



Where do firms incorporate? Deregulation and the cost of entry[☆]

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ABSTRACT

We study how deregulation of corporate law affects the decision of entrepreneurs of where to incorporate. Recent rulings by the European Court of Justice (ECJ) have enabled entrepreneurs to select their country of incorporation independently of their real seat. We analyze foreign incorporations in the U.K., where incorporations of limited liability companies can be arranged at low cost. Using data for over 2 million companies from around the world incorporating in the U.K., we find a large increase in cross-country incorporations from E.U. Member States following the ECJ rulings. In line with regulatory cost theories, incorporations are primarily driven by minimum capital requirements and setup costs in home countries. We record widespread use of special incorporation agents to facilitate legal mobility across countries.

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1. Introduction

Historically, companies have tended to incorporate in the country in which they operate. This association of legal with real seats is mostly due to limitations on the ability of companies to incorporate in countries that differ from the main location of their operations. Legal and real seat have been allowed to differ across states within the U.S. but to date there has been no evidence on mobility across countries.

The contribution of this paper is to analyze incorporations in the U.K., originating from around the world using data for over 2 million companies newly incorporated in the U.K. between 1997 and 2006. We use these data to evaluate the impact of liberalization of country of incorporation prompted by a series of landmark rulings by the European Court of Justice (ECJ) permitting free choice of location within the European Union (E.U.).¹ Although the ECJ decisions have caused considerable legal

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¹ See the *Centros* decision (ECJ Case C-212/97, *Centros Ltd. v. Erhvervs- og Selskabsstyrelsen*, decision of 3/9/1999, E.C.R. I-1459, the *Überseering* decision (ECJ Case C-208/00, *Überseering B.V. v. Nordic Construction Company Baumanagement GmbH (NCC)*, decision of 11/5/2002, referred to the ECJ by the German Bundesge-richtshof (BGH), Resolution of 3/30/2000) and the *Inspire Art* decision (ECJ Case C-167/01, *Kamer van Koophandel en Fabrieken voor Amsterdam v. Inspire Art Ltd.*, decision of 9/30/2003).

debate, there is no consensus about their practical consequences.² While some authors predicted that companies would move their legal seat to the U.K., others argued that there would be no measurable impact as entrepreneurs would prefer to stay with their familiar domestic legal systems. This paper is the first to quantify the impact of legal deregulation on incorporation decisions.

We then investigate what determines the choice of corporate law. A regulatory cost theory would suggest that given comparable quality of company law, consumers would opt for low-cost systems. If commercial law is easily substitutable across countries then price considerations should dominate. Finally, we provide evidence of whether the ECJ rulings are leading to regulatory competition between E.U. Member States to provide low-cost corporate law.

The reason for studying U.K. incorporations is that it is the only country that has always allowed the export of corporate law to other countries without restrictions, a key point of our analysis. Further, the U.K. has the simplest incorporation procedures and the lowest costs of incorporation in the E.U. It also has a large number of incorporations from outside the E.U. and a central company register from which information on the nature of incorporations can be derived.

The existing literature evaluates the effect of choice of state of incorporation in the U.S. on firm value (Daines, 2001; Subramanian, 2004) and the effect of regulatory competition between states (Romano, 1985; Kahan and Kamar, 2002). This paper is most closely related to Djankov et al. (2002) who use data on the costs of entry of firms in different countries to establish the adverse effect of regulation on corruption and informal black economies and to Fonseca, Lopez-Garcia and Pissarides (2001), who show that there is a negative correlation between the cost of entry on the one hand and movements between employment and self-employment and in employment rates across countries on the other.

The paper is in the spirit of the paper by Djankov et al. in using international data but it does so to answer questions about entrepreneurship, new company formation and competition for incorporations. It is therefore as far as we are aware the first attempt to supply international empirical evidence on how deregulation and the costs of regulation affect the decisions of firms on where to incorporate. The econometric tests we employ are more powerful than previous cross-sectional correlations because they establish a link between the cost of regulation and the rate of new company formation. They are also free from potential endogeneity bias.

We show that the Centros rulings were directly associated with large international flows of companies that are economically significant. Between 2003 and 2006 over 67,000 new private limited companies were established in the U.K. from other E.U. Member States. The yearly average number of incorporations increased from 146 firms per country-year during the pre-Centros period to 671 firms per year after Centros. These numbers contain only true Centros-type incorporations, namely firms that incorporated in the U.K. without any operational activity there. We show that our methodology successfully identifies foreign flows of incorporations and is able to remove other types of firms, such as subsidiaries of foreign parents.

In absolute terms the largest flows of companies are from Germany, France, the Netherlands and Norway. Most of the new foreign limited companies are small entrepreneurial firms and we do not find evidence that Centros has had significant effects yet on incorporations of public limited companies in the U.K. This means that the primary impact of the change in regulation recorded in this paper is on entry of new firms rather than in the legal status of existing firms. Consistent with our predictions we show that the sharp increase in incorporations from E.U. countries in the U.K. is not mirrored by increases in incorporations from non-E.U. countries to which the ECJ rulings do not apply.

We provide evidence on the drivers of foreign incorporations. Using differences-in-differences regressions we show that post-Centros increases in legal migration rates are explained by country-specific incorporation costs and minimum capital requirements. Small differences in setup costs and capital requirements between countries have surprisingly large effects on the probability that an entrepreneur will choose to incorporate in the U.K. rather than in her home country. Legal uncertainty, language and stronger enforcement of disclosure standards do not appear to be barriers to foreign incorporations. The evidence supports a simple model of choice of legal form dictated by relative costs of incorporation in different jurisdictions rather than a broader set of non-price considerations.

Importantly, while minimum capital and incorporation costs determine the number of entrepreneurs coming from E.U. countries to the U.K., this is not true for incorporations from non-E.U. countries where the ECJ rulings do not apply. We use country-level incorporation parameters from Djankov et al. (2002) and the World Bank (2005) for this analysis. Consistent with our predictions, non-Centros country incorporations are not determined by minimum capital requirements or setup costs and incorporations from high-cost but non-Centros countries do not increase over time. Strikingly, other incorporation parameters such as the duration of the incorporation process or the number of procedures to be completed do not matter for the decisions of entrepreneurs, both from the E.U. and the rest of the world.

We show that one of the reasons why price is such an important consideration is that the market has been penetrated by registration agents who function as intermediaries, minimize the costs of shifting between legal jurisdictions and reduce the significance of non-price considerations in firm choice. These agents reduce the transaction costs of uninformed entrepreneurs taking advantage of price differentials between jurisdictions. The agent effect is particularly pronounced in the German and Dutch incorporation markets and therefore seems to emerge endogenously in high-cost jurisdictions.

Finally, we provide evidence that the ECJ rulings are leading to regulatory competition between E.U. Member States to provide low-cost corporate law. While there is no direct monetary benefit from attracting incorporations from other Member States–U.S. style franchise taxes are explicitly prohibited within the E.U.–there is a political cost of loss of control in the case of entrepreneurs choosing to incorporate abroad. If corporate law is a means of implementing a political agenda then politicians have an incentive to

² Recent overviews are Kieninger (2004), Dammann (2003) and Wymeersch (1999, 2003).

keep entrepreneurs from incorporating their companies abroad. Since corporate law in many E.U. Member States includes social provisions such as the codetermination rules in Germany, the free import of corporate law may preclude domestic political influence. Our hypothesis is that given the ECJ rulings, national governments have a strong incentive to provide low-cost corporate law. In line with our hypothesis we find that following the ECJ rulings, France, Spain, Germany and the Netherlands have all eliminated or lowered minimum capital requirements or are in the process of doing so. Both the Dutch and German consultation documents explicitly state as a reason for change the necessity to compete with more attractive U.K. company law and incorporation procedures. According to our results, reforms in France and Spain aimed at making domestic incorporations significantly cheaper have stopped the rapid growth in incorporations abroad.

The rest of the paper documents and estimates the Centros effects. Section 2 describes the institutional background to the analysis. Section 3 explains the empirical methodology. Section 4 presents the main results and analyzes their robustness. Section 5 concludes.

2. Corporate mobility and regulation

We begin by describing the ECJ rulings that are relevant for this study and the differences that exist across countries in the degree of choice that companies have about location of incorporation. We discuss the factors that would be expected to influence companies' incorporation decisions and the hypotheses that we test.

2.1. Law and institutions

On 30 September 2003, the ECJ upheld the decision by *Inspire Art Ltd.*—a private company limited by shares incorporated in Folkestone, England—to incorporate in England while operating entirely within the Netherlands. The ECJ stated that this was permissible even if the only reason for incorporating in the U.K. was to circumvent Dutch minimum capital requirements. The *Centros*, *Überseering*, and *Inspire Art* cases established the *incorporation principle* by which firms that incorporate in one Member State of the E.U. are free to do business in any other Member State. The Court has emphasized that freedom of incorporation also holds for “round-trip” incorporations, when residents of country *A* incorporate in country *B* with the sole purpose of doing business in country *A*.

Historically, jurisdictions have followed either the *incorporation principle* or the *real seat principle*, while some countries employ a mixture of the two. Under the incorporation principle firms can freely choose their country of incorporation irrespective of their real seat. The incorporation principle is applied by the U.K., Ireland and most U.S. states. Under the real seat principle incorporation is restricted to the geographic location of firms' real seat. Prior to the ECJ rulings this principle applied in Austria, France, Germany and most other E.U. countries. Real seat countries by definition cannot export their law, while incorporation countries can.

In addition to restrictions on the ability of firms to opt out of a particular country's company law, regulation of registration of a new company also varies between jurisdictions. In a survey of 85 countries, Djankov et al. (2002) show that costs of regulation differ because, for example notaries are employed in the registration process in some but not all countries.

There are two important institutional differences between the notion of corporate mobility in the United States and Europe. First, in the U.S. a firm that is incorporated in and operates in State *A* can reincorporate in State *B* without winding-up or incurring a tax penalty. Naturally the company can also choose to incorporate in State *B* at the time of initial incorporation. In the E.U. a firm cannot leave its country of incorporation without facing mandatory dissolution, taxation, notary and other costs.³ A draft European Commission Directive is seeking to reduce the cost of exit, but it is uncertain whether Member States will support complete liberalization of the incorporation market.⁴ This seems effectively to limit corporate mobility in Europe to initial incorporation decisions by private limited companies of small size and precludes the owner–manager conflict concerning reincorporation that has been discussed in the context of Delaware.

Second, the incentives for Member States of the E.U. and the U.S. to compete for incorporation business differ. Regulatory competition in the U.S. is influenced by franchise tax revenue.⁵ In the E.U., a comparable tax does not exist and taxes of this character are explicitly prohibited.⁶ E.U. Member States therefore lack the straightforward incentives for competition that, for example, states in the U.S. have (see Bar-Gill et al., 2006).

2.2. Theory and hypotheses tested

The ECJ decisions provide a unique opportunity to test theories of corporate mobility and costs of regulation empirically. The ECJ has moved the E.U. from a mostly real seat model to a single market for company law operating under the incorporation model. Entrepreneurs can, for the first time, reveal their preferences by choosing among corporate law and regulation regimes.

³ Details differ between Member States. Restrictions on exit were upheld in the *Daily Mail* case that involved a U.K. company wanting to move its real seat to the Netherlands for tax purposes. See the *Daily Mail* case (ECJ Case C 81/87 (27/09/1988), *The Queen vs. H. M. Treasury and Commissioners of Inland Revenue*, ex parte *Daily Mail and General Trust plc*).

⁴ Public consultation on the 14th Company Law Directive on the cross border transfer of companies' registered offices (European Commission, Press Release, IP/04/270, 26/02/2004).

⁵ Romano (1998) shows that the State of Delaware's income from the franchise tax for incorporations has amounted to between 10.9 and 24.9% of total tax revenue of the state between 1966 and 1996.

⁶ See art. 2 (1) and art. 10 lit. a of Directive 69/335/EEC.

This paper tests the theory that corporate mobility is driven by costs of regulation. There are three types of costs of incorporation. The first is the setup costs that firms incur at the time of registration. The second is an indirect cost arising from the capital that firms have to put up at incorporation.⁷ The third cost is the present value of ongoing expenses associated with operating a particular legal form over the lifetime of the firm. We can observe the first two costs directly; for the average firm in our population of newly incorporated firms, both cost types are significant relative to total firm value. The average firm is very small, with only two directors and has a life expectancy of less than three years. We therefore expect both costs to be important decision variables.

Firms should migrate from high to low low-cost regimes. The first hypothesis that we examine is whether deregulation has had an impact on decisions on where to incorporate. There is a widely held view that companies, in particular small ones, are firmly wedded to their national legal systems and therefore incorporate where they operate. We test this by looking at changes in cross-border incorporation before and after the Centros judgements. If there is a high degree of inertia in companies' incorporation decisions then we would expect to find little increase in cross-border incorporation.⁸

We then refine this test by examining whether the cross-border incorporations come from within or outside the E.U. If deregulation does affect incorporation decisions then we expect to observe difference in cross-border incorporation from E.U. and non-E.U. countries.

We combine the above two tests in a “difference in difference” test. We examine whether the changes in cross-border incorporation around deregulation come primarily from E.U. as against non-E.U. countries. If deregulation is of little significance then we would not expect to observe such a relation, but if it is then we would.

The second hypothesis that we examine is the impact of costs of regulation on decisions of where to incorporate. We use the above categories of costs of regulation and examine their relation to cross-border incorporations. If non-price factors, such as language and the quality rather than the cost of incorporation, are more important then we would expect to observe little influence of cost. We then examine the relation between changes in cross-border incorporations and the costs of incorporation in the countries from which companies originate. If cost is important then we would expect that there would be a particularly marked movement from countries with high costs of incorporation.

Finally, the paper considers the policy response to cross-border incorporations. We examine the extent to which competition between national regimes has emerged by reporting the degree to which legislative changes have been enacted or proposed in different E.U. countries. If policymakers are concerned about cross-border flows of companies from their countries then we would expect to observe policy reactions in those countries experiencing the largest number of exits. We would also expect to observe changes in those policy instruments that our analysis suggests have the most effect on cross-border movements. For example, if we find that minimum capital requirements influence cross-border location decisions then we would expect to observe reduced minimum capital requirements in those countries most affected by exits of companies.

3. Methodology and data

3.1. Empirical methodology

3.1.1. Identifying the nationality of a firm

We begin by defining empirical measures of nationality for a firm that is mobile between jurisdictions. To keep the legal details tractable, we introduce some terminology. What is a German, a Dutch, or a Maltese company? Under the real seat principle, a German company is one that has directors and owners residing in Germany, its main centre of activity in Germany and is therefore obliged to adopt a German legal form. For a private limited company this would be a *GmbH*, the German equivalent of the U.K. private limited company (Limited). In contrast, under the incorporation principle we define a *German Limited* as a company that has its directors and owners residing in Germany, its main centre of activity in Germany but is incorporated in the U.K. as a private limited company. This *foreign Limited*, with its main centre of activity in a foreign country is therefore different from a *domestic Limited*, with its main centre of activity in the U.K. The foreign Limited, which we call a *Centros-type Limited*, is also very different from a subsidiary of a foreign firm since, while a subsidiary could be incorporated as a Limited in the U.K., it would also have considerable real activities in the U.K. A Centros-type Limited will have little or no real activities in the U.K.

Another legal concept we employ is *branches* of foreign companies. Generally, a branch is defined as an organizational unit of a founding entity, where the founding entity is a foreign firm. The branch itself does not have a separate legal entity but it may correspond with one. Most jurisdictions around the world require that a foreign company must register a branch with the relevant local authorities if it engages in real activity in that jurisdiction. Under the 11th E.U. Company Law Directive (89/666/EEC) on the disclosure requirements regarding branches, a foreign company must register its real activity in any E.U. State as a branch within that state.

A German Limited incorporated in the U.K. and with real activities in Germany therefore would have to register a branch in Germany. In a Centros-type Limited the *branch* is the *sole* centre of economic activity, while the parent company—the private

⁷ Minimum capital requirements are not a direct cost as the paid-up capital is still owned by the shareholders. They cause indirect costs however in the form of opportunity costs or costs of increased financial constraints.

⁸ Note that increases in incorporations in the U.K. do not necessarily translate one for one into decreases in incorporations in the relevant home countries. This is because the Centros rulings enable a larger absolute number of entrepreneurs to incorporate. Entrepreneurs that could not previously incorporate in their domestic high minimum capital jurisdiction due to capital constraints may be able to incorporate in the U.K. following the rulings.

limited company incorporated in the U.K.–undertakes *no* real activity. In economic terms the branch is therefore the parent and the legal parent is a shell without real activity. Since branches are not legal entities their registration typically is not strictly enforced. Tentative information from various European business registers suggests that only a fraction of companies do in fact register branches. This means that Centros-type companies have a low probability of detection in home countries, since information of the U.K. incorporation may never reach official sources in the respective home countries. In this study U.K. data therefore *indirectly* reveal far more extensive mobility patterns for all 25 E.U. States than *direct* data from the home countries ever can.

In practice, we devise three measures of nationality. The first two measures define nationality through the geographic location of the board – the country of residence of the firms' directors. The first measure states that if a *majority* of the directors of a firm–excluding the company secretary–live in a country other than the U.K. the company is defined as coming from that country. The second measure requires *all* directors of a firm to live in one country other than the U.K.⁹

Obviously these director residence measures do not necessarily capture the centre of real activity of all firms, which is also not disclosed in U.K. Companies House filings. All firms in our sample however are new registrations and mostly small firms. For such entities the real centre of activity is close to the place of residence of the directors.

Therefore, as a robustness check, we construct a third nationality measure which additionally filters out foreign Limited companies based on the criterion of having a physical presence in the U.K. As we show later, our first two measures for filtering out Centros-type firms almost exactly coincide with those companies also not having a physical presence in the U.K. Centros-type companies almost always only have a *virtual* presence in the U.K., using registered office addresses shared by hundreds, often thousands of companies.¹⁰

To illustrate our methodology, consider the example of *Munich Stylist Limited*, a hairdresser's in Munich, Germany and a typical Centros-type firm. The company was incorporated in the U.K. in December 2003.¹¹ The company has one director, residing in Germany and a company secretary based in the U.K. The registered office of the firm is at 59 Greenside Avenue in Huddersfield, one of the virtual addresses used by a German registration agent. All of this information is publicly available at Companies House. In January 2005, Munich Stylist Limited had not yet registered a branch in the German company register. Under the directors' country of residence definitions and the virtual U.K. registered office definition we are able to identify *Munich Stylist Limited* as a German Limited.

The main drawback of the directors' place of residence definition is that we are unable to make a direct distinction between the German Limited of the *Munich Stylist Limited* variety and U.K. subsidiaries of German companies or U.K. Limiteds that operate in the U.K. even though a majority of directors live outside the U.K. As we show later, this has no practical consequences for our results. For one thing, we test for changes in levels of incorporations from pre- to post-Centros. If the rate of subsidiary formation in the U.K. is constant over time, subsidiary formation cancels out in the pre- and post-Centros migration rate comparison. Second, subsidiaries of E.U. companies incorporated as Limiteds in the U.K. have much larger boards of directors than the Centros companies that we are looking at and a majority of directors of these companies operating in the U.K. usually live in the U.K. Our filtering consequently identifies subsidiaries as domestic Limiteds, not as foreign Limiteds. Third, the activities of registration agents confirm the link between the change in registration rates and the ECJ judgements. In particular, the Dutch and German foreign firms use registration agents that do not cater for U.K. firms, whereas foreign subsidiaries are more likely to use U.K. agents. Finally, and most importantly, we find that the companies we identify as foreign in the post-Centros period overwhelmingly do not have a physical presence in the U.K. We take this as strong evidence that the economic centre of activity of these companies is not the U.K. but another country. We return to these issues in our discussion of the empirical results.

3.1.2. Timing of the experiment

To analyse the impact of the ECJ, the timing of the Court's decisions is crucial. Table 1 provides an overview of the relevant ECJ rulings. We identify three periods relevant to our study: During the *pre-Centros* period (1997–1999) the real seat principle applied in most E.U. countries. During the *interim* period (2000–2002) the implications of the ECJ rulings were ambiguous. Germany for example ignored the Court's decision and other countries, like the Netherlands, continued to impose restrictions on the registration of branches. Legal uncertainty was considerable. Finally, the post-*Überseering* period (2003–2006) begins after the ECJ confirmed that foreign Limited companies could operate freely in all 25 Member States and its position was widely recognized by courts in all Member States, including Germany and the Netherlands.

We therefore argue that the ECJ Centros ruling in 1999 did not have an immediate impact on corporate mobility since it left many legal questions unresolved, for example whether the ruling would similarly apply to a company incorporated in a real seat country, such as Germany. Further, the ECJ decisions translated into national court rulings with a considerable time lag. However, with the ECJ's stance towards corporate mobility confirmed in the *Überseering* ruling in 2002 entrepreneurs and investors were finally assured that companies incorporated in one E.U. country operating in another would not be declared illegal by national

⁹ Incorporation agents do function as company secretaries or as directors, and in some cases as both. By using the 'all director' definition we exclude all foreign Limiteds that have at least one U.K. director. Since this U.K. director may be an agent we are excluding all foreign Limiteds using a U.K. agent who functions as a director. The 'all director' definition therefore is a lower bound of actual foreign incorporations, as it classifies some companies as domestic although they are foreign. For the bulk of the German and the Dutch Limited companies we were able to establish a link with a German and a Dutch agent, which gives us even more confidence in our methodology and results.

¹⁰ As a fourth measure we experimented with telephone books. Foreign Limited companies should have a telephone number in their home countries but not in the U.K. Given the size of our dataset, the approach however is too time-consuming. As a further alternative we tried to rely on the provisions of the 11th E.U. Company Law Directive under which a Foreign Limited has to register its real activity in its home country as a branch. A preliminary comparison between Companies House and branch registrations in Germany however reveals that only a small fraction of foreign Limiteds are registered in their home country, rendering the approach similarly impractical.

¹¹ The company drew wide attention to the legal migration phenomenon in Germany after being featured in the weekly *Der Spiegel* (27 September 2004).

Table 1

Timeline of European court of justice decisions on corporate mobility

Label	Case	Content
"Daily Mail" 27 Sep 1988	Case 81/87, The Queen v. H. M. Treasury and Commissioners of Inland Revenue, ex parte Daily Mail and General Trust plc.	Freedom of establishment has no influence on the applicability of the Member States' company law.
"Centros" 09 Mar 1999	Case C-212/97, Centros Ltd. v. Erhvervs- og Selskabsstyrelsen	Centros Ltd., incorporated in the U.K., cannot be denied registration in the Danish Business Register on the grounds that the company operates entirely within Denmark and is incorporated in the U.K. only to circumvent stricter Danish incorporation (minimum capital) requirements.
"Überseering" 05 Nov 2002	Case C-208/00, Überseering B.V. v. Nordic Construction Company Baumanagement GmbH (NCC)	Überseering B.V., incorporated in the Netherlands, operates in Germany and is rejected as a plaintiff by German courts on the grounds that a Dutch company lacks legal capacity in Germany. BGH referred the company's appeal to the ECJ for guidance. ECJ rules that the company must not be denied legal capacity when the only possible forum is a German court.
"Inspire Art" 30 Sep 2003	Case C-167/01, Kamer van Koophandel en Fabrieken voor Amsterdam v. Inspire Art Ltd.	Inspire Art Ltd. is incorporated in the U.K., but operates in the Netherlands. The Dutch Government upholds that while the company can legally operate in the Netherlands, it must adhere to legislation in place for formally foreign companies, which among other requires that directors are personally liable if the firm has minimum capital below the minimum capital requirement for Dutch firms.

courts. We therefore expect the effect of the ECJ judgements on corporate mobility to be felt in the post-Centros period from 2003 onwards, but not in the pre-Centros period.

3.2. Sample construction and summary statistics

As previously described we study all new incorporations of limited liability companies in the U.K. between 1997 and 2006. To do this we utilize the fact that all existing and newly incorporated U.K. firms are required to file information at a central depository called Companies House in Cardiff, Wales. The raw data distributed by Companies House are first processed by Jordans, a commercial data vendor in Bristol. The Jordans data are further processed and distributed by Bureau van Dijk in Brussels through its FAME database. The FAME database therefore provides an accurate snapshot of all companies incorporated at the UK at a specific point in time.

Using back issues of FAME we construct a panel of all limited liability firms incorporated in the U.K. between 1997 and 2006. The procedure we need to use to construct the panel is involved and described in detail in a data appendix available from the authors and online at www.ecgi.org/centros. We summarize the approach here. We construct a series of cross-sections of firms that were incorporated at Companies House from six consecutive issues of FAME. FAME issues are published quarterly. We use the April disks for every year from 2002 until 2007.¹² Using multiple issues of FAME is crucial as individual FAME disks do not contain the full population of newly incorporated firms for a number of reasons. First, there is an inclusion delay. To resolve this, we use for every incorporation year the disk that has the maximum coverage of firms incorporated during that year, which is always the subsequent issue. Second, for some companies data is simply missing. We resolve this by computing correction factors based on a comparison between FAME and total incorporation numbers from Companies House assuming the FAME data is missing at random.¹³ Finally, companies that do not file accounts start getting excluded after 22 months. Since we are only collecting data on new incorporations this does not affect our analysis.

The range of countries reported in director home addresses is large. For practical purposes we limit the number of nationalities for our limited liability companies to 139 by working downwards through a country list sorted by GDP at current dollar prices in 2004. The remainder are pooled under the "rest of the world".

To estimate the impact of the costs of regulation on corporate mobility we also collect data on the different types of incorporation costs for all 25 E.U. countries. We collect information about minimum capital requirements, setup costs, setup times and the number of incorporation procedures for the 25 E.U. countries from a number of European law firms, the *World Bank Doing Business (2005)* database, which extends the data provided by Djankov et al. (2002), the *EVCA (2004)* European Business Environment study and relevant web pages. We record minimum capital requirements as well as minimum paid-up capital—the minimum capital necessary to be paid in at time of incorporation—in all E.U. countries for the smallest possible private limited company. Regarding deadweight setup costs, we use two alternative measures. First, we use typical setup costs reported in *EVCA (2004)*, which are setup costs for private limited companies resulting from taxes, duties and notary fees. Second we use typical setup costs as reported in the World Bank database. Regarding the delay of the incorporation process, we again use two alternative measures. First, we use time to complete the incorporation process reported in *EVCA (2004)* and second, the same measure reported in the World Bank database. We also use the number of procedures itself, that an entrepreneur has to complete to incorporate a firm.

Table 2 reports summary statistics. In total there are 2.38 million newly incorporated limited liability firms in our final sample, with a total of 8.16 individuals with their respective addresses. We process all addresses as far as possible automatically to

¹² Jordans only received data on the full population of firms from Companies House from 2002 onwards. Prior FAME coverage is insignificant. We extract all available firm information from four earlier FAME disks (October 1998, April 1999, April 2000 and April 2000) and confirm that the disks cover less than 5% of the total population of UK firms.

¹³ Exclusion is very likely not to be random, but is also not a serious concern since we only consider companies at the time of their incorporation. However, it prevents us from performing a survival analysis.

Table 2

Summary statistics

Limited liability companies incorporated in the U.K., 1997–2006	
Number of firms	2.38 million
Number of individuals (directors and company secretaries)	8.16 million
Average (median) number of directors per firm	
For private limited companies (LTDs)	2.1 (2)
For public limited companies (PLCs)	4.2 (4)
Number of countries	139
Ten most frequent countries for LTDs (number of firms in thousands)	United Kingdom (2235.1), Germany (45.1), United States (15.1), France (11.2), Netherlands (8.6), Norway (6.4), Cyprus (6.3), Republic of Ireland (5.0), Denmark (3.9), Switzerland (3.8)

determine the country of residence from the information provided in the address. If country information is missing we use city names or postcodes to determine the country. We apply this manual approach to all unidentified addresses in the sample. As a consequence, we are able to determine the country of residence in 99.85% of all cases, leaving only 3934 out of 2.81 million addresses unidentifiable.

Most directors reside in the U.K., followed by Germany, the US, France, the Netherlands and Norway. The median private limited company is small and has two directors and one company secretary.

4. Empirical results

In this section we report the empirical results of our study. We begin by reporting Centros-type incorporations in the U.K. from other E.U. Member States between 1997 and 2006 and confirm the robustness of our company nationality definition. We then perform four sets of tests. The first compares the pre- to post-Centros difference in E.U. incorporation rates to the difference in non-E.U. incorporation rates. The second set of tests relates minimum capital, setup costs and other incorporation parameters to changes in corporation rates from E.U. countries. The third set of results confirms that this effect only applies to Centros countries, not to non-Centros countries and that it does not apply to other incorporation parameters. The fourth set applies a different technique of identifying the nationality of a firm based on address clusters and presents statistics about the use of incorporation intermediaries.

4.1. The evolution of corporate mobility

We begin the analysis by reporting the numbers of firms that we identify as foreign Limiteds incorporated in the U.K. between 1997 and 2006 from all E.U. Member States. As previously defined, we consider a company to originate from country x if the majority or all of its directors reside in that country. We report the results for all 24 E.U. countries, including the ten Accession Countries that joined the E.U. effective on 1 May 2004, plus Norway.¹⁴

Table 3 reports the results for new foreign private limited companies. The table shows that private limited companies exhibit a high degree of corporate mobility and firms from other Member States are incorporated in the U.K. in large numbers, with pronounced yearly increases mostly from 2002 onwards. Absolute numbers are largest for Germany, the Netherlands and France. For example, using the majority of directors definition in Panel A, in 1997 only 600 German Limiteds were incorporated in the U.K., rising to 1164 in 2002 and sharply increasing to over 16,000 in 2006. In contrast, while absolute numbers in France are high, the increase is much less pronounced. As we explain in more detail later, France undertook a reform of its private limited company act in 2003. The dampened growth in the incorporation flow from these countries to the U.K. may therefore be evidence of the effects of regulatory competition, a hypothesis we address later.

In contrast, our evidence shows that Public Limiteds are not yet subject to corporate mobility. A table similar to Table 3 but for public limited companies is available from the authors. It shows that no E.U. Member States incorporate significant numbers of public limited companies in the U.K., with an average of 1.3 companies per year per country. In most years all countries report zero newly incorporated public limited companies. The small numbers of observations preclude any meaningful statistical analysis and we therefore limit our analysis mostly to private limited companies.

4.2. Corporate mobility pre- and post-Centros

In the following we analyze whether the Centros rulings have had a significant impact on incorporations. We address several questions. First, is there a significant increase in incorporations of companies from E.U. Member States to the U.K. following the Centros rulings? Second, is this increase confined to countries to which the Centros ruling applies? Third, are these results economically significant and statistically robust? We provide answers by using a differences-in-differences approach and

¹⁴ The accession process has extended the applicability of the Centros decisions to the new Member States in 2003. The ten accession countries are the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia. For Norway the Centros rulings apply due to its European Economic Area country status.

Table 3

New private limited companies by country

Country	Year of incorporation									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
<i>Panel A: Number of U.K.-incorporated firms where the majority of directors reside in country x</i>										
Austria	70	63	107	104	150	163	212	456	754	719
Belgium	236	300	378	305	293	335	323	395	531	592
Cyprus	151	198	675	936	881	1070	937	819	976	852
Czech Republic	22	17	32	39	33	38	56	67	89	170
Denmark	133	135	178	163	299	1131	1484	239	288	280
Estonia	2	8	7	5	7	8	9	18	30	14
Finland	22	37	37	43	33	12	24	16	24	35
France	1112	1396	1491	1408	1214	1298	1411	1477	1759	1670
Germany	600	633	776	807	717	1164	2752	10,263	13,728	16,438
Greece	77	121	133	87	73	105	123	100	121	159
Hungary	15	17	21	9	23	9	38	37	73	91
Ireland	350	471	600	427	391	427	1914	507	473	521
Italy	440	442	538	422	329	370	428	431	553	748
Latvia	4	0	11	9	17	18	15	17	35	33
Lithuania	7	0	2	2	13	18	25	25	13	23
Luxembourg	59	60	103	58	54	48	37	84	110	66
Malta	11	27	21	22	15	11	21	25	23	23
Netherlands	501	506	583	467	521	637	732	1571	2193	2156
Norway	103	85	112	109	91	105	317	1222	2332	2335
Poland	31	29	41	20	24	34	301	116	140	154
Portugal	55	67	54	46	46	28	57	54	66	77
Slovakia	15	6	4	7	8	11	12	13	16	21
Slovenia	2	4	6	2	11	7	10	18	33	48
Spain	243	242	307	269	269	373	279	386	555	564
Sweden	173	263	249	237	133	206	242	245	410	533
<i>Panel B: Number of U.K.-incorporated firms where all directors reside in country x</i>										
Austria	50	48	52	39	21	37	92	311	608	595
Belgium	177	198	262	140	20	125	130	219	378	445
Cyprus	127	162	575	657	361	428	473	529	659	700
Czech Republic	9	8	19	17	5	8	33	32	63	123
Denmark	53	63	133	70	8	759	1406	105	194	178
Estonia	0	0	4	5	0	0	2	8	19	8
Finland	11	19	15	17	6	2	12	8	11	13
France	843	1069	1075	793	223	252	471	730	974	1026
Germany	411	394	495	369	151	420	1811	9038	12,777	15,633
Greece	55	94	94	39	8	23	38	37	76	102
Hungary	7	13	9	0	2	2	18	28	49	55
Ireland	232	277	358	165	85	106	1610	176	185	212
Italy	311	285	348	199	55	56	130	181	285	458
Latvia	0	0	7	5	2	5	9	6	15	24
Lithuania	7	0	2	0	1	2	23	21	8	14
Luxembourg	55	29	73	31	7	9	7	43	71	37
Malta	9	17	9	12	0	3	3	10	9	9
Netherlands	359	362	384	228	126	235	385	1212	1812	1703
Norway	74	56	56	34	10	8	235	1081	2165	2193
Poland	20	21	22	14	4	7	280	51	85	104
Portugal	31	42	30	26	5	3	18	17	35	36
Slovakia	7	2	4	3	1	1	8	11	12	13
Slovenia	2	2	4	0	4	3	4	8	16	31
Spain	151	142	172	117	43	71	80	143	316	324
Sweden	118	160	161	109	10	81	109	113	289	413

This table reports new incorporations of private limited companies in the U.K. from E.U. Member States and Norway. In Panel A, incorporations from country *x* count the number of firms where the majority of directors resides in country *x*. In Panel B, incorporations from country *x* count the number of firms where all directors reside in country *x*. Observations have been filtered and corrected both on the level of individual directors as well as on the firm level as described in the Appendix.

determine the flows of foreign Limiteds to the U.K. pre- and post-Centros from around the world and contrast the E.U. with the rest of the world. We break down the sample into the three time periods described in the previous section, and compare the pre-Centros and the post-Centros cohorts of firms from around the world. We expect a regulation effect for the post-Centros period, but not for the pre-Centros period.

Fig. 1 reports cross-sectional averages by year of incorporation for E.U. Limiteds and Limiteds from the 30 largest non-E.U. economies. The graph shows that while there is a positive time trend in foreign Limiteds both from the E.U. and other countries, the E.U. States show a strong growth pattern beginning in 2002, which is not experienced by other countries. If we use all countries in our sample as the benchmark for the E.U., the differences in time trends become even larger.

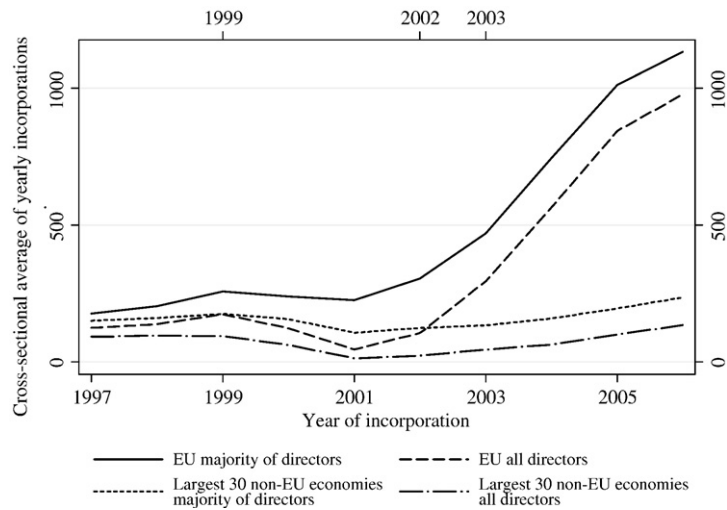


Fig. 1. Foreign private limited company incorporations in the U.K. 1997–2006.

We estimate formal differences-in in-differences as

$$y_{it} = \alpha + \beta_1 \text{EU25} + \beta_2 \text{PostCentros} + \beta_3 \text{EU25} \cdot \text{PostCentros} + \gamma_1 \text{Accession country} + \gamma_2 \text{Commonwealth} + \gamma_3 \text{Log(GDP)} + \sum d_t + \varepsilon_{it}, \quad (1)$$

where the dependent variable y_{it} is one of four different measures of the annual number of incorporations from any country. EU25 is a dummy variable which equals 1 for all E.U. Member States and 0 for all other countries, excluding the U.K. Post-Centros is a dummy variable which equals 1 for the post post-Centros period (2003–2006) and 0 for the pre-Centros period (1997–1999), accession country is a dummy variable and equals 1 if the origination country became a E.U. Member in 2003, 0 otherwise. The regressions include year fixed effects d_t .

The results of the formal regression analysis are shown in Table 4. Countries of origin are identified by the majority of directors criterion in the first column and by the all directors criterion in the second column. The coefficient for the interaction term, (EU25)×(PostCentros), is an estimate of the change in incorporations experienced by an E.U. country as a difference from the change for all countries around the world, i.e. the differences-in-differences estimate. The non-E.U. country group is sufficiently large to be a valid benchmark in this specification as the sample consists of roughly 40% non-E.U. companies.

Table 4

Incorporations of private limited companies in the U.K. pre- and post-Centros

Dependent variable: Number of companies from country x incorporated in the UK		
	Company nationality criterion based on majority of directors	Company nationality criterion based on all directors
Log(GDP)	37.519*** [8.063]	19.774*** [4.705]
EU 25	114.253*** [41.645]	74.164*** [25.058]
Post Post-Centros	−3.098 [6.034]	−8.322 [5.040]
(Centros)×(EU 25)	76.190*** [26.750]	41.802** [16.667]
Commonwealth	146.230*** [36.038]	83.006*** [23.082]
Accession country	−160.653*** [39.040]	−93.979*** [23.251]
Observations	791	791
R-squared	0.552	0.514
RMSE	92.303	56.009
F-statistic	12.262	11.526

This table reports differences-in in-differences estimates of changes in incorporations of foreign private limited companies in the U.K. The dependent variable is the number of companies from country x incorporating in the U.K. Nationalities of companies are based on whether the majority of directors resides in country x or whether all directors reside in country x . Post Post-Centros equals 1 for the post post-Centros period, 0 otherwise. Accession country equals 1 for all Member States that joined the E.U. in 2003, 0 otherwise. Fixed year effects are not reported. Standard errors clustered at the country level are reported in brackets. ** and *** denote the parameter is significantly different from 0 at the 5% and 1% level, respectively.

The analysis yields two main results. First, incorporations from E.U. countries are significantly higher than incorporations from the rest of the world. Second, and more importantly, incorporations from E.U. countries increase significantly more post-Centros than incorporations from the rest of the world. The difference is significant in all cases. The second result clearly confirms that E.U. Member States incorporate significantly larger numbers of Limiteds in the U.K. following the ECJ rulings, while a similar effect cannot be detected for countries to which the Centros rulings do not apply.

4.3. The determinants of corporate mobility

What drives corporate mobility in the E.U.? In this section we begin by providing an overview of what should *not* determine mobility, namely all parameters of a Centros-type Limited which do *not* change upon incorporation in the U.K. We then identify the motives that seem to be driving entrepreneurs from the E.U. to incorporate Centros-type Limiteds in the U.K.

To begin with, corporate mobility of the Centros type generally has no tax consequences. An E.U. Limited becomes liable to tax in the U.K. with its worldwide income upon incorporation. Double taxation agreements between the U.K. and all E.U. countries however rule that if the permanent establishment of the firm is in its home country and it generally has no economic contact with the U.K., the firm is taxed in its home country.¹⁵

Similar rules apply in cases of insolvency or personal liability. That is, incorporation in the U.K. does not generally change the fact that legislation of the jurisdiction in which the company operates applies. According to the European Insolvency Regulation, foreign Limiteds have to file for insolvency in their home country. A company without economic activity in the U.K. therefore will not fall under U.K. insolvency regulations. For example, insolvency of a French Limited would be handled according to French insolvency law.

Also, country-specific regulation of firms cannot be easily circumvented by using a foreign Limited. For example, codetermination rules in Germany cannot be circumvented by U.K. incorporation, as the rules apply to all companies with a permanent establishment in Germany, independently of how or where the company is incorporated.

We show that what *does* matter for corporate mobility are the large differences regarding minimum capital requirements and setup costs. We test the hypothesis that corporate mobility is driven by these variables. The differences in minimum capital requirements and typical setup costs are considerable between E.U. Member States. Table 5 reports minimum capital requirements and typical setup costs for private and public limited company types for E.U. Member States. For private limited companies, the countries with the highest minimum capital requirements are Austria, Belgium, Denmark, Germany, Greece and the Netherlands. No minimum capital requirements on the other hand exist in Cyprus, France, Ireland, and the U.K. Setup costs for private limited companies are highest in Austria, Denmark, Italy, Luxembourg and Slovakia, and lowest in Finland, France, Hungary and the U.K. Setting up a private limited company in Austria requires 38,500 Euro, of which 3500 are a deadweight loss of incorporation. Achieving the same legal structure in the U.K. requires just 427 Euro, of which only 425 are deadweight incorporation costs. The only other similarly inexpensive country is France, where 451 Euro are required to achieve legal status of limited liability. In summary, cross-country differences in incorporation costs are large even within the E.U. This confirms previous evidence by Djankov et al. (2002).

For public limited companies a different ranking emerges. High minimum capital requirements exist for companies in Finland, Hungary, Italy, Poland and the U.K., low minimum capital requirements exist in Cyprus, Estonia, Luxembourg, Slovakia, Slovenia. The U.K. therefore is a relatively unattractive country for incorporating a public limited company. Our observation that there are essentially no foreign public limited company incorporations in the U.K. confirms this.

To assess the importance of these incorporation variables on the mobility of firms we re-run the regressions from Table 4. We now decompose the Centros effect into two components. The first is the difference in differences due to the Centros rulings that apply to all E.U. countries. The second component is the difference between high- and low-cost countries. We test whether the post-Centros increase of foreign Limiteds that we detect among E.U. countries is conditional on whether the originating country is a low-cost or high-cost jurisdiction. If the ECJ rulings have induced a shift in new incorporations towards low incorporation cost countries, we would expect the post-Centros increase to be higher for high-cost countries than for low-cost countries. Our previous sets of tests already have established that incorporation rates from E.U. countries increase following Centros while they do not for other countries. In this step we now verify whether the magnitude of the Centros effect is attributable to incorporation costs and minimum capital requirements.

We consider four variables: minimum capital, minimum paid-up capital, incorporation costs and minimum capital plus incorporation costs. We estimate the following specification:

$$y_{it} = \alpha + \beta_1 \text{PostCentros} + \beta_2 \text{HIGH} + \beta_3 \text{PostCentros} \cdot \text{HIGH} + \gamma_1 \text{Accession country} + \gamma_2 \text{Commonwealth} + \gamma_3 \text{Log(GDP)} + \sum d_t + \varepsilon_{it}. \quad (2)$$

The dependent variable is the number of companies from the E.U. Member States incorporated in the U.K. HIGH is a dummy variable that equals 1 if the respective variable is above the E.U. median. The regressions also include the interaction of Centros and HIGH. The results are reported in Table 6.

If corporate mobility is indeed driven by costs of incorporation, we would expect large numbers of exits of firms from those countries where local regulations require high minimum and paid-up capital. The interaction term (Centros)×(HIGH) should therefore be positive and significantly different from zero. The results show that, consistent with our prediction, the coefficient for

¹⁵ On the other hand, the possibility that in some cases foreign Limiteds may incorporate in the U.K. for purposes of fraud and tax evasion cannot be ruled out.

Table 5

Minimum capital requirements and incorporation costs in the E.U.

Country	Private limited company				Public limited company			
	Local name	Abbreviation	Minimum capital	Setup costs	Local name	Abbreviation	Minimum capital	Setup costs
Austria	Gesellschaft mit beschränkter Haftung	GesmbH	35,000	3500	Aktiengesellschaft	AG	70,000	7000
Belgium	Besloten vennootschap met beperkte aansprakelijkheid or Société responsabilité limitée	BVBA or SPRL	18,550	980	Naamloze vennootschap or Société anonyme	NV or SA	61,500	1798
Cyprus	Private company limited by shares	Ltd	2	n.a.	Public company limited by shares	Plc	8850	n.a.
Czech Republic	Společnost s ručením omezeným	s.r.o.	6,700	1234	Akciová společnost	a.s.	67,000	1234
Denmark	Anpaartsselskap	ApS	16,800	6715	Aktieselskab	A/S	67,200	6715
Estonia	Osühing	OÜ	2560	n.a.	Aktiaselts	AS	25,560	n.a.
Finland	Osakeyhtiö	Oy	8000	285	Julkinen osakeyhtiö	OYJ	80,000	285
France	Société à responsabilité limitée	SARL	1	450	Société anonyme	SA	37,000	550
Germany	Gesellschaft mit beschränkter Haftung	GmbH	25,000	1500	Aktiengesellschaft	AG	50,000	1500
Greece	Eteria periorismenis efthynis	E.P.E.	18,000	1500	Anonymos eteria	A.E.	60,000	3000
Hungary	Korlátolt felelősségű társaság	Kft	12,170	430	Részvénytársaság	Rt	81,150	2443
Ireland	Private limited liability company	Ltd	1	1500	Public limited liability company	Plc	38,092	5000
Italy	Società a responsabilità limitata	S.r.l.	10,000	2750	Società per azioni	S.p.A.	120,000	2750
Latvia	Sabiedriba ar ierobežotu atbildību	SIA	2880	n.a.	Akciju sabiedriba	AS	35,950	n.a.
Lithuania	Uždaroji akcine bendrove	UAB	2900	n.a.	Akcine bendrove	AB	43,440	n.a.
Luxembourg	Société à responsabilité limitée	SARL	12,500	2300	Société anonyme	SA	31,000	2500
Malta	Private limited liability company	Ltd	1160	n.a.	Public limited liability company	Plc	46,400	n.a.
Netherlands	Besloten vennootschap	B.V.	18,000	1750	Naamloze vennootschap	N.V.	45,000	1750
Norway	Aksjeselskap	AS	11,913	1787	Allmennaksieselskap	ASA	119,130	1787
Poland	Spółka z ograniczoną odpowiedzialnością	SP.Z.O.O	12,460	650	Spółka akcyjna	S.A.	124,580	3500
Portugal	Limitada	Lda.	5000	650	Sociedade anónima	S.A.	50,000	830
Slovakia	Spoločnosť s ručením omezeným	s.r.o.	5230	4000	Akciová společnost	a.s.	26,140	5000
Slovenia	Družba z omejeno odgovornostjo	d.o.o.	8780	n.a.	Delniska družba	d.d.	25,090	n.a.
Spain	Sociedad de responsabilidad limitada	S.L.	3010	600	Sociedad anónima	S.A.	60,100	1200
Sweden	Privat aktiebolag	privat AB	10,650	2210	Publikt aktiebolag	publikt AB	53,240	2210
United Kingdom	Private limited company	Ltd	2	425	Public limited company	Plc	75,450	779

This table reports minimum capital requirements and setup costs for private and public limited liability companies in the E.U. Member States and Norway. All figures are in Euro.

the (Centros)×(HIGH) interaction term is positive and significant at the 1% level or better for the “majority of directors” nationality definition and significant at the 5% level or better for the “all directors” nationality definition. While the interaction term for incorporation costs is not significant, it is still positive and it is significant at the 1% level when combined with the minimum capital variable. Incorporations from other E.U. countries in the U.K. therefore increase more for firms that come from countries with high minimum capital requirements and high incorporation costs.

To confirm that the results are not spurious we run high versus low low-cost differences differences-in-in-differences regressions also for worldwide incorporations in Table 7. In the regression we use four incorporation parameters from the World Bank (2005) – minimum capital, incorporation cost, time to incorporation and number of procedures. Under the Centros hypothesis, the interaction of high minimum capital and high incorporation cost with the Centros dummy should be positive for E.U. countries, but not for non-E.U. countries. At the same time the interaction of the Centros dummy and high waiting time and high number of procedures should not be different from zero. The results exactly confirm this hypothesis, as the interaction terms in columns (3) and (4) are positive and strongly significant, while they are not significant in all other cases. The results show that Centros matters for high high-cost and high minimum capital countries within the E.U. but it does not matter for non-E.U. countries, irrespective of whether they have high or low incorporation costs or minimum capital requirements. Also, in line with our predictions, incorporation parameters such as the waiting time to incorporation or the number of procedures to be completed are not relevant.

Table 6

Determinants of firm incorporations from EU countries in the U.K.

Dependent variable: Number of companies from country <i>x</i> incorporated in the U.K.								
Company nationality criterion based on	Majority of directors	All directors	Majority of directors	All directors	Majority of directors	All directors	Majority of directors	All directors
Post Post-Centros	–31.086 [22.772]	–14.997 [17.780]	–32.12 [22.556]	–23.257 [20.504]	34.572 [46.610]	20.488 [31.806]	–39.605 [27.519]	–27.726 [25.804]
Accession country	–50.494 [65.498]	–25.73 [36.691]	–66.015 [59.318]	–30.427 [34.534]	8.997 [49.989]	11.807 [29.358]	–50.343 [64.774]	–20.129 [36.508]
Log(GDP)	82.409*** [18.422]	45.516*** [10.590]	85.016*** [16.057]	48.381*** [9.537]	132.099*** [21.458]	75.665*** [13.176]	112.795*** [23.728]	63.380*** [13.784]
High min. capital+setup costs							–95.829* [49.467]	–38.646 [31.370]
(Centros)×(High min. capital+setup costs)							192.232*** [43.426]	112.007*** [29.720]
High setup costs					86.707* [47.104]	60.538* [29.084]		
(Centros)×(High setup costs)					31.255 [66.032]	7.547 [41.707]		
High paid-up capital			–145.017*** [40.486]	–69.692** [25.719]				
(Centros)×(High paid-up capital)			158.762*** [42.494]	93.920*** [26.899]				
High minimum capital	–89.217* [49.937]	–31.689 [31.608]						
(Centros)×(High minimum capital)	158.608*** [42.536]	79.501** [29.118]						
Observations	154	154	154	154	126	126	126	126
R-squared	0.685	0.626	0.701	0.639	0.695	0.624	0.697	0.63
RMSE	113.053	72.136	110.061	70.885	111.304	72.549	110.882	71.921
F-statistic	14.709	15.567	21.395	19.973	29.105	26.078	28.734	19.04

This table reports differences-in-differences estimates similar to Table 4. The dependent variable is number of companies from country *x* incorporating in the U.K. The sample is restricted to EU Member Countries plus Norway. Control variables on the country level are as follows. Minimum capital is the legal minimum capital requirement. Paid-up capital is the minimum capital necessary to be paid in at time of incorporation. Setup costs are typical setup costs of incorporation. High minimum capital, high setup costs, and so on are dummy variables that equal 1 if the measure is equal to or above the EU median. This dummy variable is interacted with the Centros variable in all regressions. Fixed year effects are not reported. Standard errors clustered at the country level are reported in brackets. *, **, and *** denote the parameter is significantly different from 0 at the 10%, 5%, and 1% level, respectively.

4.4. Regulatory responses

We find evidence of regulatory competition. Germany and the Netherlands, the two countries with the largest numbers of firm exits, are responding to the U.K. Limited challenge: the German government is preparing to reform German company law to allow founders to set up companies under German law on U.K. Limited terms. Similarly in the Netherlands a fundamental review of the private limited (B.V.) law is under way in its Parliament. The Dutch consultation documents explicitly state that “the [reformed] Dutch private limited company must take on the competition with foreign legal forms.”¹⁶ In contrast, France dropped minimum capital requirements in a company law reform in 2003 and has experienced much lower numbers of firm exits. Notwithstanding the fact that member states do not levy franchise fees on incorporations, they are responding to corporate mobility by lowering the costs of incorporation. Domestic incorporation is *per se* perceived to be important even if it does not bear directly on government revenues or the location of production or control.

E.U. countries are responding to the U.K. Limited challenge by lowering the direct and indirect costs of domestic incorporations. This race to match U.K. standards shares characteristics with the regulatory competition emphasized by the U.S. corporate mobility literature, but there are important differences. First, corporate mobility in the E.U. relates to new company formation, not to established companies. Second, E.U. national governments are not motivated by franchise tax revenue as franchise taxes are prohibited within the E.U. Rather, governments are either implementing reform to stimulate small business formation or to avoid the loss of jurisdictional control over substantial parts of their economies. Third, U.K. incorporation rules were implemented *pre*-Centros and initially only affected domestic entrepreneurs and not those in other E.U. Member States. Since the U.K. has no obvious reason to compete for incorporations with other E.U. Member States, our analysis therefore suggests that foreign incorporations in the U.K. should decline once equivalent regulation is introduced in those countries.

4.5. Robustness

We perform several robustness checks to make sure our results are not spurious. First, we drop all firm observations from Germany to make sure that our results do not depend on the large number of incorporations from this country. We find that the results in Tables 4, 6 and 7 are quantitatively unchanged, even after excluding all German observations.

¹⁶ See www.justitie.nl/themas/wetgeving/dossiers/BVrecht/Information_in_English.asp (consulted on 6 November 2005).

Table 7

Determinants of firm incorporations from around the world in the U.K.

Dependent variable Sample	Number of companies from country x incorporated in the U.K., company nationality criterion based on majority of directors							
	EU countries				Non-EU countries			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post Post-Centros	57.92 [47.53]	36.42 [47.75]	–10.83 [39.44]	–32.12 [22.56]	13.75 [10.84]	–8.97 [6.59]	–2.16 [7.84]	0 [7.98]
Log(GDP)	93.64a [22.03]	86.87a [18.46]	80.66a [20.38]	85.02a [16.06]	33.02a [8.12]	34.31a [8.27]	35.01a [8.50]	34.84a [8.53]
High MINCAP				–145.02a [40.49]				–2.13 [15.55]
(Centros)×(High MINCAP)				158.76a [42.49]				–1.01 [12.28]
High COST			–63.08 [48.41]				–0.2 [16.89]	
(Centros)×(High COST)			119.37b [48.63]				3.19 [12.42]	
High TIME		–65.73 [43.83]				–18.87 [12.40]		
(Centros)×(High TIME)		18.63 [56.13]				16.24 [11.91]		
High PROC	–40.16 [50.93]				–29.30c [15.10]			
(Centros)×(High PROC.)	–25.33 [56.79]				2.49 [12.47]			
Accession country	–16.81 [73.17]	–11.62 [61.07]	–54.32 [63.21]	–66.01 [59.32]				
Tax haven					118.59a [33.12]	140.25a [33.03]	142.02a [34.09]	140.86a [34.36]
Observations	154	154	154	154	637	637	637	637
R-squared	0.66	0.66	0.67	0.7	0.37	0.36	0.36	0.36
RMSE	117.4	117.67	116.15	110.06	79.08	79.86	80.09	80.09
F-statistic	11.74	14.23	14	21.39	3.47	3.47	3.46	3.5

This table reports differences-in-differences estimates of changes in incorporations of companies from around the world in the U.K. EU countries include Norway. Non-EU countries include all 139 sample countries except the 25 EU countries and Norway. Tax haven equals 1 for countries belonging to the OECD List of Uncooperative Tax Havens (2002), zero otherwise. Four control variables are from [World Bank \(2005\)](#). MINCAP is the legal minimum capital requirement. COST is typical setup costs at time of incorporation. TIME is the mean time to complete all procedures necessary to incorporate a private limited company. PROC is the number of procedures an entrepreneur must complete to obtain legal status of the firm. High MINCAP, high COST, and so on equal 1 if the measure is equal to or above the median. The dummy variable is interacted with the Centros variable in all regressions. Fixed year effects are not reported. Standard errors clustered at the country level are reported in brackets. a, b, and c denote the parameter is significantly different from 0 at the 1%, 5%, and 10% level, respectively.

Second, it may be that other incorporation parameters matter for the decision of entrepreneurs of to incorporate in the U.K. We re-run the regressions from [Table 7](#) using other components of the [World Bank \(2005\)](#) incorporation index as well as the whole index. However we do not find any other incorporation parameters that explain the post-Centros increase in incorporations from E.U. countries. While it is plausible that other considerations matter as well for individual entrepreneurs, empirically the only variables that explain post-Centros corporate mobility are country-specific incorporation costs and minimum capital requirements.

Third, we consider the possibility that our definition of the nationality of a firm may not capture the true nationality of firms. One possible objection to our definition is that we are placing considerable weight on the physical location of directors. It could be that our methodology is picking up significant numbers of subsidiaries of foreign firms, where the directors do not live in the U.K. but the firm still has its main centre of activity in the U.K. These would not be the Centros-type companies we are interested in. We resolve this by showing in the following that the vast majority of foreign firms incorporated in the U.K. following the Centros rulings in fact do not have a physical presence in the U.K.

Our approach is a purely mechanical one of identifying clusters of firms using the same address. Independently of how we define address clusters, the analysis yields the result that the foreign Limiteds we previously identify as coming from E.U. Member States indeed are Centros-type firms and overwhelmingly lack a physical presence in the U.K. We analyze all sample firms by their primary address. We find that firm addresses are not unique, but instead often are used by hundreds, if not thousands of other firms as well. While it is of course possible that two firms in our sample have exactly the same address—for example, if a firm died and another firm moved into the offices later or if the address signifies a business park or large commercial estate—it is very unlikely that if more than a dozen or even hundreds of firms have the identical primary address, that these addresses correspond to businesses with real economic activity. Our initial and very conservative definition therefore is that a firm lacks a physical presence if its primary address is an address used by at least 100 firms with different registration numbers. We reduce the necessary cluster size to 50 and 20 firms at the same address consequently. We then condition identifying an E.U. Limited not just on the directors' place of residence but additionally on being incorporated at an address cluster.

The results reported in Panel A of [Table 8](#) show yearly percentages of foreign private limited liability companies that are located at address clusters. In the table the “all directors” criterion is used to identify the nationalities of companies. Results

Table 8

Centros-type E.U. private limited companies incorporating in the U.K.

Panel A: Address clustering by country												
Country	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Pre-Centros mean	Post-Centros-mean
Austria	17.4	8.0	14.3	34.8	16.7	42.9	64.0	77.7	91.3	88.8	13.2	80.5
Belgium	7.4	7.8	6.4	9.8	23.5	74.8	36.5	45.8	58.5	71.5	7.2	53.1
Cyprus	41.4	23.8	35.5	51.0	68.3	90.9	82.4	77.1	76.9	67.9	33.6	76.1
Czech Republic	50.0	0.0	40.0	20.0	25.0	50.0	71.9	74.2	68.9	56.3	30.0	67.8
Germany	13.8	20.0	13.3	20.3	37.8	59.5	87.5	93.3	93.0	93.2	15.7	91.8
Denmark	4.2	9.1	22.5	12.2	14.3	84.3	88.1	58.8	71.8	53.2	11.9	68.0
Estonia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	55.6	100.0	0.0	57.6
Spain	13.0	8.1	6.5	11.6	33.3	32.4	39.7	42.8	56.0	54.0	9.2	48.1
Finland	0.0	20.0	12.5	0.0	20.0	100.0	33.3	50.0	45.5	46.2	10.8	43.7
France	12.2	13.7	13.8	14.2	5.3	24.6	46.6	36.7	43.8	46.8	13.2	43.5
Greece	4.8	5.7	5.8	7.4	7.3	11.8	14.2	13.8	18.3	19.6	5.4	16.5
Hungary	33.3	28.6	0.0	0.0	50.0	100.0	70.6	48.1	75.0	81.1	20.6	68.7
Ireland	2.8	8.3	8.9	17.5	4.2	10.9	92.9	11.2	16.4	19.4	6.7	35.0
Italy	13.4	10.8	20.4	14.5	15.2	24.5	41.3	42.3	51.8	54.8	14.9	47.5
Lithuania	66.7	0.0	100.0	0.0	100.0	0.0	68.2	65.0	75.0	71.4	55.6	69.9
Luxembourg	32.0	13.3	10.3	5.6	66.7	33.3	42.9	35.7	42.6	61.1	18.5	45.6
Latvia	0.0	0.0	25.0	0.0	0.0	20.0	33.3	66.7	46.7	73.9	8.3	55.1
Malta	25.0	11.1	0.0	0.0	0.0	100.0	100.0	20.0	11.1	66.7	12.0	49.4
Netherlands	17.1	25.0	31.7	44.0	44.3	67.0	44.5	83.4	72.5	80.4	24.6	70.2
Norway	5.9	0.0	10.0	0.0	12.5	25.0	66.7	63.0	84.8	88.2	5.3	75.7
Poland	22.2	9.1	25.0	12.5	0.0	71.4	96.0	63.3	61.7	67.3	18.8	72.1
Portugal	21.4	13.6	0.0	13.3	0.0	0.0	47.1	37.5	44.1	54.3	11.7	45.7
Sweden	5.6	12.0	7.0	4.7	12.5	75.3	69.8	55.0	70.0	77.3	8.2	68.0
Slovenia	100.0	0.0	50.0	0.0	33.3	33.3	25.0	62.5	93.8	83.3	50.0	66.1
Slovakia	33.3	0.0	0.0	0.0	0.0	0.0	37.5	63.6	75.0	30.8	11.1	51.7
Non-UK mean	19.3	16.8	23.5	35.7	54.6	75.4	83.8	86.5	86.9	88.1	19.9	86.3
United Kingdom	4.8	5.7	5.8	7.4	7.3	11.8	14.2	13.8	18.3	19.6	5.4	16.5
Panel B: Differences in changes in address clustering (differences-in-in-differences)												
Dependent variable: Percentage of firms from country <i>x</i> incorporated at an address cluster												
Minimum number of firms at address cluster	Centros		Non-UK		(Centros)×(Non-UK)		<i>N</i>		<i>R</i> ²		<i>F</i> -statistic	
100 firms	6.02		15.85***		28.77***		159		0.5		52.2	
	[6.20]		[3.86]		[4.52]							
50 firms	9.05		18.78***		24.72***		164		0.5		54.59	
	[5.71]		[3.02]		[3.92]							
20 firms	3.69		27.22***		15.36***		166		0.4		48.2	
	[6.94]		[4.77]		[5.38]							

This table identifies address clusters of private limited liability companies in the U.K. Address clusters are defined as primary firm addresses used by at least 100, 50 or 20 different firms (with different registration numbers at Companies House). Nationalities of firms are identified using the “all directors” criterion. Panel A reports the percentage of firms which are incorporated at an address cluster. Panel B reports differences-in-differences regressions of the changes in the percentage of incorporations at an address cluster. The minimum address cluster size is 100 firms in Panel A and 100, 50 and 20 firms in Panel B. *** denotes the parameter is significantly different from 0 at the 1% level.

are virtually identical for the “majority of directors” criterion and not reported. To illustrate, in 1997 17.4% of all Austrian companies incorporating in the U.K. were incorporated at an address used by at least 100 firms: in 2006 the percentage was 88.8%.

The results from Panel A show a very consistent pattern. It is that pre-Centros the *majority* of E.U. companies incorporated in the U.K. do have a physical presence in the U.K. Post-Centros however, there is strong evidence of the reverse, i.e. only a *minority* of E.U. companies incorporated in the U.K. have a physical presence in the U.K. Panel B reports regression coefficients to confirm the results in a multivariate setup. The dependent variable is the percentage of firms from country *x* incorporated at an address cluster. The interaction of the non-U.K. dummy and the Centros dummy is always significantly positive.

Finally, we address the use of incorporation agents by foreign entrepreneurs. As previously explained, entrepreneurs can hire incorporation agents to incorporate the company. While incorporation agents have existed in the U.K. for a long time, their services are particularly attractive for foreign entrepreneurs who are unfamiliar with the incorporation process. The incorporation agents therefore function as incorporation intermediaries and minimize the costs of shifting between legal jurisdictions. In the following we show that since the Centros rulings, agents have specialized in foreign incorporations of Centros-type Limiteds.

We proceed as follows. Using the address cluster information from the preceding table, we match address clusters with the incorporation agents that own these addresses. To illustrate the approach, among the 2.2 million registered office addresses in our database, one of the most frequent addresses is “Ground Floor Broadway House, 2–6 Fulham Broadway, Fulham, London, SW6 1AA”. After taking into account spelling mistakes and shorter versions, this is the registered office address for 23,273 companies in

Table 9

Using agents for incorporation of private limited companies

Agent	Web address	Country of provenance	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
1st Contact	www.1stcontact.co.uk	UK	0	0	14	2471	5349	4056	5239	3518	2626	3371	26,644
Go Ahead	www.go-limited.de	DE	36	23	40	60	49	46	1029	6251	8817	10,844	27,195
L4You	www.limited4you.de	DE	0	0	2	0	0	121	833	2558	4058	3291	10,863
Formationshouse	www.formationshouse.com	UK	4	3	2	12	54	822	2117	2403	1899	1400	8716
York Place Companies	www.yorkplace.co.uk	UK	0	0	0	0	0	0	0	3259	2806	3538	9603
Brighton Formations	www.brightonformations.co.uk	UK	2	9	27	23	23	398	1242	842	1848	34	4448
Haags Juristen Colleg	www.hjc.nl	NL	77	141	269	344	284	533	484	928	1236	699	4995
Incorporate Online	www.incorporateonline.co.uk	UK	134	190	277	798	697	707	582	509	393	342	4629
Stanley Davis	www.sdgonline.com	UK	81	139	139	231	237	329	526	841	1004	855	4382
Westbury	www.westbury.co.uk	UK	0	0	0	0	0	0	0	576	2732	3742	7050
Companea GmbH	www.limited24.de	DE	3	0	2	3	5	15	487	1100	1386	1632	4633
Chettleburgh	www.chettleburghs.co.uk	DE	0	0	137	699	266	725	1138	0	0	0	2965
Hanover	www.hanovercompanyservices.com	UK	5	7	18	146	145	311	570	565	469	419	2655
Swift Formations	www.swiftformations.com	UK	85	152	258	311	276	235	398	221	289	344	2569
Duport	www.duport.co.uk	UK	2	2	2	3	2	91	269	408	1431	2033	4243
National Business Register	www.start.biz	UK	74	107	110	192	144	299	496	420	331	268	2441
Appleton	www.appleton.co.uk	UK	109	81	163	256	247	390	248	276	257	194	2221
FCLS Limited	www.fcls.co.uk	UK	4	6	19	135	149	107	276	181	190	216	1283
Companies24	www.companies24.com	DE	8	31	25	25	41	34	81	171	541	387	1344
ADCOMP.de	www.adcomp.de	DE	6	4	15	9	13	64	89	321	407	563	1491
Chalfen	www.chalfen.com	UK	0	0	0	1	0	129	180	324	249	275	1158
Ashburton	www.arcorporateservices.com	UK	23	39	49	49	61	104	139	173	213	245	1095
UK Data	www.ukdata.com	UK	0	1	1	2	4	23	119	305	118	66	639
Interlimited	www.companyregistrations.co.uk	UK	2	0	0	2	0	11	50	246	253	908	1472
Europe Consulting	www.eurogmbh.ch	CH	0	0	0	0	0	46	94	348	40	2	530
Hager Consult	www.hagerconsult.com	DE	27	41	45	55	41	66	68	43	25	31	442
ADCOMP Groep	www.adcomp.nl	NL	24	7	7	11	23	12	29	96	22	0	231

The table reports the uncorrected raw frequency counts for each address linked to a specific registered office address cluster for domestic and foreign Limited companies.

our sample and belongs to the incorporation agent 1st Contact.¹⁷ We use web searches to identify which address belongs to which agent and from which country the agents are operating. Almost every agent uses several addresses.

Table 9 provides an overview of the 27 largest incorporation agents that we identify in this way together with their country of provenance. The table has three main results. First, some of the largest incorporation agents do not operate in the U.K., but in Germany, the Netherlands, and Switzerland. Second, while the U.K. agents incorporate significant numbers of firms prior to the Centros rulings, the foreign agents only enter the incorporation market from 2002 onwards.¹⁸ Third, we can interpret the number of incorporations using a foreign agent as an alternative measure of the yearly number of foreign incorporations. For example, according to Table 9, German incorporation agents incorporated a total of 13,457 companies in 2006. This is very close to the 16,438 companies that we identify as having a German origin in Table 3 using the location of directors as the criterion. This strongly confirms the robustness of our approach of identifying Centros-type companies in Table 3.

5. Conclusions

This paper analyzes the effects of deregulation on corporate mobility within Europe. Using data on over 2 million newly incorporated U.K. companies it provides evidence of a significant inflow of private limited companies from all E.U. Member States into the U.K.

The paper shows that the ECJ rulings have had a dramatic effect on the legal geography of new company formation, as the number of private limited companies from all Member States incorporating in the U.K. per year has increased from 4400 firms pre-Centros to 28,000 firms post-Centros. These numbers are economically significant. Further, we find that much of the variation in the change between pre- and post-Centros flows of firms from Member States to the U.K. is explained by direct and indirect costs of national incorporation procedures.

Our findings are consistent with micro-evidence from the entrepreneurship literature suggesting that financing constraints are a major impediment to small business formation. In support of this hypothesis we find that for example relatively small differences in minimum capital requirements make a large difference in the rate of new company formation. The transaction costs associated with foreign incorporations are substantially reduced by the emergence of intermediary agencies.

¹⁷ The largest address cluster in our sample is “Gabem Group, Waterside, Petworth, West Sussex, GU28 9BP”. This address belongs to the company *Gabem Group* which is not an incorporation agent and has registered 46,847 firms at this address. We exclude Gabem Group from the sample in the clustering analysis as it distorts the true concentration measure of U.K. firms.

¹⁸ This is confirmed by the agents' websites. While all of the agents from outside the U.K. explicitly refer to the ECJ rulings on their websites, none of the domestic U.K. agents do.

E.U. countries are responding by lowering the direct and indirect costs of domestic incorporations. Since the U.K., as we show, has no obvious reason or incentive to compete for incorporations with other E.U. Member States, our analysis therefore suggests that foreign incorporations in the U.K. should decline once equivalent regulation is introduced in those countries.

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