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1.THE IMPACT OF ENTRY REGULATIONS ON BUSINESS GROWTH

1.1. Introduction

The creation of new businesses is a key part of the process of creative destruction that is argued to be a key ingredient in spurring economic growth. Young firms are not only seen to have an important role in bringing innovations to the market and in aiding the diffusion of new technologies, but also in raising the competitive pressure on incumbents. This provides incentives for incumbent firms to raise their own efficiency, as well as aiding the reallocation of resources from lower to higher productivity businesses, all of which gives a further stimulus to productivity and economic growth.

The business sector in Spain has, however, historically been characterised by relatively low birth rates, a relatively high share of low-productivity, micro firms and a relatively low incidence of high-growth firms. It has been argued that one contributory factor is the set of entry requirements for new businesses in Spain (see, for example: Gonzalez-Pandiella, 2014; Bank of Spain, 2015); these entry requirements are relatively high when compared with a number of other European countries. Such entry barriers have a clear justification in the presence of market failures and for reasons of public protection. However, theory and empirical evidence supports the view that higher entry requirements can hamper the creation of new firms, thereby muting the dynamism of the market, with attendant consequences for business competitiveness and growth.

The government of Spain has undertaken a number of reforms since 2012 to reduce the barriers to entry for new firms. For instance, the process of business registration has been made easier and faster, and some administrative requirements for small firms have been simplified. These have led to measurable improvements in the business environment facing potential entrepreneurs in Spain. However, the barriers facing potential entrants remain higher than in many other major, advanced economies. They also vary to notable degrees across Spain's nineteen Autonomous Cities and Communities. The extent of such barriers is seen as an impediment to further progress in boosting the dynamism and competitiveness of Spain's economy (OECD, 2017a; European Commission, 2017).

In this chapter, we examine the relationship between entry barriers and business dynamics in order to identify the economic rationale for further reforms to the administrative environment governing business entry in Spain. We combine quantitative indicators of the barriers to entry for new firms with the latest available data on business demography, thus taking account of the progress made by Spain in the early stages of its reform process (2012-15). We undertake analyses at the level of the nation state, comparing Spain with other major European economies, but also at the regional level, exploring the implications of inter-regional heterogeneity in entry requirements between Spain's Autonomous Cities and Communities.

In both samples, we find that the height of entry barriers depresses firm birth rates and raises the average size of newly-born enterprises. Our results imply that further reforms to the administrative environment governing business entry in Spain – both at the national and regional level – would yield economic benefits in terms of higher rates of business creation. However, our results also indicate that the lowering of entry barriers is not sufficient, on its own, to raise overall levels of business dynamism and growth.

The chapter proceeds as follows. Section 1.2 first provides a review of theory and empirical evidence on the relationship between entry regulations and rates of business creation, and the relationship between business entry and other aspects of market dynamism. Section 1.3 then provides an overview of the degree of business dynamism

and the extent of entry barriers in Spain, by way of context for our empirical analysis. Section 1.4 outlines the methodology for our analysis, with the results being presented in Section 1.5. Finally, Section 1.6 concludes and discusses some of the potential policy implications of our findings in more detail.

1.2. Theoretical framework and existing literature

Although the positive contribution of entrepreneurship to business dynamics and growth is widely recognised (Audretsch et al, 2006; Syverson, 2011), most countries place some restrictions on those wishing to register a new firm. In some cases, this may simply involve a requirement to register with the national tax office. In others, the entrepreneur may have to give notification to the local municipal authorities, obtain an official identification number for the business or even obtain a licence to operate. Many countries require those wishing to establish a limited liability company to undertake additional steps, including the deposit of a minimum amount of paid-up capital.

A certain amount of regulation or bureaucracy may be justified on the basis of public interest, particularly where there is risk of market failure (Pigou, 1938). For instance, governments may seek to screen new entrants in order to protect consumers from low quality goods or services or to protect third parties from negative externalities such as pollution. Registration and screening can also provide protection for creditors and generate information to aid aspects of public administration – notably tax collection. However, there is a growing recognition that high entry barriers may also have economic costs, reducing the rate at which new firms enter the marketplace and thus muting the disciplinary effects of competition on economic growth.¹

The first-order effects come from the impact that greater procedural or capital requirements have in raising the overall cost of entry.² Such entry costs may discourage entrepreneurs from establishing new businesses, thus lowering the overall entry rate. Since these costs are largely fixed, they may also particularly discourage those with limited resources, thereby limiting the inflow of small young firms. The second-order effects come via the reduction in competitive pressure that these small, young entrants would otherwise exert on incumbents. Lower entry rates thus tend to go hand-in-hand with lower exit rates and lower growth trajectories for incumbent firms (see Brandt, 2004).

Evidence on the potential first-order effects comes from a variety of sources. Desai et al (2003) use a cross-country approach with industry fixed effects to estimate regressions of the impact of entry regulations on firm entry and size with a single year of industry*country data for Europe. Using indicators of start-up procedures from the World Bank (Djankov, 2002), they find that countries with higher entry barriers have lower firm entry rates (once other institutional factors are controlled for) and higher average firm size. Van Stel et al (2006) extend this approach by adding a time dimension to their industry*country panel (albeit with a broader focus on rates on entrepreneurship) and find that higher minimum capital requirements are a key factor. Scarpetta et al (2002) and Brandt (2004) also use industry*country panels but employ indicators of the barriers to entrepreneurship from the OECD's *Product Market Regulation database*. Both find a negative association between the extent of administrative barriers on start-up firms and firm entry rates.³

¹ Entry barriers are, of course, only one determinant of rates of business creation. For a wider view of the large array of potential determinants of entrepreneurship, see OECD (2016: 13).

² Cost is broadly defined here in terms of the monetary cost arising from fees and capital requirements but also the opportunity cost of complying with administrative procedures.

³ Bjornskov and Foss (2008) and Nystrom (2008) pursue similar approaches to those studies mentioned here, using data from the Fraser Institute's Economic Freedom Index' (although this index contains no detailed measure of entry requirements, providing only more-general indicators of the business environment).

However, despite the inclusion of industry fixed-effects, causal inference is difficult in this empirical framework as omitted country characteristics may be jointly driving the nature of regulation and economic outcomes. Some have addressed this problem through the use of a 'difference-in-differences' (DiD) approach, taking a lead from Rajan and Zingales' (1998) efforts to identify the impact of a country's financial development on economic growth. The key insight in this approach is that the costs or benefits arising from the institutional environment are not felt equally by all firms, and so the difference in outcomes between those most and least affected firms will vary across institutional environments at a given point in time. This focus on the interaction between an industry characteristic and the institutional environment permits an econometric specification in which it is possible to include both industry and country fixed-effects, thereby reducing concerns about omitted variables.

Those applying the DiD methodology to the case of entry regulations assume that some industry sectors have higher 'natural' rates of entry than others, and that the difference in economic outcomes between these 'naturally high-entry' and 'naturally low-entry' industry sectors will vary across countries with more or less-stringent entry regulations.⁴ Klapper et al (2006) and Ciccone and Papaioannou (2007) both use the World Bank indicators from Djankov et al (2002) to estimate the impact of entry regulations on firm birth rates in a country*industry cross-section, using this approach. Klapper et al (2006) focus particularly on the financial costs of entry, whilst Ciccone and Papaioannou (2007) focus on the time taken. Both find that higher entry requirements reduce firm entry rates, whilst Klapper et al (2006) also show a positive effect on the size of entrants.

A further set of studies have focused on particular countries. Bripi (2013) uses the DiD approach to study the effects of differences in start-up procedures across the provinces of Italy, finding that lengthier and more costly procedures reduce entry rates for limited liability firms. Similarly, Garcia-Posada and Mora-Sanguinetti (2014) use the approach to look at the impact of the judiciary on firm entry rates in Spain, employing a regional measure of the efficiency of the judicial system as their institutional indicator.

Others have focused on specific instances of policy reform within particular countries. Branstetter et al (2014) studied the establishment of 'one-stop shops' in Portugal which simplified incorporation procedures (reducing the time required for incorporation from several months to approximately one hour) and significantly reduced administrative fees (from around 2,000 Euro to less than 400 Euro). They found that the reforms increased the number of monthly start-ups by approximately 17% and the number of new jobs by 22%, although many of the new firms were of low quality. Yakovlev and Zhuracskaya (2007) studied the effects of reforms that were introduced in Russia between 2001 and 2004. The reforms required that registering a business would involve a visit to just one government agency and would take no more than one week, that each inspecting agency would come to inspect a business no more once every two years, and that some business activities which previously had required licenses would become exempt from licensing. They found that the reforms had a large, significant positive effect on entry rates and employment for small and medium-sized firms. Elsewhere, Bruhn (2011) and Kaplan et al (2011) studied the creation of a Rapid Business Opening System (SARE) for 'low-risk' industries in Mexico which led to reductions in: the average number of days required to register a business (from 30 to 1); the number of procedures (from 8 to 3); and the required number of office visits (from 4 to 1). They found that the reform increased the entry rate and wage levels, reduced the income of incumbents and also reduced prices.⁵

⁴ The key assumption is that there are no omitted variables at the country*industry level which affect firm birth rates.

⁵ Other related studies include those by Monteiro and Assuncao (2012), Chari (2011), Sharma (2009) and Bertrand and Kramarz (2002).

Second-order effects

As noted earlier, if entry barriers limit the establishment of small, young firms, then they could also have second-order negative effects by limiting the process of creative destruction which would otherwise incentivise incumbents to grow or even push older, low-productivity firms out of the market. A number of theoretical models give new entrants a prominent role in bringing new technologies or product innovations to the market (Cabellero and Hammour, 1994; Aghion and Howitt, 1992; Grossman and Helpman, 1991), thereby pressuring or replacing incumbents which rely on older vintages of capital or out-dated products and processes.

A variety of studies have shown the importance of entry rates in driving dynamism and growth in this vein. For instance, Foster et al (1998) decompose aggregate productivity growth in the US into the contributions of entrants, exiters and incumbents, showing that the process of firm entry and exit played a substantial role in reallocating resources from low to higher productivity units. Aghion et al (2004) use panel data on British establishments to show that higher levels of entry by foreign firms led to faster total factor productivity growth of domestic incumbent firms and thus to faster aggregate productivity growth. More generally, Brandt (2004) shows that high rates of firm entry tend to coincide with rapid growth of productivity, output and employment. For Spain, Callejon and Segarra (1999) and Martin-Marcos and Jaumandreu (2004) both show that both entry and exit rates have both contributed positively to the growth of total factor productivity in industries and in regions, whilst Lopez-Garcia and Puente (2009) point to the high growth rates of new entrants.

Nevertheless, only a few studies have looked directly at the association between entry regulations and ‘second-order’ indicators such as firm growth and productivity. Klapper et al (2006) do so and find a sizeable impact of entry regulations on rates of productivity growth among incumbent firms, but the magnitude of the effect reduces once an attempt is made to address potential endogeneity bias via instrumental-variables estimation. Bripi (2013) also finds modest effects (though without attempting to address endogeneity). The modest effects in these studies thus serve as a reminder that entry rates are only one factor in shaping broader levels of business dynamism and growth, which can also be critically affected *inter alia* by the presence of size-dependent regulations, credit conditions and barriers to trade and investment (see Gonzalez-Pandiella, 2014: 17-19).

In summary, then, theory and empirical evidence support the view that higher entry requirements can hamper the creation of new firms, thereby potentially muting the dynamism of the market, with attendant consequences for business competitiveness and growth. This is not to say that lowering entry requirements are universally beneficial. As noted earlier, some element of administrative screening can be in the public interest. Lowering entry barriers has also been shown to have short term employment costs (Bassanini and Cingano, 2018), and may bring in firms that are below average quality (Branstetter et al, 2010), such that the medium-term benefits are below expectations. It is also the case that other features of the institutional environment – such as credit conditions – can hold back growth. However, if these other features are favourable, the longer-term expectation is of a more dynamic business sector, which promotes positive outcomes at the level of the economy as a whole.

1.3. Business dynamics and entry barriers in Spain

Having reviewed some of the theory and prior evidence, we now go on to provide some contextual evidence on levels of business dynamism and entry barriers in Spain, as a prelude to our empirical analysis.

Business dynamics in Spain

Evidence on comparative levels of business dynamism in Spain is provided by Eurostat as part of its suite of Business Demography statistics. We use the latest-available wave of data, which gives various indicators of business dynamics for the year 2015 across 25

European countries, including Spain.⁶ We focus on aggregate figures for NACE Rev. 2 Sections B-N, after excluding the activities of holding companies (NACE Rev. 2 Group 64.2).

The first panel of Figure 1.1 shows that the firm birth rate in Spain is just below average by EU standards, standing at 9% in 2015. The rate itself has risen slightly in recent years, but Spain's ranking among EU countries has remained fairly stable over this time. The rate itself is less than two-thirds of that found in the UK and Portugal, with the latter having seen a notable increase in its own entry rate (from 12% to 16%) over the period 2012-15. The second panel of Figure 1.1 then examines the average size of newly-born enterprises in 2015. The average size of new firms in Spain is just above the EU average. This is notionally in line with Spain's lower-than-average birth rate and, indeed, a number of countries with relatively low birth rates also have relatively large entrants (Greece, Austria and Germany, for example). However, the correlation between the two series is weak overall, and the UK is notable for sitting to the right of both charts.

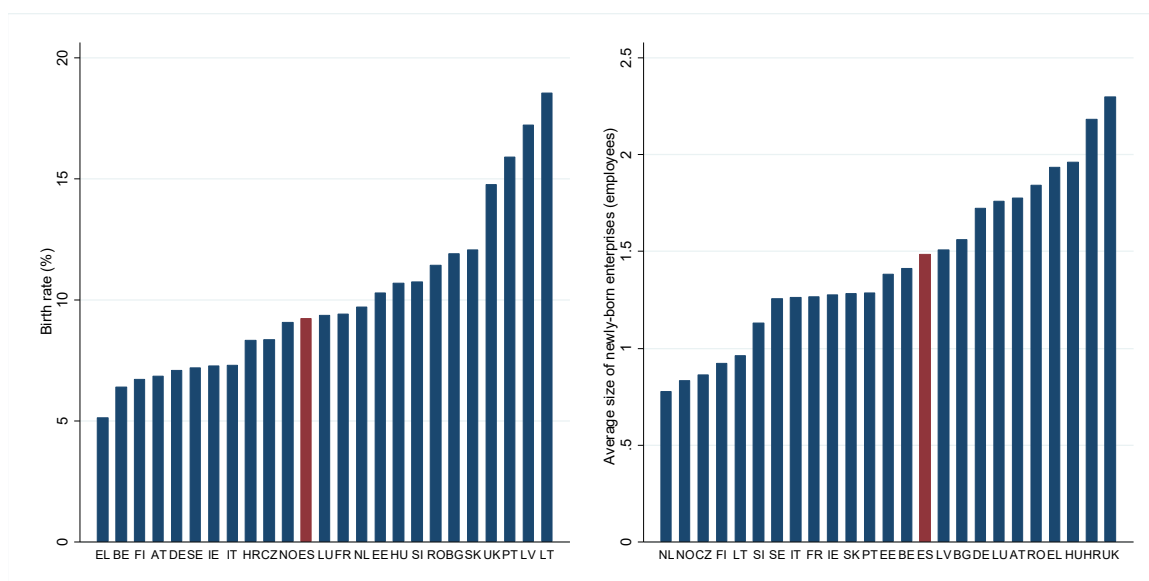
Figure 1.2 goes on to examine the death rate of firms and the overall rate of churn in the business population ('churn' being defined as the sum of the birth and death rates). Spain again sits in the middle of the set of 25 EU countries, some way below the UK and Portugal. Figures 2.3 and 2.4 then show the shares of high-growth firms and young high-growth firms (gazelles) in each country. Spain performs relatively well in 2015 in terms of the share of high-growth firms, but this point-in-time comparison hides considerable upward movement over time, with Spain having ranked in the lower third of countries just two years prior. This may reflect the comparatively strong performance of the Spanish economy in the period 2014-2015. The share of gazelles is observed for only 12 of the 25 countries but, here, Spain's ranking has remained stubbornly low, with no notable improvement over the period.

This picture of relatively low rates of growth among new firms is supported by Figure 1.5, which shows the average size of enterprises born in 2011, by age. In the UK and Germany, the average 5-year old firm in this cohort was around 70 per cent larger than the average 1-year old firm had been four years previously. In Portugal, the figure was around 55 per cent. However, in Spain (and Italy), the average 5-year old firm was just 25 per cent larger than the average 1-year old firm.

Spain therefore tends currently to sit either in the middle or towards the lower end of the EU distribution on most of the measures of business dynamism presented here. It is generally ranked some way below the most dynamic economies, such as the UK, but also some way behind its near neighbour Portugal, which has seen the benefits of recent reforms to its entry procedures for new firms (see previous section). Spain has improved on some measures, but there is notable room for further progress, particularly in respect of the share of young start-ups.

⁶ The 25 countries comprise 24 Member States and Norway. The remaining Member States of Denmark, Malta, Cyprus and Poland each have various amounts of missing data for the chosen year.

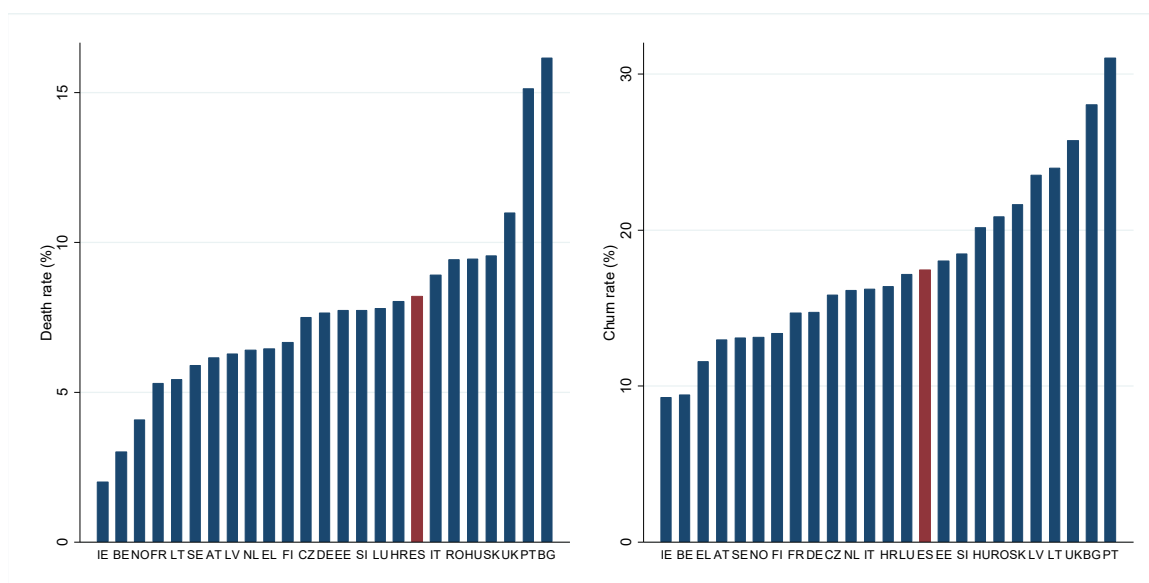
Figure 1.1: Birth rate and average size of newly-born enterprises, 2015



Notes: NACE Rev.2 Section B-N (exc. activities of holding companies)

Source: Eurostat Business Demography Statistics [bd_9ac_l_form_r2]

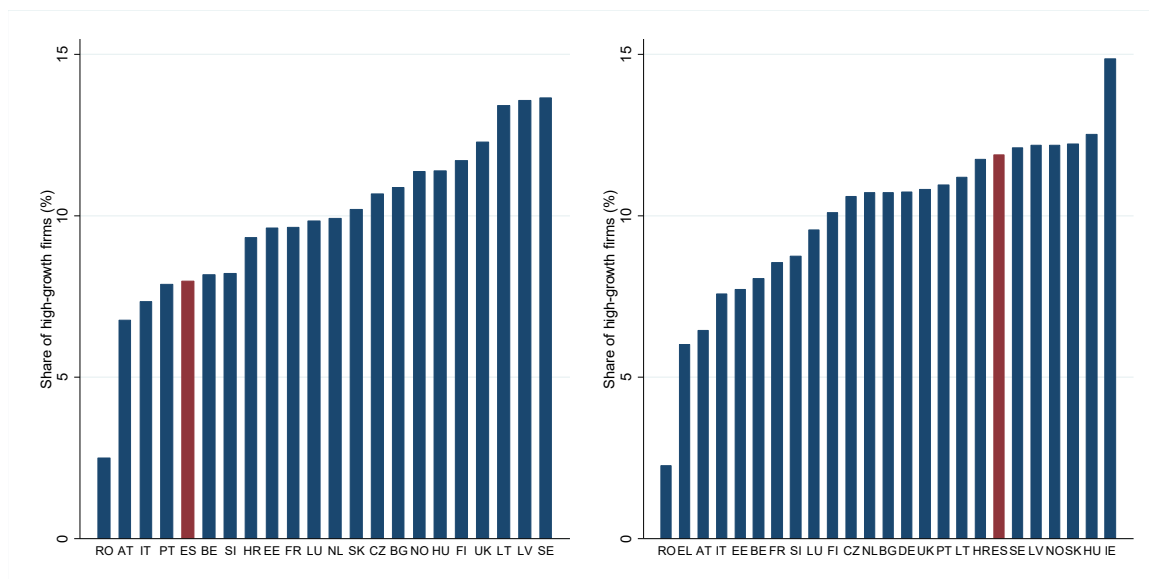
Figure 1.2: Death rate and churn rate, 2015



Notes: NACE Rev.2 Section B-N (exc. activities of holding companies)

Source: Eurostat Business Demography Statistics [bd_9ac_l_form_r2]

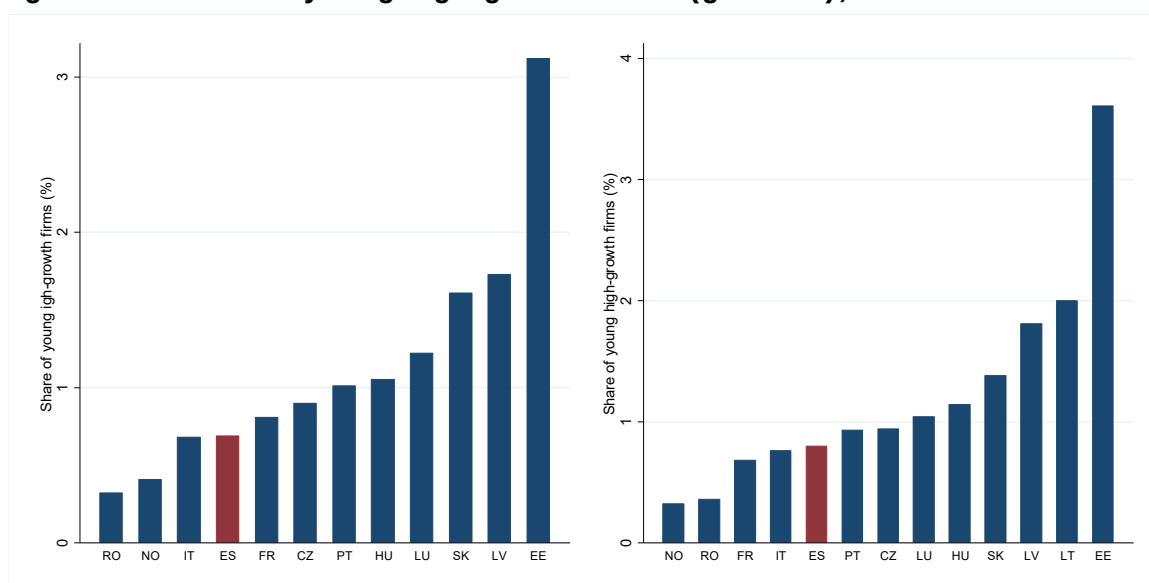
Figure 1.3: Share of high-growth enterprises, 2013 and 2015



Notes: NACE Rev.2 Section B-N (exc. activities of holding companies). Number of high-growth enterprises measured in employment.

Source: Eurostat Business Demography Statistics [bd_9pm_r2]

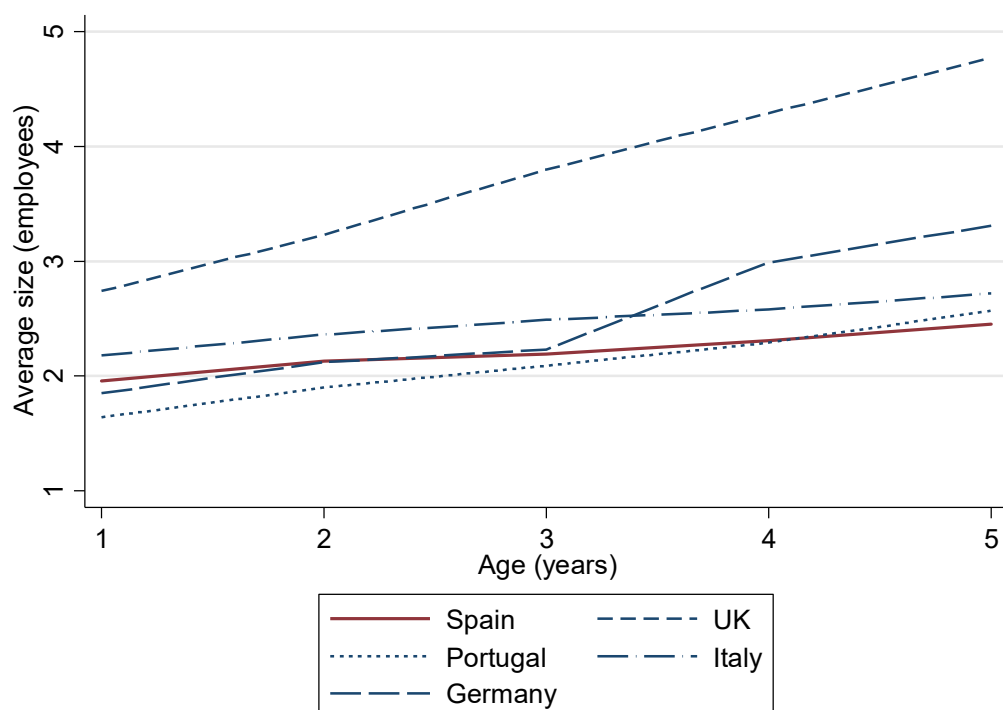
Figure 1.4: Share of young high-growth firms (gazelles), 2013 and 2015



Notes: NACE Rev.2 Section B-N (exc. activities of holding companies). Number of young high-growth firms measured in employment.

Source: Eurostat Business Demography Statistics [bd_9pm_r2]

Figure 1.5: Average size of enterprises born in 2011, by age



Notes: NACE Rev.2 Section B-N (exc. activities of holding companies).

Source: Eurostat Business Demography Statistics [bd_9bd_sz_cl_r2]

Barriers to entrepreneurship

It has long been recognised that those wishing to start a new business in Spain have faced greater administrative burdens and a greater complexity of procedures than in many other advanced economies.

The OECD last charted these entry barriers as part of the 2013 update to its *Product Market Regulation Database* (Koske et al, 2013) (i.e. near the beginning of the recent reform process in Spain). The OECD methodology involved the compilation of a large number of numerical indicators across three main headings: the administrative barriers on start-ups; the complexity of regulatory procedures; and the regulatory protection of incumbents; the results are summarised in Table 1.1.⁷ Spain ranked 32nd overall among 35 OECD countries in 2013, with its low overall ranking driven by its comparatively high level of administrative burdens and procedural complexity. Among the four countries specifically highlighted in Table 1.1 (Spain, the UK, France and Germany), Spain ranked lowest on the sub-index for 'Administrative burdens on start-ups' and also on the sub-index for 'Complexity of regulatory procedures', whilst Germany ranked lowest on 'Regulatory protection of incumbents'.

⁷ The indices are compiled from closed questions that can either be answered with numerical values (e.g. the number of bodies that need to be contacted to start a business) or by selecting an answer from a pre-defined list. The coded information is normalised over a zero to six scale, where a lower value reflects a more competition-friendly regulatory stance.

Table 1.1: OECD Barriers to Entrepreneurship Index, 2013

	Index value (lower = more competition-friendly)				Rank (among 35 OECD countries)			
	Spain	Min	Max	Median	Spain	UK	FR	DE
Barriers to entrepreneurship (overall index)	2.10	1.15	2.78	1.69	32	9	17	15
Administrative burdens on start-ups (sub-index)	2.34	0.92	3.08	1.97	26	9	24	14
Administrative burdens for corporations	1.60	0.00	2.60	1.60	17	4	29	6
Administrative burdens for sole-proprietors	1.40	0.00	2.60	0.80	29	5	14	5
Barriers in service sectors	4.01	1.15	4.62	3.40	28	13	25	20
Complexity of regulatory procedures (sub-index)	2.83	0.41	3.75	1.85	31	26	15	19
Licences and permits system	4.67	0.00	6.00	2.67	27	27	5	13
Communication and simplification of rules and procedures	0.99	0.00	1.50	0.59	27	11	30	32
Regulatory protection of incumbents (sub-index)	1.15	0.64	2.72	1.30	12	1	19	23
Legal barriers	1.30	0.20	2.00	0.90	25	12	22	6
Anti-trust exemptions	0.00	0.00	2.95	0.00	1	25	1	32
Barriers in network sectors	2.14	0.97	3.95	2.69	4	1	21	9

Source: OECD Product Market Regulation Indicators (Koske et al, 2014)

Some have linked the lack of business dynamism in Spain to these comparatively high entry barriers (Gonzalez-Pandiella, 2014; Bank of Spain, 2015) and, in 2012, the Spanish Government began a program to reduce the administrative burdens for new firms, as part of the broader program of national reform to improve Spanish competitiveness and foster economic growth.

The Spanish Government created the Commission on the Reform of the Spanish Public Administration (CORA by its Spanish acronym) in October 2012, with one sub-commission charged with reducing administrative barriers to economic activity. The sub-commission put forward a range of proposals, and these have led to a number of significant initiatives to facilitate the establishment of new businesses (see Box 1.1).

Box 1.1: Initiatives to facilitate the establishment of new businesses in Spain

- Eliminating the requirement for a municipal licence to open commercial premises with an area of less than 300 square metres (Law 19/2012 of 25th May 2013; enacted December 2012). Later extended to cover permanent establishments with a retail area not exceeding 750 m² (Law 20/2013).
- Eliminating some other formalities previously required for business start-up, such as the verification of the record of Labour Inspectorate visits (an initiative adopted by the Council of Ministers in July 2013).
- Easing and speeding up the process of business registration process (Law 14/2013):
 - o 'Entrepreneur Service Point' (PAE) created a 'one-stop shop' for business information and start-up, integrating the previous network of business service desks (VUE) and Consulting and Process Initiation Points (PAIT).
 - o Single Electronic Document (DUE) can be completed and filed via the PAE or online.
 - o DUE submitted via the Business Information and Creation Network (CIRCE) to the Tax Authorities, Social Security Authorities and local/regional government offices.
 - o Time limits for the Commercial Registry to issue a certificate of registration.
- Law 14/2013 also:
 - o introduced a new form of company, the Gradually Established Limited Liability Company (SLFS), which reduced the initial costs of incorporating a company by removed the minimum initial capital requirement (previously 3,000 Euros).
 - o Creation of Entrepreneurial Limited Liability (E.L.L.), allowing individuals to avoid liability for business debts from affecting their primary residence
 - o Support for the provision of residency visas for non-EU entrepreneurs
 - o Reduction in income tax (of 20%) for investments made in new companies
 - o Simplification of health and safety law for small enterprises
 - o Simplified accounting requirements for small companies
- Development of model byelaws to expedite the incorporation procedure via CIRCE (Royal Decree 421/2015)

The process of reform proposed by the CORA has been monitored through the creation of (in June 2013) of the Office for the Implementation of Reform in Public Administration (OPERA), which documents the progress of the reform program through a series of quarterly and annual reports.⁸

These reforming initiatives have built on the progress that had already made prior to 2012 (for example, in making it easier for individual entrepreneurs to register a business electronically). Spain's overall progress can be observed through reference to the World Bank's *Doing Business* (DB) indicators, which measure the number of procedures required to register a business in Spain, along with the time and cost, for each year from

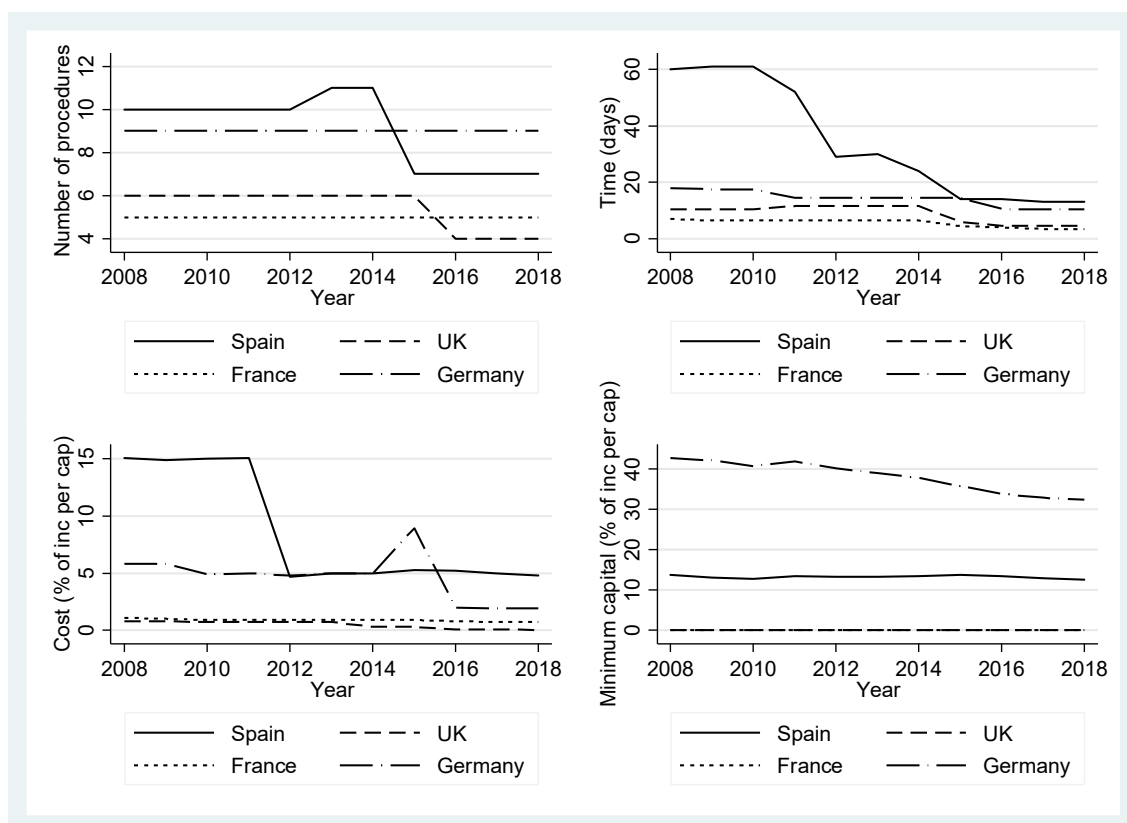
⁸ See http://www.sefp.minhfp.gob.es/en/web/areas/reforma_aapp/actuaciones-informes.html

2005-2018. These data are based on the administrative environment facing a start-up firm in Madrid, the capital, and comparable data are available from the World Bank for many other countries (again based capital cities).⁹ These metrics are less detailed than those collated by the OECD (see Table 1.1) but have the considerable advantage of being updated on an annual basis.

Figure 1.6 shows Spain's trajectory on these indicators over the period 2008-2018, compared with the major European economies of France, Germany and the UK. Spain has clearly improved its position over the past 5-6 years, and now sits above Germany in the World Bank's overall rankings for the ease of starting a business (86th out of 190 countries, compared with Germany's ranking of 113th). However, Spain is still some way below France (ranked 25th) and the UK (ranked 14th).

Within Europe, Spain sits roughly at the 75th percentile in terms of the number of procedural steps required to start a business, the time taken, the cost and the minimum amount of paid-up capital required. At present seven procedural steps are required to start a typical business in Madrid, taking 13 days and costing 4.8% of per capita income. The minimum capital requirement is typically 12.5% of per capita income. By comparison, in the UK, business start-up typically requires 4 procedural steps, taking 4.5 days with zero cost and requiring zero paid-up capital.

Figure 1.6: Entry regulations in Spain over time



Source: World Bank: Doing Business Annual Reports

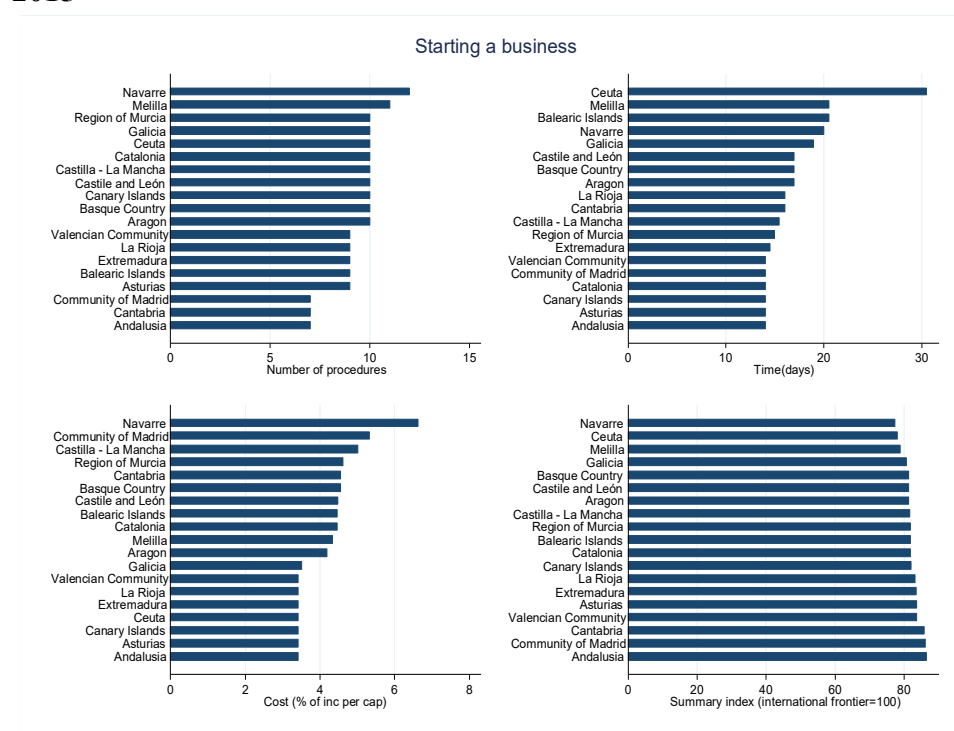
Regional heterogeneity within Spain

⁹ See <http://www.doingbusiness.org/>

The regional devolution of competencies within Spain mean that the specific entry requirements also have a degree of spatial variation across Spain, as regions have used their devolved powers to set their own procedural requirements. This spatial variation can be mapped via a specific sub-national analysis that was conducted by the World Bank in 2015. Figure 1.7 shows the variation across the 19 Autonomous Cities and Communities of Spain in terms of the number of procedures required to start a business, the time taken and the cost as a percentage of per capita income.¹⁰ Regions such as Navarre and Galicia tend to sit towards the top of these charts (having more extensive barriers), whereas regions such as Andalusia and Cantabria tend to sit towards the bottom. The community of Madrid also sits near the bottom, indicating that the World Bank's national rankings for Spain understate the regulatory burden faced by the average business in Spain.

In a departure from the methodology used for their national reports, the World Bank's sub-national report for Spain also measured the administrative requirements for setting up an industrial SME (using the stylised example of a manufacturer of steel products). The inter-regional variation is even greater here, particularly in respect of the time taken (Figure 1.8). It is also notable that the regions' scores are broadly uncorrelated across the two series ($r=-0.02$), with the Community of Madrid ranking only 9th among 19 regions for the ease of setting up an industrial SME. The two measures therefore need to be viewed in combination in order to provide a more comprehensive portrait of the degree of inter-regional diversity within Spain.

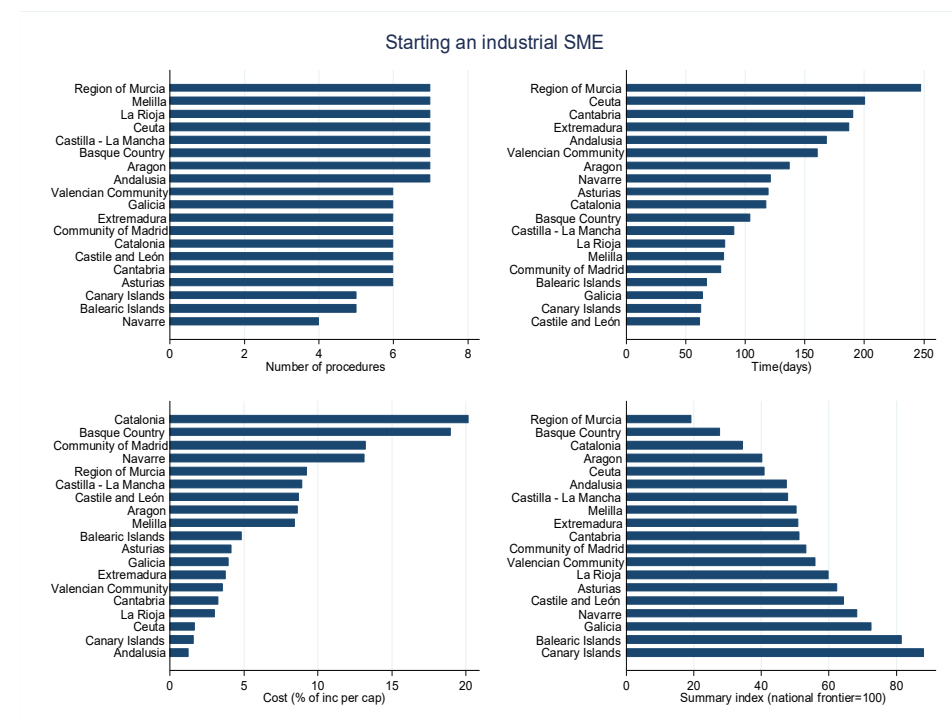
Figure 1.7: Regional variance across Spain in entry regulations for a standard business, 2015



Source: World Bank: Doing Business Subnational Report for Spain 2015

¹⁰ These 19 Autonomous Cities and Communities correspond to NUTS2-level regions.

Figure 1.8: Regional variance across Spain in entry regulations for an industrial SME, 2015



Source: World Bank: *Doing Business Subnational Report for Spain 2015*

1.4. Methods and data

In the remainder of the report, we combine the World Bank’s quantitative indicators of the entry barriers for new firms with the latest available data on business demography to investigate the relationship between entry barriers and business dynamics. We undertake analyses at the level of the nation state, comparing Spain with other major European economies, and also at the regional level, exploring the implications of inter-regional heterogeneity in entry requirements between Spain’s Autonomous Cities and Communities.

We take a two-step approach: first, estimating the impact of entry barriers on firm birth rates and the average size of newly-born firms (what we have termed the ‘first-order effects’); and second, estimating the potential implications of higher birth rates for other indicators of business dynamism, namely death rates and the share of high-growth firms (what we term the ‘second-order effects’).¹¹ In the following sub-sections, we outline our methods, which apply generally to both the country-level and region-level analyses, before going on to provide overviews of our various data sources.

¹¹ This is not to imply that the causal path runs only from entry to exit: exogenous shocks which raise exit rates may also create the space for new firms to enter. We limit ourselves to exploring correlations, rather than estimating the *causal* impact of higher entry on exit.

Methods

In seeking to estimate the impact of entry barriers on firm birth rates and the average size of newly-born firms, we follow the two broad methodologies that have been applied in the literature. The first of these (seen, for example, in the study by Desai et al, 2003) seeks to estimate regressions of birth rates (or average firm size) on measures of entry regulations using industry*country-level data. Industry fixed effects are used to control for industry characteristics that are common across all countries and which may be correlated with entry rates or entrant size (one example might be capital requirements). Other indicators of the business environment in each country (such as the availability of bank credit) are entered alongside the country-level measures of entry regulation in an attempt to reduce the chances of omitted variable bias at the country level. The specification is outlined in Equation 1 below.

$$B_{rj} = \beta_0 + \beta_1 Regulation_r + \beta_2 X_r + \beta_3 I_j + \beta_4 Z_{rj} + \varepsilon_{rj} \quad (\text{Eq. 1})$$

where: B is a measure of the firm birth rate in country r and industry j (or alternatively, a measure of average firm size); $Regulation$ is a measure of entry regulation in country r ; X is a vector of additional country characteristics; I is a set of industry dummies; and Z is a vector of additional controls at the industry*country level. One expects the coefficient β_1 to be negative if higher entry regulations are associated with lower entry rates.

Causal inference is difficult in this empirical framework, however, as omitted country characteristics may still be jointly driving the nature of entry barriers and economic outcomes. As noted earlier, some (e.g. Klapper et al, 2006) have addressed this problem through the use of a 'difference-in-differences' (DiD) approach which focuses on the difference in economic outcomes between more and less-affected industries within a given country or region. This approach allows the analyst to include fixed effects at both the industry and country-level, thus reducing fears about omitted variables. The empirical specification is as follows:

$$B_{rj} = \beta_0 + \beta_1 (Dynamism_j \cdot Regulation_r) + \beta_2 C_r + \beta_3 I_j + \beta_4 Z_{rj} + \varepsilon_{rj} \quad (\text{Eq. 2})$$

where: B , I and $Regulation$ are defined as per Equation 1; C is a set of country dummies; $Dynamism$ is a measure of the 'natural' level of business dynamism (in this case, birth rates) in industry j ; and Z is again a vector of controls at the industry*country level. The critical coefficient is again β_1 , which one expects to be negative if entry regulations are reducing the difference in entry rates between high and low-entry industries.

One limitation of this approach is that one is unable to obtain an estimate of the average effect of entry regulations on the economic outcome of interest; instead, one obtains an estimate of the relative effect on high-entry vs low-entry industries. However, the approach is likely to get closer to the causal effect of entry regulations on national economic outcomes than the alternative approach mentioned earlier.

To give a view of the potential 'second-order' effects of lowering entry barriers, we first repeat the methods outlined above, after replacing the dependent variable with the share of high-growth firms. To complete the analysis, we then also follow Brandt (2004) in looking more broadly at the correlation between entry rates and measures of business dynamics (specifically, death rates and the share of high-growth firms).¹² The specification for this final component of the analysis is as follows:

$$D_{rjt} = \beta_0 + \beta_1 B_{rjt-i} + \beta_2 C_r + \beta_3 I_j + \beta_4 T_t + \varepsilon_{rjt} \quad (\text{Eq. 3})$$

¹² Such an analysis may also seek to focus on gazelles, but the measure provided in Eurostat's Business Demography Statistics (the share of all firms that are gazelles) represents the combination of the overall firm birth rate and the rate of growth among the newly-born. Ideally, we would like a measure of the share of newly-born enterprises that are high-growth, but this is not provided.

where: D is either the firm death rate or the share of high-growth firms in industry j in country r at time t ; B is the birth rate in industry j in country r at time t ; C , I and T are sets of country, industry and time dummies; and i takes the value 0, 1 or 2 to specify lagged terms which allow for delayed effects of up to two years. This informal specification seeks to assess whether there is a positive relationship within industry*country cells between the rate at which firms are entering the market and the rate at which firms are either growing or exiting. The specification is estimated on multiple years of data, with year fixed effects, in order to smooth any temporal volatility in the estimated relationships (such as may be caused by generalised economic shocks).

Data on business dynamics

To provide measures of business dynamics at the country level, we rely on data from Eurostat's series of Business Demography Statistics. Specifically, we utilise data on firm birth rates, the average size of newly-born enterprises, death rates and the share of high-growth firms (see Appendix 1.A for definitions and further details). We restrict our attention to NACE Rev. 2 Sectors B-N (after excluding Division 64.2 'Activities of holding companies') and extract data series at industry*country level for the year 2015 (the latest year of data available). After omitting countries with substantial amounts of missing data, we arrive at a sample of 44 industries across 25 countries. We use the data for the UK to estimate the 'natural' firm birth rate in the absence of entry barriers, since the UK has one of the lowest levels of entry regulation in Europe. The UK is thus excluded from all of our 'first-order' regressions, leaving us with a maximum sample size of 1,056 observations. We have two sets of estimates: one pertaining only to limited liability firms (since the World Bank *Doing Business* indicators for starting a business refer specifically to the process of incorporation) and another pertaining to all firms (so as to be able to observe any aggregate effects). Limited liability firms account for around 40% of all firms in NACE Rev 2. Sections B-N in Spain, but around 70% of all employment.¹³

For the inter-regional analysis within Spain, the Eurostat Regional Business Demography Statistics prove to have significant limitations, as they are available for only eight aggregated sectors, are not split by legal status and extend only to 2014. Consequently, we turn to other sources to obtain detailed industry-level data for each of Spain's Autonomous Cities and Communities (NUTS2 regions) in 2015. We obtain firm birth rates at industry*region level from the Spanish Statistical Office (INE) series on Harmonised Business Demography. This series offers data for each of 72 Divisions across Sections B-N of the NACE Rev. 2 classification, split by legal status. Data are not provided for the Basque Country, due to the unavailability of some primary sources, and we omit the Autonomous Cities of Ceuta and Melilla in North Africa, leaving a total of 16 regions. We thus have a maximum of 1,152 observations. We use the same source to provide data on firm death rates.

Unfortunately, INE provide no detailed industry*region estimates of the average size of newly-born enterprises, nor of the share of high-growth firms. We sought to obtain both from the SABI database, but the rate of firm birth observed in SABI was too low to be credible and so we have had to omit any analysis of the average size of births from our inter-regional analysis. The share of high-growth firms estimated by SABI did match reasonably well at the national level with that suggested by official statistics, however, and so SABI provides our estimates of the shares of high-growth firms at industry*region level (again for 72 industry Divisions in each of 16 regions).

¹³ Estimates calculated from the Eurostat Business Demography Statistics.

One additional issue that arises in the measurement of business dynamics when operating at the inter-regional, rather than the inter-country level, is that the firm-level estimates provided by INE and SABI are likely to suffer from a degree of 'headquarter bias'. Such a bias may arise if multi-establishment firms tend to locate their headquarters in particular regions (say that of the capital city). In this situation, the growth of the firm will be attributed to the region hosting the headquarters, even though this growth may actually have occurred across plants in other regions. Such biases are generally unavoidable in the absence of detailed plant-level statistics, but we are able to address the issue to some extent in the SABI data by restricting our attention to firms with fewer than 250 employees. We also note that the degree of headquarter bias is considered to be lower in Spain than in many other countries (OECD, 2017b: 86). Further details and sources of the sub-regional data are provided in Appendix 1.B.

Data on entry barriers

To provide measures of the entry barriers facing new firms at country-level or across the regions of Spain, we turn to the World Bank's *Doing Business* (DB) reports, as presented in Figures 2.5 to 2.7.

As noted earlier, the DB country-level reports provide measures of the number of procedures required to register a business, along with the time taken (in days), the cost of any fees levied, and the minimum capital requirement. They are distinct from the OECD measures of entry barriers, but feed into the indices of economic freedom compiled by the Fraser Institute and Heritage Foundation. The DB indicators are based on information about a stylised case (specifically, the administrative environment facing a limited liability firm providing general industrial or commercial activities in the capital city of each country), so as to harmonise measurement across time and space. Accordingly, the measures are not based on the 'lived experience' of any one firm, nor do they show the mean experience of all firms. They ought to indicate the experience of the median firm, however, and they have the advantage of being annual. We take the data for 2015 so as to match our data on business dynamics.¹⁴

Measures of the regional variation in entry barriers within Spain come from the DB 2015 sub-national report for Spain. This report provided measures of the number of procedures required to register a business in each NUTS2 region, along with the time taken (in days) and the cost of any fees levied.¹⁵ Measures were collected for the standard case of a limited liability firm providing general industrial or commercial activities and for an industrial firm manufacturing steel products (see Figures 2.6 and 2.7); we use both series, taking the barriers facing an industrial firm as those pertaining in NACE Rev. 2 Sections B-E and taking the barriers facing a general firm as those pertaining in Sections F-N.

Again, Appendices A and B provide further detail on definitions and sources.

¹⁴ The DB approach has been criticised in some quarters because individual countries' ranking positions have been shown to vary considerably over time as a result of temporal changes to the methodology of computing each country's 'distance to the frontier' (*The Economist*, 2018). We use only a single year of DB data (thus avoiding inconsistencies in measurement over time). For our focal measures of entry barriers, we also follow the recommendations of an earlier independent review of the DB methodology (Manuel et al, 2003) by utilising specific indicators of procedural requirements and costs, in preference to the aggregated 'distance to the frontier' rankings. Further information on the DB methodology is presented at: <http://www.doingbusiness.org/methodology>

¹⁵ The minimum capital requirement did not vary by region within Spain.

1.5. Results

National sample

In simple bivariate regressions using our industry*country-level sample (not shown), we find a negative association between the extent of the entry barriers and industry birth rates. Countries with higher entry costs and higher minimum capital requirements have lower birth rates, whilst the average size of newly-born enterprises is larger in countries with more extensive entry procedures. However, these associations could reflect a variety of omitted variables. The left-hand panel of Table 1.2 thus presents the results of analyses which control for a range of other features of the business environment, as measured in *Doing Business*, following the specification set out in Equation 1 in Section 6.4.¹⁶ Here we see that, after controlling for these other features of the business environment and industry fixed-effects, the association with levels of paid-up capital remains statistically significant: firm birth rates are found to be lower in countries with a higher minimum capital requirement (model 4) and the result holds after entering all four measures of entry requirement alongside one another (model 5). This association is slightly stronger when focusing on entry rates for limited liability firms (upper panel) than when focusing on the entry rate for all firms (lower panel), but this is to be expected, given that the requirements for paid-up capital typically pertain only to limited liability firms.¹⁷

The coefficient of -0.427 for all firms implies that a one standard deviation increase in the minimum capital requirement in a country is associated with a 1.1 percentage point reduction (on average) in the birth rate within an industry*country cell. To put this in context, the mean birth rate across industry*country cells in our sample is 9.3 per cent, with a standard deviation of 5.3 percentage points. Thus, an increase in one standard deviation in the minimum capital requirement is associated with a reduction of one fifth of a standard deviation in the birth rate: a modest but still notable elasticity.

The right-hand panel of Table 1.2 then shows the association between the level of entry requirements and the average size of newly-born firms. Here, more extensive entry procedures and higher entry costs are each associated with a larger average size of entrants, both in respect of limited liability firms and all firms (model 10). The elasticities are similar to that noted above: increases of one standard deviation in the number of procedures and the extent of entry costs are each associated with increases of around one fifth of a standard deviation in the average size of newly-born enterprises.

Table 1.3 goes on to present the DiD models, following the specification set out in Equation 2. Here the model controls for a full set of country-level fixed effects and the coefficients now indicate whether the firm birth rate is lower in industries with a high 'natural' propensity for entry than it is in industries with a low 'natural' propensity when the country has higher entry barriers. The results suggest that some of the associations seen in Table 1.2 may have been caused by unobserved country-level characteristics. In the DiD models, lengthier and more costly entry requirements are found to be negatively associated with the birth rates for limited liability firms (models 2 and 3), whilst higher minimum capital requirements are found to be positively associated with the size of entrants (model 8). The coefficients are generally smaller when looking at the outcomes

¹⁶ These additional features are listed in the notes to the table.

¹⁷ The coefficients on the other measures of the business environment are not shown, for reasons of brevity. However, 'better' scores on these measures typically attract positive coefficients, with measures of the ease of registering property and the ease of enforcing contracts being statistically significant. The measure of the ease of trading across borders is the only one to have a statistically significant negative association with firm birth rates.

for all firms, but the negative association between the time needed to fulfil entry requirements and the firm birth rate remains statistically significant under this perspective.

To provide some interpretation of these DiD estimates, we can look at the difference in birth rates between an industry such as the manufacture of leather products (NACE Rev. 2 Division 15), which sits at the 25th percentile of UK sectoral birth rates (birth rate of 11% in 2015), and an industry such as computer programming and IT consultancy (NACE Rev. 2 Division 62), which sits at the 75th percentile of this distribution (birth rate of 16% in the UK in 2015). The coefficient of -0.094 in the lower panel of Table 1.3 suggests that moving from Spain (which sits at the 75th percentile of the distribution on entry time in 2015) to Portugal (which sits at the 25th percentile) would raise the difference in birth rates between these two sectors by around 0.5 percentage points.¹⁸ The mean difference in birth rates between these two sectors across the countries in our sample is 4 percentage points, again suggesting a modest but notable effect of entry barrier on firm birth rates.

In summary, these results accord broadly with the extant literature, suggesting that market entry barriers do continue to depress firm birth rates and to raise the average size of entrants in European countries in 2015.

¹⁸ For comparison, Klapper et al (2006) estimate that moving from the 25th percentile to the 75th percentile in the distribution of entry costs (their focus) also raises the difference in entry rates between the sectors at the 25th and 75th percentile of the distribution of entry rates by 0.5 percentage points.

Table 1.2: Fixed-effects estimates of the impact of entry barriers on birth rates and the size of newly-born enterprises, country sample, 2015

	Birth rate					Ln(Average size of newly-born enterprises)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Limited liability firms:</i>										
Ln(Procedures)	-0.578 [-0.30]				-0.622 [-0.44]	0.721*** [3.77]				0.630*** [3.31]
Ln(Time)		-0.218 [-0.28]			0.228 [0.43]		0.014 [0.10]			-0.085 [-0.75]
Ln(Cost)			0.153 [0.33]		-0.063 [-0.15]			0.150*** [2.99]		0.110*** [2.93]
Ln(Minimum capital)				-0.465*** [-3.32]	-0.476*** [-3.39]				0.002 [0.11]	0.005 [0.24]
Observations	927	927	927	927	927	778	778	778	778	778
Goodness of fit	0.45	0.45	0.45	0.51	0.51	0.55	0.49	0.53	0.49	0.57
<i>All firms:</i>										
Ln(Procedures)	-1.379 [-0.51]				-0.486 [-0.18]	0.368** [2.53]				0.263* [1.80]
Ln(Time)		-1.360* [-1.85]			-0.806 [-1.30]		0.135** [2.11]			0.065 [1.26]
Ln(Cost)			-0.365 [-0.61]		-0.447 [-0.76]			0.084*** [3.14]		0.066** [2.52]
Ln(Minimum capital)				-0.419* [-1.84]	-0.427** [-2.10]				0.018 [1.06]	0.019 [1.26]
Observations	954	954	954	954	954	915	915	915	915	915
Goodness of fit	0.44	0.45	0.44	0.47	0.48	0.50	0.49	0.50	0.48	0.52

Notes: The estimates in columns (1)-(5) are from Tobit regressions, with left-censoring at zero and goodness of fit measured via the McKelvey-Zavoina pseudo-R²; those in columns (6)-(10) are from OLS regressions with goodness of fit measured via adjusted-R². All regressions include a constant, the industry share of value-added by country, a full set of industry dummies, and the country's *Doing Business* 'distance-to-the-frontier' scores for: getting electricity; registering property; getting credit; protecting minority investors; paying taxes; trading across borders; enforcing contracts; and resolving insolvency. Standard errors are clustered by country. Key to statistical significance: *** p<0.01; ** p<0.05; * p<0.10. See Appendix 1.A for variable definitions and sources.

Table 1.3: Difference-in-difference estimates of the impact of entry barriers on birth rates and the size of newly-born enterprises, country sample, 2015

	Birth rate				Ln(Average size of newly-born enterprises)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Limited liability firms:</i>								
Entry _{UK} *Ln(Procedures)	-0.005 [-0.09]				-0.017 [-1.42]			
Entry _{UK} *Ln(Time)		-0.061* [-1.92]				0.007 [0.83]		
Entry _{UK} *Ln(Cost)			-0.029* [-1.89]				-0.000 [-0.03]	
Entry _{UK} *Ln(Minimum capital)				-0.003 [-0.32]				0.003* [1.86]
Observations	927	927	927	927	778	778	778	778
Goodness of fit	0.63	0.63	0.63	0.63	0.65	0.65	0.65	0.65
<i>All firms:</i>								
Entry _{UK} *Ln(Procedures)	-0.012 [-0.20]				-0.003 [-0.59]			
Entry _{UK} *Ln(Time)		-0.094** [-2.29]				0.003 [0.70]		
Entry _{UK} *Ln(Cost)			-0.004 [-0.23]				0.001 [0.49]	
Entry _{UK} *Ln(Minimum capital)				-0.000 [-0.02]				0.001 [1.23]
Observations	954	954	954	954	915	915	915	915
Goodness of fit	0.60	0.60	0.60	0.60	0.59	0.59	0.59	0.59

Notes: The estimates in columns (1)-(4) are from Tobit regressions, with left-censoring at zero and goodness of fit measured via the McKelvey-Zavoina pseudo-R²; those in columns (5)-(8) are from OLS regressions with goodness of fit measured via adjusted-R². All regressions include a constant, the industry share of value-added by country, a full set of industry dummies and a full set of country dummies. Standard errors are clustered by country. Key to statistical significance: *** p<0.01; ** p<0.05; * p<0.10. See Appendix 1.A for variable definitions and sources.

The second phase of our industry*country-level analysis examines the potential implications of lower entry barriers for broader levels of business dynamism and growth.

First, we repeat the specifications presented in Tables 2.2 and 2.3 but take the share of high-growth enterprises as the dependent variable.¹⁹ The results are shown in Table 1.4. Here we see a predominance of negative coefficients, but none of them are statistically significant from zero at the 10 per cent level, either under the fixed-effects or DiD specifications. This suggests that any impact that entry barriers may have on levels of firm growth are too weak to be robustly identified in our sample.

Table 1.4: Fixed-effects and difference-in-difference estimates of the impact of entry barriers on the share of high-growth enterprises, country sample, 2015

	Share of high-growth enterprises				
	(1)	(2)	(3)	(4)	(5)
<i>Fixed-effect estimates:</i>					
Ln(Procedures)	0.365				0.551
	[0.17]				[0.25]
Ln(Time)		-0.708			-0.699
		[-0.64]			[-0.69]
Ln(Cost)			0.200		0.159
			[0.37]		[0.27]
Ln(Minimum capital)				-0.207	-0.177
				[-0.99]	[-0.78]
Observations	921	921	921	921	921
Goodness of fit	0.36	0.36	0.36	0.37	0.37
<i>Difference-in-difference estimates:</i>					
Ln(Procedures)	-0.112				
	[-1.47]				
Ln(Time)		-0.072			
		[-1.34]			
Ln(Cost)			0.021		
			[1.34]		
Ln(Minimum capital)				-0.009	
				[-0.78]	
Observations	921	921	921	921	
Goodness of fit	0.55	0.55	0.55	0.55	

Notes: For fixed-effects estimates, see the notes to Table 1.2. For difference-in-differences estimates, see the notes to Table 1.3.

This is not to say that birth rates do not matter for levels of business dynamism and growth, however. Table 1.5 takes our industry*country dataset and pools over four years (2012-2015), controlling for country, industry and year fixed-effects (following

¹⁹ We have no measure of employment growth within limited liability firms, so our analysis focuses on rates for all firms.

equation 3 in Section 2.4). Birth rates are found to be strongly correlated with firm death rates and with the shares of high-growth firms under this analysis.

The size of the coefficients on the firm birth rate do not increase monotonically with the length of the lag, as is the case in Brandt's (2004) analysis. And in additional analyses (not shown) we find no statistically significant association between birth rates and rates of productivity growth.²⁰ However, the results in Table 1.5 do suggest that higher entry rates not only bring new firms into the market but also contribute to greater levels of market dynamism more generally.

Taken together, the full set of results indicates that the height of entry barriers does depress firm birth rates and raises the average size of newly-born enterprises. However, the lowering of entry barriers is not sufficient, on its own, to raise overall levels of business dynamism and growth.

Table 1.5: Conditional correlations between birth rates and death rates, and between birth rates and the share of high-growth firms, country sample, 2012-2015

	Death rate			Share of high-growth enterprises		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Birth rate at lags:</i>						
0	0.262*** [21.45]			0.059*** [3.18]		
1		0.225*** [18.69]			0.059*** [3.25]	
2			0.240*** [20.35]			0.035* [1.94]
Observations	4145	4024	3963	3968	3861	3807
Pseudo-R ²	0.49	0.49	0.49	0.43	0.43	0.43

Notes: The estimates are from Tobit regressions, with left-censoring at zero and goodness of fit measured via the McKelvey-Zavoina pseudo-R². All regressions include a constant and full sets of industry, country and time dummies. Key to statistical significance: *** p<0.01; ** p<0.05; * p<0.10. See Appendix 1.A for variable definitions and sources.

Regional sample

The analysis of our industry*region sample proceeds in the same vein as that discussed above for the national sample, with the exception that we have no data on the size of newly-born enterprises at industry*region level within Spain. Recall, also, that our measure of entry barriers is more nuanced, as it takes account of the different requirements applying to industrial and non-industrial activities.

In bivariate regressions (not shown), regions with more extensive entry procedures are found to have lower birth rates for limited liability firms, but there are no statistically significant associations with the time or cost of fulfilling entry requirements. The upper panel of Table 1.6 shows that the nature of these associations remains once we control for those other elements of the business environment that are measured in the DB

²⁰ Brandt (2004: 21-22) showed a positive association, but only with total factor productivity growth. Our measure is of the growth in value-added per worker.

report for Spain (the ease of obtaining construction permits, the ease of getting electricity and the ease of registering property). The coefficients are generally smaller when we use birth rates for all firms (the lower panel of Table 1.6) and the length of entry procedures, in particular, is no longer statistically significant in the regional sample under this perspective.

Table 1.6: Fixed-effects estimates of the impact of entry barriers on birth rates, regional sample, 2015

	Birth rate			
	(1)	(2)	(3)	(4)
<i>Limited liability firms:</i>				
Ln(Procedures)	-2.871*			-3.291*
	[-1.74]			[-1.69]
Ln(Time)		-0.062		0.162
		[-0.10]		[0.23]
Ln(Cost)			0.220	0.621
			[0.28]	[0.78]
Observations	1066	1066	1066	1066
Pseudo-R ²	0.35	0.35	0.35	0.35
<i>All firms:</i>				
Ln(Procedures)	-1.667			-1.528
	[-0.74]			[-0.61]
Ln(Time)		-0.321		-0.214
		[-0.34]		[-0.20]
Ln(Cost)			-0.307	-0.117
			[-0.36]	[-0.13]
Observations	1066	1066	1066	1066
Pseudo-R ²	0.56	0.56	0.56	0.56

Notes: All estimates are from Tobit regressions, with left-censoring at zero and goodness of fit measured via the McKelvey-Zavoina pseudo-R². All regressions include a constant, the industry share of enterprises by region, a full set of industry dummies, and the region's *Doing Business* 'distance-to-the-frontier' scores for: getting electricity; registering property; and dealing with construction permits. Standard errors are clustered by region. Key to statistical significance: *** p<0.01; ** p<0.05; * p<0.10. See Appendix 1.B for variable definitions and sources.

Table 1.7 presents the results of the DiD analysis on our industry*region sample. To interpret the coefficient on the length of entry procedures in this model, we can look again at the implied difference in birth rates between the leather industry and the computing/IT consultancy industry. The coefficient implies that moving from the region at the 75th percentile in the distribution of procedural steps (Castilla and Leon) to the region at the 25th percentile (Extremadura) – a shift of approximately one standard deviation in the distribution of procedural steps within Spain – reduces the difference in birth rates between these high and low birth-rate industries by 0.15 percentage points.

The effect is therefore around one third of the size of that estimated at the national level in respect of a shift in the time required to complete these procedural steps.

The results indicate that, just as at the national level, the height of entry barriers does affect firm birth rates. Specifically, within Spain, those Autonomous Cities and Communities which use their devolved powers to implement lengthier entry procedures for new firms do indeed have a lower rate of firm entry into their local market than those Autonomous Cities and Communities with shorter entry procedures. However, the differences in entry procedures between the regions of Spain appear less important, economically, than the differences in entry procedures between Spain and other countries in Europe.

Table 1.7: Difference-in-difference estimates of the impact of entry barriers on birth rates, regional sample, 2015

	Birth rate		
	(1)	(2)	(3)
<i>Limited liability firms:</i>			
Entry _{UK} *Ln(Procedures)	-0.237*		
	[-1.96]		
Entry _{UK} *Ln(Time)		-0.013	
		[-0.32]	
Entry _{UK} *Ln(Cost)			0.066
			[0.87]
Observations	1066	1066	1066
Pseudo-R ²	0.37	0.37	0.37
<i>All firms:</i>			
Entry _{UK} *Ln(Procedures)	-0.171		
	[-1.26]		
Entry _{UK} *Ln(Time)		-0.015	
		[-0.28]	
Entry _{UK} *Ln(Cost)			0.066
			[0.86]
Observations	1066	1066	1066
Pseudo-R ²	0.59	0.59	0.59

Notes: All estimates are from Tobit regressions, with left-censoring at zero and goodness of fit measured via the McKelvey-Zavoina pseudo-R². All regressions include a constant, the industry share of enterprises by region, a full set of industry dummies and a full set of region dummies. Standard errors are clustered by region. Key to statistical significance: *** p<0.01; ** p<0.05; * p<0.10. See Appendix 1.B for variable definitions and sources.

Table 1.8 then repeats the specifications presented in Tables 2.6 and 2.7 but takes the share of high-growth enterprises as the dependent variable. As in the country-level analysis, none of the coefficients are statistically significant from zero at the 10 per cent level, either under the fixed-effects or DiD specifications. Again, this suggests that any impact that entry barriers may have on levels of firm growth within Spain are too weak to be robustly identified in our sample.

Table 1.8: Fixed-effects and difference-in-difference estimates of the impact of entry barriers on the share of high-growth enterprises, regional sample, 2015

	Share of high-growth enterprises			
	(1)	(2)	(3)	(4)
<i>Fixed-effect estimates:</i>				
Ln(Procedures)	-3.958			-5.053
	[-0.68]			[-0.78]
Ln(Time)		1.610		1.986
		[0.48]		[0.56]
Ln(Cost)			0.102	0.734
			[0.04]	[0.35]
Observations	967	967	967	967
Goodness of fit	0.20	0.20	0.20	0.20
<i>Difference-in-difference estimates:</i>				
Ln(Procedures)	-0.824			
	[-0.80]			
Ln(Time)		0.253		
		[0.79]		
Ln(Cost)			0.481	
			[1.54]	
Observations	967	967	967	
Goodness of fit	0.22	0.22	0.22	

Notes: For fixed-effects estimates, see the notes to Table 1.6. For difference-in-differences estimates, see the notes to Table 1.7.

Table 1.9 then looks more directly at the association between entry rates and levels of business dynamism (cf Table 1.5). The left-hand panel shows the results of regressing the firm death rate in each industry*region on the firm birth rate, both contemporaneously and with lags. The results are similar to those found in the national sample, except that here the positive relationship between entry and exit is only found in the first and second lag.

The right-hand panel shows the results of regressing the share of high-growth enterprises in each industry*region on the firm birth rate. Here, we also find a positive association, but only on the second lag. The association between rates of entry and rates of within-firm employment growth thus seems weaker within Spain than it is across Europe as a whole (though we cannot discount the possibility that the differences may also be a function of our use of an alternative data source for the share of high-growth firms).²¹

²¹ Replacing the birth rate for all firms with the birth rate for limited liability firms does not change the pattern of results.

Table 1.9: Conditional correlations between birth rates and death rates, and between birth rates and the share of high-growth firms, regional sample, 2015

	Death rate			Share of high-growth enterprises		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Birth rate at lags:</i>						
0	-0.052 [-1.33]			-0.335 [-1.43]		
1		0.261*** [7.70]			0.001 [0.01]	
2			0.208*** [5.67]			0.546** [2.44]
Observations	1072	1068	1067	968	967	967
Pseudo-R ²	0.46	0.50	0.50	0.22	0.23	0.23

Notes: The estimates are from Tobit regressions, with left-censoring at zero and goodness of fit measured via the McKelvey-Zavoina pseudo-R². All regressions include a constant and full sets of industry and region dummies. Key to statistical significance: *** p<0.01; ** p<0.05; * p<0.10. See Appendix 1.B for variable definitions and sources.

1.6. Conclusions and policy implications

Theory and empirical evidence supports the view that higher entry requirements can hamper the creation of new firms, thereby muting the dynamism of the market, with attendant consequences for business competitiveness and growth. In spite of a number of reforms that have been undertaken by the government of Spain over recent years, the barriers facing potential entrants remain higher than in many other major, advanced economies. They also vary to notable degrees across Spain's nineteen Autonomous Cities and Communities. The extent of such barriers is seen as an impediment to further progress in boosting the dynamism and competitiveness of Spain's economy (OECD, 2017a; European Commission, 2017).

In this chapter, we combined quantitative indicators of the barriers to entry for new firms with the latest available data on business demography in order to re-evaluate the relationship between entry barriers and business dynamics at the present time. We undertook analyses at the level of the nation state, comparing Spain with other major European economies, and also at the regional level, exploring the implications of inter-regional heterogeneity in entry requirements between Spain's Autonomous Cities and Communities.

In both samples, we found that the height of entry barriers depresses firm birth rates and raises the average size of newly-born enterprises. We also presented evidence of the positive correlation between firm birth rates and other aspects of business dynamism, namely exit rates and the share of high-growth firms. However, we found no statistically significant direct association between the height of entry barriers and rates of firm growth.

Our results imply that further reforms to the administrative environment governing business entry in Spain – both at the national and regional level – would yield economic benefits in terms of higher rates of business creation. When considering possible avenues for future reform, our results suggest that initiatives to reduce the number of procedural steps needed to register a business, to reduce the time taken to complete these steps, and to reduce the cost of registration could all bring benefits. Prior

experience in other countries (and to some extent, within Spain itself) suggests a number of potential avenues for continued reform. For instance, further promotion of the use of 'one-stop' shops and online registration procedures, which have seen greater use in Spain in recent years, and which have brought considerable benefits in countries such as Portugal and Mexico, will help to reduce procedural delays. Further promotion of the sets of model byelaws, as are now used in a large number of countries, and which were introduced in Spain in 2015, will also help to speed up processing times. Spain has already made progress in these areas in recent years, but our analysis suggests that further gains can yet be realised.

However, our analysis suggests that the lowering of entry barriers is not sufficient, on its own, to raise overall levels of business dynamism and growth. Although there is a positive relationship between birth rates and indicators of business churn and growth, we found no statistically significant direct association between such indicators and the height of entry regulations, reinforcing the view that other factors are important. Some of these potential factors will be explored in the chapters which follow.

Appendix 1.A: Variable definitions and sources for country-level sample

Variable	Definition and source
<i>Industry*country-level variables:</i>	
Birth rate	Number of enterprise births in year t divided by the number of enterprises active in year t . Source: Eurostat Business Demography (indicator V97020)
Average size of newly-born enterprises	Logarithm of the number of persons employed in year t among enterprises born in year t divided by the number of enterprises born in year t . Source: Eurostat Business Demography (indicator V97121)
Death rate	Number of enterprise deaths in year t divided by the number of enterprises active in year t . Source: Eurostat Business Demography (indicator V97030)
Share of high-growth enterprises	Number of high-growth enterprises in year t divided by the number of active enterprises with at least 10 employees in year t . A high-growth enterprise is an enterprise with >10% average annualised growth in the number of employees over a three-year period ($t - 3$ to t) and having at least 10 employees in the beginning of the period ($t - 3$). Source: Eurostat Business Demography (indicator V97460).
Industry share of value-added	Value-added in industry i and country j as a share of total value-added for country j . Source: Eurostat Structural Business Statistics.
<i>Country-level variables:</i>	
Entry procedures	Logarithm of the number of interactions with external parties that are required to start a limited liability company in the capital city of country j . Source: <i>Doing Business 2015</i>
Entry time	Logarithm of the time (in days) required to start a limited liability company in the capital city of country j . Source: <i>Doing Business 2015</i>
Entry cost	Logarithm of the cost (as a % of income per capita) of all fees required to start a limited liability company in the capital city of country j . Source: <i>Doing Business 2015</i>
Minimum capital requirement	Logarithm of the minimum paid-in capital (as a % of income per capita) required to start a limited liability company in the capital city of country j . Source: <i>Doing Business 2015</i>

Appendix 1.B: Variable definitions and sources for region-level sample

Variable	Definition and source
<i>Industry*region-level variables:</i>	
Birth rate	Number of enterprise births in year t divided by the number of enterprises active in year t . Source: INE Harmonised Business Demography (Tables 01004 and 01002)
Death rate	Number of enterprise deaths in year t divided by the number of enterprises active in year t . Source: INE Harmonised Business Demography (Tables 01010 and 01002)
Share of high-growth enterprises	Among enterprises with <250 employees: the number of high-growth enterprises in year t divided by the number of active enterprises with at least 10 employees in year t . See Appendix 1.A for the definition of 'high-growth'. Source: SABI Database.
Industry share of enterprises	Number of enterprises in industry i and region j as a share of the total number of enterprises in region j . Source: INE Harmonised Business Statistics (Table 01002).
<i>Region-level variables:</i>	
Entry procedures	Logarithm of the number of interactions with external parties that are required to start a limited liability company in the capital city of region j (for NACE Rev. 2 Sections B-E: a limited liability company engaged in industrial production). Source: <i>Doing Business in Spain 2015</i>
Entry time	Logarithm of the time (in days) required to start a limited liability company in the capital city of region j (for NACE Rev. 2 Sections B-E: a limited liability company engaged in industrial production). Source: <i>Doing Business in Spain 2015</i>
Entry cost	Logarithm of the cost (as % of income per capita) of fees required to start a limited liability company in the capital city of region j (for NACE Rev. 2 Sections B-E: a limited liability company engaged in industrial production). Source: <i>Doing Business in Spain 2015</i>