No Country for Young Firms?

Policy failures and regulations are a greater obstacle for start-ups than for incumbents

Start-ups and young firms are the engine of job creation. OECD findings (see box on p. 3) show that the contribution of young firms to job creation is much higher than their share in total employment (Figure 1). On average, firms five years old or younger account for only 21% of total employment, but are responsible for 47% of job creation. The aggregate figure, however, masks a fair degree of heterogeneity: it is only a tiny fraction of start-ups that substantially contribute to job creation, while the majority either fail in the first years of activity, or remain very small. For instance, Figure 2 shows that out of 100 micro start-ups entering the market in a given year, after five years 26 to 58 are not active, 36 to 71 have still less than 10 employees, and only 1 to 8 have 10 employees or more.

This is not a new finding: a growing number of studies have shown that the majority of small start-ups remain small and are likely founded by so-called *subsistence* entrepreneurs,[1] where firm growth is not a key objective. However, the tiny proportion of *transformational* entrepreneurs' start-ups that do grow – on average 4% of all micro start-ups – creates a disproportionate amount of new jobs: out of 100 jobs created or destroyed by micro start-ups over a five year window, between 22 (the Netherlands) and 53 (France) newly created jobs come from this group. The rapid scaling up of a small number of very successful start-ups is therefore one of the main drivers of aggregate employment growth.

The quick read

With sluggish employment growth and disappointing productivity trends in most OECD countries, the central role played by start-ups and young firms in creating jobs and bringing innovations to the market has acquired renewed importance in the policy debate.

The OECD DynEmp project provides new evidence on the growth dynamics of start-ups and incumbents across 21 OECD countries and non-OECD economies. While entrants disproportionately contribute to job creation in all countries, significant differences exist across countries in the different components that contribute to aggregate net job creation – i.e. the firm entry rate, a firm's average size at entry, its survival rate, and its post-entry growth rate.

National policies and framework conditions explain some of these differences. Policy failures hamper start-ups significantly more than incumbents, especially in the most risky and volatile sectors. As those sectors also exhibit higher growth potential, it is important to tackle policy failures that impose an extra cost on risk, such as burdensome bankruptcy regulations or weak contract enforcement.
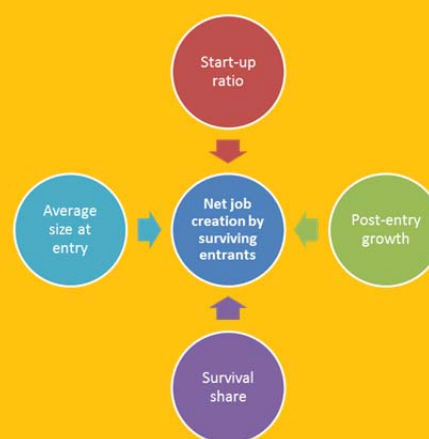
There are concerns, however, that the dynamism of young firms is losing momentum. Recent evidence of a secular decline in start-up rates in the United States – and correspondingly their contribution to job creation – has sparked a lively discussion.[2] The DynEmp data confirm that this trend is broadly true for most OECD countries over the last 15 years (Figure 3). Although the causes of this trend are still being debated, the evidence points to policy as one factor, which appears to hamper start-up entry and subsequent growth.

Figure 1. Young firms contribute disproportionally to job creation in all countries
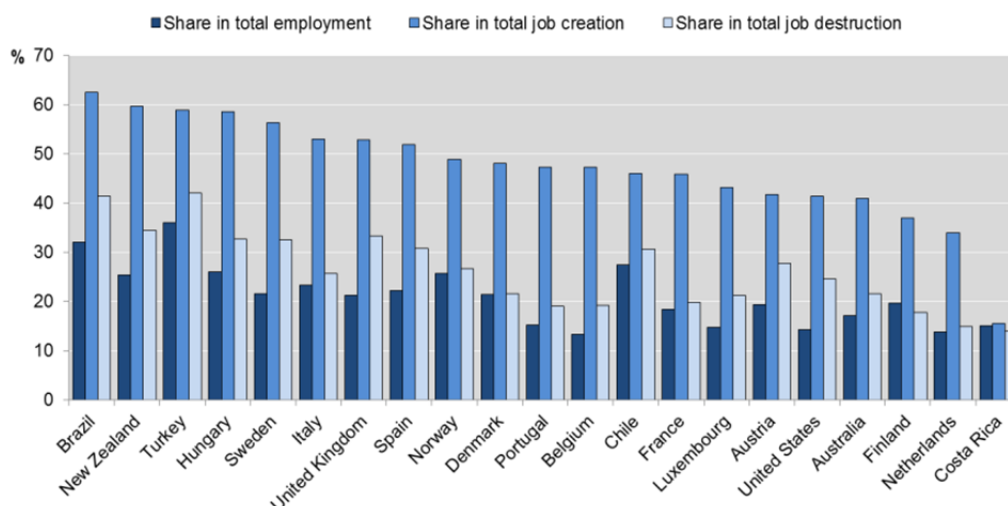
Note: The graph shows the share of young firms (less than six year old) in total employment, total gross job creation, and total gross job destruction, respectively. Data cover manufacturing, construction, and non-financial business services. Figures for Chile are preliminary. Owing to methodological differences, figures may deviate from officially published national statistics.

*Source*: OECD DynEmp version 2 database, see http://oe.cd/dynemp.

Figure 2. Few micro start-ups grow, but these contribute disproportionally to job creation
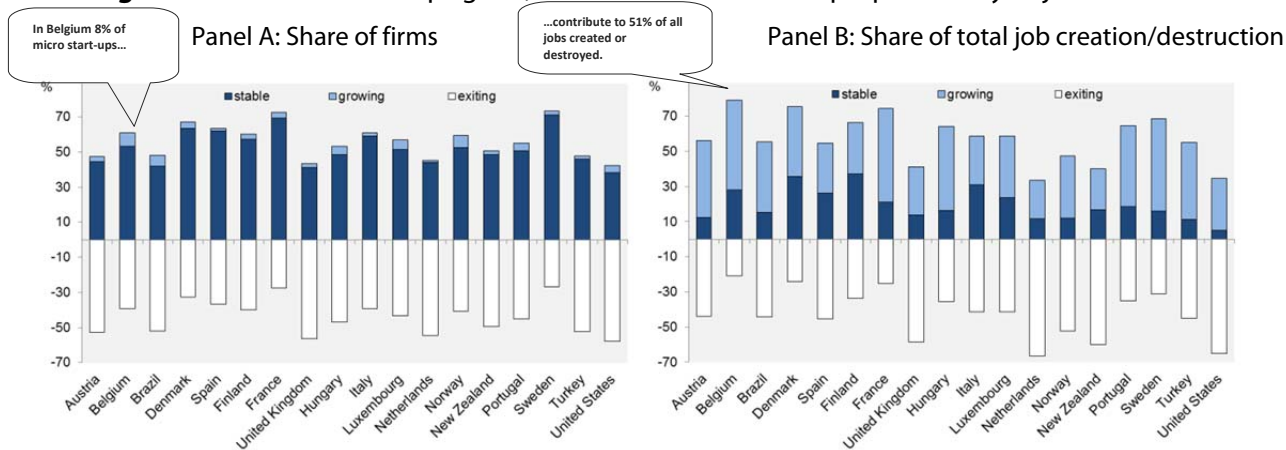
Note: Figures report the average for different time periods t = 2001, 2004 and 2007, conditional on the availability of data. Panel A represents the share (in terms of number of units) of micro (0-9 employees) entrants at time t by their size class at time t + 5. Panel B represents the net contribution to aggregate flows (defined as net job creation by the group over the sum of the net job variations by all groups in absolute values) for micro (0-9 employees) entrants at time t by size class at time t + 5. Size classes are aggregated as follows: stable (0-9 employees), growing (10 or more employees) and exiting units. Firms with missing employment at the beginning or at the end of the period are excluded. The sectors covered are: manufacturing, construction, and non-financial business services. Owing to methodological differences, figures may deviate from officially published national statistics.

Source: OECD DynEmp v.2 database, see http://oe.cd/dynemp.

Figure 3. The start-up rate is decreasing in most OECD countries
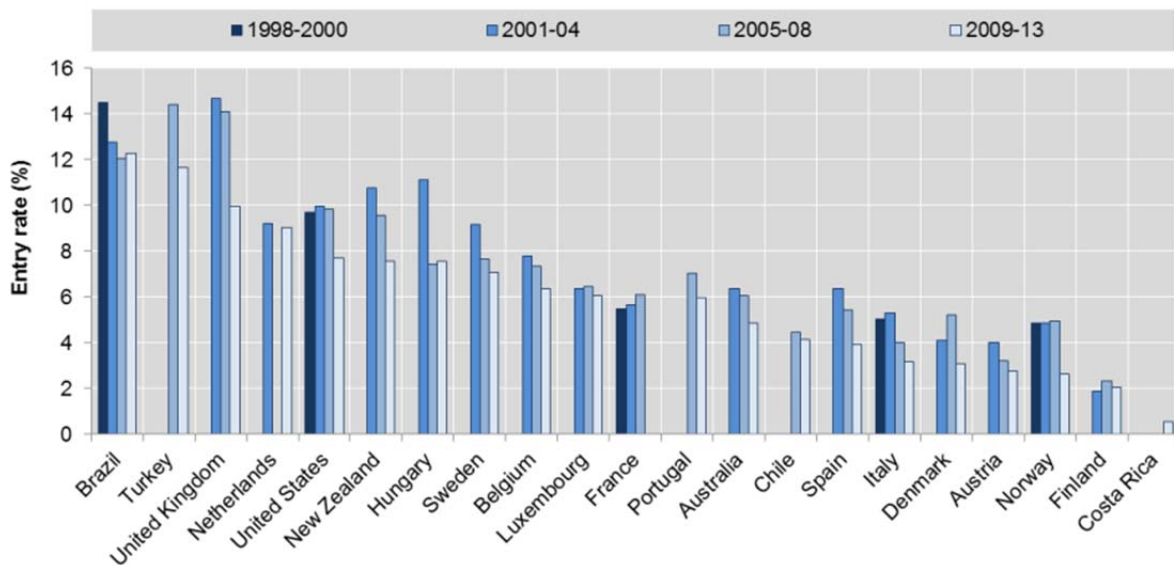
Note: The graph provides data on entry rates (calculated as the number of entrants with positive employment over the total number of units with positive employment). The figures report averages for the periods 1998-2000; 2001-04; 2005-08 and 2009-13 conditional on the availability of data. Sectors covered are: manufacturing, construction, and non-financial business services. The period between 2005 and 2008 has been excluded for the Netherlands due to a redesign of the business register in 2006. Figures for Chile are preliminary. Owing to methodological differences, figures may deviate from officially published national statistics.

Source: OECD DynEmp v.2 database, see http://oe.cd/dynemp.

DynEmp: an OECD database on employment dynamics

Measuring employment dynamics and its economic effects in terms of job creation is not an easy task and appropriate data, taking into account both the age and the size of businesses, are necessary. Very few databases allow researchers to follow cohorts of firms (or plants) over time, despite the wide recognition that this is crucial when studying business dynamics, especially in the case of entrants. The DynEmp project provides a unique approach for this type of investigation.

The OECD DynEmp project is based on a distributed data collection to create a harmonised cross-country micro-aggregated database on employment dynamics from confidential micro-level data, where the primary sources of firm and establishment data are national business registers. The project is supported by a network of national experts who run common statistical routines developed by the OECD on confidential micro-data to which they have access (see Criscuolo, Gal, and Menon, 2015). The experts also implement additional country-specific disclosure procedures to ensure that the confidentiality of the underlying microdata is respected.

The most recent wave of data collection, named DynEmp version 2, includes a disaggregated analysis of the growth patterns of incumbents and start-ups, following cohorts of entrants for three, five, and seven years after their entry in the market. The dataset also allows for a granular analysis at the industry level, as data are now available at the two-digit sector level.

The advantages of using harmonised micro-aggregated data from business registers for the study of business employment dynamics are manifold. First of all, the different channels of employment changes can be identified separately, distinguishing between gross job creation and job destruction, and between the role of firm entry and exit (the so-called extensive margin) and post-entry growth (the so-called intensive margin). Furthermore, the role of firm age and size can be examined. Last but not least, each of these elements can be compared across countries, sectors and over time.

Deconstructing job creation by start-ups

New firms contribute to employment dynamics through three main channels: they create jobs when they enter the market; they lose jobs in the event of failure, of which they are much more at risk than older firms; and they create and lose jobs by hiring and firing workers (the so-called *intensive margin*) as is the case for all firms, but they do so at a greater rate given their higher growth volatility in their first years of activity.

Figure 4. The decomposition of net job creation by start-ups
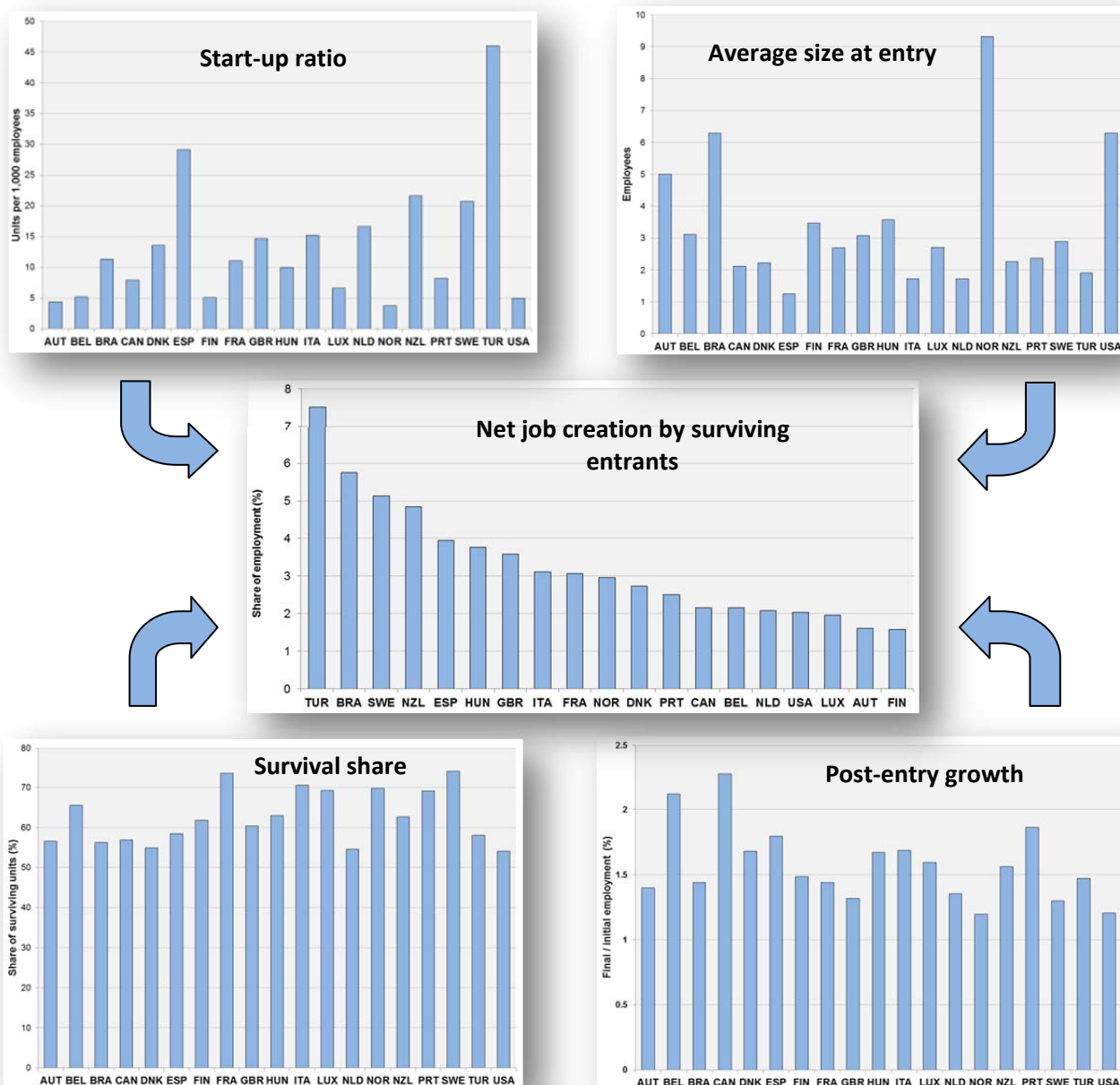
Note: in the graphs net job creation by surviving entrants (in the centre, defined as the ratio between employment at time t + 3 of surviving entrants and overall country employment at time t) is decomposed into four components: i) start-up ratio (on the top left) expressed as total number of entering units over total employment (in thousands); ii) average size of surviving entrants (on the top right) expressed as total employment of surviving entrants over number of surviving entrants; iii) survival share of entrants (on the bottom left) expressed as number of entering units surviving over total number of entrants per cent; iv) post-entry growth (on the bottom right) expressed as ratio between total employment at t + 3 over total employment of surviving entrants. Figures report the average for different time periods t = 2001, 2004 and 2007, conditional on the availability of data. Sectors covered are: manufacturing, construction, and non-financial business services. Owing to methodological differences, figures may deviate from officially published national statistics.

Source: Calvino, Criscuolo, and Menon (2015) and OECD DynEmp v.2 database, see http://oe.cd/dynemp.

The contribution of new firms to the creation of new jobs over their first years of activity can be expressed as a combination of four different elements[3] (Figure 4):

- start-up ratio, measured as the number of entrants relative to the country's total employment
- survival share, measured as the number of units that survive over the first years of activity over the total number of starting units
- average size at entry, calculated as the average number of employees for entrants
- average post-entry growth, measured as the final over initial employment ratio of surviving entrants.

This simple decomposition reveals some interesting insights (Calvino, Criscuolo, and Menon, 2015). In particular, although the contribution by new firms to job creation is clearly evident and extremely important in all countries, there are substantial cross-country differences in the relative contribution from each of these four factors. These different elements are not necessarily positively correlated, and while all contribute to explaining differences in the contribution of start-ups to aggregate job creation in the economy, the extent to which they do so varies across countries. For instance, in Belgium the start-up rate is very low, but the post-entry growth rate of survivors is the second highest among all countries. Conversely, in New Zealand and Turkey the start-up rate is high but average post-entry growth is much lower.

Another stylised fact which emerges from the characterisation of firm dynamics relates to the survival rate. This component shows smaller cross-country differences than the others. In the majority of countries, the survival rate is equal to just above 60% after three years from entry; it decreases to about 50% after five years, and to just over 40% after seven years. Furthermore, it appears as a striking regularity across many countries that the probability of exiting is highest when businesses are two years old, and decreases (linearly) beyond that age. The first two years of a firm's activity seem therefore to be crucial in determining its fate. In most countries, these two years are also characterised by a much higher average employment growth rate for those entrants that survive.

Growing a start-up is a risky business

Start-ups with high growth potential face much greater risk and volatility than both established businesses or less dynamic start-ups (Figure 5).[4] In turn, risky and volatile sectors – such as, for instance, information

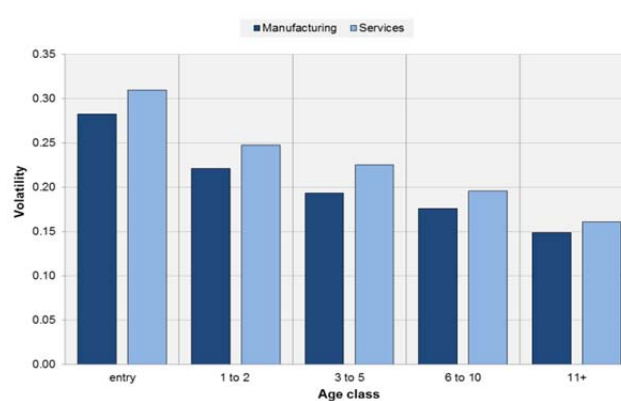**Figure 5.** Volatility and employment growth of surviving entrants

Panel A: Volatility of start-ups and employment growth

Panel B: Average volatility by age class
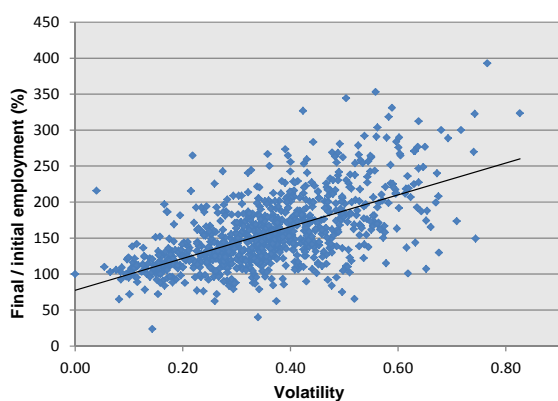
Note: Each dot represents a country/2-digit industry/year observation (17 countries, 25 industries between 2001 and 2010, conditional on availability). The horizontal axis reports volatility, which is calculated as weighted average of the standard deviation of the yearly employment growth index at firm level over time. The weights are equal to the firms' average employment over the same period. The vertical axis reports the ratio between total employment at t + 3 over total employment at entry of surviving entrants. See also note of Figure 1.

Source: Calvino, Criscuolo, and Menon (2016).

Note: The graph shows the cross-country average employment growth volatility by age class in manufacturing and non-financial business services (18 countries between 2001 and 2010, conditional on the availability of data). Volatility is calculated as the weighted average of the standard deviation of the yearly employment growth index at firm level over time (time windows have three years of length). The weights are equal to the firms' average employment over the same period. Owing to methodological differences, figures may deviate from officially published national statistics.

Source: DynEmp v.2 database, see http://oe.cd/dynemp.

technologies, business services and scientific research and development – typically have higher aggregate net job creation rates than other sectors.[5] These are also generally the sectors which have been most deeply affected by digital technologies and are more innovative. With risk and growth so closely intertwined – particularly for young businesses – it is important to promote policies that help firms face temporary difficulties (e.g. by improving access to finance) and also tackle policy failures that impose an extra cost on risk (e.g. weak contract enforcement).

Entrants are much more exposed to policy weaknesses than incumbents

Although young firms play a prominent role in job creation across all economies examined, cross-country data reveal important differences in start-up dynamics. Moreover, cross-country evidence is now emerging on the links between national policies and the growth dynamics of start-ups (Calvino, Criscuolo and Menon, 2016). The key finding of this work is that within the same country, industry, and time period, national policies have a much larger impact on the growth dynamics of entrants than of incumbents.

The analysis focuses in particular on sectors such as information technologies, business services and scientific research and development that are characterised by higher uncertainty, proxied by a larger difference between high and low growth firms in employment growth, and by higher employment growth volatility over time. The policy areas considered are bankruptcy regulation, contract enforcement, and civil justice efficiency, as well as access to finance. Four main policy-relevant findings emerge from the start-up dynamics in these sectors:

- The negative link between policy failures (such as poor contract enforcement and lengthy bankruptcy procedures) and the growth dynamics of start-ups is much stronger than is the case for incumbents. This finding may suggest that delaying reforms in these areas may be particularly detrimental for start-ups employing innovative business models and technologies, rather than for established incumbents.

- The negative role of policy failures on start-up performance is much stronger in these volatile sectors than in any other sector of the economy. This is important because sectors with higher growth dispersion and volatility are also the ones which exhibit higher aggregate growth.

- Timely bankruptcy procedures, strong contract enforcement, and civil justice efficiency are key to establishing a dynamic start-up environment. In addition, the results confirm the importance of access to finance for start-ups, a result already well-established in the economic literature.

- Finally, the results show that the survival share of entrants is generally not associated with the policies examined, contrary to the survival share of incumbents. For start-ups, the higher exit rate seems to be more an idiosyncrasy due to experimentation and learning in the first few years of activity, rather than to policy. This also suggests that policies are likely to affect the overall job contribution by entrants and incumbents through different channels: i.e., through entry and post-entry growth for entrants; and through growth and exit for incumbents.

Policy reforms can have a strong impact on start-up growth

A graphical illustration of the economic significance of these results is presented in Figure 6, which shows the estimated effect of policy reforms in the area of bankruptcy, contract enforcement, and civil justice. The graph compares start-up employment growth in information technologies, a sector characterised by high employment growth volatility and dispersion, in an OECD country with relatively weak contract enforcement (Italy) relative to a country in which contract enforcement is stronger (Japan). If Italy completed insolvency procedures as quickly as Japan, it is estimated that the post-entry employment growth (measured as the ratio of final over initial employment over a three-year period) of surviving start-ups in the IT sector would increase by 17 percentage points, i.e., after three years these start-ups would have grown by 88% percent rather than by 66%. The effect for incumbent businesses is also positive, but is much smaller at 4 percentage points (from 9% to 13%). An effect of similar magnitude is estimated for hypothetical reforms which reduce the average length of civil disputes in Italy to the much lower level of New Zealand. Increasing the specialisation of tribunals – an important performance-enhancing factor of civil justice in a complex business environment – would also have significant effects on post-entry growth. While these estimated effects should not be interpreted literally, they are indicative of the potential benefits in terms of job creation arising from policy reform in these areas.

These results also reflect that regulations often reflect the established technological and business paradigms, and may be slow to change. This may generate additional barriers for entrants seeking to bring new and disruptive technologies or business models to market. The results also suggest that "regulatory incumbency" could play a role in hampering the opportunities and growth prospects for start-ups. This might arise from the relative prominence and lobbying power of incumbents in the policy debate in comparison with the lack of "voice" of young firms and prospective entrants. Given the important role of start-ups for job creation and innovation, however, this may have significant costs in term of jobs and productivity growth. Conversely, taking into account the important contribution of start-ups when designing and reforming policies is an important lever for growth.

Figure 6. Reform simulations related to bankruptcy regulation and civil justice
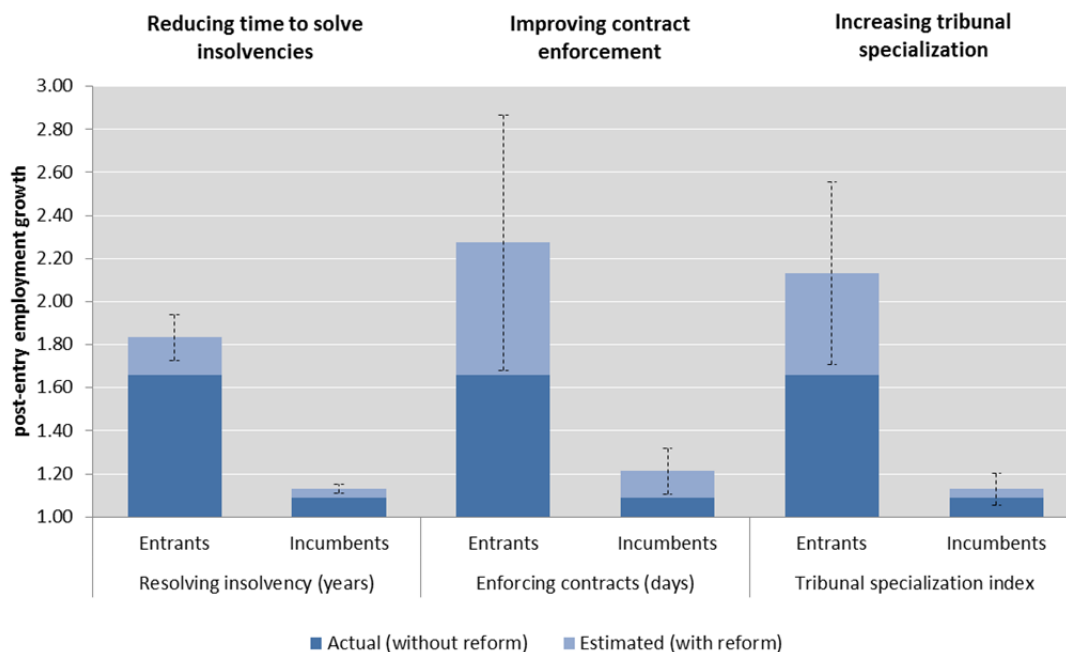
Note: The bars show the effect ceteris paribus of policy changes on the response variable if the econometric estimates reported in the paper are interpreted causally. Dashed lines show 95% confidence intervals. The response variable is post-entry growth and it is measured as the ratio of final over initial employment over a three-year period.

Source: Calvino, Criscuolo, and Menon (2016).

Notes

1. The distinction between subsistence and transformational entrepreneurship is discussed in Schoar (2010).

2. See for instance Decker et al. (2016).

3. In particular, it can be shown algebraically that the net job contribution by surviving entrants can be expressed as the product of the start-up ratio, the survival share, their average size and their average post-entry growth. For further details see Calvino, Criscuolo, and Menon (2015).

4. Ongoing OECD work is analysing the extent to which firm characteristics, in particular firm size and firm age, affect the microeconomic dynamics of employment growth volatility across countries.

5. At country-industry level, the data show a strong positive correlation between the dispersion in the employment growth distribution of start-ups – i.e., the gap between the top and the bottom performers – and the average growth rate of the same group of firms (Calvino, Criscuolo, and Menon, 2016).

Further reading

Calvino, F., C. Criscuolo and C. Menon (2015). "Cross-country evidence on start-up dynamics", *OECD Science, Technology and Industry Working Papers*, No. 2015/06, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jrxtkb9mxtb-en.

Calvino, F., C. Criscuolo and C. Menon (2016). "No Country for Young Firms?: Start-up Dynamics and National Policies", *OECD Science, Technology and Industry Policy Papers*, No. 29, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jm22p40c8mw-en.

Criscuolo, C., P. N. Gal and C. Menon (2015). "DynEmp: A Stata® Routine for Distributed Micro-data Analysis of Business Dynamics", *The Stata Journal,* 15(1), pp. 247-274.

Decker, R.A., J. Haltiwanger, R.S. Jarmin and J. Miranda (2016). "Where has all the skewness gone? The decline in high-growth (young) firms in the U.S.", *European Economic Review*, http://dx.doi.org/10.1016/j.euroecorev.2015.12.013 (accessed 23 February 2016).

Schoar, A. (2010). "The divide between subsistence and transformational entrepreneurship", in *Innovation Policy and the Economy*, Volume 10 (pp. 57-81), University of Chicago Press.

Directorate for Science, Technology and Innovation Policy Note

This series of Policy Notes is designed to make available, to a wider readership, selected studies that have been prepared for use within the OECD.

Comment on this Policy Note is invited, and may be sent to OECD, 2 rue André Pascal, 75775 Paris Cedex 16, France, or by e-mail to dynemp@oecd.org.

Please cite this note as:

OECD (2016), "No Country for Young Firms?", Policy Note, Directorate for Science, Technology and Innovation Policy Note, June 2016.

Stay informed by subscribing to our newsletter: **OECD News on Innovation, Science, Technology and Industry**: http://oe.cd/stinews

@OECDInnovation

http://oe.cd/dynemp

Contact us at: STI.contact@oecd.org