Entrepreneurship and the Business Cycle[1]

Michael Fritsch[2] and
Alexander S. Kritikos[3]

Introduction

There is an ongoing discussion about whether business cycles influence rates of entry into entrepreneurship (see *inter alia* Congregado, Golpe and Parker 2012; Koellinger and Thurik 2012; or Parker, Congregado and Golpe 2012). Are people more likely to become self-employed during boom periods or during recessions? What impacts entrepreneurial entries more: high or low unemployment rates? Does new business formation reflect a pro-cyclical effect or is it counter-cyclical?

While there are good reasons to expect that individual decisions for or against self-employment are shaped by business cycle fluctuations, competing effects may occur. For instance, nascent entrepreneurs may react positively to an upswing by setting up new ventures due to the friendly business climate, thus unfolding pro-cyclical effects. A second line of argument claims that transition rates into self-employment may rise when employment opportunities are rare, pointing to counter-cyclical effects. Since the prevailing effect on new business formation is indistinct from a theoretical point of view, an empirical analysis is required.

This contribution provides an overview of the different strands of existing research about the effect of business cycles on new business formation and reports results of empirical analyses for Germany. In particular, we focus on the relationship between the development of GDP, unemployment, interest rates, and transitions into self-employment over the business cycle. The following section presents our research questions in greater detail. Moreover, we argue why gross-entry should be preferred to net-entry in this kind of analysis. We then present the main results of our analyses for Germany. The final section summarizes these findings and outlines some important avenues for further research.

Why start-up activity should be related to the business cycle

Research shows a variety of motivations underlying why people start their own businesses. Several studies analyzing the factors that influence entrepreneurial transitions at the micro-level find that demographic, educational, economic, and personality characteristics affect the decision to start a business.[4] Other factors influencing start-up decisions could also include the macro-economic environment as manifested in the general business climate, unemployment levels, and the availability of job opportunities. From an economic perspective, it is important to understand the extent to which these macro-economic factors influence entry rates into entrepreneurship, and whether entry rates vary pro- or counter-cyclically.

There are basically three macro-economic forces that may influence entrepreneurial entry. Starting with the development of GDP, some research expects start-up rates to increase during growth periods because of a positive environment for investments, including growing demand and widespread optimism about the future. In line with this reasoning, fewer individuals may be willing to enter self-employment during recessions, when future development prospects appear uncertain and investments are perceived as relatively risky (Rampini 2004). In a similar vein, Barlevy (2007) argues that entrepreneurs may introduce radical innovation during growth periods, thereby eventually triggering acceleration effects that may lead to further entrepreneurial opportunities and, thus, to a significant increase in

[1] We are indebted to Simon Junker, Katharina Pijnenburg and Michael Wyrwich for support in the preparation and analysis of the data.
[2] Friedrich Schiller University Jena, German Institute for Economic Research (DIW Berlin) and Institute for Economic Research (IWH), Halle.
[3] German Institute for Economic Research (DIW Berlin), University of Potsdam, IZA-Bonn and IAB Nuremberg.

[4] For an overview of the different approaches see Fritsch and Storey (2014) and Parker (2009). Caliendo, Fossen and Kritikos (2014) analyze the role of personality characteristics on start-up behavior.

GDP. These claims should mean that economic growth has pro-cyclical effects on entrepreneurial activities. However, GDP development may also unfold opposite forces. For example, Francois and Lloyd-Ellis (2003) argue that innovative entrepreneurs may prefer to enter markets at times when labor and production costs are low, i.e. during recessions or in periods of high unemployment. Thus, with respect to GDP change, there may be multiple forces at work that – depending on what effect prevails – trigger either pro- or counter-cyclical effects.

The second macro-economic factor that may influence entrepreneurial entries is the level of unemployment that reflects the availability of opportunities in dependent employment. According to the standard model of occupational choice (Parker 2009), people may switch from employment or unemployment into self-employment if starting their own business appears to be more rewarding than the status-quo. Hence, if unemployment benefits are only on a low level and limited in duration, the occupational choice approach suggests that transitions into self-employment may occur more often during periods of high unemployment. Accordingly, the number of start-ups may be relatively low in periods of low unemployment when opportunities for dependent employment are plentiful. For these reasons the effect of the unemployment level on entrepreneurial entries should be counter-cyclical.

Román, Congregado and Millán (2013) further elaborate on this argument by combining the effects of unemployment levels with GDP development. They hypothesize that high unemployment may have different effects on the types of entry, showing that even new businesses set up by the unemployed tend to be more opportunity-driven during boom periods and more motivated by necessity in recessions. Furthermore, they argue that in the event that new businesses fail and have to exit the market, finding a job in dependent employment is easier if unemployment is low. Both arguments weaken the counter-cyclical effect of new business formation, again making the relationship between unemployment and entrepreneurial entry ambiguous.

A third factor that may unfold effects on new business formation is the development of interest rates. Low interest rates during recessions lower the cost of capital and may stimulate investment in new businesses, while high interest rates in boom periods may deter some potential founders from setting up their own firm, particularly if the venture requires substantial amounts of capital (see, for example, Parker 2009). However, banks might also be more reluctant to offer finance to new businesses during recessions because they consider start-ups as too risky.

Summarizing this brief review, we conclude that from a theoretical perspective, there are several macro-economic forces that may affect new business formation, but are pulling in different directions. It is unclear which of these effects prevail, i.e. whether entries into self-employment have a pro- or counter-cyclical effect on the economy.[5] Moreover, several authors argue that these two effects could be quite different for different types of entrepreneurs. If entry is dominated by opportunity entrepreneurship, the impact on economic development should be more positive than if new businesses are more dominated by necessity entrepreneurs. Although the motivation for running an own business may change over time, there is a widespread belief that firms set up out of necessity are smaller, with fewer employees, and have a less significant effect on growth than firms founded for opportunity reasons. However, there is no deterministic relationship between specific stages of the business cycle and the characteristics of entrepreneurial entries.

Previous empirical research

Our review of previous research on the effect of demand, unemployment, and interest rates on different types of entry has made clear that it is an empirical question of which effects predominate. The available evidence on this relationship, however, is rather scarce and inconclusive. As for the relationship between GDP growth and entrepreneurship, studies from the 1990s suggest a pro-cyclical influence, i.e. that periods of growth have a positive influence on the number of entrepreneurial entries and vice versa (see e.g. Grant 1996, for the US; Carrasco 1999, for Spain). Studies for more recent years find, however, no such cyclicality (see e.g. Pérotin 2006; Parker 2009).

The empirical findings for the relationship between unemployment and entrepreneurship are also mixed and vary with the period of analysis (see Parker 2009

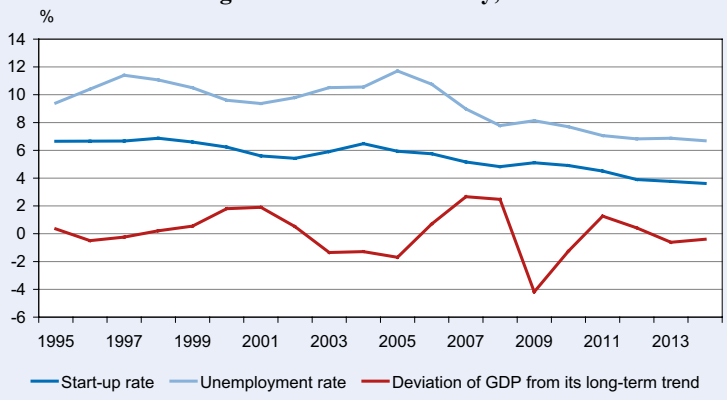
[5] Although there are a number of reasons to assume that the business cycle affects the level of new business formation, there may also be a causal relationship in the opposite direction, i.e. start-ups affect the business cycle. While demand or unemployment may affect the level of new business formation with a considerable time lag, one can expect new business formation to be a leading time series if start-ups influence the business cycle. Koellinger and Thurik (2012) find evidence for such an effect.

for an overview). Analyzing this relationship for OECD countries, Blanchflower (2000) only finds a positive link for two countries, Italy and Iceland, while the relationship between the levels of unemployment and entrepreneurship is negative for all other OECD countries.

A recent analysis of how macro variables affect entrepreneurship in Germany was conducted by Hundt and Sternberg (2014).[6] For the recent economic crisis of 2009 and afterwards, they find a positive relationship between the unemployment rate and the propensity to engage in the venturing of a new business. This relationship tends to be more pronounced for those founders who are primarily motivated by realizing a certain idea with their start-up (opportunity founders), as compared to those who are mainly driven by the necessity of earning money.

Figure 1

Start-up rates, unemployment rates and deviations of GDP from its long-term trend in Germany, 1995–2014



Sources: DIW; ZEW.

Reasons for time dependent findings may include changes in individual attitudes toward entrepreneurship, as well as access to better data, more controls, and more advanced methods of analysis (see Parker 2009). Summarizing the available empirical evidence still leaves us with the puzzle of which macro-economic effects prevail.

Another important reason for the inconclusiveness of the empirical findings could be that most studies of the relationship between entrepreneurship and the business cycle use changes in the stock of entrepreneurs as dependent variable (net-entry), and not transitions into self-employment (gross-entry). Analyzing changes in the stock of self-employment may not be appropriate for such an analysis because the number of entries and exits are quite often of similar size, such that net-entry largely conceals changes of the gross-flows. Moreover, since the number of gross-entries shows greater variation over time than the respective net-changes in the stock of existing businesses, this variable should be much better suited for identifying the effect of the business cycle on entrepreneurship than net-entry.[7] For these reasons our empirical analysis for Germany uses gross-entry, i.e. the number of start-ups, as the indicator for entrepreneurship.

New empirical evidence for Germany

Figure 1 shows the yearly start-up rates[8] in Germany from 1995 – 2014 based on figures provided by the Centre for European Economic Research (ZEW, Mannheim). According to these figures, the level of new business formation in Germany follows a declining trend that shows some correspondence with the development of the unemployment rate. The level of new business formation declined particularly sharply in boom periods when real GDP was above its long-term trend (e.g. between the years 2000 and 2002, as well as between 2007 and 2008). It increased in years where GDP was below the trend (e.g. between 2003 and 2005, or in the year 2009).

Based on different data sources that provide information about start-up activities in Germany, Fritsch, Kritikos and Pijnenburg (2015, 2016) analyze the effect of macro-economic fluctuations on entrepreneurship in Germany.

[6] Hundt and Sternberg (2014) use the Total Early-Stage Entrepreneurial Activity (TEA) rate of the Global Entrepreneurship Monitor (GEM) as indicator for entrepreneurship.

[7] Moreover, it is not unlikely that the macro-economic factors influencing exits out of self-employment are quite different from the determinants of entry. Hence, analyzing net-entry may confound these two groups of determinants such that the factors driving entry and exit cannot be clearly distinguished from one another.

[8] Number of new businesses per 10,000 working population.

While Fritsch, Kritikos and Pijnenburg (2015) use data from the Business Registration Statistics (Gewerbemeldestatistik), as well as from the Micro-Census, the analysis of Fritsch, Kritikos and Pijnenburg (2016) is based on the data on new firms collected by the Centre for European Economic Research (ZEW, Mannheim). Although all three sources use different units of analysis[9] and report different numbers of start-ups, they all show that macro-economic variables have rather similar effects on start-up rates. The pattern found for quarterly data of new business formation is not significantly different from the results for yearly data.[10] The analyses are at the level of the German Länder and for NUTS2 regions, respectively. Control variables include regional innovation activity, the qualification level of the regional workforce and the share of small business employment.

Using a fixed-effects approach with different lags between the macro variables and the entry into self-employment (as well as a panel-VAR model with regional fixed-effects), they show that the counter-cyclical effects prevail when it comes to entries into self-employment in Germany. More specifically, their analyses provide evidence for the following results:

Firstly, there is a positive relationship between entry into self-employment and the unemployment level of the previous year (t-1), but not with the rate of the penultimate year (t-2). This indicates that unemployment has a counter-cyclical influence on entrepreneurial entries. According to the results, a ten percent increase in the unemployment rate leads to an almost seven percent increase in the number of entries per economically active population in the following period.

Secondly, regressing entries into self-employment separately on positive and negative deviations of the unemployment rate from its trend, it is observed that below-average unemployment leads to significantly fewer entries into self-employment, while above-average unemployment does not induce *significantly* more start-ups, indicating an asymmetric relationship. This asymmetry points to a "low unemployment retain effect".

Thirdly, the deviation of real GDP from its long-term trend (i.e. the cyclical component of real GDP) has a counter-cyclical influence on new business formation, meaning that above-average economic conditions lead to lower levels of new business formation and vice versa. According to the estimates, a one percent deviation of GDP above the trend reduces the number of start-ups per economically active population member by 3.5 percent.

Fourthly, there is also a significantly negative relationship between the interest rate and entry into self-employment, but only when using quarterly data. This indicates that higher interest rates lead to lower levels of new business creation and vice versa.

Summary and conclusions

There are a number of possible reasons for the effect of the business cycle on new business formation. The empirical evidence, however, is rather scarce and inconclusive. One particular shortcoming of a large part of the available analyses is that they are limited to changes in self-employment (i.e. net-entry) that tend to remain rather constant over time. By contrast, we focus on changes in the level of new business formation, i.e. gross-entry.

Summarizing the evidence for Germany, it can be stated that

(1) The effects of deviations in the unemployment rate and in GDP from their long-term trend on the level of new business formation tend to be counter-cyclical.

(2) This counter-cyclical relationship is mainly due to significantly lower levels of entry into self-employment during times when unemployment is below its long-term trend. Unemployment above the trend does not induce significantly higher levels of new business formation, pointing to a certain asymmetry.

This finding of rather counter-cyclical effects makes clear that poor economic conditions seem to encourage transitions into entrepreneurship. At the same time, these results reveal that there is no evidence of a stimulating effect of boom periods on self-employment. If such an effect should exist, it is offset by the fact that low unemployment tends to impair the formation of new businesses. Thus, our analysis provides evidence that entrepreneurs are not only important for an economy because they may introduce new products, create

[9] While the ZEW data refer to new firms, the Business Registrations may also include new branch plants. The reporting unit of the Micro-Census is individual transitions from another employment status into self-employment.

[10] Most of the analyses are performed for yearly data because of better data availability. A further reason is that the exact definition of the day or month of the start-up is rather arbitrary.

new jobs and spur competition by contesting established market positions, but also because they could play a role as stabilizers throughout the business cycle.

Future research into the effect of the macro-economic environment on new business formation should try to account for the characteristics of the start-ups. It would be particularly interesting to assess the extent to which firms that are created during recessions are different from those set up during boom periods. Are innovative entries more likely to appear during boom periods or in recessions? Do firms started in times of macro-economic prosperity create more jobs in subsequent years than entries during periods of low growth and high unemployment? This kind of analysis, however, requires more detailed panel data than is currently available.

Since entrepreneurship may have a pronounced positive effect on growth (see Fritsch 2013; Kritikos 2014), it is plausible to assume that it is not only the business cycle that affects new business formation, but also that an upturn in start-up activities may feed-back into the macro-economic level by stimulating economic development (see Koellinger and Thurik 2012). Hence, future empirical analyses should try to account for both directions of this relationship.[11] In this respect, it would be desirable to know more about the performance of those new businesses that are set up during recessions and in boom periods. In order to provide a more complete picture of the relationship between macro-economic factors and business dynamics, more should also be known about the effect of the business cycle on business exits.

References

Barlevy, G. (2007), "On the Cyclicality of Research and Development", *American Economic Review* 97 (4), 1131–64.

Blanchflower, D. (2000), "Self-Employment in OECD Countries", *Labour Economics* 7(5), 471–505.

Caliendo, M., F. M. Fossen and A. S. Kritikos (2014), "Personality Characteristics and the Decisions to Become and Stay Self-Employed", *Small Business Economics* 42 (4), 787–814.

Carrasco, R. (1999), "Transitions to and from Self-Employment in Spain: An Empirical Analysis", *Oxford Bulletin of Economics and Statistics* 61 (3), 315–41.

Congregado, E., A. A. Golpe and S. C. Parker (2012), "The Dynamics of Entrepreneurship: Hysteresis, Business Cycles and Government Policy", *Empirical Economics* 43 (3), 1239–61.

Faria, J. R., J. C. Cuestas and E. Mourelle (2010), "Entrepreneurship and Unemployment: A Nonlinear Bidirectional Causality?", *Economic Modelling* 27 (5), 1282–91.

Francois, P. and H. Lloyd-Ellis (2003), "Animal Spirits Through Creative Destruction", *American Economic Review* 93 (3), 530–50.

Fritsch, M. (2013), "New Business Formation and Regional Development – A Survey and Assessment of the Evidence", *Foundations and Trends in Entrepreneurship* 9 (3), 249–364.

Fritsch, M. and D. Storey (2014), "Entrepreneurship in a Regional Context – Historical Roots and Recent Developments", *Regional Studies* 48 (6), 939–54.

Fritsch, M., A. S. Kritikos and K. Pijnenbug (2015), "Business Cycles, Unemployment and Entrepreneurial Entry – Evidence from Germany", *International Entrepreneurship and Management Journal* 11 (2), 267–86.

Fritsch, M., A. S. Kritikos and K. Pijnenbug (2016), "The Effect of the Business Cycle on Start-ups across Industries and Regions – An Empirical Analysis for Germany", *DIW Berlin and Friedrich Schiller University Jena*, mimeo.

Grant, D. (1996), "The Political Economy of New Business Formation across the American States, 1970–1985", *Social Science Quarterly* 77 (1), 28–42.

Hundt, C. and R. Sternberg (2014), "How Did the Economic Crisis Influence New Firm Creation? A Multi-Level Approach Based upon Data from German Regions, *Jahrbücher für Nationalökonomie und Statistik* 234 (6), 722–56.

Koellinger, P. and A. R. Thurik (2012), "Entrepreneurship and the Business Cycle", *Review of Economics and Statistics* 94 (4), 1143–56.

Kritikos, A. S. (2014), "Entrepreneurs and their Impact on Jobs and Economic Growth", *IZA World of Labor* 8, 1–10.

Parker, S. C. (2009), *The Economics of Entrepreneurship*, Cambridge University Press, Cambridge.

Parker, S. C., E. Congregado and A. A. Golpe (2012), "Testing for Hysteresis in Entrepreneurship in 23 OECD Countries", *Applied Economics Letter* 19 (1), 61–6.

Pérotin, V. (2006), "Entry, Exit and the Business Cycle: Are Cooperatives Different?", *Journal of Comparative Economics* 34 (2), 295–316.

Rampini, A. (2004), "Entrepreneurial Activity, Risk, and the Business Cycle", *Journal of Monetary Economics* 51 (3), 555–73.

Román, C., E. Congregado and J. M. Millán (2013), "Start-up Incentives: Entrepreneurship Policy or Active Labour Market Programme?", *Journal of Business Venturing* 28 (1), 151–75.

[11] Such an analysis of the relationship between entrepreneurship and unemployment for various OECD countries is conducted by Faria, Cuestas and Mourelle (2010).