

**The Two Components of Business Creation:
Opportunity versus Necessity Entrepreneurship**

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Abstract

A common and seemingly paradoxical finding in the entrepreneurship literature is that business creation increases in recessions. We investigate this countercyclical pattern by separating business creation into two components: “opportunity” and “necessity” entrepreneurship. Although there is general agreement in the previous literature on the conceptual distinction between these two factors driving entrepreneurship, there are many challenges to creating a definition that is both objective and empirically feasible. The goal of this paper is to create an operational definition of opportunity versus necessity entrepreneurship using readily available nationally representative data. We create a distinction between the two types of entrepreneurship based on the entrepreneur’s prior work status that is consistent with the standard theoretical model of entrepreneurship. We document that “opportunity” entrepreneurship is pro-cyclical and “necessity” entrepreneurship is countercyclical. We also find that “opportunity” vs. “necessity” entrepreneurship is associated with the creation of incorporated and employer businesses. The operational distinction proposed here may be useful for future research in entrepreneurship.

1. Introduction

Although the U.S. unemployment rate rose to over 10 percent in the "Great Recession" and the economic contraction was generally considered the worst since the Great Depression, business creation actually increased steadily during the recession (Fairlie 2013). Business creation was also lower throughout the preceding period of unusually strong economic growth, commonly referred to as the "Roaring 90s." Similar patterns were found for the United Kingdom (Bell and Blanchflower 2011), and previous research on the general relationship between unemployment and entrepreneurship provides mixed results with many studies showing positive relationships, negative relationships, and zero relationships (Parker 2009). The apparent counter-cyclical nature of business creation, or at least the lack of unambiguous pro-cyclical nature, is one of the most important puzzles in the entrepreneurship literature.

One possible reason for these seemingly counterintuitive findings on the relationship between entrepreneurship and economic conditions is that there are two underlying components to business creation: one that is pro-cyclical and one that is countercyclical. Indeed, one topic of research in entrepreneurship that has drawn a substantial amount of attention in recent years is identifying different motivations for starting a business. Two distinct motivations, "opportunity" entrepreneurship and "necessity" entrepreneurship, have been repeatedly discussed and contrasted with each other in the literature.¹ The basic distinction is that some entrepreneurs create businesses when they see a business opportunity whereas other entrepreneurs are forced into starting a business out of necessity because of the lack of other options in the labor market. Earlier studies have used the related terms "pull" vs "push" entrepreneurship or "disadvantaged" entrepreneurship to express roughly similar ideas. The interest in identifying motivations for starting businesses is

¹ See for example, Reynolds et al. (2005), Block and Koellinger (2009), Block and Wagner (2010), and Fossen and Buettner (2013).

driven by their importance for increasing innovation, job creation and economic growth through entrepreneurship.

At some level it is impossible to create a clean dichotomy along the lines of opportunity and necessity entrepreneurship. Entrepreneurship or business ownership is more broadly determined by both supply and demand factors. An outward shift in demand for the goods and services typically produced by entrepreneurs or an outward shift in the availability of capital could lead to more opportunity entrepreneurship, whereas an inward shift in demand for wage and salary jobs could lead to more necessity entrepreneurship. Economic fluctuations, however, are likely to affect all of these factors and not just one in isolation, thus making it difficult to cleanly dichotomize the underlying motivations for starting a business.

Although many studies distinguish between the two types of entrepreneurship conceptually, there are many challenges to creating an operational definition. An early attempt at creating a working definition of opportunity vs. necessity entrepreneurship was provided by the Global Entrepreneurship Monitor (GEM). GEM uses responses to a specially designed question: "Are you involved in this start-up to take advantage of a business opportunity or because you have no better choices for work?" But, this definition is subjective, not generally available in other datasets, and may depend on the success of the business launch instead of pre-launch motivations.

The goal of this paper is to create a working definition of opportunity versus necessity entrepreneurship that is both objectively defined and empirically possible in many datasets. The goal is to match the theoretical concepts as closely as possible, but also provide a method that is easily implemented with existing, nationally representative data sources. To classify entrepreneurs into opportunity versus necessity entrepreneurship, we propose using initial unemployment status. Individuals who are initially unemployed before starting businesses are defined as being

“necessity” entrepreneurs, and individuals who are wage/salary workers, enrolled in school or college, or are not actively seeking a job are defined as being “opportunity” entrepreneurs. This type of information is readily available in two types of datasets. First, panel datasets will typically have month-to-month or year-to-year information on unemployment, wage/salary work and business ownership. Second, some cross-sectional datasets provide information on the labor force state just prior to the current labor force state.

In this paper, we demonstrate how these definitions of opportunity and necessity entrepreneurship are motivated by the classic economic theoretical model of entrepreneurship. Using microdata from several nationally-representative and widely used sources we also show that opportunity entrepreneurship generally moves pro-cyclically and necessity entrepreneurship clearly moves counter-cyclically. Opportunity vs. necessity entrepreneurship is also positively associated with the creation of incorporated and employer businesses.

2. Theoretical Considerations

In this section, we briefly discuss the theoretical concepts behind the two components of business creation. Theoretical models of the choice to become self-employed are generally based on a comparison of potential income from business ownership and wage and salary work. In the classic economic model by Evans and Jovanovic (1989) individuals can obtain the following income, Y^W , from the wage and salary sector:

$$(2.1) Y^W = w + rA,$$

where w is the wage earned (earnings) in the market, r is the interest rate, and A represents the consumer’s assets. Income in the self-employment sector, Y^{SE} , is defined as:

$$(2.2) Y^{SE} = \theta f(k)\varepsilon + r(A-k),$$

where θ is entrepreneurial ability, $f(\cdot)$ is a production function whose only input is capital, ε is a random component to the production process, and k is the amount of capital employed in the business. Individuals choose to become self-employed if the potential earnings from self-employment and investing remaining personal wealth after using it for startup capital is higher than the potential income from wage and salary work and investing personal wealth.

Two clarifications are needed in the model to facilitate the discussion of opportunity vs. necessity entrepreneurship. First, in (2.1) it is important to note that w is *total earnings* of which employment is a major component. Second, $\theta f(k)\varepsilon$ in (2.2) captures production measured in sales and not in the quantity produced. Thus, for example, ε might capture a random demand shock instead of or in addition to a random shock to production. Note that in both cases, all components of income are measured in dollars.

This simple theoretical model is useful for identifying the two components of business creation. Necessity entrepreneurship is generally thought of as business creation in the face of limited alternative opportunities. In this model, this would imply that Y^W is low or suffered an adverse shock. Given that there is downward wage rigidity in the labor market, the primary cause of low earnings in the wage and salary sector will more commonly be through unemployment and not a reduction in wages.

Opportunity entrepreneurship is generally thought of as business creation when there is an entrepreneurial opportunity. In this case Y^{SE} is high or experienced a positive shock. In examining (2.2) there are several possible factors resulting in opportunity entrepreneurship. First, there could be a positive random shock to production (measured in sales). Consumer and firm demand for products and services provided by startups might increase resulting in higher ε . Another possibility, is that an entrepreneur might discover a better production method resulting in a larger

$f(k)$ for any value of k . Third, entrepreneurial ability may be high or change. Some individuals might take advantage of higher or increased entrepreneurial ability. Finally, capital may become more available or cheaper resulting in expanded opportunities for business creation. All of these cases are forms of opportunity entrepreneurship.

It is important to note, however, that this discussion holds everything constant, which is difficult to find in the real world. It is rare that one factor affecting either necessity or opportunity entrepreneurship will change in isolation. For example, factors that lead to high levels of unemployment also often lead to limited entrepreneurial opportunities. One of the main effects of recessions is that they reduce consumer and firm demand for products and services provided by startups, thus decreasing potential entrepreneurial earnings, Y^{SE} .² Recessions may also reduce total wealth, A , which in turn would lower the likelihood of entrepreneurship. In the presence of liquidity constraints, lower levels of wealth may make it more difficult for entrepreneurs to find the required startup capital to launch new ventures. Personal wealth may have declined substantially through declining home values and home ownership rates. Recessions also make it more difficult to acquire financing from banks, other financial institutions, angel investors, and venture capitalists.

On the other hand, the costs of production are lower in a recession, especially rent and labor, increasing Y^{SE} . The opportunity cost of capital, r , is likely to be lower in recessions also placing upward pressure on entrepreneurship. Perhaps the largest factor having a positive effect on the entrepreneurial decision is that compensation in the wage/salary sector decreases in economic contractions. The larger number of displaced and unemployed workers in an economic downturn increases necessity entrepreneurship. The positive effect of lower wages on

² Schweitzer and Shane (2016) focus on the effects of demand as measured by industry-level output growth on transitions into and out of self-employment.

entrepreneurship may be tempered somewhat in recessions, however, because some workers may be reluctant to leave their jobs in a recession because of concerns about finding another one if the business fails.

The net effect of these opposing forces on total business creation is ambiguous. This potentially explains why the previous studies find negative, positive and null relationship between entrepreneurship and the business cycle (Parker 2009; Fairlie 2013). The net effects on opportunity and necessity entrepreneurship are less ambiguous. We expect to find that the number of new opportunity entrepreneurs relative to new necessity entrepreneurs is higher in economic growth periods and lower in recessions.

3. Operationalizing the Distinction between Necessity and Opportunity Entrepreneurship

To distinguish between opportunity versus necessity entrepreneurs, we use initial unemployment status. Individuals who are initially registered as unemployed before starting businesses are defined as being necessity entrepreneurs, because someone who registers as unemployed is, by definition, looking for employment. In contrast, individuals who are wage/salary workers, enrolled in school or college, or are not actively seeking a job before starting businesses are defined as being opportunity entrepreneurs. If business creation occurs out of these three prior labor market states then we view it as an "opportunity."

This operationalization has several advantages. First, the classification criterion is objective and unambiguous. Every entrepreneur can be classified if the employment status before starting the business is known. Second, the data requirements are relatively light, so the approach can be applied to a broad set of available databases. In contrast, an approach that requires asking for specific motives to become an entrepreneur, for example, rules out the use of many available

databases and in many cases requires the costly implementation of new and specific surveys, which often implies making compromises on sample size and representativeness.

Panel data with at least two time-series observations almost automatically fulfills the requirements for our classification approach, but some limitations should be considered. A new entrant into entrepreneurship, who is an entrepreneur in period t , but not in period $t-1$, is labeled a necessity entrepreneur in t and the subsequent periods while remaining an entrepreneur if he or she was unemployed in $t-1$, and an opportunity entrepreneur otherwise. This works for all entrepreneurs except for those who are already entrepreneurs in the first period of observation in the panel. Some panel surveys such as the German Socio-economic Panel (SOEP) elicit the retrospective employment history in the first interview with a new respondent, which allows recovering the employment status before starting the current business and classification even in these cases. Asking the retrospective information may come at the cost of recall bias, however.

The classification approach using the employment status in two subsequent waves of panel data will be sufficiently adequate for most analyses if the period between two interviews is not too long (say, one year). The longer the period between two interviews, the higher the danger of multiple employment transitions between them, which are not captured using this method. For example, somebody may be a paid employee at the time of the interview in $t-1$, then become unemployed, and then become an entrepreneur before the interview in t . In this case, the information on temporary unemployment would be missed, and the entrepreneur would be classified as an opportunity entrepreneur, although classification as a necessity entrepreneur might be regarded as more adequate. Some panel surveys elicit calendar style information for the time between two interviews. For example, in each of the annual interviews, the respondents may be asked for their employment states in each month between the last and the current interviews. This

would prevent missing any intermediate employment spells. Other panel surveys include questions such as “Have you ever been unemployed within the previous year” or “How many months did you receive unemployment benefits in the previous year”, this would also be fully sufficient for our classification purpose.

Not only panel data, but also many cross-sectional databases enable our classification approach if they include a retrospective question. Some cross-sectional surveys not only ask for the current employment status, but also the previous one before the current employment spell. For example, a survey of business owners typically asks whether the respondent was unemployed just prior to starting the business, which is sufficient for our classification. Again, recall bias is an important limitation, especially if the business was started many years ago. A second limitation is that only surviving businesses at the time of the interview are included in the analysis. This potentially implies survival bias, a common limitation to cross-sectional analyses. Other cross-sectional questionnaires such as the German Micro Census ask for the current employment status as well as the employment status 12 months (or some other fixed period) ago. This allows classification of all new entrants into entrepreneurship into necessity and opportunity entrepreneurs, while those who were already entrepreneurs 12 months ago cannot be classified. This is sufficient for analyses that focus on entry into entrepreneurship. For many research questions, the dynamics of entrepreneurship are of more interest than the stock of entrepreneurs, especially if the intention is causal inference. However, if the retrospective question refers to a longer time ago, the same limitations occur as discussed before, namely recall bias and the danger of missing intermediate, multiple transitions between employment states.

Not only survey data, but also administrative data often include information allowing our classification approach, as long as minimal information on the employment history is included or can be reconstructed.

Datasets

To illustrate patterns in opportunity and necessity entrepreneurship using these definitions, we use data from three nationally-representative and widely used sources of data – the matched U.S. Current Population Survey (CPS), the German Micro Census, and the German Socio-Economic Panel (SOEP). With more than 1 million observations per year, the matched CPS is one of the largest household survey panel datasets in the world. The CPS is used to estimate the widely reported and analyzed national unemployment rate in the monthly "Jobs Report" produced by the U.S. Bureau of Labor Statistics. The German Micro Census is an official annual cross-sectional household survey provided by the German Federal Statistical Office. It consists of a 1% sample of the population in Germany, i.e. about 370,000 households per year. Most questions are subject to compulsory response, which ensures a low rate of non-response and that entrepreneurs are adequately represented. For additional analyses, we also use the SOEP, an annual household panel survey, which is provided by the German Institute for Economic Research, and which is similar to the U.S. Panel Study of Income Dynamics (PSID). It offers a very rich set of socio-demographic variables, but with about 22,000 individuals in 12,000 households, it covers a smaller sample size in comparison to the Micro Census. To add regional data such as the local unemployment rate, we merge local characteristics of Germany's 96 Spatial Planning Regions to our panel data.³

³ We obtain the regional data from the INKAR database provided by Germany's Federal Institute for Research on Building, Urban Affairs and Spatial Development (<http://www.inkar.de/>). Spatial Planning Regions in Germany are used for statistical reporting and do not have administrative functions on their own.

Definition of Entrepreneurship in the CPS

Using the matched CPS data over time, we create a measure of business formation that captures all new business owners including those who own incorporated or unincorporated businesses, and those who are employers or non-employers. To estimate the business formation rate in the matched CPS data, we first identify all individuals who do not own a business as their main job in the initial survey month in the two-month pair. By matching CPS files, we then identify whether they own a business as their main job with 15 or more usual hours worked in the subsequent survey month. The entrepreneurship rate is thus defined as the percentage of the population of non-business owners that start a business each month. To identify whether they are business owners in each month we use information on their main job defined as the one with the most hours worked. Thus, individuals who start side businesses will not be counted if they are working more hours on a wage and salary job. The 15 or more hours per week (or roughly 2 or more days per week) criterion is chosen to guarantee a reasonable work commitment to the new business.

Definition of Entrepreneurship in the German Micro Census and SOEP

In the German Micro Census and SOEP, we define entrepreneurship analogously to our definition using the CPS, i.e., we define those as entrepreneurs who report that self-employment is their main job and working 15 or more hours a week. Again this includes employers and non-employers. In both German data bases, we can identify business formation. Although the German Micro Census is cross-sectional, it not only asks for the current employment state, but also includes a retrospective question on a respondent's employment state in the year prior to the interview. This

allows us to identify new necessity entrepreneurs, who were unemployed in $t-1$ and entrepreneurs in t , and new opportunity entrepreneurs, who were in another labor market state in $t-1$ and entrepreneurs in t . The main advantage of the Micro Census is its large sample size and representativeness, which makes it possible to analyze time trends with high precision.

The main advantages of the SOEP are the availability of a rich set of socio-demographic variables and its panel structure (see Wagner et al. 2007). When using the SOEP, we exploit the panel structure and identify new necessity (opportunity) entrepreneurs as those who are observed in unemployment (all other labor market states, respectively) in year $t-1$ and entrepreneurs in year t .

Previous Definitions

To be sure, the idea of distinguishing between business creation out of unemployment and other labor force states is not new. Evans and Leighton (1989) were one of the first studies to document the high rate of self-employment coming out of unemployment. Farber (1999) also showed high rates of self-employment among displaced workers. More recently other studies have shown that the distinctions are important for understanding the importance of liquidity constraints and risk attitude for entrepreneurship and measuring the returns to education among entrepreneurs (Fairlie and Krashinsky 2012; Caliendo et al. 2009; Fossen and Buettner 2013).

As noted above, an early attempt at creating a working definition of opportunity vs. necessity entrepreneurship was provided by the Global Entrepreneurship Monitor (GEM). GEM uses responses to a specially designed question: "Are you involved in this start-up to take advantage of a business opportunity or because you have no better choices for work." But, this definition suffers from several major problems. First, the question is subjective. How one person

interprets this question could be very different than how another person interprets the question. Another problem is that the same person could differ in how they interpret the question over time (i.e. as they get older or at different parts of the business cycle). A third major problem is that this information is available only in a handful of existing datasets. Fourth, entrepreneurs may base their responses to this question on how successful their business launch is going and not on pre-launch goals.

A related approach is to ask entrepreneurs for various motivational factors for their decision to become an entrepreneur. For example, the 2010 wave of the German Socio-economic Panel (SOEP) asks those who newly became self-employed in the survey year how much they agree with eight statements, including “I have always wanted to be my own boss”, “I had an idea that I really wanted to implement”, “I did not want to be unemployed anymore”, and “I did not find employment (anymore)”. Using similar questions in another survey, Caliendo and Kritikos (2010) find that many formerly unemployed entrepreneurs simultaneously indicate pull as well as push motives, making it difficult to categorize them into necessity or opportunity entrepreneurs. The approach of asking for a number of motives poses similar concerns over subjectivity, potential inconsistency across individuals and time, and potential reverse causality that we discussed above.

4. Business Cycle Patterns

In this section, we use our definitions of entrepreneurship, opportunity entrepreneurship and necessity entrepreneurship to document trends over the business cycle. Figure 1 displays the total number of new entrepreneurs vs the national unemployment rate from 1996 to 2015 using the CPS.⁴ The number of new entrepreneurs captures the adult, non-business owner population that

⁴ The unemployment rate is from the U.S. Bureau of Labor Statistics (BLS).

starts a business each *month*. We focus on the period starting in 1996 because it captures the start of the strong economic growth period of the 1990s reasonably well and because of data limitations in matching the CPS in immediately preceding years. The period from the beginning of 1996 to 2015 captures two downturns and three growth periods. The NBER officially dates the peak of the strong economic growth period of the late 1990s as March 2001 and the subsequent contraction period as ending in November 2001. The next peak of the business cycle was December 2007 and the official end of the "Great Recession" was June 2009, although unemployment remained very high over the next few years.

The number of new entrepreneurs shows a somewhat countercyclical pattern generally moving with the unemployment rate. Both entrepreneurship and unemployment were high in 1996 then declined steadily in the strong economic growth period of the late 1990s. Both measures increased in the early 2000s corresponding with the recession. In the mid-2000s both measures declined at first but only the unemployment rate continued to decline until the start of the current recession in 2007. The unemployment rate rose very rapidly over the next two years during the Great Recession. In the few years immediately following the Great Recession the number of new entrepreneurs and unemployment rate fell, but as the unemployment rate continued to fall the number of new entrepreneurs changed course and has been increasing since 2013.

Figure 2 displays the number of new entrepreneurs and real GDP growth rates. Entrepreneurship displays a relatively weak counter-cyclical pattern when using real GDP growth rates to track economic conditions. One problem is that real GDP growth rates bounce around making it difficult to see a more continuous measure of business cycle conditions. But, these results generally paint the same picture as those displayed in Figure 1 for the unemployment rate.

The examination of trends from the CPS indicates that entrepreneurship does not follow a strong cyclical trend which may be due to the opposing forces of opportunity and necessity entrepreneurship. To investigate this question we separately examine trends in opportunity and necessity entrepreneurship. Figures 3 and 4 display the number of new opportunity and necessity entrepreneurs over the business cycle, respectively. The number of new opportunity entrepreneurs shows somewhat of a cyclical pattern. The number of opportunity entrepreneurs rose in the late 1990s, in the mid-2000s, and in the past few years. It declined during the early 2000s and around the Great Recession. The number of new necessity entrepreneurs shows a strong counter-cyclical trend moving strongly with the unemployment rate, as expected.

To combine and simplify these patterns, Figure 5 displays the opportunity share of new entrepreneurs (defined as the number of new opportunity entrepreneurs as a share of the total number of new entrepreneurs). Over the past two decades, the share of new business creation from opportunity entrepreneurship increased when economic conditions were improving and decreased when economic conditions were worsening. The largest share of opportunity entrepreneurship occurred at the height of the "Roaring 90s," and the smallest share was in 2009 at the end of the Great Recession. The share of opportunity business creation also decreased in the recession of the early 2000s and increased in the following growth period in the mid-2000s. The opportunity share of new entrepreneurs is clearly pro-cyclical.

Figures 1-4 display the number of new entrepreneurs over the business cycle. The patterns do not change when we implicitly adjust for population size by focusing on entrepreneurship rates (which capture the percentage of the adult, non-business owner population that starts a business each *month*). Figure 6 displays the entrepreneurship rate over the business cycle. As expected the patterns do not differ substantially from patterns for the number of new entrepreneurs. Appendix

Figures 1 and 2 display trends for similar rate measures for opportunity and necessity entrepreneurship. These also follow similar time series patterns. Opportunity entrepreneurship follows a pro-cyclical pattern and necessity entrepreneurship follows a counter-cyclical pattern.

Explaining Change in the Number of New Entrepreneurs

From 2006 before the Great Recession to 2010 when the Great Recession ended the number of new entrepreneurs increased by 85,370 per month. Most of the increase in business creation from the start to end of the Great Recession came from necessity entrepreneurship. The number of new necessity entrepreneurs increased by 53,886 (63 percent). In contrast, the recent increase in the total number of new entrepreneurs of 103,990 from 2013 to 2015 was entirely driven by the increase in the number of opportunity entrepreneurs. Separating out opportunity and necessity entrepreneurship is clearly important for understanding the patterns of business creation over the business cycle.

Trends in Germany

Next we look at trends in Germany using the German Micro Census. Due to the annual nature of the data, we report new entrepreneurs *per year* for Germany.⁵ Figure 7 plots the total number of new entrepreneurs and the unemployment rate, which is obtained from Germany's Federal Employment Agency (2015). Similar to the United States, the number of new entrepreneurs exhibits a weak countercyclical pattern moving mostly with the unemployment rate. Figure 8 shows the relationship between entrepreneurship and the real GDP growth rate, which is provided by German Federal Statistical Office (2015). No clear pattern emerges due to the erratic

⁵ In this preliminary working paper, our sample for Germany from the Micro Census does not include persons who are not in the labor force, unlike our sample for the U.S. from the CPS.

nature of GDP growth. In Figure 9, we look at new opportunity entrepreneurs separately. Like the total number of new entrepreneurs, the number of new opportunity entrepreneurs moves somewhat with the unemployment rate. A very clear relationship becomes apparent between the number of new necessity entrepreneurs and the unemployment rate (Figure 10). As expected, and as seen in the United States, the two trends move together, indicating that necessity entrepreneurship is counter-cyclical. The opportunity share of new entrepreneurs is strongly cyclical (Figure 11), which confirms the result from the United States. In 2003-2005, when unemployment is at its peak, the share of opportunity entrepreneurs out of all new entrepreneurs falls from 90% to below 80% and rises back to 90% again thereafter. Finally, when we plot new entrepreneurship rates instead of numbers, very similar patterns emerge (Figure 12 and Appendix Figures 3 and 4), which confirms our earlier observation from the U.S. data.

Regression Results

We next examine the relationship between entrepreneurship and the business cycle in a regression framework. The regressions allow us to control for trends in demographic factors that might be correlated with business cycle dynamics. The coefficients on some demographic characteristics, such as race and gender, are also of interest. We first examine entrepreneurship in the United States using the CPS from 1996-2015.

Table 1 reports estimates from linear probability regressions for the probability of total entrepreneurship, opportunity entrepreneurship, and necessity entrepreneurship. The sample for all three models includes the adult, non-business owner population in the initial survey month of the two-month panel. Total entrepreneurship captures the probability of starting a business in the second survey month. Specifications 1 and 2 report estimates for the regression of the total

entrepreneurship on the national unemployment rate with and without controls, respectively. The entrepreneurship probability has a positive association with the national unemployment rate indicating a countercyclical pattern.

Controlling for demographic factors does not change the estimate of the association between entrepreneurship and the unemployment rate. The coefficients on the demographic controls are also of interest on their own. Entrepreneurship is lower for women, African-Americans, Latinos, and Asians, but higher for immigrants.

Specifications 3 and 4 report estimates for regressions for the probability of opportunity entrepreneurship, and Specifications 5 and 6 report estimates for regressions for the probability of necessity entrepreneurship. The probability of opportunity entrepreneurship is not strongly associated with the national unemployment rate. The point estimate is negative, as expected, but it is not statistically significant. The necessity entrepreneurship probability, however, is positively associated with the national unemployment rate. Opportunity entrepreneurship is found to be higher among immigrants, but lower among women, African-Americans, Latinos, Native-Americans, and Asians. Interestingly, necessity entrepreneurship is also higher among immigrants. Necessity entrepreneurship is lower for women and most minority groups.

Local Labor Market Conditions

To focus on the relationship with local labor market conditions, we also estimate regression models that replace the national unemployment rate with the MSA unemployment rate. Table 2 reports estimates from linear probability regressions for the probability of total entrepreneurship, opportunity entrepreneurship, and necessity entrepreneurship including the local unemployment rate. Total entrepreneurship has a positive association with local unemployment rates. Necessity

entrepreneurship, as expected also has a positive association with local unemployment rates. On the other hand, we do not find evidence of a negative association with opportunity entrepreneurship. These results generally confirm the findings using the national unemployment rate as the measure of business cycle conditions.

Regressions for Germany

Table 3 shows analogous linear probability regressions for Germany based on the SOEP. Using the annual panel data and the sample of adult non-entrepreneurs, the dependent variable is 1 if somebody reports entrepreneurship in the subsequent year. Those who are unemployed before the transition are classified as necessity entrepreneurs and other new entrepreneurs as opportunity entrepreneurs. The main regressor of interest is the local unemployment rate in one of the 96 Spatial Planning Regions of Germany. The association between total new entrepreneurship and the unemployment rate is positive, indicating counter-cyclical, similar to the United States. The association between opportunity entrepreneurship and the unemployment rate is negative, indicating pro-cyclical, but the point estimates are not statistically significant. In contrast, necessity entrepreneurship is positively associated with the unemployment rate and significant. This result confirms the counter-cyclical pattern of necessity entrepreneurship that we also found for the United States.

Our findings hold with or without control variables. The estimated coefficients on the control variables indicate that women are less likely to be any type of new entrepreneur. Persons with a direct migration background, i.e., who were not born in Germany, are less likely to be new opportunity entrepreneurs or new entrepreneurs in general, but are more likely to be new necessity

entrepreneurs, which may reflect the difficulty of finding wage and salary employment for this group.⁶

Business Types Associated with Opportunity vs. Necessity Entrepreneurship

Using our definitions of opportunity and necessity entrepreneurship we can examine whether they are correlated with other measures of the “seriousness” of business ownership. Table 4 reports estimates for several measures of the businesses being created. Using the CPS for the United States, we find that new opportunity entrepreneurs are more likely to work full-time for their businesses than new necessity entrepreneurs. We also find that they are more likely to create incorporated businesses and are more likely to create employer businesses. These two factors are especially associated with the seriousness of the business venture (e.g., Astebro and Tag, 2015). Finally, we find that new opportunity entrepreneurs are less likely to create construction businesses. Construction captures contractors and there is a lot of movement between working for a construction firm as a wage/salary worker and being a self-employed contractor.

Using the SOEP, we find that opportunity entrepreneurship is related to indicators of seriousness of the business in Germany as well (Table 5). New opportunity entrepreneurs are more likely to hire workers: Three quarters of new necessity entrepreneurs are solo-entrepreneurs, but only 53% of new opportunity entrepreneurs. New opportunity entrepreneurs also earn substantially more per month than necessity entrepreneurs. Their lead is even larger with regard to business assets. New necessity entrepreneurs are more likely to work in the construction industry in Germany as well, although the difference is not as large as in the United States. In contrast to the

⁶ In Germany, persons with a migration background often belong to disadvantaged minorities. The largest group of persons with a migration background are of Turkish origin. A person is defined to have an indirect migration background if he or she was born in Germany, but does not have German citizenship or at least one parent was not born in Germany or does not have German citizenship.

United States, in Germany the share of necessity entrepreneurs working full-time is larger than the share of opportunity entrepreneurs. Unfortunately, neither the SOEP nor the Micro Census provide information on incorporation status.

5. Conclusions

In this paper, we create an operational definition of necessity and opportunity entrepreneurship that has three major properties: i) objectively defined, ii) empirically measurable, and iii) available in many datasets. Using panel data or retrospective information we define individuals who are initially unemployed before starting businesses as “necessity” entrepreneurs, and individuals who are wage/salary workers, enrolled in school or college, or are not actively seeking a job are defined as “opportunity” entrepreneurs. We document that total entrepreneurship is somewhat countercyclical, but once we distinguish between opportunity and necessity entrepreneurship associations with the business cycle become clearer. Opportunity entrepreneurship is generally pro-cyclical and necessity entrepreneurship is strongly countercyclical. Opportunity entrepreneurship is also found to be associated with incorporated and employer businesses. The dichotomy between opportunity and necessity entrepreneurship could be valuable for future research on the determinants and outcomes of entrepreneurship.

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Figure 1
Number of New Entrepreneurs and Unemployment Rates (1996-2015)

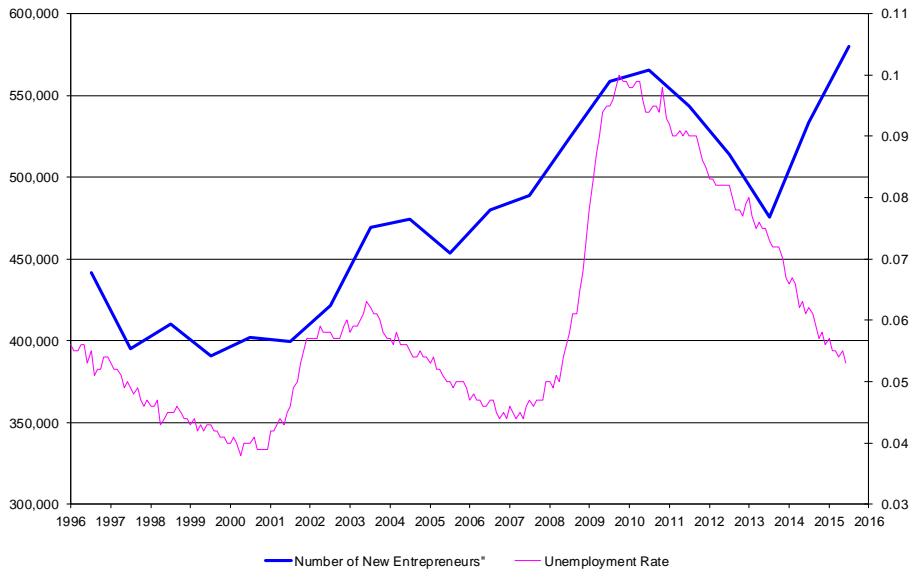


Figure 2
Number of New Entrepreneurs and Real GDP Growth Rates (1996-2015)

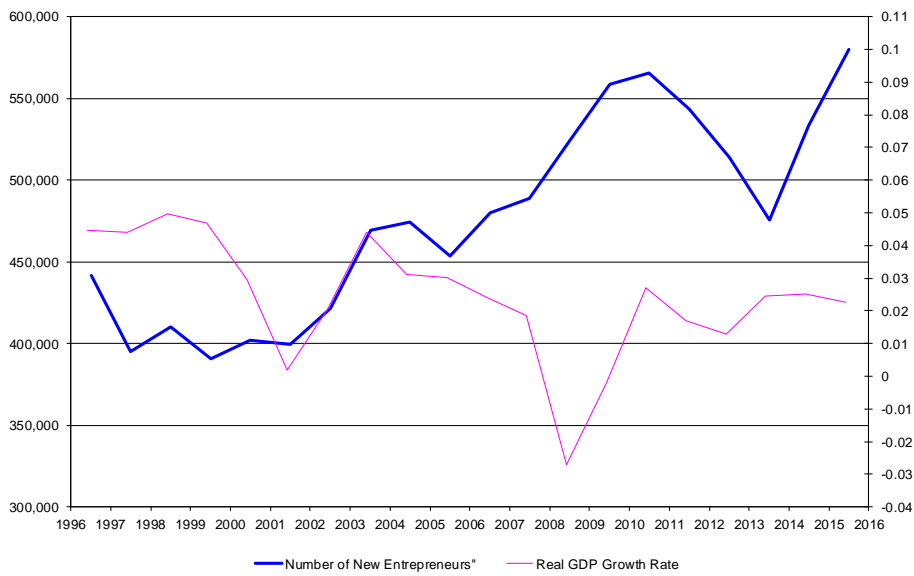


Figure 3
Number of New Opportunity Entrepreneurs and Unemployment Rates (1996-2015)

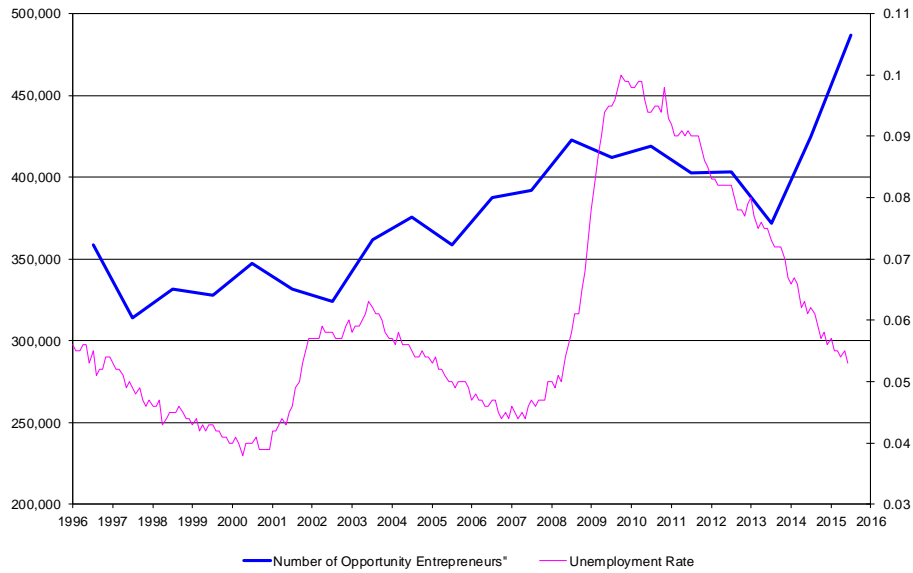


Figure 4
Number of New Necessity Entrepreneurs and Unemployment Rates (1996-2015)

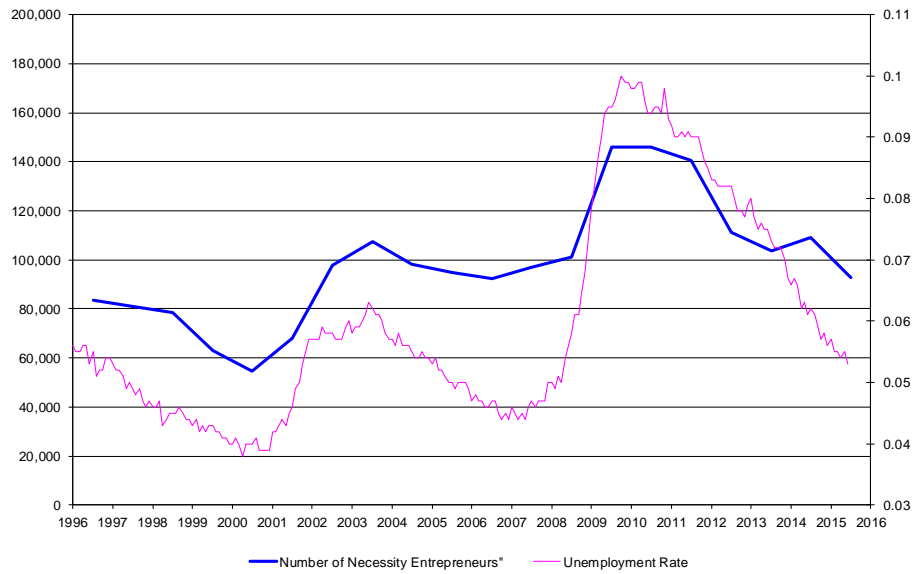


Figure 5
Opportunity Share of New Entrepreneurs and Unemployment Rate (1996-2015)

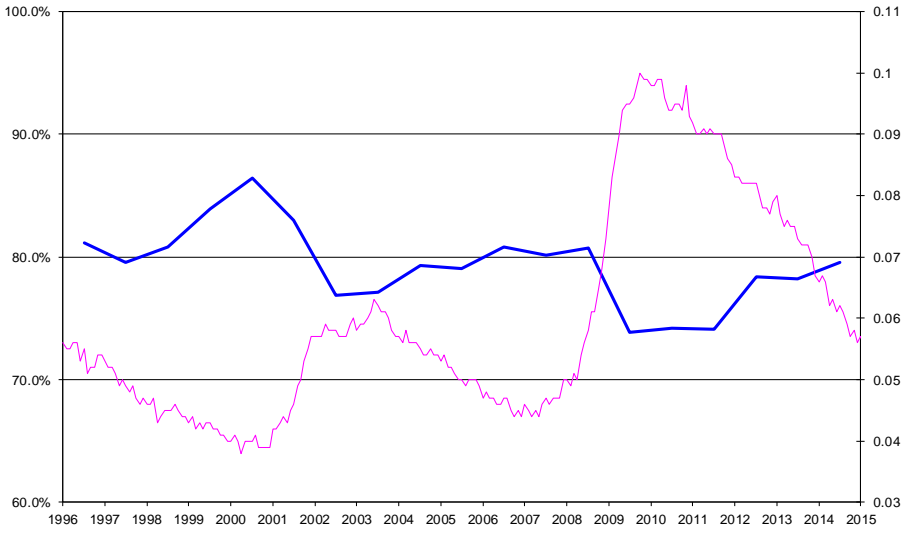


Figure 6
Entrepreneurship Rate and Unemployment Rates (1996-2015)

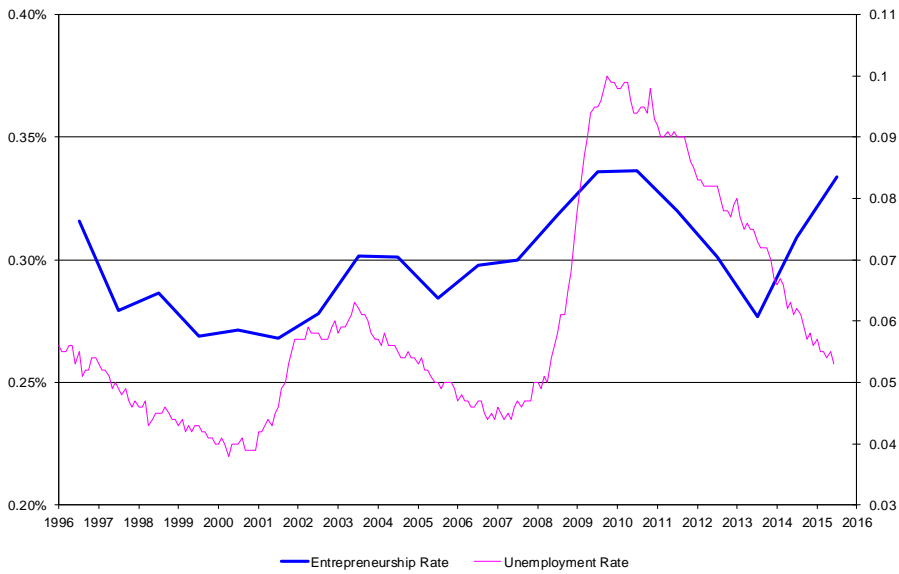


Figure 7
Number of New Entrepreneurs and Unemployment Rates in Germany (1996-2011)



Figure 8
Number of New Entrepreneurs and Real GDP Growth Rates in Germany (1996-2011)

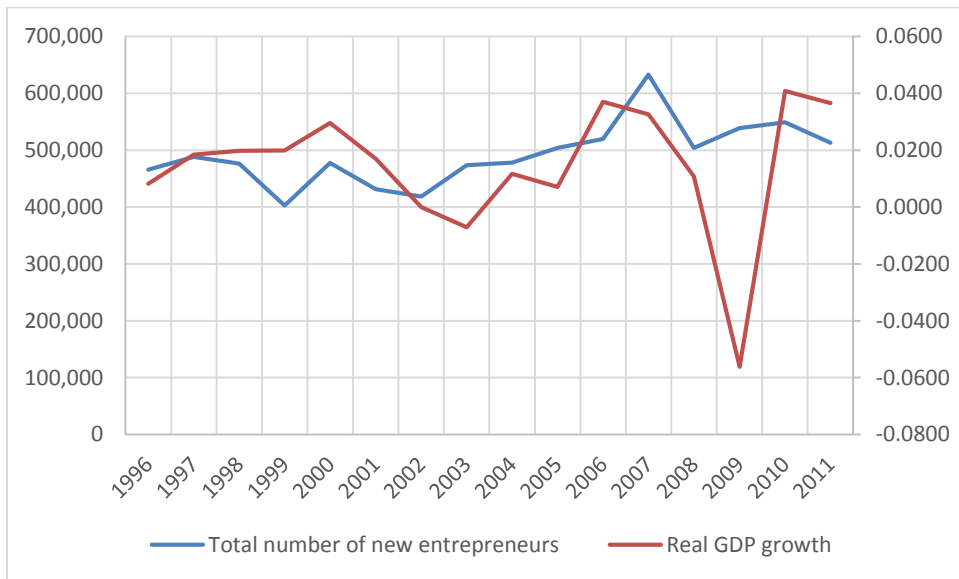


Figure 9
Number of New Opportunity Entrepreneurs and Unemployment Rates in Germany (1996-2011)

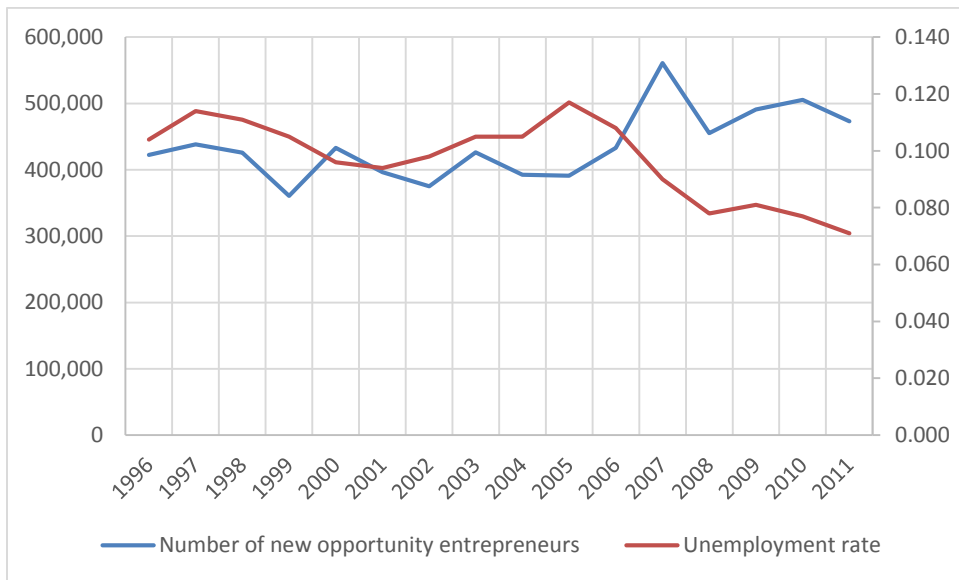


Figure 10
Number of New Necessity Entrepreneurs and Unemployment Rates in Germany (1996-2011)

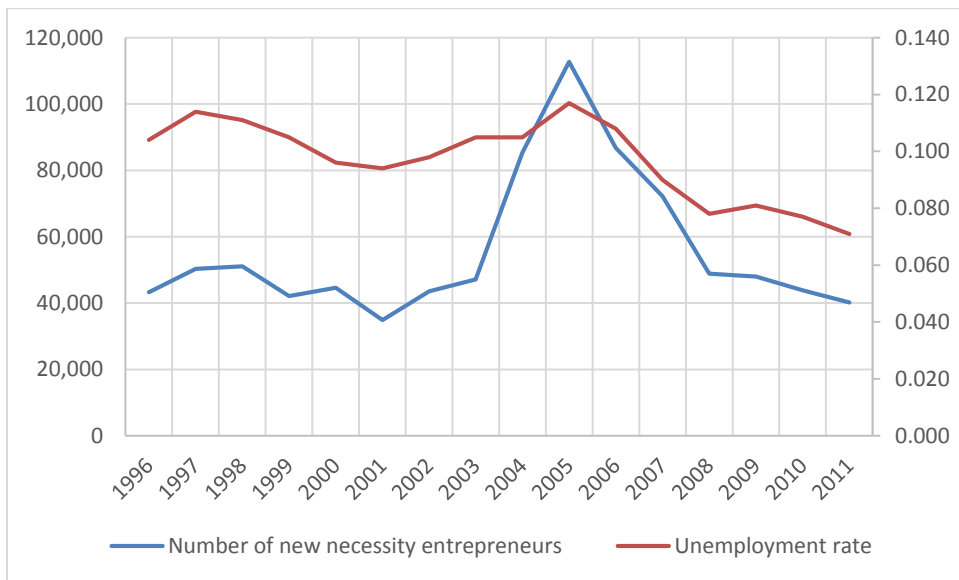


Figure 11
Opportunity Share of New Entrepreneurs and Unemployment Rates in Germany (1996-2011)

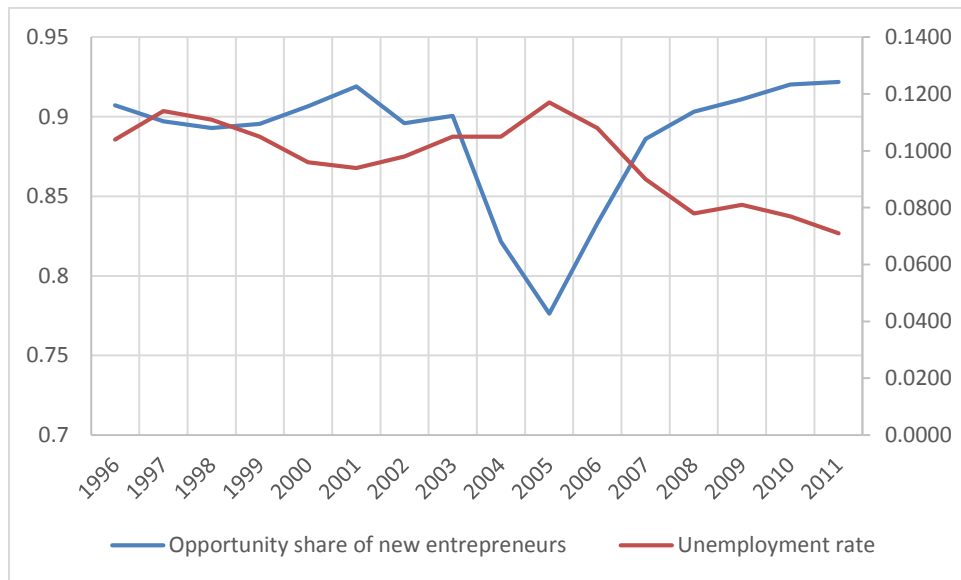
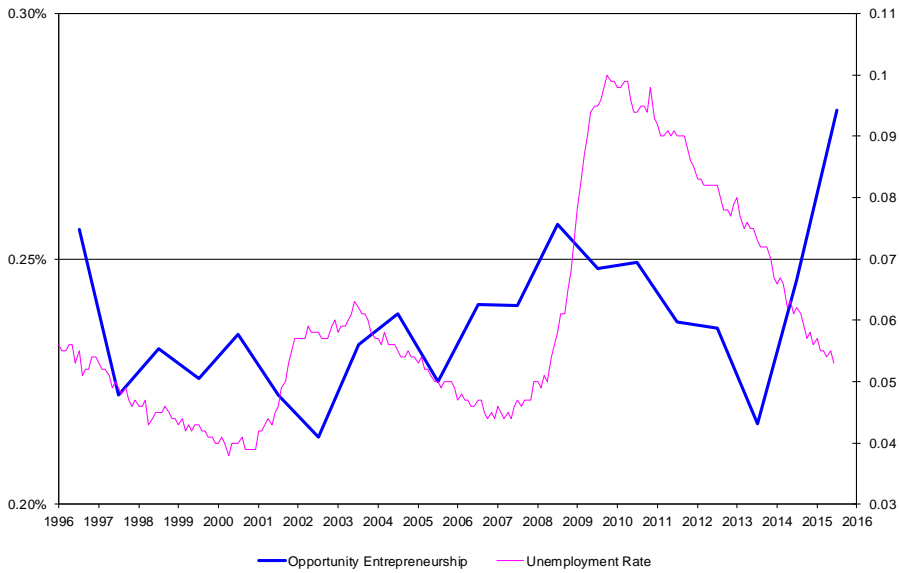


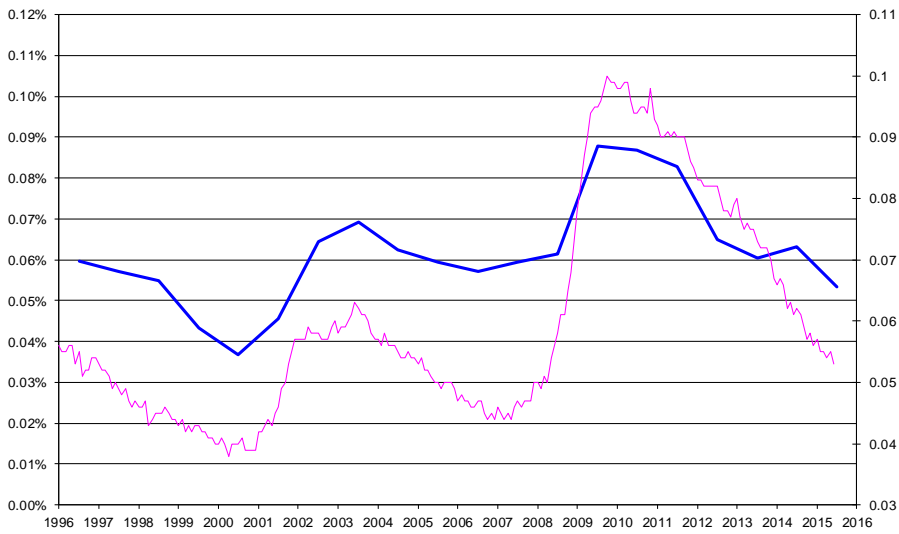
Figure 12
Entrepreneurship Rate and Unemployment Rates in Germany (1996-2011)



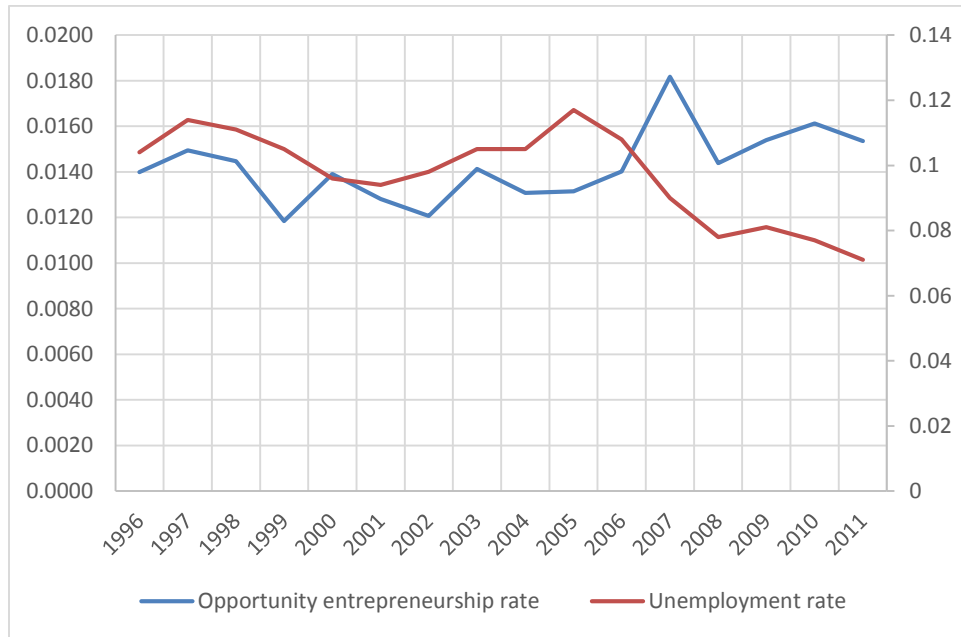
Appendix Figure 1
Opportunity Entrepreneurship Rate and Unemployment Rates (1996-2015)



Appendix Figure 2
Necessity Entrepreneurship Rate and Unemployment Rates (1996-2015)



Appendix Figure 3
Opportunity Entrepreneurship Rate and Unemployment Rates in Germany (1996-2011)



Appendix Figure 4
Necessity Entrepreneurship Rate and Unemployment Rates in Germany (1996-2011)

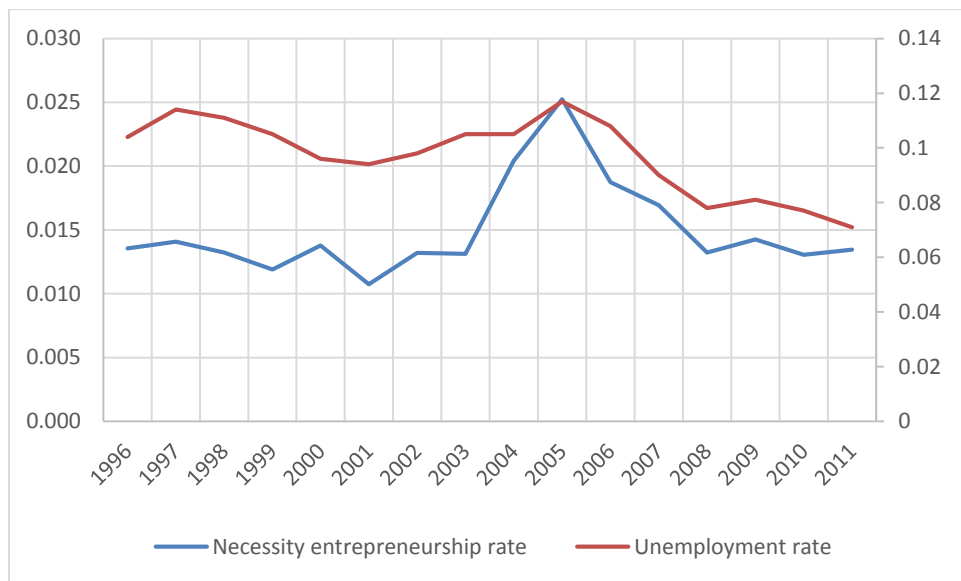


Table 1
 Regressions for Probability of Entrepreneurship Type
 Current Population Survey (1996-2015)

Explanatory Variable	Total Entrep (1)	Total Entrep (2)	Opportunity Entrep (3)	Opportunity Entrep (4)	Necessity Entrep (5)	Necessity Entrep (6)
National unemployment rate	0.00573 (0.00115)	0.00579 (0.00115)	-0.00120 (0.00102)	-0.00114 (0.00102)	0.00693 (0.00052)	0.00692 (0.00052)
Female		-0.00144 (0.00003)		-0.00078 (0.00003)		-0.00065 (0.00002)
Black		-0.00087 (0.00005)		-0.00080 (0.00005)		-0.00006 (0.00002)
Latino		-0.00026 (0.00006)		-0.00026 (0.00005)		0.00000 (0.00003)
Native American		-0.00001 (0.00017)		-0.00021 (0.00015)		0.00020 (0.00008)
Asian		-0.00134 (0.00009)		-0.00090 (0.00008)		-0.00044 (0.00004)
Immigrant		0.00167 (0.00006)		0.00131 (0.00005)		0.00036 (0.00003)
Mean of dep. var.	0.00300	0.00300	0.00238	0.00238	0.00062	0.00062
Sample size	11,470,272	11,470,272	11,470,272	11,470,272	11,470,272	11,470,272

Notes: (1) The sample consists of individuals (ages 20-64) who do not own a business in the initial survey month of the two-month panel. (2) Additional controls include quadratic time trend, age, age squared, education levels, marital status, region and urban status dummies.

Table 2
 Regressions for Probability of Entrepreneurship Type for Local Unemployment Rates
 Current Population Survey (1996-2015)

Explanatory Variable	Total Entrep (1)	Total Entrep (2)	Opportunity Entrep (3)	Opportunity Entrep (4)	Necessity Entrep (5)	Necessity Entrep (6)
Local unemployment rate	0.00952 (0.00066)	0.00745 (0.00067)	0.00062 (0.00059)	-0.00086 (0.00060)	0.00891 (0.00031)	0.00831 (0.00031)
Female		-0.00141 (0.00004)		-0.00077 (0.00003)		-0.00065 (0.00002)
Black		-0.00075 (0.00006)		-0.00068 (0.00005)		-0.00008 (0.00003)
Latino		-0.00021 (0.00007)		-0.00019 (0.00006)		-0.00002 (0.00003)
Native American		0.00004 (0.00022)		-0.00020 (0.00020)		0.00025 (0.00010)
Asian		-0.00134 (0.00009)		-0.00089 (0.00008)		-0.00045 (0.00004)
Immigrant		0.00169 (0.00006)		0.00133 (0.00006)		0.00036 (0.00003)
Mean of dep. var.	0.00295	0.00300	0.00233	0.00233	0.00062	0.00062
Sample size	8,363,123	8,363,123	8,363,123	8,363,123	8,363,123	8,363,123

Notes: (1) The sample consists of individuals (ages 20-64) who do not own a business in the initial survey month of the two-month panel. (2) Additional controls include quadratic time trend, age, age squared, education levels, marital status, region and urban status dummies.

Table 3
 Regressions for Probability of Entrepreneurship Type for Local Unemployment Rates
 German Socio-economic Panel (1996-2013)

	Total Entrep. (1)	Total Entrep. (2)	Opportunity Entrep. (3)	Opportunity Entrep. (4)	Necessity Entrep. (5)	Necessity Entrep. (6)
Local unemployment rate	0.0022 (0.0099)	0.0011 (0.0150)	-0.0120 (0.0088)	-0.0141 (0.0121)	0.0142*** (0.0022)	0.0153*** (0.0049)
Female		-0.0030*** (0.0005)		-0.0019*** (0.0004)		-0.0011*** (0.0002)
Direct migration background		-0.0017** (0.0008)		-0.0023*** (0.0006)		0.0007** (0.0003)
Indirect migration background		-0.0008 (0.0010)		-0.0014 (0.0009)		0.0006 (0.0004)
Mean of dep. var.	0.0098	0.0098	0.0083	0.0083	0.0015	0.0015
Sample size	185,300	185,300	185,300	185,300	185,300	185,300

Notes: The sample consists of individuals (ages 20-64) who do not own a business in the year of observation. The dependent variable in the first two columns is one if the individual owns a business in the subsequent year and zero otherwise (new entrepreneur). In columns (3) and (4), only those among the new entrepreneurs are counted as new opportunity entrepreneur who are not unemployed in the initial year, and in (5) and (6), precisely those who are unemployed in the initial year are coded as new necessity entrepreneurs. The local unemployment rate is the unemployment rate in the Spatial Planning Region (SPR) where the individual lives. Additional controls include quadratic time trends, age, age squared, educational degrees, marital status, region and population density in the SPR. The standard errors in parenthesis are clustered at the SPR level. Stars (**/**/ *) indicate significance at the 1%/5%/10%-levels.

Table 4
Mean Characteristics of New Entrepreneurs in their First Month
Current Population Survey (2014)

	New Opportunity <u>Entrepreneurs</u>	New Necessity <u>Entrepreneurs</u>
Full-time	60%	53%
Incorporated	18%	11%
Employer	15%	4%
Agriculture	10%	3%
Construction	16%	33%

Table 5
Mean Characteristics of New Entrepreneurs in their First Year
German Socio-economic Panel (1996-2013)

	Opportunity entrepreneurs	Necessity entrepreneurs
Solo entrepreneur	0.5322	0.7516
1-9 employees	0.2684	0.1742
10 or more employees	0.0603	0.0097
Full-time	0.6655	0.7645
Monthly gross labor income in euro	2536	1521
Business assets in euro	49927	6974
<i>Industry</i>		
Agriculture	0.0307	0.0290
Mining and quarrying	0.0006	0.0000
Energy and water	0.0029	0.0000
Manufacturing	0.0377	0.0355
Construction	0.0725	0.1000
Trade	0.1565	0.1484
Hotels and restaurants	0.0406	0.0419
Transport and communication	0.0423	0.0226
Financial services	0.0574	0.0548
Real estate	0.0023	0.0000
Business services	0.1733	0.2032
Public and personal services	0.2128	0.1645
Missing information on industry	0.1171	0.1581

Notes: Based on 1725 observations of new opportunity entrepreneurs and 310 observations of new necessity entrepreneurs in their first year of business. Gross labor income is based on 1367 (249) observations for new opportunity (necessity) entrepreneurs and business assets on 259 (39) observations. Assets are only observed in 2002, 2007 and 2012.