

Fritsch, Michael; Wyrwich, Michael

Working Paper

Does persistence in start-up activity reflect persistence in social capital?

Jena Economic Research Papers, No. 2015-009

Provided in Cooperation with:

Friedrich Schiller University Jena, Faculty of Economics and Business Administration

Suggested Citation: Fritsch, Michael; Wyrwich, Michael (2015) : Does persistence in start-up activity reflect persistence in social capital?, Jena Economic Research Papers, No. 2015-009, Friedrich Schiller University Jena, Jena

This Version is available at:

<https://hdl.handle.net/10419/121287>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

JENA ECONOMIC RESEARCH PAPERS



2015 – 009

Does Persistence in Start-up Activity Reflect Persistence in Social Capital?

by

**Michael Fritsch
Michael Wyrwich**

www.jenecon.de

ISSN 1864-7057

The JENA ECONOMIC RESEARCH PAPERS is a joint publication of the Friedrich Schiller University Jena, Germany. For editorial correspondence please contact markus.pasche@uni-jena.de.

Impressum:

Friedrich Schiller University Jena
Carl-Zeiss-Str. 3
D-07743 Jena
www.uni-jena.de

© by the author.

Does Persistence in Start-up Activity Reflect Persistence in Social Capital?¹

Michael Fritsch

Michael Wyrwich

July 2015

Contribution to: Hans Westlund and Johan P. Larsson (eds.): *Edward Elgar Handbook on Social Capital and Regional Development*

Abstract

Emerging literature shows that spatial differences in entrepreneurship tend to persist over longer periods of time. A potential mechanism underlying this pronounced persistence is that high levels of start-up activity lead to the emergence of a regional culture and a supporting environment in favor of entrepreneurship that particularly involves social capital. This chapter summarizes the available empirical evidence on the regional persistence of entrepreneurship and elaborates in detail how different elements of such a culture, such as social capital, can exert an influence on the level of new business formation and self-employment. As a demonstration for the relevance of a regional entrepreneurship culture for new business formation, we highlight the case of Germany where we find pronounced persistence of start-up activity despite radical structural and institutional shocks over the course of the 20th century. The German case suggests that there is a long-lasting local culture of entrepreneurship that can survive disruptive changes. We discuss the relationship between place-specific social capital and a regional culture of entrepreneurship and draw policy conclusions.

Keywords: Entrepreneurship, social capital, economic development, self-employment, new business formation, entrepreneurship culture, institutions

JEL-classification: L26, R11, O11

Address: Friedrich Schiller University Jena, School of Economics and Business Administration, Carl-Zeiss Str. 3, 07743 Jena, Germany

m.fritsch@uni-jena.de, michael.wyrwich@uni-jena.de

¹ We are indebted to the editors and to two anonymous referees for helpful comments on an earlier version of this paper.

1. Persistent levels of regional levels of new business formation

Studies for a number of established market economies have found that the regional level of new business formation tends to be rather constant over longer periods of time. Even if the overall level of new business formation in a country changes, the rank order of regions tends to remain rather constant. One obvious explanation for this phenomenon could be that regional determinants of new business formation and their effects are relatively stable over time. Indeed, variables that have been shown to be conducive to the emergence of new firms, such as qualification of the regional workforce or the employment share in small firms (Fritsch and Falck 2007), tend to remain fairly constant over successive years (Fotopoulos 2014). Some authors have claimed, however, that the persistence of start-up rates may indicate the presence of an entrepreneurship culture (Andersson and Koster 2011; Fritsch and Wyrwich 2014), sometimes also referred to as “entrepreneurship capital” (Audretsch and Keilbach 2004).

This paper elaborates on those determinants of entrepreneurship and new business formation that may be subsumed under the notion of a “regional culture of entrepreneurship.” We first summarize the empirical evidence for the persistence of regional new business formation (Section 2) and then deal with effects of such a culture on growth (Section 3). Section 4 discusses the factors that may constitute a regional entrepreneurship culture. In particular, we try to shed more light on the question of in how far social capital may be reflected in a culture of entrepreneurship. Section 5 deals with different ways of how a regional culture of entrepreneurship may be transmitted over time. Finally, we draw policy conclusions and present some important questions for further research.

2. The persistence of regional new business formation and entrepreneurship

2.1 Overview on the empirical evidence and its interpretation

Studies of established market economies such as West Germany (Fritsch and Mueller 2007), the Netherlands (van Stel and Suddle 2008), Sweden (Andersson and Koster 2011), the United Kingdom (Fotopoulos 2014), and the United States (Acs and Mueller 2008) show that regional start-up rates tend to be relatively persistent and path dependent over periods of one or two decades. Hence, regions that have a relatively high level of entrepreneurship and start-up activity today can be expected to also experience high levels in the future. It is particularly interesting that the ranking of regions with regard to entrepreneurship, their position in the “National Entrepreneurship League Table”, tends to remain relatively unchanged even when the overall level of new business formation and self-employment is changing considerably (Fotopoulos and Storey 2015; Brixy, Fritsch and Kublina 2015).

There are two types of possible reasons for this strong regional persistence of entrepreneurship. One source of persistence could be that important region-specific determinants of entrepreneurship such as activities of Research and Development or high shares of employment in small businesses also remain relatively constant over time, or, as stated by Marshall (1920), *natura non facit saltum* (nature does not make jumps). Fotopoulos (2014) has shown for NUTS II regions in the UK that this type of explanation may have considerable relevance over the 1994–2007 period, a time of rather steady and smooth development. Another explanation could be the existence of regional traditions or a regional entrepreneurship culture which is reflected, for instance, by informal institutions, i.e., norms, values, and codes of conduct in a society (North 1994) that is in favor of entrepreneurship. Historical research provides many examples for a long-term persistence of such informal institutions (Nunn 2012; Williamson 2000). Hence, an entrepreneurship culture should, at least to some degree, be independent of short-term socio-economic conditions and may, therefore, even endure considerable

shocks to the socio-economic environment such as serious economic crises, devastating wars, and drastic changes of political regimes. In contrast, formal institutions (e.g., property rights), governance structures, and resource allocation change much more frequently and can be viewed as being embedded in the informal institutional framework.

2.2 The particularly remarkable case of East and West Germany

Germany is a particularly interesting case for studying entrepreneurship over longer time periods because the country has experienced a number of severe disruptions during the last 80 years. These “jumps” in the economic framework conditions include the world economic crisis of 1929, the advent of the Nazi regime in 1933, World War II, occupation by the allied powers, massive in-migration of refugees from former territories, particularly from the East, separation into East and West Germany (see Figure 1), reconstruction of the country, and German Reunification. East Germany experienced additional shocks due to its occupation by the Soviet Army at the end of World War II, followed by 40 years of a socialist regime and then transformation to a market economy after German Reunification in 1990, that last of which can be described as a “shock treatment” (Brezinski and Fritsch 1995). If we find persistence of regional levels of entrepreneurship despite these shocks, this can be regarded as a strong indication for the existence of a regional culture of entrepreneurship that is robust and long-lasting.

Our starting point for demonstrating the persistence of regional entrepreneurship in Germany is the regional distribution of self-employment rates across Germany in the year 1925² and across today's

² Own calculations on the basis of Statistik des Deutschen Reichs (1927). The historical data are based on a comprehensive survey conducted in 1925. There is only limited information on the planning region that comprises the federal state of Saarland since parts of this area did not belong to Germany in 1925.

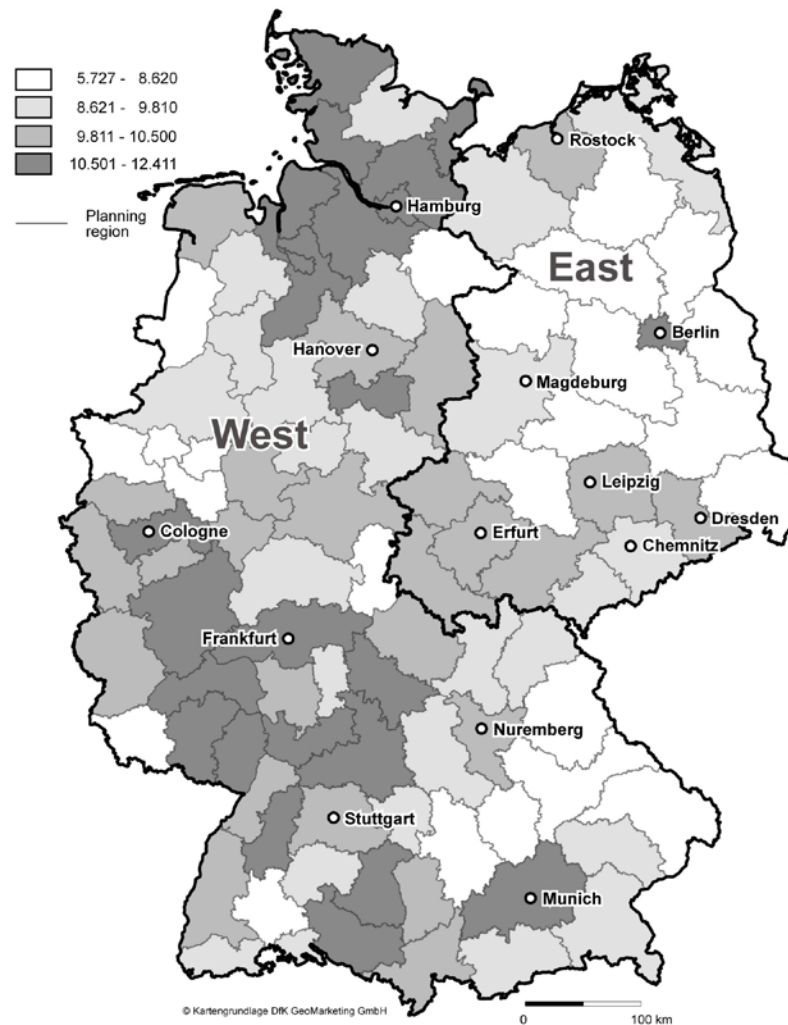


Figure 1: Share of self-employed persons in nonagricultural sectors in total employment in German regions in 1925

planning regions³ (Figure 1). The regional self-employment rate is defined as the number of self-employed persons in the nonagricultural private sector divided by the overall number of employees. It represents the share of entrepreneurial role models within total regional employment.

Entrepreneurial role models, that is, examples of self-employed persons,

³ The definition of administrative districts at this time is much different from what is defined as a district today. Nevertheless, it is possible to assign the historical districts to the current planning regions. Planning regions represent functionally integrated spatial units comparable to labor market areas in the United States. There are 96 planning regions in Germany, 74 in what was West Germany before German unification in the year 1990 and 22 in the East, the former German Democratic Republic (GDR).

can have a strong influence on decisions to start an own business (Bosma et al. 2012). The share of self-employed persons in the regional workforce can also be regarded an indication of the social acceptance of entrepreneurship in a region, and it may signal the presence of a supportive infrastructure such as availability of financial resources for start-ups, public support, and the like.⁴

There have been pronounced differences in the regional levels of entrepreneurship in Germany in the year 1925. A first observation is that, on average, self-employment rates were higher in regions that became West Germany after World War II. Regions with relatively high self-employment rates are mostly found around the urban centers of Hamburg, Frankfurt, Cologne, Munich, and Nuremberg. Also, the southwestern part of Germany, which is known for its innovative spirit and entrepreneurship culture, had high levels of self-employment in 1925. Regions with relatively low self-employment rates in the west of the country include the Ruhr area north of Cologne, which was characterized by a high concentration of large-scale industries such as mining and steel processing, and a number of rural regions in the east and the southeast. Self-employment in East Germany in 1925 was concentrated in the southern regions of Saxony and Thuringia. These areas are known for having a comparatively long industrial and entrepreneurial tradition. Regions adjacent to Berlin had very low self-employment rates. Around 1925, these areas were rather backward in terms of economic capability and were dominated by large-scale agriculture.

⁴ Not all types of self-employment in the year 1925 are significantly related to new business formation today. Fritsch and Wyrwich (2016) show that such a long-term effect can particularly be found for general self-employment in the non-agricultural sector and particularly for self-employment in knowledge-intensive manufacturing industries. No such relationship can be identified for homeworkers and for self-employed women.

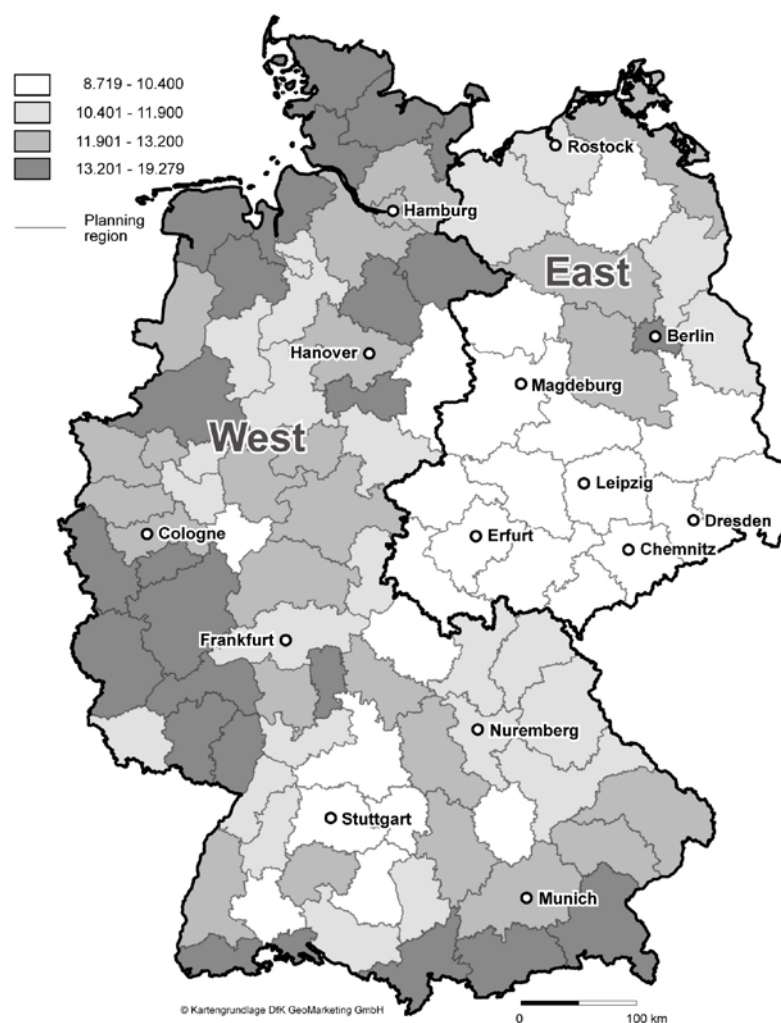


Figure 2: Start-up rates in German planning regions 2005

As a measure of entrepreneurship in 2005 we use the start-up rate which is the number of new businesses in the private sector with at least one employee subject to social insurance contributions per 1,000 of the population. The start-up rate reflects the gross inflow to self-employment that occurred in a certain year and is commonly considered to reflect entrepreneurial dynamics somewhat better than the self-employment rate. It can be interpreted as the propensity of a member of the regional workforce to set up an own business. We again find great regional differences in the level of entrepreneurial activity across Germany (Figure 2), as was the case for self-employment rates in 1925. Start-up rates tend

to be higher in West Germany as compared to East Germany. The on average lower level of start-ups with at least one employee in East Germany probably has to do with problems of transition to a market economy after having been under a socialist regime for 40 years.

2.3 Persistence of regional entrepreneurship in West Germany 1925–2005

To investigate whether regional self-employment in 1925 continues to influence the level of new business formation in the period from 1984 to 2005, we run regression analyses, including the self-employment rate in 1925. The regression models show a highly significant positive effect of the 1925 regional self-employment rate on the current level of new business formation (see Table A1 in the Appendix). If we control for the regional industry structure in 1925 and include some additional factors commonly used to explain regional levels of new business formation (e.g., the share of employees working in Research and Development and the regional unemployment rate), the effect of the self-employment level in 1925 remains statistically significant and is sometimes quite pronounced. This means that historical levels of self-employment have an effect that is independent of structural regional conditions and thus provide additional explanation for regional-levels' new business formation today! Quantile regression analysis reveals that the marginal effect of the historical self-employment rate on current start-up activity increases in the level of the historical rate (Fritsch and Wyrwich 2014). Thus, the effect is particularly strong if a regional entrepreneurial tradition is relatively pronounced. This pattern reflects the “response mechanism” according to which the share of people that already opted for self-employment reflects the number of entrepreneurial role models that accelerate the number of entrepreneurs due to peer effects (for a detailed exposition of this argument see Andersson and Koster 2011, who find a similar pattern for Swedish regions).

Therefore, we conclude that regional differences in entrepreneurship in West Germany have persisted for a period of 80 years in spite of several disruptive shocks of environmental conditions. This high

level of persistence is particularly remarkable given the high levels of in-migration by refugees from former German territories into West Germany after World War II, which has led to considerable changes in the population.⁵ The fact that we find persistence of the levels of entrepreneurship, despite such severe changes, can be regarded as a strong indication that there are region-specific factors at work that determine a regional entrepreneurship culture and induced adjustment to this culture by in-migrants.

2.4 Persistence of regional entrepreneurship in East Germany

After the end of World War II, East and West Germany experienced very divergent developments. The western part of the country became the Federal Republic of Germany, and the Western allies soon began to assist in reconstructing its economy eventually resulting in West Germany becoming a prosperous market economy. The East was occupied by the Soviet Army, which for some time continued to destroy that region's economic base by dismantling existing machinery and transferring it to the USSR. Moreover, the Soviets quickly installed a socialist regime with a centrally planned economic system. In 1949, the eastern part of Germany became the German Democratic Republic (GDR) and part of the Soviet bloc. As a consequence of political pressure and severe economic problems, there was massive out-migration of East Germans to the West until the East German border was closed in 1961. Throughout the GDR period, a number of policy campaigns were undertaken with the aim of creating new industrial centers, thereby considerably reshaping regional structures. The socialist East German state collapsed in late 1989, and East and West Germany were reunified in 1990.

The consequent transformation of the East German economy to a market economic system was a kind of "shock treatment" (Brezinski and Fritsch 1995) during which the ready-made formal institutional framework

⁵ It is remarkable that the refugees from former German territories of Eastern Europe showed a relatively low propensity for self-employment. In the year 1950 the self-employment rate among the refugees was just 4.1 percent, while the self-employment rate of the original population was about 14 percent (see (Census, 1950).

of West Germany was adopted practically overnight. This development induced massive structural change accompanied by a nearly complete replacement of the incumbent firms. Between 1989 and 1991, the share of manufacturing employment in East Germany dropped from 48.7 percent to 16.0 percent, and unemployment rose from virtually zero in 1989 to more than 15 percent in 1992. In the course of the transformation process, many East German regions once again experienced massive out-migration, particularly of young and qualified workers. Even today, more than 20 years after this transformation process began, economic welfare in nearly all East German regions lags considerably behind their West German counterparts.

East Germany's 40 years of socialist regime after World War II are of particular interest for our analysis because during this period the region was subjected to a great deal of policy intended to eradicate entrepreneurship. The socialist regime strongly favored collectivist values, whereas entrepreneurship was perceived as a bourgeois anachronism. Hence, a rigorous anti-entrepreneurship strategy was adopted that included massive socialization of private enterprises and the suppression of any remaining private-sector activity (for details, see Pickel 1992). This strategy was particularly focused on those regions characterized by high levels of self-employment, which were regarded as strongholds of entrepreneurship. As a result, the self-employment rate at the end of the GDR regime in 1989 was only about 1.8 percent compared to 10.5 percent in West Germany. The few private businesses that did exist were primarily active in those small trades ill-served by inflexible centrally planned state firms. The longer-term effects of the anti-entrepreneurship policy in the GDR are studied by Alesina and Fuchs-Schuendeln (2007), who find that East German citizens who were exposed to the socialist regime are much more in favor of redistribution and state intervention than are their West German counterparts.

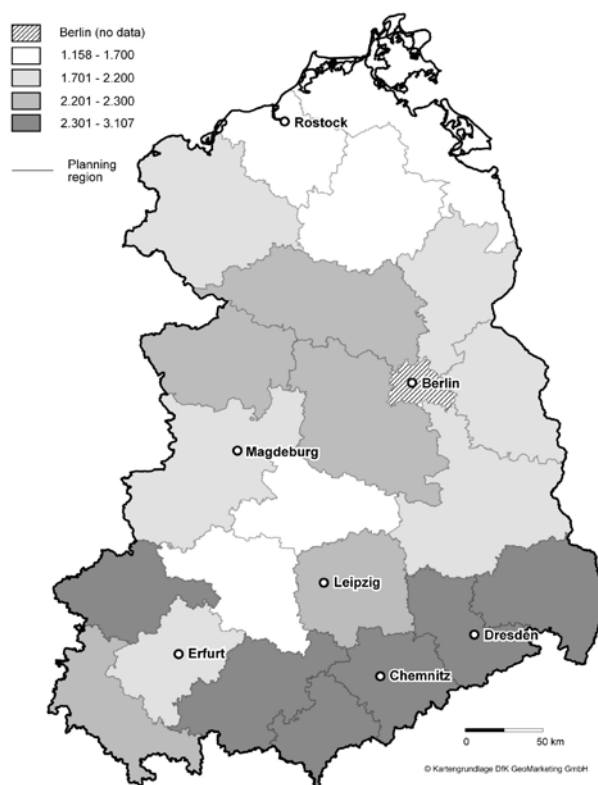


Figure 3: Self-employment rates in East German regions 1989

Nevertheless, the socialist regime was not able to stamp out self-employment equally effectively across the GDR, which is evidenced, for example, by the finding that in regions with a pronounced entrepreneurial tradition, higher shares of craftsmen abstained from joining socialist handicraft cooperatives (Wyrwich, 2012). This indicates that the GDR's attempts to battle entrepreneurship were not completely successful particularly in regions with high levels of self-employment. Hence, regional variation in private-sector activity in 1989 can be viewed as a result of variation in private initiative or of different levels of resistance to the abolishment of private enterprise. Indeed, comparing the regional distribution of self-employment in East Germany at the end of the socialist regime in 1989 (Figure 3) with the pattern found for 1925 (Figure 1) reveals remarkable correspondence. In particular, the levels of self-employment after 40 years of socialism were particularly high in those

regions that had a pronounced entrepreneurial tradition in pre-socialist times. Many of these regions, such as Chemnitz and Dresden, had a relatively strong tradition in the manufacturing sector prior to World War II.

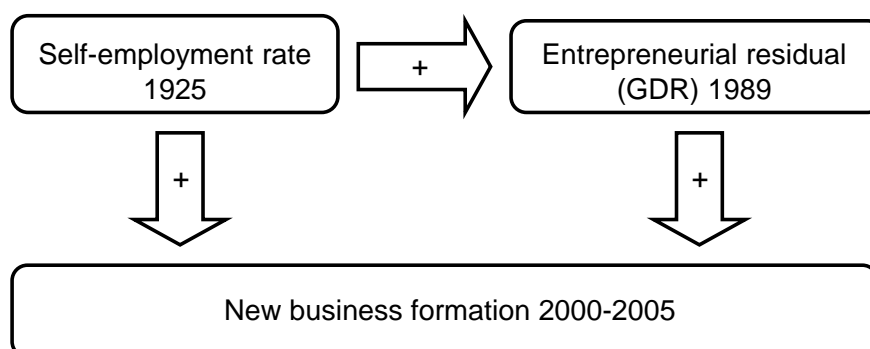


Figure 4: Main findings on persistence of regional entrepreneurship culture in East Germany

Regression analyses for East Germany reveal a significant positive relationship between the regional level of self-employment in 1925, the level of self-employment in 1989 after 40 years of socialist regime, and the level of self-employment and new business formation in the period from 2000 to 2005 (Figure 4). As well as in the case of our analysis of West Germany (Section 2.3), this positive effect remains statistically significant even when we control for the regional industry structure in 1925 and include other variables for explaining new business formation such as the share of R&D personnel, the regional unemployment rate, and population density (see Table A2 in the Appendix). Hence, we conclude that the historical level of self-employment is a separate effect that considerably adds to the explanation of new business formation today.

Our analysis for East Germany once again confirms the high persistence of regional entrepreneurship despite a number of severe shocks. That regional entrepreneurship survived the hostile circumstances of a socialist regime suggests that a regional entrepreneurship culture, once established, may be quite robust. In particular, this finding of persistence is evidence that political attempts to destroy a culture of entrepreneurship will face considerably more resistance in regions that

have a strong tradition of self-employment. It is also remarkable that the recovery of entrepreneurship in East Germany, after reunification with the West, was particularly fast in those regions that had relatively high self-employment rates in pre-socialist times.

2.5 Wrap-up of the empirical evidence for the German case

The pronounced persistence of regional entrepreneurship that we find clearly supports the existence of a regional entrepreneurship culture that is an enduring intangible regional asset. This culture is “in the air” more so than bound to physical production amenities, as the latter were largely destroyed during World War II and thereafter. Moreover, it is also robust with regard to high levels of in- and out-migration. Thus, even when accounting for the significant number of 14 million German expellees after World War II (Braun et al. 2013), who in some regions made up to 38 percent of the entire population in 1950, we find a strong relationship between historical self-employment and entrepreneurship rates today (Fritsch and Wyrwich 2015). Expellees came from regions that are nowadays part of Eastern European countries (e.g., Czech Republic, Poland, Romania, Russia) and had a distinct culture (e.g., dialects, habits, religious denominations) as compared to the population in the regions they moved to. In particular, they also had a much lower propensity for self-employment than the original population. Against this background, it is quite remarkable that a culture of entrepreneurship was not sensitive to such a “population shock.”

Due to its resilient character, fostering and sustaining an entrepreneurship culture should be at the top of the agenda of policymakers interested in pursuing long-term-oriented regional development strategies. However, what factors make up such a culture, and how and why does such a culture persist? The next section addresses these important issues.

3. Regional entrepreneurship culture and regional development

The available empirical evidence as to if and how an entrepreneurship culture affects regional development is still rather sparse and often also debatable. In the following, we first discuss different ways of how a culture of entrepreneurship may transform into regional growth (Section 3.1) and then give an overview on the respective empirical results (Section 3.2).

3.1 How can an entrepreneurship culture lead to regional growth?

Assuming a positive relationship between an entrepreneurship culture and growth implies that entrepreneurship is conducive to growth. Many studies show that this is indeed the case for most regions, particularly in the longer run. The strength of this effect may, however, vary considerably across regions, and there are a number of cases where such a positive effect could not be identified (see Fritsch 2013, for a review of the evidence). These reasons for such differences are, however, still largely unclear.

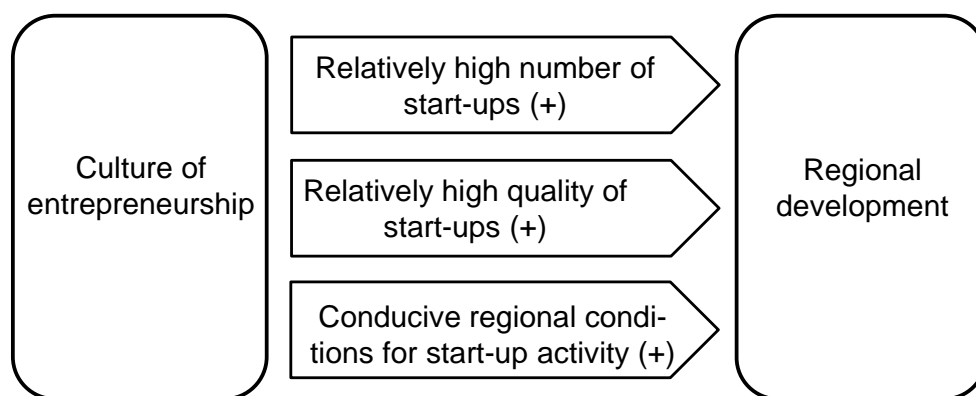


Figure 5: Ways in which a culture of entrepreneurship may have an effect on regional development

There are a number of ways in which a regional entrepreneurship culture may transform into growth (see Figure 5). One of these channels could be that a culture of entrepreneurship leads to a relatively high number of start-ups that then induce growth. Based on theoretical considerations, Fritsch (2013) concludes that the quality of the start-ups

should play a key role for their effects on development with the relevant quality issue being the competitive threat that a newcomer exerts on the incumbent firms. Although quality in this sense can hardly be measured directly, there are indirect measures such as the qualification of the entrepreneur, how well a venture is prepared, and the innovativeness of processes and product program. If the quality of start-ups is important for their effect on growth, then a second way in which an entrepreneurship culture can transform into regional development may be that it leads to a relatively high average quality of the start-ups in a region. A third possibility in which an entrepreneurship culture may affect regional development is that it provides conditions that are conducive to relatively high growth effects of new business formation such as easy availability of relevant resources like finance, supporting consulting services and the like. It can also be possible that a regional culture of entrepreneurship attracts in-migration of persons with an entrepreneurial mindset that may then set up new businesses of a relatively high quality.

According to the current state of knowledge, we can say that a culture of entrepreneurship may lead to relatively high levels of new business formation, but we do not know anything about the significance of the other two potential transfer channels and their relative importance.

3.2 Entrepreneurship culture and growth: Empirical evidence

One of the few indications for a growth enhancing effect of a culture of entrepreneurship is a study by Beugelsdijk and Noorderhaven (2004) that relates a measure for an entrepreneurial orientation of the population that is based on survey data to regional GDP growth and finds a significantly positive relationship. This result may, however, suffer from endogeneity problems because the measured values and attitudes could have emerged as a response to long-term growth so that they may not be a cause for positive development. Tabellini (2010) establishes a causal link between the values of the population and growth but does particularly focus on entrepreneurship culture.

Glaeser, Kerr and Kerr (2015) attempt to dispel endogeneity concerns by using an indicator of regional entrepreneurship culture in a much earlier time period that they assume to be independent from current economic growth. The measure they use is a region's distance from coal mines that were operating in 1900. The idea behind using this indicator is based on the observation that coal mining areas were characterized by large-scale plants and relatively low levels of self-employment. Glaeser, Kerr and Kerr (2015) argue that geographic proximity to historical mines at the beginning of the 20th century is negatively related to the emergence of an entrepreneurship culture over time, leading to relatively low current levels of entrepreneurship. They justify their identification strategy by reference to Chinitz (1961). In this study, Chinitz compares the economic structures of Pittsburgh and New York City and explains the low levels of self-employment in Pittsburgh with the presence of large-scale industries such as coal mining and steel, which, in turn, contributed to the emergence of an entrepreneurship-inhibiting climate that has to some degree persisted until today. Glaeser, Kerr, and Kerr (2015) find that there is indeed a negative relationship between proximity to historical mines and the level of entrepreneurship today that affects current growth.

Fritsch and Wyrwich (2015) use the regional level of self-employment in the year 1925 in their study for Germany as a proxy for an entrepreneurship culture and analyze its effect on subsequent regional performance, particularly employment growth, in West Germany between 1976 and 2008. Based on an IV approach, they find a positive effect of regional entrepreneurship culture on regional growth, thus demonstrating that regional entrepreneurship culture is a resource for regional development.⁶ Their results suggest that the part of new business formation that can be attributed to a regional entrepreneurship culture

⁶ Interestingly, Fritsch and Wyrwich (2015) find that the share of mining employment in the year 1925 in German regions explains neither the level of start-up activity in the 1970s and 1980s, nor employment growth. This difference to the results for the US may be due to the differences in the type of mining as well as to different historical and institutional context conditions. In particular, most German regions with significant mining activities in the late 19th and early 20th century already had a century-long economic tradition that may have confounded the imprint left by mining, whereas mining regions in the US around that time started more or less from scratch so that their industry became crucial for the initial formation of regional economic cultures.

have a relatively strong effect on growth. Unfortunately, this type of analysis cannot be conducted for East Germany because of a relatively small number of regions. Fritsch and Wyrwich, however, report indications that regions with high self-employment rates in the year 1925 also had relatively high levels of self-employment at the end of the socialist period and also experienced high start-up rates in the years after German reunification. These regions were able to manage the enormous problems of transitioning to a market economy comparatively well (see also Kawka 2007).

4. What is a regional culture of entrepreneurship?

An entrepreneurship culture is typically defined as a “positive collective programming of the mind” (Beugelsdijk 2007, 190) or an “aggregate psychological trait” (Freytag and Thurik 2007, 123) of the population oriented toward entrepreneurial values such as individualism, independence, and achievement (e.g., McClelland 1961; Hofstede and McCrae 2008). Accordingly, a culture of entrepreneurship can be understood as an informal institution that comprises norms, values, and codes of conduct (Baumol 1990; North 1994). It is marked by a high level of social acceptance and approval of entrepreneurship (Kibler, Kautonen and Fink 2014) that results in high self-employment rates. Empirical research shows that informal institutions such as a culture of entrepreneurship may evolve over several decades if not several centuries and tend to change very slowly (see, for example, Nunn 2012).

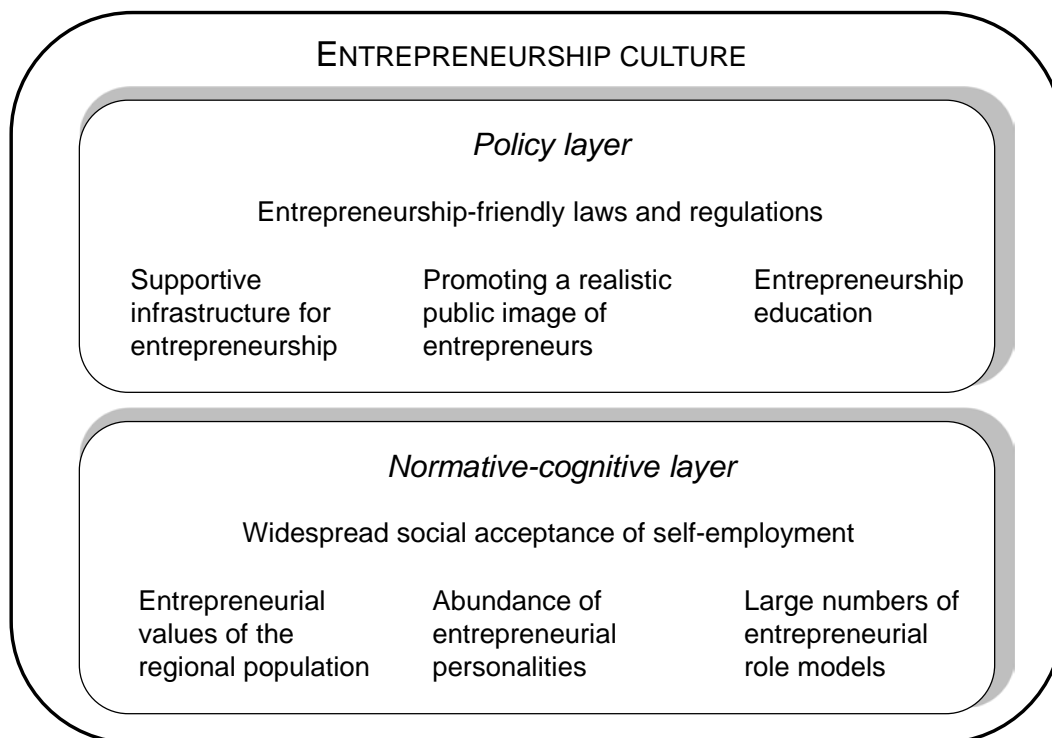


Figure 6: Elements of an entrepreneurship culture

One may distinguish between the *political* and the *normative-cognitive* layers of a regional entrepreneurship culture (see Figure 6). The *normative-cognitive* layer of an entrepreneurship culture encompasses:

- *Widespread social acceptance of self-employment*: the population has a positive attitude toward entrepreneurial activity; there is no social stigma attached to entrepreneurial failure.
- *Entrepreneurial values of the regional population*: entrepreneurial norms and values such as individualism, autonomy, and achievement or mastery are widespread.
- *Abundance of entrepreneurial personalities*: the population contains a high share of persons with an entrepreneurial personality, which is characterized by traits such as extraversion, openness to experience, conscientiousness, and the ability to bear risk.

- *Large numbers of entrepreneurial role models who generate demonstration and peer effects:* high levels of self-employment in the region.

The *political* layer consists of those factors that can be directly targeted by policy, including, for example:

- *Entrepreneurship-friendly laws and regulations:* for example, conditions for entry and exit, freedom of establishment and trade, competition policy, the tax system, the social security system as well as a low level of corruption.
- *A supportive infrastructure for entrepreneurship:* the existence of supporting services for business founders as well as for established firms, including good access to financial resources for start-ups and small businesses and training and consulting services.
- *Promoting a realistic public image of entrepreneurs:* awareness campaigns, programs for encouraging contact with entrepreneurial role models.
- *Entrepreneurship education:* particularly at universities but also beginning with some very basic skills at a lower level in the education system.

The political layer is an important component of an entrepreneurship culture because it contains the instruments that may be used to create and support a regional culture of entrepreneurship. The normative-cognitive layer represents the depth and strength of entrepreneurship culture among the local population. The layers are, of course, interdependent. That is, on one hand, policy can and does affect the experiences and beliefs of the regional population; on the other hand, the experiences and beliefs of the regional population influence policy design. For example, high levels of new business formation in a region can create high demand for supporting public services such as consulting and training. The persistence of a regional entrepreneurship culture is clearly based in its normative-cognitive layer. The example of the socialist period in East Germany (see Section 2.4) demonstrates that norms and

values regarding entrepreneurship can survive even severe policies aimed at eliminating them. Generally speaking, the normative-cognitive layer of regional entrepreneurship culture is a largely informal institution, and one of the most characteristic attributes of such institutions is their high level of persistence and tendency to change only very gradually over time (North, 1994).

A number of studies provide compelling evidence that entrepreneurship culture can vary substantially across regions of a country, even though there are country-wide, uniform, formal rules (Beugelsdijk and Noorderhaven 2004; Fritsch and Wyrwich 2014; Kibler, Kautonen and Fink 2014). Since informal institutions are deeply embedded in a population, an entrepreneurship culture should manifest as a relatively high share of persons with an entrepreneurial personality, which is characterized by traits such as extraversion, openness to experience, conscientiousness, and the ability to bear risk (Rauch and Frese 2007; Zhao and Seibert 2006; Obschonka et al. 2013).

In this respect, it should be noted that culture and entrepreneurship culture in particular can influence individual behavior differently. Based on insights from different strands of sociological, psychological and institutional literature, Stephan and Uhlaner (2010) argue that it may not be entrepreneurial values alone but also community-specific common behaviors or a “dominant logic of action” that are cultural drivers of an entrepreneurial choice. Thus, if pursuing entrepreneurship is well-perceived, and if entrepreneurship is widely accepted, then considering an entrepreneurial career can be regarded as a repetition of common behaviors in the community.

5. How is entrepreneurship culture related to local social capital?

Clearly there is considerable overlap between this normative layer of an entrepreneurship culture and the concept of social capital, as has been put forward bei Coleman (1988), Putnam (2000) and others. In essence, social capital refers to social acceptance of certain values and of respective behavior, trust, and particularly the networks of social

relationships between actors both public and private (for an overview, see Westlund and Bolton 2003). It includes information channels such as role models that can have a considerable effect on individual behavior. The existence of social capital may not only have a stimulating effect on the decision to start an own business, but it may also be conducive to the quality of the new businesses and their performance.

As far as social capital is related to entrepreneurship, the concept goes beyond the concept of entrepreneurship culture. Entrepreneurship culture captures only that part of social capital that affects the level and the perception of entrepreneurship. It comprises the values, trust and social acceptance of entrepreneurship and the relevant role model and peer mechanisms related to social interaction of entrepreneurs and non-entrepreneurs. It does not include the system of relationships as such. The concept of an entrepreneurship culture goes beyond the notion of social capital as it includes the supportive institutional and physical infrastructure or policy layer such as entrepreneurship-friendly laws and regulations, supply of supporting services (e.g., in training and consulting), access to financial resources, entrepreneurship education at schools and universities.

Altogether, entrepreneurship culture and social capital have some significant conceptual overlap. Both can “be regarded as an informal counterpart to formal institutions” (Westlund and Adam 2010, 902). Moreover, one could regard them as interlinked. So, social network relationships that foster the level of entrepreneurship and its social acceptance might lead to the emergence of an institutional and physical infrastructure that is supportive to entrepreneurship and hence to the establishment of an entrepreneurship culture. In a similar vein, Westlund and Bolton (2003) develop the concept of *entrepreneurship-facilitating social capital (EFSC)*. Based on the literature on social capital, the authors understand EFSC as a community characteristic that fosters local entrepreneurship. EFSC represents a part of the entire local social capital which further consists of entrepreneurship-inhibiting social capital (EISC) and types of social capital that are not directly related to entrepreneurship.

The stronger the entrepreneurship-facilitating social capital is as compared to the inhibiting component, the more positive the effect on entrepreneurial activity in a region. Westlund and Bolton (2003) refer to the German Ruhr area as an example for places where entrepreneurship-inhibiting social capital is dominating. The area is marked by cultural traits and resource endowments that are tuned to a growth model that relies on old heavy industries such as coal mining and steel production but are not suited for entrepreneurship (see also, Grabher 1993).

According to Westlund and Bolton (2003), EFSC broadly consists of local resources and preferences in favor of entrepreneurship. Comparing this idea with the concept of entrepreneurship culture, one could regard resources as entrepreneurship-facilitating elements of the political layer, whereas preferences in favor of entrepreneurship allude to entrepreneurship-facilitating elements of the normative-cognitive layer (see Figure 6). In essence, a high level of EFSC should translate into a culture of entrepreneurship. The persistence of entrepreneurship culture can then be regarded as a persistence of resources and preferences that facilitate entrepreneurship. Similarly, a dominance of the entrepreneurship-inhibiting component in the regional social capital would be reflected in a persistent low level of an entrepreneurship culture like in the German Ruhr area.

6. How can persistence of an entrepreneurship culture be explained?

Why an entrepreneurship culture is so persistent over time and in which ways it is transmitted across generations is largely unclear. One important channel through which an entrepreneurial attitude in the regional population may be transferred between generations is the presence of positive examples of entrepreneurs in the social environment.

Entrepreneurial role models can give rise to *demonstration* and *peer effects* by providing opportunities to learn about entrepreneurial tasks and capabilities. In particular, the presence of entrepreneurial role models in the social environment reduces the uncertainty potential entrepreneurs

may feel about starting an own business and may help them acquire necessary information and entrepreneurial skills (Minniti 2005). Seeing the success of others may increase individual self-confidence in the sense of “if they can do it, I can do it, too.” This “learning by example” can be viewed as a non-pecuniary externality that reduces the ambiguity and influences the decision to pursue an entrepreneurial career (Minniti 2005). Moreover, being able to observe entrepreneurs in action, especially successful ones, may raise social acceptance of entrepreneurship (Bosma et al. 2012; Kibler, Kautonen and Fink 2014; Stuart and Sorenson 2003) thereby also increasing the likelihood of others to adopt entrepreneurial behavior. Hence, individuals may perceive entrepreneurship as a favorable career option just from observing successful entrepreneurship among their peers (for a detailed exposition of this argument, see Fornahl 2003).

Empirical research shows that the effects of role models are driven by social interaction and personal contact at the local level rather than by classroom examples or entrepreneurial icons touted by the media (Bosma et al. 2012). Since people typically start their firm close to where they reside, such role model effects may be concentrated in the respective region and may not spill over to other areas. Thus, the presence of entrepreneurial role models in a region can be regarded as a region-specific trigger of entrepreneurship.

Learning through peers tends to be more effective the closer the contact is with the entrepreneur. For this reason, the employment share in small and young firms is a good predictor of the effectiveness of entrepreneurial role models because employees in smaller firms have relatively close contact with the entrepreneur. This close proximity to the role model provides valuable opportunities to acquire entrepreneurial human capital. Furthermore, employees in small firms usually have to perform a much greater variety of tasks than their counterparts in larger firms where work tends to be more specialized. Such a variety of skills is conducive to starting an own business (Lazear 2004). Accordingly, it is a stylized fact of empirical research that, for different reasons, employees in

small firms have a higher propensity of starting an own business than large-firm employees (Parker 2009). Because most start-ups remain small, regions with high levels of new business formation not only have many entrepreneurs but also high employment shares in small businesses. This structural characteristic of entrepreneurial regions may also contribute to the persistence of a regional entrepreneurship culture.

Another factor that may contribute to this persistence is a strong intergenerational transmission of entrepreneurial values and behaviors from parents or grandparents to their children that may be mainly based on socialization and peer effects. That is, a person has a considerably higher propensity to start an own firm if at least one of his or her parents (or grandparents) has been or is self-employed (e.g., Laspita et al. 2012). One can not completely exclude that genetic inheritance of entrepreneurial personality traits may play a role in this respect, but the empirical evidence about a genetic determination of entrepreneurship clearly suggests that the effect of the socialization is considerably stronger (Lindquist, Sol and van Praag 2015).

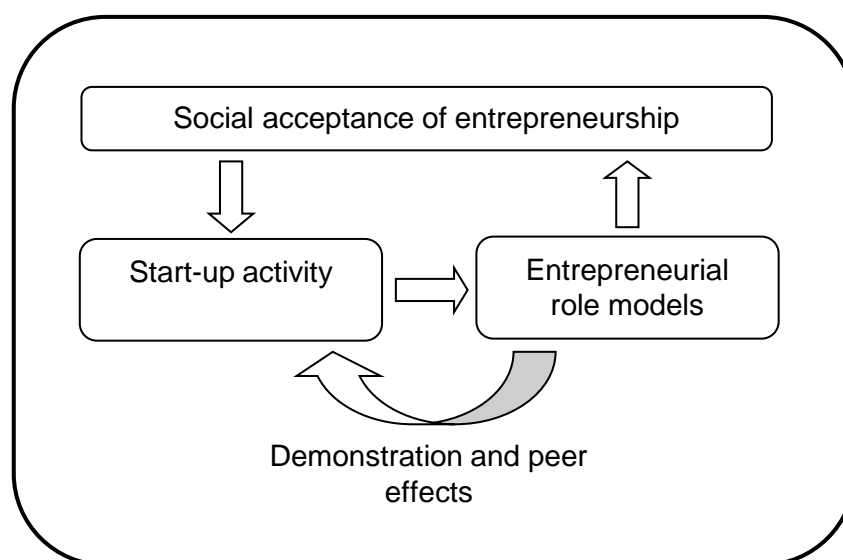


Figure 7: The self-perpetuation of entrepreneurship through demonstration and peer effects

Hence, a regional culture of entrepreneurship can be expected to foster persistent regional differences in self-employment and new business formation over time. Altogether, the interplay of role model effects, start-up activity, and social acceptance can create a virtuous circle that makes a regional entrepreneurship culture—once established—self-perpetuating (Figure 7).

There are two further factors that may reinforce a regional culture of entrepreneurship and explain its persistence. One of these factors is the policy layer (see Figure 6) that includes an infrastructure of supporting services, particularly the availability of competent consulting, entrepreneurial finance, and political support. The emergence of such an infrastructure may be a reaction to a high regional level of new business formation and may reinforce high levels of entrepreneurship over time. However, the example of East Germany (see Section 2.4), where the rigorous anti-entrepreneurship policy of the socialist regime has intensively tried to discourage and suppress self-employment, demonstrates that a regional entrepreneurship culture may persist even without any political support.

Another mechanism that can lead to a reinforcement of a given entrepreneurship culture could be that it attracts people with an entrepreneurial mindset into the region. Since such self-sorting of entrepreneurial people into regions with an entrepreneurship culture weakens the entrepreneurial basis for their home regions, such a process would reinforce regional disparities with regard to such a culture. Because the main elements of a regional entrepreneurship culture change only gradually over time, as well as due to the self-perpetuating effects mentioned above, regional cultures of entrepreneurship have a pronounced tendency to be long-lasting and thus can be viewed as a type of “capital.”

7. Conclusions for policy

We have shown that once a certain level of an entrepreneurship culture has been achieved, it tends to be rather persistent and has positive effects

on regional growth over long periods of time. However, the stability of regional levels of self-employment and new business formation detected in empirical studies also strongly suggests that the establishment of an entrepreneurship culture may require considerable political effort and long periods of time. Hence, policy attempts that aim at fostering the emergence of a regional entrepreneurship culture should be viewed as a long-term investment in a kind of capital stock. It may take a long time until returns on such an investment become visible, but when they occur they will have a long-lasting positive effect on regional development. Our results suggest that an entrepreneurship culture can persist not only for long periods of time, but can also survive severe shocks such as four decades of anti-entrepreneurship policy and an utterly devastating war. This persistence of an entrepreneurship culture implies that it might contribute considerably to the resilience of a region with regard to adverse effects of disruptive changes. In this respect, fostering an entrepreneurship culture could be viewed as a sort of insurance policy or as a preemptive recovery program.

We still do not know much about the forces behind the emergence of a strong regional culture of entrepreneurship. In the regions covered by our empirical analysis, such a culture obviously was not consciously created by political action. Maybe the type of agriculture that prevailed in a region, for example large-scale farming with many employees (northeast Germany) versus small family-run farms (Baden-Wuerttemberg), plays a role. Differences in agriculture practices may have socio-political reasons, but they may also have to do with the quality of the soil or with certain social practices such as the mode of inheritance. If, for example, it has been common practice in a region to divide the land among the beneficiaries in real terms (*Realteilung*), the resulting small lots could have created an incentive to shift economic activity toward some type of craft business, maybe first as a secondary occupation that later became the main source of income. This is an often-found explanation for the emergence of an economic structure characterized by many relatively small firms in some regions in the south of Germany.

Much of the policy aimed at stimulating a regional culture of entrepreneurship involves creation of a supportive infrastructure for entrepreneurship, political commitment to entrepreneurship, and entrepreneurship-friendly laws and regulations (see Figure 5). Since the majority of the relevant laws and regulations apply nationwide, regional-level policy needs to focus on creating a supportive infrastructure, promoting entrepreneurship and new business formation, and possibly local implementation of national laws and regulations. To stimulate the effectiveness of entrepreneurial role models, policy could be designed to enhance the opportunities for personal contact with entrepreneurs. Such policy could include, for example, business plan contests or seminars and presentations at local universities that involve actual entrepreneurs. Another way to encourage the establishment of a regional entrepreneurship culture is to promote entrepreneurial role models in the media. Such realistic examples could help to make entrepreneurship more socially acceptable, especially in areas such as the former East Germany where successful entrepreneurial role models are in short supply. Toward the same end, removing any stigma attached to entrepreneurial failure would also be helpful.

Policy could also promote entrepreneurship education in schools and universities by, first, teaching entrepreneurial skills, and second, providing students with a realistic view of entrepreneurship and helping them accurately assess their own entrepreneurial abilities. A main goal of entrepreneurship education should be that it is those people best suited to the endeavor who choose to be self-employed. Contact with real-world entrepreneurs might work as an “eye-opener” in this regard. Apart from such “soft” campaigns, the policy toolkit should also include measures aimed at creating a physical infrastructure supportive of entrepreneurship. Finally, policies that aim at developing the regional knowledge base and promoting innovational activities can be rather supportive by creating entrepreneurial opportunities. There are many empirical examples that demonstrate a key role of new business formation and other kinds of entrepreneurial behavior for transforming knowledge into commercial

application and growth⁷. Hence, innovation policy and the creation of an entrepreneurship culture may be closely interlinked. Stimulating entrepreneurship can particularly contribute to making the regional knowledge economically effective.

Conscious creation of a culture of entrepreneurship is a new policy field and, as yet, not much is known about how to actually accomplish the task. The national institutional framework is no doubt important, but we suspect that region-specific measures might play an even larger role. There is considerable room for creative strategies based on knowledge gleaned from successful examples.

⁷ This is the main element of the knowledge spillover theory of entrepreneurship (see Acs et al, 2009, 2013).

References

- Acs, Zoltan J., Pontus Braunerhjelm, David B. Audretsch and Bo Carlsson (2009): The knowledge spillover theory of entrepreneurship. *Small Business Economics*, 32, 15–30.
- Acs, Zoltan J., David B. Audretsch and Erik E. Lehmann (2013): The knowledge spillover theory of entrepreneurship. *Small Business Economics*, 41, 757–774.
- Andersson, Martin and Sierdjan Koster (2011): Sources of persistence in regional start-up rates—Evidence from Sweden. *Journal of Economic Geography*, 11, 179–201.
- Andersson, Martin (2012): Start-up rates, Entrepreneurship Culture and the Business Cycle – Swedish patterns from national and regional data. In Pontus Braunerhjelm (Ed.): *Entrepreneurship, norms and the business cycle*, Swedish Economic Forum Report 2012, Stockholm: Entreprenörskapsforum, 91-110.
- Audretsch, David B. and Michael Fritsch (2002): Growth Regimes over Time and Space. *Regional Studies*, 36, 113-124.
- Aoyama, Yuko (2009): Entrepreneurship and regional culture: The case of Hamamatsu and Kyoto, Japan. *Regional Studies*, 43, 495–512.
- Baten, Jörg, Anna Spadavecchia, Jochen Streb, and Shuxi Ying (2007): What made southwest German firms innovative around 1900? Assessing the importance of intra- and inter-industry externalities. *Oxford Economic Papers*, 59, 105–126.
- Baumol, William J. (1990): Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy*, 98, 893-921.
- Bernard, Andrew B. and J. Bradford Jensen (1999): Exceptional Exporter Performance: Cause, Effect, or Both? *Journal of International Economics*, 47, 1–25
- Beugelsdijk, Sjoerd and Niels Noorderhaven (2004): Entrepreneurial attitude and economic growth: A cross-section of 54 regions. *Annals of Regional Science*, 38, 199–218.
- Beugelsdijk, Sjoerd (2007): Entrepreneurial culture, regional innovativeness and economic growth. *Journal of Evolutionary Economics*, 17, 187–210.
- Bosma, Niels, et al. (2012): Entrepreneurship and role models. *Journal of Economic Psychology*, 33, 410–424.
- Bauer, Thomas K., Sebastian Braun and Michael Kvasnicka (2013): The Economic Integration of Forced Migrants: Evidence for Post-war Germany. *The Economic Journal*, 123, 998-1024.
- Brezinski, Horst and Michael Fritsch (1995): Transformation: The shocking German way. *Moct-Most*, 5(4), 1–25.

- Brixy, Udo, Michael Fritsch and Sandra Kublina (2015): Persistence and Change of Regional New Business Formation in the National League Table. Jena: Friedrich Schiller University (mimeo).
- Census (1950): *Ergebnisse der Volks- und Berufszählung vom 13. September 1950 in den Ländern der Bundesrepublik Deutschland*. Various volumes, Statistical Offices of the Federal States of Germany.
- Chinitz, Benjamin (1961): Contrasts in Agglomeration: New York and Pittsburgh. *American Economic Review*, Papers and Proceedings, 51, 279-289.
- Coleman, James S. (1988): Social Capital in the Creation of Human Capital. *American Journal of Sociology* (Supplement), 94, 95–120.
- Dahl, Michael S. and Olav Sorenson (2009): The Embedded Entrepreneur. *European Management Review*, 6, 172–181.
- Davidsson, Per (1995): Culture, structure and regional levels of entrepreneurship. *Entrepreneurship and Regional Development*, 7, 41–62.
- Davidsson, Per and Johan Wiklund (1997): Values, beliefs and regional variations in new firm formation rates. *Journal of Economic Psychology*, 18, 179–199.
- Etzioni, Amitai (1987): Entrepreneurship, adaptation and legitimation. *Journal of Economic Behavior and Organization*, 8, 175–199.
- Fotopoulos, Georgios (2014): On the spatial stickiness of UK new firm formation rates. *Journal of Economic Geography*, 14, 651–679.
- Fotopoulos, Georgios and David Storey (2015): Persistence and change in Interregional differences in Entrepreneurship: England and Wales, 1921-2011. Sheffield (UK): University of Scheffield (mimeo).
- Freytag, Andreas and Roy Thurik (2007): Entrepreneurship and its determinants in a cross-country setting. *Journal of Evolutionary Economics*, 17, 117–131.
- Fritsch, Michael and Pamela Mueller (2007): The Persistence of Regional New Business Formation-Activity over Time – Assessing the Potential of Policy Promotion Programs. *Journal of Evolutionary Economics*, 17, 299-315.
- Fritsch, Michael (2013): New Business Formation and Regional Development—A Survey and Assessment of the Evidence. *Foundations and Trends in Entrepreneurship*, 9, 249–364.
- Fritsch, Michael, Elisabeth Bublitz, Alina Sorgner and Michael Wyrwich (2014): How Much of a Socialist Legacy? The Reemergence of Entrepreneurship in the East German Transformation to a Market Economy. *Small Business Economics*, 43, 427-446.
- Fritsch, Michael and Michael Wyrwich (2014): The Long Persistence of Regional Levels of Entrepreneurship: Germany 1925 to 2005. *Regional Studies*, 48, 955-973.

- Fritsch, Michael and Michael Wyrwich (2015): The Effect of Regional Entrepreneurship Culture on Economic Development—Evidence for Germany, Jena: Friedrich Schiller University (mimeo).
- Fritsch, Michael and Michael Wyrwich (2016): The Persistence of Regional Entrepreneurship – Are all types of Self-Employment Equally Important? In Elizabeth Mack and Haifeng Qian (eds.), *The Geography of Entrepreneurship*. Abingdon: Routledge.
- Glaeser, Edward L., Sari Pekkala Kerr, William R. Kerr (2015): Entrepreneurship and Urban Growth: An Empirical Assessment with Historical Mines. *Review of Economics and Statistics*, 97, 498–520.
- Grabher, Gernot. (1993): The Weakness of Strong Ties: The Lock-in of Regional Development in the Ruhr Area. In: Gernot Grabher (Ed.), *The Embedded Firm*, London: Routledge, 255-277.
- Hall, John B. and Udo Ludwig (1995): German Unification and the “market adoption” Hypothesis. *Cambridge Journal of Economics*, 19, 491-507.
- Hannan, Michael T. and John Freeman (1977): The population ecology of organizations. *American Journal of Sociology*, 83, 929–984.
- Hofstede, Geert and Robert R. McCrae (2008): Personality and culture revisited, linking traits and dimensions of culture. *Cross-Cultural Research*, 38, 52 – 87.
- Hunt, Jennifer (2006): Staunching Emigration from East Germany: Age and the Determinants of Migration. *Journal of the European Economic Association*, 4, 1014–1037.
- Kawka, Rupert (2007): Regional disparities in the GDR: Do they still matter? In S. Lentz (ed.): *German Annual of Spatial Research and Policy: Restructuring Eastern Germany*, Berlin: Springer, 111–122.
- Kibler, Ewald, Teemu Kautonen and Matthias Fink (2014): Regional Social Legitimacy of Entrepreneurship: Implications for Entrepreneurial Intention and Start-Up Behaviour. *Regional Studies*, 48 (forthcoming)
- Laspita, Stavroula, Nicola Breugst, Stephan Heblch and Holger Patzelt (2012): Intergenerational transmission of entrepreneurial intentions. *Journal of Business Venturing*, 27, 414-435.
- Lindquist, Matthew, Joeri Sol and Mirjam van Praag (2015): Why do Entrepreneurial Parents have Entrepreneurial Children? *Journal of Labor Economics*, 22, 269-296.
- McClelland, David C. (1961): *The Achieving Society*. Princeton, NJ: Van Nostrand Reinhold.
- Michelacci, Claudio and Olmo Silva (2007): Why so Many Local Entrepreneurs? *Review of Economics and Statistics*, 89, 615-633.
- Minniti, Maria (2005): Entrepreneurship and network externalities. *Journal of Economic Behavior and Organization*, 57, 1–27.

- North, Douglass C. (1994): Economic performance through time. *American Economic Review*, 84, 359–368.
- Nunn, Nathan (2012): Culture and the Historical Process. *Economic History of Developing Regions*, 27, S108-S126.
- Obschonka, Martin, Eva Schmitt-Rodermund, Samuel D. Gosling and Rainer K. Silbereisen (2013): The Regional Distribution and Correlates of an Entrepreneurship-Prone Personality Profile in the United States, Germany, and the United Kingdom: A Socioecological Perspective. *Journal of Personality and Social Psychology*, DOI 10.1037/a0032275.
- Parker, Simon (2009): Why do small firms produce the entrepreneurs? *Journal of Socio-Economics*, 38, 484-49.
- Putnam, Robert D. (2000): *Bowling alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.
- Ranger-Moore, James, Robert S. Breckenridge and Daniel L. Jones (1995): Patterns of growth and size localized competition in the New York State Life Insurance Industry, 1860-1985. *Social Forces*, 73, 1027–1049.
- Rauch, Andreas and Michael Frese (2007): Let's Put the Person Back into Entrepreneurship Research: A Meta-Analysis on the Relationship Between Business Owners' Personality Traits, Business Creation, and Success. *European Journal of Work and Organizational Psychology*, 16, 353–385.
- Rentfrow, Jason P., Samuel D. Gosling, and Jeff Potter (2008): A theory of the emergence, persistence, and expression of geographic variation in psychological characteristics. *Perspectives on Psychological Science*, 3, 339-369.
- Statistik des Deutschen Reichs (1927): *Volks-, Berufs- und Betriebszählung vom 16. Juni 1925: Die berufliche und soziale Gliederung der Bevölkerung in den Ländern und Landesteilen*. Vol. 403–Vol. 405, Berlin: Reimar Hobbing.
- Statistische Ämter der Deutschen Länder (1950): Ergebnisse der Volks- und Berufszählung vom 13. September 1950 in den Ländern der Bundesrepublik Deutschland. Various volumes.
- Stephan, Ute and Lorraine M. Uhlander (2010): Performance-based vs socially supportive culture: A cross-national study of descriptive norms and entrepreneurship. *Journal of International Business Studies*, 41, 1347-1364.
- Sternberg, Rolf (2011): Regional determinants of entrepreneurial activities – theories and empirical evidence. In Michael Fritsch (ed.): *Handbook of Research on Entrepreneurship and Regional Development*, Cheltenham: Elgar, 33-57.
- Stuart, Toby E. and Olav Sorensen (2003): The geography of opportunity: spatial heterogeneity in founding rates and the performance of biotechnology firms. *Research Policy*, 32, 229-253.

- Stuetzer, Michael, et al. (2014): Regional characteristics, opportunity perception and entrepreneurial activities. *Small Business Economics*, 42, 221-244.
- Suedekum, Jens (2008): Convergence of the Skill Composition across German Regions. *Regional Science and Urban Economics*, 38, 148–159.
- Sutaria, Vinod and Donald A. Hicks (2004): New firm formation: dynamics and determinants. *Annals of Regional Science*, 38, 241–262.
- Tabellini, Guido (2010): Culture and institutions: economic development in the regions of Europe. *Journal of the European Economic Association*, 8, 677-710.
- Tipton, Frank B. (1976): *Regional Variations in the Economic Development of Germany during the Nineteenth Century*. Middletown: Wesleyan University Press.
- Westlund, Hans and Roger E. Bolton (2003): Local Social Capital and Entrepreneurship. *Small Business Economics*, 21, 77-113.
- Westlund, Hans and Frane Adam (2010): Social Capital and Economic Performance: A Meta-analysis of 65 Studies. *European Planning Studies*, 18, 893-919.
- Westlund H., J.P. Larsson and A.R. Olsson (2014): Startups and Local Social Capital in Swedish Municipalities. *Regional Studies* 48 (forthcoming).
- Williamson, Oliver (2000): The New Institutional Economics: Taking Stock, Looking Ahead. *Journal of Economic Literature*, 38, 595–613.
- Wyrwich, Michael (2012): Regional entrepreneurial heritage in a socialist and a post-socialist economy. *Economic Geography*, 88, 423-445.
- Zhao, Hao and Scott E. Seibert (2006): The Big-Five Personality Dimensions and Entrepreneurial Status: A Meta-Analytical Review. *Journal of Applied Psychology*, 91, 259–271.