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Unemployment as a driver of entrepreneurship in Eastern and Western Germany

Christian Bergholz[a], Rolf Sternberg[b], Lennard Stolz[b] and Johannes Bersch[c]

ABSTRACT

This article investigates regional variation in the unemployment push in Germany during economic upswings. Using a dataset of 1.2 million business formations in an eight-year period, we analyse regional variation in the urban–rural dichotomy and differentiate between regions in capitalist Western and those in the formerly socialist Eastern Germany and account for regions' economic situations. The intensity of the unemployment push increases with the level of rurality, and there is a stronger unemployment push in Western than in Eastern Germany. The latter can be attributed to differences in policy preferences regarding state reliance as tested by using voting patterns.

KEYWORDS

necessity entrepreneurship; urban regions; rural regions; Eastern Germany; socialist heritage; unemployment push

JEL L26, N94, R11

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1. INTRODUCTION

Unemployment has been a key issue in many countries and their subnational regions for the last several decades, and Germany is no exception. While unemployment has been replaced by the much greater long-term problem of a shortage of skilled labour in many regions (e.g., Buch et al., 2024), it continues to exert a strong influence on other economic phenomena. These phenomena include regional and national economic growth and the founding of new businesses, which is, in turn, an important determinant of regional and national economic growth that is well documented in the regional entrepreneurship literature (cf. Fritsch, 2011). The unemployment push argument is that starting one's own business is a serious alternative to seeking (new) paid employment. In the case of such 'necessity entrepreneurship', a person starts a business due to a lack of attractive employment alternatives because they fear losing their job or they are already unemployed (Mueller & Pieperhoff, 2023).

The motivation for 'opportunity entrepreneurship' is fundamentally different; in this form of entrepreneurship, founders have well-paid jobs but see good start-up opportunities to execute their own business ideas (Fairlie & Fossen, 2019). The personal and context-related determinants, the motives to start a new business, and the prospects for success are very different for these two types of entrepreneurship. The unemployment-push argument is often made in the context of particularly high unemployment rates during a recession or other economic crises so that the unemployment push in favour of (necessity) entrepreneurship is disproportionately strong when macroeconomic circumstances are worse (Koellinger & Thurik, 2012).

While the unemployment push is well documented in the literature at the country level (e.g., Bergmann & Sternberg, 2007), little is known about its regional variation within a single economy. Understanding regional differences in the unemployment push aids in the implementation of well-tailored policy measures. The main objective of this paper is to bring to light this under-researched area, and we make three main contributions to the literature.

First, we focus on rural–urban differences in the unemployment push. There are good reasons to assume huge differences in this push between very low and high-density regions. High-density regions are characterised by greater economic activity, which generates more business opportunities for necessity entrepreneurs. The labour markets in rural and urban areas are also strikingly different. Whereas rural regions are often shaped by their thin labour

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markets and the associated problems of limited job supply and demand, most urban regions have thick labour markets (Di Addario, 2011). There are also significant disparities between Germany's rural and urban regions in terms of economic indicators such as the unemployment rate, household income and gross domestic product (GDP) per capita, as detailed in section 2.

Our second contribution is that we compare the unemployment push in Western and Eastern Germany in terms of new venture formation. As shown in section 2, there are, even several decades after reunification, still obvious economic, social and entrepreneurial discrepancies between these parts of Germany. The socialist heritage theory (related to Eastern Germany) obviously still offers an, at least partial, explanation of these differences. Also relevant are the populations' different perceptions regarding the state's responsibility if the economic situation is not considered satisfactory. As Alesina and Fuchs-Schuendeln (2007) show, compared with those in Western Germany, citizens living in the former German Democratic Republic (GDR) more often expect and favour state intervention. This difference also relates to individual or regional unemployment – and necessity entrepreneurship as a possible response.

Our expectation, tested in the empirical core of the paper, is that those who are unemployed in Eastern Germany will start a new venture less often than those in the same circumstance in Western Germany; those in Eastern Germany expect the state to help them out of this economically difficult situation. We use federal election data on the county level (NUTS-3) to show that political parties that assign more responsibilities to the state (instead of promoting individualised and less state-dependent behaviour) are much more successful in Eastern Germany than in Western Germany. In other words, people's policy preferences differ significantly between Western and Eastern Germany, which also results in a lower unemployment push effect in the east. To the best of our knowledge, there is no empirical literature on this highly policy-relevant issue. Understanding the mechanism of the unemployment – entrepreneurship relationship in varying regional contexts is highly relevant for regional policy programmes.

Third, and partially related to the argument above, we investigate the unemployment push conditional on regional economic circumstances. This helps us to better contextualise the results and identify the extent to which hard economic facts drive regional differences in the unemployment push.

In the empirical section, we test one hypothesis for each of these three core topics:

Hypothesis 1: The effect of unemployment on new venture formation is higher in urban than in rural areas.

Hypothesis 2: The effect of unemployment on new venture formation is lower in Eastern German regions than in Western German regions.

Hypothesis 3: The unemployment push is more pronounced in prospering regions.

In section 2, we outline the conditions in German regions for our reference period 2012–19 in purely descriptive terms, differentiated according to urban and rural and western and eastern regions of Germany, to gain insight into Germany's economic and demographic situation and to further substantiate our research focus. In section 3, we describe the literature on the impact of unemployment on regional entrepreneurship and develop our three hypotheses. In section 4, we present our data, variables and methods. The empirical results are presented in section 5. We discuss our findings in section 6 and conclude with policy implications, limitations and recommendations for future research in section 7.

2. UNEMPLOYMENT, NEW VENTURE FORMATION AND REGIONAL ECONOMIC INEQUALITIES: A DESCRIPTIVE VIEW ON THE SITUATION IN GERMANY

Internationally, Germany is considered a country with relatively low interregional inequality according to various economic indicators (Organisation for Economic Co-operation and Development (OECD), 2023), including rates of unemployment and entrepreneurship. However, Germany does exhibit regional economic inequality. Economic disparities persist even several decades after the reunification of Western Germany (Federal Republic of Germany – FRG) and Eastern Germany (the former communist GDR; Der Beauftragte der Bundesregierung für Ostdeutschland, 2023). There are also significant and persistent differences between urban and rural areas, as we show below (see also Küpper & Peters, 2019). According to Küpper's (2016) classification, 60% of the German population (excluding Berlin)[1] lived in rural regions at the beginning of our observation period in 2012. The share of the population who lived in rural areas had hardly changed by the end of our observation period in 2019 (59%). In 2019, 56% lived in rural regions in the west and 79% in the east. It is important to assess these demographic conditions before describing the spatial patterns of unemployment and business formation in Germany. We do so by applying a 2 × 2 matrix of urban and rural regions on the one hand and western versus eastern regions on the other, acknowledging that the simple rural–urban dichotomy is highly simplistic. The following observations refer to the reference period (2012–19), except for the unemployment rate (2011–18), which is lagged by one year for use in regression.

Based on NUTS-3 level data, Figure 1 shows considerable differences in the unemployment rate, especially at the beginning of the observation period. The unemployment rate of regions in Eastern Germany was about 11% in 2011, but only 7.6% and 4.9% in Western Germany's urban and rural areas, respectively. Over time, there has been a substantial decrease in the unemployment rates in rural and urban regions in Eastern Germany, which converged with urban western regions at about 7% in 2018. The unemployment rate for rural Western regions dropped from 4.9% to 3.9%, but there remains a

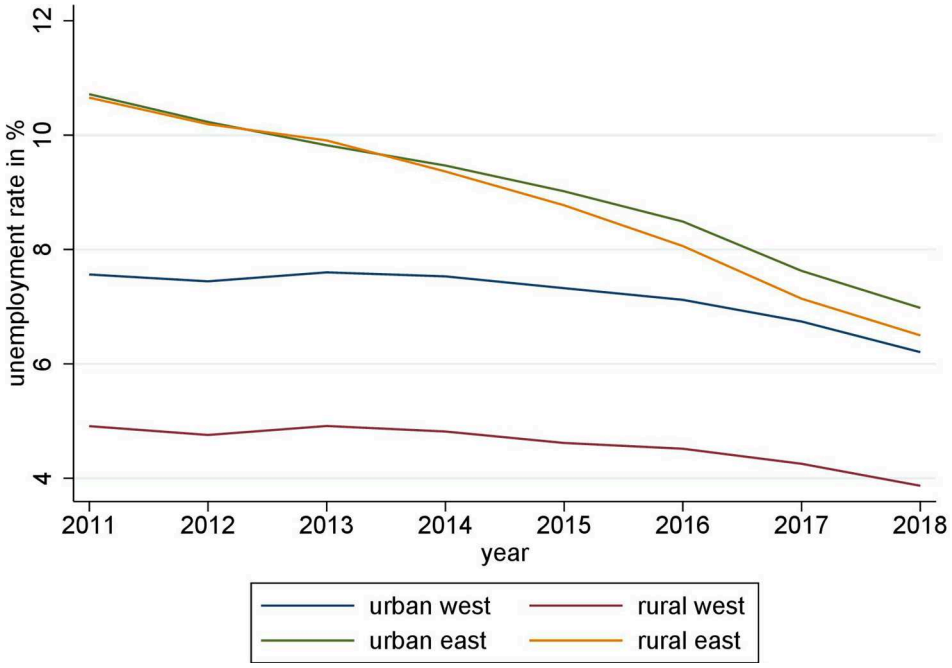

Figure 1. Unemployment rate, 2011–18, by region type (German NUTS-3 regions aggregated).

substantial difference between rural regions in Western and Eastern Germany. At first glance, the process of convergence is good news for regions in Eastern Germany, but the downward trend is not driven by putting more unemployed people to work. Rather, it is due to passive remediation,[2] where the vast majority of Eastern German regions experienced a decrease in employed people (Fuchs, 2016; Küpper & Peters, 2019).

We observe a relevant urban–rural divide and an even stronger west–east divide in GDP per capita (in €1000) (Figure 2). Notably, all four region types exhibit similar shifts over time, with significant level differences. The differences between urban and rural areas hardly changed during the period under review. They are (still) more pronounced in the west than in the east, where there are significantly fewer cities than in the west – also relative to the size of the population (80.6% of Germany's inhabitants lived in the west, 15.0% in the east and 4.4% in Berlin).

Another relevant economic indicator regarding the formation of new ventures from a position of unemployment is the average household income in euros (Figure 3). In both

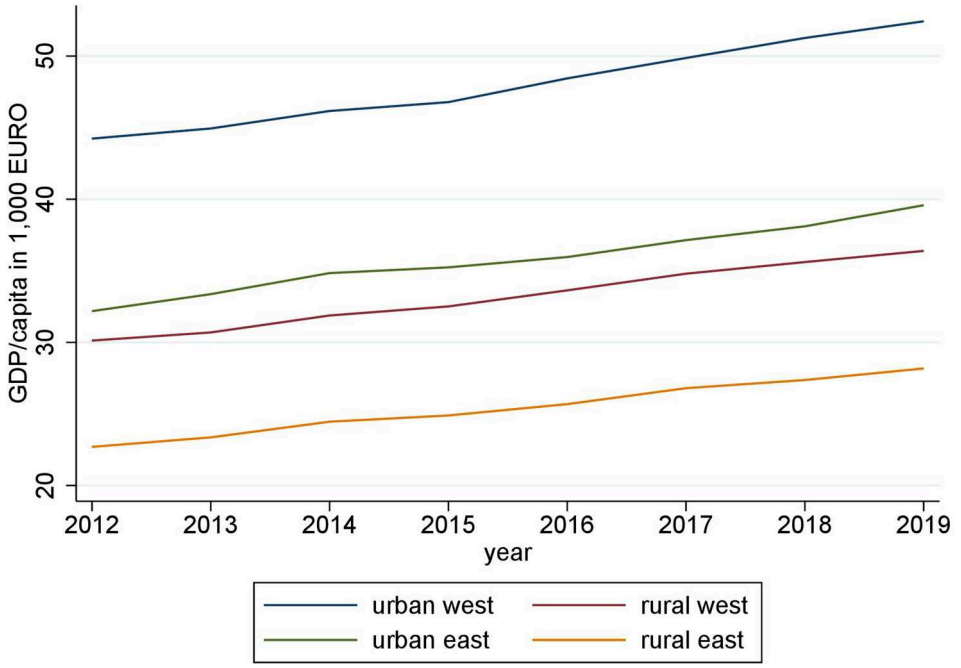

Figure 2. Gross domestic product (GDP)/capita, 2012–19, by region type (German NUTS-3 regions aggregated).

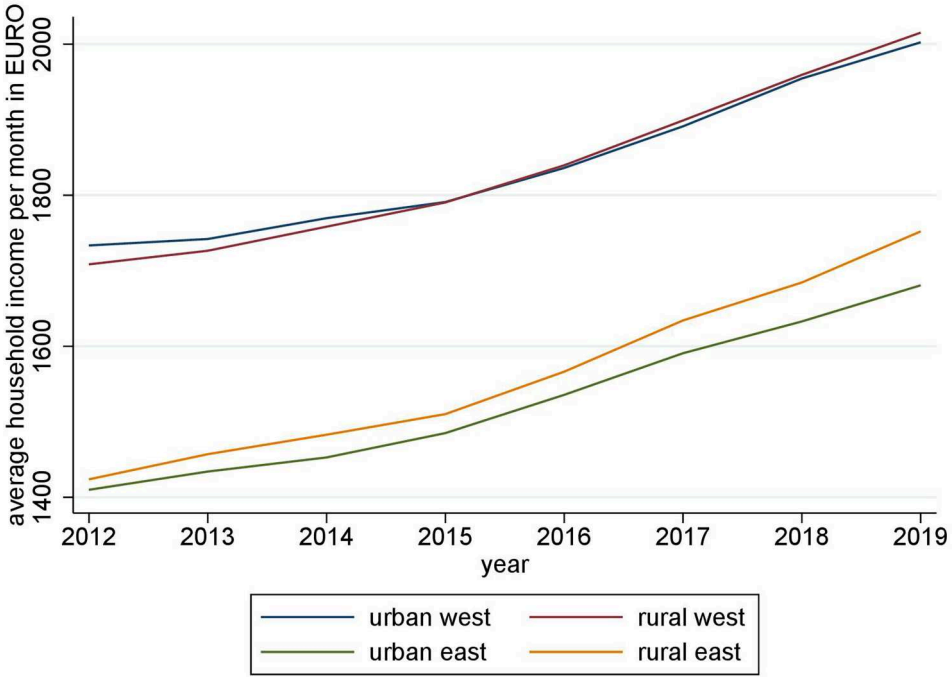

Figure 3. Average household income, 2012–19, by region type (German NUTS-3 regions aggregated).

parts of Germany, urban–rural differences in household income are low – but the east–west differences are striking for both urban and rural areas (approximately 40% higher median household income in the west than in the east) and decreased only slightly during the study period. These differences in household income reflect the considerable wage differentials between Western German and Eastern German regions, even several decades after reunification, as well as the difference between the two in terms of the presence of large companies and manufacturing firms. Household income represents local demand, on which the necessity entrepreneurs analysed in this work are particularly dependent.

Figure 4 shows venture formations per 10,000 employees. It reveals a strong west–east divide in the rate of venture formation, which is far higher in Western Germany. It also clearly confirms that venture formation in Germany is primarily an 'urban event'; in both parts of Germany, the venture formation rates in urban regions are around 5 percentage points higher than in rural areas, as is the case in many countries (Bosma & Sternberg, 2014). The rates did not change significantly during the study period, but

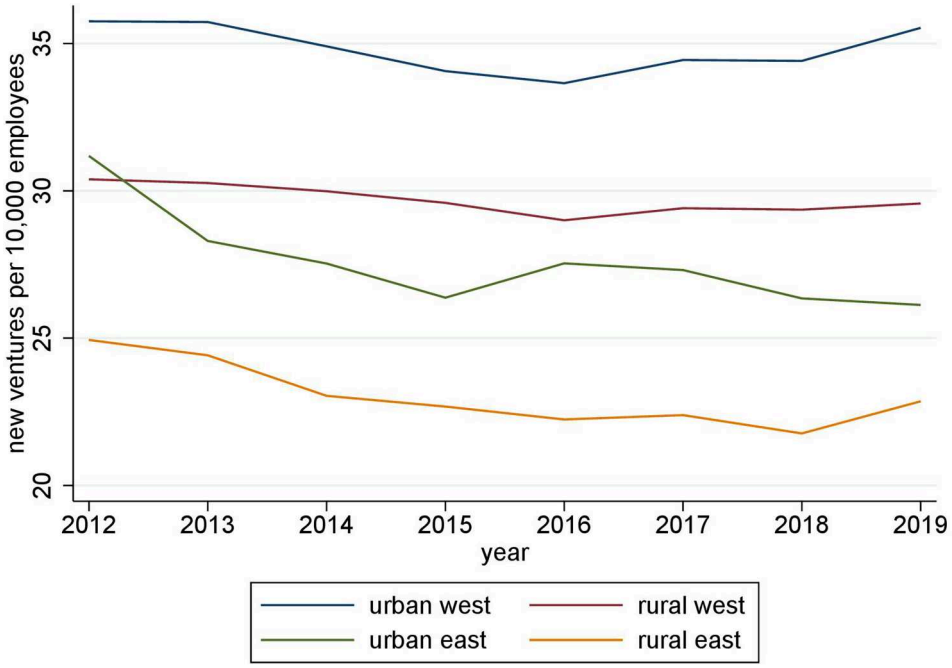

Figure 4. New business formations per 10,000 employees, 2012–19, by region type (German NUTS-3 regions aggregated).

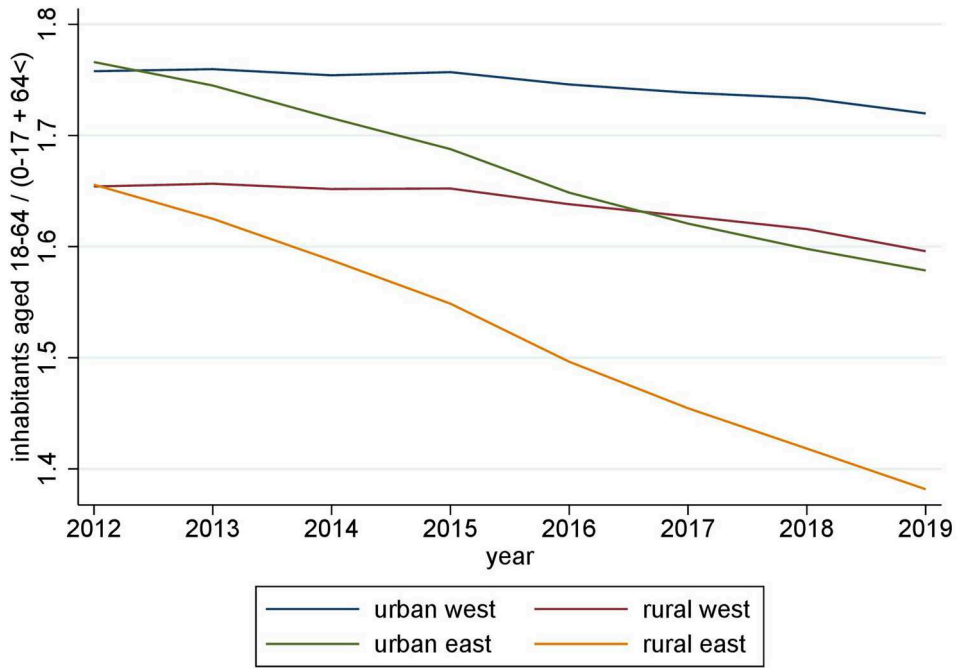

Figure 5. Proportion of inhabitants of founding age (18–64 years old) to residents of non-founding age (0–17 years old plus > 64 years old) by region type (German NUTS-3 regions aggregated), 2012–19.

the absolute and relative decline in the rate of venture formation in urban regions in Eastern Germany is striking.

Of course, the total population living and working in a region serves as the overall basis for our main indicators of interest: (un)employment and venture formation. More precisely, the proportion of 18–64-year-olds in the total population is relevant, as those under 18 and over 65 are usually neither unemployed nor forming new ventures.

Figure 5 shows more dynamism during the period under review than any other indicator. While the proportion of 18–64-year-olds decreased for all four spatial categories, there was a widening of the gap for this indicator between Western and Eastern cities and between rural Western and rural Eastern regions. While in Western Germany, this age group's share slowly declined, this reduction was more abrupt in Eastern Germany. Ageing and migration are the obvious explanations for this: the population in Germany as a whole is getting older, and growth (or at least stability) is mainly the result of in-migration rather than natural population growth. In several regions in Eastern Germany, depopulation is the result of outmigration and ageing.

In sum, the economic and demographic disparities between Western and Eastern Germany remain evident, even several decades after reunification. The disparities were particularly evident and increasing for venture formation and the proportion of 18–64-year-olds, while there was a decreasing gap in terms of unemployment during the period under review. The first core statement also applies to urban–rural differences (in favour of urban regions): they are greatest and increasing for the proportion of 18–64-year-olds and the venture formation rate. The combination of characteristics (degree of urbanity–rurality and west–east affiliation) shows that urban NUTS-3 regions in the west perform best and rural ones in the east worst for all indicators except the unemployment rate. We focus on these regional differences in our review of the literature on the unemployment push and in deriving our hypotheses in section 3.

3. UNEMPLOYMENT AND ENTREPRENEURSHIP: LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

3.1. Relevance of the unemployment push

The impact of unemployment on entrepreneurial activities has been debated for decades. There are two contradicting arguments in the literature. On the one hand, unemployment might lead to individuals becoming self-employed to earn a living (Oxenfeldt, 1943). On the other hand, unemployment is tied to the economic context of a particular region, and high unemployment rates might result in fewer business opportunities (Verheul et al., 2002). Several empirical studies have shown the positive relationship between unemployment and entrepreneurial activity as a result of decreased opportunity costs, which is also referred to as a supply or unemployment 'push' of individuals into entrepreneurial activities (e.g., Apergis & Payne, 2016; Koellinger & Thurik, 2012; Thurik et al., 2008). Entrepreneurial activity resulting from unemployment is often used to operationalise 'necessity' entrepreneurship that individuals carry out when they lack other options for earning a living (Bergmann & Sternberg, 2007; Reynolds et al., 2005).

Existing studies pay little attention to the potential impact of the regional context on this unemployment push. Entrepreneurship theory, however, highlights the

importance of the (spatial) context in researching entrepreneurship (Welter, 2011) and posits that entrepreneurship is a primarily regional event (Feldman, 2001). Many studies take regional unemployment rates into account as a control variable, but few consider the impact of regional differences in any detail. The results regarding the overall magnitude and the effect size are heterogeneous. For German regions, Audretsch et al. (2015) and Fritsch and Wyrwich (2014) find that the unemployment rate is negatively associated with entrepreneurship, except for periods during which the federal government financially supported self-employment to exit unemployment. Fritsch et al. (2015) find a positive relationship. This relationship is stronger during recessions than in boom periods. Bergmann and Sternberg (2007) find a negative relationship between the change in the unemployment rate and the probability of becoming an entrepreneur across German regions from 1999 to 2001 and a positive relationship from 2001 to 2003.

The literature on entrepreneurship and regional development suggests that this heterogeneity is the result of considerable differences between regions within the same country; regional characteristics influence the regional-level interdependencies between the socio-economic environment, individual-level perceptions of opportunity and entrepreneurial activity (Stam, 2015; Sternberg, 2011, 2022). In analysing the unemployment push on the regional level, we account for this heterogeneity by focusing on persistent urban–rural and west–east differences and regional economic differences.

3.2. The unemployment push in rural and urban regions

A major differentiator of regions is their degree of rurality. Several empirical studies note the lower entrepreneurship rates in non-urban regions (e.g., Bosma & Sternberg, 2014; Stam, 2005). The mechanisms of entrepreneurship in urban areas have been extensively studied (Andersson & Larsson, 2016; Audretsch et al., 2021; Bosma & Sternberg, 2014; Zhang & Roelfsema, 2020). Agglomeration effects are offered as the main explanation for the prevalence of entrepreneurship in urban areas (Bosma et al., 2008; Delgado et al., 2010; Glaeser et al., 2010; Rosenthal & Strange, 2004). Urban economies provide relatively more opportunities for potential entrepreneurs as a result of higher local demand and the urbanisation economies associated with a diversified industry and firm structure.

These conditions are generally favourable for new venture formation for the following reasons. First, due to spatial concentration, inter-industrial linkages are more likely to emerge, resulting in information spillovers that support new business ideas. Second, a wide range of diversified skilled labour and a huge pool of cheap labour are present in urban areas. There is also good access to a great variety of business services, which is an especially helpful way for early-stage entrepreneurs to compensate for skill deficits. Third, urbanisation effects are size dependent; the larger an urban region, the more pronounced the effects will be.

The above findings on urban advantage in entrepreneurship also apply to necessity entrepreneurs, at least to a certain extent. Nevertheless, we provide additional arguments that are especially relevant for necessity entrepreneurs and could explain a pronounced unemployment push in urban regions. Urban regions offer the ideal conditions for the business models usually applied by necessity entrepreneurs. These business models, for example, small-scale retailing and various forms of catering, often depend on concentrated local demand within a narrow geographical radius (e.g., Carree & Dejardin, 2020). Urban regions have, on average, a much greater variety in the demand structure of individual needs than rural regions (Bosma et al., 2008). The variety of demand creates an abundance of business niches that can be filled and, in turn, provides necessity entrepreneurs in urban regions with greater opportunities than those in rural regions. Bosma and Sternberg (2014) analysed the extent to which the emergence of necessity and opportunity in entrepreneurship in European regions depends on individual and regional characteristics. For necessity entrepreneurship, the regional context of cities is over three times more important than for opportunity entrepreneurship; the urban context is thus particularly important for the unemployment push. Based on the previous arguments, we posit the following hypothesis.

Hypothesis 1: The effect of unemployment on new venture formation is higher in urban than in rural areas.

3.3. The unemployment push between Eastern and Western Germany

Given the very specific history of Eastern Germany and its 40 years of socialist governance, described above, we integrate a further dimension into our research design: the distinction between Eastern and Western Germany. Even today, there are evident differences between these parts of Germany as a result of their distinct histories, for example, in terms of their degree of rurality and economic prosperity discussed in section 2. We thus examine the respective influence of these factors on the unemployment push. In addition, we consider a difference between the two that is attributable to their distinct histories. Eastern Germany's socialist heritage, which we argue contains culturally embedded views on the role of the state in unemployment.

The social heritage theory has been studied extensively regarding the persistent economic, social and entrepreneurial gap between Western and Eastern Germany (e.g., Fritsch et al., 2019; Wyrwich, 2012, 2013; Wyrwich et al., 2019). Most studies find lower rates of entrepreneurship and self-employment in Eastern Germany than in Western Germany and attribute this to the socialist heritage of the former. However, a recent work by Fritsch et al. (2023) using a difference-in-difference approach provides evidence that the negative long-run effect on entrepreneurship rates in Eastern Germany after reunification is the result of a reunification shock rather than the

socialist heritage of the region. This finding is supported by Becker et al. (2020), who provide several well-founded arguments for why applying the natural experiment approach to Eastern Germany's 40 years of socialism is unsuitable. Most of the socialist heritage literature analyses ordinary new venture formation rates. However, many mechanisms of how Eastern Germany's socialist heritage continues to influence today's entrepreneurship rates have not yet been considered.

Wyrwich et al. (2019) is a step toward closing existing research gaps. The study shows that the impact of failed role models on the fear of failure is more pronounced in entrepreneurship-inhibiting environments such as post-socialist Eastern Germany. We tie into this line of research and analyse the relationship between unemployment and entrepreneurship against the background of Eastern Germany's socialist heritage. The motivation for starting a business out of unemployment differs fundamentally from that driving opportunity entrepreneurship, in which the founder has a well-paid job but sees a good opportunity for her business idea and/or prefers to be her own boss (Fairlie & Fossen, 2019). We argue that Eastern Germany's socialist heritage makes this factor particularly relevant. It could influence the impact of unemployment on entrepreneurship since being unemployed (and thus needing to consider necessity entrepreneurship) was virtually unknown in the GDR. The centrally organised economy ensured that every individual had a job. Hence, there was barely a need to look for a job on your own, let alone think about forming a venture out of unemployment.

We argue that there is an additional mechanism that attenuates the unemployment push in Eastern Germany, which is that people who have lived under socialism have developed an understanding that in the event of unemployment, the responsibility for finding a job lies more with the state and less with the individual.

According to Alesina and Fuchs-Schuendeln (2007), compared with those who lived in Western Germany, significantly more Germans who lived in the former GDR favour state intervention to ensure the financial security of non-working groups (e.g., unemployed, sick, retired). Given that Eastern and Western Germany were part of the same country before their separation following the Second World War, this suggests that the distinct political regimes impacted individual perceptions and beliefs. In addition, the authors find that the probability of believing that social conditions (rather than individual characteristics) determine whether a person is poor is higher for Eastern Germans than for Western Germans, and this effect is particularly pronounced for older Eastern Germans. Hence, a longer time living in the GDR led to a stronger belief that it is the 'society's fault' if someone is poor. If it is not the individual but the society that is responsible, it makes sense that the state should take care of the problem.

Both findings – believing that the state should take care of financial security and that an individual's success is determined by social conditions – indicate that being socialised or being the offspring of someone socialised in Eastern Germany impacts the unemployment push. People with these beliefs would rather rely on the state when becoming unemployed than act to, for example, form a new venture. This position is supported by the findings of Bauernschuster et al. (2012), who show that self-reliance is significantly lower in Eastern Germany than in Western Germany and that this is neither explained by individual characteristics nor by economic differences. The results show that self-reliance is positively associated with the likelihood of becoming an entrepreneur; hence, the lack of self-reliance hinders entrepreneurship in Eastern German regions.

More recent contributions in this stream of research confirm these findings, and the effect should be measurable with our data. Bondar and Fuchs-Schündeln (2023) show that the effect is still present and that a convergence between the parts of Germany regarding past reliance on the state was mainly driven by a change in the composition of the population and is now slowing. The results show that younger persons who were born after German reunification to parents who lived in the East are significantly more likely to have policy preferences for state reliance than those born to parents who lived in the West. The authors find that self-employed respondents favour state interventions for the unemployed less than other groups (Bondar & Fuchs-Schündeln, 2023); this could also indicate that heavy state reliance is negatively associated with the likelihood of becoming an entrepreneur in the case of unemployment. In their study of 17 European countries, Fuchs-Schündeln and Schündeln (2020) find that more people in former socialist countries agree with the statement that it is the responsibility of the government to reduce income inequalities between the poor and the rich than is the case in Western countries. Again, the share is higher among older respondents, indicating that living longer under socialism bolsters this mindset. Based on these arguments, we propose the following hypothesis:

> *Hypothesis 2: The effect of unemployment on new venture formation is lower in Eastern German regions than in Western German regions.*

3.4. The unemployment push and regions' economic conditions

Discussions about the unemployment push have been clearly linked to macroeconomic conditions, particularly in periods of economic downturn, during which firms go bankrupt and release employees. Fewer job opportunities and low opportunity costs push these people into self-employment, and, as a result, there is an overall increase in entrepreneurship rates (Oxenfeldt, 1943; Parker, 2009). The unemployment push has been extensively studied across various countries and economic contexts and in relation to various policy interventions. The literature provides mixed results for the unemployment push as it applies to entire countries and without regional differentiation (e.g., Apergis & Payne, 2016; Carmona et al., 2012; Cueto et al., 2015; Fritsch et al., 2015; Koellinger

& Thurik, 2012). The inconclusiveness of the literature is mainly explained by studies focusing on specific countries with varying labour market programmes and social security systems. They also vary in their observation periods, encompassing both boom and recession phases.

The literature on the regional unemployment push being conditional on economic conditions is scarce. We contribute by examining differences in region's responses based on their economic level, exploiting cross-regional variation in economic circumstances across Germany. As far as we know, only two existing studies examine this topic. First, in a panel study of 148 European NUTS-2 regions for the period 2008–17, O'Leary (2022) finds a positive relationship between the growth of entrepreneurship and unemployment conditional on the regions' economic levels. The relationship is positive for high-performing and negative for low-performing regions. Bosma and Sternberg's (2014) study yields similar results, focusing on European NUTS-2 regions with an emphasis on urban regions. They find GDP growth has a more pronounced positive effect on necessity entrepreneurship than on opportunity entrepreneurship. Both studies indicate that even necessity entrepreneurs who start their business out of unemployment exploit promising regional economic conditions. Based on the above, we propose the following:

Hypothesis 3: The unemployment push is more pronounced in prospering regions.

4. DATA AND ESTIMATION STRATEGY

4.1. Dependent variable

We use the absolute number of venture formations for each German NUTS-3 region *i* in year *j*. The data in the analyses are those in the Centre for European Economic Research's Mannheim Enterprise Panel (MUP) (cf. Bersch et al., 2014). The MUP uses the narrowly defined concept of enterprise of the data provider Creditreform, which registers economically active enterprises. As a result, the reported rates for new ventures are lower than for other data sources, such as the official business register. Thus, we largely avoid the problem of a new business being recorded for which there are no relevant activities evident in the market. A comparison with evaluations from the German Microcensus suggests that the MUP provides a relatively realistic picture of new venture activity in Germany. Around 1.2 million new ventures were established for the 399 German NUTS-3 regions between 2012 and 2019, with an average new venture intensity of 29.49. As in several related spatial analyses, we exclude Berlin because it cannot be clearly assigned to either Western or Eastern Germany; West Berlin belonged to the FRG and East Berlin to the GDR (Fritsch et al., 2023).

Figure 4 provides a first impression of the distribution of new venture intensity across regions, with a substantial west–east divide and a strong urban–rural divide.

4.2. Independent variables

We create a unique dataset comprising all German NUTS-3 regions, that is, using counties as observation units. The dataset consists of our main variables of interest: the unemployment rate, a rurality dummy identifying each region as rural or urban, a dummy variable identifying regions located in Eastern Germany, the voter share of the far-left party 'Die Linke' in each region, regional GDP per capita, average household income and a series of control variables that existing studies have proved empirically relevant in explaining spatial differences in new venture intensity and/or are of theoretical relevance. These factors are essentially geographic, economic, socio-economic and demographic. We further account for each region's industry structure based on NACE Rev. 2. sections by adding variables representing each industry's employees as a share of all employees in a region (cf. Bersch et al., 2014).

4.2.1. Unemployment rate

Our main variable of interest is the unemployment rate, which is defined as the share of unemployed in the regional workforce. We argue that the unemployment rate is a suitable proxy for necessity entrepreneurship at the regional level because it is reasonable to expect that almost all individuals forming a venture out of unemployment do so because they lack adequate alternatives in the job market. This relationship is confirmed and widely accepted in the literature (Hundt & Sternberg, 2014). We thus expect the unemployment rate to have a positive impact on entrepreneurship intensity. We lag the unemployment rate by one year because it usually takes some time to form a venture after becoming unemployed.

4.2.2. Rurality

The rurality dummy[3] takes the value of 1 if NUTS-3 region *i* is assigned as rural according to Küpper's (2016) classification;[4] 76% of German NUTS-3 regions qualify as rural. We expect rurality to have a negative influence on entrepreneurship intensity. According to Hypothesis 1, and because of the differences in the labour market functioning of rural and urban regions, we expect this rurality dummy to be a moderator variable for the unemployment rate, such that unemployment has a larger impact on entrepreneurship intensity in urban than rural regions.

4.2.3. Eastern Germany

The Eastern Germany dummy is equal to 1 if the NUTS-3 region is located in Eastern Germany (i.e., in the states of Brandenburg, Mecklenburg-Western Pomerania, Saxony-Anhalt, Saxony and Thuringia); this applies to 75 out of the 399 German regions. Given the expected effect of Eastern Germany's socialist heritage, we expect a negative impact on entrepreneurship intensity. As with the rurality dummy, we presume that this Eastern Germany dummy will moderate the relationship between the unemployment rate and entrepreneurship. Differences in policy preferences, especially concerning state reliance, between Eastern and Western Germany (see section 3.3) lead us

to expect a negative moderation effect of this dummy on the relationship between unemployment and entrepreneurship.

4.2.4. Share of far-left voters

Measured at the NUTS-3 level, this variable represents the share of the votes achieved by the far-left party 'Die Linke' in federal parliamentary elections ('Bundestagswahlen'). This variable captures the extent of left-wing policy preferences in a region. We argue that, particularly in the relationship between unemployment and entrepreneurship, this variable reflects reliance on the state (in the sense of the federal, state or local government, rather than the individual, being considered responsible for social security). In relation to our observation period, federal elections took place in 2009, 2013 and 2017. We use election data for the year the election took place and the subsequent years until the year of the next election; that is, data from the 2009 election are used for 2012, and data from the 2013 election are used for the period 2013–16 and so on. We refrain from adding federal state or local election data that, while it would provide us with additional time points, bears the risk of being biased and incomparable between states regarding policy preferences; particular topics or political idiosyncrasies within federal states could affect policy preferences and election outcomes.

4.2.5. Gross domestic product (GDP) per capita

Regional GDP per capita reflects each region's economic performance. We expect this variable to moderate the impact of the unemployment rate on the number of ventures formed. Even when venture formation out of unemployment is considered low in periods of macroeconomic upswing, we expect a positive moderating effect on venture formation at the regional level. This can be explained by more opportunities, positive future expectations, and better conditions for obtaining loans for forming a venture, all of which also benefit new venture formations out of unemployment.

4.2.6. Average household income

We use the average household income as a proxy for the level of local demand. Regions with high local demand provide more business opportunities to meet it. Similar to GDP per capita, we expect average household income to positively moderate the relationship between the unemployment rate and venture formation out of unemployment.

4.2.7. Control variables

We control for a series of geographic, economic, socio-economic and demographic variables as well as for the regional industry structure. Among the geographical variables, we account for the average travel time to the next urban area[5] and for counties adjacent to the start-up hotspot Berlin.[6] In terms of socio-economic factors, we add the share of academics in the workforce and the number of students and universities. These three variables capture the level of human capital and knowledge available at the regional level. All three have proven to be relevant predictors for regional entrepreneurship activity (e.g., Andersson & Koster, 2011; Audretsch et al., 2005; Baptista & Mendonça, 2010). We account for low levels of human capital by introducing the share of school leavers in a cohort graduating with the lowest qualification or obtaining no school-leaving qualification. The demographic controls are the logarithmised population, the share of inhabitants in the age group for founders (18–64) and finally, net migration, which is defined as the difference between population inflow and outflow. Table 1 shows all variables, data sources, years of observation and basic descriptive statistics (mean, standard deviation, minimum and maximum values). We also checked correlations among the explanatory variables; all correlation coefficients are < 0.68 (see Table A1 in Appendix A in the supplemental data online) except for the share of far-left voters and the Eastern Germany dummy, which we discuss in more detail in the following subsection.

4.3. Estimation strategy

We answer our research questions by applying a series of negative binomial panel regression models with year-fixed effects to control for economic shocks that affected all German regions equally.

The dependent variable is the number of new venture formations within each NUTS-3 region. Given the character of this variable, which only takes on nonnegative integers, count data regression models are appropriate and suitable for testing our hypotheses. The standard model for analysing count data in the literature is the Poisson regression model (Cameron & Trivedi, 2009). However, because our data do not meet the property of equidispersion (conditional mean equals conditional variance) but suffer from overdispersion, we stick with a common alternative approach, the negative binomial model (Cameron & Trivedi, 2009).[7] The panel negative binomial regression model we estimate takes the following form:

$$y_{ij} = \exp(x_{ij}\beta)$$

where y_{ij} represents the number of ventures formed in region i in year j. The expression on the right-hand side of the equation corresponds to an exponential function, where x_{ij} represents the explanatory variables and β the corresponding coefficients.

We start by estimating a baseline specification to investigate the unemployment push across all German NUTS-3 regions and the extent to which there is regional variation in business formation (in rural compared with urban regions and in eastern compared with western regions) not covered by the set of explanatory variables (Table 2, column 1).

We test Hypothesis 1 by extending the baseline specification in the following way. We investigate differences in the unemployment push between rural and urban regions by introducing an interaction term consisting of the lagged unemployment rate and the rural dummy (Table 2,

Table 1. Summary statistics for explanatory variables (NUTS-3 level).

Variable	Period	Observations	Mean	SD	Minimum	Maximum
Unemployment rate (%)	2011–18	3192	5.95	2.85	1.25	16.63
Rural (= 1; urban = 0)	2012–19	3192	0.76	0.43	0	1
Eastern Germany (= 1; Western Germany = 0)	2012–19	3192	0.19	0.39	0	1
Number of universities (abs.)	2012–19	3192	0.89	1.81	0	19
Travel time regional centre (min)	2012–19	3192	23.24	16.22	0	69.61
Borders Berlin (= 1)	2012–19	3192	0.02	0.15	0	1
GDP per capita (in €1000)	2012–19	3192	35.14	15.6	13.94	188.29
Average household income (€)	2012–19	3192	1785.61	239.57	1258.24	3534.34
Number of students per 1000 inhabitants	2012–19	3192	27.88	52.49	0	452.96
Share of academic employees	2012–19	3192	11.25	5.029	3.33	35.69
Share of inhabitants' founding age	2012–19	3192	1.64	0.15	1.2	2.35
Net migration (in-migration – out-migration (abs.))	2012–19	3192	5.93	5.68	−40.58	59.31
Population (log)	2012–19	3192	11.97	0.64	10.43	14.43
Share of low or no school-leaving qualification	2012–19	3192	23.3	5.43	9.61	60.21
Share of far-left voters	2012–19	3192	9.00	6.60	2.42	36.97

column 2). As a sensitivity analysis, we conduct an alternative regression using a continuous rurality variable. Based on several indicators that reflect rurality,[8] Küpper (2016) creates an index through principal component analysis. This index is standardised (*z*-transformed) and takes on values between −3.77 and 1.12. Increasing values reflect an increasing level of rurality of the NUTS-3 regions. This continuous measure is the basis for calculating the rurality dummy in our regressions (see Küpper, 2016, for further details). We replicate the model in Table 2 (column 2) and substitute *unemployment rate##rural* with *unemployment rate##continuous-rurality* and omit the rurality dummy. The result is displayed in Table A2, column 1, online.

Testing Hypothesis 2, we start by interacting the lagged unemployment rate with the Eastern Germany dummy to investigate if and to what extent the unemployment push is more pronounced in Western than Eastern German regions (Table 2, column 3). In the next step, we introduce the variable share of far-left voters to examine the impact of regional-level policy preferences for state reliance on the unemployment push. Note that the Eastern Germany dummy and the share of far-left voters variable are highly correlated ($r = 0.9$), which is why we cannot include these in the same regression model. We address multicollinearity by dropping the Eastern Germany dummy and conduct the regression by including a variable reflecting the interaction between the unemployment rate and the share of far-left voters to test the extent to which the unemployment push is moderated by regional-level state-reliance preferences (Table 2, column 4). Finally, we construct a quartile variable of the share of far-left voters and assign each region to one of the quartiles according to its level of the far-left party's share in the last federal election. We interact this variable with the unemployment rate, with the first quartile serving as the reference category. This approach allows us to obtain a more accurate impression of the magnitude of the impact by comparing the reference to quartiles 2–4 (Table 2, column 5).

Investigating differences in the unemployment push conditional on regional variation in economic performance (Hypothesis 3), we employ two variables reflecting regional economic performance. Based on GDP per capita and average household income, we build ordinal variables to measure the four quartiles of each variable. We analyse the relationships by constructing an interaction term of the lagged unemployment rate and the respective quartile variables (Table 2 column 6 for GDP per capita and column 7 for average household income). Again, the lowest quartile serves as the base category in each case and is omitted.

5. RESULTS

Our results for the tests of Hypotheses 1–3 are displayed in Table 2. We report incidence rate ratios (IRRs) instead of coefficients because the interpretation of the former is more intuitive.[9] The baseline specification results (column 1) provide evidence of the unemployment push in Germany between 2012 and 2019. The reported IRRs suggest that a 1 percentage point increase in the unemployment rate will raise the probability of venture formation by 1.9% on average.

The spatial perspective identifies significant variation in new venture formation. We account for a substantial share of factors that explain differences in new venture formation between Eastern and Western Germany and between rural and urban regions in terms of economic performance, socio-economic, demographic and geographical factors, as well as the industrial structure. We find significant differences between Eastern and Western Germany but not between rural and urban regions. As the Eastern

Table 2. Negbin regressions of business formations on contextual factors at the level of German NUTS-3 regions, 2012–19.

Variables	(1) Baseline	(2) Hypothesis 1	(3) Hypothesis 2	(4) Hypothesis 2	(5) Hypothesis 2	(6) Hypothesis 3	(7) Hypothesis 3
Unemployment rate	1.019***	1.018***	1.026***	1.034***	1.044***	1.012***	0.999
	(0.00205)	(0.00311)	(0.00244)	(0.00325)	(0.00571)	(0.00262)	(0.00263)
Rural	1.012	1.002	1.030**	1.018	0.979*	1.022*	1.010
	(0.0115)	(0.0240)	(0.0121)	(0.0119)	(0.0118)	(0.0117)	(0.0119)
Eastern Germany	0.837***	0.836***	1.001			0.855***	0.814***
	(0.0115)	(0.0117)	(0.0338)			(0.0121)	(0.0114)
Unemployment rate##rural		1.001					
		(0.00307)					
Unemployment rate##Eastern-Germany			0.979***				
			(0.00357)				
Share of far-left voters				0.997			
				(0.00193)			
Unemployment rate##share of far-left-voters				0.999***			
				(0.00019)			
Share of far-left voters (2nd quartile)					1.021		
					(0.0279)		
Share of far-left voters (3rd quartile)					1.118***		
					(0.0301)		
Share of far-left voters (4th quartile)					1.000		
					(0.0333)		
Unemployment rate##share of far-left-voters (2nd quartile)					0.989*		
					(0.00603)		
Unemployment rate##share of far-left-voters (3rd quartile)					0.972***		
					(0.00545)		
Unemployment rate##share of far-left-voters (4th quartile)					0.972***		
					(0.00563)		
GDP per capita (2nd quartile)						1.012	
						(0.0220)	
GDP per capita (3rd quartile)						0.945***	
						(0.0205)	

(*Continued*)

Table 2. Continued.

Variables	(1) Baseline	(2) Hypothesis 1	(3) Hypothesis 2	(4) Hypothesis 2	(5) Hypothesis 2	(6) Hypothesis 3	(7) Hypothesis 3
GDP per capita (4th quartile)						0.998	
						(0.0254)	
Unemployment rate##GDP per capita (2nd quartile)						1.003	
						(0.00327)	
Unemployment rate##GDP per capita (3rd quartile)						1.019***	
						(0.00332)	
Unemployment rate##GDP per capita (4th quartile)						1.016***	
						(0.00395)	
Household income (2nd quartile)							0.935**
							(0.0297)
Household income (3rd quartile)							0.932**
							(0.0292)
Household income (4th quartile)							1.015
							(0.0321)
Unemployment rate##household-income (2nd quartile)							1.012***
							(0.00427)
Unemployment rate##household-income (3rd quartile)							1.021***
							(0.00487)
Unemployment rate##household-income (4th quartile)							1.027***
							(0.00556)
GDP per capita	1.002***	1.002***	1.002***	1.002***	1.002***		1.002***
	(0.00034)	(0.00034)	(0.00034)	(0.00034)	(0.00035)		(0.00035)
Household income	1.000***	1.000***	1.000***	1.000***	1.000***	1.000***	
	(2.38e–05)	(2.43e–05)	(2.50e–05)	(2.53e–05)	(2.43e–05)	(2.44e–05)	
Number of universities	1.010***	1.010***	1.010***	1.010***	1.014***	1.010***	1.009***
	(0.00214)	(0.00214)	(0.00213)	(0.00215)	(0.00227)	(0.00211)	(0.00219)
Travel time regional centre	0.999*	0.999*	1.000	1.000*	0.999***	1.000	1.000
	(0.00027)	(0.00028)	(0.00027)	(0.00027)	(0.00028)	(0.00028)	(0.00028)
Borders Berlin	1.210***	1.211***	1.171***	1.172***	1.193***	1.195***	1.219***
	(0.0277)	(0.0277)	(0.0275)	(0.0275)	(0.0284)	(0.0273)	(0.0287)
Number of students	1.000	1.000	1.000**	1.000**	1.000***	1.000**	1.000***
	(9.45e–05)	(9.45e–05)	(9.44e–05)	(9.52e–05)	(9.83e–05)	(9.46e–05)	(9.64e–05)

Share academic employees	1.005***	1.005***	1.006***	1.004***	0.998	1.007***	1.011***
	(0.00151)	(0.00152)	(0.00151)	(0.00151)	(0.00148)	(0.00147)	(0.00151)
Share of inhabitants' founding age	1.301***	1.301***	1.372***	1.457***	1.586***	1.360***	1.195***
	(0.0408)	(0.0408)	(0.0446)	(0.0461)	(0.0512)	(0.0438)	(0.0381)
Net migration	1.007***	1.007***	1.007***	1.007***	1.004***	1.006***	1.008***
	(0.00073)	(0.00074)	(0.00073)	(0.00074)	(0.00065)	(0.00073)	(0.00076)
Population (log)	2.720***	2.721***	2.723***	2.711***	2.715***	2.707***	2.703***
	(0.0182)	(0.0183)	(0.0182)	(0.0184)	(0.0191)	(0.0176)	(0.0186)
Share of low or no school-leaving qualification	1.001**	1.001**	1.002***	1.002***	1.002***	1.001**	1.002***
	(0.007)	(0.00068)	(0.00068)	(0.00068)	(0.00071)	(0.00067)	(0.00070)
Constant	0.0003***	0.000314***	0.000239***	0.000229***	0.000258***	0.00029***	0.00085***
	(3.68e–05)	(3.80e–05)	(3.02e–05)	(2.98e–05)	(3.33e–05)	(3.46e–05)	(9.07e–05)
Observations	3192	3192	3192	3192	3192	3192	3192
County FE	No	No	No	No	No	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: # signifies interaction terms; *$p < 0$: 10, **$p < 0$: 05, ***$p < 0$: 01; standard errors are given in parentheses.

Germany variable suggests, the probability of additional venture formation is reduced by 16.3% in Eastern German regions.

Hypothesis 1 is tested, and the results are presented in column 2. When examining the insignificant interaction variable *unemployment rate##rural*, we find no evidence supporting Hypothesis 1 that the unemployment push is stronger in urban than rural regions. However, the alternative regression with the continuous rurality measure shows a significant relationship of the interaction variable *unemployment rate##continuous-rurality* but with the opposite sign (see Table A2, column 1, in Appendix A in the supplemental data online). Interestingly, our findings suggest that higher levels of rurality are associated with a more pronounced unemployment push.

The results for our test of Hypothesis 2 appear in columns 3–5 of Table 2 and show a highly significant IRR (0.979) for the interaction variable *unemployment rate##Eastern-Germany*, indicating that an increase in the unemployment rate by 1 percentage point reduces the probability of an additional venture formation in Eastern Germany by 2.1% compared with Western Germany. Nevertheless, the unemployment push is positive overall for Western (IRR = 1.026) and Eastern Germany (IRR = 1.005). Column 4 shows a significantly lower unemployment push in regions in which the far-left party has a higher voting share, as the significant IRR of *unemployment rate##share far-left-voters* suggests. With a 1-percentage-point increase in the share of far-left voters, the impact of the unemployment rate on venture formation decreases by an average of 0.001%.

A better impression of the effect size is offered in column 5. We split German NUTS 3 regions into quartiles depending on their level of the voting share of the far-left party. We find a significantly lower unemployment push in the second, third and fourth quartile compared with the first. A 1-percentage-point increase in the unemployment rate leads to a decrease in additional venture formation by 1.1% compared with the first quartile. The effect is even more pronounced in the third and fourth quartiles, with an associated decrease of 2.8% in both quartiles. Taken together, these findings support Hypothesis 2.

Columns 5 and 6 display the results of testing Hypothesis 3. The results provide evidence for Hypothesis 3, which posits a stronger unemployment push in prospering regions. By splitting all German NUTS-3 regions into quartiles based on their GDP per capita, we find a significantly higher unemployment push in the third and fourth quartiles than in the first two. The IRR of the lagged unemployment rate indicates that a 1-percentage-point increase of the lagged unemployment rate in the lowest quartile leads to an increase in the probability of additional venture formation by 1.2%. The insignificant IRR of the interaction of the second quartile with the lagged unemployment rate implies that there is no discernible difference in the unemployment push between the first and the second quartile. Moving to the third and fourth quartiles, we find an even stronger unemployment push with an increase in the probability of 3.2% in the third and 2.8% in

the fourth quartile. The results are even more compelling for our second variable employed to test Hypothesis 3. The average household income that strongly indicates the magnitude of local demand positively moderates the unemployment push. It is lowest in the first quartile and gradually increases until the fourth quartile. Our result suggests that an increase in the lagged unemployment rate by 1 percentage point is 2.8% higher in the fourth than in the first quartile.

6. DISCUSSION

We analyse the unemployment push in a Western economy in times of economic upswing and falling unemployment rates. We explicitly consider regional variation by analysing differences between urban and rural regions and between Eastern and Western Germany. We further examine the extent to which the unemployment push is moderated by the region's economic situation.

Our results show a positive relationship between the regional level of unemployment and new venture formation, suggesting evidence for an unemployment push for Germany in times of economic upswing and decreasing unemployment rates. This implies that even in times of an increasing shortage of skilled workers, starting a venture out of unemployment seems to be an alternative to applying for a new job or even relocating for one.

The examination of regional variation in unemployment reveals interesting insights. First, we do not find evidence for a more pronounced unemployment push in urban than rural regions. However, in our alternative analysis, we find the unemployment push to be significantly increasing with the level of rurality (see Table A2 in Appendix A in the supplemental data online). This picture is confirmed by plotting the marginal effects of unemployment conditional on the values of the continuous rurality measure (see Figure A1 online). This finding undoubtedly rejects Hypothesis 1 and provides evidence for the opposite proposition, which is surprising and challenges our hypothesis. It indicates that a simple urban–rural dichotomy does not reflect the complexity of urban–rural differences in the unemployment push. It is also important for future research on different outcomes conditional on settlement structures.

One explanation could be related to rural areas' thin labour markets (e.g., Mushinski et al., 2015). Even though the shortage of skilled workers in Germany is, on average, at least as high in rural as in urban regions, there could be difficulties matching job demand and supply (Buch et al., 2024). The risks for workers and employers are inherently lower in urban regions because their large labour markets ensure matching (Rosenthal & Strange, 2004). This leads to an increase in the opportunity costs of necessity entrepreneurship. In rural regions, by contrast, labour meeting the occupational profiles sought by companies may be less available. When unemployed people are reluctant to relocate to regions with suitable job opportunities, they may see forming a venture as a viable alternative to dependent work. Furthermore, we apparently overemphasised the role of agglomeration effects in providing better opportunities for necessity entrepreneurs in terms of higher, denser and more varied demand structures. These results give rise to reconsidering the finding that new venture formation is primarily an urban event (Bosma & Sternberg, 2014) and allow a more differentiated view. We can conclude that not only is new venture formation, in general, sensitive to spatiality but there is also spatial variation in the underlying motivation (necessity versus opportunity entrepreneurship). Our results do not imply that there are more venture formations in rural than urban regions (in absolute and relative terms). However, they do imply that the entrepreneurial reaction to unemployment is, on average, more pronounced in rural regions.

For the unemployment push between Eastern and Western Germany, we do find the expected less pronounced effect in Eastern Germany (Hypothesis 2). In addition, we provide a compelling explanation for the lower unemployment push in Eastern Germany. We obtain quantitatively identical results when substituting the Eastern Germany dummy for the highly correlated voting share of the far-left party 'Die Linke' representing a policy preference for state reliance. We can thus conclude that the west–east divide in the unemployment push is mainly driven by the substantially different policy preferences for state reliance of Eastern and Western Germany.

Our empirical strategy does not allow us to directly investigate the extent to which the socialist heritage of Eastern Germany is responsible for its particular policy preferences (contrary to those in Western Germany), which lead, in turn, to the less pronounced unemployment push in Eastern Germany than in Western Germany. However, we can empirically show that their different policy preferences exist, and we can rely on the existing literature that confirms that the region's 40 years of socialism is a main driver of those in Eastern Germany having different social security policy preferences (Alesina & Fuchs-Schuendeln, 2007; Bondar & Fuchs-Schündeln, 2023) (see section 3.3). Our results allow us to point out the extent to which necessity entrepreneurship is moderated by policy preferences for state reliance. In particular, the motivation to form a new venture differs with regard to necessity and opportunity entrepreneurship against the background of state reliance preferences. People who expect the government to be responsible for social security would not form a venture as an exit from unemployment but would do so for a promising business opportunity. These insights improve scholars' understanding of the socialist heritage theory of entrepreneurship against the background of different forms of entrepreneurship and can help policy makers to design entrepreneurship programmes geared to certain target groups (see section 7).

Although we are confident in our interpretation of the results, there could be an alternative explanation. Over the majority of years of our observation period (2012–19) 'Die Linke' was by far the most prominent protest party in Germany. It was only replaced by the 'Alternative für Deutschland' (AfD) in the 2017 federal election. That is

why one can argue that the voting share of 'Die Linke' covers not only policy preferences for state reliance but also voters' protest and dissatisfaction with the political systems, which could, in turn, lead to resignations and decreased entrepreneurial activity. This alternative explanation is weakened by Noorderhaven et al. (2004), who provide evidence for the opposite position based on data from 15 EU countries; that is, those experiencing a higher level of dissatisfaction exhibit higher levels of entrepreneurial activity.

Our results support Hypothesis 3 (that the unemployment push is more pronounced in prosperous regions) and are in line with the scarce literature on the topic (Bosma & Sternberg, 2014; O'Leary, 2022). We contribute to the literature by showing strong cross-regional variation in the unemployment push dependent on regions' per capita GDP and average household income under positive macroeconomic conditions in Germany and with decreasing rates of unemployment. Whereas the unemployment push has mostly been associated with rising unemployment and recession, we identify its presence in favourable economic climates. The results indicate that it is not only opportunity entrepreneurs (e.g., Hundt & Sternberg, 2014) but also necessity entrepreneurs who exploit favourable economic conditions. This is good news for regions that are economically prosperous. Even when a certain share of the working population loses their jobs, forming a new venture out of unemployment is a viable alternative, and they can earn a living by tapping into local demand. However, for regions already in an economic downturn, this is not the case; these regions are already affected by relatively high unemployment and little local demand. Having no serious alternatives to earn a living forces people to either remain unemployed or migrate, which can result in a downward spiral (e.g., Hundt & Sternberg, 2014; Martin et al., 2016). These factors have important implications for scholars' understanding of the conditions under which necessity entrepreneurship emerges as well as for policies to promote place-based entrepreneurial support programmes (see section 7).

7. CONCLUSIONS: POLICY IMPLICATIONS, LIMITATIONS AND FURTHER RESEARCH

The main empirical results show that the region type (rural versus urban) and the geographical location of a region (in Eastern or Western Germany) are strongly correlated with the extent of the unemployment push. It is stronger in rural (than in urban) regions and stronger in Western German (than Eastern German) regions. Concerning regions' economic situation, those with a high level of prosperity face a stronger unemployment push, suggesting that even necessity entrepreneurs exploit good economic conditions by forming new ventures. These findings have considerable potential for implementation in spatially sensitive government policies in favour of labour markets, economic affairs and venture formation.

As the individual decision to form a new venture is primarily embedded in the regional rather than national context (Feldman, 2001), the chances for place-based entrepreneurship support policies are generally better in a country with a federal system such as Germany than in more centrally organised countries. The 16 federal states should consider promoting new regional ventures in their economic policies. With respect to the west–east division, Eastern German regions face more serious economic and social problems than Western German regions – and also have higher unemployment rates. For the former, we cannot recommend that policy measures be adopted to increase the formation of new ventures out of unemployment. We justify this based on two arguments.

First, these regions show a very low entrepreneurial reaction to unemployment even though the unemployment rate has been comparably high. Our explanation is based on the socialist heritage argument but interpreted differently than in previous studies. Those who are unemployed in Eastern Germany are not averse to forming new ventures because they do not know how or because they do not want to do so (after being embedded, directly or indirectly, in a socialist environment). Rather, it is because of differences in their policy preferences regarding the role of the state and their expectation that the government will more actively take care of their citizens if they are in economic or social trouble, for example, in the case of unemployment, as this is what happened during socialism. However, forming a new venture based on individual motivation and initiative and, thus, existing unemployment without significant support from the government is not how individuals were socialised in the former GDR. In recent elections (including in February 2025), the vote gains in Eastern German regions were particularly high for parties that continued to promote these older policy behaviours (namely, Die Linke ('The Left') or BSW 'Bündnis Sahra Wagenknecht' ('Sahra Wagenknecht Alliance')); this is distinct from the situation in Western German regions. Hence, government measures to support entrepreneurship by the unemployed in Eastern German regions would involve a certain degree of risk and should be further investigated before implementation (see below).

Second, a significant number of Eastern German regions (especially the rural ones) do not satisfy several of the conditions beneficial for venture formation out of unemployment. Most importantly, the local demand structure is insufficient (low concentration of demand and low variety) for business models that can easily be started out of unemployment (e.g., small-scale retailing or catering). Also, the prospects for future demand are not promising because these regions are often highly affected by ageing and outmigration.

For Western German regions, we recommend programmes to support the formation of new ventures. The implication of our results is that it is not necessary to motivate more unemployed individuals to form a new venture because there is already an acceptable entrepreneurial reaction in these regions; however, helping them improve their business ideas is advisable.

Thus far, regional variation in the unemployment–entrepreneurship relationship apparently has no role in

the evaluation of policies supporting entrepreneurship (OECD, 2023). Otherwise, however, this topic touches the view expressed by Román et al. (2013, p. 152) on the effectiveness of entrepreneurship support policies and related labour market programmes, given the substantial heterogeneity of new businesses and their founders: 'to avoid some unexpected (and undesired) effects, the interaction of different macro-level institutional factors (i.e., labour market institutions and the business cycle) should be considered when defining the regulatory environment'.

Of course, our study has certain limitations. Our analyses are restricted to a single country with a unique history that is characterised by regions being separated in 1949 and reunified in 1990. In terms of their entrepreneurship culture, bureaucratic institutions and social security, Germany and other Western countries differ substantially, and our results are thus not readily transferable to the latter. Furthermore, we limited our analyses to a period of overall economic upswing. Regional differences in the unemployment push might be different in recessions, as several studies suggest (e.g., Fritsch et al., 2015; Koellinger & Thurik, 2012). Our empirical analyses do not fully capture spatial autocorrelation and spillover effects that extend beyond the studied NUTS-3 regions. Unlike Alesina and Fuchs-Schuendeln (2007), our data do not include where people were born and where they grew up. Instead, we simply assume that people in Eastern Germany were born there. We are aware that there is no perfect correlation between those who currently live there and those who were born there. On an aggregate level, however, we can assume a very high correlation. Finally, we do not know what motivated individual founders to form their businesses; that is, we do not know whether or not it was out of economic necessity. Our data do not contain such information, but in individual cases, we infer necessity entrepreneurship based on high regional unemployment. We are aware of the danger of the ecological fallacy.

This last limitation – that we do not know individuals' motives for not forming new ventures in the case of unemployment – leads us to the first of two suggestions for future research. These individual motives could potentially be identified using survey-based data, provided that the employment situation directly before forming a new venture is known and the motives for the current self-employment are asked about directly. In addition, this issue could also be examined in another way using surveys, namely by investigating the current intention of forming a new venture for currently unemployed people. For instance, the annual Adult Population Survey of the Global Entrepreneurship Monitor (2024) offers precisely such information and also allows for a comparison between Western and Eastern Germany over a longer period (even if not at the NUTS-3 level).

Second, the significantly lower unemployment push in Eastern Germany than in Western Germany should be investigated. As we concluded above, it seems to be related to the population's expectation regarding the policy responses to economic problems both on the regional level (high unemployment, low income) or the individual one (being unemployed, having a low income). Understanding how to encourage the unemployed who have a policy preference for government responsibility to form new ventures in economically weak regions could inform support policies that benefit other countries facing similar challenges.

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NOTES

1. For further information about the reason for the omission of Berlin, see section 4.1.
2. Passive remediation of the labour market can, for example, happen when unemployed people reach retirement age and drop out of the statistic. When this occurs, the denominator of the unemployment rate decreases, while the numerator remains constant. As a consequence, the unemployment rate decreases without a single additional person being employed.
3. We refrain from including counties' population density because of the high correlation with the rurality dummy.
4. Küpper (2016) assigns each German NUTS-3 region as either rural or urban. The assignment is based on a mix of population density, the share of farmland and forest land in total area, the share of single- and two-family houses on all residential buildings, and accessibility of larger cities.
5. Urban areas are defined according to the German term 'Oberzentrum' (higher level centre). These cities are obliged to offer certain infrastructure and services to citizens who live close by. Cities are host to warehouses, universities, specialty hospitals and cultural offerings such as operas or theatres (Einig, 2015).
6. Berlin is the most vibrant entrepreneurial environment in Germany. Due to huge competition in the real estate market and resulting high prices for office space, entrepreneurial activities might spill over to adjacent counties.
7. In the case of overdispersion, standard errors in a Poisson model can be biased downwards, which results in incorrect high values for the t-statistics (Cameron & Trivedi, 1986).

8. See note 3.
9. Whereas reported coefficients of a negative binomial model reflect the change in the log count of businesses founded in a NUTS-3 region per one unit increase of an explanatory variable, IRRs refer to the multiplicative change in the predicted count of business formations per one unit increase in the explanatory variable. IRRs > 1 can be interpreted as a positive relationship and < 1 as a negative one.

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REFERENCES

Alesina, A., & Fuchs-Schuendeln, N. (2007). Good bye Lenin (or not?): The effect of communism on people's preferences. *American Economic Review*, *97*(4), 1507–1528. https://doi.org/10.1257/aer.97.4.1507

Andersson, M., & Koster, S. (2011). Sources of persistence in regional start-up rates – Evidence from Sweden. *Journal of Economic Geography*, *11*(1), 179–201. https://doi.org/10.1093/jeg/lbp069

Andersson, M., & Larsson, J. (2016). Local entrepreneurship clusters in cities. *Journal of Economic Geography*, *16*(1), 39–66. https://doi.org/10.1093/jeg/lbu049

Apergis, N., & Payne, J. E. (2016). An empirical note on entrepreneurship and unemployment. *Journal of Entrepreneurship and Public Policy*, *5*(1), 73–81. https://doi.org/10.1108/JEPP-10-2015-0029

Audretsch, D. B., Belitski, M., & Cherkas, N. (2021). Entrepreneurial ecosystems in cities: The role of institutions. *PLoS ONE*, *16*(3), e0247609. https://doi.org/10.1371/journal.pone.0247609

Audretsch, D. B., Heger, D., & Veith, T. (2015). Infrastructure and entrepreneurship. *Small Business Economics*, *44*(2), 219–230. https://doi.org/10.1007/s11187-014-9600-6

Audretsch, D. B., Lehmann, E. E., & Warning, S. (2005). University spillovers and new firm location. *Research Policy*, *34*(7), 1113–1122. https://doi.org/10.1016/j.respol.2005.05.009

Baptista, R., & Mendonça, J. (2010). Proximity to knowledge sources and the location of knowledge-based start-ups. *Annals of Regional Science*, *45*(1), 5–29. https://doi.org/10.1007/s00168-009-0289-4

Bauernschuster, S., Falck, O., Gold, R., & Heblich, S. (2012). The shadows of the socialist past: Lack of self-reliance hinders entrepreneurship. *European Journal of Political Economy*, *28*(4), 485–497. https://doi.org/10.1016/j.ejpoleco.2012.05.008

Becker, S. O., Mergele, L., & Woessmann, L. (2020). The separation and reunification of Germany: Rethinking a natural experiment interpretation of the enduring effects of communism. *Journal of Economic Perspectives*, *34*(2), 143–171. https://doi.org/10.1257/jep.34.2.143

Bergmann, H., & Sternberg, R. (2007). The changing face of entrepreneurship in Germany. *Small Business Economics*, *28*(2–3), 205–221. https://doi.org/10.1007/s11187-006-9016-z

Bersch, J., Gottschalk, S., Müller, B., & Niefert, M. (2014). *The Mannheim Enterprise Panel (MUP) and firm statistics for Germany* (Discussion Paper No. 14-104). ZEW.

Bondar, M., & Fuchs-Schündeln, N. (2023). Good bye Lenin revisited: East–West preferences three decades after German reunification. *German Economic Review*, *24*(1), 97–119. https://doi.org/10.1515/ger-2022-0042

Bosma, N., & Sternberg, R. (2014). Entrepreneurship as an urban event? Empirical evidence from European cities. *Regional Studies*, *48*(6), 1016–1033. https://doi.org/10.1080/00343404.2014.904041

Bosma, N., Van Stel, A., & Suddle, K. (2008). The geography of new firm formation: Evidence from independent start-ups and new subsidiaries in The Netherlands. *International Entrepreneurship and Management Journal*, *4*(2), 129–146. https://doi.org/10.1007/s11365-007-0058-8

Buch, T., Fuchs, M., Helm, J., Niebuhr, A., Peters, J. C., & Sieglen, G. (2024). Zunehmende Fachkräfteengpässe – Warum sind ländliche Räume besonders betroffen? *Wirtschaftsdienst (Hamburg)*, *104*(5), 323–328. https://doi.org/10.2478/wd-2024-0088

Cameron, A., & Trivedi, P. (1986). Econometric models based on count data: Comparisons and applications of some estimators and tests. *Journal of Applied Econometrics*, *1*(1), 29–53. https://doi.org/10.1002/jae.3950010104

Cameron, A., & Trivedi, P. (2009). *Microeconometrics using Stata* (Revd ed.). Stata Press.

Carmona, M., Congregado, E., & Golpe, A. A. (2012). Comovement between self-employment and macroeconomic variables. *SAGE Open*, *2*(2), https://doi.org/10.1177/2158244012448665

Carree, M., & Dejardin, M. (2020). Firm entry and exit in local markets: 'market pull' or 'unemployment push' effects, or both? *International Review of Entrepreneurship*, *18*(3), 371–386.

Cueto, B., Mayor, M., & Suárez, P. (2015). Entrepreneurship and unemployment in Spain: A regional analysis. *Applied Economics Letters*, *22*(15), 1230–1235. https://doi.org/10.1080/13504851.2015.1021450

Delgado, M., Porter, M., & Stern, S. (2010). Clusters and entrepreneurship. *Journal of Economic Geography*, *10*(4), 495–518. https://doi.org/10.1093/jeg/lbq010

Der Beauftragte der Bundesregierung für Ostdeutschland. (2023). *Zum Stand der Deutschen Einheit* [Annual 'Reports on German Unity']. https://www.publikationen-bundesregierung.de/resource/blob/2277952/2226090/19e8d0dba83e65e13266838329366e15/zum-stand-der-deutschen-einheit-2023-download-bk-amt-data.pdf?download=1

Di Addario, S. (2011). Job search in thick markets. *Journal of Urban Economics*, *69*(3), 303–318. https://doi.org/10.1016/j.jue.2011.01.001

Einig, K. (2015). Gewährleisten Zentrale-Orte-Konzepte gleichwertige Lebensverhältnisse bei der Daseinsvorsorge? [Do central-location concepts guarantee equivalent living conditions in terms of services of general interest?]. *Informationen zur Raumentwicklung*, *1*, 45–56.

Fairlie, R. W., & Fossen, F. M. (2019). *Defining opportunity versus necessity entrepreneurship: Two components of business creation*. National Bureau of Economic Research (NBER).

Feldman, M. (2001). The entrepreneurial event revisited: Firm formation in a regional context. *Industrial and Corporate Change*, *10*(4), 861–891. https://doi.org/10.1093/icc/10.4.861

Fritsch, M. (Ed.). (2011). *Handbook of research on entrepreneurship and regional development – National and regional perspectives*. Edward Elgar.

Fritsch, M., Greve, M., & Wyrwich, M. (2023). The long-run effects of communism and transition to a market system on self-employment: The case of Germany. *Entrepreneurship Theory and Practice*, *47*(5), 1594–1616. https://doi.org/10.1177/10422587221094498

Fritsch, M., Kritikos, A., & Pijnenburg, K. (2015). Business cycles, unemployment and entrepreneurial entry – Evidence from

Germany. *International Entrepreneurship and Management Journal*, *11*(2), 267–286. https://doi.org/10.1007/s11365-014-0326-3

Fritsch, M., Obschonka, M., & Wyrwich, M. (2019). Historical roots of cultures of entrepreneurship and innovation – An analysis for German regions. *Regional Studies*, *53*(9), 1296–1307. https://doi.org/10.1080/00343404.2019.1580357

Fritsch, M., & Wyrwich, M. (2014). The long persistence of regional levels of entrepreneurship: Germany, 1925–2005. *Regional Studies*, *48*(6), 955–973. https://doi.org/10.1080/00343404.2013.816414

Fuchs, M. (2016). Unemployment decline in East Germany: The role of demography. *Review of Regional Research*, *36*(2), 145–168. https://doi.org/10.1007/s10037-016-0106-3

Fuchs-Schündeln, N., & Schündeln, M. (2020). The long-term effects of communism in Eastern Europe. *Journal of Economic Perspectives*, *34*(2), 172–191. https://doi.org/10.1257/jep.34.2.172

Glaeser, E. L., Rosenthal, S. S., & Strange, W. C. (2010). Urban economics and entrepreneurship. *Journal of Urban Economics*, *67*(1), 1–14. https://doi.org/10.1016/j.jue.2009.10.005

Global Entrepreneurship Monitor. (2024). *Unternehmensgründungen im weltweiten Vergleich – Länderbericht Deutschland 2023/2024* [A global comparison of business formations – Country report Germany 2023/2024].

Hundt, C., & Sternberg, R. (2014). How did the economic crisis influence new firm creation? *Journal of Economics and Statistics (Jahrbücher für Nationalökonomie und Statistik)*, *234*(6), 722–756. https://doi.org/10.1515/jbnst-2014-0605

Koellinger, P. D., & Thurik, R. A. (2012). Entrepreneurship and the business cycle. *The Review of Economics and Statistics*, *94*(4), 1143–1156. https://doi.org/10.1162/REST_a_00224

Küpper, P. (2016). *Abgrenzung und Typisierung ländlicher Räume* [Delimitation and typification of rural areas] (Thünen Working Paper No. 68). Thünen-Institute.

Küpper, P., & Peters, J. C. (2019). *Entwicklung regionaler Disparitäten hinsichtlich Wirtschaftskraft, sozialer Lage sowie Daseinsvorsorge und Infrastruktur in Deutschland und seinen ländlichen Räumen* [Regional disparities in terms of economic strength, social situation, services of general interest and infrastructure in Germany and its rural areas] (Thünen Report No. 66). Thünen-Institut.

Martin, R., Sunley, P., Gardiner, B., & Tyler, P. (2016). How regions react to recessions: Resilience and the role of economic structure. *Regional Studies*, *50*(4), 561–585. https://doi.org/10.1080/00343404.2015.1136410

Mueller, H., & Pieperhoff, M. (2023). Necessity entrepreneurship: An integrative review and research agenda. *Entrepreneurship & Regional Development*, *35*(9–10), 762–787. https://doi.org/10.1080/08985626.2023.2246045

Mushinski, D., Bernasek, A., & Weiler, S. (2015). Job lock in rural versus urban labor markets. *Growth and Change*, *46*(2), 253–273. https://doi.org/10.1111/grow.12069

Noorderhaven, N., Thurik, R., Wennekers, S., & van Stel, A. (2004). The role of dissatisfaction and per capita income in explaining self-employment across 15 European countries. *Entrepreneurship Theory and Practice*, *28*(5), 447–466.

O'Leary, D. (2022). Unemployment and entrepreneurship across high-, middle- and low-performing European regions. *Regional Studies, Regional Science*, *9*(1), 571–580. https://doi.org/10.1080/21681376.2022.2118072

Organisation for Economic Co-operation and Development (OECD). (2023). *Framework for the evaluation of SME and entrepreneurship policies and programmes 2023* (OECD Studies on SMEs and Entrepreneurship). OECD Publ.

Oxenfeldt, A. R. (1943). *New firms and free enterprise: Pre-war and post-war aspects*. American Council on Public Affairs.

Parker, S. C. (2009). *The economics of entrepreneurship*. Cambridge University Press.

Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P., & Chin, N. (2005). Global entrepreneurship monitor: Data collection design and implementation 1998–2003. *Small Business Economics*, *24*(3), 205–231. https://doi.org/10.1007/s11187-005-1980-1

Román, C., Congregado, E., & Millán, J. M. (2013). Start-up incentives: Entrepreneurship policy or active labour market programme? *Journal of Business Venturing*, *28*(1), 151–175. https://doi.org/10.1016/j.jbusvent.2012.01.004

Rosenthal, S. S., & Strange, W. C. (2004). Evidence on the nature and sources of agglomeration economies. In J. Henderson, & J. Thisse (Eds.), *Handbook of regional and urban economics* (pp. 2119–2171). Elsevier.

Stam, E. (2005). The geography of gazelles in The Netherlands. *Tijdschrift voor Economische en Sociale Geografie*, *96*(1), 121–127. https://doi.org/10.1111/j.1467-9663.2005.00443.x

Stam, E. (2015). Entrepreneurial ecosystems and regional policy: A sympathetic critique. *European Planning Studies*, *23*(9), 1759–1769. https://doi.org/10.1080/09654313.2015.1061484

Sternberg, R. (2011). Regional determinants of entrepreneurial activities – Theories and empirical evidence. In M. Fritsch (Ed.), *Handbook of research on entrepreneurship and regional development. National and regional perspectives* (pp. 33–57). Edward Elgar.

Sternberg, R. (2022). Entrepreneurship and geography – Some thoughts about a complex relationship. *The Annals of Regional Science*, *69*(3), 559–584. https://doi.org/10.1007/s00168-021-01091-w

Thurik, A. R., Carree, M. A., van Stel, A., & Audretsch, D. B. (2008). Does self-employment reduce unemployment? *Journal of Business Venturing*, *23*(6), 673–686. https://doi.org/10.1016/j.jbusvent.2008.01.007

Verheul, I., Wennekers, S., Audretsch, D. B., & Thurik, R. (2002). An eclectic theory of entrepreneurship: Policies, institutions and culture. In D. B. Audretsch, R. Thurik, I. Verheul, & S. Wennekers (Eds.), *Entrepreneurship: Determinants and policy in a European–US comparison* (pp. 11–81). Springer.

Welter, F. (2011). Contextualizing entrepreneurship-conceptual challenges and ways forward. *Entrepreneurship Theory and Practice*, *35*(1), 165–184. https://doi.org/10.1111/j.1540-6520.2010.00427.x

Wyrwich, M. (2012). Regional entrepreneurial heritage in a socialist and a postsocialist economy. *Economic Geography*, *88*(4), 423–445. https://doi.org/10.1111/j.1944-8287.2012.01166.x

Wyrwich, M. (2013). Can socioeconomic heritage produce a lost generation with regard to entrepreneurship? *Journal of Business Venturing*, *28*(5), 667–682. https://doi.org/10.1016/j.jbusvent.2012.09.001

Wyrwich, M., Sternberg, R., & Stuetzer, M. (2019). Failing role models and the formation of fear of entrepreneurial failure: A study of regional peer effects in German regions. *Journal of Economic Geography*, *19*(3), 567–588. https://doi.org/10.1093/jeg/lby023

Zhang, Y., & Roelfsema, H. (2022). Entrepreneurial ecosystems, new business formation, and scale-up activity: Evidence from 286 Chinese cities. *Entrepreneurship Research Journal*, *12*(4), 559–595. https://doi.org/10.1515/erj-2019-0265