Does Unemployment Contribute to Self-employment and Productivity in Regions? A Causal Examination Adopting a Cross-Lagged Design

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Introduction

In a report on 'missing entrepreneurs', OECD (2019) identified entrepreneurship/self-employment as a driver for the development of new solutions to social and economic problems. At the same time, the report observed that many individuals are excluded from the labour market and that there are disadvantaged groups which are less represented in entrepreneurship activities. In their analyses, OECD called for more inclusive entrepreneurship policies to unlock the full potential of entrepreneurship among disadvantaged communities. One of the groups identified in the OECD series (2013, 2014, 2015, 2017, 2019) of publications on missing entrepreneurs was the unemployed. According to the report by OECD (2019), about 2.5 per cent of unemployed individuals in the EU started a business in 2018. The report highlighted that unemployed individuals are less involved in entrepreneurship and more likely to face greater barriers in areas including skills, finance, networks and institutions. In their analysis, they emphasised the importance of addressing barriers to entrepreneurship for groups such as unemployed to enable more people to develop creativity and innovation, and also to reduce the negative effects relating to rising inequality.

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In recent years, policymakers have reacted to persistent high unemployment rates (together with limited economic growth) by giving greater importance to entrepreneurship and self-employment (Baptista and Thurik 2007). Unemployment has been viewed as a potentially destructive experience (Røed and Skogstrøm 2014b) as empirical evidence suggests that unemployment reduces future employment opportunities and earnings, increases the likelihood of entering disability programmes and even raises the risk of divorce and early death (Kenny and Rossiter 2018). Olusegun Ajayi (2015) found support for a positive relationship between unemployment and criminal behaviour, arguing that the lack of job opportunities, together with a lack of entrepreneurship and vocational skills, forced individuals to resort to crime for survival. At the same time, there are many suggested benefits of transferring job status from unemployed to self-employed. Studies in economics, psychology and entrepreneurship have documented the positive mental health effects and higher job satisfaction for individuals entering into self-employment (Nikolova 2019). Therefore, the link between unemployment and entrepreneurship is a relevant empirical relationship that, so far, is characterised by ambiguity (Cueto et al. 2015).

While promising, empirical studies thus far have not rendered conclusive results regarding the link between unemployment and entrepreneurship. OECD have identified unemployed individuals as a disadvantaged group to engage in self-employment. At the same time, there are studies showing that greater unemployment increases start-up activity (Evans and Leighton 1989, 1990; Reynolds et al. 1994). Yet, others have found that unemployment reduces the amount of entrepreneurial activity (Audretsch and Fritsch 1994). There is also causal ambiguity regarding the relationship between regional unemployment and self-employment rates. The relationship can be dynamic in that unemployment rates may stimulate start-up activity and at the same time high self-employment may reduce unemployment. Following the arguments of a potential reciprocal causal relationship between unemployment and self-employment, this chapter introduces a cross-lagged design to examine the existence of two-way causation in a longitudinal data set of Swedish functional analysis regions during the years 2008–2009.

The use of a cross-lagged design has several advantages, such as the design being suitable for examining causalities among a set of variables. The method also considers lagged effects which suits the slow-developing process perspective that may be needed to find support for the dynamic relationship between unemployment and self-employment. Four models are compared to evaluate potential reciprocal causality among unemployment and self-employment: (1) a stability

model that includes the relationships of the two measurement points for each construct; (2) a regular causation model that asserts how unemployment at one time influences self-employment at a later time; (3) a reverse causation model that examines the influence of self-employment at one time on unemployment at a later time and (4) a reciprocal causation model that combines the regular and reverse causation from models 2 and 3. The study pinpointed a number of interesting findings which are detailed later in the chapter.

Literature Review and Hypotheses

Knight (1921) argued that individuals have to decide between three states—unemployment, self-employment and employment. Out of these states, the transition between unemployment and self-employment, has received vast attention in the literature. Oxenfeldt (1943) pointed out that individuals confronted with unemployment and who had low prospects for being employed were likely to turn to self-employment as a viable alternative. Thereafter, empirical studies have returned ambiguous results and different theoretical explanations. Previous studies on the relationship between unemployment and self-employment have generally discussed two different mechanisms determining the likelihood of a person to engage in self-employment (Santarelli and Vivarelli 2007; Thurik et al. 2008). The first effect has been referred to as the 'pull effect' where individuals freely choose an independent profession that enables them to materialise their visions. The opposite, the so-called 'push effect' or refugee effect, refers to individuals who may consider the formation of a business as their best choice (Storey 1991; Marlow and Storrey 1992) and because the opportunity cost of starting a firm has decreased (Evans and Leighton 1990).

The various OECD reports have highlighted that unemployed individuals generally are less likely to engage in self-employment. In the 2019 report on missing entrepreneurs, less than 3 per cent of unemployed individuals want to become self-employed. Unemployed is thus a minority when it comes to self-employment and most likely they are overrepresented by self-employment due to so-called push/refugee effect reasons. Thurik et al. (2008) further argued that the unemployed generally exhibit less entrepreneurial talent and lower human capital endowments necessary to start and run a new firm. Also others have found unemployed to have disadvantages in transitioning into self-employment. For instance, Johansson (2000) argued that liquidity constraints could deter unemployed to become self-employed. Some studies

have even suggested that unemployed individuals transitioning into self-employment are more likely to fail. Millán et al. (2012) found that entering entrepreneurship from unemployment strongly increases the probability of returning to unemployment, while the tendency that entrepreneurs with past unemployment periods are more likely to fail has been discovered in extensive literature (e.g. Taylor 1999; Van Praag 2003; Millán et al. 2012). Previous literature has posed competing theoretical explanations and empirical results for the relationship between unemployment and self-employment. As a consequence, Wood et al. (2013) argued that empirical ambiguity in the relationship between unemployment and self-employment may be explained by a multi-dimensionality of unemployment. Others have argued that the relationship between unemployment and self-employment is dynamic. Table 1

Table 1 Literature review of studies examining dynamic relationships between unemployment and self-employment

Reference	Sample	Methods for analysis	Results
Baptista and Preto (2007)	30 Portuguese regions between 1983 and 2000	Two-equation vector autoregression model	Unemployment has a positive influence on entrepreneurial activity and unexpectedly entrepreneurial activity has a positive influence on unemployment
Thurik et al. (2008)	23 OECD countries between 1974 and 2002	Two-equation vector autoregression model	Support for two distinct relationships between unemployment and self-employment
Biltagy et al. (2017)	Egypt between 1993 and 2013	Two-equation vector autoregression model	Support for a negative effect of entrepreneurship on unemployment. No significant relationship of unemployment influence on entrepreneurship.

gives a short overview of studies taking a dynamic approach to explain the relationship between unemployment and self-employment. The table includes reference to identified studies, their main research methods and the results.

Baptista and Preto (2007) examined the dynamic relationship between entrepreneurship and unemployment rates in Portugal. They found that the relationship between unemployment and entrepreneurship is ambiguous. In support for their theoretical argument they found that unemployment has a positive influence on entrepreneurial activity. However, in contrast to their argument they also found entrepreneurial activity to have a positive influence on unemployment. Thurik et al. (2008) investigated the dynamic relationship between self-employment and unemployment and found support for both the push and pull effects, but the pull effect was considerably stronger than the push effect. Biltagy et al. (2017) found that entrepreneurship has a significant positive effect on economic growth and inflation, while it has a negative effect on unemployment. However, Biltagy et al. did not find support for a reversed relationship. The inconclusive empirical results from previous studies might be explained by a reciprocal relationship between unemployment and self-employment. As Parker (2009) suggested, there might not be a clear-cut relationship between unemployment and self-employment, since high unemployment can influence entrepreneurship in two different ways—either high unemployment may stimulate necessity-based start-ups or high levels of entrepreneurship may increase alternative costs for becoming self-employed. For this reason, a cross-lagged design is employed to examine the causality between unemployment and self-employment. Further, an examination of the causality between unemployment and regional productivity is also added to the model. Figure 1 depicts the model used to test the hypotheses. The model suggests reciprocal causal relationships between unemployment, self-employment and regional economic productivity. First, it is hypothesised that unemployment increases self-employment and contributes positively to

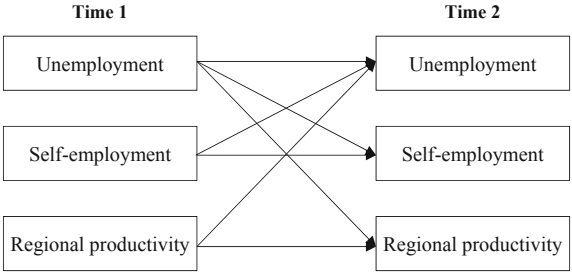

Fig. 1 Conceptual model

regional economic productivity such that unemployment at Time 1 will positively influence self-employment and regional economic productivity at Time 2. Second, it is hypothesised that regional entrepreneurship levels and regional economic productivity reduces regional unemployment.

At first, the focus is on the regular causation explanation for how regional levels of unemployment can predict future states of self-employment and regional productivity levels. For example, it has been argued that some individuals confronted with unemployment and with low prospects for being employed were likely to turn to self-employment as a viable career alternative. Some studies have found that unemployed individuals have a higher propensity to create new ventures compared to employed workers (Blanchflower and Meyer 1994; Berglann et al. 2011) Røed and Skogstrøm (2014a) argued that unemployment levels triggers creativity and therefore, they also foster entrepreneurship as it reduces the opportunity cost of starting a new venture. Previous studies of necessity entrepreneurs reveal that there are push-factors motivating unemployed individuals in engaging in starting-up new ventures, which contribute to regional productivity levels (Deli 2011). Difficult economic conditions (Baines and Wheelock 1998) or losing a job (Robichaud et al. 2010) may be different examples of push-factors stimulating individuals to engage in job creation by venturing. Furthermore, Wood et al. (2013) argued that unemployment positively influences an individual's risk assessment, desirability and feasibility towards starting a new venture. Empirical studies have also shown that lagged unemployment is a significant push factor for start-up activities (Carree 2002). Given this background, a regular causation relationship between unemployment on the one hand and self-employment and regional productivity on the other is suggested. Therefore, the following hypotheses are posited:

Hypothesis 1 There will be a positive influence of unemployment on self-employment.

Hypothesis 2 There will be a positive influence of unemployment on regional productivity.

The second area of focus is on the reverse causation explanations for how regional levels of self-employment and regional productivity influences future levels of regional unemployment. There are several arguments regarding why higher levels of self-employment and regional productivity would reduce unemployment. For instance, people in regions that have many entrepreneurial role models may become infected with the desire to become

self-employed (Nanda and Sorensen 2010). Previous studies have also identified that opportunity entrepreneurs create new ventures in situations where economic conditions are good leading to reduced unemployment (Nasiri and Hamelin 2018). Further, it has additionally been demonstrated that new firms hire employees and as such contributes to decreases in unemployment (Pfeiffer and Reize 2000). Fritsch and Mueller (2004) found a positive spillover effect from new business formation as it influences job opportunities in the new firms (as well as other firms) and thereby positively influences overall levels of productivity. These arguments suggest that high levels of self-employment and high regional economic productivity decreases unemployment. Higher levels of self-employment and regional economic productivity can also act as pull-motivators for increased entrepreneurship and thus lower unemployment. Pull-motivators come in different forms including business opportunities, innovation and role models to mention a few (Shane et al. 1991; Carter et al. 2003). Given this background a reversed causation relationship between self-employment and regional productivity on the one hand and unemployment on the other is suggested. Therefore, the following hypotheses are posited:

Hypothesis 3 There will be a negative influence of self-employment on unemployment.

Hypothesis 4 There will be a negative influence of regional productivity on unemployment.

Research Methodology

The empirical data used to test the model comprised of information on unemployment, entrepreneurship and productivity in all 60 functional analysis (FA) regions in Sweden, for the years 2008 and 2009. The FA-region classification is intended to facilitate regional analyses and essentially reflects local labour markets, rather than administrative units (Tillväxtanalys 2015). Figure 2 provides an overview of the FA-regions. The majority of the data were collected from the rAps-RIS database, which contains Swedish regional economic and demographic statistics and is provided by the Swedish Agency for Economic and Regional Growth. Municipality level data on annual new firm formation of limited companies were collected from the Swedish Companies Registration Office. Municipality level data were then aggregated

01	Malmö-Lund	21	Nyköping-Oxelösund	41	Östersund
02	Kristianstad-Hässleholm	22	Eskilstuna	42	Sundsvall
03	Karlskrona	23	Stockholm	43	Kramfors
04	Älmhult-Osby	24	Västerås	44	Örnsköldsvik
05	Ljungby	25	Örebro	45	Sollefteå
06	Halmstad	26	Karlskoga	46	Strömsund
07	Värnamo	27	Karlstad	47	Åsele
08	Växjö	28	Västlandet	48	Umeå
09	Kalmar	29	Torsby	49	Lycksele
10	Oskarshamn	30	Malung-Sälen	50	Vilhelmina
11	Västervik	31	Vansbro	51	Storuman
12	Vimmerby	32	Ludvika	52	Skellefteå
13	Jönköping	33	Avesta-Hedemora	53	Arvidsjaur
14	Borås	34	Falun-Borlänge	54	Arjeplog
15	Göteborg	35	Mora	55	Luleå
16	Trollhättan-Vänersborg	36	Gävle	56	Haparanda
17	Lidköping-Götene	37	Bollnäs-Ovanåker	57	Överkalix
18	Skövde-Skara	38	Hudiksvall	58	Jokkmokk
19	Linköping-Norrköping	39	Ljusdal	59	Gällivare
20	Gotland	40	Härjedalen	60	Kiruna

Fig. 2 Functional analysis regions in Sweden (*Source* Swedish Agency for Economic and Regional Growth)

to the functional region level, following the official regional classification (Tillväxtanalys 2015).

The empirical analysis focuses on the causal relationship between three variables—unemployment, self-employment and regional productivity. In this analysis, regional unemployment is measured as the total number of openly unemployed persons per 1000 inhabitants from the ages of 16 to 64 years. The annual number of new firms divided by the total number of registered firms in the region is used as a proxy for self-employment. This measure is recognised in previous literature as the firm 'birth rate' (e.g. Birley 1986) or 'entry rate' (e.g. Audretsch et al. 2004), and more recently the 'startup rate' (Decker et al. 2014). It is not an ideal proxy for self-employment, yet it acts as a measure of entrepreneurial activity, which enables one to study the proposed relationship between unemployment and entrepreneurship in a meaningful way. Lastly, regional productivity is measured as gross regional product (i.e. regional GDP) per employed

Table 2 Variable definitions for the study constructs

Construct	Definition
1. Unemployment	Annual no. of openly unemployed persons per 1000 inhabitants in ages 16–64 years
2. Self-employment	Annual no. of new firms (limited companies), divided by the total number of registered firms
3. Productivity	Annual gross region product ('000 SEK) per employed person

person, thus providing a relative measure of output with respect to the size of the regional labour market. Table 2 provides a summary of the variable definitions, while correlations and descriptive statistics are available in Table 3.

Analyses

All analyses were conducted using IBM® SPSS® AMOS™ Version 25.0 (Arbuckle 2014). To assert causality, four competing models were compared using a nested model design. First, comparisons of the following models were undertaken: (1) a stability model without cross-lagged paths; (2) a regular causation model including unemployment influences on self-employment and regional economic growth; (3) a reverse causation model in which self-employment and regional economic growth was allowed to influence unemployment and (4) a reciprocal causation model in which both regular and reverse causation were combined (see Fig. 2). Evaluation of the competing models was based on a chi-square difference test and on assessment of absolute and relative fit of the theoretical models by chi-square tests, goodness-of-fit index (GFI; Jöreskog and Sörbom 2001), normed fit index (NFI; Bentler and Bonett 1980), and CFI (Bentler 1990). These GFIs are deemed appropriate for studies with sample sizes similar to those in this study (Hu and Bentler 1995). Table 3 presents correlations and descriptive statistics for the central variables used to test the hypotheses. The statistics include means, standard deviations and Pearson correlations. Initial support for the proposed relationships was found by denoting consistent patterns between the correlations and the formulated hypotheses.

Nested model tests were adopted to evaluate the causality between unemployment on the one hand and self-employment and regional productivity on the other (see Table 4). Chi-square differences revealed that only one model showed an improved fit over the stability model. The reverse causation model reveals a significantly better fit with the data than do either the regular or

Table 3 Descriptive statistics and inter-correlations for the study constructs

Construct	Mean	S.D.	1		2		3		4		5		6	
1. Unemployment (T1)	29.36	7.67	1	.00										
2. Self-employment (T1)	0.07	0.01	–	.17	1	.00								
3. Productivity (T1)	715.75	285.19	–	.04	–	.23*	1	.00						
4. Unemployment (T2)	44.85	7.64		.80***	–	.25*	–	.16	1	.00				
5. Self-employment (T2)	0.06	0.01	–	.23*		.58***	–	.17	–	.14	1	.00		
6. Productivity (T2)	663.81	177.63	–	.06	–	.24*		.94***	–	.18	–	.13	1	.00

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$, one-tailed significance test

Table 4 Results on test of nested structural models

Model	χ^2	P	d.f.	NFI	CFI	IFI	RMSEA	Comparison	$\Delta\chi^2$	P	Δd.f.	Model pref.
1. Stability model	8.93		6	.96	.99	.99	.09					
2. Regular causation model	7.62		4	.97	.98	.98	.12	M1 vs. M2	1.31		2	M1
3. Reverse causation model	2.08		4	.99	1.00	1.03	.00	M1 vs. M3	6.85	*	2	M3
4. Reciprocal causation model	0.61		2	.99	1.00	1.00	.00	M1 vs. M4	8.32		4	M1
								M2 vs. M4	7.01	*	2	M4
								M3 vs. M4	1.47		2	M3

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Notes Regular causation model adds on stability model relationships between unemployment in T1 to self-employment and productivity in T2; Reverse causation model adds on stability model relationships between self-employment and productivity in T1 to unemployment in T2; Reciprocal causation model combines regular and reverse causation

the reciprocal causation models. As such, support for a reciprocal causation model was not found, but support for a reverse causation model was found where self-employment and productivity are important predictors of regional unemployment.

The standardised path coefficients of the four models are presented in Table 5. Although the results are consistent across the different models, the nested model tests acted as a guide to further elaboration on the results from the reverse causation model (Model 3, Table 3). The first two hypotheses related to regular causation of unemployment in relation to self-employment and regional productivity. The results provided no support for hypothesis 1, which posits a positive influence of unemployment on self-employment ($\beta = -.12$, $p > .05$). No support for hypothesis 2 was found either, where a positive influence of unemployment on regional productivity ($\beta = -.02$, $p > .05$) was posited. The third and fourth hypotheses referred to the reciprocal relationship between unemployment and self-employment and regional productivity, respectively. Hypothesis 3, which posited a reciprocal relationship between self-employment and unemployment, received support in that the coefficient was negative and significant ($\beta = -.16$, $p < .05$). Also, results supported hypothesis 4, which implied that there is a reciprocal relationship between regional productivity and unemployment such that higher regional productivity implies lower levels of unemployment ($\beta = -.16$, $p < .05$).

Discussion

The main objective in this chapter was to present a potential reciprocal causation between unemployment, self-employment and regional productivity. Drawing on arguments for potential reciprocal causation and from studies that have found mixed empirical findings, a longitudinal data design was used with a cross-lagged SEM approach to evaluate four models: a stability model; a regular causation model; a reverse causation model; and a reciprocal causation model. Such an approach allowed for an evaluation of causality and allowed an examination regarding how the variables of interest related to one another over time. The analysis went beyond the previously used cross-sectional designs that had exclusively dominated the literature on unemployment. The results do not support a reciprocal causation logic, although they do support a reverse causation model and find this to be a significant improvement over the alternative models, including both the stability model and the reciprocal causation model. These results hold interesting implications for theory and policy.

Table 5 Model test

Dependent variables (Time 2)	Independent variables (Time 1)	Model 1[a]		Model 2[a]		Model 3[a]		Model 4[a]	
Unemployment	Unemployment	.81	***	.80	***	.78	***	.77	***
	Self-employment					−.16	*	−.16	*
	Productivity					−.16	*	−.16	*
Self-employment	Self-employment	.61	***	.59	***	.59	***	.57	***
	Unemployment			−.12				−.13	
Productivity	Productivity	.94	***	.94	***	.94	***	.94	***
	Unemployment			−.02				−.02	

[a]Standardised path coefficients
*$p < .05$, **$p < .01$, ***$p < .001$

- First, according to the empirical results of the study, self-employment and regional economic productivity are important predictors of reduced unemployment rates. However, unemployment does not predict self-employment or regional productivity. It is possible that these results are in support of previous findings where unemployment programmes have spurred limited necessity-based entrepreneurship which have had a very limited economic spin-off (Laffineur et al. 2017).
- Second, this study is among the first to examine causality between unemployment and self-employment and at the same time consider the effect from and on economic productivity. Surprisingly, reduced unemployment does not lead to increased economic productivity, while, in line with expectations, increased productivity leads to reductions in unemployment.
- Third, for policymakers, while active labour market programmes appear to be a panacea for fighting unemployment levels and at the same time contribute to entrepreneurship and economic development, this study argues that such programmes need to consider unique challenges to work. This is important as input for the 2020 Action Strategy of the European Commission focused on bringing Europe back to growth and higher levels of employment. One of the core instruments of this strategy is to foster entrepreneurial activity and there are high hopes that this approach will help to create new jobs and stimulate the economy (Mühlböck et al. 2018). At the same time, several studies confirm that entrepreneurship programmes contribute to necessity-based entrepreneurship with high potential of venture failure and with limited economic effect. For such programmes to work it is important to find potential for opportunity-driven entrepreneurship where the most important drivers of reducing unemployment are to find opportunity-driven entrepreneurs and a positive trend in the regional economic development.

This study is not without limitations. The first is that the study is based on a small sample size, building on functional analysis regions within one country (Sweden). Furthermore, the issue of time needs consideration and future studies could address different time lags. This study found both self-employment and regional productivity to predict unemployment levels at a later time. However, future studies should consider that it might take a longer time for unemployment levels to influence self-employment and regional productivity. For instance, Fölster (2000) found self-employment to cause employment in longer lags up to five years. Results may also be sensitive to the time period studied. Sorgner and Fritsch (2018) argued that empirical results may differentiate between situations of economic slowdown and

boom periods. Future studies could take account of this and explore different economic situations, as well as country and cultural effects.

Conclusion

The reports on missing entrepreneurs published by the OECD identified unemployed people to be an entrepreneurship minority group. Generally, the group exhibits low intentions to engage in self-employment and previous studies have demonstrated that the group often is disadvantaged when it comes to entrepreneurial talent, human capital and resources necessary to start and run a new firm. Policymakers have long been interested in the potential of entrepreneurship and self-employment to be used as a mechanism for moving unemployed people back into work. This is justified by the many potential negative aspects for individuals and society of high unemployment levels. However, theoretical and empirical work has presented ambiguous and contradicting results about the dynamics of the relationship between unemployment and self-employment. A few studies have specifically engaged in examining the dynamic relationship, and thereby alternative explanations, for the relationship between unemployment and self-employment. Empirical results from these studies have been mixed.

In this study a cross-lagged panel design has been adopted to examine the causality between unemployment and outcomes in terms of self-employment and regional productivity. The results give support for a reversed causal influence where regions with higher levels of self-employment and regional productivity reduces unemployment. This might likely be without engaging unemployed individuals into self-employment, but rather by transitioning into employment. The results from this study thus suggests that regional levels of unemployment will be unrelated to future levels of self-employment and regional productivity. However, this study provides strong support that increased levels of self-employment and regional productivity reduces future regional unemployment. As such, the results of this study demonstrates the importance of fostering a strong culture of regional entrepreneurship to avoid future unemployment.

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