Institutional Environment and New Firm Formation in Swedish Regions

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Abstract:

This paper uses an institutional approach to investigate the relationship between the regional institutional environment and regional new firm formation. The importance of perceived attitudes regarding private enterprises, local taxes, political majority, the size of the government sector and perceived rules and bureaucracy on new firm formation in 286 Swedish municipalities are investigated. The empirical findings show that perceived positive attitudes toward private enterprises and municipalities governed by right bloc majority have higher new firm formation. A large local government sector on the other hand tends to crowd out new firm formation. The paper also explore if the different aspects of institutional environment are similar across industries. The pattern in the private service sector industries is most similar to the general pattern in the economy, while the only variable reflecting the institutional environment that influences new firm formation in manufacturing industries is perceived rules and bureaucracy.

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1. Introduction

Political and economic institutions underlie and determine the incentive structure in a society. Hence, they importantly affect economic performance in a society (North 1991 and 1994). It is undoubtedly the case that the quality of institutions plays an important role for creating economic growth (see e.g. Acemoglu, Johnson and Robinson, 2001 and Rodrik, Subramanian, and Trebbi, 2004). Stimulating entrepreneurship is by many policymakers regarded as an important way to achieve economic growth. However, as recognised by Wennekers and Thurik, (1999), the link between individual micro-level level foundations in terms of entrepreneurship and the aggregate growth level needs to be unravelled further. Unravelling the link between the institutional setting, entrepreneurship and aggregate economic growth can of course be done in several different aspects. The institutional differences can of course be expected to vary across countries (se for example Bjornskov and Foss, 2006 and Freytag and Thurik, 2007). In addition, the institutional differences can vary substantially across regions within a country. The role of the region put forward as becoming increasingly important. It is argued that economies experience increased globalisation the role of national markets decreases and limits the possibility macroeconomic policy tools in order to adjust the economy. In such an environment regional specialization tend to increase and regions and not countries are the ones competing with each other (Hallin and Malmberg, 1996).

The Swedish institutional context provides a particularly interesting case for studying the link between institutions and entrepreneurship. The Swedish "welfare state" is characterized by a large public service sector and extensive social security systems. Henrekson (2005) discuss how welfare state institutions, such as for example, the large size of the public service sector and the tax structure reduces the incentives for entrepreneurship. Henrekson and Rosenberg

(2001) specifically focuses on science based entrepreneurship and conclude institutions do not favour the incentives to become entrepreneur or for existing firms to grow in these industries. However, these studies focus on the aggregate country level and do not consider regional institutional differences. An additional motivation to study the Swedish case is that the Swedish economy during the 1990.s has experienced some major de regulations as regards, for example, opening up for more private alternatives in education and health- and medical care industries. During the period 1996-2001 employment in the private sector of these sectors in Sweden increased by 40 000 employees. A large part of this increase is due to the establishment of new firms in these sectors (Nyström 2006a).

Studies focusing on regional new firm formation in Sweden though not applying an explicit institutional focus are for example include Davidsson et al. (1994)[2] Karlsson and Nyström (2006) and Nyström (2007). This paper contributes to the empirical knowledge about the link between the regional institutional environment and regional entrepreneurship in terms on new firm formation. In doing so the paper uses the econometric tools that modern spatial econometrics provide.

This paper is organized as follows: Section 2 outline the theoretical foundation for the paper i.e. the different types of institutions and how they influence incentives for new firm formation. Moreover, in section 2 the particular regional institutional environment aspects that will be empirically investigated are discussed. Section 3 presents the data and econometric method that will be used in the empirical analysis. Section 4 presents the empirical results, and finally the conclusions are presented.

[2] However, it should be noted that the study included some explanatory variables related to the institutional environment such as for example, variables reflecting entrepreneurial culture and access to role models.

2. Institutions and regional new firm formation

Before we proceed to elaborate on the institutional setting that influence firm behaviour we need to at least mention a few words about the concept of the entrepreneur and entrepreneurship in relation to new firm formation. Historically a number of definitions have been suggested. Among the most commonly used definitions are the definition of the entrepreneur as a risk taker, resource allocator and innovator. These three perspectives all focus on the economic function of the entrepreneur. A frequently used definition of entrepreneurship which incorporate all these function and also emphasize the role of institutions are the definition by Wennekers and Thurik (1999) who defines entrepreneurship as:

"… the manifest ability and willingness of individuals, on their own, in teams within and outside organisations, to: perceive and create new economic opportunities and to introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and use of resources and institutions." (Wennekers and Thurik, 1999 pp. 46-47)

This definition indeed highlights the multidimensional aspects entrepreneurship, which make it particularly difficult operationally in empirical work. Measures that are frequently use (but does not cover all the above described dimensions of entrepreneurship) is self-employment rates, new firm formation or innovation in small firms. As previously mentioned this appear will use new firm formation as a measure of entrepreneurship.

1.1 Institutions and the behaviour of the firm

Institutions are commonly depicted as the "the play of the game" for individuals or organisations and they can be either characterized as informal or formal. Williamson (2000) specially discuss the institutions that influence economic activities in *firms*. He categorize institutions according to four aspects which will help us elaborate on the relationship between institutions and entrepreneurship. *Social embeddedness* includes informal institutions, customs norms and social networks; *Institutional environment* which represent the formal rules of the game such as polity, judiciary and bureaucracy; *institutions of governance*; which refers to transactions and contracts between firms and finally *resource allocation and employment*, which emphasizes the role of institutions for reshaping incentive structures which affects decisions on resource allocation in production. These concepts will be further elaborated on below and related to some previous empirical findings.

Social embeddedness

The concept of social embeddedness refers to, for example, the culture, norms, values traditions and religion in a society. These institutions form how different behaviours are rewarded (or punished). Hence, they influence people's behaviour and decisions. Social relations include relations to family, friends, colleges or business relations. These institutions change very slowly. More explicitly discussing how people do business, Granovetter (1985) suggests that the density of social network relations indeed influence what kind of activities and transactions are made. There is now an increasing literature emphasizing the role of social conditions for innovation and entrepreneurship and economic growth.[3] Empirical findings focusing on the effect on the regional level include Baptista (2004) who finds that cultural values in a society, in terms of attitudes toward risk and uncertainty, influence the level of

[3] See, for example, the literature on enterprise culture (e.g. Amin and Tomaney, 1991) and regional innovation systems (e.g. Cooke et al 1997 and Thomas, 2000.

entry regulations in a country. Beugelsdijk and Noorderhaven (2004) investigate 54 European regions and show that regions differ with regard to entrepreneurial attitude and culture and that these regional characteristics are correlated with regional economic growth. Kangasharju (2000) argues that there might be a stochastic distribution of entrepreneurial talents across regions, which in addition may be enhanced by regional specific factors and hence contribute to explaining the regional variation in entrepreneurship. Finally, Audretsch (2001) identifies entrepreneurial culture as important for nurturing start-ups and growth of U.S biotech firms. It should be noted that entrepreneurial culture in a region is of course very difficult to measure. Most studies that consider regional culture as a variable n the empirical analysis either measure it indirectly by including regional specific effects or use proxies for regional culture Beugelsdijk and Noorderhaven (2004).

Institutional environment

The institutional environment includes the formal rules such as constitutions, regular law and regulations (North, 1991). The institutional environment concerns the definition and enforcement of property rights and contract laws, which are of course rudimentary for economic activities and transactions. Secure property rights ensure that people are able to keep the returns of their entrepreneurial activities. In addition well defined property rights and contract enforcement decreases the transaction cost associated with doing business (Coase, 1937). The institutional environment includes both the functions of the government as well as the powers distribution between different levels of government (Williamson, 2000). Consequently, the ability for each region to influence the environment for entrepreneurship is limited by given level of autonomy

Institutions of governance

Regardless of the existence of contract laws much of the contract agreements and dispute settlements are managed directly by the parts involved. In analysing the effect of institutions of governance transaction cost economics are often used in the analysis (Williamson, 2000). Important decisions include the choice of producing something within the firm or choose to use another firm as supplier. Moreover, the institutions governing product markets influence competitive environment and decisions on mergers and acquisitions, which of course in the end are important aspects that potential entrants need to consider. In empirical studies it found that rigorous regulatory environment on product markets have a negative effect on productivity and new firm formation (Scarpetta et al 2002). Djankov et al. (2002), investigate the time and money that a firm need to spend on starting up a business in 85 countries. They find that countries with higher entry costs also have higher levels of corruption and larger unofficial sectors. One of the motivations for entry regulations is the belief that these regulations should improve the quality of the private and public goods produced. This does not seem to be the case, according to Djankov et al. (2002).

Resource allocation and employment

Institutions influence the availability, flexibility and cost of using different resources such as capital and labour in the firm and hence they will also influence the incentives to start a new firm. This fourth level of institutional analysis is the level where neoclassical economics analysis has dwelled (Williamson, 2000). Examples of this type of analysis may include studies of the incentives, prices and quantities on the labour and capital markets. Labour market legislations have, for example, the purpose of creating a stable environment for both employers sand employees, but may also decrease the incentives to hire people and starting a new firm since they affect the cost of labour. In addition the quality of the financial

institutions determine the cost of acquiring capital for investments and seed capital for starting a new firm.

2.1. Institutional impact on new firm formation in the Swedish regional context

In some respects the institutional prerequisites are similar across regions in a country at least considering the second level of institutions preciously denoted institutional environment since the general rules of the game, which are centrally determined and applies to all regions. In Sweden this is, for example the case with the taxation of capital and labour market legislation. However, there are some important regional differences. In Sweden, there are primarily three different levels of levels of government that needs to be considered; the national-, county- and municipality-level. The decisions taken at the national level of course concerns all firms and individuals equally. At the county-level the responsibility is mainly to provide health- and medical care and public transportation. The spectra of issues that the municipality is responsible for is much wider including for example education, waste disposal and issuing building permits. Until now, we have deliberately been vague when using the concept of a region since it can be defined and measured in several different ways. In the empirical part of this paper the regional dimension corresponds to the municipality. The wider spectra of issues handled at the municipality level make it more interesting than the county-level as the unit of analysis from an institutional perspective. However, it should be emphasized that the municipality is still an administrative definition, which may not be completely adequate especially regarding regional market conditions. The following sections will discuss some institutional aspects that differ across Swedish municipalities and which reflect the variables used in the empirical part of the paper.

Attitudes

The attitudes towards entrepreneurship and being a business owner in general reflects if it is permitted to earn money on entrepreneurship. In a social context, we can expect the attitudes from different social contexts to have more or less impact on regional entrepreneurship. One of the Swedish "success stories" as regards regional entrepreneurship is the Gnosjö region located in the south/middle part of Sweden. The region is often compared to regions such as the third Italy district. It is claimed that one of the reasons for the success of the entrepreneurial Gnosjö region is the social network, which has formed a local environment with positive attitudes towards entrepreneurship. It should also be noted that the causality could also be the reverse i.e. that successful entrepreneurship positively influence attitudes and local environment.

Local taxes

As previously mentioned capital incomes are taxed equally regardless of which region, the firm is located in. However, a large part of the entrepreneurial income is taxed as wage income (Henrekson, 2005). Since tax on income are determined at the municipality level they can be regarded as economic institution that determine the economic payoff of being an entrepreneur in particular regions. However, it should be noted that the variation in tax rate across municipalities are rather small and the difference between municipality with the highest and smallest tax rate is just above six percentage units. The previously mentioned study by Davidsson et al. (1994) included the local tax rate as an explanatory variable for gross births of establishments per 1,000 inhabitants, but this variable did not turn out to be statistically significant inn the empirical analysis.

Size of the government sector

One of the aspects of product market institutions is the level of competition. Competition refers not only to competition between firms in the private sector, but also occur between private firms and the public sector. In certain service sectors such as education and health care the main competitor for a potential entrepreneur are services provided by government sector. In a cross country setting it has been shown that the size of the government sector is negatively correlated with entrepreneurship (Bjornskov and Foss (2006). The size of the Swedish government sector and the regulations regarding certain service sectors implies a limited possibility to establish new firms in these sectors. In fact Swedish private service sector is much smaller compared to many other OECD countries (SOU 1997:17). Actually, there has been no net growth of employment in the private sector in Sweden since the 1950.s (Davidsson and Henrekson (2002). However, at the regional level there is still some variation in terms of the number of private alternatives in for example, health care[4] and education sectors. Different municipalities have for example chosen to imply different levels of private alternatives regarding providers of health care (Socialstyrelsen, 2003).

Political power

The institutional environment and institutions of governance can also differ regarding with depending on the interests political agenda of the policymakers. Pierre, (1999) argue that the degree of inclusion of organized interests in urban governance differs within nations. This in turn influences the policy outcomes in different regions. This is of course reflected in the previously mentioned differences in involvement in providing public services or decisions on local tax rates, but there might of course be additional differences regarding how/if one encourage private entrepreneurship. The study by Davidsson et al (1994) included

[4] The municipality is responsible for health care for elderly.

explanatory variables on the percent of socialist voters and the per cent christian-democratic voters in the regions as a measures of entrepreneurial culture., but they was not found to affect regional new firm formation.

Rules and bureaucracy

For 2006 The World Bank ranks Sweden as number 13 out of 175 countries regarding the ease of starting a business World Bank (2006). In order to start a firm 20 procedures need to be accomplished and the time spent on these start-up procedures is three days. The cost of starting a new business is reported to be 0.7 per cent of income[5] per capita. Among the rules that may be of importance at the local level are building permits, permit to serve alcohol, or rules regarding environmental concerns. There is both a possibility that the rules determined are more or less restrictive in different regions and that they are applied differently. Hence, the time and efforts that a firm may have to spend on bureaucracy may differ significantly across municipalities. A number of studies has on a cross country basis found that the bad bureaucracy regulations associated with starting a new firm reduces new firm formation (see for example Alfaro and Charlton (2006), Klapper Laeven and Rajan (2006) Desai, and Gompers and Lerner, (2003). Van Stel Storey and Thurik, (2006), on the other hand, show that administrative considerations (time cost and number of procedures needed in order to start a firm) does not affect the amount of nascent and young entrepreneurs in the economy.

Regional market conditions

In addition to the institutional environment that we expect to influence the number of entering firms in a region, regional market conditions of course are expected to have the main impact on the decision to start a new firm in a particular region. In the empirical part of this paper a

[5] Gross National Income

number of measures of the regional market condition will be used. The size of the population in a region can be expected to influence the number of entering firms since it reflects the number of potential customers but it can also be expected to influence the "supply" of entrepreneurs. The income level reflects both the demand aspect in terms of buying power of the potential customers but also the possibilities to acquire new venture capital in the region (Reynolds, et al. 1994). The unemployment rate may affect entrepreneurship either positively by forcing people in to entrepreneurship as an alternative too unemployment or negatively if unemployment is regarded as an indicator of the economic situation and hence an indicator of decreased demand. The level of education in a region can be expected to have ambiguous effects on the probability to start a new firm in a region. From a demand perspective, it is more attractive for a firm to locate in a region with well-educated inhabitants assuming that they also have higher incomes. It might also be attractive to locate in a region with a highly skilled population if this is the particular type of human capital that the firm needs in order to run the business. This might for example be the case for highly innovative firms in early stages of the product life cycle. In general it is also assumed that the probability to start a new firm are high among well educated since they are believed to have better opportunities to perceive and exploit entrepreneurial opportunities. On the other hand, it should be recognised that the opportunity cost of being an entrepreneur (e.g. wage from employment) can be expected to be higher for well-educated people. Actually, the choice to engage in entrepreneurship is a second choice for many Swedish well-educated people in the science and technology industry (Delmar et al, 2005). Finally, the structure of local business in the municipality may affect the number of new firm formations. if the industry structure is characterized by many small firms it could be expected that the frequency of entry and exit is high in such regions compared to regions with many large firms.

3. Data, description of variables and econometric method

3.1. Data and description of variables

In the empirical analysis, several sources are used. The data used to compile firm entry in each municipality are collected by Statistics Sweden. This dataset consists of firm-level data. Each firm in the dataset is classified according to the Standard Industrial Classification (SIC) system[6]. All Swedish non-financial enterprises in the corporate sector[7] are included in the dataset. This means that all non-financial joint-stock companies, cooperatives, partnerships, limited partnerships, associations and some foundations are included. Each firm in the dataset is assigned a unique identification code. If a new identification code appears, this is identified as a firm entry. Further details about this dataset can be found in Statistics Sweden (1998) and Nyström (2006b). The numbers of entering firms in each Swedish municipality for 2001 is used in the empirical part of this paper. The variable measuring the average firm size in each municipality is also complied from this dataset.

The population income education local-taxes, variables for each municipality have also been collected by Statistics Sweden. These variables are available at www.scb.se. The variables measuring the size of the government sector, unemployment and political majority was recovered from a database called the municipality database which is a comprehensive data covering many different aspects of municipality characteristics. The variables associated with the institutional setting in terms of attitudes and rules and bureaucracy are based on an annual survey[8] conducted by the Swedish confederation of employees, henceforward denoted SCE. The survey is sent to over 60 000 firms in all Swedish municipalities and the response rate is

[6] The SIC code at the four digit level corresponds to NACE Rev. 1.
[7] Financial intermediation (SIC codes 65-67), Real estate activities (SIC code 70) and Activities of membership organizations (SIC code 91)) are not included in the dataset since these sectors are not covered in the data collection made by Statistics Sweden.
[8] The survey was published in 2002. However, it was conducted in the autumn of 2001.

about 60 per cent. In the survey among other things, firms are asked about their perception of the attitudes regarding private enterprises in their social environment. This includes the attitudes of the general public, the local government politicians, municipal employees, the media and the educational system. In addition, the respondents are asked about their perceptions of rules and bureaucracy. The data and further information about how the survey was conducted is available at: www.svensktnaringsliv.se. It should of course be noted that the responses from this questionnaire reflects on the subjective views of the representatives from incumbent firms. However, Djankov et al (2002) conclude that regarding the importance of administrative regulations the subjective assessments made buy business people reported by World Economic Forum (2001) has a high correlation with the more objective measures provided by Djankov et al. (2002). In table 1 the variables included in the analysis are defined and the source for each variable are also presented. Several variables suffered from severe skewness and kurtosis indicating non-normal distribution. Therefore these variables was used in their logarithm form in order to avoid sever problems with normality. The data set includes observations from 286 municipalities.[9]

[9] In 2001 Sweden actually consisted of 289 municipalities. However, in the distance matrix necessary for controlling for spatial autocorrelation information from only 286 municipalities was available. This implies that the municipalities Nykvarn, Bollebygd and Lekeberg are not included in the analysis.

Table 1 Description of variables

Variable	Definition	Source
New firm formation	Number of entering firms in the municipality 2001 (Logarithm)	Statistics Sweden
Attitudes	Attitudes regarding private enterprises. Perceptions of attitudes regarding private enterprises from the general public, the local government politicians, municipal employees, media and educational system respectively in each municipality. The value ranges from 0.2 to 1.2. A higher value of the measure implies more positive attitudes private enterprises. An average of five categories of attitude measures are constructed.	SCE
Tax	Local tax in per cent in the municipality 2001	Statistics Sweden
Political majority	Dummy variable taking the value 1 if the municipality is governed by parties that defined as right bloc parties[10] 0 otherwise.	Municipality database
Government sector	Size of the local government sector measured as the number of employed in the local government per capita in the municipality. (Logarithm)	Municipality Database
Rules and bureaucracy	Perceptions of the extent of rules and bureaucracy in municipality. The measure ranges between 1 and 6 where a higher score corresponds to better (less) rules and bureaucracy.	SCE
Population	Population in the municipality 2001. (Logarithm)	Statistics Sweden
Income	Average income (thousand SEK) in municipality 2001. The measure includes incomes from both employment and business (Logarithm)	Statistics Sweden
Education	Share of employees with a university degree in the municipality 2001. (Logarithm)	Statistics Sweden
Unemployment	Unemployment rate in the municipality 2001	Municipality Database
Firm size	Average firm size in the region 2001 (Logarithm)	Statistics Sweden

[10] The Center Party, The Christian Democrats, The Liberal Party and The Moderate Party are defined as parities belonging to the right on the political scale.

In order to investigate whether the different aspects of the institutional environment are more or less important for manufacturing or private service industries the number of entering firms in a region was also divided into two sub-samples. The manufacturing industries include firms with SIC 15-37 and the private service sector refers to industries with SIC codes 50-64 and 70-74. Hence, it should be emphasized implies that for example health care, and education sectors are not included. Table 2 presents the descriptive statistics for the variables included in the study. Unless otherwise noted, the descriptive statistics refers to the case when all industrial sectors are included..

Table 2. Descriptive statistics

	Mean	Std dev	Min	Max	Skewness	Kurtosis
Entry (all industries)	3.499	1.078	1.099	8.618	0.785	4.551
Entry (manufacturing industries)	1.222	0.955	0.000	5.710	0.749	4.318
Entry (private service sector)	3.031	1.175	0.000	8.353	0.629	4.197
Attitudes	0.700	0.206	0.240	1.200	2.614	2.614
Tax	31.096	1.227	27.15	33.17	-0.778	3.081
Political majority	0.321	0.468	0.000	1.000	0.763	1.583
Government sector	4.262	0.167	3.638	4.615	-0.775	4.150
Rules and bureaucracy	3.500	1.196	1.000	6.000	-0.024	2.594
Population	9.823	0.899	7.878	13.534	0.720	3.850
Income	5.152	0.116	4.979	5.818	1.893	8.533
Education	-1.675	0.320	-2.192	-0.575	0.843	3.404
Unemployment	3.399	1.325	1.000	8.500	0.715	3.793
Firm size	2.107	0.419	1.270	3.429	0.629	3.349

3.2. Econometric method

The econometric model was initially specified as a standard linear regression with the entry variable as dependent variable and all the above-described variables as explanatory variables. The possibility of multicollinearity was also investigated by calculating the variance inflation factors (VIF), which did not indicate that any severe multicollinearity[11] problems should be expected. However, since some municipalities are located in the proximity of each other, there is a possibility that there may be spatially dependence in such an econometric model. A Morans test confirms the suspicion of spatial autocorrelation. In the presence of spatial autocorrelation there are two alternative opportunities regarding how to re-specify the model i.e. as a spatial lag model or a spatial error model In a spatial lag model, it is assumed that the dependent variable is a function of the dependent variable in the neighbouring municipalities. In a spatial error model there is spatially correlated measurement errors due to omitted explanatory variables that are believed to be spatially correlated (Haining (2003). Unfortunately, the Moran test do not give us any indication about which of the two model that should be applied and this choice must instead be made on theoretical basis and/or by comparing the estimation results of the two models. In our case such a comparison favour the choice of a spatial lag model. In the estimation of the he spatial lag model robust standard errors was used in order to control for heteroscedasticity.

4. Regression results

Tables 3 to 5 present the regression results. In Table 3 new firms in all industrial sectors are is the dependent variable. Since the institutional perspective is our focus, we start analysing the

[11] The VIFs did not exceed 10 which are usually used as a rule of thumb for indicating multicollinearity problems.

variables measuring the institutional environment.[12] Informal institutions represented by the variable measuring the attitudes towards private enterprises have a positive effect on new firm formation. Municipalities governed by the right bloc also have statistically significantly more new firms. However, one must be careful to interpret this result as solely because of more "entrepreneurship friendly policy" since such a dummy variable also may capture additional differences across regions which also reflect the preferences of the voters. A large local government sector has a negative effect on new firm formation. The local tax rate and the perceived rules and bureaucracy do on the other hand, not influence new firm formation. All variables except unemployment reflecting the regional market conditions are statistically significant. A large population and higher education level tend to increase new firm formation, while a higher income level and a larger average firm size have negative effect son new firm formation.

[12] Since the dependent and many of the explanatory variables are in their logarithm form interpretation of the size of the variables not always straightforward. In the interpretation of the results, the focus is therefore on the sign and significance of the coefficients.

Table 3: Regression results new firms in all industries are the dependent variable

Variable	Coeff.	Robust std err	t-value
Attitudes	0.440*	0.160	2.75
Tax	-0.006	0.021	-0.26
Political majority	0.105*	0.040	2.61
Local government sector	-0.361*	0.181	-1.99
Rules and bureaucracy	-0.027	0.025	-1.09
Population	1.085*	0.041	26.42
Income	-0.542*	0.266	-2.04
Education	0.343*	0.113	3.04
Unemployment	0.021	0.021	0.97
Firm size	-0.155*	0.058	-2.67
Constant	-1.660	1.975	-0.84
R^2	0.919		
N	286		

*indicates significance at the 5 per cent level. ** indicates significance at the 10 per cent level.

The results of this regressions focusing on new firm formation in the manufacturing industry are provided in Table 4. The table show that that the explanatory variables do not perform as well in explaining the differences in new firm formation in manufacturing industries across regions as they did when including all industrial sectors. The only variables that are statistically significant are population and perceived rules and bureaucracy and the R^2-value is much lower. The size of the region in terms of the size of the population does positively affect new firm formation. Rules and regulations perceived as well functioning also positively influence new firm formation.

Table 4: Regression results new firms in manufacturing industry is the dependent variable

Variable	Coeff.	Robust std err	t-value
Attitudes	0.194	0.306	0.63
Tax	-0.025	0.041	-0.61
Political majority	0.077	0.080	0.97
Local government sector	0.216	0.410	0.53
Rules and bureaucracy	0.084**	0.045	1.87
Population	0.932*	0.068	13.61
Income	-0.079	0.486	-0.16
Education	-0.290	0.212	-1.37
Unemployment	0.012	0.034	0.36
Firm size	-0.027	0.091	-0.30
Constant	-8.271*	3.799	-2.18
R^2	0.639		
N	286		

*indicates significance at the 5 per cent level. ** indicates significance at the 10 per cent level.

Table 5 present the result of the regression focusing on the private service sector. The results of this regression are more similar to the results received in the estimation for all industrial sectors. Also in this case positive attitudes towards private enterprises are positive for new firm formation. In addition, municipalities governed by a right majority tend to have more new firm established. On the other hand, the variable measuring the size of the government sector is not statistically significant. For private sector industries the tax rate seem to be of certain importance indicating that higher local tax rate decreases private sector new firm formation. Regarding regional market condition variables the regression render similar results as for all industrial sector i.e. a larger population and a higher level of education in the

municipality tend to increase new firm formation whereas a higher income level and large firm size decreases new firm formation.

Table 5: Regression results new firms in private service sector are is dependent variable

Variable	Coeff.	Robust std err	t-value
Attitudes	0.475*	0.188	2.53
Tax	-0.039**	0.024	-1.65
Political majority	0.108*	0.051	2.11
Local government sector	-0.220	0.203	-1.08
Rules and bureaucracy	-0.022	0.029	-0.75
Population	1.123*	0.044	25.47
Income	-0.551**	0.315	-1.75
Education	0.518*	0.141	3.68
Unemployment	0.033	0.024	|1.37
Firm size	-0.171*	0.061	-2.81
Constant	-1.723	2.298	-0.75
R^2	0.903		
N	286		

*indicates significance at the 5 per cent level. ** indicates significance at the 10 per cent level.

5. Conclusions

This paper has used an institutional framework for explaining the regional differences in new firm formation. Believing that entrepreneurship, measured as new firm formation is a vital link to economic growth, the institutional prerequisites for entrepreneurship is indeed important. The institutional environment empirically measured in this paper includes attitudes towards private entrepreneurship, local tax rates, political majority, the size of the government sector and the perceived rules and bureaucracy. In the paper, the region is defined as 286

Swedish municipalities. The effect of the institutional variables was analysed controlling for regional market conditions and spatial autocorrelation.

The effects was analysed both for a all industrial sectors level and for two sub samples; the manufacturing industry and the private service sector. At the aggregate level perceived positive attitudes towards private enterprises and municipalities governed by the right bloc political majority have a positive effect on new firm formation. A large local government sector, on the other hand, tends to decrease new firm formation. This can be interpreted as competition from the government may crowd out private entrepreneurship. In the private sector industry, the patterns are rather similar to what was observed for all industrial sectors except for the size of the local government sector does not show up statistically significant. Higher levels of local tax rate do instead reduce new firm start-ups in this sector. However, in the manufacturing perceived rules and bureaucracy play a more pronounced role. The other institutional variables are in this case of less importance and so is several of the variables reflecting regional market conditions except for the size of the region, which still is of major importance. These findings highlight the fact that different aspects of the institutional environment are not equally important across sector. The differences across sectors regarding determinants of regional new firm formation is also emphasised by Davidsson et. al. (1994) and Nyström, (2007).

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