

Regional Studies Association European Conference 2013
5th - 8th May 2013; University of Tampere, Finland

**The Impact of Pubs on the Level of Socio-Economic Activity in Rural Parishes:
An Econometric Study**

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Abstract: Pubs in the UK are often seen as hubs for social interaction, which is particularly prominent in villages and rural areas where they play a pivotal role in the stimulation of socio-economic activity. In such areas pubs provide a fertile ground for community cohesion and are often at the epicentre of wider community activities such as sporting events and galas. Moving from a previous study conducted by Cabras and Reggiani (2010), the current investigation seeks to measure the societal and economic impact of pubs in rural communities in the North of England – North West, North East, and Yorkshire and Humber. Using multiple and ordered probit regression, the authors conduct a preliminary econometric analysis to quantify such impact. Findings suggest that there is a strong degree of association between aspects of community cohesion and socio-economic activity and the presence of pubs. However, such effects are not equitable over all dimensions. Results have strong implications for future development policies regarding the preservation of rural communities.

Keywords: Pubs; community cohesion; socio-economic activity; Northern England

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1. Introduction

The traditional importance of pubs in British culture, economy and society is widely acknowledged and has been analysed by a number of studies (Hunt and Satterlee 1986, Bowler and Everitt, 1999, Jones et al. 2000, Pratten and Lovett 2002, Pratten 2004, Maye et al. 2005).

Pubs located in the most rural and remote areas, especially those furthest from major railway and road connections represent vital assets and networking places for their local communities. Their disappearance leaves 'black holes' in rural communities and may endanger the level of community and social cohesion among individuals. At a time when other business sectors are performing relatively well in rural areas (Defra 2011), this raises questions about the degree of integration in the rural economy.

This paper analyses the impact that the decline of pubs has on communities living in rural and remote areas. In particular, the aims of this study are to explore and investigate village pubs in rural parishes, their function in creating social capital and community cohesion inside local communities, and their role in creating business and employment opportunities inside local economies. Moving from a previous study conducted by Cabras and Reggiani (2010) on rural and remote pubs in Cumbria, the authors investigate and examine data collected from secondary sources for all Northern Regions of England, namely North East, North West and Yorkshire and Humberside.

The paper is structured as follows. The next describes the underpinnings of the study moving from a previous pilot study conducted by Cabras and Reggiani (2010) in Cumbria. The section methodology presents the data collection, analytical techniques, and results of the data analysis. The third section discusses the implications of the research results. Finally, section six concludes the study.

2. Moving from a Previous Study Conducted on Rural Pubs in Cumbria (2010)

A pilot for the proposed research was conducted by Cabras and Reggiani (2010) that explored the significant role played by village pubs in creating social capital and business opportunities. The study tested the presence of one or more pubs in parishes against the level of socio-economic activity produced at a local level. The pilot was conducted in the county of Cumbria, which is located in the North West of England on the border with Scotland. It is the second largest English county, but has a very low population density. The county population is about a half million (496,900 – ONS 2007), of which over 50% live in rural communities. The pubs analysed in this study were located in villages or rural parishes. By villages and rural parishes, Cabras and Reggiani meant 'communities or parishes with no more than 3,000 individuals, situated at least 5 miles (or 10 minutes drive) from towns or large parishes counting 5000 inhabitants or more' (2010, p.6). This division was made in order to

distinguish village and rural pubs from city and town pubs, which usually serve a wider area and show higher levels of custom and potential business.

By collecting and collating data from a number of sources, including the Neighbourhood Statistics (ONS) and the Survey of Rural Services (Countryside Agency), Cabras and Reggiani created a dataset that comprised 171 parishes and 135 village pubs which served a parish population of about 115,000 individuals. With the information gathered, the authors constructed an index of the level of socio-economic activity produced within the parishes based on three main aspects: civic engagement, volunteering activities and socially rooted leisure activities. The authors used the index for verifying the hypothesis that the social capital accumulated around local pubs, serves to feed the development of a number of initiatives, such as volunteering initiatives, the organisation of traditional fairs or festivals, the provision of civic services to local community, and the creation of business and economic opportunities. Results from this study showed that the level of socio-economic activity in the selected rural parishes was positively influenced by the presence of pubs. In addition, the study demonstrated that the presence of one or more village pubs in a parish was crucial with regard to social network formation within the area.

The study conducted by Cabras and Reggiani examined data at a parish level, while other studies in the field analyse aggregate data at higher administrative levels, e.g. county or district level. Themes such as rurality and social engagement were investigated at the lowest administrative scale and the information presented is highly detailed. In addition, given the paucity of data and research, their study provided a significant contribution to the debate generated by the closure of pubs in rural and remote areas of the UK.

This study re-utilize index approach used by Cabras and Reggiani (2010) by creating a new index encompasses three main aspects of socio-economic activity: (1) civic engagement – the presence of a parish newsletter and counseling; (2) volunteering activities – the presence of voluntary organisations conducting recycling, clothes recycling, and community composting; and (3) leisure activities – the presence of galas/ festivals and scout organisations. The hypothesis investigated in this study is whether the presence of pubs in rural areas is linked to higher levels of socio-economic activity and community cohesion. The study extends the analysis of Cabras and Reggiani (2010) to include multiple dimensions of community cohesion and all rural parishes in Northern England. In the following discussion, the study hypothesis and multiple dimensions of community cohesion are addressed and explored.

3. Methodology

The study adopts a two-phase quantitative methodology to examine the impact of pubs on socio-economic activity and community cohesion in rural Northern England. The first phase of the study is to establish the different dimensions of community cohesion using factor analysis. This method can suggest the number of underlying factors and provide the means of their elaboration. The purpose of factor analysis is to uncover the variation associated with community cohesion in rural parishes in Northern England. The data used for analysis were gathered from a number of sources, namely The Office for National Statistics (ONS. throughout the Annual Business Inquiry), National Archives (NA – data related to services and amenities available in rural parishes), and information provided by CAMRA (Campaign for Real Ale – information about pubs operating within selected parishes). The data were assembled and collated into a unique dataset spanning the North of England (Yorkshire and the Humber, North East, and North West regions).

The dataset comprised 1,134 rural parishes across 56 local authorities that serve a population of over 700,000 individuals. Information contained in the dataset provides an overview of parish level characteristics related to social, cultural, sporting, and volunteering activities. A total of 15 variables were identified to represent three different dimensions of community cohesion: (1) community interactivity (INT), (2) community sport facilities (SF), and (3) community food facilities (FF). From these variables an aggregate measure of community cohesion will be constructed and taken as a dependent variable. Variables that comprise Cabras and Reggiani's (2010) index of socio-economic activity are also included in the analysis.

Table 1 provides a summary of the variables used and dimensions covered in deriving a new aggregate measure of community cohesion. Community cohesion is taken as a three-dimensional concept. The first dimension is related to community interactivity and encompasses places of worship, community centres, sporting events, and culture. The second dimension is related to the presence of sporting facilities such as cricket pitches, tennis courts, sports halls, and playing fields. Finally, the third dimension is related to the presence of food facilities such as markets, farm shops, restaurants, cafes, and takeaways available in the parish. These dimensions were constructed by application of factor analysis to the parish variables.

Table 1. Variables Used in the Study

Dimensions of Community Cohesion	Variables Considered
Community Interactivity (INT)	<i>Places of worship</i> <i>Community centres</i> <i>Bowling green</i> <i>Football/ rugby matches</i> <i>Art/ music events</i>
Community Sports Facilities (SF)	<i>Swimming pool</i> <i>Cricket pitches</i> <i>Tennis court</i> <i>Playing fields</i> <i>Sports hall</i>
Community Food Facilities (FF)	<i>Markets</i> <i>Farm shops</i> <i>Restaurants</i> <i>Cafes</i> <i>Takeaways</i>

3.1. Factor Analysis

The suitability of using factor analysis for the study was checked using the Bartlett test of sphericity and Kaiser-Mayer-Olkin (KMO) measure. The Bartlett test examines the null hypothesis that the correlation matrix is an identity matrix, which implies no correlation between variables. Results of the Bartlett test show that factor analysis is a viable approach ($p < 0.001$, Field, 2005, Blind et al., 2001). Furthermore, results of the KMO measure are above the required threshold of 0.5 (Sharma, 1996), with the data demonstrating a value of 0.759. The determinant of the correlation matrix also shows that multicollinearity is not an issue in the dataset.

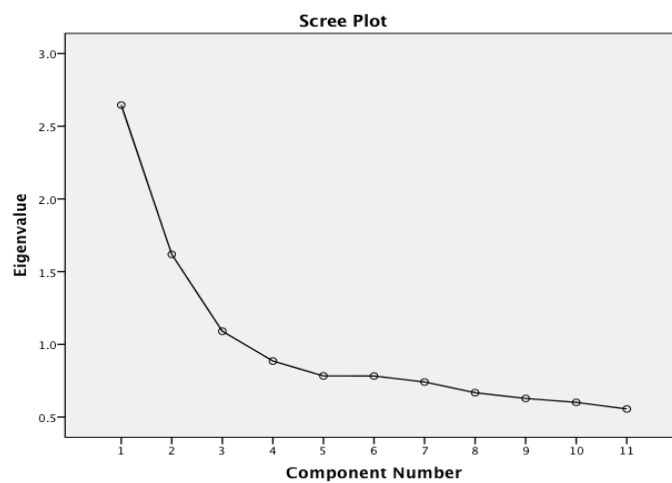


Figure 1. Scree Plot of Eigenvalues from Factor Analysis

After four iterations, results of the factor analysis, a three-factor structure was confirmed. During these iterations, factors showing a single variable structure and variables with loadings <0.5 were deleted from the analysis. After deletion, three factors emerged with eigenvalues greater than one. The scree plot in Figure 1 illustrates this, as eigenvalues significantly diminish after three components. Table 2 presents the results of the factor analysis, which document variable loadings that were >0.5. Since no correlation between factors was assumed, a Varimax rotation was used in order to examine the loadings. These were derived using maximum likelihood estimation (MLE), as MLE provides unbiased estimates of the factor scores.

The distribution of variance among factors is relatively stable, with community interactivity (INT) accounting for 24.1%, community sports facilities (SF) for 14.7%, and community food facilities (FF) for 9.9%. The loadings in Table 2 confirm the three-factor structure of community cohesion. The cumulative effect of these factors was taken to be a proxy for community cohesion ($\sum INT, SF, FF$), as these measures combine the multiple aspects from which community interaction and social aggregation occurs. The three factors can be summarised as:

- Community interactivity: a measure of parish engagement in general community activities.
- Community sports facilities: a measure of parish access to community sporting facilities.
- Community food facilities: a measure of parish access to community food facilities.

Table 2. Factor Loadings

Variables	Interactivity	Sports Facilities	Food Facilities
Places of worship	.721		
Community centres	.560		
Bowling green	.612		
Football/ rugby matches	.706		
Art/ music events	.615		
Cricket pitches		.692	
Tennis courts		.644	
Playing fields		.773	
Restaurants			.672
Cafes			.797
Takeaways			.625

3.2. *Preliminary Analysis Using Multiple and Ordered Probit Regression Analysis*

The second phase of the study seeks to examine the impact of pubs on community cohesion and socio-economic activity in rural Northern England. The study utilises multiple ordered probit regressions to test the hypothesis that the presence of pubs leads to increased levels of community cohesion and socio-economic activity. Table 3 reports the results of the estimation model for community cohesion and socio-economic activity. Results are all statistically significant. An adjusted R^2 of 17.3% for the aggregate measure of community cohesion indicates a relatively weak degree of association with the presence of pubs. However, analysis of individual dimensions shows that these low R^2 figures are primarily associated with community sports facilities (0.2%) and food facilities (1.1%). In comparison, an adjusted R^2 of 30.7% for the interaction dimension of community cohesion indicates a relatively strong degree of association with the presence of pubs.

The main result gathered from the model indicates that more pubs lead to higher levels of community cohesion reported in rural areas, and this relationship is statistically significant ($p < 0.01$). However, it appears that the impact of pubs varies significantly across individual dimensions. Interestingly, the impact of pubs on sports (0.026) and food facilities (0.051) is negligible. The model indicates that the interaction dimension is the main driver to community cohesion in relation to the presence of pubs. This outcome can be interpreted as follows: examining the level of community cohesion in contexts with an established level of social aggregation and integration e.g. members of a church, football team, or community centres, the presence of pubs is particularly strong.

How the number of pubs influences the index of socio-economic activity is investigated by performing ordered probit regression. Ordered probit regression is used to model the discrete dependent variables that take ordered multinomial outcomes. The second half of Table 3 shows the results of the estimation model for socio-economic activity. The log-likelihood ratio test shows that the model is statistically significant and a pseudo- R^2 of 15.7% indicates a reasonably good fit for the type of data analysed. All the results reported are statistically significant at the $p < 0.1$ level or higher. Similar to Cabras and Reggiani (2010), results show that more pubs leads to higher levels of socio-economic activity (0.201 ($p < 0.01$)).

Table 3. Impact of Pubs on Community Cohesion and Socio-economic Activity

Multiple Regression		
<i>Dependent Variables</i>	<i>Adjusted R-Square</i>	<i>Variable Coefficient</i>
Community Cohesion	0.173	0.331*** (0.021)
Interaction	0.307	0.255*** (0.011)
Sports facilities	0.002	0.026*(0.014)
Food facilities	0.011	0.051*** (0.014)
Ordered Probit Regression		
<i>Dependent Variable</i>	<i>Pseudo R-Square</i>	<i>Variable Coefficient</i>
Socio-economic activity	0.157	0.201* (0.015)

Notes: Standard error reported between parentheses. P-value at 1%***, 5%** , 10%*. Log-likelihood of ordered probit regression -252.087

4. Discussion and conclusions

The analysis conducted in the previous section corroborates evidence provided by the previous study on rural and village pubs in Cumbria conducted by Cabras and Reggiani (2010), and expands the level of generalization of their work and results. Even more, findings generated by our study add more clarity to the functional association between pubs and levels of community cohesion in rural areas of Northern England.

It is interesting to note how pubs work as an incubator and facilitator for community cohesion within the English countryside. In particular, the analysis appears to indicate a strong degree of association between pubs and other places fostering interaction among residents living in the selected parishes. This association can be examined with regard to the progressive disappearance of services and amenities available in rural areas, documented by numerous sources (Countryside Agency 2002, Rural Service Network 2010, Rural Insight Survey 2011). This situation has been caused mainly by the decline of agricultural work, with farmers struggling to cope with inter-generational shifts; and a tough re-organisation of public sector services accrued by the more recent financial crises. This has determined the closure of many services available in the countryside, moving rural centres towards more urbanized locations.

This situation may have had a detrimental impact on rural areas. Rural areas demographic profile has changed, as younger people have moved to cities or use rurality as a dormitory. In addition, the closure of essential services have had an impact on local supply chains, hindering firms and enterprises that were directly or indirectly dependent on those services for their business activities. To ensure that the quality of life of rural resident is not damaged, there is a distinct need to promote factors associated with community cohesion and social integration.

Findings from the data analysis clearly show that pubs play a pivotal role in keeping the community together. Furthermore, results demonstrated that parishes with more pubs have higher scores of community cohesion and interaction. While the model does not identify a clear causality function or effect among these three variables, the strong level of association is proved. However, some reasoning from this triangulation may come natural: in the current economic climate, and with the market structure in which pubs now operate being mainly dominated by large conglomerate organisations and pub-companies rather than independent free-houses, it appears difficult to imagine that pubs survive only in places with higher levels of community cohesion. On the other hand, the concept of pubs fostering and facilitating relationships among residents and increasing community cohesion in rural parishes may seem more plausible.

While many sources appear to describe this process as ‘catastrophic’ for the resilience of rural communities (BBPA 2008, APPBA 2009, CRC 2010), there is very little empirical evidence about how and to what extent the disappearance of village pubs affects individuals, damages the level of social engagement and hinders the formation of social capital. The preliminary results in this study provide support for the detrimental impact that the closure of pubs is having in rural England. These findings represent a significant contribution to the field and may stimulate future research on themes and issues regarding the most rural and remote communities of England. In addition, findings from this study may provide an excellent opportunity to policymakers and local administrators to evaluate policies and actions in support of their communities.

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