Danish LAG projects and their employment effects

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Abstract: Based on more than 4,000 Danish LAG projects, this paper sets out to analyse their employment effect at local (municipal) level. Despite the relatively small scale of the total programme, it appears to have been rather efficient in terms of generating employment. This applies especially to the largest projects.

Keywords: Local Action Groups, Employment, Entrepreneurship, Rural innovation

Introduction

Local Action Groups (LAGs) have increasingly become part of rural development in the Danish countryside, during the 2007-2013 programming period with more than 50 groups covering virtually the whole country, working as cross-sectoral partnerships to improve living conditions and diversify the rural economy. The LEADER[1] LAG method is characterized by delivering hard-to-measure process performance (Dargan and Shucksmith, 2008; OECD, 2014), which has somewhat blurred its job impact. Thus, at a seminar on rural tourism in 2011, one LAG coordinator stated about the employment effects of the work of her LAG that it: "… is hard to measure, but it is there".

This research seeks to trace local employment effects of the LAG projects. While other purposes are important as well, local job generation has become increasingly significant during the 2007-2013 programming period in the aftermath of the financial crisis. Besides, it is the only 'success factor' covered by the data set.

Section 1 presents for the data, and section 2 goes on to analyse it in terms of who have initiated the projects, the distribution of types of project and the expected project-related employment associated with various types of project. Section 3 seeks to analyse the induced local employment at municipal level. Section 4 discusses the results in relation to other studies, and Section 5 concludes.

1. Data and data limitations

The present study is based on data on 4,444 LAG applications filed during the period 2008-15. As shown in Table 1, the number of applications dropped sharply after 2013 due to the cessation of the programme.

The following variables were included in the dataset provided by the Managing Authority:

- The identity of the applicant (Project title and number; the LAG behind the application, etc.)
- Financial information on the amount of money granted, withheld and paid.
- Project type (e.g., village renewal, tourism, new food products, etc.)
- Year of project approval
- The expected number of project-related jobs

[1] The EU LEADER approach consists of seven features: 1) area-based local development strategies, 2) partnerships in the form of local action groups, 3) bottom-up strategy, 4) implementation of innovative strategies, 5) implementation of cooperative projects, 6) cross-sectoral approach and 7) networking of local partnerships (CEC, 2005, Art. 61).

- A short verbal description of each project (typically one or two sentences)
- The host municipality

An increasing proportion of applications included project-related employment during the first programming period, cf. Table 1.

Table 1: Number of applications and project-related employment 2008-15

Applicant	No. of applications	Applications with direct Project-related employment	Share of applications with proj.-rel. employment
2008	678	267	46
2009	784	463	59
2010	596	403	68
2011	755	516	68
2012	680	495	73
2013	937	665	71
2014	74	37	50
2015	40	34	85
Total	4,444	2,880	65

From an analytical perspective it would have been desirable to know more about such aspects as:

- The extent to which the project was based on local resources
- The role of local co-operation in formulating and implementing the projects
- The innovative elements of each application
- The specific local context of the application

2. Expected project-related jobs generated by LAGs

The expected *project-related job creation* is likely to be a poor measure of *total social job creation*. On one hand, jobs may crowd out other jobs. On the other hand, multiplier effects may cause the total number of jobs to exceed the project-related jobs established. Besides, a successful entrepreneurial firm could eventually develop into a multinational corporation with thousands of employees. Thus, disentangling the net impact of any single project is hardly possible. Even if it were, the result would not be one number of employees per project, but time series spanning several decades to reflect the evolution of employment over time.

A word on orders of magnitude is warranted. The total spending associated with the reported projects amounts to some DKK 638 million, the equivalent of about £ 68 mil[2]. This is less than DKK 100 million per year during this project period –

[2] Denmark's population is 11-12 times smaller than that of the UK, so in a British context this would equal about £ 750 mil.

or less than DKK 20 (≈ £2) per Dane. Thus, one should hardly expect the programme to exert any noticeable influence on rural development in general.

Table 2 below shows the number of LAG applications by the applicant's affiliation. As shown in the Table, most applications come from associations (LAG groups) seconded by the unspecified group of "others" and small enterprises. Only 24 per cent of the projects expect to generate direct project-related employment. Yet, many others are intended to support job creation indirectly by improving the general business climate, attracting new settlement, etc. Small enterprises play a prominent role in initiating such projects.

Table 2: LAG applications by applicant category

Applicant	No. of applications	Applications with direct Project-related employment	Applications within tourism
Other	846	287	101
Industry associations	25	4	5
Associations	2,211	218	101
Small enterprises	827	446	156
Medium-sized enterprises	16	4	1
Public institutions	409	63	45
Private individuals	109	42	28
Large companies	1	0	0
Total	4,444	1,064	438

In terms of project-related employment, some projects are more efficient than others. Table 3 below ranks the various project categories by the number of jobs created per million. On average, the cost of a project-related job is around DKK 220,000. Entrepreneurship seems to play an important part in generating new employment. Thus the creation of micro businesses tops the list in terms of employment per million DKK. This impression is confirmed by Table 4, which shows that private individuals and small enterprises tend to generate more jobs than other applicant categories per million received. In terms of employment generation the role of associations is very important, however, and it deserves notice that associations played an important part in the initial stages of the development of the Danish windmill industry (Andersen and Drejer, 2008).

Table 3: Efficiency in generating project-related employment

Project category	Employment	Grant DKK ,000	Employment per mil. DKK
Establishing cultural micro business	18	1,698	10.60
Diversification of service facilities	4	398	10.06
Establ. Micro businesses with service facilities	20	2,394	8.35
Service facilities for information technology	28	3,832	7.31
Strengthening LAG competencies	21	3,268	6.43
Service facilities network	92	14,685	6.27
Service facility for new information technology	16	2,590	6.18
Diversification of new jobs	37	6,093	6.07
Diversification of leisure act.	1	165	6.06
Development of micro businesses	341	56,353	6.05
Analyses for attractive living conditions	21	3,590	5.85
Marketing of tourism	61	10,716	5.69
Establishing of micro businesses	189	33,881	5.58
Investment in small food companies	63	11,329	5.56
Service facilities for culture and leisure	657	119,236	5.51
Competencies and information, new jobs	11	2,132	5.16
Diversification of cultural activities	1	198	5.05
Service facilities, living conditions	727	144,183	5.04
Development of tourism	250	49,900	5.01
Est. of micro businesses within leisure	7	1,515	4.62
Service fac., business, leisure and culture	219	52,998	4.13
Recreational infrastructure	63	17,540	3.59
Communication of analyses and studies	2	1,276	1.57
Village renovation	8	13,108	0.61
Communication of analyses and studies	8	15,478	0.52
Small environmental projects	3	11,199	0.27
Conservation of natural and cultural heritage	9	42,093	0.21
Recreational infrastructure in nature	3	15,814	0.19
Total	2,880	637,664	4.52

For these reasons, one should be careful not to read Table 3 as an expression of what works and does not work in terms of job creation. The number of project-related jobs should be seen as an indicator only. The expected numbers of jobs reported here typically exceed the realized numbers somewhat.

Tourism activities appear to be in the middle range as regards job generation efficiency.

Table 4: LAG applications by type of applicant and direct employment effect

Applicant	Expected no. of new jobs	Project support, DKK mil.	Jobs per mil.
Private individuals	55	8,779	6.265
Small enterprises	557	105,281	5.481
Associations etc.	1,443	283,845	5.084
Other	586	119,049	4.922
Industry associations Medium-	15	3,932	3.815
sized enterprises	7	2,541	2.751
Public institutions	197	114,091	1.727
Large enterprises	0	0,146	0
Total	2,880	637,664	4.516

3. Induced employment

In view of the relatively small number of jobs created, the possibility of tracing their direct and indirect effects in municipal employment statistics may seem rather slim. We assume that the propensity to initiate job-creating projects is likely to be motivated by local employment and settlement problems and poor prospects in these respects. Therefore, some other measure is required to catch the impact of local employment and settlement problems. This suggests that we should seek to estimate some function

$$E_{it} = E(E_{it-1}; U_{it-}; NIM_{it-}; ELAG_{it-}) \qquad (1)$$

The variables of this equation are:

E_{it} = Employment of municipality *i* for period *t*.
U_{it} = The rate of unemployment for municipality *i* during period *t*.
NIM_{it} = Net immigration into municipality *i* during period *t*.
$ELAG_{it}$ = Project-related jobs generated during period *t*.

Equation (1) is based on the expectation that, in the absence of project-related jobs, municipal employment in any given year could be estimated on the basis of the employment of the previous year, the rate of unemployment of the previous year, and net immigration.

As expected, the numerical difference between actual and estimated employment tended to grow with the size of the municipality. To eliminate this problem the data were weighted by average municipal population during 2011-13 raised to the power of $-w$. For various values of w the heteroskedasticity was measured simply by Pearson's correlation between squared errors and population size. The optimal value of w turned out to be about 1.16.

In the weighted regressions of Table 5, the third model appears to work best from a purely statistical perspective. A closer examination of the data reveals that unemployment rates are strongly positively correlated with project-related

employment, which explains the somewhat perverse (but statistically insignificant) coefficients on unemployment and project-related employment of model [1]. The close correspondence between rates of unemployment and project-related employment indicates that unemployment is a major driver of such initiatives, but it does not stand to reason that unemployment *per se* should generate new jobs.

Table 5: Municipal employment 2013 by past employment, net in-migration, and project-related employment*

Variables	[1]	[2]	[3]
Intercept	-124.964**	-49.260	-77.224***
Employment 2011	1.008***	1.009***	1.009***
Unemployment 2012	19.426	-	-
No. of other LAG-projects	-	-2.917	
Net In-Migration 2008-11	1.021***	1.031***	1.106***
Project-Rel. empl. 2008-12	-0.188	1.737***	1.463***

*Only municipalities with project-related employment were included in the analysis (N = 64). As spatial autocorrelation did not pose any problem (the p-value for Moran's I was 0.267 for Model 3), no correction for autocorrelation was made. Significance levels are indicated at 0.1, 0.01 and 0.001 levels with 1, 2 and 3 asterisks respectively.

The fact that unemployment rates tend to "outperform" project-related employment in model [1] indicates that other local employment initiatives may have been induced by unemployment as well. It is possible, therefore, that the coefficient on project-related employment in [3] may capture some of the effect of such initiatives. On the other hand there are at least four reasons for suspecting this coefficient to underestimate the actual employment effects of the LAG initiatives.

First, the expected project-related employment tends to exceed actual project-related employment. Secondly, there is some random variation in the extent to which it does so. Thirdly, the control variable (net in-migration) is a proxy. Its quality is unknown and unknowable, but it is hardly perfect, which suggests that its control effect on the coefficient on project-related employment may be too weak. Fourthly and finally, some of the spin-off from project-related employment is bound to be generated beyond municipal borders.

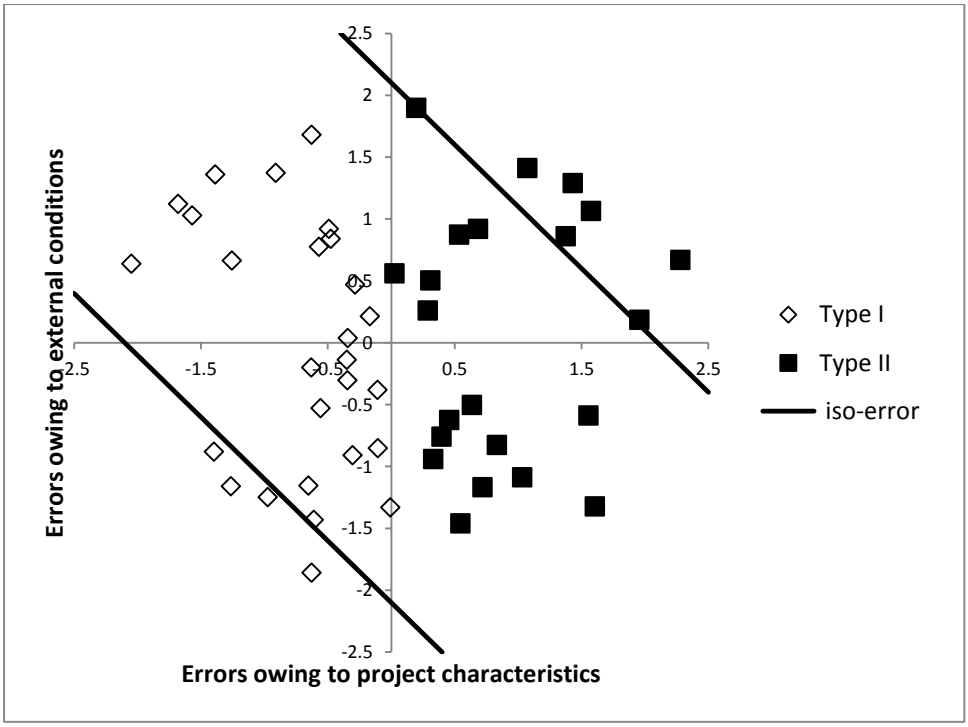
All in all it seems reasonable to assume that the bulk of the additional employment captured by Model [3] is in fact the result of project-related employment initiatives. It should be stressed that the negative coefficient on other LAG projects in model [2] is highly insignificant and should not be taken to imply that such projects hamper local job generation.

The data set contains brief descriptions of each project, which begs the question if there is some way of illuminating, at least tentatively, the difference between successful and unsuccessful strategies. The approach taken here is inspired by a simple statistical idea. If the prediction errors emanating from the diversity of project characteristics are statistically independent from all other sources of error (which seems plausible), the most positive prediction errors will combine favourable project characteristics with a favourable impact of other factors and vice versa for unfavourable deviations.

Figure 1 illustrates the argument. Type I projects are assumed to be generally less successful than Type II projects. In practice, we have no way of knowing how each individual prediction error term happens to combine errors owing to project characteristics with all other sources of error. Only the sum of two errors (indicated by the downward sloping iso-

error lines) is known. Still, if one moves the iso-error line upwards and rightwards and considers the cases as they intersect the line, the first cases considered are likely to be Type I cases whereas the last ones are likely to be the more successful Type II cases, "success" being measured along the x-axis, i.e., in this context in terms of local employment.

Figure 1: Case selection based on prediction errors



While the cases selected in this way are unlikely to be the most (or least) successful ones, we do have reasons to suspect one group of doing better than the other, which renders the quantitative and qualitative differences between them instructive. Based on Model [3] of Table 5 it was decided to consider municipalities for which project-related employment in tourism exceeded at least three employees.

On average the projects of the more successful group were somewhat larger than those of the less successful one (DKK 174,795 versus DKK 107,403; *p*-value for the difference: 0.058) and employed approximately 1 more person per project. Regressing the error term for all of the municipalities on weighted total spending on tourism and the weighted number of tourist projects yields a positive coefficient on the former (p = 0.0134) and a negative coefficient on the latter (p = 0.0136), which is consistent with the interpretation that larger projects tend to be more efficient in terms of generating employment.

Unfortunately, the scope for qualitative comparisons is rather limited. In total, the municipalities of Table 6 had submitted 75 applications. The data material contains some very short project descriptions (a single line or two on each project), which obviously does not allow much qualitative scrutiny. The following method was used to extract whatever information these descriptions might offer.

Table: 6 Municipalities selected on the basis of prediction errors

More successful	Less successful
Kerteminde	Ærø
Morsø	Randers
Svendborg	Varde
Lemvig	Ringkøbing-Skjern

First, for each application a relevant coding was defined. For example, application no. 1 reads: "A site for overnighting in nature for anyone wanting to do so. The site should be near the road – where the brook runs below the Cave. There should be a few facilities such as a bonfire house and a multi-toilet house. There has to be a shelter …" This project was coded "Access to nature" and assigned a value of 1 for this purpose. It turned out that eight different codes appeared to cover all of the applications.

The eight codes were:

- Access to nature
- Attracting tourism
- Food products
- Innovation
- Culture
- Activities for children
- Attracting settlers
- Providing local information

Table 8: Quantifying the relevancy of codes to each application

Value	Interpretation
0	The code is largely irrelevant to the aim of the application
0.2	The code is slightly relevant to the aim of the application
0.5	The code is somewhat relevant to the aim of the application
0.8	The aim is highly relevant to the aim of the application
1	The aim is central to the aim of the application

Given the limited amount of information on each project, the best option was to subjectively assign values between 0 and 1 to each application, in some cases based on available information from the Internet. For each municipality applications were then scored by the average of its applications, weighted by the amount of money received for each project. Finally, the scores of the municipalities were compared as shown in Table 8.

Both Svendborg and Randers are towns, or boroughs (*købstæder*). With about 60,000 inhabitants Randers is about three times the size of Svendborg. Randers is about 40 km from Århus, the second largest city in Denmark, and Svendborg is nearly 50 km away from Odense, the third largest.

Table 8: Scored differences between more and less successful strategies

	Svendborg vs. Randers	Lemvig vs. Varde	Morsø vs. Ærø	More vs. less successful
Access to nature	-0.66	-0.04	-0.46	-0.25
Attracting tourism	-0.30	0.01	0.00	-0.07
Food products	0.45	0.01	-0.10	0.05
Innovation	0.07	0.25	0.30	0.11
Culture	0.26	0.00	0.48	0.10
Activities for children	0.02	-0.10	0.05	0.17
Attracting new settlerment	0.00	-0.12	0.00	-0.03
Providing local information	-0.07	-0.04	-0.65	-0.03

Lemvig and Varde are situated on the west coast of Jutland. With about 7,000 and 13,000 inhabitants respectively these towns are significantly smaller. Morsø and Ærø are both islands. Kerteminde and Ringkøbing-Skjern have not been compared, since the data on Kerteminde hinged on only two major projects applications. The two municipalities are included in the rightmost column, however. An F-test on the differences between groups (i.e. rows) appears to confirm that they are different (p=0.0435). Yet, in view of the data quality as well as the small number of observations, it goes without saying that the observed patterns should be seen as suggestive only.

4. Discussion

Although the scale of the LAG initiatives is too small for them to exert any strong impact on macro geographical trends, it is worthwhile considering how the above results fit into the general theoretical discussions of regional growth of the past decades. Empirical research informed by the so-called New Economic Geography (Søgaard, 2012) pointed to three generic trends driving the change of the urban hierarchy in Denmark.

1. The overall change in industrial composition away from primary and secondary activities towards services. In and of itself this change has benefited the largest cities at the expense of rural areas.
2. The secular advances in communication technology and infrastructure (physical as well as communicational) have *reduced* agglomeration advantages traditionally associated with towns and cities as service centers. Thus, *within* most economic sectors there has been a movement away from the largest cities.
3. Scale economies at local level have led to a virtual mass extinction of schools, shops, post offices, hospitals, dairies, etc., thereby undermining the functional and social cohesion of many local communities.

Historically, agriculture has anchored a substantial share of society's economic activities in the countryside, and it is by no means clear what may replace this "anchor" in the long term. Yet, with the decreasing role of agriculture, the agricultural modernization perspective (van der Ploeg and van Dijk, 1995) has now been largely abandoned as a general model for rural development. The agricultural sector has been an important source of entrepreneurship, however. Thus, in the 1970s and -80s agricultural capital and entrepreneurial talent undoubtedly helped fuel the industrial development underpinning the "Second" Denmark (see e.g. Sabel, 1989). While entrepreneurship is bound to be pivotal to any process of economic reconstruction, the celebration of entrepreneurship as *the* source of growth tends to overestimate the contribution of entrepreneurship to growth and underestimate the extent to which business opportunities are influenced by the selection environment in which entrepreneurs plant their seeds (Davidson et al. 1998; Wennekers and Thurik 1999; Carree and Thurik, 2003; Søgaard, 2008).

Another broad stream of literature has been focused on networking, clustering and industrial districts as key to local or regional economic development. Unfortunately, as mentioned in Section 1, the data basis of the present analysis does not allow us to examine the role of entrepreneurship and networking behind the LAG projects analysed (except perhaps for the results presented in Table 4).

With its emphasis on user-producer interaction, trust, and proximity the innovation literature has drawn attention to agglomeration economies of vital importance to regional clusters and networks (as well as large cities). Despite this, the regional anchoring of industrial networks is far from permanent, as shown by Markusen (1996) in her analysis of the evolution of different types of network. Neither the manufacturing industries of the "Second" Denmark nor those of the "Third" Italy were able to withstand the waves of offshoring/outsourcing and automation dictated by global competition. The limits to these success stories began to be noted already in the 1990s (Hudson 1999), but have subsequently become increasingly evident (Hadjimichalis, 2006).

While entrepreneurship, networking and innovation are bound to be important elements in any discussion of the transformation of the countryside, these concepts are also somewhat vacuous in terms of directionality: What types of economic activity will actually benefit from being localized in a rural setting? What activities could not be localized more

advantageously in a town or a city? For some destinations, tourism may provide the answer to these critical questions. Yet, many rural areas are unlikely to become tourist destinations, and none of the general themes (or codes) suggested by the projects of the previous section seemed to provide much of a general answer. This judgment is consistent with the findings by Brückmeier (2000) and Dargan and Shucksmith (2008) that the process failed to produce "innovative ideas for model rural development that could be replicated in other areas." (Dargan and Shucksmith, 2008, p. 279).

For example, none of the codes themes of Section 4 relate to the infrastructure that might link rural and urban areas. In a recent Swedish study Westlund and Pichler found that "… it does not seem to be rural amenities *per se* that explain rural population growth in certain areas, but the rural areas' relative accessibility to urban amenities. This rural dependency on urban services and goods is a major challenge for rural policy in the neo-urban knowledge economy." (Westlund and Pichler, 2013, p. 225).

Thus, although the results of this study suggest that the money spent on the LAG projects has been well spent from an employment perspective, the projects do not seem to address the powerful drivers of geographical concentration which they were intended to mitigate. This, presumably, would require significantly more ambitious projects as well as national policies to support them.

5. Conclusions and perspectives

Despite the modest amount of money spent on the programme during the programming period studied, the results of this analysis strongly suggest that it had non-negligible employment effects. EU Regulation no. 1303/2013 (§35) laid down that "Financial instruments supported by the ESI Funds should … not crowd out private financing". In this respect the programme seems to have been rather successful – especially in view of the fact that job generation was but one of its aims. In fact the empirical results are broadly consistent with traditional Keynesian multiplier analysis. Furthermore, there are statistical as well as economic reasons for suspecting the reported job effects to be negatively biased.

Unfortunately, the data does not allow us to analyse the induced employment effects of specific types of initiative.

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