The performance of employee-owned businesses in Scotland: some preliminary empirical evidence

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Abstract

In recent years, there has been a growing focus on promoting the concept of employee-ownership of businesses within public policy. One of the strong drivers of this is an assumption that these businesses out-perform conventionally structured businesses. This paper highlights some of the findings from the first empirical examination of the growth performance of employee-owned businesses (EOBs) ever undertaken in Scotland. The study involved an in-depth examination of a small sample of employee-owned firms and a quasi-experimental comparison of these firms against a control group of non-employee owned firms. The study confirms that the performance of EBOs is generally superior to that of non EBOs on a number of different variables. On average, employee-owned firms both employ more staff and exhibit higher turnover growth than their peers. The results of this analysis are discussed and the policy implications arising from the study are outlined.

1 Introduction

In recent years there has been mounting levels of interest in different forms of employee ownership and employee financial participation (Poutsma et al, 2013). Under this form of business organisation employees have a direct financial stake in the firm, exhibit greater employee participation and in various ways 'help management make decisions regarding the economic activities of the firm' (Freeman et al, 2010, p. 1). Some have used the term 'shared capitalism' to denote this dispersed ownership model (Kruse et al, 2010). It is also central to a growing literature around employee 'voice' (Timming, 2012). In this paper we use the Co-operative Development Scotland definition of an employee owned business (henceforth EOB) whereby:

> *'the employees, rather than external shareholders, hold the majority of the shares either directly or through an employee benefits trust which buys the business on their behalf. In addition, employees have a heightened level of voice within the business.'* (Co-operative Development Scotland 2012)

While traditionally quite rare in the UK, this model of corporate structure and governance is now proving increasingly appealing [1]. Part of this growing interest stems from various policy initiatives undertaken both by the UK and Scottish Governments to promote various forms of employee ownership. At the UK level, the current Conservative-led coalition government has recently undertaken policy initiatives such as tax relief on bonuses paid through staff trusts (Financial Times, 2013). Meanwhile, in Scotland organisations such as Cooperative Development Scotland have been pro-actively encouraging employee-ownership for a number of years, which has resulted in quite a significant growth of these firms in Scotland. Indeed, such is the desire to promote this model of corporate organisation the UK government has taken to 'extolling the virtues of the John Lewis economy' (Wilkinson et al, 2014, p. 739).

One of the main reasons for this growing policy interest in EOBs stems from the increasing body of evidence suggesting that EOBs out-perform firms with more restricted ownership structures, especially in the UK and US (Lampel et al, 2012; Blasi et al, 2013). Research in the US has found a consistent positive relationship between employee-ownership and labour productivity (Blasi et al, 1996). Past research across a number of countries within a range of different sectors suggests that EOBs provide higher financial returns, greater productivity levels and higher levels of employment stability than non-EOBs (Doucouliagos, 1995, p.58; Kramer, 2010). An examination of more than 70 studies, mainly undertaken in the US, found that employee ownership is linked to a 4-5% uplift in terms of productivity (Kruse, 2002). Another US study compared 229 'new economy' firms with broad-based employee stock options discovered that they outperformed their conventionally structured counterparts (Sesil et al, 2002).

EOBs also seem to adopt different organisational characteristics than non-EOBs which may account for this superior performance. For example, a recent UK study comparing EOBs and non-EOBs found that the former were more likely to adopt longer-term horizons when investing in their business, invest more in human capital and had a stronger focus on organic growth than non-EOBs (Lampel et al, 2012). Lower levels of staff turnover and absenteeism are also sometimes found in EOBs compared to non-EOBs, (McQuaid et al., 2012) although some research does not indicate lower staff turnover (Sengupta et al, 2007). Recent evidence suggests that EOBs are less likely to be negatively affected by cyclical downturns than traditional firms (Lampel et al, 2012). This research found that EOBs had greater levels of employment continuity over the recent economic downturn (Lampel, 2014).

Yet, as a form of corporate governance, employee-ownership remains a relatively small and little understood component of the business population within the UK economy. At present, according to the Employee Ownership Association there are only around 150 companies with a significant employee ownership within the UK (EOA, 2012). EOBs account for a relatively small proportion of the overall UK economy which is estimated at around 2% of GDP or £25bn (Lampel et al, 2012). Despite its small size, the sector is growing by around 3% per annum (EOA, 2012). What is more, these businesses appear to exist in all parts of the economy and are not restricted to the types of sectors (such as primary industries, retail and professional services) traditionally associated with alternative corporate governance models. That said, the number of EOBs in the UK is still much smaller than that found elsewhere in US and parts of Europe (Wills and Lincoln, 1999).

Interestingly, at a sub-national level in the UK, EOBs seem to be a particularly prevalent within some regional economies. In recent years, there has been a large upsurge in firms adopting this form of governance structure in Scotland. Recent examples of firms becoming employed-owned include AquaScot, Clansmen Dynamics, Voice Technologies and Woollard & Henry. As a consequence of this, Scotland seems to be overrepresented in EOBs in relation to the rest of the UK. According to recent data from Cooperative Development Scotland, there are now 45 employee-owned and cooperatives headquartered in Scotland (CDS, 2014). The majority are in some form of employee ownership (n= 28) rather than workers cooperatives (n= 17). Cumulatively, these firms employ around 2,405 employees with the vast majority of employment within employee-owned firms (2157 employees) rather than in workers cooperatives (248 employees). If we include UK-owned firms, the total number of employee-owned firms rises from 45 to 59 and total employment rises from 2157 employees to 8082. The big uplift in employment from UK-headquartered EOBs is due to the inclusion of very large firms such as the John Lewis Partnership within this cohort. In contrast, the vast majority of Scottish EOBs are SMEs.

To date there has been little empirical investigation of Scottish employee-owned firms. This paper seeks to rectify this omission by examining this growing organisational phenomenon by studying the growth performance of EOBs in Scotland, specifically independently Scottish-owned employee-owned firms. The next section outlines the methodology used within the study. The empirical findings from the quantitative element of this research are then considered. The fourth part of the paper discusses the findings and examines some of the potential implications raised by the study. The final section provides some conclusions and outlines further areas for research.

2 Research methodology

This paper draws on a research project which adopted a multi-method examination of the growth performance of EOBs in Scotland (McQuaid et al, 2013). The focus of this paper is primarily on the quantitative and statistical analysis undertaken of the growth performance of EOBs. Fifteen EOBs which have their headquarters in Scotland, were contacted and asked to participate in the research. Three declined to participate. These were smaller companies in niche areas and if included might have altered our findings relating to growth. Of the twelve participating businesses, two were still in the process of becoming employee owned and five had been employee owned for less than three years. The three other businesses had been employee owned for 8 years, 18 years and 35 years. Only one of the participating businesses had been employee owned since its inception, the rest had transitioned to employee ownership from a different ownership structure. Of these twelve firms 8 provided financial data and participated in the interviews, 2 only provided data and 2 only participated in the interviews (so in total 10 provided data and 10 participated in interviews). The companies who participated in the quantitative part employed 1674 people in 2011.

The research used financial data to compare the performance of ten participating EOBs against their peers. Participating EOBs were asked to supply data for each year since at least 2008 (and preferably over a longer period) on: turnover; number of employees; salary costs, pre-tax profit; percentage profit margin; and return on capital employed. To facilitate this, companies were emailed a data collection sheet. The work also entailed the use of a quasi-experimental method to compare the EOBs with a peer group. This provided a ‘viable research laboratory’ (Shenkar and von Glinow, 1994, p. 56) in order to compare the performance of these two groups. Using the FAME (Financial Analysis Made Easy) business database which provides financial information on major public and private U.K. and Irish companies, a peer group of non-EOB firms was then identified from which a comparison of financial performance could be made (see below for details of the selection of the peer group). Our aim was to use as much longitudinal data as possible in order to smooth out annual fluctuations. This meant comparing different firms over different reporting periods. Had we used only the lowest common reporting base then too much information would have been lost and meaningful comparisons would have been unreliable.

The analysis on the compiled data followed the approach taken by Lampel et al. (2010) and in addition to the collected data and growth rates the value added index (VAI) was also computed. The VAI is taken as the ratio for profit before taxes and the total annual salary bill to the number of employees (it does not include other impacts on the Scottish economy such as effects on suppliers etc. The individual data collected from each company is compared to a peer group generated from the FAME (2012) database. The peers are chosen to be broadly of the same size and in the same business sector (as the literature indicates the size and sector are important controls when comparing EOBs and non-EOBs). The peers were formed by comparisons of size in 2011. We would have preferred to have used 2003 or 2006 as the base to form the peer groups but we were unable to form consistent groups. For each EOB ten peers were selected, although sometimes the exact number of peers varied because it was difficult to follow peers over the full period as the sectors are dynamic and the nature of competition in the market continuously changes and also some companies fell out of the database over time.

During the data collection stage participating EOBs were asked to list peers for comparison, but very few gave peers and for those who did they tended to be inappropriate either as they were much larger companies or other EOBs but in different business sectors. Also the FAME database allowed for a consistent comparator set. Paired 't' tests and analysis of variance tests were used to explore for statistically significant differences between EOBs, between EOBs and peers and for differences over time. Variations in performance and growth amongst the three types of EOB ownership and business sector or operation were investigated using analysis of variance. These comparisons are reported in tabular form.

3 Empirical findings

In this section we provide a brief summary of the quantitative findings from this study. Summaries of the annual growth rates of turnover, numbers employed, annual salary, profit margin, value added index and turnover per employee are presented in Table 1. This shows that the overall average growth rates of the sample of EOBs are positive over the period in question (each year since at least 2008). The average growth rates of the EOB sample as a whole is greater than that of their peers, for all of the selected variables. A small exception is that the growth in the median salary is slightly below that of the peers although the mean is slightly higher – the salary growth is almost the same for EOBs and their peers. It is worth noting that often employee-owned firms issue staff with non-salary bonuses which may not be captured within our analysis.

Figure 1 presents a comparison of the mean annual growth rates of turnover, employee numbers and average salary presented for all the EOBs in the sample and their peers. In this figure the overall higher growth rates of EOBs in terms of turnover and number of employees relative to their peers is clear. When tested statistically, the average (mean) turnover growth rates of the EOBs were greater than that of their peers ($P = 0.032$), however for growth rates of employee numbers there was no statistically significant difference ($P = 0.103$) and the annual salaries growth rates of the EOBs were almost the same as for their peers (p value for difference = 0.331). Paired t-tests were used to ascertain if the differences between the mean growth rates of the EOBs was significantly higher than their peers (5% significance level).

Table 1: The mean and median Annual Growth Rates of the EOBs

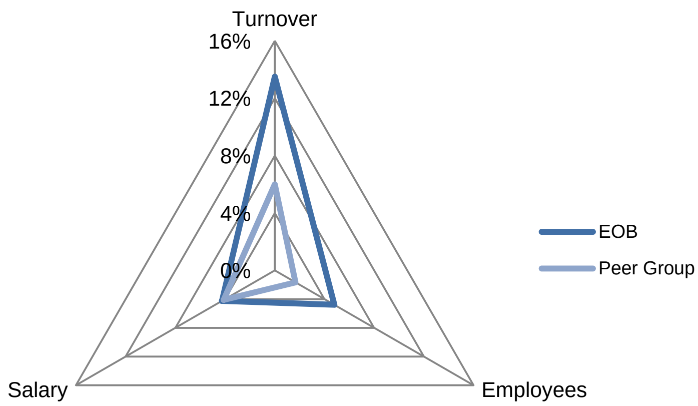
Employee Owned Business	Turnover		Numbers Employed		Average Salary		Turnover per employee	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
A	-0.33%	0.20%	-4.57%	0.00%	4.03%	4.34%	4.80%	3.51%
B	23.10%	23.70%	6.20%	4.30%	10.10%	6.00%	16.09%	18.78%
C	9.07%	7.65%	15.00%	9.68%	-4.92%	-8.28%	-3.42%	1.49%
D	3.50%	3.08%	-2.34%	-2.95%	3.57%	3.52%	6.00%	7.63%
E	11.30%	9.02%	9.81%	8.34%	3.00%	4.60%	1.63%	2.81%
F	5.00%	7.20%	-1.00%	-0.70%	3.60%	3.30%	6.06%	7.03%
G	36.06%	9.90%	5.56%	5.63%	15.71%	9.29%	29.30%	8.97%
H	2.20%	2.20%	0.00%	0.00%			2.20%	2.20%
I	35.78%	34.94%	17.48%	15.96%	-2.65%	-9.63%	16.10%	18.77%
J	9.35%	11.41%	1.83%	4.22%	5.77%	4.49%	7.96%	5.80%
Peer Group Mean	*5.99%*	*5.55%*	*1.66%*	*0.37%*	*4.10%*	*3.36%*	*5.30%*	*5.75%*
Group Mean	13.50%	10.93%	4.80%	4.45%	4.25%	1.96%	8.67%	7.70%
Group Mean without C	14.00%	11.29%	3.66%	3.87%	5.39%	3.24%	10.02%	8.39%

In addition to aggregate growth we also examined the differences between EOBs and non-EOBs on a number of other variables such as turnover per employee, profitability and return on capital. In terms of turnover per employee, this showed that overall EOB's outperform their peers and it is only in two companies where EOB's significantly underperform their peers. Regarding profitability, five out of nine (one EOB did not report its profit margin) EOBs reported a lower profit margin than their peers, while the other four EOBs reported a much higher profit margin than their peers. Our comparison of return on capital was less definitive and showed that some EOBs have a much higher percentage return on capital than their peers.

We also compared the performance in terms of profit or loss before tax, profit margin and return on capital employed. From this comparison again we saw superior profit performance of EOBs over their peers. Combining profit before taxes and annual salary it is possible to obtain an index of the value added to the Scottish Economy. Once again EOBs perform better than their peers.

The mean differences between the EOBs and their peers were computed and the paired one-tailed t-test used to assess the significance of that difference. EOBs appear to have, on the whole, significantly higher turnover, number of employees, profit margin and return on capital than their peers. For average salaries EOBs seem to pay on average £3,640 less than their peers, and this is statistically significant (at the 5% level). Possible reasons for this could be the market sectors that participated in the research, and that EOBs are more likely than non-EOBs to have profit-related bonuses which are additional to basic salary levels. There was no statistically significant difference between EOBs and their peers for profit before tax and value added index.

Figure 1: Average growth rates of all EOBs and Peers



In Table 2 each EOB is compared to its peer group in terms of the ratio of its results compared to its peer group, using the equation (EOB – mean of peer) / absolute value of the peer mean). In this ratio numbers greater than zero represent superior performance of the EOB relative to the mean of the peers and numbers less than zero are where the EOB's performance is poorer than their peer group. Again the EOBs generally perform well compared to their peers, particularly for numbers employed. Profit margin and turnover are also higher for EOBs while value added seems broadly similar to peers. However, one company (C) as a consequence of an acquisition, greatly expanded in one year and salaries are still to be reported, this has made the value added index for this company unreliable, therefore the means are recomputed with company C removed. The superior performance of EOBs is clear, although the value added index is not as strong. The marginal improvement of EOBs in regard to the value added index is due to them employing relatively more staff than their peers.

4 Discussion

The findings from our research strongly suggest EOBs in Scotland correspond to EOBs elsewhere in terms of their strong growth performance in relation to their non-EOBs peers. The study discovered that the performance of these firms is generally superior to their non-employee-owned peers on a number of different variables. This superior performance was evident across a number of different variables over a period of time. On average, employee-owned firms both employ more staff and exhibit higher turnover growth than their peers. Differences between the two cohorts were less marked for profitability and pay. Overall, our work corroborates the existing literature on EOBs and confirms their overall strong growth performance.

Table 2: The Performance of EOBs compared to Peers

Comparisons to Peer Groups

Employee Owned Business	Turnover	Number of Employees	Average Salary	Profit Margin	Value Added Index	Turnover per employee
A	0.58	-6.11	0.16	-0.24	0.07	74.16
B	2.25	-0.40	4.74	2.11	1.69	30.91
C	0.10	30.97	-1.26	6.97	0.13	-1.22
D	0.75	0.25	-0.03	-0.65	-0.21	0.12
E	2.86	6.87	2.28	-0.46	-0.44	0.11
F	0.25	0.47	-0.12	-0.20	-0.42	-0.01
G	0.86	-0.13	0.51	1.17	0.00	1.72
H	1.62	1.00		2.44	1.06	23.78
I	2.05	3.04	-14.89		0.44	1.22
J	0.06	-0.29	1.43	-0.71	0.08	0.16
Group Mean	1.14	3.57	-0.80	1.16	0.24	13.10
Group Mean without C	1.25	0.52	-0.74	0.43	0.25	14.69

While not the focus of this paper, the other part of the research project examined some of the employment practices within EOBs which might account for this superior performance. The work found that employee ownership is very much an evolving process and that employee participation and 'voice' strongly contributes to the effective functioning of these enterprises. On the one hand, this creates a situation where employees feel more valued, more engaged and committed with greater levels of job security. According to managers, on the other hand, employee ownership creates a growing appetite for human capital development, helps attract good employees, creates creativity, and promotes a culture of problem solving and employee engagement. The work also found that employee ownership does bring with it some problematic issues such as difficulties raising finance.

This research is not without limitations of course and a note of caution is required when interpreting these results. Although ten firms comprises over a third of all EOBs in Scotland, owing to the small sample size the findings from this study ought to be viewed as preliminary. We also note that the sample self-selected itself by agreeing to participate in the study; perhaps the three EOBs who did not take part were very different from those that did. Only occasionally did an EOB exhibit negative growth. The EOBs provided data for different years, so the growth rates between one EOB and another are not necessarily for comparable periods, however, the figures for the peers of each EOB are for the same years as the EOB and so we can compare EOBs with the peers.

Further research examining EOBs would help alleviate some of these problems. Given the small overall scale of the cohort of EOBs in Scotland perhaps a longitudinal tracking study could be implemented which compares the growth performance of the entire population of these firms with a carefully constructed cohort of non-EOBs. This would help to more fully 'test' whether EOBs out-perform non-EOBs over a period of time. Plus, further research is needed to further explore some of the 'internal dynamics' within EOBs which contributes to this high level of performance.

5 Conclusions and Policy Implications

This study has found that EOBs in Scotland strongly resemble EOBs elsewhere by outperforming conventionally based firms with less dispersed ownership structures. While the organisational determinants behind this superior firm performance remain less well understood, our research suggests that the organisational model within these firms engenders greater levels of performance. Thus learning from EOBs contributes towards the policy objective of how to create high performance work systems in all firms, employee-owned or not (Appelbaum et al, 2000).

The research clearly has important implications for public policy. On one level, this research backs current policy frameworks which are supportive of employee ownership. Not only does this model of ownership produce growth within firms, our empirical research suggests employee ownership may help prevent the trade sales of firms when owner-managers retire. Therefore, the succession process seems a critical opportunity to aid the transferral into employment ownership. Targeting firms undergoing these kinds of key changes or 'trigger points' is crucial (Brown and Mawson, 2013). Owing to the fact many trade sales or acquisitions are driven by foreign-owned firms, encouraging employee-ownership may also be a good mechanism for retaining domestic ownership of Scottish businesses. Indeed, the main motivation for becoming employee-owned is often driven by the desire to retain indigenous ownership.

On another level, the findings may provide justification for even greater emphasis on promoting employee-ownership as a model of business governance. Building on the important work undertaken by Cooperative Development Scotland, greater promotional efforts to further advocate the positive benefits of employee-ownership seem appropriate. Stakeholders such as business bodies, trade unions and universities (especially business schools) also have an important part to play to help remove some of the misconceptions about this mode of business organisation. While the recent fiscal changes enacted by the UK government have created supportive incentives to adopt greater levels of financial participation by employees, businesses in Scotland still seem unaware of the opportunities that this kind of governance structure can offer them. This is illustrated by the fact there are still so few EOBs despite the strong growth performance this governance arrangement can confer on firms. Relative to the rest of the UK Scotland already has more employee-owned businesses. Perhaps this presents the Scottish Government with an opportunity to build on this success and to continue to seek to foster a culture of employee ownership, both within new start-ups and existing businesses (of all sizes).

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References

Appelbaum, E. Bailey, T., Berg, P. and Kallerberg, A (2000) Manufacturing advantage: Why high-performance work systems pay off, Columbia University Press, New York.

Blasi, J., Conte, M. and Kruse, D. (1996) Employee Stock Owership and Corporate Performance Among Public Companies. Industrial and Labor Relations Review. 50: 60-80.

Blasi, J., Freeman, R. and Kruse, D. (2013) The Citizen's Share: Putting Ownership Back into Democracy. Yale: Yale University Press.

Brown, R. and Mawson, S. (2013) Trigger points and high-growth firms: A conceptualisation and review of public policy implications, Journal of Small Business and Enterprise Development, 20(2), pp. 279-295.

CDS (2014) Personal email communication between Ross Brown and Glen Dott, 3/2/14.

Doucouliagos, C (1995) Worker Participation and Productivity in Labor-Managed and Participatory Capitalist Firms: a Meta-Analysis. Industrial and Labor Relations Review, 49 (1), 58-77.

EOA (Employee Ownership Association) (2012) About Employee Ownership. Available at: http://www.employeeownership.co.uk/employee-ownership/about-employee-ownership/

FAME (2012) Financial Analysis Made Easy database https://fame.bvdinfo.com/version-2012104/Home.serv?product=fameneo

Freeman, R., Blasi, J. and Kruse, D. (2010) 'Introduction'. In Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad Base Stock Options (edited by D. Kruse, R. Freeman and J. Blasi). Chicago: University of Chicago Press.

Kramer, B. (2010) Employee ownership and participation effects on outcomes in firms majority employee-owned through employee stock ownership plans in the US, Economic and Industrial Democracy, November, 2010, 31(4) 449-476

Kruse, D. (2002) Research Evidence on the Effects and Prevalence of Employee Ownership, The National Center for Employee Ownership. Download from:http://esop.com/pdf/esopHistoryAndResearch/researchEvidence.pdf

Kruse, D.; Freeman, R. and Blasi, J. (2010) Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad Base Stock Options. Chicago: University of Chicago Press.

Lampel, J.; Bhalla, A., and Jha, P. (2012) The Employee Ownership Advantage: Benefits and Consequences. London: Department for Business Innovation and Skills.

Lampel, J. Bhalla, A., Chordia, M. and Jha, P. (2014) Does Employee Ownership Confer Long-Term Resilience, Cass Business School.

McQuaid, R., Hollywood, E., Bond, S., Canduela, J., Richard, A and Blackledge, G. (2012) Health and wellbeing of employees in employee owned businesses, Report for John Lewis Partnership and Employee Ownership Association. www.napier.ac.uk/employmentresearchinstitute/projects/Pages/EOAWellbeing.aspx

Poutsma, E. Blasi, J. and Kruse, D. (2013) 'Employee share ownership and profit sharing in different institutional contexts'. International Journal of Human Resource Management, 23(8): 1513-1518.

Senagupta, S. Whitfield,K. and McNabb, B. (2007) Employee share ownership and performance: golden path or golden handcuffs, International Journal of Human Resource Management, 18(8): 1607-1538.

Sesil, J. Kroumova, M. Blasi, J., and Kruse, D. (2002) Broad-based Employee Stock Options in New Economy Firms, British Journal of Industrial Relations, 40(2): 273-294.

Shenkar, O and von Glinow (1994) Paradoxes of Organizational Theory and Research: Using the Case of China to Illustrate National Contingency, Management Science, 40(1): 56-71.

Timming, A.R. (2012) Tracing the effects of employee involvement and participation on trust in managers: an analysis of covariance structures. International Journal of Human Resource Management. 23(15): 3243-3257.

Wilkinson, A., Dundon, T., Donaghey, J. and Townsend, K. (2014) Partnership, collaboration, and mutual gains: evaluating context, interests and legitimacy, International Journal of Human Resource Management, 25 (6): 737-747.

Wills J. and Lincoln, A. (1999) Filling the vacuum in new management practice? : Lessons from US employee-owned firms, Environment and Planning A, 31(8): 1497-1512.

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