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**Hamilton, Douglas and Moar, Lyle and Orton, Ian (1981) Job generation in Scottish manufacturing industry. Quarterly Economic Commentary, 6 (3). pp. 37-44. ISSN 0306-7866 ,**

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## JOB GENERATION IN SCOTTISH MANUFACTURING INDUSTRY

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### Introduction

Small firms are currently much in vogue. Indeed all the main political parties see them playing an important role in the future regeneration of the UK economy. From virtually total neglect as far as policy is concerned, small firms have recently come to be regarded as an important vehicle both for the rejuvenation of our industrial structure and more importantly for the generation of new jobs. However the basis for this belief has not always been very clear.

Prior to the Bolton Report (1971) small firms were thought to have no significant role to play in the management and control of economic activity in the economy. Since then however, a small firm revival of sorts has taken place, possibly identified most by Schumacher's "Small is Beautiful" (1974). With the publication of the Birch Report (1979) the job generation potential of small firms appeared to have been established at least for the US. During the period 1960-1976 firms employing 20 employees or less across all sectors were found to have generated 66% of all net new jobs in the US. It was tempting to transfer these results to the UK. However a subsequent study carried out in the UK (Fothergill and Gudgin (1979)) found that small firms, at least in the manufacturing sector, did not hold quite the same job creating potential. They also pointed out that Birch's findings for the manufacturing sector in the US were in fact very similar to their own. It was the service sector in the US, in which the small firm predominates, that had created the vast majority of jobs.

This article attempts to further this area of research by looking at the employment contribution of small manufacturing establishments in Scotland over the period 1954-1974. Using data from the Scottish Manufacturing Establishments Record (SCOMER) a components of change analysis by different size bands of establishments is carried out. It is important to note that we are talking here of small units or establishments as opposed to small firms as such. Where a firm has several distinct manufacturing establishments each of these is seen and recorded in SCOMER as a separate unit. So although not definitionally accurate, the terms firms, units and establishments are used synonymously.

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The authors wish to acknowledge the financial assistance of Shell UK Ltd and the Scottish Centre of Political Economy (SCOPE), as well as the helpful comments from participants at conferences organised by the Manchester Business School, and the Scottish Economic Society, both in September 1980.

## Components of Change Analysis

Employment changes by industrial units can occur in six possible ways.

1. Births
2. Deaths
3. Expansions
4. Contractions
5. In-moves (into Scotland)
6. Out-moves (out of Scotland)

Using the SCOMER databank which contains details of employment in all manufacturing units in Scotland employing 11 or more persons the performance of different size bands of units in terms of employment and unit change is followed through the 20 year period 1954-1974. We concentrate here only on the employment performance of those establishments which have opened during and since 1954.

The conventional wisdom is that the small firm sector (however defined) has been declining continually over time in terms of both its employment and output contribution to the economy. Over the 20 year period 1954-1974 total manufacturing employment in Scotland fell by 5% and total number of units by 13.7%. Over the same period small firms employment (the less than 200 size band) fell by 13.6% and the number of small manufacturing units by 14.8%. In other words the national decline in manufacturing employment is, to a large extent, attributable to job losses within small firms. These job losses have reduced the small unit share of total employment from 32.5% in 1954 to 29.5% in 1974 whilst the number of units has been only marginally reduced from 85.4% to 84.4%.

If however there is reason to believe that employment growth in the economy can be stimulated through the small firm sector then these trends need to be reversed. Even this however, assumes that there is some optimum size for the small firm sector. Unfortunately no theoretical premise exists for such a view. It might be argued that, due to modern production techniques and the economies of scale to be achieved in many parts of manufacturing, the "optimum" size for the small firm sector has in fact declined over time. If this is indeed the case then the observed trends in the Scottish small firm manufacturing sector might be interpreted as merely adjusting via market pressures in line with expectations. Accordingly we might argue that there is no such thing as the small firm problem! However the theoretical arguments either supporting or rejecting this view are not, as yet, well developed.

To say that the employment share of small manufacturing firms has declined only marginally does not tell us anything about the dynamics of the small firm sector and the importance it has in generating employment.

Unlike the studies undertaken by Birch (1979) in the USA and Fothergill and Gudgin (1979) for Leicestershire we do not have the detailed components of change on all firms for a particular period. SCOMER provides aggregated details for four opening cohorts, sub-divided by size bands. We are

therefore following the employment profile of small establishments as they move from period to period from their birth until closure, or the end of the time period, whichever is the case.

**TABLE 1    EMPLOYMENT CHANGE IN SCOTTISH MANUFACTURING 1954-1974**

<b>YEAR</b>	<b>NOS EMPLOYED</b>
1954	683,191
1974	649,112
Net Loss	34,079

Table 1 shows that employment in Scottish manufacturing declined by 34,079 or by 5% over the period 1954-1974. However, despite this decline 204,275 jobs were created during the same period through the birth and subsequent expansion of new establishments ie the net employment contribution effect of establishments opening during this 20 year period. This means that approximately 30% of the 1954 employment total was replaced.

Whilst these jobs were not sufficient to compensate for the employment decline experienced in manufacturing as a whole they are of importance. More important for our purposes however is to identify which firm size bands contributed most to job generation.

Using SCOMER data it is possible to examine the job generation process over the period 1954-1974 by looking at the four openings cohorts 1954-1959, 1959-1964, 1964-1969, and 1969-1974 for the following size bands:

1. Establishments employing more than 11 workers ie all the units incorporated in SCOMER.
2. Establishments employing between 11 and 24 workers.
3. Establishments employing between 25 and 50 workers.
4. Establishments employing over 50 workers.

Table 2 shows that the net employment effect for all those manufacturing establishments opening between 1954 and 1974 was 204,275 jobs.

**TABLE 2 NET EMPLOYMENT EFFECT ie births + expansions - contractions - closures. (Manuf firms: more than 11 employees)**

Time Period	Openings	54-59	59-64	64-69	69-74	Total in 1974	% change on base year emp.
Cohort							
1954-59	(33,253)		7,886	680	-1,874	39,945	20.1
1959-64			(51,541)	2,546	884	54,971	6.6
1964-69				(59,454)	1,696	61,150	2.8
1969-74					(48,209)	48,209	
<b>Total</b>		33,253	59,427	62,680	48,915	204,275	

There are a number of points arising out of Table 2 which should be emphasised. Firstly the table examines only the employment profile of the group of establishments which opened in each of the opening cohorts. Thus the first row indicates that in the 1954-1959 opening cohort the net employment generated by new establishments was 33,253, although not all this employment has risen entirely from new firm formations. In a 5 year period there is ample time (as all too many firms can testify) for closures, and some jobs will already have been lost. Similarly some establishments will have expanded rapidly after formation whilst others will have contracted, perhaps even without ever having increased their employment since their formation. More important perhaps, is the nature of the SCOMER data which does not include the 1 - 10 size band of firms. Consequently, units expanding into the 11 - 25 band are counted as new formations. Thus the opening figures in brackets are likely to be gross over-estimates of the true employment of firms at their birth. Indeed as we show later, the bulk of the net employment effect is attributable to expansions rather than births. The magnitude of the opening cohort employment in each row dominates the employment profile as a whole. In other words the bulk of the job generation arising out of the new formations is concentrated in the early years of a firm's life. Thereafter net employment generation from these same firms continues to be positive but its contribution diminishes. In the final period of the earliest cohort, employment generation actually declines. Even allowing for this total employment in 1974 was 20% higher than the opening period employment. Perhaps surprisingly the employment growth from the later cohort groups, although covering a much shorter period, are significantly lower than that generated by the 1954-1959 openings. The evidence considered so far indicates clearly that significant employment growth should only be expected in the early years of the firm's life.

As far as the separate components of change are concerned expansions were found to contribute most to the net employment effect. Closures on the other hand, were found to be the major cause of employment loss with contractions playing only a minor role.

Consider now the job generation process amongst different size bands of firms.

**TABLE 3 NET EMPLOYMENT EFFECTS 1954-1974: FIRM SIZE 11 - 24**

Time Period \ Opening Cohort	54-59	59-64	64-69	69-74	Total in 1974	% change on base year emp.
1954-59	(6,513)	464	- 7	442	7,412	13.8%
1959-64		(6,033)	5	- 28	6,010	- 0.4%
1964-69			(9,045)	64	9,109	0.7%
1969-74				(4,944)	4,944	
<b>Total</b>	<b>6,513</b>	<b>6,497</b>	<b>9,043</b>	<b>5,422</b>	<b>27,475</b>	

The 11 - 24 size group of firms contributed 27,475 net new jobs or 13.4% of the total net increase in jobs from those establishments opening during the 1954-1974 period. This is not a large contribution and would appear on a cursory glance to contradict the findings of Birch in the US. He found that between 1969 and 1976, 66% of all net new jobs in the US were created by firms employing less than 20 people. However it should be remembered that:

- (a) Our analysis is limited to the manufacturing sector.
- (b) SCOMER does not include establishments employing less than 11 employees.
- (c) Net employment changes do not include changes resulting from openings prior to 1954.

Nevertheless the 11 - 24 size group of firms increased their openings employment by only 940 jobs over the 20 year period. This is a rather disappointing performance considering the claims made about the job generating ability of this sector. Even for the earliest cohort, the percentage change on base year employment was only 13.8%. This confirms what Fothergill and Gudgin (1979) found for Leicestershire; the smallest firms make very little impact on job generation terms in the short-run.

The next size group of firms that we analyse is the 25 - 49 employee group.

**TABLE 4 NET EMPLOYMENT EFFECTS 1954-1974: FIRM SIZE 25 - 49**

Time Period \ Openings Cohort	54-59	59-64	64-69	69-74	Total in 1974	% change on base year emp.
1954-59	(5,525)	1,255	- 989	- 202	5,589	1.2%
1959-64		(5,349)	2,010	1,136*	8,495	58.8%
1964-69			(9,521)	983	10,504	10.3%
1969-74				(7,148)	7,148	
<b>Total</b>	<b>5,525</b>	<b>6,604</b>	<b>10,542</b>	<b>9,065</b>	<b>31,736</b>	

\* includes estimate for closures

The 25 - 49 employee group contributed 31,736 jobs or 15.5% of the total net increases in jobs arising from firms opening in the 1954-1974 period. Again, this is not a particularly outstanding performance. Of more relevance is this sector's role in net job expansion after opening. Compared to the smaller size group this sector's performance is more promising. A total of 4,193 jobs were added through firms established during this period expanding their employment.

The final size band of firms to be considered are those employing more than 50 employees. Clearly not all of the firms in this size band can be classified as large firms.

**TABLE 5 NET EMPLOYMENT EFFECTS 1954-1974: FIRMS SIZE  $\geq$  50**

Time Period \ Openings Cohort	54-59	59-64	64-69	69-74	Total in 1974	% change on base year emp.
1959-64		(40,159)	531	- 224*	40,466	0.8%
1964-69			(40,888)	649	41,537	1.6%
1969-74				(36,11)	36,117	
<b>Total</b>	<b>21,215</b>	<b>46,326</b>	<b>43,095</b>	<b>34,428</b>	<b>145,064</b>	

\* estimation

Establishments employing more than 50 employees created 145,064 jobs from opening and subsequent expansion during 1954-74. This size band accounted for 71.1% of all net new jobs generated and is clearly the major job generating sector. Even allowing for the fact that this sector covers the widest range of firm size, from what could be described as small to the very large, the data does suggest that large firms are performing better in terms of job generation. It might however be more accurate to say, considering the inadequacy of the data, that the smallest firms are not performing as well in terms of job generation as is commonly believed.

The three size groups of firms can now be directly compared in terms of their job generating performances for the 1954-1974 period.

**TABLE 6 NET JOB GENERATION BY SIZE GROUP 1954-1974**

FIRM SIZE	NET EMPLOYMENT GAIN	% OF TOTAL
11 - 24	27,475	13.4
25 - 49	31,736	15.5
$\geq$ 50	145,064	71.1
<b>Total</b>	<b>204,275</b>	<b>100.0</b>

Table 6 shows that in the short-run, small firms can not be expected (even if their numbers were greatly increased) to contribute a great deal to the generation of net new jobs. To direct resources away from large firms might be inappropriate given their apparent superior performance in terms of job generation in the Scottish context. Of course, it could be argued that small firms have only done badly in the past because resources have always been biased towards large firms. However this is something which cannot be empirically tested due to inadequacy of data.

To examine more fully what is happening within the net employment effect we can look at the separate components of change.

**TABLE 7 COMPONENTS OF CHANGE BY SIZE SECTOR 1954-1974**

FIRM SIZE	OPENINGS*	EXPANSIONS	CONTRACTIONS	CLOSURES	NET EMP. GAIN
11 - 24	26,535	13,531	- 2,580	-10,011	27,475
25 - 49	27,543	14,889	- 2,857	- 7,843	31,732
≥ 50	138,379	48,410	-16,606	-25,115	145,068
<b>Total</b>	<b>192,457</b>	<b>76,830</b>	<b>-22,043</b>	<b>-42,969</b>	<b>204,275</b>

\*The employment gain from openings plus the net employment effect in the initial period

Considering the short length of the time period examined it is not surprising that the employment gain from openings and the net employment effect in the initial period contributes most to the total net employment gain. Indeed in the greater than 50 size group it accounted for 95.4% of the net employment gain for that size group. The employment gain from the two smaller size bands in the opening period also accounts for a high percentage of the total net employment gain, although in real terms the gain only amounts to 41% of the gain from the greater than 50 size sector. Although positive contributors, the smallest firms do not account for a greater share of the jobs generated.

The most conclusive evidence against the job creating ability of small firms comes in Table 8. To get a more detailed view of the position, especially in the greater than 50 employee size band, the employment gain from each of the four opening periods at a more disaggregated level was extracted.



**TABLE 8 EMPLOYMENT GAIN FROM FORMATIONS AND THE NET EMPLOYMENT EFFECT IN EACH OPENING PERIOD 1954-1974**

SIZE BAND	54-59	%	59-64	%	64-69	%	69-74	%
11-24	6,513	( 20)	6,033	( 12)	9,045	( 15)	4,944	( 10)
25-49	5,525	( 17)	5,349	( 10)	9,521	( 16)	7,148	( 15)
50-99	4,350	( 13)	6,669	( 13)	12,310	( 21)	8,967	( 19)
100-199	3,120	( 9)	5,254	( 10)	11,221	( 19)	6,492	( 13)
≥ 200	13,745	( 41)	28,236	( 55)	17,357	( 29)	20,658	( 43)
<b>Total</b>	<b>33,253</b>	<b>(100)</b>	<b>51,541</b>	<b>(100)</b>	<b>59,454</b>	<b>(100)</b>	<b>48,209</b>	<b>(100)</b>

The earlier findings suggest that the most important period of employment creation occurs in the early years of the firm's life. As Table 8 indicates it is the large firm category, the greater than 200 employee group, which is the largest job generator in those terms. The one atypical period is 1964-1969 where it seems that the prevailing economic prosperity, coupled to the reintroduction of a "strong" regional policy coincided with an increased employment gain from smaller sized units. This is rather surprising given the bias in regional policy towards larger units. Even during this period however the greater than 200 size band still generated more net new jobs than any other single size band.

#### Conclusion

To conclude it can be clearly appreciated that the large firm sector is of prime importance to the Scottish economy in terms of job generation. Over the period 1954-1974 the job generation record of large units was clearly superior to that of the smaller size bands. Thus, although there has been general dissatisfaction with the employment performance of large firms, it is difficult to see how small firms can realistically be expected to take on the mantle of the largest contributor to job generation. We can only hope that if small firms are subsequently unable to meet the current expectations of their employment potential then policy measures will not revert to discriminating against small firms. There is certainly scope within the small firm sector to improve on its historical record of employment creation and as such these firms should continue to receive special attention. However it would be naive to expect small manufacturing firms to lead the way in creating new jobs for the Scottish economy.

#### REFERENCES

- D L Birch (1979) The Job Generation process. MIT Program on Neighborhood and Regional Change. Cambridge, Mass.
- J E Bolton (Ch) (1971) Small firms: Report of the Committee of Inquiry on Small Firms. Cmnd 4811, HMSO.
- S Fothergill & G Gudgin (1979) - The Job Generation Process in Britain. Centre for Environmental Studies, Research Series No 32.
- Scottish Office (1980) Small Units in Scottish Manufacturing. Scottish Economic Bulletin No 20, Spring.