SWP 45/88

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ABSTRACT

Six new manufacturing firm founder types in Wales are empirically identified using Principal Components Analysis and Cluster Analysis. The typology is based on fourteen characteristics associated with the parental background, employment history and the characteristics of the founders previous employer prior to start-up. Different founder types have established new firms with contrasting levels of performance. The public policy implications of founder types who have different abilities to generate new jobs, create new wealth and export their manufactured products is discussed.

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EXECUTIVE SUMMARY

A typology of new manufacturing firm founders in Wales is presented. Factors associated with the parental entrepreneurial background, employment history and the characteristics of the founders previous employer prior to start-up are explored. Through the adoption of Principal Components Analysis and Cluster Analysis a typology of new firm founders is detailed on the basis of fourteen characteristics. The six founder types are shown to have different abilities to generate new jobs, create new wealth and export their manufactured products.

Public policy should not solely be concerned with the number of new firms and the rate of new firm formation. Different founder types have established new firms of variable 'quality' in terms of potential for job generation, wealth creation and ability to export on a competitive basis. There is no shortage of potential new firm founders in Wales and public policy should aim to discourage those individuals who are clearly 'unsuitable' for entrepreneurship.

If the objective of policy is 'geographical welfare' there is the case for extra assistance to be directed to those regions associated with deep-seated factors which make them less conducive to 'successful' entrepreneurial formation and development. Assistance could vary according to local 'need'. In the cause of 'regional equity' policy measures and schemes could be restricted to those areas with the lowest levels of entrepreneurial potential. Government in this way could minimise its financial commitment to new firms policy whilst maximise its effectiveness. Finally, it is suggested that public policy should be targetted to those 'founder types' in problem areas who have the greatest potential for establishing 'successful' new ventures.

INTRODUCTION

In recent years there has been a dramatic increase in concern surrounding the new and small firm sector in the United Kingdom. New and small firms have been seen as a source of new wealth creation and employment generation, especially with regard to peripheral regions such as Wales. In the last decade Government has made strenuous efforts to develop an 'enterprise culture', a spirit of 'self-help' and individual achievement. However, despite an increasing volume of research into new small manufacturing firms there still remains limited information on the characteristics of those individuals who have made the strategic decision to establish a new enterprise. Government has requested detailed information on the characteristics and motivations of new firm founders in order to understand why certain individuals have a greater propensity to establish new businesses rather than other individuals (Frank et al. 1984).

Outside the United Kingdom research has been undertaken into the definition of entrepreneurial typologies (Smith 1967; Woo et al. 1988; Davidsson 1988; Lafuente and Salas, 1989) in order to allow the conceptual and theoretical development of entrepreneurial behaviour and performance. Previous studies have predominantly been concerned with testing the applicability of Smith's (1967) two-group typology of entrepreneurs: craftsmen and opportunist. The 'craftsmen-entrepreneur' has been shown to be driven by a strong preference for personal autonomy and this group is characterised by a lower level of formal education and management experience. These entrepreneurs tend not to rely on partners or outside sources of funding, and do not report rapid growth. In contrast, 'opportunist-entrepreneurs' have greater levels of experience and appear to be driven by financial and organisational success. They have a greater tendency to be orientated towards growth and demonstrate greater flexibility in achieving this goal through more diverse sources of financing and readiness for change.

Despite this research legacy and the collective importance of new businesses there has been minimal examination of the entrepreneurial antecedents influencing individuals to establish new ventures in the United Kingdom. Mo.eover, as Ritchie et al. (1982: 47) have stated, "Any review of existing work on entrepreneurship reveals that despite the diversity of disparate disciplines under which the subject has been studied, pitifully little is known about the dynamic process of personal, social, cultural, economic and geographical factors which would mould the

aspiring entrepreneur, nor about his or her aspirations and motivations. An understanding of both broad areas would seem of vital importance to policy makers: the former to describe and identify the would-be entrepreneur and to provide answers to such questions as 'Which social strata are likely to provide most would be entrepreneurs?' 'What factors encourage them, which inhibit?' 'What will their backgrounds have equipped them for?' 'Where might training needs lie?' and the latter to pin-point the stimuli which transform ideas into actions".

This research identified a range of factors found in the new firms literature to be associated with the characteristics and traits of new firm founders. Surprisingly, no study has presented an empirical 'typology' of founder types in the United Kingdom, on the basis of antecedent influences, backgrounds and personal characteristics. It is therefore the objective of this paper to ask do distinct and different types of new manufacturing firm founders exist on the basis of founder characteristics as well as previous work history incubator characteristics? Second, if so, do the different types of new firm founders establish new firms which have different levels of potential for job generation, wealth creation and the development of self-reliant local economies?

PREVIOUS RESEARCH

Cooper (1981) has suggested that the strategic decision to establish a new business is influenced by three broad factors. First, the entrepreneur, including the many aspects of his background which affect his motivations, his perceptions, and his skills and knowledge. Second, the organisation for which the entrepreneur had previously been working, whose characteristic influence the location and nature of new firms, as well as their likelihood of spin-offs. Third, the influence of various environmental factors external to the individual and his organisation, which make the climate more or less favourable to the starting of a new firm.

The weight of previous research emphasises that no one single factor can itself hope to illustrate and account for variations of motives, skill and ambitions that individuals bring to the task of starting their own business. Indeed this researcher rejects the view that new firm founders are 'born not made' and that certain character types are almost destined to take up certain roles. Following the work of Cooper (1981) it has been further suggested by Gibb and Ritchie (1982)

that a more realistic view of the complex factors associated with the entrepreneurial process of new firm formation can be better understood in terms of the types of situations encountered and the social groups to which they relate. "This view sees individuals as changeable throughout the course of life. The individual is developed by transactions with other individuals in his on-going social life. Thus, within the context, class structure, family or origin, education, occupational choice and development, career and organisational history and experience, present lifestyles and social attachments area all seen to be potentially important influences within the context" (Gibb and Ritchie 1982: 27). Adopting this view allows the researcher to suggest ways in which individuals and relevant parts of their environment may be assisted in order to generate more new firm founders who may make a contribution to job and wealth creation. Consequently, in order to identify the similarities as well as the differences between new firm founders the influences observed by previous researchers will be used in the context of new firm founders in Wales. The factors described below take into account the possible formative nature of early life experiences in creating basic ambitions but also places equal emphasis on the way adulthood itself may shape entrepreneurial ideas and ambitions.

Antecedent Influences Upon the Entrepreneur

An individual's family background will influence his or her values, attitudes, achievement, motivation and goal orientation (Cooper 1981). A father's social class may have an effect upon the type of employment entered at the start of a career and the subsequent range of business and other experience acquired. Pickles and O'Farrell (1987) tentatively hypothesised that the sons of fathers from manual and semi-skilled manual occupations would be less likely to have developed the value and skills appropriate for entrepreneurship from their parental background (BIRTHPLACE and STATUS in Appendix 1).

Studies have shown that founders often come from families where the father or a close relative was in business for himself (Roberts and Wainer 1971; Litvak and Maule 1973; Shapero and Sokol 1982; O'Farrell 1986). A family tradition of business ownership, presumably exposes the young potential entrepreneur to 'role models' and to the educational experience of learning what is involved in owning and managing a business (Cooper and Dunkelberg 1986).

Furthermore, a household in which the father was self-employed may have exposed the potential new firm founder to the expertise and values of entrepreneurship; within the household there may have been a commitment to the ideology and the nature of the reward system inherent in self-employment (Pickles and O'Farrell 1987) (PARENTS in Appendix 1).

The relationship between education and entrepreneurship is a complex one but Storey (1982) has argued that academic qualifications are a necessary but not sufficient condition for entrepreneurial success. In contrast, Pickles and O'Farrell (1987) hypothesised that education beyond the secondary level may reduce the likelihood of an individual establishing a business given the fact that more employee opportunities area available for those with higher education. In a more recent study, O'Farrell and Pickles have presented empirical evidence which suggests that manufacturing firms attract more highly educated entrepreneurs because it is more demanding they claim to run a manufacturing company than, for example, a retail store (QUALIFICATION in Appendix 1).

Psychological research has suggested that some new firm founders have a high need for achievement and a belief that they can control their own fate (McClelland 1961). Some founders may in fact be driven to founding their own business by their need to avoid being in a subordinate relationship to others (Collins and Moore 1970). Research into the characteristics of new manufacturing firm founders in Michigan in the USA suggested that entrepreneurs often have difficulty in relating to 'authority figures' such as teachers and bosses (Collins and Moore 1964). Caused apparently by their having had poor relationships with their fathers, these attitudes than led them to leave school at an earlier age and to have a succession of jobs. They were described as having an 'unwillingness to 'submit' to authority, an inability to work with it, and a consequent need to escape from it" (Collins and Moore 1964: 240). On the basis of this research, Cooper and Dunkelberg (1986) hypothesised that entrepreneurial people would have less formal education and that they would be 'job-hoppers', staying in previous jobs for shorter periods (NUMBER in Appendix 1).

Also, founders may have chosen this career path because other career paths have been closed to them either because of their age, colour, race or religion (Hagen 1971). On the basis of theses findings it is suggested that some people by virtue of their family background and early

childhood influences including educational experiences and attainments (Fothergill and Gudgin 1982; Keeble and Gould 1985; O'Farrell 1986) may be more likely to establish a new business.

Incubator Organisation

As the prospective new firm founder moves into a career and joins a particular organisation, those experiences and that setting influence subsequent entrepreneurial action (Cooper and Dunkelberg 1986). Cooper (1971 1981; 1985), Cross (1981) and Gibb and Ritchie (1982) have stressed that another major factor influencing whether a potential founder will start a new business is the nature of the organisation, which he last worked in prior to start-up. The location of the incubator organisation locates the potential founder in a particular geographic area which may or may not have a favourable entrepreneurial climate. A number of studies have indicated that most founders start their businesses close to their place of residence and were they work (Cooper 1970; Susbauer 1972; Scott 1976; Gudgin 1978; Johnson and Cathcart 1979; Cooper, 1985; Keeble and Gould 1985; Cooper and Dunkelberg 1981, 1987; Hakim, 1988). Starting in the same geographic area permits the founder to draw upon personal contacts and market knowledge, to start on a part-time basis while keeping an existing job, and to avoid the disruption of a family move (LOCATION in Appendix 1).

The incubator also provides the entrepreneur with the experience which leads to particular managerial skills and industry knowledge. Employees who work in small firms it is argued appear more likely to set-up a new business than those working in large firms (Cooper 1971; Johnson and Cathcart 1979; Storey 1982; Gudgin and Fothergill 1984; Gould and Keeble 1984; O'Farrell and Crouchley 1984; for dissenting evidence see Cooper, 1985). It is suggested that small firms appear to be good incubators because their employers learn about technologies and markets which can form the basis for small firm strategies. In addition, they probably attract more entrepreneurial inclined employees who are then exposed to the role model of the company owner-manager (Cooper and Dunkelberg 1986). It is hypothesised that employees working in large factories are not provided with the relevant experience necessary for entrepreneurial training and management. In contrast, the presence of a very active small firm sector can provide plenty of examples for potential founders to follow, For example, contacts with other small firms

may be made as part of an employees job and informal contacts with potential and actual founders may be more likely (SIZE in Appendix 1).

There is evidence to suggest that management and professional employees, particularly where they have had some responsibility for financial matters or some involvement in marketing and sales, seem to be better equipped than manual workers to start a new business, though not necessarily to turn out a good product (Cross 1981; Fothergill and Gudgin 1982; Storey 1982; Gould and Keeble 1984) (POSITION in Appendix 1). Moreover, it has been reported that individuals working in externally-controlled branch plants are less likely to establish new firms (Johnson and Cathcart 1979; O'Farrell and Crouchley 1984). In contrast, individuals employed in locally-controlled establishments are more likely to obtain the skills and risk-taking experience necessary for entrepreneurship (Gould and Keeble 1984) (CORPORATE in Appendix 1).

The strengths and weaknesses of the newly formed business reflect those of the new firm founder. Thus founders often start new businesses in the fields they already know (Mayer and Goldstein 1961; Hoad and Rosko 1964; Cooper 1970; Gudgin 1978; Johnson and Cathcart 1979; Cooper and Dunkelberg 1986 1987; Cross 1981; Storey 1982; Cooper, 1985) drawing upon technical and market knowledge acquired in the incubator organisation (Cooper and Dunkelberg 1986). Since industries vary widely in the extent to which they offer opportunities for new ventures, this means that the strategy of the incubator organisation determines to a greater extent whether its employees will ever be in a position to spin off and start their own business. Thus an established organisation in a mature industry with little growth and heavy capital requirements is unlikely to have many spin-offs (Cooper 1971 1981; Gudgin 1978; Checkland 1981; Cross 1981; Gould and Keeble 1984) (INDUSTRY in Appendix 1).

The relationship between the length of an individuals work history and the probability of establishing a business is a complex one (Pickles and O'Farrell 1987). The probability of starting a new firm will be low in the early years of employment due to the lack of capital and experience. The effective capacity for establishing a new firm typically increases between twenty-five and thirty years of age; as a person grows older, however, this trend is modified and then reversed as family-related obligations and interests are incurred (Liles 1981) (AGE in Appendix 1).

Individuals who become new firm founders are undoubtedly motivated by a complex mix of factors. Prior research, particularly that based upon personal interviews, suggests that 'displacements' or 'pushes' play a prominent role. Examples would include having your previous organisation fail, getting fired, or concluding that the organisation or one's career were not going anyplace (Shapero and Sokol 1982; Vesper 1983) (MOTIVATION in Appendix 1). It can, therefore, be suggested that the level of employment loss in redundancies and establishment closures may 'push' individuals into self-employment and new firm formation (Cross 1981; Storey and Jones 1987; Hamilton, 1989). Recent surveys have indicated that the threat of unemployment or actually being unemployed may stimulate new firm formation (Fothergill and Gudgin 1982; Storey 1982; Atkin et al. 1983; Binks and Coyne 1983) with potential founders comparing actual incomes with expected incomes resulting in the establishment of a new business (Creedy and Johnson 1983) (UNEMPLOYED in Appendix 1).

Finally, some founders may have had previous experience of founding new independent businesses which may make them more likely to establish new businesses again (Oxenfeldt 1943). However, more recent studies have shown that only a small number of founders have had experience of founding new independent businesses (Susbauer 1969; Cooper 1970; Cross 1981) (FOUNDING in Appendix 1).

SURVEY METHODOLOGY

Survey Design

The results presented in this paper are taken from a wider study of new manufacturing firm formation in Wales which have been detailed in Westhead (1988). The definition of a new firm adopted was that the wholly new manufacturing firm had been established independently and had no "obvious parent in any existing business organisation" (Allen 1961). The start-up date of the new firm was taken as the date of commencement of production on a full-time basis. The survey included firms with one (i.e. the founder) or more workers.

Unfortunately, it was not possible to gain access to an accurate listing of manufacturing firms in Wales for two points in time and so the population of new manufacturing firms in Wales was

not known. Therefore, a manufacturing establishment databank containing 7,653 establishments was assembled in 1985 from a variety of data sources including industrial and trade directories, Yellow Pages a business telephone directory, local newspapers and listings of businesses for local tax purposes. However, this databank was for only one time period and it was not logistically possible to discover at this stage the precise start-up date of the 7,653 manufacturing establishments on the database. In order to discover the new independent manufacturing firms in the database and to achieve the objective of surveying new firms in contrasting environments it was decided to classify Wales into a small number of contrasting 'ecological incubator environments'. Fifteen surrogate variables and factors statistically associated with rates of new firm formation at a local level were collected (such as occupational experience, level of self-employment, size of 'incubator' firm, level of rurality, turbulence and unemployment rates, ease of entry into industry, level of industrial specialisation, degree of local autonomy and market demand) (Cross, 1981; Gould and Keeble, 1984; O'Farrell and Crouchley, 1984) for each of the 40 local labour market areas or Travel-to-Work-Areas (TTWAs). On the the basis of these 15 surrogate 'ecological incubator' variables a classification of the 40 TTWAs in Wales was produced on a logical and consistent basis using Principal Components and Cluster Analysis. At the end of the classification process the 40 TTWAs in Wales were reduced into 5 'ecological incubator environment' types with only a 57% loss of original detail (Westhead, 1988).

For the purpose of this study it was decided on subjective grounds to interview a minimum of 40 new firms in each of the 5 'ecological incubator environments'. In four out of the five 'ecological incubator environments' this objective was achieved but in cluster 2 this target was not met because of the sparsity of new firms in this 'ecological environment' (in this cluster 9 out of a possible 10 new firms were interviewed). From field inspection of selected TTWAs in 1986 it was possible during this stage to update and clean the manufacturing establishment databank. Moreover, by contacting all the manufacturing firms in the selected TTWAs it was possible to accurately identify new independent firms.

The New Firm Survey

As indicated above, data for this paper were gathered by personal visit and interview during 1986 to surviving manufacturing firms which had been established in Wales during the period 1979 (1st January) and 1985 (31st December). In all, 269 out of 335 new firms were contacted during the 'grab' survey using an unarranged 'knock-on-door' approach which produced a noteworthy 80.3% response rate. All the 269 respondents were new firm founders who were personally contacted and interviewed by this researcher.

Statistical Techniques

In order to reduce the number of founders into a smaller number of founder types the Principal Components Analysis (PCA) technique was used. The objectives of an R-mode PCA are as follows. First, to produce new combinations of the original data, which may then be used as new independent and orthogonal reference axes (or variables) in a typology of founder backgrounds using Cluster Analysis. Second, to reduce the number of variables under investigation. Third, for the exploratory purpose of detecting and identifying groups of interrelated variables. On the basis of these new variables Ward's Error Sums of Squares (1963) Cluster Analysis was used to identify distinct founder types (or clusters) which have maximum between-group variance and minimum within-group variance. Statistical differences between the defined founder types over a range of performance measures was measured and tested using Chi-Square Analysis.

A TYPOLOGY OF FOUNDER TYPES

Standardisation of Founder Characteristics Using Principal Components Analysis

The fourteen variables drawn from the literature (Appendix 1) reflecting various characteristics of new firm founders entrepreneurial antecedents and background were standardised and reduced by an R-Mode PCA. The component models's key assumptions (Norusis 1985) were tested and they were not violated. In the unrotated solution, 66.3% of the total variance was explained by the first six components with eigenvalues greater than or equal to one. The next step in the analysis

involved finding simpler and more easily interpretable components which were retained on the basis of eigenvalues greater than or equal to one.

After a varimax rotation the first six components (out of fourteen) exhausted 66.3% of the initial total variance. Table 1 shows the variance was more evenly distributed after rotation with the first component accounting for 16.1%; the second 11.1%; the third 10.6%; the fourth 10.3%; the fifth 10.1%; and the sixth 8.1%. On the basis of the component loadings the six components have been given descriptive labels. The first component is clearly 'founders last employed in large employment sized manufacturing externally-controlled branch establishments' with high positive loadings on CORPORATE, SIZE and INDUSTRY. Component 2 is termed a 'high entrepreneurial professional and managerial parental background component' with high positive loadings on PARENTS and STATUS. In contrast, component 3 is a 'positive opportunity component for non-frequent employment changers' with a high positive loading on MOTIVATION, a high negative loading on UNEMPLOYMENT and a low negative loading on NUMBER. Component 4 is clearly an 'immigrant frequent employment changer traditionally employed outside Wales component' with high positive loadings on LOCATION and BIRTHPLACE and a medium positive loading on NUMBER. In terms of component 5, it can be labelled 'managers and professionals with an entrepreneurial tradition who are mature in age' with high positive loadings on POSITION and FOUNDING and a medium positive loading on AGE. Finally, component 6 is 'professionally qualified young founders' with a high positive loading on QUALIFICATION and a low negative loading on AGE.

In order to group the 269 new firm founders on a consistent and logical basis component scores which evaluate the original observations score on the six basic patterns in terms of a standard unit of measure was also produced by the varimax rotated PCA. The standardised 269 by 6 matrix of component scores formed the basis for the Cluster Analysis discussed in the following section.

Cluster Analysis of Founder Types

With six components or patterns of founder characteristics identified across the 269 new firm founders, the next step was to 'group' or 'cluster' founders based on similar emphasis (or

deemphasis) on each of these six entrepreneurial background dimensions. The resulting 'clusters' would each represent groups of new firm founders that have similar entrepreneurial backgrounds.

A measure of efficency in grouping, i.e. of explanation with respect to the objective function was calculated at each stage, on the lines used by Spence (1968). A sharp break in the efficency of the classification was recorded at step 263. This was regarded as a significant level of classification when a six cluster solution is the result. The number of founder types has been reduced from 269 to 6 with a loss of detail of 85.1% (bearing in mind that the inputted component scores were based on components explaining 66.3% of the original variance). The characteristics of each of the clusters (or founder types) in terms of the mean change in the fourteen variables are shown in Table 2. The cluster mean for each of the variables is shown to provide a reference point for interpreting each of the clusters. Cases where cluster means for a variable deviate by more than half a standard deviation from the respective global mean are underlined, and are used in the commentary below to highlight the distinguishing characteristics of each of the clusters (Openshaw 1983). The naming of the clusters for intelligibility purposes is inevitably a highly subjective process as was the case when varimax rotated components were labelled. Interpretation of the founder types for each of the six clusters is provided below.

Cluster 1 has 34 members and its variable characteristics deviate most strongly from the global means on three variables. This cluster is associated with founders who are 'immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship'. The largest group is cluster 2 which has 69 members. It is apparent that this cluster contains 'mature founders who had been managers and professionals in manufacturing establishments'. In contrast, cluster 3 contains 49 founders and this cluster has four variables which deviate by more than half a standard deviation from the respective global means. This cluster can be labelled 'individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments'. Cluster 4 contains 43 'Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition'. The smallest group is cluster 5 which has 9 members and can be labelled as follows. 'Founders with no academic

qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales'. Finally, cluster 6 contains 65 'founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments'.

DIFFERENCES BETWEEN THE FOUNDER TYPES OVER NEW FIRM PERFORMANCE CHARACTERISTICS

The above analysis has classified 269 new manufacturing firm founders into six founder types on the basis of the characteristics of fourteen variables associated with the founders parental background, work history and previous employment experiences and characteristics. At this stage, the following question must be asked. Do the different founder types establish significantly different types of new firms? In this section, the differences between founder types is analysed with regard to the following performance measures: present employment size of the new firm, level of revenues, level of net profitability, the percentage of revenues exported abroad, the percentage of revenues sold in Wales and the type of work done by new firms. Table 3 shows that the founder types had statistically significantly different levels of performance over two out of the six performance measures analysed, those being the level of revenues exported abroad and type of work done.

Over 50% of founders in each of the founder types had established new firms which had present levels of employment less than six employees in size (Table 4). It is interesting to note that cluster 2 ('mature founders who had been managers and professionals in manufacturing establishments') and cluster 4 ('Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition') type founders had over 23% of their members having established new firms greater than ten employees in size.

Table 5 shows that over 40% of founders in clusters 5 ('founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch

establishments located outside Wales') and 6 ('founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments') had levels of revenues of £20,000 or less. In contrast, over 38% of founders in cluster 2 and 4 had levels of revenues of £100,000 or more.

With regard to net profitability no difference was recorded between the six founder types (Table 6). However, a larger percentage of founders (over 64%) associated with clusters 4 ('Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition'), 3 ('individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments') and 1 ('immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship') had made a profit. In contrast, over 22% of founders in clusters 5 and 6 stated that their new firms had in fact made a loss.

A difference between the founder types ability to export their revenues abroad is shown in Table 7. In clusters 5 and 6, over 80% of founders stated that they did not export any of their revenues abroad. Conversely, over 52% of founders in cluster 1 had exported a proportion of their revenues abroad.

No difference was recorded between the level of revenues sold in Wales by the different founder types (Table 8). In each of the founders types approximately half of the founders stated they had sold the majority of their revenues (over 80%) in Wales alone. However, Table 9 does indicate that over 53% of founders in clusters 6 and 1 had decided to produce mainly their own products, whilst over 57% of founders in clusters 2, 3, 4 and 5 had a tendency to manufacture mainly specification orders.

On the basis of the above evidence, it can be suggested that the six founder types had produced different new businesses though not always in a statistically significant manner. Founders in cluster 1 had established new firms which were mainly engaged in manufacturing their own products, they exported a proportion of their revenues abroad and the businesses generally made a profit. In contrast, founders in cluster 2 had established businesses which mainly made specification orders, had levels of revenues of more than £100,000 and the new

firms were greater than ten employees in size. Founders in cluster 3 had established profitable businesses with over 80% of their mainly specification orders revenues being sold in Wales alone. Similarly, cluster 4 type founders had established firms which were engaged in making mainly specification orders, had a tendency to establish profitable businesses with employment sizes greater than ten employees and levels of revenues greater than £100,000. In contrast, founders in cluster 5 had established new firms which generally made mainly specification orders which were essentially sold in Wales and not exported abroad, with the businesses having levels of revenues of less than £20,000. Finally, founders in cluster 6 had established new firms which had similar levels of performance to those established by founders in cluster 5. However, founders in cluster 6 had a propensity to produce mainly their own products rather than mainly specification orders as manufactured by new firm founders in cluster 5.

CONCLUSION AND POLICY IMPLICATIONS

This paper has presented a typology of six founder types on the basis of a logical and consistent approach to classify the parental background, work history and previous employer incubator characteristics of 269 new manufacturing firm founders in Wales. The final section of this paper has indicated that the contrasting routes to new manufacturing firm formation have led different founder types to establish firms which have had contrasting levels of performance. Moreover, this research has shown that individuals drawn from families with a strong entrepreneurial tradition and who have held professional and managerial positions in small locally-controlled manufacturing establishments, have acquired the necessary skills, and made the necessary contacts which has enabled them to establish new firms which have potential for employment and wealth creation.

Founders with cluster 2 ('mature founders who had been managers and professionals in manufacturing establishments') and 4 ('Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition') characteristics and backgrounds have had a tendency to produce businesses which have made a notable contribution to employment and wealth creation. In contrast, founders who have entrepreneurial backgrounds similar to those associated with founders in clusters 5 ('founders with no academic qualifications who have had a volatile work history, new business founding experience and had

been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales') and 6 ('founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments') have been shown to have a propensity to establish new businesses with modest levels of revenues which is essentially sold in Wales alone, serving local market niches and demands such as the tourist industry in rural areas. The business set-up by these founders have nevertheless made a contribution to employment and wealth creation though at a very modest level.

It is clear from this data that public policy which is solely concerned with the number of new firms and the rate of new firm formation does not take account of the heterogeneity in the population. The 'quality' of the new firm founders and their firms in terms of job generation, wealth creation and propensity to export on a competitive basis are fundamental to self-reliant regional development in problem areas. Partly due to the current high levels of unemployment in Wales (and in the United Kingdom in general) there is no 'quantity' problem because there are a variety of individuals prepared to establish their own businesses. Indeed, it has been suggested it should be the objective of pubic policy to reduce and discourage those in the population who are clearly 'unsuitable' for entrepreneurship (Storey and Johnson 1987). From this analysis founders in clusters 5 and 6, in particular, would fall into this category and if such a policy was adopted they should not receive the available advice and financial assistance for new and small firms from publicly funded organisations.

If picking-winners is the objective, this paper has indicated that only a small proportion of founders established new manufacturing firms in Wales which have contributed disproportionately to job and wealth creation in the Principality. Public policies designed to maximise the number of business formations could inhibit the fast growth new firms which are the main source of job creation and have the greatest potential for becoming competitive on a local as well as on an international basis. In fact, those firms established by founders with the objective of serving local demands and market niches alone in Wales may have actually displaced other new firms and existing small firms. Therefore, it would be wrong and unfair for Government and policy makers to encourage individuals to risk their personal resources in a new venture which is likely to

fail. Government and local development agencies should be 'selective' and encourage the formation of new businesses by individuals who have characteristics similar to those in clusters 2 and 4 if the main objective is to 'pick winners' who will generate the maximum level of new jobs and wealth. On a note of caution it has, however, been argued by Hakim (1989, p.39) "...that no matter how desirable it may be in principle a selective policy of support for small firms is simply unworkable, not feasible on operational grounds, neither at the business start up stage nor later on when the small firm has begun to expand into a sizeable company".

Regional variations in new firm formation and entrepreneurial potential exist in the United Kingdom as well as within Wales (Storey 1982; Westhead 1988). If the objective of public policy is 'geographical welfare' there is a case for extra assistance to be directed to those regions, and areas which have a range of 'deep-seated' factors which make them less likely to generate a sizeable number of new firms with job generation and wealth creation and international competitiveness potential. Public policy might involve the creation of nationally-available new and small firm aid schemes in which the level of assistance varies according to regional and labour market 'need' (Mason and Harrison 1986). However, in the cause of 'regional equity' a more radical approach to the problem could involve the restriction of certain policy measures and schemes only to environments which have the lowest potential for entrepreneurial development and company growth. This approach can also be justified on economic and political grounds and thereby meet the present Conservative Government's concern to minimise its financial commitment to new firms policy while maximising its effectiveness. This is not, however, a solely United Kingdom issue. A recent study in Italy concluded, "...public policies are more likely to promote new business creation if they are tailored to a given territory. There is thus an imperative to identify the specific needs of the local environments, and to develop policies to match them in order to produce results over a long term span" (Dubini, 1989, p.25).

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Appendix 1 New Manufacturing Firm Founder Background Variables

BIRTHPLACE Birthplace of founder
1 = Wales
2 = Outside Wales

STATUS Fathers social class
1 = Manual
2 = Managerial and Professional

PARENTS Parents started a new business
1 = No
2 = Yes

QUALIFICATION Qualifications achieved by the new firm founder
1 = None
2 = Technical and City and Guilds
3 = Degrees and professional qualifications

NUMBER Number of previous employers
(interval scale data)

LOCATION Location of last employer prior to start-up
1 = Wales
2 = Outside Wales

SIZE Employment size of last employer prior to start-up
1 = 1 - 25
2 = 26 - 50
3 = 51 - 250
4 = 251 - 500
5 = > 500

POSITION Employment position in last job prior to start-up
1 = Manual
2 = Managerial and professional

CORPORATE Corporate status of last manufacturing employer prior to start-up
1 = Locally-controlled
2 = Externally-controlled

INDUSTRY Industry of last employer prior to start-up
1 = Non-manufacturing
2 = Manufacturing

AGE Age of founder at start-up
(interval scale data)

MOTIVATION Motivations to start the new firm
1 = Forced into entrepreneurship
2 = Various reasons
3 = To exploit a perceived market opportunity

UNEMPLOYED Unemployed prior to start-up
1 = No
2 = Yes

FOUNDING Previous experience of founding an independent business
1 = No
2 = Yes

Table 1 Standardisation of Founder Characteristics Using A Varimax Rotated Principal Components Analysis

Variables	Varimax rotated component loadings						Communality (h^2)
	1	2	3	4	5	6	
BIRTHPLACE	-0.099	-0.095	-0.066	0.717	0.139	0.178	0.588
STATUS	-0.139	0.794	-0.034	0.082	-0.060	0.147	0.683
PARENTS	-0.004	0.828	0.071	-0.099	0.175	-0.113	0.744
QUALIFICATION	0.035	0.002	0.119	0.146	0.041	0.834	0.734
NUMBER	-0.110	-0.090	-0.415	0.452	0.133	-0.175	0.445
LOCATION	0.099	0.153	0.358	0.757	-0.047	0.042	0.738
SIZE	0.814	-0.107	0.036	-0.014	-0.114	-0.195	0.727
POSITION	0.068	0.172	-0.058	-0.069	0.763	0.273	0.699
CORPORATE	0.914	-0.043	-0.033	-0.022	-0.035	0.009	0.840
INDUSTRY	0.763	-0.026	-0.149	-0.057	0.109	0.201	0.661
AGE	0.225	-0.296	0.126	0.114	0.536	-0.387	0.604
MOTIVATION	-0.126	0.172	0.775	0.191	-0.019	-0.082	0.690
UNEMPLOYED	0.059	0.183	-0.711	0.050	-0.180	-0.140	0.597
FOUNDING	-0.226	0.053	0.121	0.232	0.638	-0.113	0.542
Eigenvalue	2.258	1.554	1.490	1.444	1.410	1.136	9.292
% of variance	16.1	11.1	10.6	10.3	10.1	8.1	
Cumulative % variance	16.1	27.2	37.8	48.1	58.2	66.3	

Notes: A component loading of 0.300 (+ or -) or more is underlined

1. Founders last employed in large employment sized manufacturing externally-controlled branch establishments;
2. High entrepreneurial professional and managerial parental background component;
3. Positive opportunity component for non-frequent employment changers;
4. Immigrant frequent employment changer traditionally employed outside Wales component;
5. Managers and professionals with an entrepreneurial tradition who are mature in age; and
6. Professionally qualified young founders.

Table 2 Cluster Characteristics of Founder Types

Variables	Clusters						Global mean	Standard deviation
	1	2	3	4	5	6		
BIRTHPLACE	1.94	1.74	1.49	1.35	1.88	1.71	1.65	0.48
STATUS	1.59	1.25	1.24	1.95	1.44	1.56	1.49	0.50
PARENTS	1.06	1.14	1.04	1.93	1.22	1.33	1.29	0.45
QUALIFICATION	2.47	1.74	1.65	1.67	1.33	1.67	1.78	0.65
NUMBER	4.65	5.03	3.98	4.12	29.44	5.05	5.47	7.21
LOCATION	1.26	1.30	1.45	1.33	1.89	1.56	1.41	0.49
SIZE	1.63	2.24	3.05	1.87	1.57	1.23	2.24	0.58
POSITION	1.56	1.87	1.08	1.72	1.33	1.39	1.53	0.50
CORPORATE	1.33	1.45	1.71	1.41	1.83	1.20	1.51	0.50
INDUSTRY	1.59	1.94	1.98	1.74	3.13	1.00	1.64	0.48
AGE	33.29	45.19	33.94	35.05	41.67	37.45	38.03	10.12
MOTIVATION	1.71	1.83	2.08	2.30	1.75	2.31	2.05	0.77
UNEMPLOYED	1.29	1.33	1.14	1.35	1.78	1.23	1.29	0.45
FOUNDING	1.12	1.51	1.06	1.33	1.67	1.46	1.34	0.48

Notes: Cluster mean which deviates by more than one half standard deviation from the respective global mean is underlined.

1. Immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship;
2. Mature founders who had been managers and professionals in manufacturing establishments;
3. Individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments;
4. Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition;
5. Founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales; and
6. Founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments.

Table 3 Significant Performance Differences Between Founder Types

Criteria	X^2	d.f.	Significant difference at the 0.05 level of significance	Significant difference at the 0.01 level of significance
Employment	11.80	10	NO	
Revenues	17.23	10	NO	
Profitability	11.60	10	NO	
Exports	14.32	5	YES	
Sales in Wales	10.27	10	NO	
Type of work	22.20	5		YES

Notes:
1. Immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship;
2. Mature founders who had been managers and professionals in manufacturing establishments;
3. Individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments;
4. Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition;
5. Founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales; and
6. Founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments.

Table 4 Founder Types by Present Employment Size of the New Firms

Founder types	Present employment size						Total	
	1-5		6-10		11-150			
	No	%	No	%	No	%	No	%
1	24	70.6	3	8.8	7	20.6	34	100.0
2	35	50.7	14	20.3	20	29.0	69	100.0
3	31	63.3	11	22.4	7	14.3	49	100.0
4	27	62.8	6	14.0	10	23.3	43	100.1
5	5	55.6	3	33.3	1	11.1	9	100.0
6	45	69.2	11	16.9	9	13.8	65	99.9
Total	167	62.1	48	17.8	54	20.1	269	100.0

$X^2 = 11.80$ d.f. = 10 Significance = 0.30.

Notes:
1. Immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship;
2. Mature founders who had been managers and professionals in manufacturing establishments;
3. Individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments;
4. Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition;
5. Founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales; and
6. Founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments.

Table 5 Founder Types by Level of Revenues of the New Firms

Founder types	Level of revenues						Total	
	<£20,000		£20,001-£99,999		>£100,000			
	No	%	No	%	No	%	No	%
1	10	29.4	15	44.1	9	26.5	34	100.0
2	9	13.0	30	43.5	30	43.5	69	100.0
3	15	30.6	21	42.9	13	26.5	49	100.0
4	13	31.0	13	31.0	16	38.1	42	100.1
5	4	44.4	2	22.2	3	33.3	9	99.9
6	26	40.6	19	29.7	19	29.7	64	100.0
Total	77	28.8	100	37.5	90	33.7	267	100.0

$X^2 = 17.23$ d.f. = 10 Significance = 0.07.

Notes:
1. Immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship;
2. Mature founders who had been managers and professionals in manufacturing establishments;
3. Individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments;
4. Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition;
5. Founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales; and
6. Founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments.

Table 6 Founder Types by Level of Net Profitability of the New Firms

Founder types	Level of net profitability						Total	
	Broke-even		Loss		Profit			
	No	%	No	%	No	%	No	%
1	6	17.6	6	17.6	22	64.7	34	99.9
2	14	20.3	14	20.3	41	59.4	69	100.0
3	12	24.5	5	10.2	32	65.3	49	100.0
4	9	20.9	3	7.0	31	72.1	43	100.0
5	4	44.4	2	22.2	3	33.3	9	99.9
6	15	23.4	15	23.4	34	53.1	64	99.9
Total	60	22.4	45	16.8	163	60.8	268	100.0

$X^2 = 11.60$ d.f. = 10 Significance = 0.31.

Notes:
1. Immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship;
2. Mature founders who had been managers and professionals in manufacturing establishments;
3. Individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments;
4. Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition;
5. Founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales; and
6. Founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments.

Table 7 Founder Types by Level of Revenues Exported Abroad by New Firms

Founder types	Level of revenues exported				Total	
	0		≥1			
	No	%	No	%	No	%
1	16	47.1	18	52.9	34	100.0
2	49	71.0	20	29.0	69	100.0
3	37	75.5	12	24.5	49	100.0
4	32	74.4	11	25.6	43	100.0
5	8	88.9	1	11.1	9	100.0
6	52	80.0	13	20.0	65	100.0
Total	194	72.1	75	27.9	269	100.0

$X^2 = 14.32$ d.f. = 5 Significance = 0.01.

Notes:
1. Immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship;
2. Mature founders who had been managers and professionals in manufacturing establishments;
3. Individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments;
4. Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition;
5. Founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales; and
6. Founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments.

Table 8 Founder Types by Level of Revenues Sold in Wales by New Firms

Founder types	Level of revenues sold in Wales						Total	
	1-10		11-80		81-100			
	No	%	No	%	No	%	No	%
1	6	19.4	16	51.6	9	29.0	31	100.0
2	16	26.7	23	38.3	21	35.0	60	100.0
3	14	29.8	12	25.5	21	44.7	47	100.0
4	10	25.6	12	30.8	17	43.6	39	100.0
5	0	0.0	4	50.0	4	50.0	8	100.0
6	11	19.0	21	36.2	26	44.8	58	100.0
Total	57	23.5	88	36.2	98	40.3	243	100.0

$X^2 = 10.27$ d.f. = 10 Significance = 0.42.

Notes:
1. Immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship;
2. Mature founders who had been managers and professionals in manufacturing establishments;
3. Individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments;
4. Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition;
5. Founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales; and
6. Founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments.

Table 9 Founder Types by Type of Work Done by New Firms

Founder types	Type of work				Total	
	Mainly specification orders		Mainly own products			
	No	%	No	%	No	%
1	15	46.9	17	53.1	32	100.0
2	45	70.3	19	29.7	64	100.0
3	28	59.6	19	40.4	47	100.0
4	25	59.5	17	40.5	42	100.0
5	4	57.1	3	42.9	7	100.0
6	19	30.6	43	69.4	62	100.0
Total	136	53.5	118	46.5	254	100.0

$X^2 = 22.20$ d.f. = 5 Significance = 0.00

Notes:
1. Immigrants with no parental entrepreneurial background who have professional and degree type qualifications who have a tendency to have been forced into entrepreneurship;
2. Mature founders who had been managers and professionals in manufacturing establishments;
3. Individuals with no previous founding experience who had been manual employees in large employment sized manufacturing establishments;
4. Welsh founders who had fathers which had professional and managerial positions and parents with a strong entrepreneurial tradition;
5. Founders with no academic qualifications who have had a volatile work history, new business founding experience and had been unemployed prior to start-up. Their last employers were large externally-controlled branch establishments located outside Wales; and
6. Founders motivated by a desire to exploit a perceived market opportunity who had been employed in small locally-controlled essentially non-manufacturing establishments.