SMALL BUSINESS GROWTH IN NEW ZEALAND 1990-1994

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Dr Frank Nolan
Chief Economist
Statistics New Zealand
Christchurch
New Zealand.

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1. Introduction

This paper looks at measures and regional effects of small business growth in New Zealand between 1990 and 1994. The paper views this from two angles. Firstly there is a discussion on the business register that is maintained by Statistics New Zealand. The strengths and weaknesses of the register are discussed. Future developments in light of the need to reduce business compliance costs are outlined.

The second part of the paper deals with an analysis of business growth for small establishments (0-19 employees, including working proprietors). This follows similar analysis by Davidsson et. al. (1994) and Reynolds (1994). Regression models provide a good explanation of gross business growth, with a similar level of explanation as in the above papers.

2.0 The data.

The geographic units of analysis used in the Reynolds and Davidsson et al. papers are labour market areas (LMA). Reynolds uses cluster analysis to derive these areas.

In the New Zealand case I have used Territorial Local Authority areas (TLA). These are administrative districts which were redefined in 1989 to operate as the basic unit of multi-purpose local government. There are 74 TLAs in New Zealand ranging in population size from 3,711 to 315,668 persons at the 1991 Census of Population. These include 15 cities which were required to have a population of at least 30,000.

The disadvantage of using TLA for analysis is that there is population movement across the regional boundaries from home to employment. Consequently comparisons with population census estimates may contain effects which are due to the boundary decisions. This is particularly the case where employment in cities is fed from surrounding districts.

Data on businesses was drawn from the Statistics New Zealand business register as discussed in section 3. The unit used was what is termed the activity unit or establishment. This is the smallest unit for which employment and production data can be derived. It is the unit that attaches to one physical location. Several activity units may make up an enterprise or firm - the unit that makes financing decision for the business.

Counts were taken of both number of activity units and employment for all businesses (excluding the agricultural sector) on the register between 1990 and 1994. Employment counts were measured in a full time equivalent unit (FTE) and includes counts of working proprietors. This variable is derived from a binary variable "working full time" or "working part time", and the measure combines these into a unit of total full time employment by weighting the number of full timers by one and the number of part timers by one half and then adding the two values.

Four sectors of the economy were used in the analysis. These were based on the New Zealand Standard Industrial classification (NZSIC - derived from the international ISIC). The all sectors group included data across the whole economy (excluding the agricultural production). Manufacturing included only firms classified to major group 3. Business services included only firms classified to major group 8. Other sectors included the other major groups - Agriculture Servicing, Hunting, Forestry and Fishing; Mining and Quarrying; Electricity, Gas and Water; Construction; Wholesale and Retail Trade and Restaurants and Hotels; Transport, Storage and Communications; and Community, Social and Personal Services.

3.1. Business Register

Statistics New Zealand operates a comprehensive register of businesses in New Zealand. The register is based on administrative data from the taxation system. In 1986 New Zealand adopted a system of indirect taxation on most goods and services (called GST - similar to the British VAT).

This is a comprehensive tax (currently at 12.5%) across almost all commodities (there are a small number of exemptions). To collect this revenue, legislation requires the majority of businesses to register with the IRD (Inland Revenue Department). They are required to pay the tax at regular intervals (monthly, two monthly or six monthly depending on the size of the turnover of the business). Payment is required within seven days of the end of the period and there are large penalties for late payment.

Partly as a result of this taxation, the IRD has developed a modern computerised information system. This is based on up-to-date relational database techniques and easy to use access systems. A key variable on the register is business taxation number.

Statistics New Zealand has made use of this taxation database to provide monthly access to all new businesses. Taxation registration data has been sent electronically from the IRD database to the Statistics New Zealand register. This is followed by an exploratory questionnaire being posted to new businesses to determine location, ownership, business activity and employment numbers. This provides information for standard classifications such as industry, institutional sector, location.

In addition Statistics New Zealand has direct access into a restricted level of the taxation database. This allows statisticians to interrogate the database for the purposes of investigation and register quality checks.

3.2. Business Register Updating

The Statistics New Zealand register has been updated annually by a census of all businesses on the register. The purpose of the census is to determine any changes that have taken place in the structure of a business in the previous 12 months. This applies particularly to businesses NOT in any other Statistics New Zealand survey (about 30% of businesses are included in some other survey). This may result in indications of business death or of change in activity, location, employment, ownership, or business expansion to new locations.

The most important aspect of this annual census has been to confirm the continued business activity. Deaths of businesses are not always received in a timely way from the IRD system. There is a tendency to keep the business on the taxation database for some time after cessation, just in case they begin activity again.

The annual census, whilst only asking basic register information (no financial data required), has imposed an ongoing burden on businesses. With a major move by government in the last ten years to a more open and deregulated economy, Statistics New Zealand has been questioned about this continuing cost to businesses, especially small businesses. There have been suggestions that as an alternative to a census, Statistics New Zealand should be making increased use of administrative data already collected, particularly from IRD.

To this end Statistics New Zealand has started a programme which will effectively result in the business register being drawn from two databases. For most small businesses this will be the IRD database. For large businesses this will be the Statistics New Zealand database (which will also include small businesses included in Statistics New Zealand panel surveys).

This will make better use of data already provided by small businesses. It will also result in more efficient use of databases held by government agencies.

Statistics New Zealand will then make greater use of triggers from other IRD data to provide information on (small) businesses changing classifications. For example, a business previously not employing labour which commenced paying employee taxation would be investigated for changes in employment. Enquiries of businesses would then be far better targeted.

3.3. Strengths and Weaknesses of the Register.

The Statistics New Zealand register provides a very good frame for surveying businesses for statistical purposes. Because of the link to legislative requirements for taxation payments, there is a high quality in reporting of new business starts. A majority of these are small businesses.

The classifications on the register are another strength. These mean that the frame provides a central link with all business surveys undertaken by Statistics New Zealand. Increasingly these classifications are also used by other survey organisations and market research firms. Based on the international classifications they also provide for comparability of business statistics with overseas countries. They are also seen by administrative bodies as an objective measure that can be used for their purposes.

The birth survey and annual census investigate firm ownership. This allows for the differentiation of different establishments within the same firm. The majority of firms are single establishment firms at one physical location. It is important to differentiate multi establishment firms on the register as these may require different survey instruments and since their financial data may only be available at a firm level. As a consequence estimates of regional financial data may be difficult.

The classification of addresses is a special strength. This has allowed for the easy delivery of information at a subnational level. This can be used for planning and delivery of services by local authorities, utility companies and the like.

The register has not been able to provide for some of the new sector classifications or activities being demanded. These include specific requests for statistics on such areas as tourism, information technology, innovation, research and development. The standard industrial classification does not easily provide these splits. Attempts have been made to use filter questions on the annual census, or to use external lists - both with limited success.

The register is also limited by the quality of the administrative data. The legal requirement for a business to register for GST with IRD is an annual turnover of $30,000 (just above the value of the average annual wage in New Zealand). This means that there are a number of small part time businesses not included on either database. It is thought that these may represent less than 1% of the total number of businesses and perhaps less than 0.5% in terms of turnover.

The small businesses not included on the register also include many private non profit organisations. With the recent government reforms these organisations are now providing increased services in the social area. While the consequence of this may be more private non profit business within the database, this is still an area of weakness, especially when considering policy questions regarding voluntary labour.

The register probably does not include illegal business activity.

The register also fails to provide a Maori classification (Maori being the indigenous people of New Zealand). A definition of Maori business activity has not yet been determined. This is seen as important in terms of the Crown's obligations under the Treaty of Waitaingi.

There are threats to the integrity of the register through the dependence upon the administrative data. Current dependencies include the coverage boundary being an annual turnover greater than $30,000 and the limited exemptions for businesses to register. Both of these areas could be changed by regulation and so affect the integrity of the Statistics New Zealand register.

There are opportunities to use more administrative data. Statistics New Zealand has commenced a programme to make greater use of the IRD data for the register (see above). In addition there are possibilities to use employee taxation (PAYE) data in place of employment surveys. This could also supply size measures for the register (see Perry).

In 1995 Statistics New Zealand will use business taxation data to carry out a census of the manufacturing sector. Most small single establishment firms will not be surveyed with a Statistics New Zealand questionnaire. Instead electronic data for income, expenditure and balance sheet items captured by IRD will be electronically transferred to Statistics New Zealand. This will be used in place of completed questionnaires for those firms. Multi establishment firms will however receive a questionnaire. Pilot testing has shown that good quality results can be produced in this manner with considerable compliance savings to businesses.

3.4 Outputs.

The annual census of businesses is undertaken in February of each year. First results are available in July and are used for population selection for an annual enterprise survey. This survey provides financial data across industry groups (approximately 2 digit NZSIC).

The census data is also made available publicly in September. This is signalled with a media release giving emphasis to changes in populations over the past periods. Specific clients are then able to obtain specialised outputs from the database.

In addition, a topic based publication *Business Activity*, has been produced in the last three years. This has included additional analysis of the data in the form of a separate article - the article in *Business Activity 1994* compared changes in part time and full time employment. The publication provides easy public access to both the demographic data on businesses from the current year, plus financial data from the enterprise survey of the previous year. There is also

data on price indexes and production statistics. There are companion reports on labour market statistics and agricultural statistics.

4.0 Small businesses in New Zealand.

The annual survey of firms shows that the number of establishments in the 0-19 (FTE) employment size group has grown substantially in the period 1987 to 1994 (see Table 1). Over the eight year period there has been a growth of 24% in the numbers of these establishments and a growth of 11% in their employment. Establishments in this size group accounted for 95% of the total establishments and 49% of employment (measured by FTEs) in 1994. This is a slight over-representation of small firm dominance as it does not take account of firms operating in several locations (multi establishment units).

However a comparison with establishments in the ranges of 20-99, 100-499 and 500 plus (FTE) employment size groups reveals a very different direction. For these three groups there has been a decline in both the number of establishments operating over the period and the number of FTE employees. For establishments in the 500 plus FTE employment size group there has been decline of 40% for both number of establishments and FTE employees.

Table 1. Size distribution of establishments and employment share 1987, 1994.

	Establishments			Full Time Equivalent Employees		
Base (thousands)	170	208		1,242	1,194	
			%			
	1987	1994	Change	1987	1994	Change
Micro (0-19 FTE)	94.0	95.4	23.7	42.4	49.0	11.1
Small (20-99 FTE)	5.2	4.1	-3.6	27.4	26.9	-5.6
Medium (100-499 FTE)	0.7	0.5	-8.7	17.6	16.2	-11.5
Large (500+ FTE)	0.1	0.1	-40.6	12.5	7.8	-39.8
Total	100.0	100.1	21.9	99.9	99.9	-3.8

Over the last few years New Zealand has undergone considerable economic growth following the share market crash of 1987 (constant price GDP increase by over 5% between 1993 and 1994). This has also followed several economic reforms including deregulation of labour, goods

and financial markets. Changes were introduced in both the direct activities of the public sector and the legislative and regulatory environment in which the private sector operated. Government trading activities were commercialised and privatised, producer subsidies were removed as were numerous regulations. There was a reorientation of New Zealand firms towards being international businesses rather than providers to a protected domestic economy. This has resulted in a more open economy.

There have been major reforms in the government sector. This has seen increased competition for the services previously the prerogative of government agencies. This has included reforms in transport, postal services, telecommunications and health.

The results have been a marked decrease in the size of the public sector. In term of employment the public sector has declined by 25% between 1987 and 1994 from 290,000 to 217,000 full time equivalent employees. As a consequence there has been an uptake of some of the previous government work by the private sector. This has included previous government employees setting up private businesses to undertake similar services to those they were previously employed to carry out. Some have also set up businesses in other sectors.

In terms of growth of small and medium sized enterprises this will affect growth patterns in the analysis. This may be particularly seen in areas of previous high government sector employment, especially in the areas around the capital city.

5.0 Birth rates of small establishments.

A measure of growth of small establishments is that of an annualised birth rate. Two measures were chosen based on the work of Reynolds, 1994 and Davidsson et al., 1994. Both measures use gross change.

The first was based on the number of new establishments per 100 existing establishments at the start of the period in the same sector. For 1990-94 the national figure for all sectors was 12.9 new establishments per 100 existing establishments per year, for manufacturing it was 10.7, for business services it was 19.0, and for all other sectors it was 11.8 (compared with Reynolds USA figures of 6.9, 5.9, 8.9, 6.7).

The second measure, birth rates per human population, was based on average annual new establishments per 1,000 inhabitants in the 16-64 year age group. The denominator represents a measure of the size of the work force. The national figure for all sectors was 10.1 new establishments per 1,000 inhabitants per year, for manufacturing it was 0.8, for business services it was 2.4, and for all other sectors it was 6.9 (compared with Davidsson's Swedish average figures of 8.8, 1.0, 1.4, 6.4).

Reynolds also used another measure - establishment births per 10,000 jobs. Using the New Zealand FTE employment count gave a measure quite at variance with that obtained by Reynolds. This may be because of the averaging of part time employment within the New Zealand measure. This measure has not be used any further in this analysis.

The highest regional values of annual establishment based growth for all sectors were represented in the TLA consisting of urban areas. The lowest values were in the TLA consisting of rural areas. There were high values in the Queenstown - Lakes District, which while being rural, has a very high visitor appeal and has followed the growth in overseas visitor numbers

with business growth. Ranges of regional rates for the first two measures of growth (based on 1000 establishments or based on 1000 inhabitants aged 16-64 years) are given in Table 2.

A similar pattern to the all sectors regional distribution was followed for both the business services sector and the other sectors group. There seemed little pattern for the manufacturing sector. This may be partly an effect of the small number of manufacturing establishments in each area, there being only a total of 20,000 manufacturing establishments in the 1990 period.

Table 2. Sectoral and regional variations in establishment birth rates.

Sector	Birth measure	Median regional rate	Highest regional rate	Lowest regional rate
All sectors	Establishments	11.1	15.7	7.1
	Inhabitants	7.3	21.5	3.2
Manufacturing	Establishments	10.8	36.1	4.7
	Inhabitants	0.7	1.5	0.2
Business Services	Establishments	15.6	29.3	6.8
	Inhabitants	1.0	7.6	0.3
Other sectors	Establishments	10.3	14.9	6.2
	Inhabitants	5.8	17.4	2.2

6.0 Dynamics of growth

In his paper on USA business growth, Reynolds identifies six processes affecting new firm births that were chosen for exploration. Indicators were chosen as indicating regional variation in the presence of these processes. These are presented in Table 3.

Reynolds outlines how these processes affect growth of small businesses. These processes were also available for analysis from the New Zealand data.

Eleven indicators were used to represent the TLA at the start of the period in which firm births were calculated. These are those listed in Table 3 with the exception of median dwelling value and white collar employment which were not readily available. Most of the information was collected from the 1991 Census of Population and Dwellings.

One index related to the extent of industry specialisation was computed. This was derived From Population Census data by calculating the percentage of FTEs for each of the nine industrial sectors: Agriculture, Hunting, Forestry and Fishing; Mining and Quarrying; Manufacturing; Electricity, Gas and Water; Construction; Wholesale and Retail Trade and Restaurants and Hotels; Transport, Storage and Communications; Business and Financial Services; and

Community, Social and Personal Services. These percentages were then squared, summed and the square root taken of the sum. The value of this index averaged 44.8 and ranged from 38.6 to 57.0 (very similar values to those obtained by Reynolds for USA). A higher value indicated a higher degree of industry specialisation.

Table 3. Processes and Variables for firm births.

Demand	Population change
	Per capita income change
Urbanisation/ agglomeration	Population density
	Percentage population over 23 years with university degrees
	Percentage of the population over 15 years in white collar employment
	Percentage of the population 25 - 44 years old
Unemployment	Unemployment
	Change in unemployment
Personal household wealth	Median dwelling value
	Percentage owner occupied dwellings
Small firm specialisation	Percentage small firms
	Industry specialisation index
Local Government spending	Local government spending per capita.

7.0 Prediction of establishment births

Multiple regressions using both stepwise and forced entry (the SAS procedures PROC STEPWISE and PROC REG were used) were applied to the all sectors group and each of the three sub-sectors. The independent variables given in Table 4 were used to provide a measure of explanation of annualised births per 100 establishments. Standardised regression coefficients are given in Table 4. Blank cells in the table indicate the absence of a significant contribution of an independent variable to improving the fit of the linear model.

The first point to note from the regression is the high level of explanation for the all sectors group. The model used gave an adjusted R^2 of 0.68. This compares very well with the figures given in the other studies - Sweden 0.68 (based on 1000 population aged 16 - 64 years), USA 0.53 (based on 1000 establishments).

Secondly at the all sectors level both demand and urbanisation / agglomeration show significant positive influence. The variations in unemployment, personal household wealth and local government spending have little effect. The coefficients in the models are of generally of similar sign and significance to those obtained from the Swedish and USA data.

The models do not perform as well for the manufacturing and business services sectors. This is contrary to the findings of Davidsson et al. with the Swedish data where it was hypothesised that the more heterogeneous the category the lower the explanatory power.

The New Zealand effect in these two sectors may be a result of the 1980s economic reforms - see section 3. These have caused significant changes in the way businesses have operated and gross establishment growth may still be influenced by reaction to changes in government policy.

Table 4. Regression models for gross births of establishments per 100 establishments, standardised regression coefficients.

Variables	Sectors			
	All sectors	Manufacturing	Business services	Other sectors
Demand				
Population percentage change 1990-1994	0.50****	0.17	0.28**	0.55****
Per capita income level		-0.15	0.28*	-0.11
Urbanisation / agglomeration				
Total population per hectare 1991	0.21**			0.26**
Percentage of population aged 25-44 years with university education 1991.	0.36****			0.23*
Percentage of total population aged 25-44 years			0.18	0.09
Unemployment				
Unemployment rate 1991				
Change in unemployment rate 1986-1991				
Personal household wealth				
Percentage owner occupied dwellings 1991				
Small firm specialisation				
Percentage establishments 0-19 FTE 1990.		0.18	-0.15	
Industry job specialisation index 1991	-0.19**			-0.26***
Local Government spending				
Local government spending per capita				
Adjusted R^2	0.68	0.06	0.30	0.66
F test	38.4	2.4	8.7	24.8
Statistical significance of F test	****		****	****

Statistical significance of variables indicated by:*=0.05, **=0.01, ***=0.001, ****=0.0001.

8.0 Conclusion

To evaluate the effects of changes in economic policies governments requires good measures of business behaviour. A basic measure is the demographic data about businesses. This should include counts of businesses by location, activity, ownership and employment.

Whilst these data are simple (non financial), it must be recognised that there are costs in data supply, especially for small businesses. Statistical agencies need to ensure they adopt the most efficient methods of collection to minimise respondent burden.

Small businesses comprise the majority of New Zealand businesses and make a significant contribution to employment. Following the share market crash of 1987 and the economic reforms of the late 1980s, there has been a strong growth of small businesses in New Zealand.

Multiple regression models using factors studied in other countries show that the processes of demand and agglomeration have strong effects on growth in firms across all economic sectors. This is a similar to outcomes from other studies. The models do not show a very good fit for some of the sub sectors in the New Zealand economy.

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