Determinants of Profitability: An Empirical Investigation Using Australian Tax Entities*

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Abstract

This paper uses a sample of 180,738 tax entities from the full Australian Tax Office (ATO) tax return data to investigate the determinants of profitability. The sample of Australian tax entities are averaged over the period 1994/95 to 1996/97. Analysis is carried out at a 3 digit ANZSIC level of classification. Using simple regression techniques the analysis suggests that size of entity is positively related to profitability but industry characteristics have limited importance in explaining entity profitability. Concentration, defined at a 4 digit level, is positively and significantly related to entity profitability in 27% of Australian 3 digit industries, while a significant negative association is found in 8% of the industries. There is some evidence that barriers to entry have the positive relationship with entity profitability as dictated by theory when proxied by the industry capital intensity but not when proxied by the minimum efficient scale or industry trademark intensity. There is strong evidence that the market share of an entity has a U-shaped relationship with profitability.

Key words: structure, conduct, performance, market share, concentration, barriers to entry, tax entity, profitability

Contents

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1. Introduction

This paper uses the Australian Tax Office (ATO) tax return database to analyse the profitability of Australian tax entities. The Structure Conduct Performance (SCP) paradigm provides the motivation of the analysis of tax entity profitability between 3 digit ANZSIC industries. The paradigm postulates that market characteristics (e.g. concentration and barriers to entry) will have an influence on the conduct of firms, which in turn will influence the performance of firms within that market.

The ATO tax return database contains information on the financial activities of all Australian tax entities[1]. The SCP paradigm relates to 'firms' which operate and compete in a well defined market. In practice, firms rarely operate in one well defined market. Tax entities are units within a firm which complete a tax return form and they may, or may not relate to a specific activity or market in which the firm operates. Each year, approximately 500,000 tax entities report to the ATO. A firm can have as many tax entities as it decides. Over 70% of firms have between one and three tax entities in their group. However, some firms have over 150 tax entities within their group. A firm may decide to establish tax entities according to its line of businesses, or alternatively, firms may decide to set up tax entities for tax planning and accounting purposes. This paper investigates whether the profitability of tax entities is determined by the traditional variables of the SCP paradigm

The distinction between firms, tax entities and a line of business is important in the empirical investigation of the SCP paradigm. Industry variables included in such investigations are calculated and based on the concept of the "market" in which firms operate. Most commonly, markets are defined by a Standard Industrial Classification (SIC), an example of which is the ANZSIC. An obvious problem of using such a classification is that it is based on similarity between firms' production side rather than demand. As an example, firms producing plastic buckets are classed as operating in a different market form those producing metal ones (Hay and Morris, 1991, p.207).

[1] Previous studies of profitability in Australia have commonly used industry level data, although there have been two recent studies carried out at the firm level using the IBIS database (see Feeny and Rogers, 1999, and McDonald, 1999). The IBIS Enterprise Database contains information for approximately 2,000 firms on an annual basis from 1979. Accounting data are available through each firms profit and loss and balance sheet statements.

Another major difficulty of using such a classification is that firms rarely operate in only one industry or ANZSIC[2]. There is, as yet, no dataset in Australia containing the line of business information found in the PIMS which allows for a more accurate industry classification of a firm. ATO tax return data has its problems due to how firms register tax entities. Generally, larger companies have more than one tax entity but the number of entities per company can vary significantly. A recent study carried out for the ATO found that for Large Business and International (LB&I) companies, 59% have just one or two tax entities and almost 7% of LB&I companies have more than ten tax entities, (Rogers, Feeny and Harris, 1999). Further, each tax entity is asked to allocate itself a 4 digit ANZSIC code[3]. This is based upon the entity's activities which yield the highest amount of revenue.

The paper proceeds as follows. Section 2 provides a brief overview of the Australian evidence relating to the determinants of profitability. Barriers to entry appear to be neglected in much of the previous studies of profitability in Australia. Section 3 describes the ATO tax return data. Section 4 provides the results of multivariate analysis carried out at a 3 digit level of industry classification and section 5 concludes.

2. Empirical literature review

The SCP paradigm argues that performance is determined by the conduct of firms, which in turn is determined by the structural characteristics of the market. These structural characteristics relate to concentration and barriers to entry. The theoretical foundation for the SCP paradigm has been discussed in Feeny & Rogers (1999). Put simply, the theory dictates

[2] Many firm-level empirical studies have focused on so-called 'line of business' financial information such as the Profit Impact of Market Strategy (PIMS) dataset in the US. The PIMS unit of analysis is the Strategic Business Unit. Each business unit is a division, product line, or other profit centre within its parent company which sells a distinct set of services to an identifiable group of customers, in competition with a well-defined set of competitors, and from which revenues, operating costs, investments, and strategic plans can be identified (ref http://www.thespinet.org/pims). In contrast, the IBIS enterprise database consists of group level consolidated accounts. Given this, "weighted" industry variables must be calculated based on the firm's segment information. This procedure is complicated by the fact that some segments are assigned more than one ANZSIC code. The PIMS dataset is not without its own drawbacks. Apart from the cost of developing and maintaining such a database, it is virtually impossible for multi-product firms with many inter-linking line of businesses to account exactly for the amount of revenue or profit from a particular Strategic Business Unit. For example, there is a question over how a parent company allocates its advertising costs between lots of segments. See Kimball (1998) for a more detailed discussion of such issues relating to the banking sector.

[3] Before 1995-96, industry classification was based upon an internal ATO categorisation.

that higher levels of concentration and higher barriers to entry are expected to be associated with higher profitability. However, it is useful to review the previous empirical literature relating to concentration and market share in Australia together with a discussion of the role of barriers to entry. The discussion of the previous literature provides an explanation of the explanatory variables that are included in the analysis of this paper.

2.1. Concentration

During the 1960s and 1970s, many profitability studies where carried out at the industry level. Results differed but overall there was a general conclusion that a positive relationship between concentration and profitability existed (see Weiss, 1974). However, evidence from Australian studies indicates the relationship is much weaker than that found in the bulk of the literature. There are few Australian studies testing the profit concentration relationship in comparison to other countries and focus on the manufacturing sector due to the availability of data. Round (1976, 1980a, 1980b) found that the profitability-concentration relationship in Australian manufacturing is dependent upon the profitability ratio used and the industry level of aggregation. He thus remained uncommitted as to whether a unique, one-directional relationship existed between concentration and profitability in Australian manufacturing. Dixon (1987) also failed to find evidence for a positive concentration-profitability relationship in Australian manufacturing industries.

The failure to find a strong concentration-profitability relationship in Australia is not restricted only to the Australian manufacturing sector. Tucker (1977) found that for Australian retailing, the relationship between concentration and the price-cost margin was negative and insignificant. However, a more recent study of Australian firms has found some evidence of a positive association between concentration and profitability. McDonald (1999) used IBIS data for Australian manufacturing firms 1984-93 and constructed panel data to estimate dynamic profitability model over the business cycle. He found that lagged profitability is a significant determinant of current profit margins and that industry concentration is positively related to firm profit margins.

A previous working paper in this series found evidence to suggest a positive relationship between concentration and profitability using a sample of 722 large manufacturing and non-manufacturing Australian firms from the IBIS enterprise database. (Feeny and Rogers, 1999).

This paper uses the 4 firm concentration ratio as a measure of concentration calculated at the ANZSIC 4 digit level. The ratio is based on the sum of the market shares of the four largest firms in the industry and is the most commonly used measure of concentration in previous studies. In previous analysis it has been found to be highly correlated with the Herfindahl measure of concentration.

2.2. Market share

Feeny and Rogers (1999) outline the theory and review the empirical evidence on the rather complicated relationship between market share and profitability. In short, while the most basic theory suggests high market share raises profitability, various other considerations suggest the relationship may not be as straightforward. They also find a U-shaped relationship between market share and profitability, with higher levels of profitability associated with market shares exceeding 30%.

Studies carried out since the 1970s have generally found that market share is positively and significantly associated with rates of return and this effect dominates any concentration profitability relationship. However, McDonald (1999) fails to find any significant relationship between profitability and the market share of Australian manufacturing firms but does find a positive concentration-profitability relationship, as mentioned above.

2.3. Barriers to Entry

Definitions of barriers to entry may differ slightly but all relate to industry characteristics which place new entrants at a disadvantage relative to the established entrants in a market. Demsetz (1982) provides a comparison of definitions.

The simple Cournot models ignore the role of barriers to entry in an industry and in this sense barriers to entry are a modification of the traditional SCP paradigm. Hay and Morris (1990, p.224) state “even if concentration is a necessary condition for higher profitability, it is probably not sufficient. If there are few or no barriers to entry, then we would expect supernormal profits to be competed away by new entrants”. The influence of barriers to entry are difficult to empirically capture both because there are a wide variety of possible barriers and also since, ultimately, the barrier is unobserved (i.e. the size of the barrier is related to the expectation a potential entrant has about the post-entry equilibrium in the market, see Geroski, 1991, Chapter 5, for a discussion of this issue).

The pioneer of research in this area was performed by Bain (1956). He examined three types of barrier to a market. The first is absolute cost advantages of the existing seller. These advantages can be from patented techniques or a privileged access to resources. The second barrier to entry is the existence of product differentiation and established preferences of consumers for some existing products. The third barrier is the existence of scale economies, both in relation to industry size and in absolute terms (see Hay and Morris, 1991, for a discussion).

The minimum efficient scale is widely used as a measure of scale economies in a market. The minimum efficient scale is the size of firm at which long run average costs are at a minimum. If an industry has a very large minimum efficient scale, this may discourage potential firms from entering that market. This paper uses the minimum efficient scale as a proxy for a barrier to entry, defined as the average size of assets for those entities which account for 50% of market revenue.

Comanor and Wilson (1967) hypothesised that industries with high advertising expenditures will have high product differentiation barriers to entry for several reasons. Firstly, new entrants will have to incur disproportionately high advertising outlays to win over existing consumer preferences with established entrants. Secondly, economies of scale in advertising favours firms with large market shares, and thirdly, that the absolute capital requirements for successful entrants is significantly higher in industries where they have to advertise intensely as well as meet the costs of setting up production. The Comanor-Wilson hypothesis has been tested extensively with fairly robust results indicating a positive relationship between profitability and the industry advertising to sales ratio (Scherer and Ross, 1990).

Product differentiation as a barrier to entry is proxied by the ratio of trademarks to revenue at the 4 digit industry level. Trademark data were obtained from IP Australia which were then matched to the IBIS database (Rogers, 1999). This ratio is an attempt to proxy the level of current advertising in an industry, since data on advertising expenditure in Australia is not available from the ABS or other sources.

The third variable used in this paper as a proxy for barriers to entry is an industry capital intensity variable. A high capital intensity may reflect the existence of large sunk costs that act as a barrier to entry into the industry and so give rise to monopoly profits. (McDonald, 1999). An interaction term of concentration and industry capital intensity is also included in

the analysis to test whether both factors are necessary for high levels of profitability to be achieved.

Trade barriers are also viewed as a barrier to entry. McDonald (1999) includes import intensity (at the 2 digit industry level) as an explanatory variable, which is defined as the ratio of industry imports to the sum of industry imports and home sales. In his study of Australian manufacturing firms, he finds evidence that higher import intensities, and therefore lower barriers to entry, have a negative relationship with firm profitability. Data on trade barriers are not readily available at a 3 and 4 digit level of ANZISC aggregation so they are not included in the analysis of this particular paper.

3. Data

The large size of the ATO tax return database allows analysis to be carried out at an ANZSIC 3 digit level. In previous analyses, due to much smaller sample samples, industries are commonly pooled with the inclusion industry dummies. These industry dummies allows the intercept to vary across industries (i.e. profitability is allowed to differ between industries). However, the coefficients of the explanatory variables are constrained to be the same across all industries. Analysis at the ANZSIC 3 digit level allows these coefficients to differ and it is thus possible to identify differences in the determinants of profitability between industries. For example, in which industries does concentration appear to be positively associated with profitability and in which industries is this not the case? This type of analysis, with such a large sample size is rare, especially in Australia[4]. Measuring the profitability of tax entities is also unique.

The ATO database contains tax return information on an annual basis. Each year approximately 500,000 tax entities return data on their income, expenses, and other financial activities. These data are confidential and remote access was authorised only to Melbourne Institute researchers under the specific research project agreement. This paper uses a cross-section of tax entities, averaged over the 3 year period 1994/95 to 1996/97. Averaging is performed to focus on long term relationships rather than short term variation. Tax entities must have reported to the ATO in all three years to be included in the subsequent analysis. This removes short lived entities such as business failures and those entities set up for

[4] A recent study on a similar sized sample is by Oulton (1998), who utilises a UK dataset of 140,000 companies to examine labour productivity.

specific, short term tax planning purposes. Similarly, start-up firms (and their associated tax returns) will be excluded. In either case we might not expect the SCP paradigm to be appropriate in assessing their profitability and the inclusion of such entities would bias results.

Of the 518,469 tax entities in the database at some time in the period, 319,288 tax entities are in the database for all three years. However, 10,971 have an undefined ANZSIC code and are excluded. Table 1 provides a decomposition of the characteristics of the remaining entities by industry[5].

Table 1. Characteristics of entities in the tax return database

Industry	Tax entities	Negative Profit Margin	Zero Profit Margin	Positive Profit Margin	Profit Margin >50%	Revenue <$250k
Agriculture, Forestry and Fishing	9,623	38%	1.2%	61%	6%	58%
Mining	1,583	40%	0.4%	59%	5%	46%
Manufacturing	25,911	30%	0.3%	69%	2%	34%
Electricity, Gas and Water Supply	364	34%	1.6%	65%	3%	48%
Construction and Wholesale Trade	49,111	32%	0.6%	67%	1%	44%
Retail Trade, Accommodation, Cafes and Restaurants	37,620	34%	0.2%	66%	2%	29%
Transport and Storage	11,868	34%	0.5%	65%	2%	55%
Communication, Finance, Insurance, Property and Business Services	141,304	25%	1.4%	74%	29%	78%
Government Admin and Defence, Education, and Health and Community Services	15,536	33%	8.3%	58%	1%	52%
Cultural and Recreational Services and Personal and Other Services	15,397	35%	2.0%	63%	5%	65%
Total	308,317	29%	1.4%	69%	15%	60%

Table 1 shows that 29% (90,481 entities) have a profit margin less than zero. Theories of industrial organisation seek to explain positive profits. Loss making firms and entities have little theoretical basis unless they are transitional, with the loss being attributed to a start-up firm/entity or a firm/entity that is closing down. Previous empirical studies on profitability generally neglect the inclusion or discussion of loss making firms and loss making entities are excluded from the analysis of this paper. The small number of entities which have a zero

[5] Entities that are holding companies may classify themselves as financial companies. This may explain the large number of firms in this sector.

profit margin, where total income is equal to total expenses are also excluded as it is likely that these entities are used for tax planning purposes and could bias results.

Tax entities must also have reported the financial information necessary to calculate all of the explanatory variables to be included in the analysis. Observations are excluded if there are not at least 30 observations for a 3 digit ANZSIC industry and thus regressions are not run for these industries.

Table 1 also shows that 60% (183,452 entities) have a total income of less than $250,000, with many of these in the finance sector. Further, there are 44,889 entities which have an average profit margin of greater than 50% over the three years. Entities with such a high average profit margin are relatively common in the Communication, Finance, Insurance and Property and Business sector, but uncommon elsewhere. Additional regressions were run after excluding entities with a total income of less than $250,000 and those with a profit margin of greater than 50%. The exclusion of such entities does not significantly affect the aggregate results found in this paper and conclusions remain the same.

Table 2 provides summary statistics for the 180,738 entities left in the dataset after exclusions, by industry sector. This table can be compared to Table 4 in the appendix which provides the statistics for the untrimmed sample. Median profit margins vary from 2.9% in the “Retail trade, Accommodation, Cafes and Restaurants” sector to 27% in the “Communication, Finance, Insurance, Property and Business Services” sector. The coverage of the 180,738 entities included in the regression sample is large, accounting for approximately 83% of the revenue of the 308,317 entities in the database for all three years. Summary statistics by 3 digit industry can be found in Table 7 of the appendix.

Table 2: Summary statistics of the regression sample by sector

Industry	Tax entities	Mean Profit Margin	Median Profit Margin	Standard Deviation
Agriculture, Forestry and Fishing	5,278	18.9%	9.7%	23.8%
Mining	875	17.5%	10.1%	20.1%
Manufacturing	16,231	9.1%	4.9%	13.6%
Electricity, Gas and Water Supply	204	10.7%	4.9%	17.4%
Construction and Wholesale Trade	29,526	9.9%	4.1%	314.7%
Retail Trade, Accommodation, Cafes and Restaurants	21,294	7.1%	2.9%	13.6%
Transport and Storage	6,892	9.5%	5.0%	13.4%
Communication, Finance, Insurance, Property and Business Services	85,008	40.8%	27.0%	36.6%
Government Admin and Defence, Education, and Health and Community Services	7,233	9.3%	4.6%	13.9%
Cultural and Recreational Services and Personal and Other Services	8,197	14.6%	6.9%	19.9%
Total	180,738			

Note: Entities must have a profit margin greater than zero and less than or equal to 1.

The dependent variable for the analysis is the ratio of operating profit/loss (defined as total income – total expenses) to total income. This simple profit ratio is used to include as many entities as possible in the analysis and it is also believed to contain less 'noise' than other profit ratios such as the return on assets or return on shareholders' funds.

Table 3 contains summary statistics for the 180,738 entities which are in the regression sample (full definitions of the variables are in Table 5 of the appendix). These statistics are based on average values for an entity over the three year period. Averaging, to some extent removes year-on-year volatility and moves towards a measure of long run performance.

Table 3 shows that the mean profit margin is 24.5% with a standard deviation of 131%. Note the high standard deviations for the gearing, capital intensity and trademark intensity variables, reflecting a large amount of variation in their values. A correlation matrix of the regression variables can be found in Table 6 of the appendix.

Table 3: Summary Statistics for Variables

Variable (Average 1994-95 – 1996-97)	Mean	Median	Sd
Firm Level			
Profit margin (%)	24.5%	8.7%	130.9%
Firm size (log of assets)	12.30	12.25	1.81
Gearing (%)	252960%	177%	37724050%
Capital intensity (%)	19280%	66%	4261326%
Market share (%)	0.1%	0.01%	1.1%
Industry level			
Concentration ratio (%)	21.5%	16.8%	14.3%
Minimum Efficient Scale (logged)	17.9	17.8	2.5
Trademark intensity (per $bn)(%)	639.7%	151.1%	3078.6%
Capital intensity (%)	257.0%	79.7%	309.3%

Note: see Appendix for full definitions of variables

It is important to remember that accounting data are used in this paper to construct economic variables and the two are not consistent (see Feeny and Rogers, 1998 for a discussion of the differences). However, this must always be the case with an empirical study of economics and the differences do not imply that the investigation is not worthwhile. Researchers must make the most of the data available.

4. Multivariate analysis

In this section some initial analysis is provided using multivariate regressions carried out for three digit ANZSIC industries which have more than 30 observations. The analysis at this stage is restricted to simple regression techniques and uses only a core set of explanatory variables to investigate if the profitability of tax entities is associated with the traditional variables of the SCP paradigm. Regressions are run for each of 142 three digit ANZSIC industries. Such a large number of results cannot be presented effectively in a table or matrix. Instead, results for each of the coefficients are presented in a graph. On the x axis is the ANZSIC industry (at a 3 digit level of aggregation). On the y axis is the value of the coefficient for each industry. However, only significant coefficients are provided. A horizontal line for a coefficient value of zero is also provided in each graph so the reader can easily identify if the coefficient is positively or negatively associated with entity profitability for a particular industry. If a graph contains only a few 3 digit ANZSIC industries this implies that in most of the 142 regressions, the coefficient in question was not significant. A histogram representing the distribution of significant coefficients for each explanatory variable would look unusual. This is because significant coefficients can be either positive or

negative and the histogram would have two peaks. Further, a histogram would not be able to indicate the number of 3 digit industries for which the coefficient is significant.

The results for each variable are discussed in turn. Significant implies a t-statistic of greater than 2 or less than –2. The t-statistics are based on White's robust standard errors. Regressions were run for 142 of the 158 three digit ANZSIC industries. A full description of the ANZSIC industry code is provided in Table 7 of the appendix, together with selected summary statistics.

The regressions contain four entity level variables: market share, capital intensity, gearing and the log of total assets as a proxy for firm size. In general, these variables are more significant than the industry level variables and have much greater explanatory power. The average additional explanatory power obtained by including the industry variables in addition to the firm level variables is 9%. This varies from 0.06% for "Building construction (411)" to 55% for "Petroleum and coal product manufacturing n.e.c. (252)" but overall, it does raise a question about the value of the traditional variables of the SCP paradigm.

The regression equation estimated for the remaining 142 three digit industries is as follows:

$$\pi = b_1 + b_2(S) + b_3(G) + b_4(K) + b_5(M) + b_6(M)^2 + b_7(C) + b_8(ME) + b_9(IK) + b_{10}(T) + b_{11}(C * K)$$

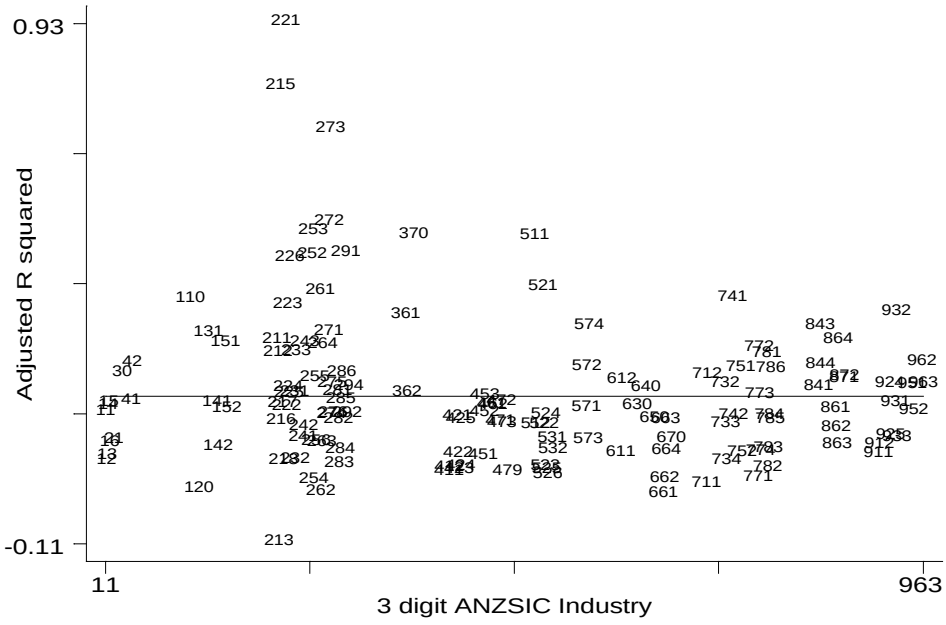
where S is entity size, G is entity gearing, K is entity capital intensity, M is entity market share, C is the 4 firm concentration ratio, ME is the minimum efficient scale, IK is the industry capital intensity, and T is the industry trademark intensity. The coefficients for concentration and industry capital intensity needed to be manipulated to provide the marginal effects, due to the inclusion of the interaction term. This is a parsimonious set of explanatory variables, justified by the nature of the traditional SCP paradigm and the discussion provided above. The fact that regressions are carried out for 3 digit industries allows for the omission of variables such as business cycle variable as it can be assumed that firms within each industry face very similar business conditions.

4.1. Explanatory power

Figure 1 below plots the adjusted R^2 for each industry regression. The adjusted R^2 varies between 93% for "Textile fibre, yarn, and woven fabric manufacturing (221)" and -11% for

"Fruit and vegetable processing (213)". The mean value for the adjusted R^2 is 18%, shown by the horizontal line in the figure below. There appears to be a great deal of variation of the explanatory power of the regression for manufacturing industries. The five highest values for the adjusted R^2 are for manufacturing industries, as are the two lowest values. However, each industry sector appears to have large differences in the variation of the dependent variable which is explained by the model. As stated above, a large proportion of the explanatory power from the regressions comes from entity level variables. This raises concern over the suitability of the data for constructing the industry level variables. The accuracy of the industry variables are reliant upon entities assigning themselves the correct ANZSIC code and that the entities do not operate in many different ANZSIC codes.

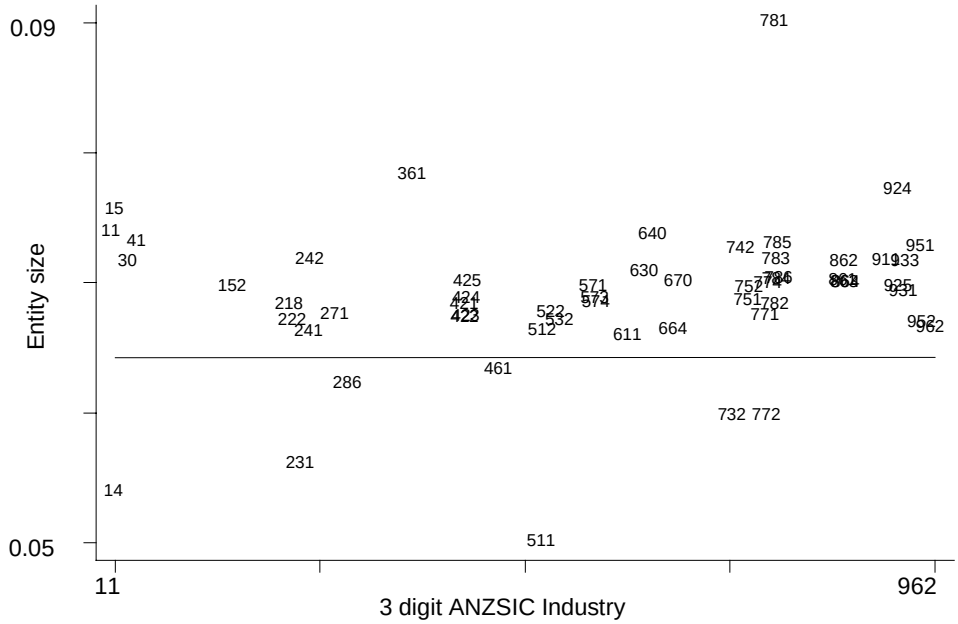
Figure 1 Explanatory power of regressions



4.2. Entity size

The coefficient on entity size is significant for 40 per cent of industries. The horizontal line marked in the Figure 2 below represents a coefficient of zero. Seven of the significant coefficients are negative.

Figure 2 Entity size coefficients

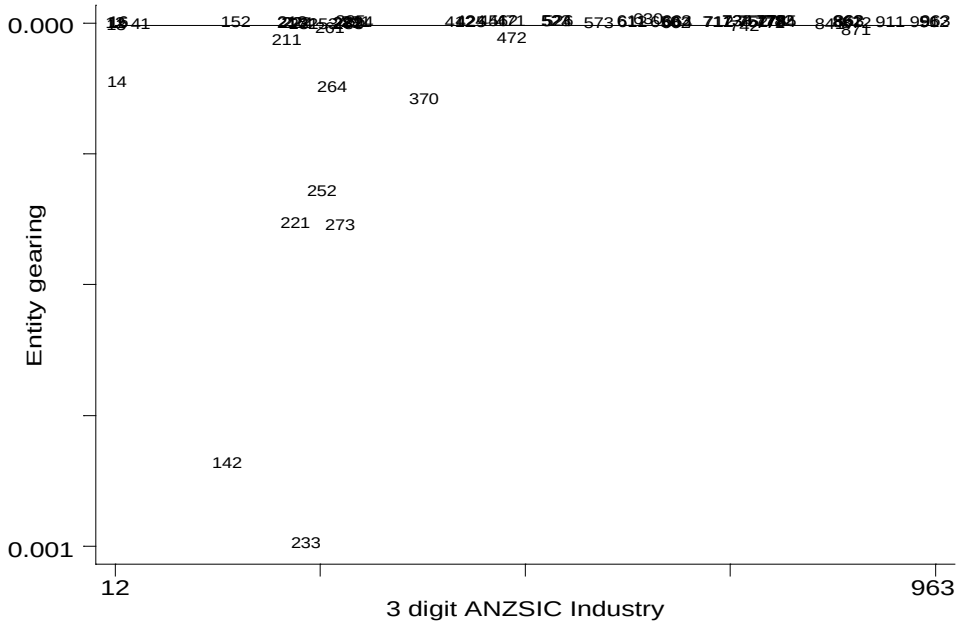


The evidence that entity size is strongly associated with profitability is an important one and is not commonly found in other studies. Shepherd (1972) finds a consistently negative, though small, coefficient on size for US firms. Dunlop (1992) found that in nearly half of the Australian industries he studied, small firms had higher price cost margins than large firms.

4.3. Entity gearing

The coefficients for entity gearing are significant for 49 per cent of industries included in the sample. The results are provided in Figure 3. All but three significant coefficients are negative. Industries with a positive and significant coefficient for entity gearing are "Household equipment repair services (526)", "Water transport (630)", and "Property operators and developers (771)". This may appear conclusive evidence that entity gearing has a negative association with entity profitability. However, the more likely reason for these results relates back to the calculation of the dependent variable. Profit is defined as total income minus total expenses. Interest payments are classed as an expense and therefore, highly geared entities with higher interest payments will have lower profits. The largest gearing effect is for entities involved in "Other mining (142)" and "Paper and paper product manufacturing (233)". Despite high statistical significance, it is worth noting that the coefficient of firm gearing is very low with an average value of -0.00004.

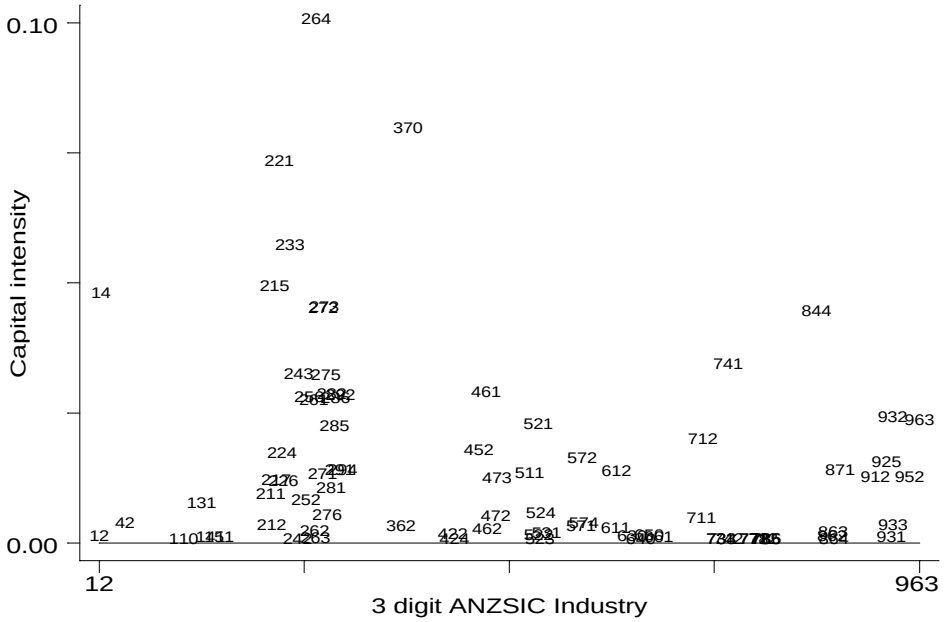
Figure 3 Gearing coefficients



4.4. Entity capital intensity

The coefficients for entity capital intensity are significant for 58 per cent of industries included in the sample. Figure 4 below shows that all significant coefficients are positive with the exception of four. Entity capital intensity is negatively associated with profits for entities in "Building completion services (424)", "Other insurance (742)", "Property operators and developers (771)" and "Real estate agents (772)". The positive and significant coefficients are particularly high for entities in "Non-metallic mineral product manufacturing n.e.c (264)" and "Water supply, sewage & drainage services (370)". When using the price cost margin as the dependent variable, it can be shown that including capital intensity as an explanator captures the cost of capital (see Cubbin 1988 for an explanation). However, with the profit margin used in this paper, it is not clear what the expected sign on the coefficient should be.

Figure 4 Capital intensity coefficients



The likely explanation for the fact that the coefficient on capital intensity is positive and significant for so many industries is that high levels of entity capital requirements act as a barrier to entry. Evidence of industry capital intensity acting as a barrier to entry is presented later in the paper. Entity capital intensity also has high economic significance. The average value of the coefficient on entity capital intensity is 0.02 for industries with a positive capital intensity-profitability relationship.

4.5. Market share

The results for market share are somewhat surprising. Regressions were run without a square of market share term and there was strong evidence to suggest a negative association between market share and profitability. Of the 54 industries with a significant coefficient, only 4 industries showed a positive market share-profitability relationship. This provided the motivation for including a square of market share term to investigate whether a U shaped relationship exists.

When both terms are included, there are 69 industries or 49% of industries in the sample in which the market share coefficient for entities is significant. All significant coefficients are negative except one. The square of the market share variable is significant for entities in 65 (46%) of the industries in the sample and all of the coefficients are positive except one. This provides strong evidence for a U shaped relationship between entity market share and profitability. An explanation for this finding is that entities with smaller market shares may

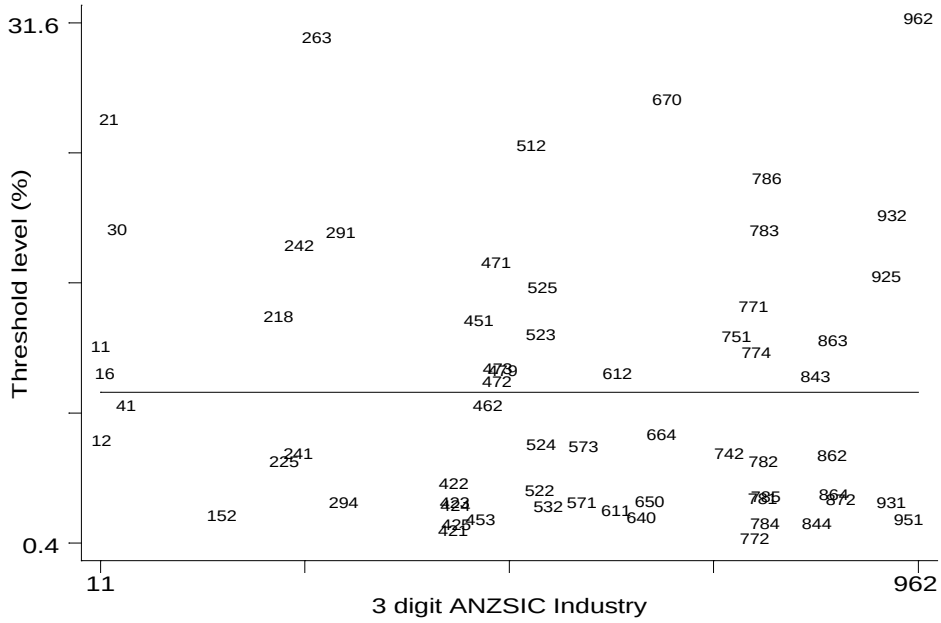
have attributes such as flexibility, niche marketing and management advantages which increase profitability.

Figure 5 below shows the threshold levels for the 62 industries which have a negative and significant coefficient on market share and a positive and significant coefficient on the square of market share. The large number of industries displayed in the graph provides strong evidence that a U-shaped relationship between market share and profitability exists. A threshold level indicates the market share level where profitability starts to increase with market share. Below this threshold level there is a negative association between market share and profitability. The figure indicates that there are large differences between the market share threshold levels of 3 digit industries.

The mean threshold level is 9.4 per cent and is represented by the horizontal line. Industries with the highest threshold levels are “Cement, lime, plaster and concrete product manufacturing (263)” and “Interest groups (962)” with levels close to 32%. More than half of the industries have threshold levels below 7%. This indicates that a negative market share-profitability relationship only exists for entities with very small market shares and somewhat reduces the importance of the finding of a U shaped relationship.

Examination of the data indicates that high and low market share threshold levels are not common to particular industry sectors. Current merger policy in Australia is to investigate a merger if it results in a market share exceeding 40% and the 4 firm concentration ratio of the market is less than 75%, or if the market share exceeds 15% in a market with a 4 firm concentration ratio exceeding 75%. The results found here indicate that these threshold levels may be too high.

Figure 5 Market share threshold levels



The evidence supporting a U-shaped relationship between market share and entity profitability contradicts much of the previous literature. Shepherd (1972) was one of the first to use firm level data. Using a sample of 231 US firms he finds a substantially larger and more significant coefficient on market share than on concentration. In contrast, Shepherd finds that the positive impact of market share on rates of return declines as market share rises. When market share and the square of market share are both included as explanatory variables for the rate of return, the market share coefficient is consistently positive and significant, while the coefficient of the square of market share is negative and usually significant. This implies an inverted U relationship between market and profitability.

Schmalensee (1985) uses a sample of 1,775 observations on the operations of 456 firms in 261 industries defined roughly at the 3 or 4 digit SIC level of aggregation for 1975. He finds that market share effects exist but explain a negligible portion of the variance in 'line of business' rates of return. This is also true to some extent in this analysis, with the inclusion of market share in the regression, on average, increasing the explanatory power by 2%.

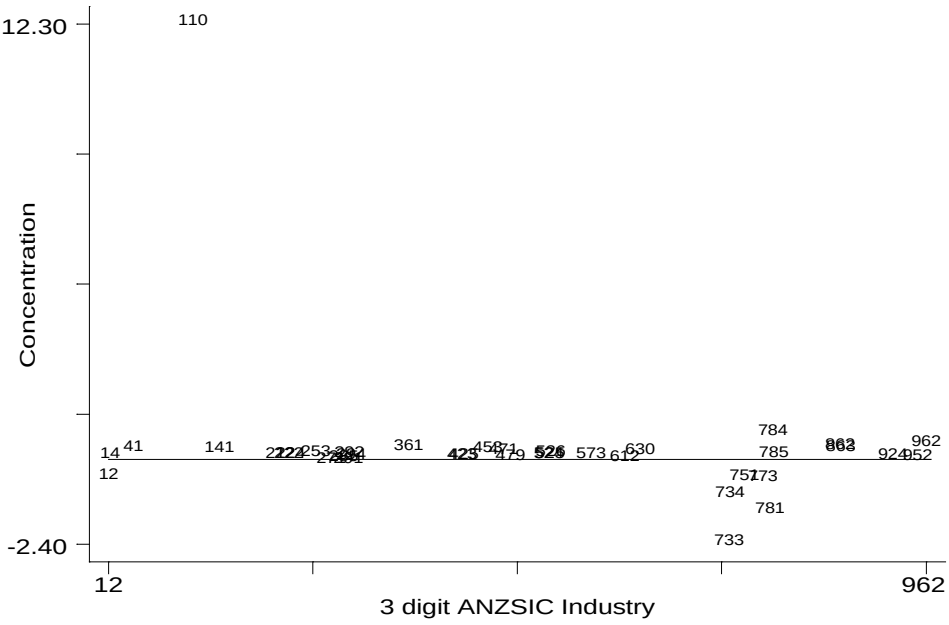
The results for the U-shaped relationship between market share and profitability are consistent with that found by Feeny and Rogers (1999), although in general, this study finds lower threshold levels than the 30% found in the study using the IBIS Enterprise Database. McDonald (1999), also using IBIS data, concludes that firm market share is generally not

found to be a significant determinant of Australian manufacturing profit margins, although this result is sensitive to the econometric model used.

4.6. Concentration

There is evidence of a positive and significant association between concentration and entity profitability in 38 (27%) of three digit industries in the sample. Results are provided in Figure 6. There is a negative and significant association between concentration and entity profitability in 11 (8%) of the industries. Interestingly, 5 of these 11 industries with the largest negative coefficients are in the finance sector.

Figure 6 Concentration coefficients



Ravenscraft (1982) uses US line of business and industry data to identify structure-profit relationships. He finds that a positive relationship between profitability and concentration does not appear in the line of business regression with market share included. This is consistent with the previous cross-sectional work of Shepherd (1972), Gale and Branch (1982) and Weiss and Pascoe (1981). However, when market share is excluded from the regressions for this analysis, the results for concentration are almost identical.

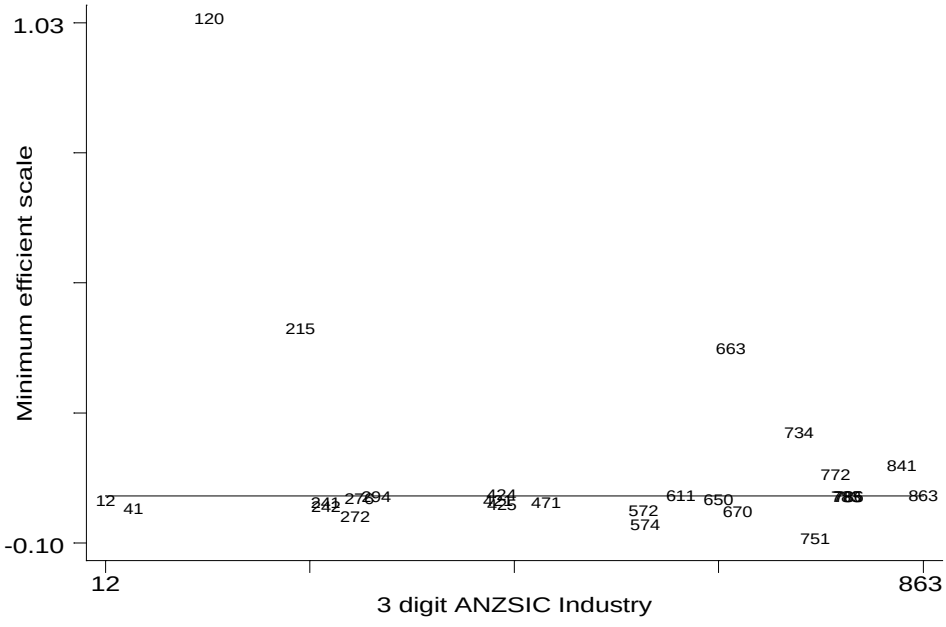
Ravenscraft (1982) also finds a positive though insignificant relationship between industry profitability and concentration. Industry profitability is out of the scope of this particular paper but could be an area of future research.

Collusion between firms is more likely to occur when seller concentration is high. This implies that the concentration–profit link is discontinuous, with the expected relationship occurring above a threshold level. Studies of US data have found a critical level of four firm concentration to be between 46 and 60 and that there is little evidence that increases in seller concentration to levels below 50 have any effect on profitability (Scherer and Ross, 1990). Regressions were run with the square of concentration included as an explanatory variable. Coefficients were positive on concentration and the square of concentration for 13 three digit industries and threshold levels were found to range from 16% for "Pubs, taverns and bars (572)" to 46% for "Other health services (863)".

4.7. Minimum efficient scale

The results for the effect of the minimum efficient scale on entity profitability are shown in Figure 5 and appear to conflict with economic theory. There are 27 industries (19%) in which the variable has a significant coefficient. Out of the 27 industries, there is a negative relationship between the minimum efficient scale and entity profitability for 21 and a positive effect for just 6. It is important to note that generally, the level of economic significance for the minimum efficient scale is low because due to low coefficients. There is a large positive coefficient for "Oil and gas extraction (120)", "Flour mill and cereal food manufacturing (215)" and "Services to air transport (663)"

Figure 7 Minimum efficient scale coefficients



The results suggest that a closer examination should be undertaken of the minimum efficient scale as a barrier to entry. The variable has little significance when applied to Australian tax entity data.

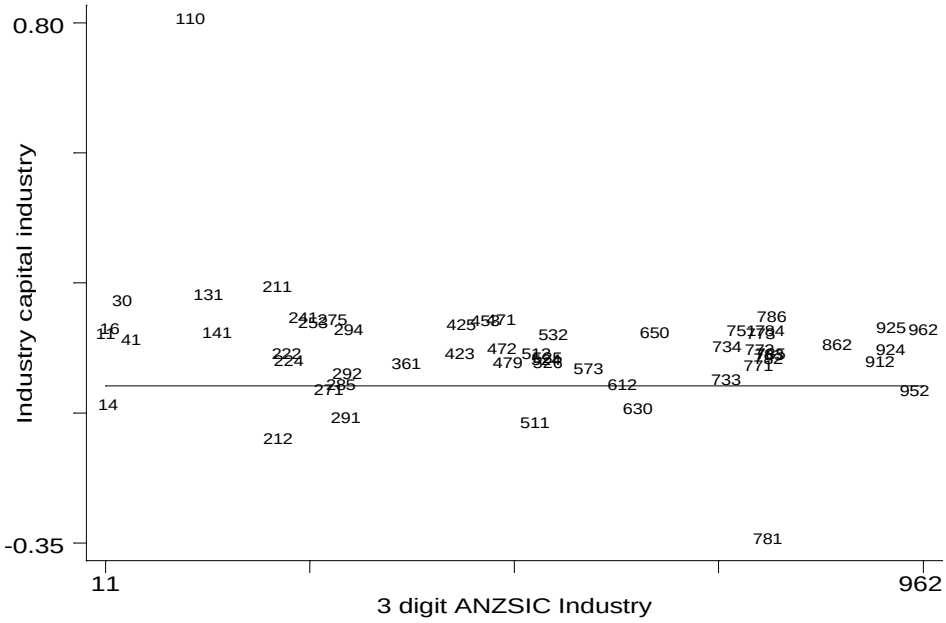
A very small minimum efficient scale may have little effect on entities. Since it may be harder to enter an industry requiring a massive capital investment, the capital/sales ratio multiplied by the sales volume associated with MES production has been used as a proxy for what Bain (1956) terms as absolute capital requirement barriers to entry. Caves, Khalilzadeh-Shirazu, and Porter (1974) argue that even large minimum efficient scales are unlikely to deter entry unless unit cost curves impose a significant penalty for sub-MES entry. They calculate a cost disadvantage ratio that can be interacted with the MES to identify industries where scale related entry barriers are high.

Another method to measure barriers to entry is to carefully study a complete list of industry characteristics such as technology, raw material availability, spatial configuration, buying practices and legal environments and then make subjective statements as to whether barriers to entry are very high, substantial, or moderate to low. (Bain, 1956). These are areas which could be explored further using the ATO tax return database.

4.8. Industry capital intensity

The coefficient on industry capital intensity is positive and significant for entities operating in 50 (35%) of the industries in the sample. There is a negative association between entity profitability and industry capital intensity for ten industries. For nearly all of these 10 industries the size of the negative coefficient is small. Results are provided in Figure 8 below.

Figure 8 Industry capital intensity coefficients

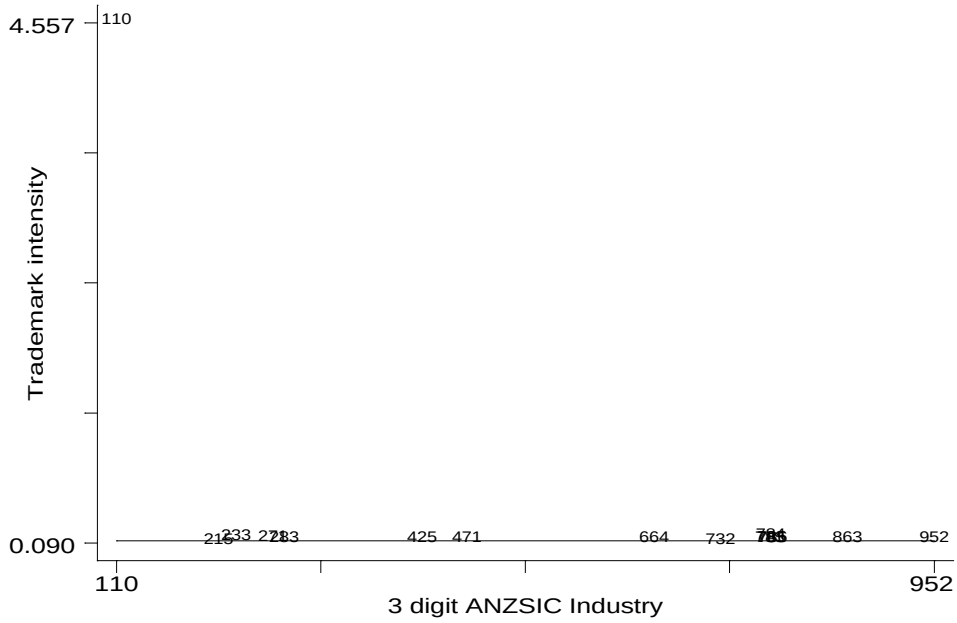


The evidence presented here indicates that industry capital intensity is the best proxy for barriers to entry in the sense that we generally observe the predicted positive association between this variable and entity profitability. The evidence of capital intensity being positively associated with profitability is strengthened by the results already discussed at the entity level. The average value of the coefficient on industry capital intensity for industries with a positive capital intensity-profitability relationship is 0.1. In economic terms, this association between capital intensity and profitability is relatively high.

4.9. Industry trademark intensity

Only 83 out of the 142 industries included in the analysis have a nonzero trademark intensity. There are 15 industries (18% of the 80 industries) where the coefficient of trademark intensity is significant for entities. For 7 of these industries, the coefficient is positive and significant; “Coal mining (110)”, “Paper and paper product manufacturing (233)”, “Iron and steel manufacturing (271)”, “Other construction services (425)”, “Food, drink and tabbacco wholesaling (471), “Computer services (783)” and “Legal and accounting services (784)”. However, with the exception of “Coal mining (110)” – which rather distorts Figure 9 below - the coefficients are particularly small, with values ranging from 0.002 to 0.13. The coefficient on trademark intensity is negative and significant for entities operating in 8 industries. Again, the size of the coefficients is very small with values ranging from –0.001 to – 0.09.

Figure 9 Industry trademark intensity coefficients

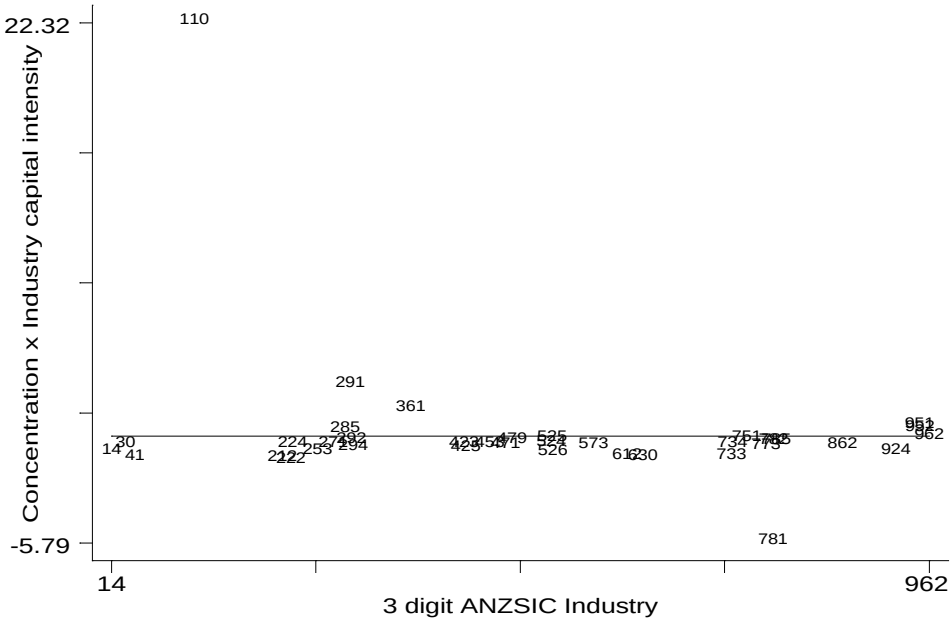


The small amount of evidence to support product differentiation or advertising as being a barrier to entry could well be due to the fact that trademark intensity is a poor proxy for advertising. Previous studies have consistently found a positive association between firm profitability and advertising to sales ratios and due to the nature of the trademark data, it is not that surprising that a positive association with entity profitability was not found. The IP data was matched with IBIS data on the basis of company name and then trademark applications were summed by 4 digit ANZSIC industry. However, some firms on IBIS are only assigned a 2 or 3 digit ANZSIC code and will therefore be excluded from the 4 digit summation. Consequently, the trademark application data is not an exhaustive account of the industries trademark activities.

4.10. Interaction of concentration and industry capital intensity

The interaction term is included to identify whether concentration and barriers to entry proxied by industry capital intensity are required together to have a strong influence on entity profitability. Results provided in Figure 10 do not suggest that this is the case. There are just 6 industries in which the coefficient of the interaction term is positive and significant. In 31 industries the association with entity profitability is a significant negative one. Concentration was also interacted with the other barrier to entry proxies but results were less significant.

Figure 10 Interaction of concentration and industry capital intensity coefficients



A previous study by Amato and Wilder also fails to find strong support for concentration and barriers to entry having a strong influence on profitability. They find a negative and significant association between the interaction of concentration and capital intensity with the price cost margins using US plant level data but a positive and significant association with return on assets

5. Conclusions

This paper has investigated the determinants of profitability in Australian tax entities. It is found that variables used to proxy industry characteristics such as concentration and barriers to entry explain very little of the variation in entity profitability – on average just 6%.

The expected negative relationship between entity profitability and gearing was found due to the calculation of the profit margin. This is strong evidence of a positive association between entity capital intensity and profitability and that entity size has a positive association with entity profitability. The coefficient on entity size is positive and significant in 35% of 3 digit industries included in the sample and negative and significant for just 5%.

There is strong evidence of a U-shaped relationship between market share and entity profitability, with threshold levels ranging from less than 1% to 32%. This result is not commonly found in previous literature and is an important area for future research.

There is little evidence of the expected positive relationship between entity profitability and industry concentration. In only 27% of 3 digit ANZSIC industries does concentration have a significant positive effect on the profitability of tax entities and in 8% of industries it actually has a negative effect. The effect of concentration on entity profitability needs to be explored further, using different measures of concentration. It may also be of some interest to investigate whether industry concentration has a positive association with industry profitability rather than at the entity level.

This paper uses three proxies for barriers to entry; the minimum efficient scale, industry capital intensity and industry trademark intensity. Industry capital intensity is the proxy which provides most evidence for the expected positive relationship between barriers to entry and entity profitability. In 35% of industries there is a positive and significant association between entity profitability and industry capital intensity, although in 7% of industries the relationship is a negative and significant one. For the other two proxies for barriers to entry the results suggest a stronger negative effect of barriers to entry on entity profitability than a positive one. An interaction term was included in the regressions to identify whether both concentration and barriers to entry are required to have a positive and significant effect on entity profitability. There is more evidence to support a negative association between entity profitability and this interaction term than there is a positive one.

The results must be evaluated with the knowledge that some tax entities may be used for tax planning purposes rather than for reporting the financial activities of a particular line of business. The use of tax entities for accounting purposes will effect the results of an investigation of the determinants of entity profitability using economic variables.

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6. Appendix

Table 4. Summary statistics of untrimmed data by sector

Industry	Tax entities	Mean Profit Margin	Median Profit Margin	Standard Deviation
Agriculture, Forestry and Fishing	9,623	-2.57	0.02	84.94
Mining	1,583	-14.62	0.02	164.08
Manufacturing	25,911	-2.79	0.02	121.99
Electricity, Gas and Water Supply	364	-1.16	0.02	13.03
Construction and Wholesale Trade	49,111	-2.88	0.02	158.05
Retail Trade, Accommodation, Cafes and Restaurants	37,620	-1.99	0.01	174.37
Transport and Storage	11,868	-2.76	0.02	179.12
Communication, Finance, Insurance, Property and Business Services	141,304	-5.75	0.12	279.07
Government Admin and Defence, Education, and Health and Community Services	15,536	-1.11	0.00	57.82
Cultural and Recreational Services and Personal and Other Services	15,397	-5.56	0.02	426.70
Total	308,317			

Table 5. Description of variables

Variable (Average 1994-95 – 1996-97)	Description
Firm Level	
Profit margin (%)	(Total income – Total expenses) / Total income
Firm size (log of assets)	Log of Total assets
Gearing (%)	Total liabilities / Shareholders funds
Capital intensity (%)	Total assets / Total income
Market share (%)	Total income / Industry revenue (4 digit ANZSIC)
Industry level	
Concentration ratio (%)	Sum of the market shares of the top four firms in a 4 digit ANZSIC industry
Minimum Efficient Scale (logged)	The mean of Total assets of the firms accounting for 50% of the 4 digit ANZSIC industry
Trademark intensity (%)	Number of trademarks/ Industry revenue ($Bn) (4 digit ANZSIC)
Capital intensity (%)	Industry assets/ Industry income (4 digit ANZSIC)

Table 6: Correlations of variables

	Profit Margin	Firm Size	Capital Intensity	Gearing	Market Share	Square Market Share	Concentration	Trademark Intensity	Minimum Efficient Scale	Industry Capital Intensity
Profit Margin	1									
Firm Size	0.05	1								
Capital Intensity	0.01	0.01	1							
Gearing	0.00	0.02	0.00	1						
Market Share	-0.01	0.22	0.00	0.00	1					
Square Market Share	0.00	0.10	0.00	0.00	0.86	1				
Concentration	-0.06	0.08	0.00	0.00	0.16	0.08	1			
Trademark Intensity	-0.01	-0.01	0.00	0.00	0.01	0.00	0.01	1		
Minimum Efficient Scale	0.12	0.29	0.01	0.01	0.00	0.02	0.29	-0.04	1	
Industry Capital Intensity	0.18	0.25	0.01	0.01	-0.05	-0.01	-0.33	-0.05	0.66	1

Table 7: Summary statistics by 3 digit ANZSIC

3 Digit ANZSIC	Obs	Median Profit Margin (%)	Mean Concentration (%)	Mean capital intensity	Mean trademark intensity
Horticulture and Fruit Growing (011)	905	8.4%	25.7%	1.08	0
Grain, Sheep and Beef Cattle Farming (012)	1,655	13.3%	24.4%	3.01	0
Dairy Cattle Farming (013)	318	7.4%	19.5%	1.80	0
Poultry Farming (014)	128	7.6%	62.5%	1.00	0
Other Livestock Farming (015)	184	7.9%	34.4%	1.98	0
Other Crop Growing (016)	305	14.6%	38.2%	1.70	0
Services to Agriculture (021)	891	5.9%	26.4%	0.82	0.02
Forestry and Logging (030)	291	7.1%	29.6%	1.26	0
Marine Fishing (041)	470	14.3%	39.7%	1.26	11.14
Aquaculture (042)	127	11.1%	51.6%	1.03	0
Coal Mining (110)	33	6.0%	34.6%	2.42	1.06
Oil and Gas Extraction (120)	42	22.2%	46.4%	3.85	0.48
Metal Ore Mining (131)	66	19.9%	47.3%	2.55	0.83
Construction Material Mining (141)	207	6.7%	42.2%	1.09	0
Other Mining (142)	84	15.4%	64.6%	1.76	0
Exploration (151)	117	14.4%	49.5%	3.01	0
Other Mining Services (152)	326	10.1%	25.1%	1.21	0.86
Meat and Meat Product Manufacturing (211)	172	2.3%	48.3%	0.40	3.29
Dairy Product Manufacturing (212)	78	3.6%	57.7%	0.67	16.57
Fruit and Vegetable Processing (213)	38	4.6%	63.1%	0.59	17.32
Flour Mill and Cereal Food Manufacturing (215)	49	6.4%	76.1%	0.88	7.15
Bakery Product Manufacturing (216)	125	3.6%	53.8%	0.58	1.14
Other Food Manufacturing (217)	369	4.1%	49.5%	0.83	9.54
Beverage and Malt Manufacturing (218)	165	10.0%	56.6%	1.49	18.75
Textile Fibre, Yarn and Woven Fabric Manufacturing (221)	76	7.0%	58.5%	0.84	10.95
Textile Product Manufacturing (222)	326	3.9%	34.7%	0.82	6.57
Knitting Mills (223)	34	4.9%	54.0%	0.86	0
Clothing Manufacturing (224)	824	3.7%	16.4%	0.56	2.14
Footwear Manufacturing (225)	66	4.4%	34.6%	0.58	49.97
Leather and Leather Product Manufacturing (226)	70	3.9%	46.0%	0.82	10.24
Log Sawmilling and Timber Dressing (231)	238	5.8%	42.4%	0.91	8.45
Other Wood Product Manufacturing (232)	379	3.8%	38.0%	0.71	0
Paper and Paper Product Manufacturing (233)	125	4.5%	65.8%	1.03	0.51
Printing and Services to Printing (241)	1,667	4.7%	20.0%	0.69	0.98
Publishing (242)	567	8.3%	39.7%	1.60	6.70
Recorded Media Manufacturing and Publishing (243)	46	10.0%	54.1%	1.01	0
Petroleum and Coal Product Manufacturing n.e.c. (252)	32	6.3%	61.3%	1.69	0
Basic Chemical Manufacturing (253)	187	5.7%	57.3%	0.78	3.75
Other Chemical Product Manufacturing (254)	455	5.7%	49.0%	0.81	15.06
Rubber Product Manufacturing (255)	136	5.4%	37.1%	0.76	0.48
Plastic Product Manufacturing (256)	459	5.5%	32.3%	0.92	3.16
Glass and Glass Product Manufacturing (261)	150	4.5%	60.8%	0.97	9.00
Ceramic Product Manufacturing (262)	86	4.9%	66.3%	1.23	10.98
Cement, Lime, Plaster and Concrete Product Manufacturing (263)	334	5.7%	61.1%	1.36	54.89
Non-Metallic Mineral Product Manufacturing n.e.c. (264)	69	3.3%	70.3%	1.23	0
Iron and Steel Manufacturing (271)	329	5.4%	64.9%	1.90	5.75

3 Digit ANZSIC	Obs	Median Profit Margin (%)	Mean Concentration (%)	Mean capital intensity	Mean trademark intensity
Basic Non-Ferrous Metal Manufacturing (272)	51	5.9%	66.5%	1.29	0.86
Non-Ferrous Basic Metal Product Manufacturing (273)	92	3.3%	66.0%	0.88	0
Structural Metal Product Manufacturing (274)	516	4.2%	36.4%	0.78	0
Sheet Metal Product Manufacturing (275)	341	5.5%	23.0%	0.63	0.46
Fabricated Metal Product Manufacturing (276)	1,262	6.0%	36.6%	0.78	1.10
Motor Vehicle and Part Manufacturing (281)	708	4.0%	43.0%	0.52	6.24
Other Transport Equipment Manufacturing (282)	294	4.4%	58.8%	0.87	0
Photographic and Scientific Equipment Manufacturing (283)	459	6.7%	35.3%	0.74	1.15
Electronic Equipment Manufacturing (284)	318	5.7%	48.3%	0.56	4.83
Electrical Equipment and Appliance Manufacturing (285)	617	4.5%	35.8%	0.78	6.87
Industrial Machinery and Equipment Manufacturing (286)	1,208	5.9%	37.0%	0.65	43.08
Prefabricated Building Manufacturing (291)	215	4.4%	32.0%	0.64	0
Furniture Manufacturing (292)	921	3.2%	14.8%	0.50	0
Other Manufacturing (294)	1,556	5.0%	25.8%	0.83	0.44
Electricity Supply (361)	56	7.8%	64.1%	2.47	2.53
Gas Supply (362)	41	4.4%	65.0%	1.50	7.99
Water Supply, Sewerage and Drainage Services (370)	107	4.2%	32.9%	1.31	0.34
Building Construction (411)	4,381	3.8%	14.4%	0.67	1.37
Non-Building Construction (412)	741	5.2%	38.7%	0.64	1.58
Site Preparation Services (421)	1,481	6.3%	12.7%	0.89	0
Building Structure Services (422)	2,222	4.6%	17.6%	0.40	0
Installation Trade Services (423)	5,020	4.6%	16.2%	0.40	0.16
Building Completion Services (424)	3,399	4.3%	12.1%	0.38	0
Other Construction Services (425)	1,237	4.6%	33.2%	0.60	15.25
Farm Produce Wholesaling (451)	810	3.7%	24.2%	0.49	2.75
Mineral, Metal and Chemical Wholesaling (452)	650	3.3%	45.4%	0.49	3.36
Builders supplies Wholesaling (453)	1,116	3.5%	25.7%	0.55	1.88
Machinery and Equipment Wholesaling (461)	2,421	4.3%	27.5%	0.53	5.97
Motor Vehicle Wholesaling (462)	1,073	2.6%	28.6%	0.36	2.28
Food, Drink and Tobacco Wholesaling (471)	1,196	2.3%	36.3%	0.36	6.16
Textile, Clothing and Footwear Wholesaling (472)	697	5.5%	33.6%	0.57	4.49
Household Good Wholesaling (473)	376	3.7%	30.3%	0.51	5.48
Other Wholesaling (479)	2,706	3.8%	35.2%	0.58	11.91
Supermarket and Grocery Stores (511)	419	1.5%	72.3%	0.23	2.05
Specialised Food Retailing (512)	1,971	2.3%	26.3%	0.42	1.74
Department Stores (521)	135	1.8%	81.7%	0.57	10.21
Clothing and Soft Good Retailing (522)	1,175	3.2%	29.7%	0.44	14.39
Furniture, Houseware, and Appliance Retailing (523)	2,203	2.7%	30.9%	0.43	3.17
Recreational Good Retailing (524)	1,531	2.5%	17.4%	0.47	4.05
Other Personal and Household Good Retailing (525)	3,853	3.4%	35.1%	0.51	4.94
Household Equipment Repair Services (526)	401	3.8%	26.5%	0.48	0
Motor Vehicle Retailing (531)	1,145	1.3%	11.4%	0.25	0.63
Motor Vehicle Services (532)	4,731	2.7%	12.1%	0.36	0.99
Accommodation (571)	1,312	8.3%	15.5%	2.05	8.33
Pubs, Taverns and Bars (572)	775	3.9%	14.3%	0.74	0
Cafes and Restaurants (573)	1,195	3.2%	27.1%	0.61	0
Clubs (Hospitality) (574)	448	7.9%	10.6%	1.22	3.06
Road Freight Transport (611)	2,861	5.3%	30.1%	0.51	0.66
Road Passenger Transport (612)	542	5.6%	32.5%	1.20	1.20

3 Digit ANZSIC	Obs	Median Profit Margin (%)	Mean Concentration (%)	Mean capital intensity	Mean trademark intensity
Water Transport (630)	154	7.9%	62.4%	1.08	0
Air and Space Transport (640)	160	7.8%	59.0%	1.44	4.31
Other Transport (650)	853	5.5%	28.7%	0.68	0
Services to Road Transport (661)	161	6.4%	33.6%	1.96	8.79
Services to Water Transport (662)	207	6.7%	39.3%	1.03	1.85
Services to Air Transport (663)	75	8.5%	79.0%	2.13	3.16
Other Services to Transport (664)	1,680	3.3%	29.3%	0.41	2.98
Storage (670)	191	9.0%	30.2%	1.28	4.89
Postal and Courier Services (711)	334	5.0%	40.6%	0.57	2.88
Telecommunication Services (712)	310	7.5%	80.4%	0.79	7.50
Deposit Taking Financiers (732)	484	10.7%	33.1%	8.52	2.21
Other Financiers (733)	413	25.7%	38.5%	6.96	2.45
Financial Asset Investors (734)	29,644	82.8%	11.6%	8.55	1.51
Life Insurance and Superannuation Funds (741)	112	11.9%	60.9%	3.32	0.51
Other Insurance (742)	330	10.6%	32.9%	2.36	1.62
Services to Finance and Investment (751)	6,268	60.3%	18.2%	5.51	10.74
Services to Insurance (752)	1,847	9.2%	33.2%	1.32	3.91
Property Operators and Developers (771)	9,818	32.1%	15.3%	5.45	2.69
Real Estate Agents (772)	4,514	14.3%	5.7%	2.29	3.28
Non-Financial Asset Investors (773)	441	61.7%	18.0%	4.33	0
Machinery and Equipment Hiring and Leasing (774)	866	11.9%	35.2%	2.65	0
Scientific Research (781)	95	17.5%	34.8%	2.76	11.24
Technical Services (782)	8,674	8.0%	18.4%	0.65	0.20
Computer Services (783)	5,896	9.5%	18.8%	0.61	9.15
Legal and Accounting Services (784)	1,747	6.3%	18.5%	1.61	3.72
Marketing and Business Management Services (785)	8,504	9.9%	15.1%	1.26	6.97
Other Business Services (786)	4,706	6.5%	34.5%	0.92	0.65
Preschool Education (841)	61	6.8%	11.4%	0.87	0
Post School Education (843)	41	6.8%	40.9%	1.27	2.68
Other Education (844)	369	6.9%	12.4%	0.71	0
Hospitals and Nursing Homes (861)	246	5.6%	23.0%	1.58	2.99
Medical and Dental Services (862)	3,988	3.4%	3.9%	0.46	0
Other Health Services (863)	1,928	6.6%	18.5%	0.58	8.11
Veterinary Services (864)	258	3.9%	8.0%	0.42	0
Child Care Services (871)	244	4.8%	8.6%	0.98	0
Community Care Services (872)	66	9.0%	39.9%	3.80	12.94
Film and Video Services (911)	959	8.8%	42.2%	1.36	0.85
Radio and Television Services (912)	255	11.0%	37.4%	2.00	39.56
Arts (924)	512	7.8%	31.6%	0.65	0
Services to the Arts (925)	244	6.8%	36.3%	0.73	2.07
Sport (931)	702	6.0%	19.9%	1.34	435.98
Gambling Services (932)	170	4.6%	75.6%	0.83	2.11
Other Recreation Services (933)	357	7.2%	25.4%	1.06	0
Personal and Household Goods Hiring (951)	394	7.1%	25.5%	1.21	0
Other Personal Services (952)	1,779	5.2%	27.3%	0.76	7.54
Interest Groups (962)	2,407	8.7%	14.2%	1.56	85.53
Public Order and Safety Services (963)	346	7.0%	37.5%	0.89	4.93