CHAPTER 2

LITERATURE REVIEW

This study follows the literature on persistence of profit, which is pioneered by Mueller (1977), who estimated a set of firm specific regressions using profit rate as dependent variable and a deterministic decaying time trend as independent variable. The coefficient for the time trend was negative for majority of firms with initial profits above norm. Meanwhile, a positive coefficient was obtained for majorities with initial profits below norm. These findings suggest that there was a tendency for profit rates to converge over time. Thus, this supported the notion of competitive pressure was effective in eliminating abnormal profits and restoring to equilibrium. Nevertheless, the coefficients were either small or incorrectly signed for a significant number of firms. Hence, this implies that convergence took place slowly, or perhaps not at all in some cases.

Connolly and Schwartz (1985) objected Mueller's (1977) methodology and presented alternative tests. Their findings supported the hypothesis for profits below norm. In the long run, the profits of firms with initial profits below norm tend to rise toward the average level. However, the process was incomplete for majority of firms with initial profits above norm. These firms appeared to earn profits above norm indefinitely. Furthermore, Odagiri and Yamawaki (1986) also critised Mueller's (1977) methodology that the estimates of its coefficient were influenced by the time unit chosen. The change was relatively large during the first few years, after which it becomes insignificant. Therefore, estimates of time trend will be more

influenced by the profit rates in the first few years. Meanwhile, the estimates of its constant will be more influenced by those in the later years. Thus, the model exhibited an inherent bias towards convergence. In the same paper, they found that a firm with a high initial profit rates tends to earn a high profit rates even in the long run, suggesting a persistence of inter-company profit rate differences. Moreover, they discovered that the estimated long run profit rates across firms were distributed similarly between Japan and the United States. The movement of profit rate was more volatile and had less explanatory power for Japan's cases. Their additional studies on the time series of the company profit rate show that the cross-company variance of the normalized profit rate was smaller in Japan in every year from 1964 to 1972. This findings and the observed larger inter-industry profit rate differences indicate smaller intra-industry/inter-company profit rate differences in Japan.

In a later contribution, Mueller (1986) developed a stochastic time series model, which became basis for most subsequent work on the persistence of profits. Mueller demonstrated that the persistence of profits could be estimated using a simple first order autoregressive equation, which represents the reduced form of a slightly larger structural model. He presented evidence on the relative importance of various firm and industry characteristics in explaining the permanent differences in firm's profit rates.

Due to unobservable forces of entry and mobility, Cubbin and Geroski (1987) applied latent variable techniques in the form of autoregressive representations of profitability to treat market dynamics. They analysed the degree of influence from industry and firm characteristics, and linked them to the parameters of their simple

structural models of market dynamics. They conducted this study on a sample of medium to large United Kingdom firms that were allocated among 48 three-digit industries. Their results revealed that approximately half the firms do not have common industry-wide response to dynamic forces. Moreover, their results supported the notion that on average, the entry barriers were weaker than mobility barriers. It was the persistence in the firm specific component (rather than industry specific component) of abnormal profits that incur the systematic persistence of profitability. They found that market dynamics within industries were likely to be rather heterogeneous, with differences among firms often persisted for a long period.

Geroski and Jacquemin (1988) examined the persistence of success for a sample of large European firms by applying autoregressive model with 3 parameters of interest describing long-run profitability, the persistence of abnormal profits, and the role of purely stochastic factors induced variations in long-run profits. In contrast to France and West Germany, the sample of UK showed that abnormal profits persist permanently in a relatively large number of cases. Moreover, the profits of UK firms were more predictable than in France and West Germany. The market process in France and West Germany were equally competitive, despite their major differences in market orientation, antitrust policies, and the general degree of government intervention in the private sector. There were systematic associations between various structural traits of firms, industry characteristics and the persistence of success, the roles of openness to international trade and concentration. However, it remained difficult to identify factors, which were systematically associated with either the

persistence or the predictability of profits. Countrywide factors emerged to be more discriminating than firm or industry specific one.

Schohl (1990) generalized the findings of Mueller (1986) and Odagiri and Yamawaki (1986) with respect to the Standard polynomial convergence model (PC-Model). He applied both PC-Model and partial adjustment model (PA-Model) on 283 German corporations. He preferred Tukey-test over Scheffe test due to its quality of the algorithms. He found that one of the findings of the persistence of profit has to be reformulated. The Tukey test showed that the hierarchy of the subgroups was unstable in the long run. Regardless of some differences pertaining individual sub-groups, a common finding from both models was that the equalising effects of competition on differential profit rates only effective in the mid-ranging sub-groups. Although those firms in upper-range sub-groups suffered a dip in their excess profits, they succeed in protecting their relative position in the long run. On the other hand, even though the trailing firms could improve their profit margins, but they failed to attain at least the average value in the long run. In a comment, Mueller expressed no disagreement with Schohl's criticism with respect to Mueller's (1977) methodology. According to Mueller, the division of the sample into sub-samples was merely a pedagogic approach rather than as a rigorous statistical procedure. Mueller suggested that the best and simplest way to test whether there are persistent differences in profit rates across firms is to test whether one can reject the hypothesis that the long-run projected profits of all firms in the sample are equal. Subsequently, Mueller (1990, ch.3) conducted this test for the sample of companies used in the US study, and the hypothesis of equality was rejected at the level of 0.01.

Odagiri and Yamawaki (1990) made an international comparison of the persistent differences in company profits within Canada, West Germany, France, Japan, Sweden, the United Kingdom and the United States. They found that the extent of the persistent differences in the company profitability is most evident in the US for the period 1950-72. In contrast, the persistence of profitability was found to be least evident in West Germany. They found that the results in Canada, Japan, France and UK lie between both aforementioned countries. The Japanese result was much closer to the German result, whereas the Canadian and French results tend to show more proximity to the US result for period 1950-72. They also discovered that the strong persistent profitability observed in the US for the period 1950-72 became less significant for the period 1964-80.

Droucopoulos and Lianos (1993) evaluated the persistence of profit rate in the case of the Greek manufacturing industry from 1963 to 1988. They highlighted the difference between model that demean the firm's profit rate and model that does not do so. They held 2 methods of estimation. In the first method, they performed a 2-stage procedure by estimating the values of speed of adjustment for various industries and determining factors that affect the speed adjustments. In the second method, they estimated the value of speed of adjustment and the value of factors that affect it simultaneously. They found that both methods of estimations gave similar and reasonable results for the parameters expressing the degree of adjustment and the long-run profit rate. Their results revealed high persistence of profit rates exist in most industrial sectors and high permanent component of the profit rates with substantial variations among sectors. With respect to the factors

affecting the degree of adjustment, their results agree partially with other researchers. Advertising intensity, export intensity and the presence of foreign firms had significant and positive effects on the speed of adjustment as expected. In contrast to expectations, their results showed that capital intensity, size of average firm and risk were negative, and in most cases, significant effect. The concentration ratio had mixed effects that displayed a U-shape relationship. The variable for strikes had a positive sign indicating a positive relationship between the level of persistence and the frequency of strikes.

Kambhampati's (1995) estimated 3 functional forms of model for each of the 42 industries in the Indian case study. He initiated with the full model and narrowed down to the restricted model to select the one that bet fits the industry. He applied Newey-West estimation to correct for autocorrelation. Consequently, he attempted to explain the persistence of profit differentials by analysing the effect of market power, industrial policy and advertisement. His findings showed that quite a large number of industries experienced persistent profits above norm. His analysis revealed that such persistence was highly dependent on the ability of the industry to grow, and therefore avoid price competition as well as to the strategic barriers. In contrary to expectations, presence of institutional controls lead to lower level of persistence in such industries. Thus, he concluded that strategic barriers and market power encouraged persistence of profit differentials. However, institutional barriers seem to discourage such persistence.

Goddard and Wilson (1996) estimated the persistence of profits model for manufacturing and service sector firms in UK for the period 1972 to 1991. They

revealed that the distributions for the 2 sets of persistence coefficients were quite similar, with the average persistence coefficients slightly higher for service firms than for manufacturers. A similar conclusion was reached by comparing measures of initial profitability and long-run profitability across firms. The relevant correlation coefficient was slightly higher for service firms than for manufacturers, suggesting that the former, if initially successful, were also slightly more effective in preserving their initial advantage than the latter. Although the difference between both sectors was quite small, to the extent that a difference does exist it suggests that on average, manufacturers operate in a more competitive environment (with lower barriers to entry) than service sector firms. Their investigation of the firm specific and industry wide characteristics that explain persistence of profits and long-run profitability revealed significant variation in average long-run profit rates of firms in different industrial groups within manufacturing, but not within the service sector. In both cases, there was a positive association between firm size, average growth and long-run profitability, although the direction of causality between these variables was difficult to determine. Within both manufacturing and services, no systematic variation was found in persistence of profits across industrial groups. Firm size was found to be an important determinant of persistence in manufacturing, but not in services. This suggests that entry barriers in manufacturing were attributable to factors correlated with firm size (e.g. economies of scale). As for services, other types of entry barriers (e.g. other forms of cost advantage, differentiation of product or location) were more crucial.

Goddard and Wilson (1999) addressed a number of issues involved in drawing inferences about the true parameters that correspond to a set of sample estimates obtained by fitting, for each of a large number of firms, a simple autoregressive model of the persistence of profit using time series profits data. In terms of presumption that the parameters reflecting the extent of both short-run and long-run persistence of profit are likely to differ across firms, they argued that standard hypothesis testing procedures for rejection of null hypothesis that parameters (either individually or collectively) take certain specific values, will only permit relatively weak inferences about the distributions of true parameter values. They believed that the problem exists when a fixed-parameter sampling distribution was used in standard tests, but the observed set of sample estimates was drawn from a variable-parameter sampling distribution. They claimed that previous empirical studies of the persistence of profit simply report sample parameter estimates, or subject them to standard hypothesis tests. They showed that conclusions drawn in this way were limited. According to them, a failure to reject the non-stationary null hypothesis does not imply that the null is true in all or even any of these cases. The inconclusiveness of the standard procedures motivated them to generate simulated sampling distributions for the estimators over various distributional assumptions. Profits seem to be stationary for all firms, with an average short-run persistence coefficient of 0.59 for the true parameter as implied by the estimated sample mean of 0.45. Long-run profit rates differ among firms, although by less than was suggested by the direct observation of variations in mean profit rates calculated over time. In the presence of short-run persistence (serial correlation in profit rates), the standard tests

tend to overstate the extent of dispersion of long-run profit. Short-run persistence appeared to be inversely related to unsystematic variation in profit. Their context of unsystematic variation excluded variation in profit resulting from entry or exit induced by previously earned abnormal profit, but included variation resulting from entry or exit induced by any other factors. Hence, both systematic and unsystematic variations in profit depend on the extent of entry barriers, which may explain the inverse relationship detected between short-run persistence and the extent of unsystematic variation.

Glen et al. (2000, 2001) analysed the persistence of profitability (of the largest 100 firms) in 7 emerging markets. Their analysis included only firms with at least 10 observations of common run of data for each country. They used 2 sets of tests of the unit root hypothesis in 7 countries. The first (unrestricted) set, $\Delta Y_{i,t-1}$ (lagged first difference in deviation of individual firm's profit from industry average) was included in all regressions. Meanwhile, in the second (parsimonious) set, the test was conducted on the basis of firms' regression chosen through a specification search in which the Schwarz-Bayesian Criterion (SBC) was calculated to decide whether or not to exclude the lagged $\Delta Y_{i,t-1}$ term. Both methods concluded that profitability data was level stationary. Their findings showed that the speed of adjustment to excess profits for the average firm in developing countries was faster than those from advanced countries.