CHAPTER 1

The persistence of firms

The hypothesis that the competitive process eliminates all economic profits and losses rests on two assumptions. First, in industries where prices exceed marginal costs there is an incentive for firms to cut price to expand their market shares and profits at the expense of other firms. This incentive is usually assumed to be greater, the greater the number of firms in an industry. Thus, the first assumption of the competitive model is that positive profits do not exist in any industry in which the number of firms is sufficiently high and concentration sufficiently low.

Where concentration is not low enough to induce sufficient competition among sellers in a market, profits may appear. These profits are assumed to be a signal for other firms to enter the industry. When they do, prices and profits are driven down. The second assumption about the competitive process is that the free entry and exit of factors and firms assures that profits (and losses) cannot persist, even when transitory market conditions sometimes allow them to exist. The force of the free entry and exit assumptions has been emphasized in the recent literature on contestable markets, where it is shown that even monopolists cannot sustain prices greater than average costs when there is truly free entry and exit (see, e.g., Baumol, Panzer, and Willig 1982).

Given these premises, a normative investigation of the competitive performance of a market economy would logically consist of two parts: a study of the existence, at any point in time, of profits due to existing market structures and other conditions, and a study of the persistence of these profits over time. The present effort is of the second kind.

In contrast, nearly all empirical investigations of the determinants of profitability are of a cross-sectional nature: the regression of firm or industry profits at a given point in time on current or lagged firm or industry characteristics. A criticism that has been leveled against these inherently short-run glimpses at the profit-market structure relationship is that they run the risk of capturing transitory correlations between market structure and profitability and inferring long-run causality (Brozen 1971a, b). Defining the profit variable as a three-
Profits in the long run

or five-year average and claiming that cross-sectional estimates capture long-run relationships are less than fully satisfactory methods of addressing the long-run nature of the persistence-of-profits question. This study addresses the question directly by using a time-series approach (Chapter 2).

The author has already completed one time-series analysis of the persistence-of-profits question, a study of 472 large U.S. corporations based on time-series regressions over 24 years of data. Companies with higher than normal profits in 1949 were found to have higher than normal profits projected to time equals infinity. Casual examination of those firms that had persistently high profits suggested that many were dominant companies in their markets. Thus, the question of whether profits persist above the norm leads directly to the question of whether market shares and other firm and industry characteristics persist over time. These questions are addressed in Chapter 3.

In attempting to answer these and related questions, our focal point will be the 1,000 largest manufacturing companies as of 1950. This group of companies was the subject of a survey by the Federal Trade Commission (FTC) in the 1950s, which gathered data on shipments by company for each five-digit census product definition for the year 1950 (FTC 1972a). It is the most detailed breakdown of company sales for a large sample of firms that has ever been published.

The FTC has undertaken a follow-up survey of the largest 1,000 manufacturing companies as of 1972. The study actually covers somewhat more than 1,000 companies because it includes some firms from the 1950 1,000 largest still in existence in 1972 but no longer part of the 1972 1,000 largest. These two samples allow us to compute market shares for economically relevant definitions of a market for a large sample of companies for 1950 and 1972 and to test for the persistence of relatively high market shares. The years 1950 and 1972 are the end points of our samples of company data in the time-series portion of the study. In 1972, the 1,000 largest manufacturing corporations accounted for 78.9 percent of total corporate assets (Hay and Untiet 1981, p. 167).

Although the choice of these two years to define our data series was determined by necessity rather than convenience, they constitute not unreasonable end points for an investigation of the economic performance of the U.S. economy. The year 1950 is far enough from the end of World War II that it may be assumed to be free of influences of this great conflict and the immediate postwar transition. It is, however, the first year of the Korean War, and some companies’ performance may be atypical for this reason. More directly, our study is
The persistence of firms

affected by this war, because the War Department suppressed the data for those companies heavily involved in armaments production. Thus, our 1950 data on market shares are for somewhat fewer than 1,000 companies.

In contrast, 1972 comes at the close of the Vietnam War. Although the data for this and the immediately preceding years may be somewhat “tainted,” limited war and heavy defense expenditures have become such a part of our daily life that a good argument can be made for treating them as normal. The year 1972 has the further advantage of coming just before the price rise by the Organization of Petroleum Exporting Countries (OPEC) and oil crisis of 1973. Thus, our sample covers most of the post–World War II era of rapid economic growth and economic prosperity. Our study seeks to determine whether the forces of competition in the United States were sufficiently strong over this stretch of time and in this economic environment to erode positions of economic profit and market power once they appeared.

From the vantage point of the mid-eighties, the years 1950–72 will seem a long time ago to some. Most graduate students who read this book will not have been born during the first years of the sample period. To many, names like Kingan, Bachmann Uxbridge, Calumet and Hecla, and Godchaux will seem as foreign as Nisson and Renault. Indeed, the major products of the latter two foreign firms are more readily called to mind than for the former four. But Kingan and Co. was a leading food products firm in 1950 – one of the 200 largest, in fact – and the other three were all in the 500 largest.

Perhaps the best way to view this book is as an exploration into economic history, a study of the biggest firms in the most competitive market economy during two of the most prosperous decades that capitalism has ever produced. It asks to what extent persistent differences in profits existed in this particular economic environment and what accounted for them. The relevance of our answers to the present and future of capitalism we leave aside until Chapter 10.

The reigning conceptual framework for explaining the existence of economic profits in the fifties and sixties was the structure-conduct-performance framework most closely associated with the work of Joe Bain. The focal point of the analysis in this framework is the industry. Industry structure determines firm conduct and together they explain profitability. In the early seventies, this reigning conventional wisdom in industrial organization was challenged by Yale Brozen (1970, 1971a, b), Harold Demsetz (1973, 1974), and Sam Peltzman (1977). This “new learning” reinterpreted the previously found positive correla-
4 Profits in the long run

tions between concentration and profitability to imply that bigger firms are more efficient and thus more profitable, not that concentration facilitates collusion and thereby greater profits (see Demsetz 1973; Carter 1978). At base, the new learning appears to be arguing that the characteristics of firms are what explain profit differences, not industries. More efficient firms earn higher profits and grow to be bigger than the less efficient firms in their industries. The new learning predicts a relationship between profits and firm characteristics, a substitution of firm market shares for industry concentration ratios in a profit equation. Since one of the unique features of the data base is its market share data, it provides a good (if not ideal) data set for testing these new and old ideas about profitability. We do so in Chapter 4 in which we formulate and test two polar models of the firm: an industry-approach model and a firm-approach model. The results of these tests are discussed in Chapter 5. In Chapter 6, the firm-approach model is extended and several additional characteristics of firms that might affect profitability are considered: advertising, patenting, size, growth, diversification, and risk.

A salient feature of modern capitalism is the existence of managerial discretion. Many hypotheses exist concerning the use of corporate revenues, which could, potentially, be reported as profits, to advance managers' personal interests. The effect of managerial discretion on reported profits is examined in Chapter 7, along with the relationship between managerial discretion and managerial income.

Before examining the question of the extent to which profits persist and what accounts for this persistence, a simpler, more basic question must be answered. To what extent did the companies themselves persist? How many of the 1,000 largest firms of 1950 were still in existence as independent companies in 1972?

In its original study, the FTC divided the 1,000 largest companies of 1950 into the 200 largest, 201 to 500 largest, and the bottom 500, and this division is a convenient format for examining the survival issue. Because one company was misclassified, there are actually only 299 firms in the second group and 501 in the third. In all, only 583 of the 1,000 largest of 1950 could be identified as ongoing enterprises in 1972 (see Table 1.1). These survivors included companies successfully reorganized under the bankruptcy act and firms designated as survivors following a merger. In most cases, the latter were relatively easy to classify as, for example, when Ford acquired Philco. Philco was classified as acquired, Ford as surviving. One might well argue that none of the constituent companies of Norton Simon survived as recognizable entities when this conglomerate (Hunt Foods,
Table 1.1. Disposition of the 1,000 largest companies of 1950

<table>
<thead>
<tr>
<th></th>
<th>1–200</th>
<th>201–500</th>
<th>501–1,000</th>
<th>1–1,000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No.</strong></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td><strong>Survived</strong></td>
<td>168</td>
<td>84.0</td>
<td>183</td>
<td>58.3</td>
</tr>
<tr>
<td><strong>Acquired</strong></td>
<td>31</td>
<td>15.5</td>
<td>110</td>
<td>38.4</td>
</tr>
<tr>
<td><strong>Liquidated</strong></td>
<td>1</td>
<td>0.5</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>No information</strong></td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1.4</td>
</tr>
</tbody>
</table>
Canada Dry, and McCall) was formed in 1968. We have, however, classified Hunt Foods as surviving in the form of Norton Simon. Thus, if anything, the classification scheme exaggerates the number of survivors from the 1950 list. The decision to treat firms like Hunt Foods as survivors was made to avoid biasing the analysis in favor of finding persistent differences in profitability by focusing on an unchanging set of companies, and to maximize the number of companies in the sample. For the same reason, a couple of firms acquired in late 1972 were classified as surviving, if data for fiscal 1972 were available. (The 1,000 largest companies are listed in Appendix A-1 along with our classifications.)

Given that more than 40 percent of the 1,000 largest firms of 1950 disappeared by 1972, a legitimate criticism of the persistence of the profits and market shares results reported in the next two chapters is that they are derived for a subset of companies that were all successful in one important dimension of performance. They survived. In this most fundamental way, these companies were successful, and might be regarded as more successful than the other members of the top 1,000 of 1950. Thus, an artificial stability may be built into the sample. It should be noted, however, that most of the empirical work, starting with Chapter 4, uses a sample of 551, of which 425 are from the 1,000 largest of 1950 and the remaining 126 existed in 1950 but were not among the 1,000 largest of that year. Companies not in existence in 1950 were excluded from the study, however, and the 417 departing companies are present only to the extent that they were acquired by other firms in the 1,000 largest list of 1972.

Most of the companies that did not survive until 1972 disappeared through mergers and acquisitions. Only 19 companies are known to have been liquidated. In determining whether a company survived, we consulted Moody's Industrial Manual and the Standard and Poors' and Dun & Bradstreet corporate directories. Fourteen companies simply disappeared from these references without our being able to determine what happened to them; they are classified as “no information.” These were, for the most part, family-controlled companies. Even if we assume that all of them were liquidated, only slightly more than 3 percent of the 1,000 largest disappeared via this route, compared with more than 38 percent via merger.

These figures reveal an important disparity between the description of the competitive process in the industrial organization–microeconomics literature and the way in which this process actually works. Bankruptcy is typically depicted as the harsh penalty for failure in the marketplace, the sword Excalibur suspended over every entrepreneur’s neck, awaiting a false decision in the marketplace. But, for
The persistence of firms

firms large enough to make the 1,000-largest list of 1950, the sword of bankruptcy was held aloft by a very thick rope. Less than one firm per year from this group is known to have faced liquidation proceedings between 1950 and 1972.

Some of the companies were acquired in lieu of bankruptcy, consistent with the popular failing firm thesis (Dewey 1961). Our primary concern in this study is with the living, not the dead, so we have not made a major effort to determine why 384 firms were acquired from the 1,000-largest list. In Chapter 9, we do present evidence suggesting that acquired firms performed poorly relative to nonacquired firms from the 1,000-largest list in terms of their ability to retain market shares. But their loss in market shares appears to have taken place after they were acquired. In a separate study, I found acquired companies to be no less profitable than otherwise similar nonacquired firms (Mueller 1980a, Chapter 9), and Boyle (1970) obtained similar results. Steven Schwartz (1982) found that target firms had somewhat lower returns on common shares, however. We conjecture that from 1950 to 1972 relatively few of the companies that were acquired faced immediate bankruptcy had they not been merged.¹

The figures in Table 1.1 do reveal a strong relationship between the likelihood of a company surviving and its initial size. Eighty-four percent of the 200 largest companies survived, whereas less than half of the firms ranked 501 to 1,000 did. The survival rate of the 200–500 largest falls squarely between these two groups. If we think of these 1,000 largest companies as a sample, drawn from the population of all firms over all points in time, and lump being acquired, liquidated, and no information together into not surviving, we can then consider surviving a binary event, and the probability of a firm in the 200 largest surviving is significantly greater than that of a firm ranked 201–500 (Z = 5.95). The probability of one of the latter group surviving is, in turn, significantly greater than the survival chances of a member of the bottom 500 (Z = 4.15). Taking into consideration that most of the nonsurviving firms were acquired, we can say that the probability of a firm’s disappearing through a merger was significantly higher, the lower its size rank as of 1950.²

In addition to eliminating a large fraction of the 1,000 largest companies, mergers contributed substantially to the growth in assets of the surviving companies and transformed their asset composition. We examine the effect of mergers on the profits of the surviving companies in Chapter 8. In Chapter 10, the various strands of the analysis are brought together to form a picture of the competitive process as it functioned in the United States between 1950 and 1972.
CHAPTER 2

The persistence of profits above the norm

A. The hypothesis

As George Stigler (1963, p. 1) once observed, the issue of whether profit rates have a tendency to converge on a single, competitive level is fundamental to a normative evaluation of the competitiveness of a market economy. In an economy subject to uncertainty, profits and losses signal the existence of excess demand or excess supply at long-run competitive price. If resources are free to respond to market signals, they should move into areas where profits are being earned and out of areas suffering losses. This movement of resources continues until returns are equalized across all markets (with appropriate adjustment for risk). Of course, each new period brings new uncertainties and new positions of profits and loss, so that a point in time when all firm or industry profit levels are equal never obtains. But if the market is capable of responding to the signals of profits and losses, the long-run movement of individual firm and industry profit rates should be toward a common competitive level. All observed profits and losses should be short-run deviations around this trend.

Despite the central position that the persistence-of-profits issue must have in any normative evaluation of a market economy, it has received surprisingly little attention from economists. Yale Brozen has addressed the issue tangentially in his attack on the positive concentration–profit rate relationship found in much of the literature. Brozen (1970, 1971a, b) presents evidence that the correlation between concentration and profits is unstable over time. But he does not consider whether profits do converge completely to competitive levels (or move only part of the way), and, if convergence is complete, how quickly it occurs. Moreover, by focusing on the profits-concentration relationship, he leaves totally unanswered the question of whether profits due to factors unrelated to concentration disappear over time.¹

In this chapter, we test the hypothesis that profits, whatever their cause, converge over time on a competitive level. We do not, at this
The persistence of profits above the norm

juncture, consider what factors prohibit or slow down the convergence process. Nor do we allow for risk differences across firms. These points will be taken up later. The results in this chapter simply test the hypothesis that all firm profit rates converge on a single competitive level, ignoring risk differences across firms.

The tests in this chapter are conducted using observations on individual firms. Although most studies of profit rate determinants have focused on industry profit levels, the competitive environment hypothesis of convergence on a single competitive level should be equally valid for firm-level profits and for industry profits. For a homogeneous product, all firms in an industry should charge the same price under competitive conditions. Free entry and exit should ensure that only the most efficient firms survive, that all firms have the same average costs as well as price. If all firms in the industry earn profits above the competitive level for long periods, then there must exist a barrier to entering the industry. If only some of the firms in a homogeneous product industry earn persistently supernormal profits, they must have access to a resource, technology, or special managerial talent that allows them to earn these higher profits. The competitive process would then appear to be thwarted in one or more of three possible ways: (1) other firms are banned from using the resource or technology that makes the more profitable firm have lower costs, (2) bidding for this special resource or talent is inhibited so that neither the assets of the firm nor the factor payments rise in value to bring the return on capital into line with competitive levels, (3) the more profitable firms do not exploit their competitive advantage by lowering price and expanding output at the expense of the other seemingly less efficient companies in the industry.

With differentiated products, both the definition of industries and the concept of entry barriers become more fuzzy, the use of firm-level profits more defensible. If a firm with a differentiated product can continually earn profits above the competitive level, other firms must be prevented from selling a sufficiently close substitute or adopting a sufficiently close technology to eliminate the price–cost margin advantage of the more successful firm. If other firms selling close substitutes in what is typically referred to as the same industry are not able to earn returns at competitive levels or suffer losses, this does not offset the fact that the persistently successful firm has some special advantage that others cannot duplicate. Our tests are designed to isolate firms with these special advantages, and to determine how significant they are.
10  Profits in the long run

B. The models

We assume that a firm’s returns on total assets at any point in time consist of three components: the competitive return on capital common to all firms; a long-run, permanent rent peculiar to the firm itself; and a short-run, quasi rent, which is also peculiar to the firm but varies over time and converges on zero in the long run. We wish to concentrate on those short- and long-run rents that are related to market structure and competitive forces. But profits can also vary over time because of business cycle factors. In a boom period, short-run rents are higher than average for any given market structure. We shall also assume that the competitive return on capital common to all firms and the permanent rent component of firm \( i \)'s profits are also higher when business cycle conditions are favorable; that is, if an economy was always at full employment, all firms would earn higher returns on capital and enjoy higher short- and long-run rents, owing to market power advantages, than they would if the economy was continually characterized by excess supply in factor markets. We thus write firm \( i \)'s return on capital at any point in time \( t \) as being proportional to the mean profit rate in the economy:

\[
\Pi^*_i = (c + r_i + s_{it}) \Pi
\]

(2.1)

where \( c \), \( r_i \) and \( s_{it} \) represent the fractions of average economy profits that correspond to the competitive return on capital, firm \( i \)'s permanent rents, and its short-run rents, respectively. Subtracting \( \Pi \) from both sides of (2.1) and dividing by it, we obtain

\[
\pi^*_i = \frac{\Pi^*_i - \Pi}{\Pi} = (c - 1) + r_i + s_{it}.
\]

(2.2)

The hypothesis that all firm and industry profit rates eventually converge on a single competitive level (risk questions aside), which we shall refer to as the competitive environment hypothesis, can now be stated as the twin predictions that

\[
r_i = 0 \text{ and } \lim_{t \to \infty} E(s_{it}) = 0,
\]

where \( E \) represents the expected value.

The deviation of a firm’s profit rate from the sample mean at any point in time is composed of two components, the constant \( (c + r_i - 1) \) and the time dependent, \( s_{it} \). If \( s_{it} \) was assumed to be of sufficiently