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Part Two
PROFITS, INVESTMENT, AND BUSINESS CYCLES

CYCLICAL DIVERSITIES IN THE FORTUNES OF INDUSTRIAL CORPORATIONS*

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This paper is based on a study of the quarterly profits reported by large corporations. The number of companies it was possible to study rises from 17 in 1920-23 to 244 in 1933-38. The findings suggest that at the bottom of a business cycle the percentage of companies with growing profits, although low, is rising. It continues to rise during the earlier stages of the following business expansion, but reaches a peak, and begins to decline, before business activity reaches its peak. The percentage continues to decline in the earlier stages of the following business contraction, but reaches a trough and begins to rise before business activity reaches its trough.

The aggregate profits of all companies, however, increase both in the earlier and in the later stages of a business expansion, and fall both in the earlier and in the later stages of a business contraction. But in most cases the rise in the earlier stages of expansion is more vigorous, and the fall in the earlier stages of contraction more severe, than in later stages.

At every stage of the cycle there are always some companies with rising and some with falling profits.

After 1938 unusual and abruptly changing influences connected with the war affected profits, and the relations observed in 1920-38 between the percentage of companies with rising profits and the level of business or of aggregate profits were disturbed, although they may recently have been re-established.

The material in the paper is pertinent to the study of cycles in several respects. It reminds us of the diversity of experience that occurs in a cycle and hence adds realistic detail. It has some interest from a forecasting point of view, since turning points in the number of companies with rising profits are found to precede turning points in business. The interval varies a good deal from cycle to cycle. By the standards prevailing in the physical sciences, the existence of so variable a lead may not be a very useful discovery. In his paper, however, Mr. Wright reports that a forecast not more

* The author here summarizes and discusses briefly the study he submitted to the Conference which the National Bureau published in 1950 as *Occasional Paper 32*.

than four months in error has some value in making business decisions. Roughly, that would be an error of one quarter. If the number of companies with rising profits had been used to forecast a business turn to occur three quarters after the date of forecast, the prediction would have fallen within this range of tolerance in six of the nine instances studied.

The material also bears on questions of investment, or business capital formation. In deciding whether or not to invest in land, plant, and equipment, business men are presumably motivated by the prospects for profit on new investment rather than by profits already earned on existing investment, but there is an intimate connection between the two. If high profits are earned on existing investment, there is a presumption that additional profits could be earned on additional facilities, at least if the cost of the latter has not risen too much. Especially where conditions are competitive, rising profits are likely to encourage both expansion by existing firms and the entry of new firms; falling profits are likely to discourage them. Moreover, profits place in the hands of business men funds they can use to inaugurate projects of whose merits they are convinced on other grounds than the current rate of return. They influence credit ratings and hence the ability of enterprises to borrow. They affect the market value of stocks and hence the ability of stockholders to borrow, perhaps for investment in fields other than those in which the profits were earned. Coming back more closely to the paper, one may note that a decline in profits does not need to be general to influence aggregate investment. Business capital formation may at times be concentrated in a few industries that have unusual technological opportunities or prospects of a long-run shift of demand toward their products. If their profits temporarily change adversely, aggregate investment may decline even though the aggregate profits of all enterprises have been rising.

The investigation described in my paper is part of a program in which we are trying to find out whatever we can about cyclical changes in costs and profits, their causes and their consequences. In other parts of that program we hope to go beyond the description of changes in profits, to which this paper is confined. We are trying to learn something on the one hand about the extent to which changes in cost affect actual and prospective profits, and on the other hand about the consequences for investment. One aspect, the reflection of profit changes in market quotations, can be investigated with comparative ease. Other aspects present greater difficulty, both because data are lacking and because approaches are hard to formulate.

I do not want to leave the impression that the relation between profits and investment is a one way relation. Profits may lead to investment; investment may generate profits. I do not mean merely that one must spend money to earn money. Suppose a preponderant number of enterprises

become convinced (say because certain new inventions mature to the point of practicality) that new investment will be profitable, even though their recent actual profits have not been high or rising. (Perhaps they are newly formed and have as yet no profit experience.) Suppose further their investment programs can be financed without diversion of funds from consumption or other investment – by expansion of bank credit, more rapid turnover of deposits, etc. Under these circumstances an investment boom should increase the flow of disbursements from the business economy to the public, by which I mean all spending units other than business enterprises. Pecuniary savings by the public will not necessarily increase by the same amount. Now it can be shown – I shall not bother with the proof here – that the aggregate profits of the business economy equal property income distributed plus business capital formation, minus nonbusiness pecuniary savings. The investment boom tends to raise the second positive term in this formula more than the negative term. The immediate increase in profits will not necessarily accrue to the firms that increase their investment, at least not in proportion. It will be more or less generally distributed over business at large. Differences in the rate of growth of aggregate profits at different times, some of which are noted in the paper, may be explicable in terms of changing investment impulses and the related expenditures.

COMMENT

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Mr. Hultgren's paper is largely confined to an investigation of the proportion of firms with rising and falling profits at various stages of the business cycle. This percentage is presented on a quarterly basis for a varying sample of 17 to 244 corporations, mostly fairly large manufacturing firms, from the early twenties to date.

Hultgren's main conclusions are: first, that the proportion of firms with rising profits leads business cycle movements, generally by fairly long intervals; and second, that the leads are so variable that they tell us little about when a business turn is coming. Third, he suggests that the cyclical fluctuations in the proportion of firms with rising profits reflect similar movements both in sales and in cost-price relationships. The first two conclusions are derived from the statistical data while the third is advanced as a tentative explanation of the empirical findings.

The data utilized for establishing the first two points are admittedly weak. The sample is quite small even for the industries covered. Moreover, neither set of ratios used in relating the diversity of profit experience for the sample firms to the business cycle turns is entirely satisfactory for arriving at the conclusion that the proportion of concerns with rising profits leads the cycle by fairly long intervals.

The first set of ratios – which is obtained by simply dividing the number of companies whose profits were higher (or losses lower) than in the preceding quarter by the total number in the sample for the quarter – gives extremely irregular results with a large number of peaks and troughs that have no very clear relationship to the business cycle turns.

The second set – obtained for each quarter by dividing the number of companies with cyclically expanding profits by the total sample – gives much more regular results but may be subject to another type of limitation whose importance cannot be assessed without access to the basic data. In particular, in specifying the peaks and troughs of expansion and contraction for an individual firm on the basis of which the cycles for these companies are determined, the rule is laid down that peaks must be at least fifteen months apart, and so must troughs. Such a rule may mechanically tend to exaggerate the lead of this set of ratios, though it could have the reverse effect, depending on the distribution of the raw data and the way in which they are handled.

In spite of the statistical limitations of the sample results, there is basically little reason to doubt their general validity. The question of their economic significance is more troublesome. The finding that the proportion of firms with rising profits 'leads' or reaches a maximum in advance of the business peak and a minimum in advance of the trough is simply a consequence of the fact that individual firms tend to reach their peak profits near the top of the boom and their low in profits near the bottom of the depression. Moreover, this phenomenon is not necessarily a lead since it is equally accurate to say that the maximum proportion lags behind the trough.

In view of the fact that aggregate profits roughly coincide with business turns, it is to be expected that there would be some clustering of individual firm peaks and troughs in profits around the corresponding business turns. Because of this clustering, the high and low points in the proportion of firms with rising profits, which occur when an equal number of firms are reaching tops and bottoms in the same period, will normally be found somewhere midway between the turning points. Statistically Hultgren does find such a clustering but appears to attribute it to the movements in the proportion of firms with rising profits which he has previously described and which he discusses in some detail. Apparently he considers the cluster-

ing of individual firm peaks and troughs around the business turns as a phenomenon of secondary importance. Actually, on *a priori* grounds the movements in the proportion of firms with rising profits seem to follow completely from the expected (and observed) clustering – not necessarily symmetrical – of individual firm peaks and troughs around the business turns. In other words, the indicated 'lead' in the proportion of firms with rising profits is simply a concomitant of the fact that most companies, but not all, reach their peak in profits near the corresponding business turn.

The emphasis placed on the 'lead' in this proportion presumably reflects the hypothesis that even though aggregate profits are increasing, the fact that proportionately fewer firms have rising profits sets in motion certain reactions that cut down aggregate investment, employment, and general activity. The validity of this assumption and the nature of these reactions are far from clear. Though I have reservations about ascribing the cause of cyclical movements to the unimodal distribution of high and low profits around the business turns, it may be of some value to analyze the variations in behavior for the different types of companies.

In this connection, it should be pointed out that while the sample data presented indicate that the scatter of turns in individual firm profits is concentrated around the corresponding points in the cycle, in seven out of eight distributions the majority of firms reach their peak or trough before the turning point. Moreover, this skewness seems to be more pronounced than is evidenced in the movement of aggregate profits around the business turns. This appears to imply some tendency for profits of the smaller firms to lead those of the larger firms. How typical or how general this size difference is cannot be determined without access to the basic data, and a satisfactory answer to this question would, of course, require more comprehensive data than are now available, including information for the smaller companies not covered in the sample discussed in the paper.

However, for the postwar period completely different and much more reliable data corroborate the inference that profits in smaller firms lead those in larger firms. Since the first quarter of 1947, quarterly estimates of profits of manufacturing corporations, as well as other profit and loss and balance sheet statistics, have been made jointly by the Securities and Exchange Commission and the Federal Trade Commission on the basis of a carefully stratified sample of well over 5,000 firms. Prior to 1947 similar information, though not nearly as satisfactory, is available from other government sources on an annual basis.

It is apparent from these data that in the years following the war the profits of the smallest manufacturing corporations turned down considerably before those of the largest firms. Moreover, it seems that this relationship between size and turning point in profits was fairly general and not

simply a characteristic of the extreme size groups. Though in the absence of satisfactory quarterly data prior to 1947 it is not possible to tell precisely when the profits of the smallest size groups turned down, we can be sure that the turn came either in 1947 or earlier. This is generally consistent with Hultgren's finding that the postwar high in the proportion of firms with rising profits was reached in the later part of 1946. The postwar period may of course be subject to special influences in this respect but annual data of the Bureau of Internal Revenue indicate a similar picture in the previous business downturn starting in 1937.

Hultgren spends very little time in considering the economic implications of his statistical results though he suggests that movements in the physical volume of sales as well as the encroachment of costs on prices probably help to explain the early cyclical changes in profits. It seems to me that not too much work with the sample data would be required to determine first, the extent to which the cyclical lead of firms depends simply on their size, and second, whether movements in sales show the same picture as profits. It would also be interesting, and not too difficult, to determine the extent to which the lead at the lower turning point was a reflection of the behavior of firms with profits as against firms with losses.

A priori it is difficult to specify any convincing reasons that would explain symmetrically on both the upturn and downturn early cyclical changes of firms on the basis of their size. For example, the physical volume of sales of the smaller firms might be expected to level off or decline prior to that of large firms in the advanced stages of a boom, assuming that newly acquired capacity of the larger firms, plus more favorable prices or better salesmanship, meant that they were able to capture an increased share of total business. This would imply in effect that prospective customers would have preferred using the larger suppliers even prior to the increase in the latters' capacity but could not be accommodated. A greater availability of funds to the larger firms permitting them to raise the added working as well as fixed capital needed may facilitate the expansion of their operations as compared with their smaller competitors.

On the other hand, it is more questionable that, in a depressed phase of the cycle, sales of small firms would level off or increase before those of large firms. However, small firms may well be more flexible in their operations, and it is possible that their production is more responsive to changes in orders.

Another possible explanation that would work on both the upturn and downturn involves the relatively higher fixed costs of larger firms. In a boom, movements in average unit costs would favor the larger as against the smaller firms so that it would be possible for sales to increase uniformly for both groups but for profits to increase only in the larger firms. In a

depression the reverse would be true, so that sales could decrease uniformly with the larger firms incurring greater losses and the smaller firms cutting down on their losses.

A lag in labor costs of smaller firms during a boom might also help, at least historically, to account for the earlier interruption of their rising profits. During a depression a lag in their labor costs would have a similar effect if we assume that over-all sales and costs pick up prior to the turning point in the cycle. Without this unrealistic assumption, and with over-all sales and costs continuing down or leveling off until the turning point, a lead in the labor costs of smaller firms on the downturn – or a greater decline in such costs – would be required to aid in explaining the lead in their profits.

These are, of course, only a few of the possible hypotheses that will require testing. The influence of monopolistic pricing in the larger firms is another factor that should be noted. Several others, including the effect of new and discontinued firms and the role of inventory profits and losses, may be discussed briefly. Thus, it is conceivable that the substantial entry of new firms into the business population during a boom eventually cuts down on the sales and profits of the smaller established firms with which they are most likely to be in direct competition. Business discontinuances during a depression would have the opposite effect. Incidentally, it is barely possible, though unlikely, that the smaller firms left in business after a depression has lasted for some time are more efficient than the larger firms which for institutional reasons continue in business.

Inventory profits and losses also may have affected significantly the observed results. Hultgren's data are book profits which may have earlier turning points than profits adjusted for inventory revaluation – or for that matter, than profits adjusted for other accounting conventions. Moreover, there may be differential effects of inventories on book profits of firms in the different size groups. It does not appear likely that small concerns take inventory profits and losses earlier than larger companies. Smaller firms, however, have lower inventories in relation to sales, i.e., a higher turnover ratio, than the larger firms. Consequently, they may have less inventory profits in relation to sales in the late stages of the upturn and less inventory losses on the downturn. It is not known whether in fact the turns in inventory profits and losses follow the turns in the ratio of firms with rising profits.

Finally, industry differences may help to account for the findings. This is one possibility that Hultgren does consider in testing for differences between durable and nondurable goods industries. However, I think that his conclusion that "makers of durable goods . . . did not regularly encounter an earlier reversal of the trend in their profits than the producers of

nondurables" should be statistically qualified. Actually, his data suggest that movements in profits of nondurables industries preceded those in durables industries in the first half of the '20's and followed durables from that time on. Since in the first half of the '20's the sample of firms ranged from 17 to 71, while later it ranged from 101 to 244, it would seem to me that a higher degree of confidence might be placed on the later results.

It probably is not too fruitful at this time to multiply the hypotheses explaining Hultgren's findings without data to differentiate among them and, more important, without being too sure of the reliability of the statistical results already obtained. Though distributional analysis in this field is an essential supplement to aggregative analysis, I think that it is becoming increasingly important to work with samples that will insure adequate representation of the universe. Even with representative data, the problems of interpretation are serious enough.

REPLY BY MR. HULTGREN

Mr. Friend gives me too much credit when he calls my remarks on cost-price relations and volume an explanation. An early decline in profits *must* reflect an early decline in the spread between price and cost, or an early decline in volume, or both. Progress toward explanation will begin when, with more information on sales, we can tell which of these three situations existed in each instance. I intended my remarks merely as a caution against interpreting the data in one way exclusively.

I don't believe the 15-month rule results in the selection of many unduly early months, or unduly late months, as turns. *A priori* I see no reason why it should. Often, moreover, there are no apparent turns (of similar direction) within 15 months of each other, and no occasion to apply the rule arises. We do not use the rule in the quarter-by-quarter approach, which yields the same broad conclusion.

Few, if any, of the companies for which we could get data would ordinarily be thought of as small. Further analysis of our materials therefore would probably not help to answer Mr. Friend's questions about size.