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CHAPTER 17

CYCLICAL AND SUBCYCLICAL FLUCTUATION: PROCESS

The necessary condition that the explanation be consistent with all the statistical facts is not sufficient to specify the explanation. It must be pieced out by information from other sources and logical inference. Making full use of both fact and inference, I formulate a description of the cyclical and subcyclical process in the industry. Though individual pieces may have the wrong emphasis or be actually in error, the picture as a whole—the picture of short fluctuation having an intrinsic reciprocating mechanism of a complicated design—may, I believe, be drawn with confidence.

Subcyclical Fluctuations

I shall deal first with subcyclical fluctuations. Originally given a place in this investigation because they were there and because they facilitated comparisons among time series, they have usurped the center of attention. For a single industry sequence, there are only a few significant distinctions to be made between the processes whereby the major and the minor turns come about; in contrast, the processes of cumulation during cyclical and subcyclical expansion or contraction have certain notable differences which will be dealt with later.

CUMULATING EXPANSION

Assume that activity in the industry has recently reached a bottom and recovery is in process; the point of observation might be a few months after a trough. Assume also that consumer income and buying is rising or at least has ceased to fall. Many activities tend to rise at this point. Some have been rising for several months—wholesale sales, retailers' orders for shoes and shoe manufacturers' for leather, shipments of leather by tanners and their receipts of domestic hides. Consumer shoe buying, production of shoes and leather, as well as leather and hide prices, have recently started to rise, as have stocks of leather held by leather-goods manufacturers and stocks of hides held by tanners. But the reservoir stocks, such as leather held by tanners and hides held by packers, butchers, or dealers, have started to fall as a consequence of the increased demand. The more sluggish aggregate of shoe stocks held by retailers is still falling though about to cease.

The expansion which is under way is fed at many

points. Increasing consumer buying requires increased activity of shoe retailer and producer in order to keep up with it. In addition, distributors and producers often find it advantageous to buy more than they sell. The process feeds on itself. It has a somewhat different character at each of the vertical stages.

For shoe retailers, four major elements, and sometimes five, may cause orders to increase:

1. Retailers order more because they are selling more.

2. Operating efficiency demands larger stocks to service larger sales, though ones less than proportionately larger; buying increases to supply the desired increments to stock.

3. Though shoe factories still have considerable excess capacity, the season's favorite models are likely to be hard to get at short notice in time for the seasonal peaks. In any case, deliveries may slow up, or be expected to slow up, so retailers place orders to provide the increment necessitated by the longer waiting period. They are also likely, if not immediately, at least soon, to feel it necessary to insure adequate choice and prompt delivery by increasing the portion of the expected season's requirements ordered several months ahead of the delivery deadline.

4. Relatively more advance buying may be based also on expectations that shoe prices will rise or quality deteriorate. Suppliers may offer price inducements for orders placed well ahead of time. The importance of the two factors, (3) and (4), which involve the timing of buying, will increase, at least for a while, as expansion continues. They result in buying that exceeds sales (an extension of the ownership position) but not necessarily—except in connection with the longer delivery periods—in receipts that exceed sales (an increase of stocks on hand).

5. Because there seems to be a tendency for estimates of future sales to be biased in the direction of current sales, during expansion, actual sales tend to be greater than expected; consequently, unintended reductions in stocks occur. Since it is important for retailers to keep their stocks in close accord with planned stock, they endeavor to recoup the deficiency through additional buying. This element in buying does not materially increase the amplitude of fluctuation at the earlier stages relative to the finished one but simply

makes up, in part, for the lag relative to consumer buying that would otherwise be present.

Wholesalers respond to (1), (3), and (4), and to (3) and (4) probably more strongly than retailers do. Also, they doubtless, in a rough sort of way, need more stocks to transact more sales (2). Correction for unintended inventory change (5) probably is not important for wholesalers, since the precise and high-priority inventory objectives upon which prompt correction of unintended change in stocks depends may well not be present for most shoe wholesalers.

Shoe manufacturers increase their production schedules to keep up with orders actually on hand or confidently expected, and they buy leather with a view to having it on hand when it will be required. Thus they, like distributors, buy more because they sell more (1). The operating need for larger stocks to service larger sales (2) also applies here but with markedly less force, since shoe manufacturers typically know a large part of their leather requirements in time to acquire leather. This is a function of the large amount of shoes produced to order, the short production period, and rapid deliveries of leather resulting from the large stocks of finished or semifinished leather held ready or almost ready for sale by tanners. Under these circumstances little increase in stocks is strictly necessary.¹ However, it is doubtless convenient to have somewhat more leather both on hand and on order when sales rise, for it is more convenient and less expensive to buy in larger lots. The fact that it may take longer to get leather delivered (3), particularly when it must be finished to customers' specification and especially during peak seasons, would also account for additional buying.

But shoe manufacturers have an important reason for an extension of the amount of leather on hand and on order if they expect rising leather prices (4). For these business firms seem to be characterized by a group of attributes likely to maximize the advantage of a correct anticipation of prices: a finished article whose price is sticky; a clearly bounded period of option for buying the materials to be used for a particular order—a period very short at its minimum (a few days to receive leather and two weeks in process), and quite long at its maximum (the two or three or more months for which shoe orders are on the books); strongly fluctuating materials prices, which put a premium on guessing right; suppliers who are willing and anxious to book advance orders and probably willing, under the proper circumstances, to offer price concessions to get them; and an article that at least in some of its forms has low storage costs, staple style, and physical durability.

¹ For example, if we can trust the figures, the very high level of operation after 1939 was carried on with exceptionally small stocks of leather actually on hand (see Chart 25).

The tanner is the first in the sequence who does not seem to buy more at this phase of the subcycle than he sells. He welcomes the opportunity to decrease his finished or (for upper leather) partly finished stocks of leather, which are high at this stage. Furthermore, the ample cushion of finished and in-process stocks eliminates the need to keep raw materials stocks in any set relation to output (2). Nor is there any clearly predetermined size of raw stocks that would involve prompt corrections if not achieved (5). Delivery periods for domestic hides have not lengthened, though a larger proportion of requirements are filled by imported hides taking, of course, longer to deliver.

There are times, however, when tanners do seem to extend their ownership position in hides (though not in total stocks). The evidence consists of departures from the usual relationships between leather production and tanners' ownership position in in-process and raw hides. The periods of extension seem rarer than for the other stages. Only when prices are low as well as rising (4) do they appear to occur. They may simply reflect a partial countermove on the part of tanners to spurts in the buying of their customers. In any event, whatever the motivation, the extension in tanners' position in hides seems more than compensated by a reduction in their position in leather. The rate of change of inventories of all sorts more usually falls than rises (the difference between hide receipts and leather shipments narrows). Indeed, tanners often ship more leather than they receive hides so stocks proper actually decline as often as they rise. It is not surprising to find tanners' response to changed market expectations more hedged by limitations than is the response of shoe manufacturers. Possibly the hide exchange, at least after the mid-thirties, provided a means for taking a market position in hide futures (as contrasted with actual hides) though I am inclined to assign a minor role to this alternative. More critical is the fact that many of the attributes we listed as encouraging price-prospect-based buying for shoe manufacturers are notably absent for tanners. Instead, heavy purchasing of hides on the basis of a correct *ex ante* guess about the direction in which hide prices will move is likely, *ex post*, to result in a reduction in leather prices and increases in hide prices, other things the same, with consequent reduction in tanners' operating margins. Only if advantage is great enough and sure enough to outweigh this effect is extension desirable.

But though tanners tend to be contracting their total market position in hides and leather at this stage of the subcycle, they are nevertheless buying increasingly more than the current kill of packer hides (packer-hide stocks are falling at an accelerating rate). This places pressure on the price structure. An expansion continues; sales spiral upward all along the line. Consumer

buying is increasing, but retailers' and wholesalers' purchases of shoes and shoe manufacturers' purchases of leather are greater than purchases by the final consumer. The excess is partly the result of the need for larger stocks to do more business and to compensate for lengthened delivery periods. It is also based on expectations of further difficulty in getting deliveries promptly and, especially in the case of leather, on expectations that prices will rise. The expectation-motivated action tends to make the expectations come true.

But expectation that a certain price will rise is just one element in the complex of factors causing prices to rise. Let us consider the vertical sequence of prices, as we have the sequence of demand. This time it seems more natural to start at the raw-material end.

Hides prices are rising as the quantity demanded increases and a higher price is required to attract additional hide supplies to central markets of this country. Soon buyers of hides and leather start to expect further rises in prices. These expectations may be based on an analysis of the supply of hides compared with the demand for leather and shoes, or on the recent course of hide and leather prices, including their rate of change. Expectations may also be based on information obtained in the course of buying and selling—the eagerness of buyers, the nonchalance of sellers, delivery terms that are being requested and accepted, the prevalence of unused capacity, the amount of unfilled orders on the books, knowledge about the size of stocks held all along the line, the volume of trading. Judgments may be influenced by the behavior of other commodity prices and stock exchange quotations.

That prices of hides and of cattle-hide leathers do rise with the added buying is intrinsic to the dynamics of fluctuation. Chapter 15 explained it in terms of shifts in market demand and supply schedules, as well as in the upward slope of the supply schedule.

For shoe prices the rise is far slower in getting under way. Indeed, many subcyclical expansions come and go without a rise recorded in the indexes for either wholesale or retail shoe prices. Resistance comes perhaps most clearly from retailers, who fear loss of business because of consumers' resistance to new price lines. Shoe manufacturers cooperate by changing the labor and materials input, in other words, by converting a change in price into a change in the quality of their finished wares. Also, they buy ahead to forestall a rise in costs. They tolerate a reduced margin over direct costs per shoe in view of the lower unit overhead expense and larger aggregate profits (even if unit profits fall) resulting from the larger volume. But as expansion continues, the resistance starts to weaken as signs suggest that consumer buying power will support an explicit rise in prices: a continued and strong rise in con-

sumer income; trading up (a shift of purchasing to higher from lower price lines, other things the same); and multiple sales in hosiery if not in shoes. Manufacturers' demand for price increases is strengthened when inventories of low price leathers are exhausted and shoe manufacturers, uniformly experiencing higher costs, all ask higher prices.

We saw in Chapter 15 that the shift from a change in quality to an explicit change in price for shoes may, other things the same, reinforce the rise in prices for hides. But whether or not shoe prices have actually started to rise in the particular subcycle phase, the cumulative process proceeds. Explicitly rising prices of leather and hides validate expectations of a rise. Expectations of a further rise, through their influence on traders' standards and actions, promote the actual rise. The movement spreads as the number of optimistic traders increases, as does also the size of the advance position each is willing to take with regard to an increasing variety of items. The situation, duplicated for other sorts of expectations—such as those involving difficulty in getting choice merchandise promptly—feeds upon itself, at least for a while.

The typical picture, then, is one of rising consumer shoe buying, increasing service stocks all along the line, expectations that make further advance preparations seem the part of caution, a further rise in buying, and a further spread and intensification of optimistic expectations; and this spiral within the industry is typically supported by rising consumer income and often by rising prices in other fields.² Can the spiral continue indefinitely? If not, what brings it to a halt?

THE PEAK

Theoretically, expansion in a single industry could continue as long as income generated in other industries is adequate to sustain a growth in consumer buying of its product sufficient to counteract any forces of deterioration at earlier stages in the production process. However, our study of the shoe, leather, hide sequence indicates that a *tendency* toward deterioration sets in after an upward swing has continued for a while, even if consumer income and the dollar volume of consumer shoe buying is still rising. Many factors may contribute:

1. *Physical versus Dollar Volume of Consumer Buying.* If prices of shoes are rising, it is possible that though income and the dollar volume of sales are still increasing, the physical volume of final sales may have ceased to rise. If so, the physical demand for shoes, leather, and hides is subjected to this deteriorating in-

² For the association of subcycles in income and shoe sales see Chapter 6, Charts 9 and 10. Conformity indexes between specific subcycles in hide prices and several other "sensitive" commodity prices were shown in Chapter 4, Table 12.

fluence. This situation is probably rare, though it may have had something to do with the early turn of production relative to retail sales in 1937.

2. *Correction of Error in Anticipating Sales.* If the rate of increase in the physical volume of shoe buying by consumers starts to decline, even though buying is still increasing, a tendency toward reversal is set in motion.³ Briefly, retailers must order some part of their expected requirements several months ahead on the basis of a guess as to what they will need. The central tendencies of these guesses will have the form of a straight-line projection (either horizontal or slanting) of current sales. Consequently, the guess is likely to prove too low when sales rise at an increasing rate and stocks are raided to meet the unexpected sales. But since retailers' intentions concerning stocks are formulated with precision and stoutly enforced, orders for immediate delivery attempt to restore inventories to their desired level. These orders, reversing the pattern of the error of the estimate, tend to follow the rate of change in sales. Total orders are the sum of the guesses about the future and the correction of incorrect guesses of the past. The first accord with current sales, the second their rate of change or first differences. When sales cease to rise at an increasing rate, the second component declines. Sometimes, though probably not very often, this will cause total orders for shoes to decline before sales proper decline, independently of other elements that might push in the same direction. In any event, whenever the rate at which sales rise has actually declined, the sales of those firms or departments of firms that specialize in at-once orders tend to decline. These specialists are likely to be wholesalers or in-stock departments of manufacturers. Since their sales are often watched with special care by members of the industry, they have an influence on industry behavior that is greater than the portion of total business they handle.⁴

3. *Sales-Linked Stock Objective.* Retardation in the rise of sales prior to its actual turn affects buying when this is associated with an intention of enforcing a given average or incremental ratio of stocks to sales. Were the objective tightly held, buying intended to supply the desired increments would decline as soon as, or shortly after, the rate of increase in sales began to slacken. However, though at least for retail stores it seems likely that stocks are intended to bear some defined positive association to sales, the intention does not appear pre-

cise or firm enough for periods of a few months (in contrast to the firm intentions to hold to a given absolute, planned, model stock) to cause associated provision for changes in stocks to reach peaks ahead of sales, especially since the period by which retardation precedes the peak in sales is often short.

For shoe manufacturers, the flexible time in production and the many other matters that bear on the size of stocks suggest that any possible link between sales and stocks, whether automatic or intended, could not be sufficiently tight to create a timing acceleration of buying. For tanners, the basic inverse association of stock and output precludes the possibility of a timing accelerator of this standard type.⁵ In general, we have found little evidence that the management objective of a positive association of sales and stocks would be capable, except very rarely, of contributing toward bringing expansion to an end.

4. *The Long-Short Market Range.* Factors based on expectations of lengthening delivery periods and higher prices, do, however, seem to have the potential power to terminate expansion. The stimulation that they impart tends to reach natural limits and then decline. To maintain a stimulating impact on buying, the market position must undergo progressive extension. Extension has three dimensions: the number of firms that participate in extending forward positions; the proportion of the many materials used by a given firm for which such provision is being made; and, for each material, the number of weeks' supply covered by actual purchase or forward orders. The limit to the first is obvious—none or all; yet susceptibility to optimistic or pessimistic expectations is a trait possessed in differing degree by various individuals, so that the spread of participation in expansion must start to slow up far short of the theoretical limit. As to the second, there seems to be a recognized hierarchy of articles for a given sort of business on which advance buying will concentrate. To illustrate, for a shoe manufacturer the sequence might be: sole leather, white, black, and tan side-upper leather, and, finally, certain style varieties of upper leather that are certainly not prone to inclusion, though not immune. As he proceeds down the list, a given expectation concerning availability or price change, held with a given firmness, will motivate less and less advance buying. In this industry, limits to the third—the number of months for which advance provision may be made—are largely a function of the stability of style of

³ This fact was mentioned briefly in connection with the process of expansion (5) but its chief interest lies in the power to set turns ahead; it was developed at length in Chapter 8.

⁴ The same point may apply to other suppliers who are known to experience early turns—those in working-class neighborhoods in large industrial centers or (for a downturn) the marginal small merchants.

⁵ The possibility may exist at one spot: for in-process sole leather the association to hide wettings was exceedingly close; but it seems unlikely that this automatic result of efficient production would impose constraints on the buying of hides of a sort that would tend to imprint upon buying the rate of change of sole leather wettings, other things the same. If anything, the causal connection would run in the opposite direction.

the article, and of the customary seasonal patterns in selling, buying, and in the extension and repayment of commercial credit.

The description indicates that limits to either extension or contraction of the ownership position are bands rather than lines. In a period when very optimistic views are surely and widely held, the upper end of the long-short market range moves farther out than at a time when optimism is more cautious. The short end is likewise not sharply defined, for even what is commonly called a hand-to-mouth position comprehends some advance provision—more sometimes than others. The point is simply that business mores deal with these matters; the ranges have meaning within a trade. Thus, for staple, popular grades of men's shoes, the desired on-hand-and-on-order position of retailers may range from around a three-weeks' supply to four months' or even more; for women's high-style shoes, both the minimum and maximum depend on whether it is early or late in the season, and in any event, something less than the estimated season's requirement is the maximum even for particular models. Shoe manufacturers typically do not consider it safe to operate with less than a month's supply of leather on hand and on order, whereas the maximum position may run over half a year for sole leather. A four months' commitment is probably fairly high for even the most staple sorts of upper leather, and for the less staple varieties, a few months may be the maximum.⁶ Just where resistance to further extension starts to build up depends on how strong are the factors making for optimistic prognosis at a given time. But when this area is reached, enforcement of the customary limits is not left entirely to the individuals immediately concerned. Three self-appointed agents may be concerned in terminating movement toward the long end of the range. Banks may refuse further credit or even call demand loans if the inventory position appears extended, as is quite apparent if loans are not liquidated at the customary times each season. Suppliers may be unwilling to take orders for long-term advance delivery if they believe customers are too greatly extended to accept delivery if the market threatens a turn. Finally, businessmen of experience impose limits on themselves. In any event, it is the same set of limits—those generally recognized in the trade—that tend to be enforced even though the agencies of enforcement may differ.

As shoe or leather buyers approach the long end of the market range, the stimulating effect on earlier stages of an extension of market position levels off. If an

⁶ For tanners and packers, the emphasis on the reservoir function of stocks eliminates the set of forces described as the long-short market range though a rough counterpart may operate through the intermediary of price (see below).

advance position of, say, four months in tan upper leather is maintained, not increased, the stimulating effect on tanners' operations and hide markets is nil. If wholesalers or retailers simply maintain an advance position of two months in certain sorts of shoes, the stimulating effect on shoe manufacturers' operations is nil.

These statements raise an important question. The long end of the market range represents a different number of months' advance position for shoes and for leather, and for different sorts of each. Is there reason to believe that these different limits will be reached at the same time? The answer is probably yes. Similar evaluations of the general market prospects will make each willing speculator whether in shoes or leathers, go about the same proportion of the way toward an extreme position. Further, the cumulation of optimistic sentiment among both shoe manufacturers and distributors is likely to follow more or less the same general course; and the evaluations themselves—since *at each stage* they depend on facts about size and location of inventories, production, and prices *at every other stage*—are likely to be roughly similar for tanner, shoe manufacturer, or distributor.

I conclude that additions to buying predicated on expectations of lengthening delivery periods or rising prices tend to level off and cease to stimulate buying. This is most likely to take place at about the same time in all branches of the industry. As soon as a further increase in the aggregate advance position starts to run against resistance, one component of total buying, the one meant to increase the ownership position, will decrease. Since the number of months for which stocks are carried on hand or on order may have doubled or tripled for some sorts of leather in a period that has averaged around seven or eight months, the cessation of this additional buying can be important enough to reverse the tide of buying as a whole, at least for the sorts of leathers in which market positions are extended, even though selling by those firms is still rising. Since selling at this point will often be increasing only at a lessened rate, the reversal is still more likely to occur. Of course the tide of consumer takings may be strong enough to keep shoe sales and shoe and leather production still rising in spite of the cessation of further advance buying.

5. *Uncertainty or Reversed Expectations about Market Prospects.* If expansion is to continue, an increase in consumer takings may have to be strong enough to override not merely the depressing effect of the cessation of further extension of market position, but also that of actual retrenchment. If businessmen come to expect a markedly reduced rate of rise in prices, become more uncertain of their optimistic guesses, and expect de-

livery periods or availability of merchandise to ease, efforts to contract the market position will be in order.

It is interesting and probably important that the growth of uncertainty alone is logically a sufficient cause, other things the same, to convert market extension into contraction. Less market extension is justified by a given most-probable guess as to future prices if that guess is made less confidently than it was two weeks ago. In addition, it may be that increased uncertainty about a future upward trend in prices of raw materials will make tanners or shoe manufacturers less willing than formerly to offer their customers advantageous terms for advance orders.⁷ In this case, a supplier's uncertainty will cause, other things the same, a contraction in the market position of his customers.

There are all sorts of reasons why uncertainty about a continued rise or expectation of a fall may precede turns in business. Many ways whereby early turns in opinion may come about have come to our attention, though we have not been able to accord them the explicit study they require. A decrease in unfilled orders on the books will not only result in shortened delivery periods, but also signify to many that market tension has lessened. Such a decrease may well be a function of the rate at which orders are increasing and thus tend to decline before orders themselves. If an increasing number of firms start to experience a reduction in their sales even though aggregate business is still rising, this must spread doubt about the continuing vigor of expansion. Other studies suggest that such an increase in the number of units experiencing declines seems also to precede decline in the aggregate.⁸ Hide prices typically slacken their rate of rise long enough before the turn in industry affairs as a whole to indicate to the businessmen who watch them that the upward surge has weakened.⁹ It may also be that this retardation in prices is itself a manifestation of all sorts of portents visible to businessmen in their day-to-day dealings, though unhappily invisible to the economic investigator.¹⁰

6. *Limitation to Fluctuation of Margins.* This study has specifically indicated, albeit on the basis of exceedingly slender evidence, that unit margins over materials cost for the finished product, shoes, seem to have an inverse subcyclical pattern, which does not, however, transgress certain fairly clearly defined limits. On a number of occasions, the lower limits have been approached prior to the turn in sales or prices, so the

problem of keeping buying prices and selling prices in line with one another could be a factor tending to terminate market extension. If shoe manufacturers are convinced that many competitors have, like themselves, reached the point where operating margins are unduly squeezed, if, moreover, a continuation of the condition indicates that, for one reason or another, raising selling prices cannot provide the remedy, then leather prices may simply be deemed too high and buying delayed pending the expected drop in prices.

Tanners' gross margins, though possessed of different patterns from shoe manufacturers' margins, seem more narrowly limited in the extent of their fluctuation. This fact, and what tanners report about the need to gauge the propriety of a hide price by its relationship to the leather price, suggest that margins may serve to keep the vertical stages of the industry in precise step with one another. A tendency toward weakness in the leather market, sensed by individual tanners as they negotiate sales of leather, casts doubt on whether hides bought at current prices can be sold profitably; the resultant reduction in hide buying, other things the same, weakens hide prices. Tanners' large stocks make feasible these alterations in buying relative to selling based on judgments about relative prices. Since their cause—threatened alterations in margins—is warded off and indeed reversed by the very buying it motivates, the specific evidence is erased the moment the cause becomes operative. We see merely that, in spite of the fact that hide prices are exceedingly sensitive to market conditions and cattle-hide leather prices moderately so, the difference between the current price of hides and leather per unit of output is remarkably steady.

7. *Inventories and Prices.* The statistics show a sharp apposition of buyers' and sellers' stocks or inventory investment in hides and leather, with a close inverse association between the rates of change in hide prices and in sellers' stocks of leather and hides. All lead the reference frame. A strong causal association links the three phenomena. Operating through expectations about future prices, the rate of change in hide prices affects investment in leather inventory by shoe manufacturers and thus may help to terminate expansion. By the same token, the causal association runs from sellers' stocks to hide prices and this sets the process in motion one link further back in the chain. The nature of the causal link was discussed in terms of shifts in demand and supply schedules in Chapter 15.

Also stated there was the argument that the neat apposition in fluctuation in buyers' and sellers' stocks may also cause the short-term shifts in supply and demand schedules to be asymmetrical, as schedules of suppliers with low inventories in the neighborhood of peaks shift more than those of buyers, whose inventories approach

⁷ See Chapter 9, p. 123.

⁸ See Thor Hultgren, *Cyclical Diversities in the Fortunes of Industrial Corporations* and Geoffrey H. Moore, *Statistical Indicators of Cyclical Revivals and Recessions*, National Bureau of Economic Research, Occasional Papers 32 and 31, 1950.

⁹ See Chapter 15, pp. 217-220.

¹⁰ See Chapter 11, p. 146.

the long end of the permissive range. If the schedules have a certain sort of shape, this could cause the quantity traded to decline.

8. *Correction of Error in Anticipating Price.* Buying associated with expectations directed toward prices, delivery periods, and the like is subject to error just as is buying based on expectations about sales. The correction of the error could be influential here too in delineating the pattern of fluctuation. There seems little doubt that this type of correction operates to intensify a decline once under way. What is more doubtful is its power to hasten the end of an expansion. There is little evidence that shoe producers expand inventories precisely in accordance with the theoretically indicated criterion—the *rate* at which prices change. Instead, the cumulating forces of market opinion (represented perhaps by hide or leather prices proper) seem more nearly to account for the course of expectation-linked leather buying. There is no reason to suppose that notions about the proper association between size of stocks and expectations about prices or other market conditions are formulated in terms precise enough to dictate a readjustment of stocks when the first signs of market weakness occur, though certainly the adjustment would be required eventually. Consequently, there is no reason to assert that the correction of error in recent market-prospect-linked purchases (in contrast to modification in new market-linked buying) carries a propensity to reverse expansion.

A possible exception involves imports. Here, as was pointed out toward the close of Chapter 14, actual price advantage is a precise figure (a price ratio) and, consequently, the difference between expected and actual advantage is likewise clear in retrospect. This error, which tends to accord with first differences in hide prices and therefore to lead the reference frame, may well be reversed in current buying and thus reduce buying as peaks are approached, other things the same.

Synchronization. The question arose in connection with the long-short market range (4) whether buying of various sorts of shoes or leathers would tend to reach the long end of their range at the same time. The presumption seems to be that they would. An analogous question concerns whether the eight factors listed as having the capacity to hasten the advent of turns likewise tend to do so at the same time.

For the factors that look to patterns of consumer buying (1, 2, and 3), a tendency to keep in step is necessarily present. For gross margins and their influence on expectations about prices (6), a link to consumer buying is also likely to be present. Shoe prices are not raised enough to prevent a margin squeeze when consumer demand is thought to lack vigor.

Insofar as hide prices are influenced by matters out-

side of the industry, prices and their rate of change may have patterns that do not reflect consumer demand directly or indirectly. Strong independent fluctuation in supply would be one such factor. Its impact would enter the complex of events just described through uncertainty or reversed expectations about market prospects (5) or through correction of error in anticipating price (8). But strong exogenous changes in hide supply are rare.¹¹ This means that there are two main directions from which the affairs of the economy at large enter into the round of cause and effect within the industry sequence: from the direction of consumer income and other factors influencing consumer demand for shoes, and from the direction of other commodity markets and general business confidence, factors influencing expectations about hide prices. On the whole, it seems likely that the second set of factors are capable of supporting the first set but seldom of supplanting it. I think it likely that market extension ordinarily takes place only when factors associated with consumer demand are propitious.¹²

But though adequate consumer demand (as defined by factors 1–3) and the absence of strong external factors tending to depress price or its rate of change are necessary conditions to optimistic expectations, they are not sufficient conditions. Actions based on optimistic expectations can taper off (as factors 4, 5, and 7 outline) and, unless swamped by still stronger

¹¹ The one example in the interwar period was the drought of 1934. But government intervention shielded the industry from, at least most of the impact of the abruptly increased supply of hides.

¹² This proposition ought to be subject to test, yet I am not able to devise a satisfactory one. Failing data on orders, we have had to identify periods of market extension in terms of the divergence from usual relationships between stocks and sales or output. The eligible periods have been limited to times when sales or output were rising. Consequently these data (the market profile or the output-stock ratio for tanners) cannot be confronted with the question: Were retail sales rising or accelerating when market extension took place? The answer would typically be yes by definition.

Lacking more appropriate measures, I have used the five-month moving average of first differences in hide prices as an indication of market prospects and have defined periods of optimistic prospects as times when these data were in rising phase except for the first two months of the phase. There are 52 months of rising phase between 1926 (when retail data are first available) to 1940. The rate of change in consumer shoe buying in pairs was in rising phase during 31 of these months or 60 per cent of the time. Sales proper were in rising phase 13 of the remaining 21 months. Thus during only 8 months, or 15 per cent, might it be said that retail markets were inauspicious. Two of the 8 months occurred during the beginning of 1928 when hide prices were undergoing the unique and extreme rise that occurred subsequent to the time when hide and leather stocks and the cattle cycle reached a post-World War I low. Another 4 months took place in early 1930 and 1932 when the rate of fall in hide prices retarded but no rise in prices followed—periods which probably ought not to be considered times of optimistic expectation. This leaves only 2 months in the middle of 1939 as clearly in opposition to the thesis.

propitious influences, can bring on a turn in output throughout the industry. We end with a picture in which shifts in market expectations cannot lag long after a reversal in factors associated directly or indirectly with consumer demand and its rate of change; they could conceivably cause earlier shifts or even additional movements.¹³ But, once started anywhere, change tends to spread everywhere, the many factors reinforcing one another at turns as they do during expansion.

It is interesting to reflect in passing that if all industries are considered together, consumer buying is no longer removed from this interlocked round of cause and effect; for, the impact of buying, and consequently production, associated with market expectations is likely to be large enough to influence substantially income distributions and consequently consumer buying.

CUMULATING CONTRACTION

If reversal in the industry were confined to a return to hand-to-mouth buying on the part of all distributors or processors who had extended their market position, its duration and severity would be short and mild. But all of the movements that we have designated as sub-cyclical seem also to have been characterized by a drop, or at least a marked leveling, in consumer buying. Accordingly, we find that the same spiral of cause and effect that characterized recovery now operates in the reverse direction to deepen retrenchment.

Consumer buying typically decreases. For some time, retailers' expectations have been too optimistic, and short-term orders are reduced to permit stocks to recede to their designed level. This level is lower than formerly, since a lower level of sales makes some reduction in stocks desirable; the effort to reduce service stocks in line with reduced sales may be present for wholesaler and shoe producer too. The achievement of desired retrenchment is probably not easy and takes a while to effect. The most urgent need for reduction is likely to lie precisely where curtailment of orders is not the appropriate therapy. Stocks will be high in the poorly selling lines or in seasonal items that missed the market. Items of this sort will never be reordered in any quantity, so reduction of stocks can mainly be achieved by markdowns. If the preceding rise was one in which the industry extended its market position, there will, of course, be an effort to contract it. Thus both stocks on hand and especially on order will be desired to fall *more* than sales.

At first thought one might expect the contraction to be abrupt, more so than the corresponding rise. But our data show little indication that it is, and this is not

really surprising. All men in an industry do not change their minds simultaneously. Some people are naturally optimistic and others naturally pessimistic, some well informed and some poorly informed, some deal in merchandise that is selling well, whether because of the locality or the sort of goods, and others in merchandise that is selling poorly. Consequently the reversal of men's ideas about future trends has a considerable temporal scatter.

But even when a man's expectations about the future course of prices has turned bearish, the extent to which buying can be cut below the needs for current replacement is limited. Insofar as price expectation alone has motivated the previous extension of the market position, it can be cut abruptly. But this motive is usually combined with the expectation of lengthened delivery periods and of difficulty in getting the more desirable goods. At this stage of the subcycle, though there is no longer the backlog of unfilled orders that may have characterized many peaks, finished stocks of suppliers, especially tanners' stocks of leather, are low, and the absolute level of factory operation fairly high, so that although an easing of bottlenecks is expected, and indeed may already have occurred, there is no reason to expect an extreme drop in the length of time required to get delivery of the choicer items. Finally, though the size of stock in the lines that sell well can soon be brought in line with intentions, the slow-moving numbers, always too plentiful in any stock, resist regimentation.

On the downward as well as the upward bank, tanners seem to cushion rather than reinforce contraction. Their buying now exceeds their selling as their total stocks of hides and leather rise. However, it is significant that their purchases of the domestic supply of packer hides tend to be less than the current kill, and purchases of foreign hides and country hides drop drastically. Hide prices drop sharply under these conditions and this has manifold repercussions.

The downward spiral continues: reduced selling, lower requirements for service stocks, shortened delivery periods for seasonal merchandise, pessimistic expectations about prices and consequent reduction of market position, further drop in prices, further pessimism, further reduction in buying relative to selling in one establishment after another. This spiral within the industry is typically supported by falling consumer income and often by falling commodity prices in other fields.

THE TROUGH

But on the downward path as on the upward one, retardation and reversal tend to occur as a logical development of the factors set in motion during the

¹³ An example may be the rise to the sharp peak in early 1928.

previous months. We review the process described for the advent of the peak (using the same paragraph numbers for each factor discussed) and endeavor to point out when and how the processes that tend to bring on expansion seem to differ, at least with respect to the relative importance of the several contributing elements, from those that bring on contraction.

1. *Physical versus Dollar Volume of Consumer Buying*; and 2. *Correction of Error in Anticipating Sales*. If shoe buying, measured in physical volume, ceases to fall at an increasing rate—a condition that may be brought about by falling shoe prices as well as by a retardation of the decline in consumer income—there will be a tendency for orders for at-once delivery to rise, reversing the pessimistic error in advance planning. This tendency for orders to pick up will be stronger for the suppliers of some sorts of stores in some sections of the country than for others and, insofar as their sales are watched as indicators of future trends, will have more than proportional importance.

3. *Sales-Linked Stock Objective*. If there is a tendency for distributors and manufacturers to require their stocks to bear a close positive association to sales, the correction element (2), and consequently its tendency to accelerate turns, will be emphasized. We rejected the notion that this factor is likely to advance turns at peaks (though it would increase the amplitude of fluctuation); for the objective is probably held too loosely to have this effect in view of the shape of fluctuation in sales. In the neighborhood of troughs, however, the low level of stocks may mean that stores experiencing rises in sales need to increase stocks fairly promptly while stores whose sales continue to decline can no longer afford to decrease stock much further. In the aggregate, this would increase both orders intended to increase stocks and those required to reverse the pessimistic bias in the forecast of sales. Thus, the asymmetry of the impact on intended inventory investment of sales-tied stock objectives, depending on whether firms are experiencing a rise or a fall in sales, may contribute toward early turns at troughs.

4. *The Long-Short Market Range*. Retrenchment by shoe merchant or manufacturer in their advance position in materials buying, which has caused selling to exceed buying for some months, approaches the short end of the long-short market range and slows down. This is, of course, the counterpart of the leveling of market extension described in connection with the upper turn. It may be that pessimistic opinion spreads more abruptly than does optimism, but without specific investigation one can only surmise. Also, the number of weeks' supply that constitutes the short end of the market range is doubtless defined more sharply than for the long end. In any event it takes a while

for desires for retrenchment, however defined, to be achieved. When once they are, cumulating retrenchment approaches its limits and starts to level off.

5. *Reversed or Uncertain Expectations about Market Prospects*; and 8. *Correction of Error in Anticipating Prices*. Just how changed evaluations of market prospects enter into the picture of approaching revival is difficult to say. My impression is that opinion tends to stay despondent for some time after signs of improvement appear. Also, uncertainty is not likely to play the same part here as it does at peaks. Whether incorrect guesses about market prospects (8) are actually corrected fast enough to influence the time at which business picks up, as contrasted with the amount that it rises when once under way, is also not at all clear. In connection with expansions, we noted that the relatively exact price comparisons associated with the decision to import hides may provide a situation where recognizable error is a function of the rate of change of prices, which, in turn, tends to lead the reference pattern. The tendency to lead seems less strong at troughs than at peaks. In any event, imports are usually small at this phase of the subcycle.

6. *Limitation to the Fluctuation of Margins*. As far as one can judge, margins of shoe manufacturers influence the trough in a fashion symmetrical to their influence at the peak. For tanners, the defense of margins presumably plays the same part in transferring firmness in hide markets to leather markets that it played at peaks in transferring weakness in the leather markets to hide markets. Perhaps this is what tanners mean when they say that leather and shoe markets tend to lead prices down whereas hide markets lead them up.

7. *Inventories and Prices*. The impact of this factor at troughs will presumably be symmetrical to its impact at peaks.

Cyclical Process

This picture of cumulating expansion, of hesitation and reversal generated within the process itself, of cumulating contraction, like expansion fomenting its own reversal, applies to what we have called subcycles in the shoe, leather, hide sequence—waves of activity often of shorter duration or of less intensity than cycles; they may be bounded by peaks or troughs in the major as well as in these minor movements. Since the major peaks and troughs are also subcyclical peaks and troughs, all that has been said of the process that brings on turns applies to them too. But it may be that the reverse statement could not be made—that at major turns additional factors operate that are not present at minor ones. In addition, it is necessary to ask whether the process whereby expansion and contraction cumulate is significantly different for cycles and

subcycles. Since the frame of reference remains the single industrial sequence, only a limited answer to these questions can be given.

CUMULATION OF EXPANSION AND CONTRACTION

Conceptually, the distinction is not nearly so direct and simple between major and minor phases as between major and minor turns. A major phase (a cyclical phase) is usually, though not always (e.g. the 1937 to 1938 major recession), interrupted by minor movements. Sometimes the interruption takes the shape of a hesitation in a downward sweep, as did the expansion of 1930 to 1931. Other times the minor movement has a more or less horizontal, rather than sloped, axis as in 1932-1933. Other movements fall somewhere between the two types.

Cycles in the shoe, leather, hide industry accord with strong fluctuations in the economy as a whole. Though there is a great deal of evidence pointing to subcycles in the economy at large, it has not as yet been systematically and critically examined. In any event, it is clear enough that the familiar business cycles, as designated in the National Bureau reference chronology, are, with perhaps one exception,¹⁴ at least longer or stronger fluctuations than any hypothetical general counterpart of subcycles in the shoe, leather, hide industry. This means that the economic background to fluctuation in the industry is different for major and for minor movements, inevitably this must influence industry affairs.

More specifically, fluctuation in consumer income is materially stronger during business cycles than during most of the other fluctuations in the industry. In consequence consumer shoe buying undergoes heavier change. This is true in spite of the fact that there may be some tendency for the response of shoe buying *relative to income* to be a little stronger during the minor waves. The stronger fluctuations in commodity prices during major fluctuations must also reinforce fluctuation in the shoe, leather, hide industry during business cycles, if only because of the strong impact of expectations on business conduct. Though perhaps less directly relevant than the changes in consumer income and prices, cyclical fluctuations in all sorts of other outside events also certainly have some bearing on how expansion and contraction in the shoe, leather, hide industry proceed during the major, as distinguished from the minor, waves. By and large, such factors would tend to intensify the severity of subcyclical phases that are in phase with cyclical phases and damp those out of phase.

Second, we have learned that within the industry chain of cause and effect, the rate at which stocks increase or decrease does not play nearly so important a

part during cycle phases as during subcycle phases either in deepening or in damping fluctuation, whichever is their characteristic role. Indeed, if we link these findings to those of Abramovitz, it would appear that, broadly speaking, the relative importance of inventory change in total fluctuation in output is inversely associated with the duration of the fluctuation.

Third, shoe prices either at wholesale or retail, as far as the available statistics indicate, seem to undergo substantial movement chiefly during the major business fluctuations. There were exceptions of course, such as the sharp spurt during the National Recovery Administration, but broadly the statement holds, providing only the overt price change reflected in the crude statistics is being discussed. In addition to the obvious implications, our analysis of the factors underlying changes in hide prices suggests that during these major movements, this fact may cause some intensification within the industry sequence of fluctuation associated with change, or expectation of change, in hide prices. During subcycles, the same fact would mean an intensification of paracyclical phases and a damping of contracyclical ones.

PEAKS AND TROUGHS

Because of the sluggishness of finished-goods prices, the process of reversal at major and that at minor turns may differ somewhat. At major peaks, rising consumer income may be partially dissipated by price change, with the corresponding damped impact on physical flows at earlier stages. At troughs, the fall in prices may partly counteract the impact of falling income.¹⁵ But the studies of the previous chapter also suggest that the presence or absence of overt change in shoe prices may affect hide prices too. When retail or wholesale shoe prices are moving, hide prices may continue in the same direction after events have taken place that otherwise might have been associated with a turn in raw material prices. The combination of a partial dissipation of consumer spending in price rises and an extended support of the rise in hide prices may, at these major turns, tend to substitute speculative demand for real demand, thus maintaining prosperity at the expense of a more violent subsequent readjustment. The reverse would apply at certain of the major troughs.

Perhaps all that emerges from this meager story is that at those points where activity in a single industry

¹⁵ A corollary of the facts that retail prices move primarily at major turns, and that they lag, is the tendency for shoe sales expressed in current prices to lag at the major turns. This fact would be important were subcycles found at about the same time in industry at large, and were the characteristics of shoe sales and prices here discussed found for many other products. For the study of a single industry, it seems to have little significance.

¹⁴ I refer to the contraction dated from late 1926 to late 1927.

derives sustenance from broad economic events, industry response is stronger when the sustenance is, for good or ill, more plentiful than when it is not. But this difference in degree becomes a difference in kind in connection with retail prices, which, because of their great lethargy, are likely to move at all only under the heavy and prolonged battering of a major fluctuation. At the same time, movement once initiated sets off a chain of events within the industry. Finally, inventory fluctuation plays a far more important part relative to fluctuation in customers' takings during subcycles than during cycles.

Summary: Fluctuation in the Industry

The statistics for the shoe, leather, hide sequence have traced a picture of fluctuation during the interwar period in which not only the familiar business cycles are mirrored by events in the industry, but in addition a number of minor waves appear.

Sales of shoes to the final consumer reflect the changing amount of money that consumers have to spend with a fidelity surprising for a single consumer good. Since income shows minor fluctuations, so does shoe buying; indeed it seems to enlarge on the amplitude of these movements conveyed by the income stream. The figures show waves in physical activity reaching peaks and troughs at about the same time in shoe buying by consumers, shoe production, and leather tanning. Since all these operations take time to perform, their synchronous turning points are puzzling.

The statistics also reveal that when sales are increasing or decreasing, so are stocks of shoes held by retailers and of leather held by shoe manufacturers. This means that provision for increasing inventories is piled on top of provision for increasing sales, and the amplitude of fluctuation at the earlier stage relative to the later one is thereby increased. Since fluctuations in inventory appear normally to have a shorter periodicity than business cycles, the amplitude of *subcycles* is augmented by waves in inventory investment a great deal more than the amplitude of the longer, stronger fluctuations. Addition to stocks on order as well as on hand further accentuates fluctuation. Snowballing fluctuation, however, does not continue all the way back to the raw material. Stocks of tanners respond inversely to minor waves in activity. Packers' and dealers' stocks of raw hides are sharply inverse. The prices of raw materials, on the other hand, fluctuate with great severity and in generally synchronous conformity to demand. Leather prices parallel these fluctuations in muted form, whereas shoe prices respond largely to the major business tides.

These figures all pose riddles. The first, the virtually

synchronous flow at each of the major stages, was spelled out early in the book, in Chapter 3. The answer, at a superficial level, lies in the fact that orders for shoes placed by retailers seem to anticipate turns in retail sales by a few months. This lead of orders is maintained, but not, in all probability, much augmented, in successively earlier stages. The explanation of the lead of orders starts at the retail stage, where objectives for stocks are reasonably clear and firm, and profitable operation highly vulnerable to delays in receipt of seasonable merchandise. Here the tendency toward a lead seems to originate. But it receives support at other stages, even perhaps at the earliest one, where the amplitude of fluctuation instead of being augmented is damped.

Eight distinct processes may contribute to this tendency for orders at one or more stages in the vertical sequence to reverse before retail sales. Moreover, this is almost sure to be an incomplete list; small reciprocating mechanisms are imbedded in quite specific business situations into many of which we have certainly failed to delve. For an industry such as the shoe, leather, hide group, where price responds more to changes in demand than to independent changes in supply, there seems to be a tendency for these factors to reinforce one another in bringing on a reversal.

These reciprocating processes fall into several categories. One concerns the disparity between dollar sales and their power to stimulate physical flows of goods when retail prices are changing. Two involve the character of the stock objective *per se*: Does it include a link between output and stock? Is the objective, whatever it is, firm enough so that failure to achieve it will be corrected in new buying (a process that seems to apply primarily at the retail stage)? Two others involve the timing of buying on the basis of judgments about prospects concerning adequacy of selections, speed of delivery, and prices. Alterations in market position predicated on these judgments have limits, albeit elastic ones, set by the long-short market range; consequently fluctuation could not proceed indefinitely in one direction, even were optimism or pessimism maintained at a given level; however, it is not likely to be so maintained. Finally, three other processes involve prices—either prices proper or the relationship between them (operating margins)—and their impact on judgments about the timing of buying relative to selling. This set of factors is capable of causing the setting ahead of turns in earlier stages relative to turns in retail sales (timing acceleration), whether or not it also causes amplitude acceleration. For tanners and packers (whose inventory investment or disinvestment serves to mute fluctuations in the flow of leather and hides) can introduce a tendency to advance turns in

the physical flows through the impact on their buying and selling of considerations centered on price and margins.

These are, perhaps, the major findings of this investigation. They may be listed without much difficulty. But it would be desirable also to indicate the underpinning of fact on which a specific inference rests. Yet it is virtually impossible to fill this gap because of the very complex interrelationship between many facts and any one inference and among the several inferences. This means that one is powerless to help the conscientious reader to a critical appraisal of the final conclusions; fundamentally, this valuable check can come only through the tedious study of the work as a whole. An illustration will perhaps indicate how fact and inference hang together.

Investment in retailers' shoe stocks is broadly synchronous with output; investment in manufacturers' leather stocks leads output by several months. On the surface, these facts could be explained by a firm sales-linked stock objective that is realized either promptly or with a short lag. The earlier turn in stocks at the earlier stage is consistent with the progressive acceleration that this principle implies. Yet this is not the explanation I proffer. Why not? First, in view of the tendency for the rate of change in sales to lead sales proper by short intervals, in view also of what retailers say about their stock objectives, in view of what we know of how far ahead of any possible knowledge of sales some orders must be placed, in view, finally, of what we see in regression analysis of the association between stocks and sales, there is no reason to believe that an intended stock change that paralleled the rate of change in sales would result in an actual stock change generally synchronous with sales. A more precisely enforceable intention is required—a designed level for stocks that is at least partly independent of the confusion of the link to changing sales. Accordingly, we emphasize the correction of error (departure from *any* firm intention) rather than the particular character of the intention (ratio to sales or to change in sales) in explaining the timing characteristics of shoe retailers' inventory investment.

Shoe manufacturers, because of their foreknowledge of requirements, may well be in a position to effectuate an intention for stocks to parallel output. However, what they say about how they determine the volume of leather buying and what the time series show of parallelism between hide prices and stocks (and regression analysis supports) indicate that expectations about market conditions and prices will be an important determinant of the size of stocks. But if so, it is likely that inventory investment of shoe manufacturers based on market prospects will tend to turn earlier than output

or retail sales for virtually all of the reasons (4–8, above) mentioned as responsible for bringing on turns and also because retailers' orders seem to lead. We even see this tendency appearing at the retail stage in the lead of the market profile and the information yielded by the correlation analysis of seasonal patterns of production.¹⁶ Hence I reject the conventional acceleration argument as the chief explanation of the observed timing characteristics of inventory investment of shoe manufacturers.

How different is the situation for tanners' in-process stocks of sole leather! Here again the picture conforms to the specifications of the output-linked stock objective. Indeed, this it does so precisely that if we simply compute what stock would be, given the pattern of wettings and a fixed in-process interval, these hypothetical stocks nearly reproduce the course of actual stock. There is little else to explain; ergo the explanation is highly satisfactory. But note that the pattern of stock in tanneries resulted from the pattern of input, not from that of output plus a desired (or needed) stock in process. And in support of this statement I can do no more than refer to the sense of Chapters 13 and 14. Yet the meaning of the observed relationship is quite different depending on what causes what.

In fine, and I cannot support these statements in capsule form, this investigation yields a picture of a single industry sequence where all sorts of processes seem bent on converting stability into fluctuation or on exciting fluctuation received from the external environment—through the impact of consumer income on shoe buying and the climate of opinion which any businessman breathes—to further fluctuation. But further fluctuation is itself converted into reversal by the connivance of most of the circumstances under which shoes, leather, and hides are produced, marketed, and sold at a price. Fluctuation is the rule. It is stability that defies explanation.

Problem of Verification and Extension

These statements are based on the study of a single sequence of industries for the period 1921 to 1940. Directly, they apply to that industry for that period. Yet clearly we make a broader claim than this. The title contains the words *case study*. These words, of course, imply that the industry is a species of a wider genus. Were this not believed to be so, an economist would hardly care to expend effort so prodigiously on the investigation of an industry responsible for less than 2 per cent of the consumer segment of the national product.

The "case" has afforded an opportunity to observe

¹⁶ Chapter 9, Tables 39 and 40.

the process of change concretely and intimately. By observing and then ordering and schematizing the process, a theory evolves. It is a partial theory of fluctuation that deals especially with one aspect of the dynamics of turns. But it is not only partial; it is incomplete even for the aspect with which it deals. For it is not possible to spell out the full meaning of the reciprocating mechanisms associated with market prospects and prices (rather than with sales) within the framework of a single industry. To complete the story it is necessary to deal with the impact of these factors on sales themselves through their impact on output, and thence on the income stream, and perhaps too via the tie among various critical prices. For this the economy as a whole, rather than the single industry, must provide the frame of reference.

The case study, in other words, is only worth its salt if it has some general applicability that is subject to test. But tests in other environments not only justify, they also verify, the case study. The key to this two-way dependence lies, I think, in this fact: If the dynamics that we have uncovered is true of the shoe, leather, hide sequence for the interwar period, *it must, with appropriate transposition, be true of other sequences and other times*. The reason is simply that the tendency to fluctuate, and for fluctuation to have limits and therefore to tend to reverse, derives from basic business objectives, problems, and procedures that cannot possibly, except in their particular manifestations, be peculiar to the period or the industry that has been examined. This means that the study can both be tested and be put to work by an investigation of the shoe, leather, hide industry in the postwar era, by empirical examination of a sort I have not been able to undertake of certain key factors in the reciprocating process, and by study of other industries. A word on each of these avenues of advancement.

THE SHOE, LEATHER, HIDE INDUSTRY TODAY

A study of the shoe, leather, hide industry in the postwar era would start with the questions developed for the earlier stretch of years. The answers, however, would not be identical. Some of the variables that the present study has selected as important are known to have changed. On the basis of the character of the change, it is possible to suggest in what way patterns may differ for recent years. One such set of differences relates to consumer shoe buying and its association with aggregate income payments. Compared with 1929 to 1940, the high level of income and its far gentler change probably means that in recent years shoe buying may have been somewhat less tightly tied to income, and the influence of other factors of the sort that

we examined may be more apparent.¹⁷ The increased use of materials other than leather in shoe manufacture may cause the link of the industry sequence to hide prices to be less sharp than formerly. If, as may be the case, tanners carry smaller stocks than they used to and tanning to order has increased, the story as told in this book requires further modification in the current setting; but it is a modification in emphasis, not in the pieces of which it is composed. One final illustration: Our analysis of hide prices led to the conclusion that of the three sorts of factors by which most of the influences operating on prices could be represented—leather shipments, the stock-location ratio, and probably shoe prices—the speculative elements, represented by the stock-location ratio, were less important after than before the traumatic experience of 1929 and 1930. It seems not at all unlikely that these shifts have continued and that the finished-goods markets (represented by shoe prices) also have increased in importance.

FLUCTUATION IN OTHER INDUSTRIES

Consider next the application of the partial theories of fluctuation based on study of the shoe, leather, hide sequence to other industries. For each group of businessmen in the chain, we found different factors, or the same factors in differing proportions, influencing the way demand moved from the sale of finished products to the purchase of raw materials. Corresponding differences in the temporal relationship of sale and purchase resulted. The same factors that produced these differences within the industry sequence ought to produce them in other business environments. Their enumeration should constitute a sort of check list, which, applied to a given industry, might provide a basis for judging, after investigation, whether buying of raw materials is likely to fluctuate more than sales of finished products, and whether intrinsic reciprocating mechanisms would presumably be present. I outline them in Table 62 simply as a reminder to someone familiar with what has preceded. The letter T indicates a factor that bears on the timing of turns, with the capacity, under certain circumstances, of tending to produce reversals. The letter A indicates a factor bearing on amplitude—a tendency to add to the amplitude of fluctuation if it appears in the first column and to subtract from it if it appears in the second column.

The table underscores the fact that a tendency toward short fluctuations will be stronger in some industries than in others. Will the extra fluctuations be

¹⁷ See Chapter 6 and Ruth P. Mack, *Factors Influencing Consumption: An Experimental Analysis of Shoe Buying*, National Bureau of Economic Research, Technical Paper 10, 1954.

TABLE 62

Factors Influencing Patterns of Association of an Enterprise's Buying and Selling

FACTORS MAKING FOR LARGER AMPLITUDE OF FLUCTUATION (A), OR EARLIER TURNS (T), OR BOTH, IN BUYING RELATIVE TO SELLING

1. *Inventory objectives and the capacity to achieve them in the first instance*
 - a. Precise high-priority inventory objectives specifying a desired absolute size (T^*) or positive association to sales (T^* and A)
 - b. Positive association to sales, even if not stubbornly enforced, increases the amplitude of fluctuation at the earlier stage (A)
 - c. The need to order substantial portions of expected sales ahead of time without foreknowledge of sales (T^*); the amplitude of fluctuation is increased when this portion varies as suggested in (2) and (3) below
 - d. Final demand tending, at least for significant segments of the total, to retard before reversing (T^*)
- * Timing acceleration may only occur from a, c, and d in combination
2. *Delivery period having a positive association to the level of demand and its rate of change (T and A); this is likely to apply to style merchandise having high seasoned variability of demand*
 3. *Raw materials prices that tend to parallel changes in demand (A)*
 4. *Inducements to anticipate short-term movements in prices or availability of merchandise in the timing of buying (A and T); though probably chiefly when condition stipulated in (3) holds*

Contributing factors:

- a. Staple materials with low carrying costs
- b. Highly variable prices of materials with limited substitutability among materials or factors of production
- c. Materials constituting a large portion of total cost
- d. Relatively inflexible selling prices
- e. A well-defined period of option in buying
- f. Ability to extend the market position by placing more and longer advance orders that are welcomed by sellers
- g. The need in times of expected stringency to get additional supplies from remote places

FACTORS MAKING FOR EARLIER TURNS (T) WITHOUT A PREDICTABLE IMPACT ON AMPLITUDE, IN BUYING RELATIVE TO SELLING

5. *A well-defined period of option: limits to the number of weeks' supply generally thought to be proper under specified conditions (T)*
6. *Limits to the rate of change in prices that is expected, or to the confidence with which it is expected (T)*

Contributing factors:

- a. Actual prices that retard before they turn
- b. Margins that, reaching a given point, are thought to suggest a reversal in prices
- c. Partitioned market, such as three types of hide supply
- d. Nonsymmetrical shifts in supply and demand schedules due to differences in subcyclical patterns of stocks of buyers and sellers and their influence on price making

likely to occur at the same time for most industries in which they appear? Summary inspection of many time series suggests tentatively some fairly general participation of industry at large in at least most of the subcycles found in the shoe, leather, hide industry, 1923 to 1940. Our study of this industry raises the possibility that at the two ends of the sequence—consumer buying, and sometimes prices (in industries where change

FACTORS MAKING FOR SMALLER AMPLITUDE OF AT LEAST BRIEF FLUCTUATION (A), OR EARLIER TURNS (T), OR BOTH, IN BUYING RELATIVE TO SELLING

1. *High priority for maintaining a regular flow of production; contributing factors:*
 - a. Perishable raw materials and durable, staple, finished products
 - b. Long period in production
 - c. Materials prices that parallel demand, thus lessening financial burden of stocks when demand is low
2. *Seasonal patterns or other inflexibilities in availability of materials making it necessary to buy along with the trade as goods become available at a price (A)*
3. *Raw materials prices primarily associated with changes in supply that tend to occur independently of the volume of demand (A)*
4. *Inducements to buy more heavily when margins on current-price basis are advantageous and vice versa*

Contributing factors:

- a. A tendency for heavier than usual buying to increase buying prices for raw materials and weaken selling prices of the finished article (A)
- b. Flexible selling prices linked to more or less current materials prices (A)
- c. A poorly defined period of option
- d. Buying largely for immediate delivery (A)

in the price of raw materials is more influenced by change in demand than by independent change in supply)—a tendency toward synchronization among industries may be present.¹⁸ But certainly the matter requires careful empirical investigation.

But whether or not, upon investigation, confluence during short movements is found, it does exist during

¹⁸ See Chapter 4, Tables 11 and 12.

cyclical phases and at the times usually recognized as turning points in business affairs. At those times, the insights that we have gained in this study apply to a fundamental aspect of how reversals in business take place. The insights involve how, under current business institutions, the sequential steps of marketing and producing a consumer good can give rise in all sorts of ways to tendencies for the direction of change to reverse. This decline or rise, once initiated within a sizable number of such sequences, can set off a decline or rise in sales of capital-goods industries, since the volume of expected sales in the next year or two is an important determinant of when to purchase machinery or even plant. From these secondary reversals, further decline cumulates. But business reversals, as a whole, do not abide by simple rules. On other occasions a weakening or strengthening in capital-goods industries may be the leader, and intended investment in inventories or in ownership position add its weight to the nascent reversal. One way or another, these factors which partly originate within the industry sequence are important links in the business-cycle chain.

KEY POINTS OF FACT

The effort to make sense out of the information for the shoe, leather, hide industry has resulted in highlighting some aspects of the complex of events and in subduing others. At least some of those on which emphasis has fallen might offer opportunities for useful empirical investigation. I mention a few examples. Questions have come up at many points concerning the association between seasonal patterns and cyclical and subcyclical characteristics. Partly related to this broad question and partly independent of it are several specific ones. Changes in delivery periods and in adequacy of selection, which seem to play an important part in fluctuating market prospects, require forthright study of a sort that we have not even touched upon for this industry. The same is true of the third factor involved in changed judgments about market prospects, namely expectations about materials prices and their relation-

ship to selling prices. But it is interesting that the urgent questions in the area seem, on the basis of this study, to involve not so much the precise character of the businessman's conception of future prices—whether it is formulated in terms of minimax, focus gain or loss, or probability distribution—as how these conceptions, however formulated, *change* over time, how *confidence* in them waxes or wanes, and how *actions* are based on them.

Another set of questions, partly related and partly separate, involves what I have called the long-short market range. Is this a legitimate concept? How elastic are its boundaries? How variable as among industries or parts of industries is its duration? Does the character of the contractual relationships between buyer and seller—whether advance orders may be placed, whether they are encouraged, and if so, under what circumstances—play some part in the process? I select these questions from innumerable ones merely to illustrate problems that are critical and that are subject to sharply focused empirical study for many industries at once. Mentioning them makes me acutely conscious of how desirable it would have been to study them directly for the shoe, leather, hide sequence. The fact that their importance was only appreciated when further detailed investigation was out of the question brings sadly to mind the cumbersome process of this study.

We started with a broad problem—the impact of consumption on business cycles. Study of all the facts that could be amassed about the industry led to the formulation of secondary questions. A scheme for answering them provided hypotheses, which, by further investigation, we endeavored to test. Efforts to test these involved the formulation of tertiary questions, hypotheses, further empirical study. Thus theory yields no priority to empirical investigation nor investigation to theory. They walk abreast. And there is no place to stop.

Abruptly, then, this book that has been over a decade in the making ends—a piece of unfinished business.