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Volume Title: The Average Workweek as an Economic Indicator

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Volume Publisher: UMI

Volume ISBN: 0-87014-383-2

Volume URL: http://www.nber.org/books/bry_59-1

Publication Date: 1959

Chapter Title: WHY DO HOURS LEAD?

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Chapter URL: <http://www.nber.org/chapters/c2546>

Chapter pages in book: (p. 91 - 103)

V. WHY DO HOURS LEAD?

The Problem

Weekly hours may lead employment at cyclical turning points because (1) they can be more quickly and conveniently adjusted; (2) changes in the length of workweek do not commit a company to a course of expansion or contraction; (3) at business cycle peaks, reduction of overtime saves costs by avoiding premium payments; (4) reduction of overtime enhances productivity since overtime hours tend to be less productive, and liberal use of overtime may encourage "drag-out" of work; (5) at troughs, fuller employment of that part of the work force which has been on an involuntary part time basis provides cost advantages as compared with the employment and training of new help; (6) maintenance of a "stable" work force is preferable from the viewpoint of employee morale; finally (7) work-sharing in times of receding demand and the converse sharing of increasing work opportunities is regarded as good public relations policy and frequently made part of union agreements. We have also suggested that the differing impact of the determinants listed under (3) and (5) might help to explain the longer leads of hours at business cycle peaks as compared to troughs.

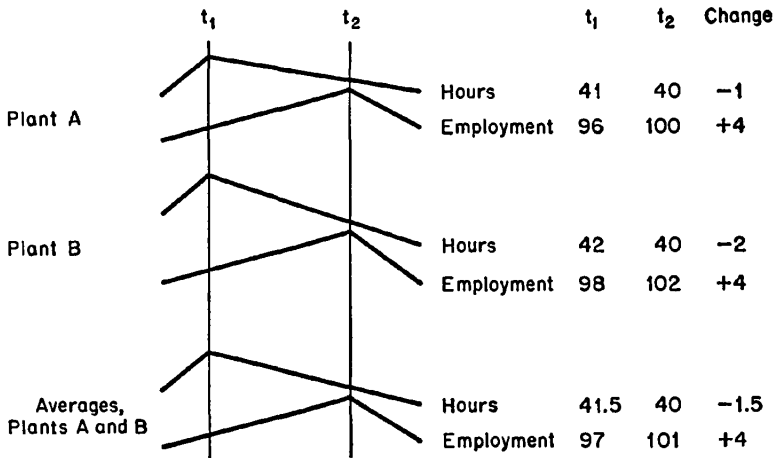
As plausible as these reasons may appear, they leave some basic questions unanswered. Why should employment—and manhours—continue to rise, near peaks, after hours have been reduced? An analysis of labor turnover rates reveals that after hours have started to drop, near peaks, the hiring rate exceeds the voluntary quit rate for a while, thus bringing continued advances in employment. But why should management, once it decides to reduce hours, be unable to reduce hiring enough to exceed voluntary quits? Perhaps the picture we get from the aggregative accounts does not really reflect the experience of individual plants and companies but is merely a result of the aggregation process. This problem must be examined before further progress can be expected in explaining the lead of weekly hours over employment.

Two Models

In principle, the average lead of weekly hours over employment (and over

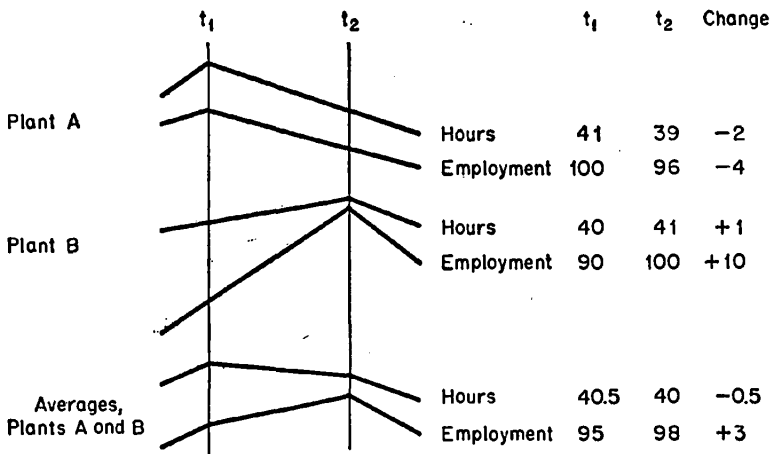
manhours) which was shown to characterize industry aggregates could occur in any of three ways: (1) as the result of similar relationships on the plant level, (2) as the result of the aggregation process, and in spite of fairly simultaneous turns in hours and employment on the plant level, and (3) as any combination of both.

The model describing the first situation is extremely simple. It can be schematically illustrated in graphic and arithmetic form, as follows:



In both plants, constituting the "industry," hours lead employment, and employment continues its prior movement, after the turn in hours. As a result, hours in the "industry" lead.

In the second case, the situation looks this way:



In this case hours and employment in each plant turn cyclically at the same time. The earlier turn of weekly hours in the aggregate is brought about by the fact that in Plant A—the plant with the earlier turns—the change in the length of the workweek, shortly after the cyclical turn, is relatively sharp. Thus it dominates the movement of the average. Once a plant decides on a change in the direction of labor input, it would preferably—though not exclusively—make the change by cutting (or expanding) hours, for reasons cited earlier in explanation of the lead of aggregate hours. Under these circumstances, the movements of hours shortly after cyclical turns may be sharper than those shortly before turns. The result would be the observed lead of average weekly hours over employment in industry aggregates.

Some Statistical Evidence

What empirical evidence can we marshal in support of either hypothesis? Let us first investigate the possibility that the lead of hours over employment is characteristic not only of industry aggregates but also of plant statistics.

Hours and employment statistics are not generally published for individual plants. In fact, the collecting agencies of the government are prevented, by strict disclosure rules, from making individual plant information available to the student. However, through the generous cooperation of the Bureau of Labor Statistics we were able to study the sequence of turning points of hours relative to employment in 20 unidentified manufacturing plants, for the period 1947 through 1957. These plants were selected according to certain broad specifications: (1) a relatively large size (by standards of the industry to which they belong); (2) a fair homogeneity of product (such as would be found in plate glass or portland cement, or certain types of work clothing); and (3) availability of data on weekly hours and employment for all the years 1947-1957.

Unfortunately there was too much seasonal variation in the charted raw data to determine turning points with much assurance; and there was too much irregular behavior for either satisfactory seasonal adjustments or cyclical analysis after such adjustments. Thus twelve months moving averages of the data were used to eliminate, in a rough way, seasonal and random movements. It was assumed that the expected shifting of turning points would not introduce any systematic bias.

The data show conclusively that the lead of turns in weekly hours over those in employment is characteristic of labor input behavior not only at the industry but also at the plant level. Timing comparisons were made for all clearly matched turns of hours and employment in each plant,

Table 24

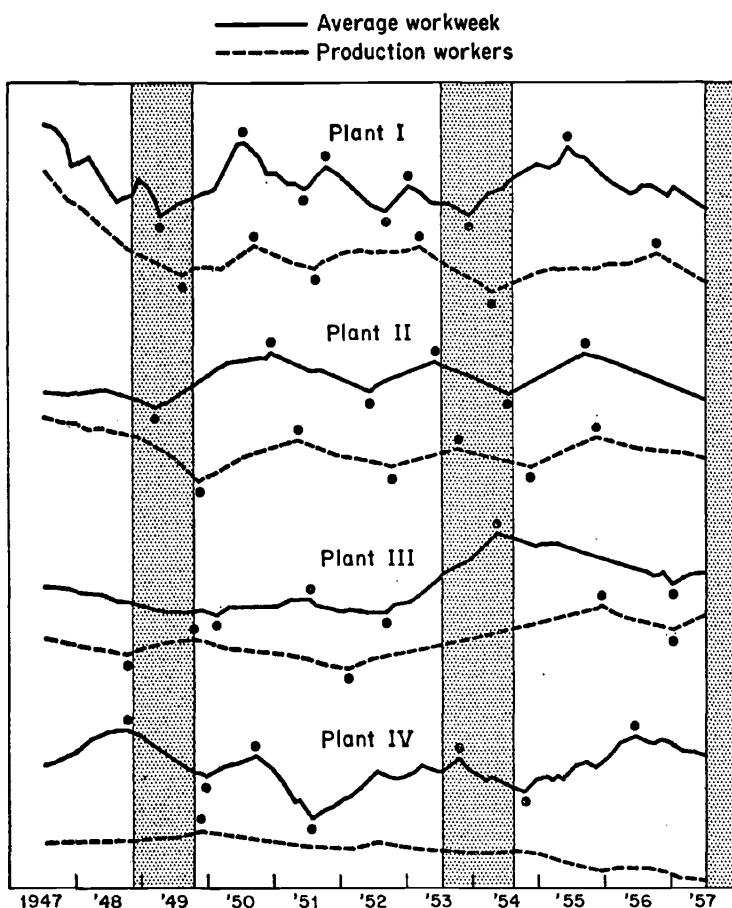
Weekly Hours in Twenty Manufacturing Plants, 1947-1957
 Number of Leads, Lags, and Coincidences Relative to Employment

Plant Code	PEAKS			TROUGHES			PEAKS AND TROUGHES			
	Leads	Coincidences	Lags	Leads	Coincidences	Lags	Leads	Coincidences	Lags	Total
A	3			2		1	3	5	1	6
B			0				0			0
C	1			1	1		2	2	1	3
D	2			1			1	3		3
E	2			1			1	3		3
F			0				0			0
G	2	1		2			2	4	1	5
H	2			2		1	3	4	1	5
I	1			2			2	3		3
J			0				0			0
K	1			1			1	2		2
L	4			4			4	8		8
M	1					1	1	1	1	2
N	1					1	2	1	1	4
O	2			2			2	4		4
P	3			3			3	6		6
Q	2	1		3			3	5	1	6
R	3			3			3	6		6
S	2		1	1	1		2	3	1	5
T	2					1	1	2	1	3
Sum	34	3	1	28	3	5	36	62	6	74

regardless of whether these turns could also be related to changes in general business conditions. Altogether, the information for 20 plants produced 74 comparable turning points. Of these, 62 showed leads, 6 lags, and 6 coincidences of turns in weekly hours and employment. The prevalence of leads is slightly stronger at peaks than at troughs (see Table 24).

The regularity with which turns in hours precede turns in employment does not, of course, imply a tight covariation of the two labor input factors.

Chart 13
Weekly Hours and Employment of Production Workers
in Four Manufacturing Plants, 1947-1957
(smoothed series, undisclosed scales)



Shaded areas represent business cycle contractions, according to NBER chronology. Dots identify peaks and troughs of specific cycles.

Although hours led employment whenever turns corresponded, not all specific turns could be matched. Only 67 per cent of the specific turns in hours and 79 per cent of those in employment could be matched with turns in the other variable. Some typical situations are illustrated by Chart 13, which contains simplified versions¹ of weekly hours and employment variations in four plants of the sample. For Plant I, even brief intracyclical variations of hours and employment are closely related, with regular leads of hours over employment. In Plant II, we find good correspondence of hours and employment as well as close correspondence of changes in labor input to those in general business conditions. Plant III shows some related turns, but also reveals a good deal of independent fluctuation of hours and employment. In Plant IV, finally, related movements are totally absent. Plant III illustrates the conditions found most frequently in the 20-plant sample: a fair degree of independence between hours and employment, some clearly matched turns, and the typical lead of hours wherever the turns can be matched.

The prevalence of leads of hours over employment, on a plant basis, does not, however, strip the second hypothesis of all explanatory value. One piece of evidence in its support—as a necessary though not sufficient condition—would be a clear tendency of weekly hours to show steeper changes shortly after than before turning points. In the absence of strong trends, such behavior could occur at peaks as a consequence of the relatively longer duration of expansions compared to contractions. At troughs, this general phenomenon would operate in the opposite direction. We cannot claim to have examined the available evidence bearing on this issue. But inspection of the behavior of weekly hours in the 20 sample plants does not suggest that hours have significantly steeper amplitudes briefly after than before their turns.

Our present conclusion is that the lead of turns in weekly hours over those in employment, as displayed by aggregated industry information, must be traced predominantly to a parallel phenomenon on the plant level. If the industry lead is occasionally the result of differential amplitudes in components, this must play a minor role.

Managerial Considerations

We can now formulate our question regarding the lead of hours over employment more pointedly: “Why do managers of individual plants cause or permit employment as well as total manhours to continue to

¹Detail between turning points was omitted in order to prevent identification of plants.

expand (or contract) after they have cut (or increased) the length of the workweek?" Perhaps the managers themselves can enlighten us about the considerations which underlie their actions. Interviews with about a dozen plant and industrial relations managers provided the following interpretation.²

Briefly, existing trends in employment and manhours apparently continue, after weekly hours have changed direction, as a result of the momentum of prevailing employment policies. While decisions on overtime, affecting the length of the workweek, are typically made on the foreman level in response to changes in current workloads, decisions to change hiring policies are made at the plant management or even higher levels in the corporate hierarchy. Changes in weekly hours come about as the result of fluctuations in current workloads; cyclical changes in employment are the result of policy decisions based on anticipated workloads. Hours changes, as they occur in the neighborhood of cyclical turns, are regarded as short term adjustments of labor input, employment changes as long term adjustments. The latter presume some revisions in the outlook for the business or plant, division or company; they require the accumulation of internal and external evidence that such revision is warranted. In the meantime established policies stand.

Let us look at the process of labor input management in greater detail.

Labor Input Adjustments at Peaks

In the early stages of the cyclical decline of average weekly hours, the reduction of overtime plays a large role. Decisions on overtime hours are often made by foremen or supervisors who are under general instruction to hold down overtime hours.³ How vigorously these instructions are carried out depends on circumstances such as the importance of labor costs

² A dozen interviews can scarcely be regarded as constituting an adequate sampling procedure, nor were they formal enough to permit quantification or even classification of the responses. Thus the following report cannot be more than an impressionistic summary of these conversations. In any case, the various explanations given by the managers interviewed require further testing. We present, however, the results of our improvised inquiry with the hope that they may be a stimulus to discussion and further research.

³ The cost and productivity considerations making such action desirable are well known. Overtime is not only expensive but also tends to be less productive. Sometimes other aspects were mentioned. Regular overtime leads to "stretch-out" of work during regular hours, in order to obtain more work at premium pay. Furthermore, sustained overtime leads to an upward revision of levels and standards of living. On occasion, it tends to "oblige" the company to perpetuate these earning opportunities; or if this cannot be done, as in cyclical contractions, the earnings adjustment are sharp and may affect morale.

in the operations of the firm, the profitability of the work involved, the urgency of the delivery date, the service orientation of the firm and managerial discipline. In any case, near peaks in general business conditions, workloads tend to be heavy, deliveries urgent, the labor market tight, and recourse to longer hours least avoidable. The foremen request additional help but frequently have to wait for it—and that is the explanation they give if taken to task for the high costs of hours at premium rates.

Suppose now that the demand, originating from the sales department, decreases somewhat. These decreases will take pressure off the production department and will first result in a reduction of the costly overtime and other premium pay hours (such as Sunday and holiday work), thereby reducing the length of the average workweek. At the same time, hiring will be less aggressive. In particular, the hiring for the specific purpose of avoiding overtime will be stopped or at least reduced. However, the fact that overtime hours are cut will not necessarily induce foremen to cancel their requests for additional help. They have no reason to assume that the reduction of pressure is more than temporary. Having just reached the desirable condition of more “normal” operations, they will not want to jeopardize this state of affairs. For some hard-to-get personnel they may have been clamoring for a long time and will certainly not withdraw their demands. There may be some lay-offs of temporary labor. But so far as work is concerned, there is characteristically still quite some backlog and there are many tasks that were postponed in order to give priority to urgent orders. And the labor market, on the whole, is still very tight. Voluntary quits will typically be replaced, and the requisitions of old standing will be kept active. If hiring is done to cut overtime, recruiting and training costs have to be considered. But recruiting costs are fixed costs largely already incurred; and training costs, spread over any prolonged employment of new workers, tend to be below overtime costs. For many new jobs, training periods are short, trained workers can be hired, and even untrained workers will soon begin to produce—albeit at low productivity. In general, the breaking-in costs are not regarded as a major deterrent to replacing overtime by regular workers. From the foreman’s point of view, there is no reason to stop normal recruiting. At this stage of development, the more cautious hiring and the mild rise in lay-offs effects employment levels less than the decrease in voluntary quits. The short term decisions, on the foreman level, do not halt the continuous rise of employment.

How about the higher management levels? For the general reasons outlined at the beginning of this section, hiring policies will be changed only if there is clear indication that business has taken a turn for the

worse. Management cannot change expectations and policies with every little wiggle in the order or sales curve. Internal and external evidence must be strong enough to justify a turn-about. This takes time. Information on orders, sales, backlogs, capacity utilization, labor costs, factory margins and profits are part of the internal evidence. Industry statistics, trade opinion, general economic indicators and business forecasts are examples of the external evidence considered. Eventually, after modifying their outlook, businessmen will decide to retrench and in this process change employment policies drastically. In the meantime, the old policies stand.

It is essential to qualify this somewhat simplified account. If the projected workload of a plant, or section of a plant, requires less than the present contingent of workers, foremen as well as higher management will of course try to reduce the payroll, without waiting for signs of a companywide, industrywide, or nationwide recession. However, management may try to find spots for these workers elsewhere—perhaps as replacements for voluntary quits, retirements, etc. It will not, characteristically, broaden such action into a policy change until the conviction grows that retrenchment on a larger scale is required.

Other complications beset the contraction of employment. If the adjustment requires not only reduction of hiring, but actual lay-offs, company policies may be circumscribed by collective agreements. In many cases dismissals of workers with seniority of, say, two and more years, may be permitted only after the workday is cut for all, or after consultation with the union. Even if lay-offs are decided upon, seniority rules may delay the adjustment of employment. A worker whose job is to be abolished may have the right to “bump” a worker with lower seniority in the same or another department or even plant. The transferred worker has to learn the new job—typically from the replaced man. This leads to double-employment, albeit for a limited period, at the very time that a policy of labor input contraction is pursued. The significance of this kind of “double employment” will become fully apparent if it is realized that “bumping” is a chain-reaction procedure and that several “bumps” may be involved in the cancellation of a job held by a man with high seniority.

Finally, the mechanisms of decision making vary between large and small plants and among individual plants of the same size group. Foremen have different degrees of authority in different plants. Thus the explanation of the lead of hours should not be conceived in terms of conflicting policies at different management levels, but rather as the result of differences in the means of short term and longer term adjustments.

These seem characteristically "out of phase" during a brief period preceding employment peaks.

Labor Input Adjustments at Troughs

What is the typical process in the neighborhood of troughs in business activity? Again, a variety of circumstances and of managerial considerations play a role in causing average hours to turn in advance of employment and manhours. Near the trough of specific cycles in a given industry or company, there is the likelihood of short time and of underutilization of manpower even during the hours of employment.⁴ Suppose orders increase and production schedules are stepped up. Some of this may be possible without measurable adjustment of labor input—by just "taking up the slack." Some further increase in output may be achieved by extending the workweek of those presently employed to full time or, for a limited period, even beyond full time hours. If more men are needed for a particular job, there may be an attempt to transfer workers from other jobs or departments overstaffed in relation to the available work. During this period of readjustment, lay-offs will be reduced and hiring will be done where the demand for labor input cannot be met by the existing work force.

At the start, any rehiring or new hiring will be cautious and will not exceed total separations (be they for economic or personal reasons). Thus employment will continue to decline. Why are supervisors and managers inclined to step up hiring only cautiously? There is the need to increase the hours of those who accepted short-time in lieu of lay-offs. There may be union agreements regulating the sequence of the build-up, and requiring that normal hours be introduced for the employed workers of specified seniority before new labor is hired. Also, guaranteed wage provisions and the experience rating aspects of unemployment insurance contributions make it desirable not to "commit" the company more deeply than necessary. And the initial costs of hiring, training and supervising new workers must enter entrepreneurial considerations to some extent. Finally, the retrenchment policies instituted by management during the contraction are likely to be still in force—even after the hiring rate has turned up and the lay-off down. These policies demand lay-offs of dispensable workers and a moratorium on new hires to the best of the supervisors' abilities.

Why does management not change its policy promptly? Again we must realize that we are close to the trough in business conditions. Thus

⁴This underutilization is particularly pronounced in case of indirect labor but also, in many circumstances, discernable in case of production workers.

the needs for defensive managerial policies are still pressing. And the disadvantages of liberal hiring at this stage, (and its effects on labor costs, morale, experience rating and so forth) are, of course, also considered above the foreman level. It should further be considered that labor is plentiful during those times, and although some companies use this situation to build some "inventory" of desirable workers, this practice plays a minor role in the general state of the labor market. Management will resume expansionist policies only when it is firmly convinced that the turn has come. And that may take several months.

Again, these general conditions may be modified by a host of special circumstances. Large orders in one or the other department, the promise of early delivery in order to obtain a given contract, a promising outlook for specific products, production processes requiring new stocks, excessive lay-offs or postponed hiring during the preceding period, collective agreements specifying a lower normal workweek—these and other circumstances may easily interfere with the neat and orderly sequence of turns in weekly hours and employment, which we are so assiduously explaining. But the wide variety of business circumstances is well recognized. The host of modifying circumstances is reflected in the fact that in 33 per cent of our observations on individual plants, cyclical turns of weekly hours could not even be matched with those of employment. And in some of the matched turns, weekly hours did in fact not lead employment. For a substantial majority of cyclical experiences, however, our account should provide a satisfactory explanation.

Will Hours Continue to Lead?

We have observed that, in the past, cyclical turns in the length of the average workweek showed a good record of preceding turns in employment and in general business conditions. In the earlier sections of this paper we investigated the reasons for this phenomenon. Let us see whether these insights permit observations on the likelihood that weekly hours may preserve their indicator characteristics in the future.

The long-term trends toward lower weekly hours and higher employment levels may be expected to continue into the future. These trends would tend to hasten peaks in hours and delay those in employment; conversely, they would delay troughs in hours and hasten those in employment. In the first instance this would lengthen, in the second shorten the lead of hours over employment. However, our findings are based on a period during which these long-term trends toward higher employment levels and a shorter workweek were already in operation, and there is no reason to assume that their impact will be fundamentally changed. Thus

we do not anticipate that these forces will produce any basic change in the relation of hours and employment turns.

The recent growth of a number of institutional arrangements also bears on our question. Guaranteed annual wage agreements, union rules on the mechanics of lay-offs and rehiring, protection of seniority rights, and interest in retirement benefit funds are examples of such developments. The main tendency of these institutional arrangements is to increase employment security and to reduce labor turnover. Hence, variations in labor input—to the extent that they are all affected at all by these developments—will be shifted toward a manipulation of the length of the workweek rather than the number of workers. This will tend to perpetuate the lead of average hours over employment. However, some arrangements will not have this effect. Supplementary unemployment benefits are an example. During the recent recession, the automobile workers preferred lay-offs of low seniority to a short workweek for all workers. Combined unemployment insurance and supplementary unemployment benefits assured a fairly high income for those layed off; the earnings of the high seniority workers were protected; and the overall income for the group as a whole was higher than it would have been otherwise. Assuming the perpetuation of present rules, the spread of supplementary unemployment benefits in the future would tend to damp the cyclical fluctuations of the average workweek.

Technological progress in the direction of greater automation may affect the fluctuation of hours. Highly mechanized around-the-clock operations, such as now exist in certain process industries, might be expected to impose an increasing rigidity on the manipulation of the workday. However, this does not necessarily imply rigidity in the length of the workweek per worker. Shifts can still be lengthened or shortened and a smaller number of shifts distributed among a given number of workers without disrupting the continuous process. The overall effect of automation, however, may be in the direction of less flexibility, since changes in the number of days worked and in the length of shifts are managerially cumbersome—certainly more so than arrangements for overtime or short time under less rigid operating conditions.

Will progress in management techniques affect the lead of weekly hours? The corporate officers interviewed expressed some interest in setting standards for decisions on adjustment of labor input. We learned of attempts to develop formal standards, ranging from a simple rule of thumb to more sophisticated approaches. A simple approach might be illustrated by the rule: "If 50 hours overtime at a semi-skilled occupation are required for more than six weeks, we will hire an extra man." In

another case, there were experiments to base hiring (and lay-off) decisions on a combination of five or six controlling factors such as length of prospective employment (or dearth of work), level of skill, degree of specialization and training time. But it was evident that rules or formulae were rarely relied upon in practice, presumably because of the many complicating factors and special circumstances. Frequently, decisions may be heavily affected by circumstances that do not lend themselves to formalized consideration; an example is the need of an important customer for a particular job at a particular time. This seems to set limits to formalizing the decisions on overtime versus hiring—and thus on a mechanical management of the hours-employment composition of labor input.

One more factor which should be considered is improved business forecasting. If turns in employment lag turns in hours in part because of belated realization of cyclical changes in industry or company activity, increased awareness and skillful use of economic indicators might conceivably shorten this lag and prevent companies from continuing hiring and lay-off policies after circumstances warrant a reversal. However, despite current progress in this field, forecasting remains speculative. We cannot expect important changes in the hours-employment leads to originate from this quarter. Sharpened foresight and wise economic policies may tend to reduce the severity of business cycles, and consequently, of labor input fluctuations. However, such reductions would be unlikely to affect the lead of average hours over employment in its role as an indicator of economic change, since hours have led during both severe and mild cycles.

Altogether, although there are factors which may tend to limit the flexibility of hours of work, the lead of weekly hours over employment turns will probably be maintained in the foreseeable future, and with it the importance of the length of the workweek as an indicator of cyclical change.