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**A NEAR-TERM LOOK AT THE CAPITAL SHORTAGE**

**Remarks by**

**Henry C. Wallich**  
**Member, Board of Governors of the Federal Reserve System**

**at a**

**meeting of the**

**Western Economic Association and Western Finance Association**

**San Francisco, California**

**Saturday, June 26, 1976**

## SUMMARY AND CONCLUSIONS

There is still a great deal of doubt whether we can avoid a capital shortage as economic recovery proceeds. In the near term, one sign of an impending capital shortage will be the appearance of bottlenecks in the industrial sector of our economy. Presently the data on capacity and its utilization are seriously defective.

The Federal Reserve Board, in order to remedy the deficiency of the data, is improving its series on utilization rates. The new series in general will show that we have substantially less unused capacity than indicated by the old series.

My preliminary reading of the improved data, nevertheless, is that we need not be greatly worried about major bottlenecks well into 1977.

Thereafter, the pace of recovery will be a critical factor. If the economy expands very rapidly, we may not have time to put in place enough capacity to avoid shortages. A moderately paced recovery will give us more time to produce the plant and equipment.

As we approach full employment, the stance of the Federal budget will decide in large part whether we shall suffer an overall capacity shortage. If the Federal full employment budget remains in deficit, we may well find ourselves investing less than required to employ fully our labor force.

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Discussions of impending capital shortage have begun to fall into something of a pattern. Typically, the author begins by examining the share of GNP that needs to be invested in order to meet the requirements of economic growth at more or less our historical rate. He modifies the recent historical GNP ratio of 15 per cent for total private investment or of 10.5 per cent for business fixed investment in accordance with a number of fairly obvious new elements -- more environmental and health and safety investment, probably less housing investment, perhaps a little less for schools and hospitals. Typically, he finds a modest increase in investment requirements over past investment rates amounting to one-half to one per cent of GNP.

The author then turns to the supply of savings from households and firms, and notes as a favorable factor that the personal savings ratio of late has risen substantially, or perhaps as an unfavorable one that the personal savings ratio is apt to decline hereafter from present high levels. He further notes that corporate profits have risen substantially over the last year or perhaps that their recent high level involves a significant overstatement owing to inventory profits and underdepreciation. He is apt to end up with a question mark concerning the future net borrowing or lending position of the public sector.

My own conclusion from repeated performance of this exercise has been that the Federal budget deficit or surplus is the crucial factor. Anyone who relies on a future Federal surplus as the means of forestalling a capital shortage at full employment has the burden of proof upon himself. Insofar as I have had to modify my views over the last year, it has been to the effect that household and corporate savings look a little more promising than they did earlier, while the outlook for a significant full employment surplus looks a little more dubious.

#### Two Short-Run Views of a Capital Shortage

Instead of repeating this macro exercise, I would like to devote today's discussion to two more immediate problems: (1) the adequacy of our present capital stock to employ fully the labor force

in the near term and (2) the question whether we shall be able to avoid bottlenecks even before we get to full employment.

Implicit in my focus on the near-term capital stock are two possible versions of the concept of a capital shortage. They are by no means the only ones that can be imputed to this concept which, in strict theory, has no proper place in a market economy where interest rates are supposed to equate the demand for and supply of capital. One such concept is the capital/labor ratio. The question here is: Has this ratio in the last few years evolved in a manner that would allow us to reach full employment of the labor force before, or at the same time as, we reach full employment of capital? The other concept relates to industrial capacity and capacity utilization rates. Do the present and projectable utilization rates allow enough margin to avoid bottlenecks and the resulting inflationary pressures? My answer will be a tentative no to both questions.

In developing these answers, I shall have occasion to refer to work now going forward at the Federal Reserve Board which will revise and greatly broaden presently available data on capacity and utilization rates in the production of materials and in industrial activity.

### The Capital Stock and the Labor Force

I shall begin with a few comments on the evolution of the capital stock in relation to GNP and to the labor force. Since 1947, and

through 1974, the real gross capital stock and real GNP for the private economy have risen at approximately the same rate. Thus, the output/capital ratio, i.e., the productivity of capital, has changed hardly at all, for the average of the period. However, the same cannot be said for subperiods. From 1947 to 1966, the productivity of capital increased at an average rate of one-half per cent per year. From 1967 to 1974, it fell at an average rate of 1.3 per cent. In recent years, therefore, more capital was required, or at least was being employed, to produce a unit of output than during the earlier period. The recessions of 1969-70 and 1974-75 may have contributed to this outcome but the data nevertheless suggest that our capital needs, relative to output, have tended to increase of late.

Turning to the capital/labor ratio, we observe that it has increased throughout the years 1947-74. The capital stock, like the GNP, normally tends to grow faster than the labor force. This is an important element in raising the productivity of labor, i.e., output per hour. This rise in the capital/labor ratio has been about the same during 1947-66 and 1967-74.

The fact that the capital stock rose faster than the labor input measured in hours does not indicate, however, that additions to the capital stock have been adequate. In recent years, productivity gains per hour have slowed down significantly, from an average of 3.4 per cent during 1947-66 to 1.6 per cent during 1967-74. While in part this slowing of productivity no doubt reflects recession conditions, in part it also suggests that additions to the capital stock have not been sufficient. And indeed it should be noted that, using a different

set of data and different time spans and employing the net capital stock and the labor force for computing the capital/labor ratio, it appears that for the years 1960-69 this ratio rose at an average rate of 3 per cent per year, and at only 1.1 per cent per year for 1969-75. These data strongly suggest that in recent years additions to the capital stock have been less than adequate.

Further confirmation of the slowing of productivity increases can be derived from a look at hourly compensation, stated in real terms (data adjusted for both overtime and inter-industry shifts in employment patterns, relating to private nonagricultural work force). Hourly compensation reflects the marginal productivity of labor, if we accept as a broad generalization that labor tends to be paid its marginal product. Output per hour paid, i.e., labor productivity, reflects the average product of labor. Hourly compensation, the marginal product, rose at 2.3 per cent per year during 1947-66. During 1967-74, it rose at only 1.2 per cent per year. Thus, the diminishing growth of the marginal product of labor roughly parallels the diminishing growth of labor's average product. While none of this can be said to demonstrate conclusively that we have underinvested, relative to the standards of capital adequacy set forth above, the suspicion that we may have done so seems rather well founded.

#### Capacity Utilization Rates

That brings me to my second topic: utilization rates. If we accept the hypothesis that we have underinvested, and that

the capital stock has not grown fast enough relative to the labor force, this ought to show up in a rise in capacity utilization rates, other things being equal. Unfortunately, other things have not been equal. In particular, the economy is still recovering from a severe recession, unemployment is very high, and utilization rates for that reason must currently be expected to be very low. The question is how high they would be if we were operating at something approaching full employment.

Data on utilization rates and, implicitly or explicitly, productive capacity, are very unsatisfactory at the present time. That is why the Federal Reserve is making a strong effort to improve them.

Among the well known series on capacity utilization, there are: the Federal Reserve Board Index of Manufacturing Capacity Utilization, the Wharton Index of Capacity Utilization, the McGraw-Hill Survey of Capacity Rates of Operation, the Census Bureau Survey of Plant Capacity, and the BEA Utilization of Manufacturing Capacity. The data cover only the manufacturing sector of the economy at best, accounting for about one-third of the GNP. Services are left out, and so, of course, is the public sector. The various series tell very different stories, with the Federal Reserve index relatively low, Wharton relatively high, and McGraw-Hill in between but closer to the Federal Reserve than to Wharton. Federal Reserve

certainly and McGraw-Hill very probably are far too low. Even during peak periods, such as 1969 and 1973, they never advanced anywhere near 100 per cent, but typically have remained below or only slightly above 90 per cent utilization. Wharton comes close to 100 per cent at such times, thanks to its method of construction which assumes that the peak output by two-digit industries reached during any major business cycle represents 100 per cent of capacity. Thus it happened that in 1973, when the Federal Reserve and McGraw indexes still seemed to signal ample capacity in most lines, we were, in fact, experiencing severe bottlenecks and were very much surprised thereby.

It must be borne in mind that practical capacity typically remains below the physically possible maximum, and that annual capacity or capability remains below peak monthly or weekly capacity. Indexes ought to be so constructed as to allow for these facts. If practical capacity is reached at a level of, say, 90 per cent, the public and even policymakers may easily be misled about true unutilized capacity.

#### Improved Federal Reserve Indexes of Utilization

As an interim solution, the Federal Reserve has produced its by now well known Major Materials Capacity Utilization Index. This covers only about 22 per cent of total industrial materials production and only about 8.5 per cent of total industrial production. For the first quarter of 1976, this index shows operating rates in the industries

covered at 81 per cent, with 71.4 per cent in durables and 84.2 per cent in nondurables. It contrasts with the Federal Reserve series for manufacturing capacity utilization which in the first quarter stood at 71.9 per cent. Compared to a peak of 94 per cent in the third quarter of 1973, the major materials index therefore indicates there is not all that much excess capacity left even now, especially when we look at particular industries.

The Federal Reserve is trying in several ways to improve its presently available utilization indexes. First, the major materials index is being broadened to cover all industrial materials so as to give us a total materials utilization index. Indications are that the level of this index will not differ greatly from that of the existing major materials index. Some new series with lower current utilization rates will be included and will pull the final index down. But an adjustment will also be made for "seasonal loss," reflecting the fact that it is not possible to run the plant of an industry at the same rate during the whole year at which it can be run during some brief, seasonal peak load period. Thus, the existing major materials index can be used as a rough estimate of the total materials utilization rate. This total materials index will begin to be published monthly in the Federal Reserve's Industrial Production Statistical Release beginning in mid-July. Quarterly data from 1973 through 1975 will be published in the June Federal Reserve Bulletin.

Second, the Federal Reserve will present a revised version of the present index of capacity utilization in manufacturing. This revised index will be published this fall in the Federal Reserve Bulletin and will show a considerably higher utilization rate than the present index.

Third, the Federal Reserve is moving to produce by next year a capacity utilization index for all industrial activity, i.e., paralleling the Federal Reserve industrial production index. This new index will cover an area about 14 per cent larger than the present index for manufacturing. The new index covering all industrial activity will also show a considerably higher utilization rate for the 1970's than its precursor, the present index of capacity utilization in manufacturing. The revision shows a higher utilization rate because allowance has been made for the fact that the ratio of capacity to capital stock in manufacturing no longer appears to be rising, as it did during the 1950's and 1960's.

#### Recovery and Prospective Bottlenecks

Present levels of indexes, whether now available or, at best, still in experimental form, do not, of course, tell us whether or not we are likely to encounter bottlenecks as the expansion progresses. This depends in part on the speed of the expansion. A very rapid expansion would not allow us enough time to remedy the deficiencies of the overall capital stock and in particular the bottlenecks that were visible in 1973-74. A more moderate expansion would provide more leeway in this respect.

The prospect for avoiding bottlenecks further depends on the way in which the worldwide business cycle develops. A major raw materials boom, synchronized for most industrial countries, as we experienced the last time, would prevent particular shortages from being remedied by imports and would further aggravate these shortages through speculative accumulation. A more balanced expansion, proceeding at different rates in different countries, would be more favorable.

My intuitive interpretation of the present preliminary data is that we need not be concerned about major bottlenecks well into 1977. Thereafter, a rapid expansion would quite likely produce bottlenecks.

As the expansion proceeds, the question raised at the outset, however, will become increasingly pressing: Do we have the savings that would make possible investment on a scale sufficient to prevent bottlenecks? This will depend largely on the stance of the Federal budget. Since I sketched out the nature of the problem at the beginning of my comments I shall not address it again here.

Likewise, the question of finance will become pressing. Assuming the savings to be available, will the financing capacity of enterprises -- their ability to sell equity and to borrow -- permit the channeling of these savings into fixed business investment? Many businessmen, when they speak of a capital shortage, think of it in terms of market-imposed restrictions on financing rather than in

terms of a macro calculus of the flow of funds. While I agree that this balance sheet and cash flow problem is also a serious one, I shall not address it here.

Finally, there remains the very serious question whether, at full employment of capital, our capital stock will be adequate to employ the full labor force. This question cannot receive a conclusive answer from the data adduced. An intuitive evaluation of the relative growth rates of capital stock and labor force and of the movement of the capital/labor ratio leaves considerable doubt as to the adequacy of the capital stock. It will take time to protect us against the risk of such an inadequacy. The fundamental remedy will be a restructuring of our output, with less emphasis on consumption and more emphasis on investment. In an economy in which most of the pressures are on the side of consumption, this will not be an easy job.

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