

Research Department Federal Reserve Bank of San Francisco

August 29, 1975

Inventory Time

Many observers (including this one) have argued for years that inventory control was becoming an exact science because of the advent of computers and modern management techniques. But 1974's experience belied all that. Overnight, it seemed, an economy of shortages was transformed into an economy of gluts, and every warehouse and storage yard in the nation became filled to overflowing. Hard on the heels of a severe consumer recession, the worst inventory recession in a generation struck in full force, causing a \$38-billion cut in GNP (annual rate) between the second half of 1974 and the first half of 1975.

It wasn't anyone's fault in particular. Businessmen's orderbooks were bulging—how were they to know the extent of double- and triple-ordering involved?—and in an inflationary atmosphere, they felt impelled to buy feverishly to beat ever-impending price increases. Worse still, the official inventory statistics turned out to be misleading, as 1974 data revisions showed.

Analysts found that the usual inventory - sales ratio had understated the massive 1973-74 buildup, not only because of the weakness of the underlying data but also because of the impact of inflation. In the traditional formula, the inventory stocks in the numerator of this ratio are valued in prices of earlier periods, while sales in the denominator are valued in (much higher) prices of the current period. This inflation-caused un-

derstatement was largest in the case of the last-in-first-out (LIFO) accounting technique.

Better measure

This experience has led forecasters to place more reliance on the ratio, in constant-dollar terms, of the total stock of business inventories to final sales in the business sector of the economy. The ratio represents physical relationships that are not influenced by relative price changes. Also, this measure is broader than the conventional manufacturing-and-trade ratio, since it covers the entire business economy, including agriculture, mining, construction, and the service industries.

This broad inventory ratio trended irregularly downward between the late 1940s and the mid-1960s, giving strong support to the theory of ever-increasing efficiency of inventory management. There were wide cyclical swings, with the ratio falling in booms as stockrooms were stripped clean and rising in the early stages of recession as unwanted inventories piled up. However, the trend was clearly down, with inventories amounting to about 34 percent of final business sales in early 1947 and only 29 percent of business sales in early 1966. But then a reversal occurred. The ratio rose to almost 32 percent in the 1970 recession, fell again to the 29-percent lowpoint in the early-1973 boom, and then soared to 33 percent in late 1974. Despite 1975's severe cutbacks, real inventories

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still amounted to 31½ percent of final business sales this spring, or higher than at practically any other time in the last two decades.

This evidence is supported by detailed data available for durable-goods manufacturing, where most of the problem is now centered. (Liquidation of durable stocks began late in the first quarter, somewhat later than in trade or in nondurable manufacturing.) Although the data are stated in current-dollar instead of real terms, and thus distorted somewhat by inflation, they provide useful information by permitting an analysis of durable-goods stocks by stage of fabrication.

The level of raw-material and goods-in-process inventories, when related to unfilled orders of durable goods, is one indication of the continuing glut. This ratio (in current-dollar terms) jumped from 52 percent in mid-1974 to 64 percent in mid-1975, as manufacturers watched their stocks pile up in the face of rapidly falling backlogs. The same problem has been evident at the final production stage. The ratio of durable finished-goods inventories to shipments has risen from a relatively low 46 percent to a relatively high 61 percent over the past year, with stocks continuing to climb in the face of falling sales to final buyers.

Conflicting pressures

The wild cyclical swings revealed by all these ratios are an important part of the inventory problem, but equally critical is the apparent reversal during the past decade of the postwar trend toward lower inventory ratios. Several factors have continued to put downward pressure on shelf-space requirements. The greatest efficiencies have come from innovations in operations-research and computer techniques, which have helped to conserve inventories by speeding up stock control and improving the locational efficiency of plants and warehouses. Long-term changes in the composition of the economy have also tended to reduce the required level of stocks. Service industries, whose inventory requirements are much lower than those of other industries, have grown half again as fast as manufacturing industries over the past decade and a half.

By the late 1960's, however, these forces began to be offset by other factors generating higher inventory ratios. One was a Vietnam-related buildup of inventories of defense products, especially aircraft. At all times, inventories are quite large in the durable-goods sector, since manufacturers must hold on to large quantities of goods in process because of the long time-span between order-taking and delivery. During the Vietnam buildup, this was especially true for aircraft and other products with long manufacturing lead-times.

Another factor generating ever-larger inventories has been the force of inflation, which in 1973-74 led purchasing agents to ignore the heavy cost of inventory financing and to participate in a head-long flight into goods. In this period, purchasers steadily built up their stocks of materials and finished goods, acting on the assumption that their sales would continue to expand at ever-higher prices. Yet another factor aggravating the situation has been the cyclical pattern of purchasing habits. As sales picked up in the recent boom, purchasing agents all increased their orders simultaneously, and hard-pressed suppliers stretched out their delivery times. But with longer delivery times, purchasers decided to increase their desired levels of inventories and thus expanded their orders even more. This feedback process built on itself and created massive order backlogs.

Shifts in '75

The latter factor was reversed in early 1975. With the sales reductions of the past year or so, order backlogs have gradually been worked down. With inventory goals achieved, purchasing agents have reduced their orders, and the result has been a significant decline in lead times and in shipments. Only 24 percent of all major firms were reporting slower deliveries this spring, compared with 88 percent of the total in early 1974. With lead times shrinking in this fashion, and with sales falling

relative to current production levels, purchasing agents have pared orders even more to reduce inventories; this in turn has cut lead times further, giving another push to the downward cycle.

The inventory liquidation, the worst of our generation, should come to an end in the latter part of this year as desired inventory positions are restored and as rising final sales create the need for new inventories. Even with no net increase in stocks, the snapback from the first half's steep decline would mean a \$25-billion boost to the GNP totals. Moreover, the recent increase in defense purchases, with prime-contract awards rising 13 percent over a year ago, should expand the needs for goods-in-process inventories. And finally, the recent price acceleration, exemplified by July's (and August's?) double-digit rate of increase in wholesale prices, could generate another wave of advance ordering in coming months. This may be the crucial near-term determinant of inventory behavior. In the absence of renewed inflation, purchasing agents could concentrate on the cost-cutting, profit-enhancing aspects of inventory management, and thereby create the atmosphere for a solidly based business upturn.

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 8/13/75	Change from 8/06/75	Change from year ago	
			Dollar	Percent
Loans (gross, adjusted) and investments*	84,797	- 55	+ 754	+ 0.90
Loans (gross, adjusted)—total	63,785	- 131	- 2,231	- 3.38
Security loans	1,070	- 89	- 89	- 7.68
Commercial and industrial	22,826	- 180	- 878	- 3.70
Real estate	19,568	+ 22	- 179	- 0.91
Consumer instalment	9,906	+ 14	+ 345	+ 3.61
U.S. Treasury securities	8,234	+ 35	+ 3,255	+ 65.37
Other securities	12,778	+ 41	- 270	- 2.07
Deposits (less cash items)—total*	84,519	+ 32	+ 4,569	+ 5.71
Demand deposits (adjusted)	23,379	+ 35	+ 920	+ 4.10
U.S. Government deposits	315	- 135	+ 2	+ 0.64
Time deposits—total*	59,441	+ 258	+ 3,805	+ 6.84
States and political subdivisions	6,145	- 138	+ 192	+ 3.23
Savings deposits	20,667	+ 14	+ 2,857	+ 16.04
Other time deposits‡	28,954	+ 268	+ 376	+ 1.32
Large negotiable CD's	15,135	+ 313	- 250	- 1.62
Weekly Averages of Daily Figures	Week ended 8/13/75	Week ended 8/06/75	Comparable year-ago period	
Member Bank Reserve Position				
Excess Reserves	18	34		29
Borrowings	5	10		226
Net free (+) / Net borrowed (-)	+ 13	+ 24		- 197
Federal Funds—Seven Large Banks				
Interbank Federal fund transactions				
Net purchases (+) / Net sales (-)	+ 1,752.7	+ 1,474.2		+ 1,276.9
Transactions of U.S. security dealers				
Net loans (+) / Net borrowings (-)	+ 554.2	+ 294.9		+ 530.3

*Includes items not shown separately. ‡Individuals, partnerships and corporations.

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