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# THE EFFECT OF WAR ON BUSINESS FINANCING:

## Manufacturing and Trade, World War I

FOR THOSE WHO OCCUPIED positions of financial responsibility in corporate management during the World War I era, the record presented in this paper will bring memories of feverish financing experiences, which up to mid-1920 were more often profitable than unprofitable but were decidedly the reverse in the latter half of 1920 and in 1921. These experiences undoubtedly left a deep impression, which affected attitudes and policies for years to come. To those whose financial responsibility began at a later date, the record provides insight into a period rich in financial lessons.

This study has a single objective: to show simply, directly, and as comprehensively as available data permit, how economic developments of the World War I era affected the financial structure—assets, liabilities and net worth—of manufacturing and trade enterprise. No one thinks that history repeats itself in detail, but a survey of this nearest parallel to the World War II period can be useful in observing and interpreting current economic tendencies.

Facts on financial structure are only the trees, and not the forest itself. Therefore this study opens with a general review intended to outline the over-all financing tendencies of World War I as revealed in detail in the subsequent analysis. A comparison with financing tendencies in World War II is also presented, but only in summary fashion. Thorough examination of the way in which the financial structure of business enterprise has reacted to the demands of the current war is reserved for a later paper in the present series.

The seven-year period that followed the outbreak of World War I has been regarded, for simplicity of treatment, as consisting of three major phases: the financial expansion of the war years, 1915-

18; the postwar financial expansion, 1919-20; and the postwar financial contraction, 1921. To set the wartime record in perspective, comparisons are briefly made, so far as the data permit, with financial experience before and after the war period, particularly with the two peacetime periods of financial expansion, 1922-29 and 1933-37, and with the two peacetime liquidations of 1930-32 and 1938.

The historical data available to us for tracing the financial experience of enterprise during the World War I era are far less complete than one would wish. They consist only of annual financial statements of comparatively small samples of manufacturing and trade companies in two size groups—large companies (over \$1 million total assets) and medium and small companies (\$50 thousand to \$5 million total assets).

The large corporation samples probably account for about 10 percent of the number of large corporations in these fields in 1920 and for about 20 percent of the total assets held by them. But the samples of medium and small corporations include altogether only a few hundred out of a total number of more than 70,000, and thus represent only a minor fraction of the total assets of manufacturing and trade corporations in this size class. All available evidence relating to the World War I period indicates that the financial behavior of medium and small companies contrasted in many respects with that of large corporations, and our samples of medium and small concerns display such a contrast.

The samples were collected for the most part in connection with the Financial Research Program's Studies in Business Financing, one of which deals with changes in the financial structure of manufacturing and trade enterprise since the turn of the century. Appendix A, which discusses the methods and limitations of the present study, describes the samples in detail.

The charts and tables that illustrate the detailed discussion are based on aggregate financial statements for the samples. This method, although subject to well-known limitations, was adopted first, because of its simplicity, second, because of interest in the overall financing tendencies of business enterprise, and third, because our records suffice to describe only the general contours of wartime changes in financial structure in manufacturing and trade. Aggregate balance sheet data and selected income statement data are presented in Appendix B.

Probably the most powerful influence affecting the financial experience of corporate enterprise over the 1915-21 period was the wartime inflation of prices and the postwar price collapse. Over the 6-year period following the outbreak of war, the wholesale price index more than doubled, and then during a single year it declined more than one-third. Business accounts clearly mirrored the wartime inflation and postwar deflation of prices and, what is more significant, they reflected the changing attitudes and policies of corporate management, which were among the strategic elements of the inflation and deflation process.

For six months prior to the outbreak of World War I, business activity in the United States had receded, and the immediate effect of the European conflict was to accelerate this recession. Within a year, however, revival succeeded recession, and domestic recovery forces were strongly reinforced by an inflow of orders from abroad, especially from belligerents for military supplies. Idle productive capacity was quickly reemployed, and corporate earnings and resources in manufacturing and trade began a rise that continued through 1920. Per annum rates of growth in business asset investment attained levels higher than those in any of the three prewar expansions (1904-07, 1908-10, and 1911-13) or in either of the postwar expansions that followed (1922-29 and 1933-37).

At the outset of wartime revival, current or working assets were relatively scarce, fixed assets abundant. The financing problem of manufacturing and trade enterprise was therefore to provide working assets, and the problem was soon accentuated by the advance of prices. For enterprise in both fields the increase in working assets—inventory, receivables, cash and marketable securities—was exceptionally rapid. The growth of such assets in proportion to total assets was especially marked during the war years proper, and was more noteworthy among large corporations than among medium and small concerns.

The increase in the book value of inventory over the war and postwar expansions (1915-20) reflected in part the effects of rising prices and in part larger holdings of physical stocks, both on hand and in transit. Inventory turnover, i. e., the dollar volume of inventory in relation to sales, declined through the war years for large companies as well as for medium and small concerns, suggesting that

protective and speculative inventory buying, induced by the price rise, and by transportation bottlenecks, exerted a cumulative inflationary influence on wholesale prices. After the war the inventory turnover of large corporations continued to decline, but that of the smaller companies moved upward. On the whole, inventory accumulation—by both large and smaller companies during the war years proper, and especially by the larger companies in the postwar years—appears to have been a strong factor in the financial expansions of 1915-20. Concerning the postwar years, price advances and shipment delays aggravated inventory speculation and provoked duplicate ordering on an exceptionally wide scale.

The wartime increase in dollar inventory helped to swell corporate profits because, as long as wholesale prices rose, the then prevalent methods of inventory accounting in manufacturing and trade generated unrealized book income as a result of the lag between the time of purchase and the time of sale of inventory. These methods, though based on averages of inventory cost, more nearly approximated the first-in, first-out ("fiffo") method of inventory valuation than any other. A substantial proportion of large companies made provision, through the establishment of special inventory reserves, for book losses that were bound to occur if the wartime price advance were converted by the cessation of hostilities into a decline, but in general these reserves were inadequate to meet the contingency of such a drastic price recession as occurred in 1920-21. A few of the more conservatively financed companies, e. g., the U. S. Steel and International Harvester Corporation, valued inventories in reports to stockholders at prewar prices and carried the difference between these values and cost as inventory reserves.

The growth in manufacturing and trade sales during the war years was accompanied by an increase in trade receivables, but the increase of other quick assets—cash and marketable securities—was even greater, and thus the liquidity of quick assets increased. During the war years the rise in the cash balances of manufacturing and trade corporations appears to have been somewhat more rapid than the increase in demand deposits of banks, largely because of increased cash balances among the large enterprises; but in the postwar years cash balances increased at about the same rate as circulating deposits. And marketable securities, which were a net

able proportion of business assets in 1914, expanded during the main period of American war borrowing (1917-18) into a significant item both for larger and smaller companies. Much of this investment was of course a patriotic response to the Liberty Loan drives and did not reflect a deliberate policy of building up corporate liquidity by investment in marketable securities. Large manufacturing companies liquidated marketable securities in 1919-20, and large trade companies did so in 1920, and from all the evidence this liquidation was large enough to help weaken the market for government obligations in these years; prices of government bonds fell slightly toward the end of 1919 and sharply in the early part of 1920. Some companies built up holdings of marketable securities while others were liquidating; this seems to have been particularly true of smaller concerns in manufacturing and trade. The expansion in wartime production, which was stimulated by war orders, by increased consumer incomes and by rising prices, prompted both manufacturing and trade enterprise to add new plant facilities. Not all of the plant expansion of the war years is visible in accounting records, for in war industries some contracts provided for the cost of special new facilities to be financed by contract advances. Prior to our entry into the war, European belligerents financed plant expansion in this way, obtaining a large part of the funds advanced from proceeds of security sales in American markets. Some plant expansion was covered under war contracts of our own government, 1917-18. Each of our samples had smaller percentage additions to fixed property in 1918 than in 1917—a consequence of war priorities and shortages—but there was some revival of fixed property additions in 1919 and an extremely sharp expansion in 1920. The average annual rate of investment in fixed property (increase, net of depreciation as shown by corporate accounts) between the end of 1918 and the end of 1920, and the average ratio of fixed property expenditure to the property account for those two years, were the highest attained between 1915 and 1937—a period including two wartime expansions (1915-18 and 1919-20) and two peacetime expansions (1922-29 and 1933-37).

For large companies the annual rate of investment in plant and equipment was lower, on the average, during the war years proper than during the expansion years of the '20s; for the smaller companies this rate was higher during the war years than in the '20s.

Over the expansion years of the '30s, on the other hand, all of our samples except large trade corporations showed declines in plant and equipment account.

Granting that our wartime data are incomplete, it nevertheless seems that the increased output of military supplies was accomplished without abnormally large additions to manufacturing facilities financed by war industry itself, especially if allowance is made for the inflated building and equipment costs of this period. Moreover, such additions as there were apparently did not seriously interfere with plant expansion among manufacturing and trade enterprises serving consumers. The expansion of plant facilities in 1919-20 was clearly a response to the outburst of postwar consumer spending in this country, to an unprecedented influx of orders from world markets, and to business optimism that these developments engendered at prevailing and prospective price levels. In addition, the modernization of facilities became desirable as an aid to maintaining the high wage rates that had been established during war years. To judge from our samples, most of the wartime additions to the book value of fixed property accounts, however much inflated by abnormal costs, were carried over into the '20s at a slower rate of depreciation, without special postwar write-downs. However, some postwar write-downs were taken on war-built plant and equipment, after individual companies had established the economic obsolescence of such facilities, as permitted under wartime corporate income tax laws.

The postwar increase in the fixed property expenditures of manufacturing and trade enterprise has been interpreted as representing in significant part, replacement deferred during war years. The accounting records for our samples suggest that on the whole such corporations spent their depreciation and depletion accruals on replacement during the war period proper. The postwar expansion in plant facilities seems to have represented deferred replacement only to a small degree; to a much greater extent it developed because going concerns launched new business projects, some of which had been planned during the war years and deferred, some of which were newly conceived ventures. Among railroads, however, deferred replacement was probably of considerable importance, and their postwar expenditures for deferred replacement and property betterments undoubtedly swelled the demand for the o

out of manufacturing industry and, indirectly, for trade services as well.

Manufacturing and trade companies as a whole earned more and saved more in the wartime expansions than in the succeeding peacetime expansions: a much larger proportion of these corporations reported profits to the Treasury during the war and postwar expansions than in the expansion period of the later '20s or that of the '30s. After the second year of the war, profits after taxes tended to decline in relation to sales, but in relation to net worth they reached higher average levels than in the interbellum expansions. After 1916 corporate taxes took a large part of net income, claiming in 1918 as much as 45 percent of manufacturing profits and 35 percent of trade profits.

While retained earnings were an important source of funds for financing asset investment, external sources were also relied upon heavily. Short-term debt, a large part of which was bank debt, was the chief external source during the 1915-18 expansion for both the larger and the smaller companies represented in the samples we have observed; but in the postwar expansion sales of stocks and bonds exceeded in importance short-term debt as an external source of funds. In general, however, fixed asset investment was financed by retained earnings plus sales of new securities—stocks or bonds; and short-term debt, where relied upon, was confined to financing additions to working assets. In this respect the financing of wartime asset expansion was consistent with accepted standards of prudence. There were exceptions, perhaps too numerous as events turned out; our samples in each year had a few companies that financed part of their long-term investment needs by means of short-term debt.

The rapid expansion of bank deposits that occurred during the years 1915-20 was closely paralleled by the growth of bank loans. According to national bank figures, loans to manufacturing and trade enterprise constituted nearly half of the bank loans outstanding at the end of 1920. It seems clear, therefore, that increased borrowing by manufacturing and trade was a factor of considerable importance in the inflation of bank credit during the war and postwar periods. There are indications also that during the 1915-20 period the greater reliance on bank debt characterized the large corporations more than the smaller concerns. Over the entire six-year period, there apparently was a very considerable increase in



the total *number* of small and medium-size companies that owed debt to banks, but only a moderate rise in the average amount of such debt; on the other hand, the increase in the total number of large corporations that owed debt to banks was probably small, but the average amount of notes payable increased greatly.

One of the striking features of corporate financial behavior in manufacturing and trade during 1915-18 is the extent of the changes in balance sheet relationships that in prewar years had come to be regarded as "normal." The first departures from prewar rule-of-thumb standards were undoubtedly viewed as "temporary and essential expedients," but they were soon crystallized by the requirements of national war finance and by the process of wartime price inflation. While the new pattern of corporate balance sheet relationships reflected elements of strength—larger holdings of cash, marketable securities and receivables, and even increased working capital—it also reflected elements of weakness, such as higher book values of inventory, unprotected by adequate reserves for price recession, and greatly augmented short-term debt in the form of notes and accounts payable.

During the war years changes of this sort were more marked in the case of the large corporations. They were the enterprises to incur the stronger impact of wartime expansion pressures, and they were in a position to command promptly the large amounts of credit needed to finance wartime asset expansion, particularly the expansion of current assets. But financial expansion by medium size and small enterprises was likewise greatly stimulated in the early phase of the war period, and these companies too showed marked changes in balance sheet proportions from prewar years.

The story of financial experience in manufacturing and trade during the postwar boom of 1919-20 is one of accelerated growth in business assets and liabilities. For a time after the Armistice, many business leaders anticipated a substantial recession in wholesale prices and were hesitant in undertaking forward commitments. Both consumer and producer markets, however, received support from various sources: for example, the continued military expenditures of the Federal government; expenditures of bonuses and savings of discharged soldiers; expenditures of abnormal cash balances by industry and trade to maintain current operations and to make postwar readjustments; the expenditure of funds for special pur-

poses, obtained by business enterprises and ultimate consumers through the liquidation of Liberty Bond holdings; and the expenditure by foreign nations of accumulated dollar balances, of proceeds from new foreign loans, and of intergovernmental advances from the United States.

Although wholesale prices sagged in the first quarter of 1919, they failed to decline seriously as a whole, and soon began to move upward. This had a decisive effect on business expectations. As consumer and business spending gathered force, business sentiment turned buoyantly optimistic. Optimism was soon reinforced by unprecedented demands from world markets, demands that carried the dollar volume of exports and the balance of merchandise trade to record levels for the entire period between the two World Wars. Three strategic financial elements helped to make these great expectations effective: first, the willingness of banks to renew loans to borrowers with established lines of credit; second, the easy access to new bank and trade credits in domestic and foreign trade; third, the availability of the capital markets to private financing, now that the Treasury war financing program was ended and the control of the Capital Issues Committee relaxed.

Postwar sales of large manufacturing companies were well sustained in 1919-20, especially by heavy export demands, but sales of large and of medium and small manufacturing corporations moved sharply upward, mainly in response to the heavy wave of consumer buying financed from savings, bonuses, and current income. The accompanying financial prosperity of large trade companies and of thousands of the country's smaller enterprises was probably a major stimulant in the 1919-20 investment boom. It is significant that the proportion of manufacturing and trade corporations reporting profits was higher in 1919 than in any other year of the entire period 1914-39. Furthermore, there were fewer business failures in 1919 and 1920, and a higher ratio of new business enterprises to discontinued enterprises, than in any other years from the outbreak of World War I to the end of 1939.

It seems justifiable to say that while the financial expansion of 1915-18 was accentuated by the sustained response of large manufacturing corporations to wartime production and price stimuli, the expansion of 1919-20 was intensified by the response of large trade companies, and of the majority of medium and small com-

panies in both manufacturing and trade, to a price, market, and transport situation that was especially stimulating to them. The fact that in 1918 there was a check to the expansion of plant and equipment facilities in trade and in medium and small manufacturing plus the fact that the war years 1915-18 had been a time of high profits, high corporate savings and rapid working capital growth combined to produce the needed financial flexibility among all sizes of concerns to take advantage of diversified demands, domestic and foreign, after the war.

For most manufacturing and trade concerns 1920 was a year of profitable operation, but by mid-year business activity and prices had passed their crest, and by the end of the year demoralized commodity markets, widespread cancellation of orders, and mounting unemployment showed the acute financial distress of business enterprise. For the year as a whole, however, financial accounts reflected mainly a sharp expansion in resources; the effect of deflation was not recorded until 1921, when the current assets and debts of many manufacturing and trade companies suffered drastic shrinkage.

Although the financial distress of business concerns was only one of many factors that contributed to the 1920-21 recession, there is no doubt that the distress was severe and important. Several considerations illustrate its intensity.

First is the severity of the fall recorded in wholesale and retail prices. Between the middle of 1920 and the middle of 1921, the span of a single year, a sharper and more rapid decline in wholesale prices occurred than over the three-year period of drastic deflation from the middle of 1929 to the middle of 1932. Only farm prices declined more severely in the latter and longer period than in 1920-21. The percentage decline in retail food prices and in the cost of living was practically identical, judging from available indexes, for the two periods.

Second was the fact that falling prices imperilled commitments on forward orders, commitments to buy of both manufacturers and retailers, and commitments to sell of manufacturers. Postwar rising prices, and the artificial shortages which they precipitated, coupled with transportation bottlenecks, encouraged the practice of duplicate orders. When inventory stocks accumulated more rapidly than sales, cancellation of duplicate orders followed; and when it ap

ceived that deliveries were still in excess of needs, further cancellations followed. Domestic cancellations quickly spread backward from retailing, and as they gained force, receding prices brought a virtual avalanche of cancellations from international markets. In December 1920, the committee on finance and currency of the Chamber of Commerce of the State of New York issued a report declaring: "The wave of cancellations of buying orders and repudiation of sale by buyers, which at present is sweeping the world and is menacing also the United States, has called forth a great concern in business and banking circles."<sup>1</sup> Reputable concerns in these circumstances were confronted with a difficult choice. In many cases, enforcement of contracts to sell meant the conversion of inventory into receivables of dubious collectibility, with the serious danger that the latter would shortly become bad debts. Commitments to buy, on the other hand, involved a concern's credit standing in the trade, future as well as present, and were not lightly repudiated by responsible companies. One large rubber concern, reorganized in 1920, set up a reserve of \$24 million to cover losses on its commitments for future delivery. Manufacturing companies, whose post-war prosperity depended heavily on foreign orders, were especially vulnerable in this situation.

A third indication of the severity of the 1920-21 recession is the reduction in the book value of inventory that resulted from sales and write-downs. For the large manufacturing and trade companies included in our samples, the percentage reduction for the single year 1921 was roughly four-fifths of the percentage decrease over the three-year liquidation of 1930-32. Inventory write-downs of a group of 64 large manufacturing and trade companies for which information is available totaled \$344 million in 1920-22—for each corporation an average of more than \$5 million that disappeared into thin air. Such write-downs in 1920 amounted to 18 percent, and in 1921 to 13 percent, of beginning-of-year book value. Corporations that did not recognize the losses resulting from the collapse of prices by means of inventory write-downs, nevertheless experienced them in the form of smaller operating profits or larger operating losses arising from higher costs of goods sold.

Fourth is the fact that at the end of 1920 much of the swollen Chamber of Commerce of the State of New York, "Report of the Committee on Finance and Currency," *Monthly Bulletin* (December 1920) p. 13.

dollar inventory holdings were financed by short-term debt. It is true that a good deal of this debt was legitimate by conventional credit standards (e. g., the rule of thumb that there should be two dollars of current assets for each dollar of current debt). Nonetheless, about half of the companies represented in our samples had short-term indebtedness, including income tax accruals, that exceeded the highest amounts of "cash throw-off from operations" (net profit plus non-cash charges against income) in any one year of the entire war and postwar period 1915-20; and in some cases the excess was substantial. It seems clear that many business concerns, in following their accustomed practice of looking to future sales at the current price level for the liquidation of their short-term indebtedness, failed to discount fully the possibility of a sudden and drastic decline in prices that would prevent the full retirement of outstanding debt from current transactions. The companies represented in our data, while they are not numerous, are all concerns that survived both the liquidation of 1920 and the prolonged depression of 1930-32; in other words, they represent the more ably managed companies. Obviously, the debt problem faced by many imprudent and less well managed concerns must have been critical indeed, considering the commitment and inventory situation at that time.

Given the exaggerated business optimism occasioned by the fact that no serious postwar recession in prices developed in 1919, and by the prompt emergence of active demands for goods from domestic and world markets, it was perhaps inevitable that prudence and caution in financial management should have been thrown to the winds in early postwar years. And when this attitude was combined with the financial unbalance that had accumulated over four years of war prosperity, it seems inevitable, from today's vantage point at least, that business assets in postwar years should have deteriorated in quality as they increased in quantity, and that a severe financial crisis should sooner or later have resulted.

Considering the nature of the eventual crisis, its international as well as domestic basis, it could hardly have been avoided by any makeshift policies of business, banking and government, conceived and applied at the moment. Unfortunately, business departure from prudence in commitments to buy and sell, in inventory holdings, and in short-term business debt had gone too far in too many

ses. Furthermore, the participation of manufacturing and trade concerns in the speculative excesses of the period was widespread; in certain industries—of which automobiles, textiles, rubber, paper, retailing and wholesaling were outstanding examples—financial overextensions were numerous and conspicuous. Orders for goods were too often placed and accepted with a reckless disregard for the responsibilities involved. The ultimate liquidity of too many debt commitments, however consistent with customary practice and with the commercial credit theory underlying the newly established Federal Reserve System, was solely dependent on impending transactions at the inflated level of prices then prevailing; in other words, too few concerns took sufficient account of their future capacity to retire debt from funds retained from operations in case short-term market expectations failed to materialize. Lastly, too many business creditors and debtors were unprepared to make debt adjustments when financial crisis was at hand; too few of them had anticipated the possibility of such a crisis, and too few debtors had refunded excess short-term debt in time, or converted it into equity. In brief, businessmen, bankers, and public officials had simply raised their sights in the future too high and in so doing had overlooked immediate realities. Nothing except a different set of postwar business expectations, a less ambitious scale of business planning, and stricter adherence to older standards of financial prudence could have altered the result.<sup>2</sup>

Whether wartime taxes on corporate profits accentuated the wartime inflation of business debt, by reducing the funds available for internal financing or self-financing, is debatable. It is true that higher profits after taxes, if not paid out in dividends, would have made it possible to expand corporate resources after the war with less reliance upon current debt; on the other hand, such a fiscal policy would have made it more profitable to "trade on equity" by financing current operations with bank and trade credit. Moreover, departures from pre-1914 business standards of balanced financial structure had gone far even before the United States entered the war, and it cannot be said with certainty today that untaxed profits would have been used to liquidate current debt.

Opinions will differ as to whether the abrupt liquidation of current debt in this connection Stella Stewart, *Post-War Planning of World War I*, U. S. Bureau of Labor Statistics, Historical Study No. 63 (May 1943).

rent assets and short-term debt, given the inflated financial structure of 1920, was desirable from the standpoint of the long-run prosperity of the whole economy; and as to whether business enterprise could have avoided participating so extensively in the postwar accumulation of inventory, of current debt, and of forward commitments to buy and sell. Business concerns were, of course, following long-established practices of financing current operations, and their policies were formulated by executives whose experience did not embrace a single period of drastic price deflation. Furthermore the business contraction and price deflation of 1920-21 was more than a crisis of commitments, inventory and current debt; irresponsible cancellation of orders and the heavy liquidation of inventory and business debt seem mainly to have made the contraction more severe. Nevertheless, it was unfortunate that the postwar environment induced such widespread disregard of financial prudence.

In drawing general conclusions from this paper, it should be borne in mind that only a limited segment of the economy is dealt with here, and only a few of the factors involved. Many elements other than those associated with the financing of manufacturing and trade enterprise determined the course of the war period financial expansion, and many other elements, international as well as domestic, operated to bring about the postwar liquidation. The difficulties that beset any effort to obtain a completely comprehensive view are so great, however, that use must be made of investigations of more limited scope. Only by comparing the views of a number of different observers will it be possible to develop the entire record of World War I and absorb fully the economic lessons of that period.

#### FINANCING TENDENCIES, WORLD WAR II — A PRELIMINARY COMPARISON

Compared with the present conflict, World War I was part-time. Even in 1918, the year of greatest effort, probably only a little more than a fifth of the national product was devoted to war. Military output made no serious inroads on civilian supplies until the second half of 1918, and by the end of that year hostilities had ceased and demobilization was in full swing. But in 1941, before the country was directly involved in World War II, one-tenth of the nation's