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## THE LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS, WORLD WAR II

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### LIMITATIONS OF THE DATA

THE INTERPRETATION OF BALANCE SHEETS published by corporations during World War II presents difficulties which have to be brought to light before an analysis of the present liquidity position of corporations can be presented. Some of these difficulties concern items of the balance sheet which do not play any role in the analysis that follows and, therefore, need not be discussed here in detail. That the "net income" shown in the balance sheet for war years is a less reliable figure than the one for peacetime years, because of renegotiation of contracts and other factors, is well known. It is also common knowledge that a government-owned plant run by a company is not among the assets of the company and, therefore, that the ratio of fixed property to other items of the balance sheet is distorted.

The difficulties that arise in the interpretation of sales and cash figures are perhaps less well known. Since our discussion is based largely on these two items,<sup>1</sup> the influence that the conditions under which war production is carried on may have on these items needs to be emphasized.

Sales result from the operation of the corporation's own plant or of the government-owned plant. A few companies, in their reports, give figures for sales under each type of ownership; others do not. Some reports state explicitly that the published sales figure excludes sales resulting from the operation of government-owned plants. Other reports do not make any explicit statement, but carry in "other income" an item, "fees arising from operation of government-owned facilities" or some similar descriptive title. In this case, the plant is operated under a cost-plus-fixed-fee con-

<sup>1</sup> The payments figure used throughout this study is derived from the sales figure. (See Appendix C.)

tract; it can then be assumed that the sales figure excludes sales resulting from operation of the government-owned plant. In many cases no hint is given at all. However, a reasonable assumption is that, in the majority of cases, sales which result from the operation of plants that were leased to the corporations are *included* in the company's sales figure as reported.

As for cash, company reports often mention a special deposit "to be used exclusively on United States government contracts" (or some similar caption). For the present study, this item has been added to the other cash of the company. If a corporation that runs a plant for the government *includes* the corresponding sales in its reported sales figure, the ratio of cash to sales (or payments, derived from sales) as computed here is unbiased, since the cash balance includes cash required to operate the government plant. In cases where cash necessary for the operation of government plant is included in the cash shown in the balance sheet but corresponding sales are not, the ratio would be too high. Therefore, the ratio used in our analysis, if it is biased at all, is biased in an upward direction.

### POSTWAR RESERVES

Industrial concerns are acutely aware of the instability of present conditions and many firms have considered it essential to make some kind of financial provision for various contingencies arising out of the war and, more especially, for the reconversion to peacetime production.<sup>2</sup> This they have done by setting up special reserves, usually out of current earnings.<sup>3</sup> A survey by the American Institute of Accountants, based on 1941 fiscal year-end reports of 429 large corporations in 15 manufacturing and trade groups, shows that by the end of that year about one-fifth had established contingency reserves of one type or another for postwar purposes.<sup>4</sup> Tabulations of corporate annual reports for 1942, also made

<sup>2</sup> The American Institute of Accountants took early cognizance of this problem and in "Accounting for Special Reserves Arising Out of the War," *Accounting Research Bulletin*, No. 13 (January 1942) discussed the many technical problems in connection with accounting provision for postwar readjustment outlays.

<sup>3</sup> In some cases sums that were previously classified under "surplus" (representing past earnings) have been earmarked as reserves for contingencies; in such cases the setting up of reserves clearly involves no change in the corporations' financial positions compared with what they were before the reserves were set up.

<sup>4</sup> *Journal of Accountancy*, Vol. 74, No. 2 (August 1942) pp. 125-32.

by the Institute, indicate a considerable increase during the year in the proportion of companies providing postwar reserves.<sup>5</sup> A detailed investigation of postwar reserves made by the Securities and Exchange Commission and based on 250 selected companies reveals that 146 companies by the end of 1942 had set up reserves for war and postwar contingencies.<sup>6</sup>

Of the 45 corporations in our sample B,<sup>7</sup> 35 set up special reserves at one time or another after the end of 1939; some of these reserves were later released, particularly in 1943. The reasons for which reserves were set aside may be classified as follows:

### 1. Possible Decline in Inventory Values

Apart from protecting themselves against a decline in inventory values by a change-over from the "first-in, first-out" method of inventory valuation to the "last-in, first-out" method, many companies set up special reserves against a possible decline. Under the Contract Settlement Act of 1944, however, the danger of losses on inventories is largely removed.

### 2. Postwar Conversion of Plant and Equipment

Under this heading are included the costs of rearranging and adapting to postwar needs buildings and equipment now in use, and the costs of reinstalling machines that were removed and stored during the war. Also, in this classification, one corporation<sup>8</sup> mentions carrying overhead costs during the period of readjustment when current receipts will be low; and a corporation in the aircraft industry<sup>9</sup> refers to the development of non-aircraft products after the war.

### 3. Deferred Repairs and Maintenance

In some instances repairs and replacements that would have been made in normal times have had to be postponed, partly because of the necessity of keeping all machines continuously in operation, and partly because new machines and parts of machines have not been obtainable. In a few cases special reserve accounts have

<sup>5</sup> *Ibid.*, Vol. 76, No. 5 (November 1943) pp. 391-408.

<sup>6</sup> Securities and Exchange Commission, *Report on Corporate War and Post-War Reserves* (Philadelphia, October 1943).

<sup>7</sup> For a description of this sample see Appendix A.

<sup>8</sup> J. I. Case, *Annual Report for 1942*.

<sup>9</sup> Boeing Aircraft Company, *Annual Report for 1942*.

been set up for repairs and maintenance, though provision has more often been made through the normal medium of reserve for depreciation and obsolescence.

#### *4. Renegotiation of Government Contracts*

Reserves under this heading are intended to provide for retroactive readjustments of earnings that may arise during the war through the government's downward adjustment of the prices it has agreed to pay for deliveries of war materials.<sup>10</sup>

#### *5. Dismissal Compensation*

Concerns are making provision for payments to employees during the period of lay-off that is expected to occur while plant readjustments are being made.

Many of the reserves are simply called "reserves for contingencies," but inasmuch as they are evidently intended as a general provision for one or more of the purposes indicated above, it is fitting that they should be included in any statistical summation of special war reserves. For our 45 corporations, the total of all the sums allocated to reserves, which seem to be connected with wartime or postwar adjustments, amounted to \$275 million in the period 1940-42; this sum was equivalent to 10 percent of the corporations' net income (after taxes and before dividends) during those years. By the end of 1943 the total amount of such reserves was \$406 million.

The *primary* function of the special reserves is that of an accounting procedure which tries to make allowance for the lack of precision of cost determination. Managements of corporations rightly hold that in present circumstances, when the duration of their operations along present lines and on their present scale cannot be predicted any more than the duration of the war itself, the allocation of costs to specific fiscal periods of relatively short length has become an even more difficult task than it was in "normal" times.

A large part of the risk connected with the amortization of

<sup>10</sup> There is also considerable uncertainty connected with the cancellation of government contracts which will take place when the war ends. Some such cancellation is already occurring, and considerable business uncertainty is attached to these wartime cancellations.

equipment for the production of war goods is being shouldered by the government for emergency facilities. This has been done in six ways: (a) Some of the plants and facilities are financed and owned by the government through the Defense Plant Corporation (a subsidiary of the Reconstruction Finance Corporation) which leases them to the corporations operating them; (b) others are financed by the corporations which operate them, but the government contracts to buy them on sixty monthly instalments or upon earlier termination of the contract; (c) some have been financed as part of allowable costs under contract; (d) some plants and facilities have been financed by the corporations, but they may be amortized for tax purposes over sixty months; (e) some plants are owned by the War and Navy Departments and are operated either by them or by private corporations; (f) some are financed by loans from the Reconstruction Finance Corporation.

Industrial corporations, however, will have to face the costs of actually converting plants to peacetime production, the possibility that they may incur losses on their inventories, and the necessity of carrying large overhead costs that are unmatched by normal sales volume while the period of readjustment lasts. Corporation managers are probably justified in representing these costs as a charge against the income of the war period. There is no precise way in which costs can be allocated to the operations of individual years, since both the magnitude of the costs and losses, and the length of the war and therefore of the period over which they should be distributed, are uncertain. It is correspondingly uncertain what part of any year's sales proceeds can be truly considered as net income. Undoubtedly, corporations have created "special reserves" out of current earnings to emphasize the lack of finality of the figure declared as net income.<sup>11</sup>

Additions to earned surplus, though they are not separated as a distinct reserve labeled for a particular purpose, are not essentially very different from special war reserves. The important thing is that the corporation retains earnings within the business and distributes that much less as dividends. For the 45 corporations the

<sup>11</sup> The suggestion has been made by accountants (see American Institute of Accountants, *Accounting Research Bulletin*, No. 13, January 1942) that the use of the term "net income" in profit and loss statements should be discontinued for the duration of the war and the period of adjustment immediately afterward, and that the final item shown should be "increase or decrease in earned surplus."

proportion of retained earnings to net income as shown in the balance sheets in the four years 1940-43 was 47.1 percent, compared with 29.8 percent in the three years 1935-37. Retaining income instead of paying it out in the form of current dividends serves to build up a reserve against which the extraordinary costs connected with conversion can later be charged. By setting up special reserves and increasing the earned surplus, management tends to avoid overstating income at present and understating it in the immediate postwar years when earnings are, in any case, likely to be lower than they are now.

In the present study, the question of particular interest is whether or not it is true (as is widely believed) that the establishment of these special reserves also performs a second function, that of strengthening the liquidity of corporations.

#### LIQUIDITY POSITION OF MANUFACTURING CORPORATIONS

The composite balance sheet of the sample of 45 large manufacturing corporations yields no evidence, up to the end of 1943, of any exceptionally heavy increase in holdings of cash. The actual increase of cash was from \$1,131 million at the end of 1939 to \$1,665 million at the end of 1943 (Table 3). The percentage increase (47) was less than that of the total means of payment (78) in the same period.<sup>12</sup> Moreover, the ratio of cash to payments — which relates cash to the work it has to do — actually fell from 12.3 percent in 1939 to 7.5 percent in 1943 (Table 4); the 1943 ratio was not much higher than that for 1937, the year in which the ratio was the lowest of any time since 1929. Thus by neither standard of comparison — i.e., reference to the total means of payment or reference to the volume of corporate transactions — does the increase in cash holdings of this sample appear to be abnormally high. Therefore, on the basis of the corporations' cash position alone, the argument that their liquidity position has been strengthened considerably is not justified. This conclusion is contrary to a widespread belief, which obviously is based on the observation that the *actual* increase in the cash balance of corporations has been substantial.

<sup>12</sup> It also was far below the percentage increase in cash for all corporations. The Securities and Exchange Commission estimates that the cash of all corporations more than doubled in the period between the end of 1939 and 1943.

Table 3—COMPOSITE BALANCE SHEET AND SELECTED INCOME ITEMS,  
1939 AND 1943, FOR SAMPLE B OF LARGE  
MANUFACTURING CORPORATIONS <sup>a</sup>  
(millions of dollars)

<i>Item</i>	1939	1943	<i>Increase or De- crease, 1939-43</i>
<i>Assets</i>			
Cash	\$ 1,131	\$ 1,665	\$ 534
Marketable securities (tax notes)	403	1,798 (605)	1,395 (605)
Receivables	853	2,098	1,245
Inventories	2,303	3,298	995
Total current assets	4,690	8,859	4,169
Fixed assets <sup>b</sup>	5,483	5,358	-125
Investments	1,269	1,215	-54
Other assets	345	664	319
<b>TOTAL ASSETS</b>	<b>11,787</b>	<b>16,096</b>	<b>4,309</b>
<i>Liabilities</i>			
Notes payable	75	167	92
Accounts payable	420	946	526
Other current liabilities (tax liabilities)	490 (279)	2,859 (1,727)	2,369 (1,448)
Total current liabilities	985	3,972	2,987
Long-term debt	1,335	1,264	-71
Other liabilities	400	429	29
Capital stock	5,739	5,641	-98
Surplus	2,910	3,866	956
Reserves (special war reserves)	418	924 (406)	506 (406)
<b>TOTAL LIABILITIES</b>	<b>11,787</b>	<b>16,096</b>	<b>4,309</b>
Sales	8,933	20,366	11,433
Net income	699	795	96
Cash dividends	532	513	-19
Depreciation charges	482	627	145

<sup>a</sup> For a description of the sample see Appendix A.

<sup>b</sup> Net of depreciation reserves.

Our earlier analysis, however, has shown clearly that an attempt to measure the liquidity of corporations cannot be confined to consideration of their cash liquidity alone. If only the cash balance is taken into account, a distorted result is obtained; for



instance, if the year end occurs immediately after a war bond drive has been concluded, the cash balance will be relatively low, and, therefore, the ratio of cash to payments will be low; the reverse will be true if the year end falls in a period just preceding a war bond drive. For this reason, marketable securities must be included in our analysis. Such securities can be considered as good as cash, not only from the standpoint of an individual corporation but also from the standpoint of all corporations together, since liquidation of the securities is unlikely to cause a sharp drop in their prices for the following reasons: First, corporations can use part of the securities (especially tax notes) to make tax payments, an offset which is equivalent to a release of cash. Second, large amounts of government securities are short-term and bring in cash automatically, so there is no necessity to sell them. Third, if corporations should begin to sell the longer-term bonds, it is highly possible that the monetary authorities would support the market if it should show a tendency to sag.

Although, as indicated in Table 4, the ratio of cash plus marketable securities to payments in 1943 (14.9 percent) was lower than in 1939 (16.2 percent), it was considerably above the 1937 ratio (10.0 percent), which was the lowest in the whole interwar

Table 4—LIQUIDITY POSITION OF SAMPLE B OF LARGE MANUFACTURING CORPORATIONS, 1937-43<sup>a</sup>  
(dollar figures in millions)

Year	Average Cash <sup>b</sup>	Average Marketable Securities <sup>b</sup>	Estimated Cash Payments	Ratio of:	
				Cash to Payments <sup>c</sup>	Cash Plus Marketable Securities to Payments <sup>d</sup>
1937	\$ 798	\$ 304	\$11,072	7.2%	10.0%
1938	897	282	8,320	10.8	14.2
1939	1,095	344	8,880	12.3	16.2
1940	1,285	407	9,911	13.0	17.1
1941	1,407	673	13,779	10.2	15.1
1942	1,387	1,075	16,627	8.3	14.8
1943	1,533	1,507	20,401	7.5	14.9

<sup>a</sup> For a description of the sample see Appendix A.

<sup>b</sup> Average of two successive year-end figures.

<sup>c</sup> Ratio of average cash of two successive year ends to total payments in the year between the two dates.

<sup>d</sup> Ratio of average cash plus average marketable securities of two successive year ends to total payments in the year between the two dates.

period.<sup>13</sup> On this basis, it may be said that corporations have actually decreased their liquidity since 1939, but that they have a considerable amount of "excess" liquidity upon which to draw even if they no longer have much "free" cash. If the minimum requirements for liquid funds of corporations are estimated for 1943 by applying to the payments figure for that year the 1937 ratio of cash plus marketable securities to payments, it is found that in 1943 cash plus marketable securities exceeded the minimum requirements by \$1,000 million.<sup>14</sup> This amount in excess of minimum needs constitutes, on this basis of comparison, "free" liquid funds in 1943. Since the ratio of liquid funds to payments for 1937 is the lowest of any year in the interwar period, this figure of \$1,000 million would have to be regarded as the upper limit for "free" funds in 1943.

However, certain new factors which made themselves felt in 1943 but were absent or less important in 1937 make it more than doubtful that these \$1,000 million can be readily considered as "free" funds. These factors are such that they force companies to hold a larger percentage of liquid funds to payments than in prewar years; in other words, it is uncertain what part of this "excess" liquidity is really excess in the sense that companies have free funds above those required to provide liquidity for expected payments. The factors necessitating a higher ratio of liquid funds to payments include the high tax liability in 1943 against which liquid funds must be held; the possibility that retroactive rises of wage rates may be necessary, with which companies have to reckon; the fact that payments by government agencies are often made in the form of an advance of money which can be used only for the execution of the war contracts for which the advance is made; and the probability that concerns will have to make lump

<sup>13</sup> Chart 17 shows that the ratio of cash to current liabilities, the ratio of cash plus marketable securities to current liabilities, the "quick" ratio, and the ratio of current assets to current liabilities in 1943 were *below* their 1937 levels, a fact that contrasts sharply with the result obtained when the liquidity of corporations is measured by the ratio of cash plus marketable securities to total payments. The difference is accounted for by the fact that current liabilities have risen faster than payments since 1937. This in turn is due to the increase in the proportion of current liabilities represented by tax liabilities, which now account for almost one-half of total current liabilities.

<sup>14</sup> The year 1937 recommends itself as a basis for comparison not only because it shows the lowest ratio of cash to payments in the interwar period but also because it was, on the whole, a prosperous year and because it is relatively near to the present.

sum payments to government agencies as the result of the renegotiation procedures.<sup>15</sup> The most important of these factors is the tax liability, the influence of which will now be discussed in greater detail.

It may be contended that special account does not have to be taken of tax liabilities, since tax payments are included in our payments figure and liquid funds held against the tax liability are in our figure for cash and marketable securities. This contention is not justified, however. Prudent management considers it necessary to cover all<sup>16</sup> or a large part of tax liabilities in the form of liquid funds; that is, tax liabilities require holdings of liquid funds which are much higher in relation to the payments to which they give rise than are the holdings of liquid funds required to provide for other payments. Then, part or all of the "excess" liquidity calculated on the basis of the 1937 ratio of liquid funds to payments may be actually tied up by the tax liability and is not "excess" at all.

In 1943 the companies in our sample estimated that they owed the government by way of tax liability \$1,727 million; they themselves were, on account of their holding of tax notes and government securities, creditors of the government to the extent of approximately \$1,800 million.<sup>17</sup> If (on the assumption that companies deem it necessary to cover tax liabilities 100 percent by liquid funds) all taxes as estimated by the companies for 1943 are excluded from our payment figure for this year, and tax liabilities are correspondingly excluded from our figures for liquid funds,<sup>18</sup> and if the average ratio of the remaining liquid funds to the remaining payments is computed, the ratio is found to be 7.7 percent for 1943, a figure lower than the ratio of total liquid funds to total payments in 1937 (10.0 percent). If it is assumed

<sup>15</sup> A war contractor whose profits have been reduced by renegotiation takes credit for the taxes he has already paid. The contractor pays only the net difference between the refund payable to the government agency and the taxes already paid.

<sup>16</sup> Some critics of the first draft of this study pointed out to the author that prudent management considers it necessary to cover tax liabilities 100 percent by liquid funds.

<sup>17</sup> Marketable securities also include nongovernment securities. However, the deductions to be made from marketable securities on this account are of relatively minor importance.

<sup>18</sup> A sum equal to the tax liabilities in the year-end balance sheet of 1942 is deducted from the liquid funds for this same date and correspondingly for the year-end balance sheet for 1943; the average of the remaining liquid funds is related to the payments during 1943 diminished by the tax liabilities as estimated for 1943.

that only 50 percent of tax liabilities has to be covered by liquid funds,<sup>19</sup> the ratio of liquid funds to payments (after deducting 50 percent of the tax liabilities from the figures for liquid funds and the tax liabilities for 1943 from the figure for payments) is 12.0 percent for 1943. While it is true that the 1937 ratio may be too high for purposes of comparison (since the influence of tax liabilities on holdings of liquid funds cannot be eliminated for that year because of the lack of tax liability figures), the error cannot be very large, since the tax liability in 1937 was of minor importance compared with 1943. Taking into account that the ratio of liquid funds to payments in 1937 is the lowest ratio in the interwar period and, furthermore, that other factors, some of which were mentioned above (possibility of retroactive wage rise, advances from the government on special war contracts), tied up additional liquid funds, the 1943 liquid funds do not appear to be more than sufficient to provide the amount of liquidity that prudent management would consider necessary in view of the payments that could reasonably be expected.<sup>20</sup>

Whether or not an analysis of the medium-sized and small manufacturing corporations will lead to the same result is a point of interest. The data for our sample of these companies are less satisfactory for our purposes than are those for large manufacturing corporations, since figures for medium-sized and small companies are available only to the end of 1942 and holdings of marketable securities are not reported separately in the balance sheet but are included in the item, "investments." Because of these deficiencies of our sample, the following discussion is based on a different sample of the same size-group of corporations, a sample which has the advantage of comprising 832 manufacturing cor-

<sup>19</sup> Tax notes alone in 1943 were 41.2 percent of tax liabilities.

<sup>20</sup> There is one factor which in 1943 may have made itself felt in the opposite direction. The turnover of inventories was considerably higher in that year than in 1937. It is true that this situation does not affect the amount of liquid funds required for the transaction purpose proper: Two companies which have the same receipts and expenditures, spread continuously through time, have the same degree of coincidence of receipts and expenditures and therefore need the same amount of liquid funds for the transaction purpose (see Chapter 4, p. 37), no matter what their respective ratios of inventory turnover are. But in so far as the more rapid turnover of inventories signifies a greater liquidity of inventories the companies may consider it possible to get along with a smaller amount of cash or marketable securities held for *precautionary* reasons (see Chapter 4, p. 39). A company may therefore feel justified in reducing the total amount of cash plus marketable securities held to provide for expected and unexpected payments.

Table 5—LIQUIDITY POSITION OF MEDIUM-SIZED AND SMALL MANUFACTURING CORPORATIONS, 1940-43<sup>a</sup>  
(dollar figures in millions)

Year	Year-End Cash Balances	Year-End Marketable Securities	Annual Sales	Ratio of:	
				Cash to Sales <sup>b</sup>	Cash Plus Marketable Securities to Sales <sup>c</sup>
1940	\$ 71.0	\$ 10.2	..	..	..
1941	88.4	20.7	\$2,048.2	3.9%	4.6%
1942	146.5	81.0	2,659.2	4.4	6.3
1943	217.9	178.4	3,242.4	5.6	9.6

<sup>a</sup> Sample of 832 corporations, from Board of Governors of the Federal Reserve System.

<sup>b</sup> Ratio of average cash of two successive year ends to total sales in the year between the two dates.

<sup>c</sup> Ratio of average cash plus marketable securities of two successive year ends to total sales in the year between the two dates.

porations.<sup>21</sup> The figures are, however, available only since 1940, which precludes a comparison with prewar years.

Cash holdings of this sample of companies at the end of 1943 were 206 percent above those at the end of 1940 (Table 5). Total means of payment in the same period rose only 60 percent and cash balances of our sample of large manufacturing corporations (sample B) only 16 percent. Thus while the increase in cash holdings of the large corporations lagged considerably behind the increase in the total means of payment, the increase in cash holdings of medium and small corporations far exceeded it. Other samples based on a smaller number of companies in the medium and small size group of corporations also show that the increase in cash for this group is far greater than that of the total means of payment. Exceptionally large accumulations of cash appear to be characteristic of medium-sized and small manufacturing corporations but not of large.

Not only the absolute volume of cash for the medium and small companies but also the ratio of average cash to sales (which are a good substitute for payments) shows a substantial increase. The

<sup>21</sup> Data for the sample were put at the disposal of the Financial Research Program by the courtesy of the Board of Governors of the Federal Reserve System.

ratio rose from 3.9 percent in 1941 to 5.6 percent in 1943, in contrast to the group of large corporations whose ratio declined during the same period.

If account is taken of marketable securities, the liquidity position of the medium-sized and small corporations appears still more favorable. Marketable securities for this sample of 832 manufacturing corporations increased more than seventeen times between the end of 1940 and 1943. The ratio of average cash plus marketable securities to sales rose from 4.6 percent to 9.6 percent between 1941 and 1943 whereas the corresponding ratio for large manufacturing corporations was lower in 1943 than in 1941 (Table 4). Even if all tax liabilities are deducted from the sales figures (which have to be taken as representing the payment figures for the medium-sized and small group) and also from the figures for liquid funds, the ratio still indicates a definite improvement in the liquidity position of medium-sized and small corporations during the war period.

#### SUMMARY

- (1) The increase in cash of large manufacturing corporations which has taken place since 1939 does not constitute an increase in liquidity since the volume of payments has risen more than cash. Medium-sized and small manufacturing corporations, on the other hand, show a much more rapid increase in cash than in payments. Their cash liquidity, therefore, has increased.
- (2) If marketable securities are taken into account, the liquidity of large corporations, as measured by the ratio of cash plus marketable securities to payments, is higher than in 1937. However, this higher ratio does not signify "free" liquid funds, since corporations have to hold larger cash balances for their expected payments than was the case before the war.
- (3) The ratio of average cash plus marketable securities to sales of medium-sized and small corporations shows a substantial increase since 1941. Their liquidity position has improved definitely during the war years and is in sharp contrast to that of the large corporations.