Money in the till: vault cash

In 1959 Congress amended the Federal Reserve Act to authorize the Board of Governors to permit member banks to count currency and coin as part of their legal reserves. Subsequently the volume of excess reserves exhibited a tendency to rise, especially after September 1960 when a sizeable quantity of vault cash became countable as legal reserves. The following discussion examines the proposition that these events were related.

History of legal reserves

From the point of view of the individual bank, funds in the form of currency and coin are almost perfectly interchangeable with balances at the Federal Reserve or at correspondent banks, since each class of asset can be used to settle debts. For example, when a bank buys a security it could remit in the form of currency, although chances are such an event would be too bothersome for both parties to the transaction. More probable would be remittance either in the form of an order on a correspondent bank or on a Federal Reserve Bank.

The original Federal Reserve Act allowed member banks to include both balances at the Federal Reserve and their own currency and coin funds as legal reserve balances for the satisfaction of required reserves on deposits. Unlike the present law, the original Act limited as a percentage of deposits the amount of vault cash that could be counted as legal reserves. Specified parts of the total had to be kept at Federal Reserve Banks and in vault cash at the member bank.

Chart 1 records the historical pattern of legal reserves. Prior to the establishment of the Federal Reserve, national banks outside the then designated central reserve cities of New York, Chicago and St. Louis had to keep a minimum part of their reserves in the form of gold or Treasury currency (vault cash) but they could keep the remaining part of their legal reserve balances at authorized reserve depositories. For country banks these included all of the reserve city and central reserve city banks. Reserve city banks could count balances at the central reserve city banks. National banks in central reserve cities, on the other hand, were required to satisfy all of their reserve requirements with metallic and currency reserves.

After the establishment of the Federal Reserve in 1913, member banks could count vault cash and balances at the Reserve banks as legal reserves, and, for a short time, reserve city and country member banks were permitted to continue to carry part of the reserves in balances at National Banks in reserve or central reserve cities. Within a few years wartime concern over the availability of the nation's stock of monetary reserves led to the exclusion of vault cash as legal reserves. It was hoped that member banks would thereby be encouraged to reduce their cash holdings of gold and Treasury currency and commensurately increase their balances at Federal Reserve Banks. No further changes in the definition of legal reserves were made until 1959 when the President signed the Vault Cash Bill into law and the Federal Reserve implemented it.

The Vault Cash Bill

Allowing vault cash as legal reserves in part corrected an inequity. Because of the nature of their business, some banks need larger amounts of vault cash than others. For example, a bank might require an extra measure of vault cash because it has an inordinate number of customers who need currency to meet payrolls or to carry on trade. A greater than average inventory of cash might also be necessary because a bank is located some distance from sources of additional cash at correspondent or Federal Reserve Banks and their branches. Country member banks, which account for about one-third of deposits but three-fifths of vault cash, were principally affected. Central reserve city and reserve city banks, because of their proximity to Federal Reserve Banks or their branches, are able to keep vault cash to a bare

minimum despite the fact that many of them have a sizeable job of supplying currency and coin to many of their nonmember country correspondent banks and others.

Parallel treatment of vault cash and balances at the Federal Reserve was considered logical since each has the same effect on liquidity and on the lending power of banks. Further, permission to count vault cash as legal reserves could be expected to induce banks to hold somewhat larger currency stocks. As a result, they would be able to absorb greater currency deposits or withdrawals without necessitating a shipment of currency to or from the Federal Reserve, a costly service for member banks that the Federal Reserve absorbs. Another factor supporting the inclusion of vault cash as legal reserves for member banks was that almost all of the states permitted the state-regulated nonmember banks to count vault cash as legal reserves. Finally, if banks built up their stock of till money, the resulting wider dispersion of currency and coin might be expected to permit continued financial transactions should major financial centers be destroyed in wartime.

To avoid uncontrolled reserve expansion, the Federal Reserve Board gave permission for vault cash to be counted as legal reserves in stepwise fashion. In December 1959, country banks were allowed to count currency and coin in excess of 4 percent of their net demand deposits. City banks could include vault cash above 2 percent of net demand deposits. Permission to count somewhat more vault cash as legal reserves was granted in August and September of 1960. And finally, on November 24, 1960, all vault cash became countable as legal reserves.

[1] The distribution of reserves shown on the chart for the period 1913-1917 was to become effective in November 1917. At the beginning of the System, country banks were required to hold a minimum of 1/6 of required reserves with Federal Reserve banks and 5/12 in vault, and reserve city banks were required to hold 1/5 with reserve banks and 2/5 in vault, while the remainder could be held in vault, with reserve banks or with national banks in reserve or central reserve cities. These fractions were gradually changed to approach those shown on the chart.

Chart 1—Distribution of legal reserves[1]

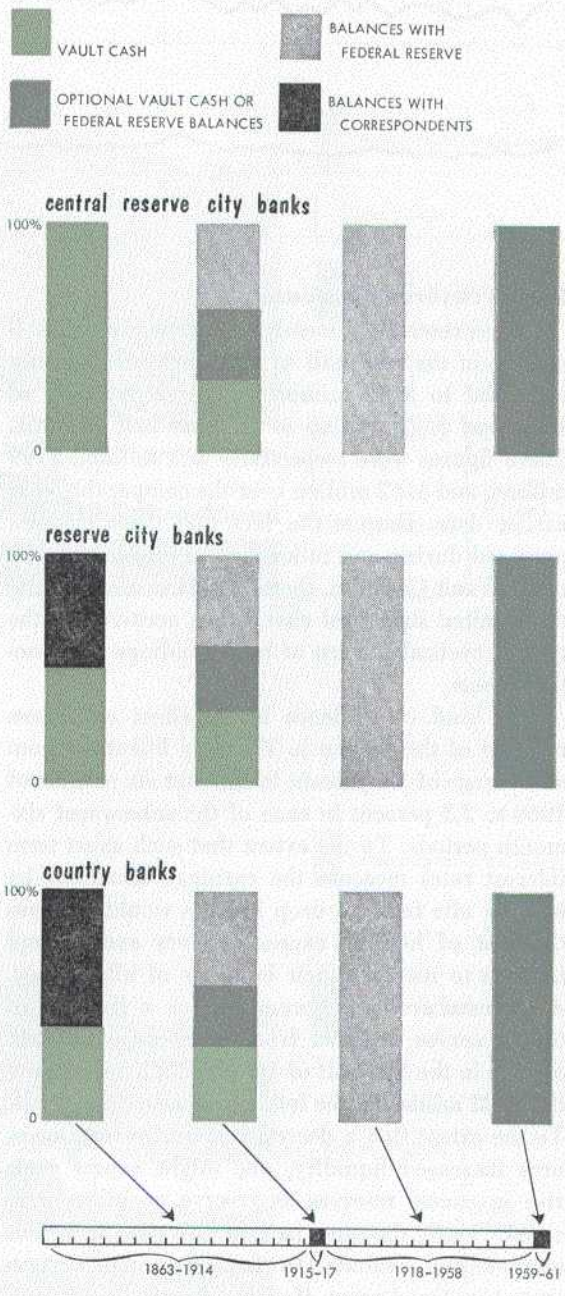
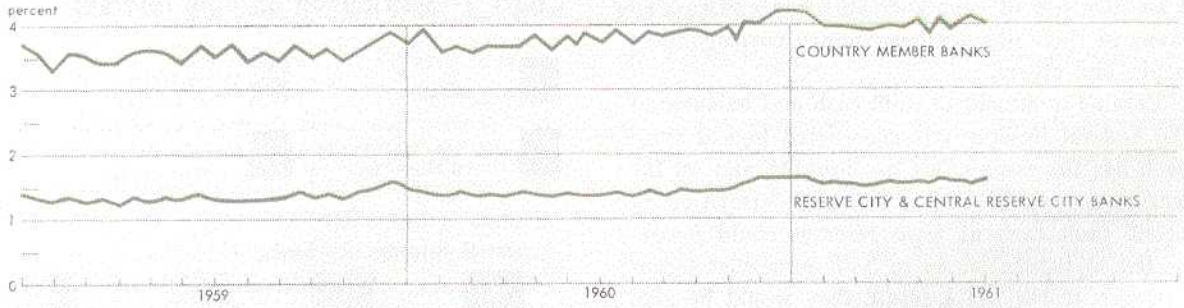


Chart 2—Vault cash as a percentage of net demand deposits



Excess reserves increase

Excess reserves of member banks averaged $460 million in the first half of 1960 but subsequently increased to $642 million in the second half of 1960 and $622 million in the first half of 1961. These figures were respectively $11 million, $199 million, and $162 million over the comparable year earlier data. Despite the fact that these changes occurred during and following the implementation of the Vault Cash Act, there is evidence suggesting that limited structural change has occurred in the typical cyclical pattern of bank holdings of monetary assets.

One kind of evidence is the effect on excess reserves of the decline in Treasury bill rates from an average of 3.4 percent in the first six months of 1960 to 2.3 percent in each of the subsequent six-month periods. To the extent that such short term interest rates measure the earnings sacrificed by holding idle funds, a drop in rates would decrease the cost of holding excess reserves and prompt bankers to increase their holdings of idle money. Also, member bank borrowings as a fraction of total reserves declined from an average of $648 million in the first half of 1960 to $212 million and then $82 million in the following half-year periods. To the extent that a decrease in borrowings measures increased liquidity, one might expect some rise in excess reserves as reserve positions were eased. Nearly the same pattern prevailed in earlier credit-easing periods. In fact, the analysis presented in the August *Monthly Review* yields estimates on the basis of historical relationships between seasonally adjusted excess reserves, Treasury bill rates, and borrowings which account for the increase of excess reserves. The following paragraphs offer an explanation of why idle money behaved as it did in the period following the inclusion of vault cash as legal reserves.

Vault cash and excess reserves

An individual banker must try to maintain enough excess reserves to keep within reasonable bounds the chance of being forced to borrow or hastily liquidate assets to avoid an impending deficit. The excess reserves he needs would be determined on the basis of the possible range of variation in his legal and required reserves. An argument has been made that an even larger cushion of idle funds is needed since the inclusion of vault cash as legal reserves. This is because a bank's legal reserves are now beset by the ups and downs of currency and coin deposits and withdrawals, as well as the usual fluctuations in balances at the Federal Reserve as checks are collected and cleared.[2] There is an element of truth in this argument for higher excess reserves. But it fails to consider the effect that currency flows have had on legal reserves even in the absence of permission to count vault cash as legal reserves.

At individual banks the relationship of vault cash to deposits has been a small and reasonably stable quantity over the years. For the aggregate of city banks and country banks, the ratio of vault cash to net demand deposits is plotted on Chart 2.

[2]See, for example, Milton Friedman, "Vault Cash and Free Reserves," **Journal of Political Economy**, Vol. LXIX, No. 2, April 1961, pp. 181-82.

A reason for the relative stability of the ratios, outside of the regular and hence predictable seasonal change, was that a bank which had accumulated more currency or coin than it desired to hold as hand to hand cash would quickly dispatch the excess to the Federal Reserve for credit to its reserve balance account. In opposite circumstances, a shortage of hand to hand money would be eliminated by requesting a shipment of currency from the Federal Reserve. In each case the ebb and flow of currency was matched by a change in reserve balances.

So long as the relationship of vault cash to deposits remained relatively constant, a $1 increase in a bank's vault cash would subsequently increase reserve balances in nearly matching quantity. For example, if a bank tried to keep 5 percent of its deposits in vault cash form and had deposits totaling $100,000, it would keep $5,000 in vault cash. If the bank's deposits rose by $100 and its desired vault cash by $5, the remaining $95 of newly deposited currency would be redundant and would be shipped to the Federal Reserve for reserve balance credit.

In general, the better a bank can predict its currency flow, the lower the inventory of currency it need carry to hold its chance of being temporarily embarrassed by a shortage of currency within a reasonable limit. The fact that large banks carry less vault cash relative to their deposits is partly due to their being able to predict their currency needs more closely from past experience than small banks can. With their many customers, the unusual behavior of any one customer would likely be balanced in the averages by the offsetting actions of others. Small banks, with fewer customers, are less able to count on such offsets. This is suggested in Chart 3 which shows that the country banks hold considerably more vault cash than city banks. In terms relative to their deposits, country banks would be shown to hold even more vault cash than their city counterparts. The chart also shows: (1) that country banks hold substantially larger correspondent balances than city banks and (2) that lower required reserves have permitted country banks to maintain smaller legal reserve balances than city banks, despite the fact that they hold more reserves idle.

The point of the argument is that even in the absence of permission to count vault cash as legal reserves, banks had to hold vault cash to cushion the impact of currency movements. They also had to hold excess reserves to buffer not only variation in their clearings but also variation in their currency flow. Hence, so long as individual banks kept a small and relatively fixed fraction of deposits as vault cash, one should expect that counting vault cash as legal reserves would not very much alter their demand for excess reserves. To the extent that banks use vault cash as a buffer—letting it rise and fall with the currency flow without requesting currency from or sending it to the Federal Reserve—the permission to include vault cash as legal reserves adds to the variability of legal reserves and thus makes the avoidance of a deficit more difficult, unless the fund of excess reserves rises commensurately.

To illustrate these points suppose that a $1.00 deposit of currency is made and the required reserve ratio is 15 percent. If the desired vault cash ratio is 5 percent, desired vault cash holdings would rise by $.05 as the result of a $1.00 currency deposit. The remainder would be shipped to the Federal Reserve for reserve balance credit. Of that amount, $.15 would be absorbed through increased required reserves. Hence, the $1.00 currency deposit would increase excess reserves by ($1.00 —$.05 —$.15) or $.80 when vault cash is not countable as legal reserves. Currency withdrawal could be expected to have the opposite impact. On the other hand, suppose that the circumstances remain the same save that vault cash is independent of deposits. Assuming that vault cash is not part of legal reserves, a $1.00 deposit of currency would add nothing to reserves but would increase required reserves by $.15. Hence, excess reserves would decline by $.15 as the result of a $1.00 currency deposit and would increase $.15 as the result

of a $1.00 currency withdrawal. When vault cash is included in legal reserves, a $1.00 deposit of currency would increase legal reserves by $1.00 and required reserves by $.15. Hence, excess reserves would rise $.85 and could be expected to decline by a like amount as the result of a currency withdrawal.

Conclusions

Because vault cash has gained a desirable property—being countable as legal reserves—it is not surprising that total vault cash has tended to rise, especially since December 1960 when all of it became legal reserves. The explanation of why banks have not accumulated even more vault cash is that by so doing they would add to their maintenance and protection costs.

Credit easing during the period when vault cash became countable as legal reserves explains much of the subsequent increase in excess reserves. The fact that excess reserves didn't rise more may be accounted for by the small magnitude and the stability in the vault cash ratio prior to the inclusion of vault cash as legal reserves. Thus, there is evidence to support the conclusion that the permission to count vault cash as legal reserves has not appreciably altered member bank demand for excess reserves.

—William Dewald

Current conditions . . .

Economic recovery in the Ninth district thus far in 1961 has been reflected in renewed activity in construction, manufacturing and trade, with improvement in hours worked and weekly earnings. Nonagricultural employment, although slightly higher than a year ago, has not kept pace with new additions to the labor force and unemployment rates are therefore relatively high. Unemployment in the district has been concentrated relatively strongly in the mining regions. For example, Duluth and Superior continued to experience an unemployment rate of 9 to 12 percent in July compared with a 6 percent rate for the state of Minnesota as a whole. Furthermore, the number of small centers in the district with substantial unemployment increased from 9 in June to 21 in July with about half of these unemployment centers located in mining areas.

Personal income, a comprehensive measure of district economic activity, was around 5 percent higher for the first half of the year compared with the first half of 1960. The rate of gain in personal income in recent months, although still above a year ago, has been decreasing, reflecting poorer 1961 small grain crops and reduced farm incomes. June cash farm income, for example, was about 2 percent below the same month last year and this income disparity is expected to widen as the impact of drouth on grain marketings in July and later months is fully realized. Because of drouth, the cash value of grain production is estimated to fall by $351 million, or 25 percent, from last year's

crop value.

In the latter half of July heavy showers, but no general rains, gave temporary relief to the drouth areas in the district. However, rainfall in the first part of August was again below normal, with temperatures high and with much of the Dakotas and eastern Montana again in need of heavy soaking rains to bring late crops to maturity and to improve feed conditions on the ranges. In spite of the severe dryness, with its effect on pastures and feed, livestock are reported in generally good condition. Farmers and ranchers are tending to reduce numbers in line with feed supplies and this trend will be intensified unless adequate rainfall occurs soon. Stock water is reported extremely short on the ranges and livestock producers are becoming concerned about stock water and grass supply for 1962 because of extremely dry subsoil as well as topsoil conditions.

The current banking situation is characterized by a less than usual seasonal increase in deposits at country banks and a contra-seasonal decline in loans. This trend probably is a reflection of drouth effects on incomes and spending. At the city banks, deposits have continued to grow with loan demand down slightly as of about mid-August. These banks also have a shorter maturity situation on their Government securities compared with a year ago. The statistics as of early August, therefore, indicate a modest improvement in over-all bank liquidity positions. Furthermore, district reserve city banks in July and early August did not find it necessary to borrow funds from the Federal Reserve Bank and country banks borrowed less than a year earlier. Also, the volume of Federal Funds purchases has declined. As the recovery continues, however, the demand for loans for inventory and other purposes is likely to increase with renewed pressure on both interest rates and liquidity. It may be noted, too, that bank-loan deposit ratios at the beginning of the current recovery were relatively high and thus have less room to expand in the period ahead.

The following selected topics describe particular aspects of the current economic scene:

GRAIN CROP ESTIMATES REVISED

The more favorable weather conditions during the month of July caused revisions in the Department of Agriculture's crop forecasts. Corn production estimates, nationally, were revised upward from the July forecast by 177 million bushels to a total expected outrun of 3.35 billion bushels. Production of corn in Minnesota is now expected to be 298 million bushels or 5.5 percent less than last year. An increase in the estimated yield during July from 55 to 60 bushels per acre has partly offset a 13.5 percent reduction in corn acres planted this year. For the entire district corn production is now estimated at 405 million bushels or about 9 percent less than last year. Corn acreage in the district was reduced 16.5 percent from last year. Nationally, corn production is now predicted to decrease 13.8 percent in response to an 18.4 percent cut in corn acres. The national average corn yield was revised upward 3 bushels to 57.5 bushels per acre.

The revisions in crop estimates between July and August reflect estimated changes in yields per acre. In general, small grain production in the

TABLE 1. ESTIMATED NINTH DISTRICT* CROP PRODUCTION, AUGUST 1, 1961

	Spring Wheat	Winter Wheat	Durum	Oats	Barley	Flax	Rye	Corn
1961 estimate (millions of bushels)	98.6	49.7	17.5	273.9	89.5	16.9	8.8	405.3
% change from 1960	—46.6	—19.7	—47.9	—26.7	—45.6	—39.5	—35.7	—8.8

*Data based on four states wholly within the district.

district was revised slightly upward from the July estimate except for winter wheat and flax. Montana is the exception in the August forecast. Dry conditions there made it necessary to revise downward or to hold the July estimate for all grains.

TABLE 2. PERCENTAGE INCREASE IN CROP PRODUCTION ESTIMATE FROM JULY CROP REPORT

	Spring Wheat	Winter Wheat	Durum
Minnesota	+11.1	+ 4.4	+16.7
North Dakota	+ 5.3	—	+10.0
South Dakota	+ 4.2	—15.0	+ 7.1
Montana	—16.7	0	0
District*	+ .88	— 5.3	+ 8.7

	Oats	Barley	Rye	Corn
Minnesota	0	+ 9.1	+5.6	+9.1
North Dakota	0	+ 9.1	+9.1	+8.0
South Dakota	+10.3	— 5.0	—5.0	+9.4
Montana	—16.7	—15.0	—7.1	0
District*	+ 3.2	+ 0.8	+1.0	+9.1

*Data based on four states.

SURPLUS LABOR AREAS INCREASE

In the nation, both employment and unemployment rose as is usual at the end of the school year. The rise in unemployment was largely accounted for by the record number of 2.5 million teenagers (300,000 more than in June 1960) who entered the labor force in June, including both graduates looking for permanent work and students seeking summer jobs. Not revealed in the aggregate figures was a significant reduction in unemployment among adult males. In July, unemployment fell by 400,000, the usual seasonal decline, and the seasonally adjusted rate of unemployment remained at 6.9 percent—practically unchanged for the eighth straight month.

In the Ninth district as a whole, unemployment during the first part of the summer remained higher than a year ago. According to reports from local employment offices in drouth regions, unemployment is expected to continue higher than usual during the remainder of the summer.

Unemployment estimates are available for some of the district states. In Minnesota, unemployment in July was nearly 6 percent of the labor force while last year it was only 4.0 percent. The Dakotas usually have a very low rate of unemployment during the summer but in June it was 2.7 percent in South Dakota and 3.7 percent in North Dakota. In July, initial claims filed for unemployment insurance rose in Montana, North Dakota and South Dakota, indicating that an increasing number of workers were being laid off due to a contraction in business activity.

In this district, the number of surplus labor market areas increased in July. Duluth and Superior, one of the major labor market areas surveyed by the Bureau of Employment Security and the affiliated State Employment Security Agencies, continued to have an unemployment rate from 9 to 12 percent.

Small centers in the district with substantial un-

employment rose from nine centers in June to twenty-one in July. Ten of these centers are in mining regions: Hancock, Ironwood, Iron Mountain and Marquette in Michigan; Hurley, Wisconsin; Brainerd-Grand Rapids and Hibbing-Virginia in Minnesota; and Butte, Montana. Eight centers depend primarily on retailing but some also have industrial payrolls: L'Anse, Munising, Newberry, St. Ignace and Sault St. Marie, Michigan; Crandon, Hayward and Park Falls, Wisconsin. Two are industrial centers: Menomonie and La Crosse, Wisconsin. One is in a lumbering area: Kalispell, Montana.

The duration of the unemployment is even more serious than the total number unemployed. In the surplus labor areas of the district, a large number of individuals have been unemployed for more than 26 weeks and were immediately eligible for the temporary extended unemployment insurance benefits enacted by the federal government in March of this year. Although statistics are not available on the number of unemployed who are heads of families and year-around workers instead of part-time or seasonal, general information leads to the conclusion that they constitute a substantial proportion of the total.

The food stamp program was introduced in June in northeastern Minnesota and in the Butte, Montana area to assist unemployed households and low income families. The food stamps were designed to supplement the proportion of the family's income normally set aside for the purchase of food products. The amount of stamps received at the Federal Reserve Bank of Minneapolis and at the Helena Branch where they are redeemed has risen sharply during July, indicating that an increasing number of families have applied for and are using them. Even more families may apply for stamps during the winter, as some have discovered that the proportion of income scheduled to be set aside for food is more than is necessary during the summer, when produce is available from gardens. They preferred to have more income for other purposes and, as a result, have not yet joined the program.

BOND YIELDS UP AT MID-AUGUST

From mid-July to mid-August government securities declined in price, more than two points for some of the issues with longer maturities. At mid-August most intermediates and longs were yielding more than at any time in 1961 but less than the highest yields registered in 1959 and 1960.

YIELDS ON U. S. GOVERNMENT SECURITIES

	Long Terms*	3-5 Year Issues*	3-Month Bills
1959-60 high	4.42	5.00	4.59
1961 low	3.70	3.15	2.17
1961 mid-August	4.02	3.86	2.49

*Average yield on sample of selected issues.

Although short-term rates also rose in the month ended mid-August, these remained below the highs registered earlier in the year. This was true of Treasury bills as well as of commercial and finance paper and Federal funds.

Associated with declining bond prices was the prospect of added Treasury borrowing following the President's call for enlarged defense expenditures. Interest rates abroad were also marked up in the period.

BALANCE OF PAYMENTS BY MIDYEAR

In the first half of this year the United States experienced considerable improvement in its balance of international payments. The seasonally unadjusted over-all deficit, which last year ran from $634 million in the first quarter to $1.18 billion in the fourth quarter, was reduced to $308 million in the first quarter of 1961. (At a seasonally adjusted annual rate this was equivalent to a reduction from $5.6 billion deficit in the fourth quarter of 1960 to $1.2 billion deficit in the first quarter of 1961.) The changes responsible for this improvement may be seen by comparing the magnitudes of individual items in the respective quarters shown in the table.

THE UNITED STATES BALANCE OF PAYMENTS BY QUARTERS (millions of dollars)

	1960		1961
	I	IV	I
Exports of goods and services (excluding military grants)	6,353	7,326	6,883
Imports of goods and services	—5,769	—5,427	—5,322
Balance on goods and services (excluding military transfers)	584	1,899	1,561
Unilateral transfers, private and government (excluding military grants)	—579	—661	—700
U. S. capital outflow, net	—875	—1,905	—1,357
Private, net	—651	—1,557	—937
Private short term	—90	—610	—445
Private long term	—561	—947	—492
Government, net	—224	—348	—420
Foreign capital			
Long term	187	—63	119
Short term	584	261	—38
Gold and foreign currencies sales or purchases (—)	50	921	346
Unrecorded transactions	49	—452	69
Deficit or surplus (—)	**634**	**1,182**	**308**

The improvement in the balance of payments position after 1960 was principally due to improvements in the private long-term capital account and the inflow of unrecorded funds. Some improvement was also registered on short-term capital account. The seasonally unadjusted balance on goods and services account worsened, due mainly to a decline in exports. At a seasonally adjusted annual rate, however, the excess of exports over imports was at the highest level since 1957.

The official statistics for the second quarter balance of payments were not available at the time of writing. However, fractional data and advanced estimates from various sources indicated that the over-all deficit was entirely eliminated. The improvement resulted from prepayments of $650 million of official debt by Germany ($587 million), the Netherlands ($43 million), and the Philippines ($20 million). All these, of course, were extraordinary transactions which will not be repeated—on the contrary, they will be reflected in a lower level of repayments in the future.

The United States gained a total $170 million of gold during the second quarter. In addition, official reserves of foreign convertible currencies expanded by $160 million. It was the first quarter since the end of 1957 that U. S. gold and foreign exchange reserves actually increased. Apparently, with confidence in the dollar restored, foreigners were once again willing to hold liquid dollar assets in preference to gold.

CURRENT SOYBEAN CROP ESTIMATED AT RECORD LEVELS

Higher price supports and excellent growing conditions this summer have given rise to expectations for the largest soybean crop on record. The August Crop Report issued by the U. S. Department of Agriculture predicted that total U. S. soybean production for 1961 would amount to 683 million bushels, 22 percent more than last year's output. Most of this increase can be attributed to a soybean acreage expansion of about 15 percent more than was planted a year ago. This expansion brings total soybean acreage to 27.1 million acres. Ideal growing conditions throughout the important producing areas have also contributed heavily toward the expected record output. On a national average, yields increased from 23.6 bushels an acre in 1960 to an expected 25.2 bushels per acre this year.

In Minnesota, where most of the Ninth district soybean production takes place, farmers are expected to increase total production over 22 percent above last year's output, on 11 percent more

SOYBEAN PRODUCTION AND ACREAGE
1961 AS A PERCENT OF 1960

	Production*	Acreage**
Minnesota	+22.1	+11.0
North Dakota	+32.4	+14.8
South Dakota	+16.7	+24.0
District***	+22.4	+11.8
United States	+22.2	+14.6

*Production data from August 1961 Crop Production Report.
**Acreage data from July 1961 Crop Production Report.
***Data based on three states.

acres than were devoted to last year's crop. This year's predicted output of 51 million bushels in the state is 36 percent higher than the ten-year average of 37.5 million bushels. Yield per acre is estimated at 22 bushels per acre, 2 bushels higher than last year's average. Soybean production in South Dakota is expected to reach 2 million bushels, an increase of 17 percent over last year. This increased production results from a 24 percent increase in soybean acres. Total South Dakota output is offset to some degree by a predicted drop from 17 bushels to 16 bushels in per acre yields.

Even in North Dakota, where the drouth is severe, the soybean producers were favored by excellent growing conditions. Soybean production there is expected to be over 3 million bushels, up almost 33 percent from last year. Acres for harvest in North Dakota increased to 202,000, up 14 percent, and yields are predicted to increase from 13 to 15 bushels per acre.

Over all, soybean production in the Ninth district is expected to increase 22 percent to equal the national percentage increase. Twelve percent more acres are being planted to soybeans in the district as compared with a national increase of almost 15 percent more acres than last year.