

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Measuring Transactions Between World Areas

Volume Author/Editor: Herbert B. Woolley

Volume Publisher: NBER

Volume ISBN: 0-870-14155-4

Volume URL: <http://www.nber.org/books/wool66-1>

Publication Date: 1966

Chapter Title: World Totals

Chapter Author: Herbert B. Woolley

Chapter URL: <http://www.nber.org/chapters/c1558>

Chapter pages in book: (p. 20 - 34)

WORLD TOTALS

In the matrix tables of Appendixes A and B the entries in the upper left-hand corner provide world totals for the several types of transactions. In this chapter the record of these totals will be examined for what they tell about the course of world trade and its composition and for the light the paired entries shed on the nature of error in the accounts. To set the statistics in proper perspective, the salient historical developments of 1950–54 should be briefly recalled.

The five years were marked by the following events: the outbreak of a “small war” in Korea on June 25, 1950, the threat of a “big war” later in the year when Communist China intervened, the emergence of a military stalemate in mid-1951, the conclusion of a truce in mid-1953, and the subsequent readjustment to a period of eased tension. Throughout most of the period 1950–54, civil war between Communist nationalists and French forces disrupted life in Indochina. Stepped up after the Korean truce with the redeployment of Red Chinese forces, this war ended, shortly after the defeat of French forces at Dien Bien Phu, with the conclusion of an armistice at the Geneva conference in mid-1954. France was also pressed by unrest in North Africa throughout the period. Communist-led revolts during the early 1950’s threatened governments in the Philippines and Malaya. Not all the disturbances could be attributed to the Communists. Of considerable sig-

nificance to world trade and the British payments position was the nationalization of Iranian oil (March 1951), which interrupted the flow of Iranian oil from mid-1951 to late in 1954 and prompted the British to rely on alternative sources.

By 1950 most of the countries of the free world had pretty well recovered from the disruptions and actual devastation of World War II. Our former enemies, Germany and Japan, lagged behind partly because Allied policy aimed at giving their European and Far Eastern rivals a head start at rehabilitation; and the problems of the newly independent countries of the Far East were increased by the disruptions accompanying the establishment of new governments and by Communist-led revolts. The currencies of Western European countries and of the countries trading principally with them had been realigned in September 1949 with a sharp devaluation against gold and the U.S. dollar, thereby placing European countries in a stronger position to compete for markets.¹ The devaluation came just as the force of the first postwar recession in the United States was spent, so that, in addition to benefiting from the devaluation, Western Europe benefited from the revival of U.S. demand. Then, after the outbreak of fighting in Korea, governments in the West launched new programs of military rearmament, and they as well as private business everywhere engaged in a wild scramble for raw materials, with prices skyrocketing.²

A. THE COURSE AND COMPOSITION OF WORLD TRADE IN 1950–54

As a consequence of the above developments, world trade in goods and services rose sharply from 1950 to 1951, as can be seen in Chart 1. Subsequently, the

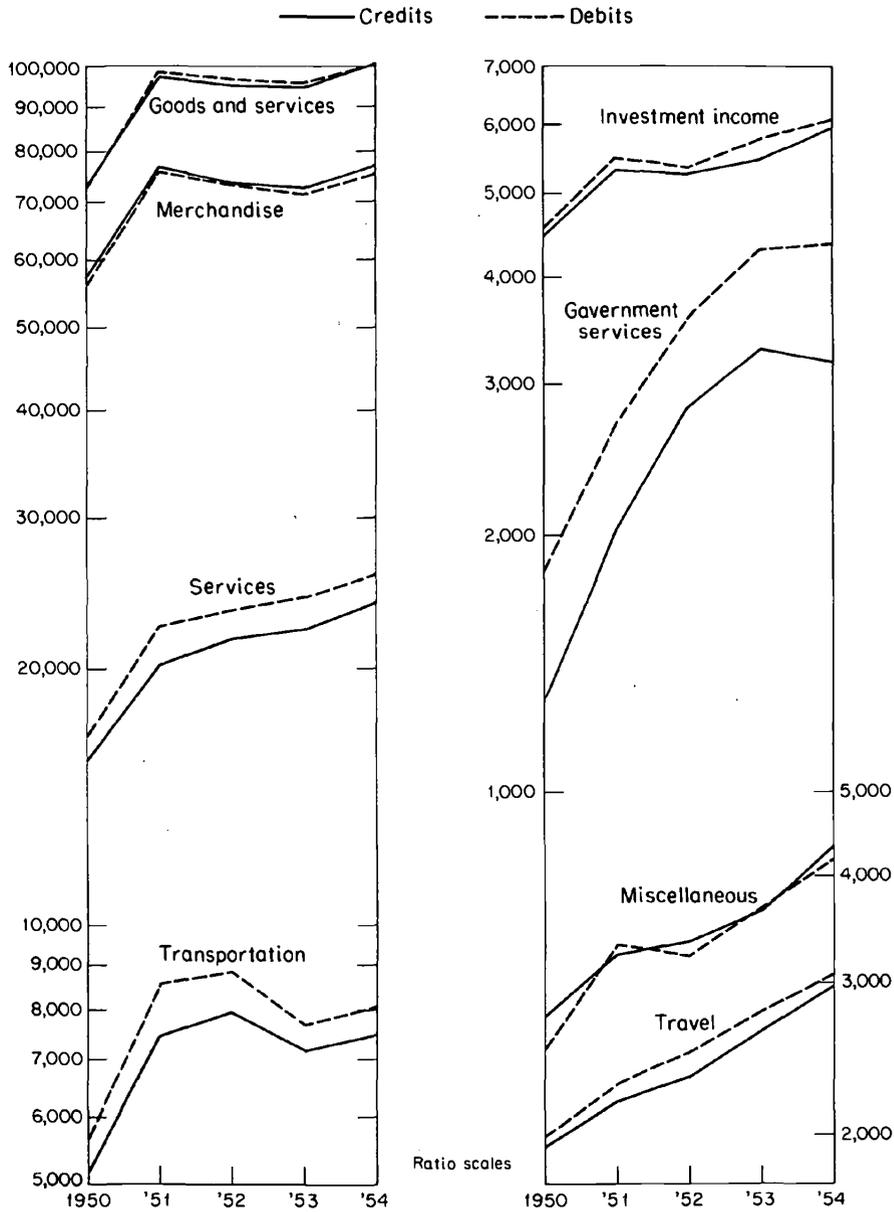
¹ “Countries accounting for 65 per cent of world imports devalued their currencies, most of them by about 30 per cent” (J. J. Polak, “Contribution of the September 1949 Devaluations to the Solution of Europe’s Dollar Problem,” *International Monetary Funds Staff Papers*, September 1951, p. 1).

² *World Economic Report, 1949–50*, United Nations, New York, 1951, p. 8; and *World Economic Survey, 1955*, U. N.,

military situation in Korea stabilized and Western governments proceeded with plans to revitalize the common defense, governments modified their stock-

New York, 1956, pp. 21 ff. Bert G. Hickman (*The Korean War and U. S. Economic Activity, 1950–1952*, NBER, Occasional Paper 49, New York, 1955) describes the anticipatory buying waves in the U.S. immediately after the outbreak of hostilities and again after the intervention by Red China. He observes that the subsidence of this speculation coincided with the actual increase in military expenditures later in 1951.

CHART I
 The Course of World Trade: Goods and Services Credits and Debits
 by Type of Transaction, Annually, 1950-54
 (million U.S. dollars)



SOURCE: Appendix B.

piling policies, and private expectations reflected renewed confidence in the future. The "extraordinary inventory cycle" prompted by the outbreak of the Korean War gave way to liquidation and slackening demand in international markets.³ World trade receded moderately in 1952 and 1953, the last year being affected also by the U.S. recession which began in the second quarter of 1953. World trade in goods and services expanded again from 1953 to 1954 under the stimulus of continued growth in Western Europe and revival in the United States. Over the five years 1950-54 the current dollar value of world trade in goods and services rose by 38 per cent, with most of the increase from 1950 to 1951. Both total credits and debits show the growth and a cyclical swing. Compared with the movement of world trade, the difference between the credit and debit records is evidently minuscule.

The contribution of merchandise and the several types of services to total world trade can be seen in Table 3, which gives the credit and debit totals for each type of transaction from two-valued matrices. These totals have also been plotted in Chart 1.

As measures of total world trade and its division into goods and various types of services, the figures given in Table 3 suffer from the omissions mentioned in the previous chapter. Services transactions are probably understated but, in spite of deficiencies, the figures are more comprehensive and provide a better basis than anything hitherto available for judging the relative importance of goods and services.

As can be seen in Table 3, the six categories do not represent an equal division of all goods and services transactions. Merchandise accounts for more than three-fourths of the total, whether credits or debits. Transportation, the largest of the five types of service, represents no more than 8.4 per cent of either credit or debit totals over the five years and about 10 per cent of merchandise f.o.b.; investment income was a little smaller; and travel, government, and miscellaneous were much smaller, running from 2.6 to 3.7 per cent of all goods and services depending on the item and on whether credits or debits are used. The smallest category, travel, was only about a third the size of transportation.

Although the proportions of merchandise and the several types of services transactions in total world

trade varied somewhat from year to year and over the five years, these variations were small compared with the great differences in order of magnitude between these categories.

However, the several types of trade did not experience the same growth over the period or the same year-to-year variation. The rise, decline, and revival of world trade in the period 1950-54 characterized merchandise separately and some services, but not all. Total services rose without interruption throughout the five years although more rapidly from 1950 to 1951 and from 1953 to 1954 than from 1951 to 1953 (see Chart 1). Transportation, investment income, and miscellaneous services (debits) show the cyclical rise-fall-rise, with declines either in 1952 or 1953, but the strong upward surge of government services and travel expenditures throughout the period smoothed out the combined services total.

Whereas all trade grew 38 per cent over the five years, merchandise increased 34 per cent and services rose by more than 50 per cent and grew as a proportion of all goods and services (Table 3). Growth was most pronounced in government services, which more than doubled from 1950 to 1954, mainly as a reflection of expanding U.S. military expenditures abroad. Travel and miscellaneous services increased by about 50 per cent. Transportation transactions rose relatively from 1950 to 1952 but then declined, ending up at about the same proportion of all goods and services in 1954 as they were in 1950. Investment income tended to rise and fall with merchandise, but not as pronouncedly, and represented a smaller proportion of all goods and services in 1952 than in 1950 or 1954. It was evidently the cyclical movement in the merchandise account which set the pattern for the cyclical variation in total trade including services (Chart 1).

Again, both credit and debit records show the broad movement in world trade for each type of transaction and the difference between records generally is small relative to the variation in the series over time. However, in two instances when year-to-year movements were small, the credit record shows a different direction of movement from that of the debit record: miscellaneous debits declined slightly while credits rose slightly from 1951 to 1952 and government services credits declined while debits rose slightly from 1953 to 1954.

³ *World Economic Survey, 1955*, p. 21.

TABLE 3
The Course and Composition of World Trade in 1950-54

	1950	1951	1952	1953	1954	1950-54	1950	1951	1952	1953	1954	1950-54
	CREDITS (million dollars)											
Goods and services	72,980	97,001	95,083	94,706	100,902	460,672	100.00	100.00	100.00	100.00	100.00	100.00
Merchandise	57,364	76,808	73,411	72,521	76,994	357,098	78.60	79.18	77.21	76.57	76.31	77.52
Services	15,616	20,193	21,672	22,185	23,908	103,574	21.40	20.82	22.79	23.43	23.69	22.48
Transportation	5,195	7,428	7,915	7,155	7,492	35,185	07.12	07.66	08.32	07.55	07.43	07.64
Travel	1,938	2,188	2,328	2,635	2,970	12,059	02.66	02.26	02.45	02.78	02.94	02.62
Investment income	4,464	5,304	5,262	5,473	5,944	26,447	06.12	05.47	05.53	05.78	05.92	05.74
Government	1,278	2,028	2,818	3,292	3,193	12,609	01.75	02.09	02.96	03.48	03.16	02.74
Miscellaneous	2,741	3,245	3,349	3,630	4,309	17,274	03.76	03.35	03.52	03.83	04.27	03.75
	DEBITS (million dollars)											
Goods and services	72,775	98,210	96,727	95,518	100,810	464,040	100.00	100.00	100.00	100.00	100.00	100.00
Merchandise	56,142	75,774	73,239	71,309	75,051	351,515	77.14	77.16	75.72	74.66	74.45	75.75
Services	16,633	22,436	23,488	24,209	25,759	112,525	22.86	22.84	24.28	25.34	22.55	24.25
Transportation	5,766	8,556	8,846	7,695	8,070	38,933	07.92	08.71	09.15	08.06	08.01	08.39
Travel	1,991	2,383	2,489	2,784	3,068	12,715	02.74	02.43	02.57	02.91	03.04	02.74
Investment income	4,553	5,490	5,353	5,772	6,079	27,247	06.26	05.59	05.53	06.04	06.03	05.87
Government	1,814	2,691	3,577	4,306	4,374	16,762	02.49	02.74	03.70	04.51	04.34	03.61
Miscellaneous	2,509	3,316	3,223	3,652	4,168	16,868	03.45	03.38	03.33	03.82	04.13	03.63
	DIVERGENCE ^a (million dollars)											
Goods and services	205	-1,209	-1,644	-812	92	-3,368 ^b						
Merchandise	1,222	1,034	172	1,212	1,943	5,583 ^b						
Services	-1,017	-2,243	-1,816	-2,024	-1,851	-8,951 ^b						
Transportation	-571	-1,128	-931	-540	-578	-3,748						
Travel	-53	-195	-161	-149	-98	-656						
Investment income	-89	-186	-91	-299	-135	-800						
Government	-536	-663	-759	-1,014	-1,181	-4,153						
Miscellaneous	232	-71	126	-22	141	406						

SOURCE: Appendix B.

^a Credits less debits.

^b The adjustments described in Chapter 2 to allocate the unallocated transactions reduced the net over-all discrepancies to \$5,112 million and -\$8,209 million, respectively (Appendix Table A-4), mainly because of the transfer of \$471 million of unallocated oil sales to the government account.

WORLD TOTALS

*B. DISCREPANCY IN TOTAL CREDITS AND
DEBITS FOR GOODS AND SERVICES*

Conceptually, the purchases and sales of all areas from all areas for any given type of transaction should be equal, i.e., credits should equal debits. But in fact we do not find this to be so, and the pattern of divergence between credits and debits, both between different types of transactions and over time, provides some insight into the nature of errors in the accounts.

Divergences between total credits and debits for goods and services together are shown in Table 3 and are plotted in Chart 2 below. Certain features are striking. First, over the five years as a whole, the balance was negative with an excess of debits over credits. Second, the excess arose mainly in the middle years of greatest uncertainty in world affairs. The divergences at the beginning and end of the period were exceptionally small and opposite to the five-year total.

The over-all balance for each year, obtained by summing net goods and services (excluding major nonmonetary gold transactions) in the sixty-eight summary statements or full country accounts available in the International Monetary Fund *Balance of Payments Yearbook*, shows much the same magnitude and movement over the period 1950-54 as the over-all divergence in our goods and services account

⁴ This should not be surprising since added accounts usually include credits and debits with the world of much the same order of magnitude, and when we are ignorant of transactions (as in the case of services and financial flows between France and French Overseas Territories) we cannot include them on either side.

⁵ When customs records are used to measure merchandise trade flows, the supplying of goods tends to be reported in advance of their purchase. The influence of the rising trend of trade and its cyclical variation on the agreement between credit and debit reports can be judged by calculating

(Table 4 below). Evidently, the tendency for debits to be reported in excess of credits in a period of world-wide uncertainty shows up in the combined accounts of the most important trading countries on which IMF regularly reports and is not greatly affected by the adjustments we have made or the accounts we have added for omitted countries.⁴ This time pattern cannot be readily explained by rising trade coupled with a lag in reporting debits, although such a lag may have had some influence.⁵

The pattern of divergence between total credits and debits, which can be observed for the different types of goods and services transactions (Table 3 and Chart 2), reflects a persistent bias in the record. Merchandise credits exceed debits each year; debits for each type of services (except miscellaneous) exceed credits. It is because the excess of service debits exceeded the excess of merchandise credits that the goods and services account as a whole shows excess debits. The swing (decline-rise) in divergence observed for all goods and services over the five years also characterized divergences between total credits and debits for merchandise, transportation, and travel. In contrast, the divergence tended to mount in the government account and to move erratically in the account for miscellaneous services.

the hypothetical excess of merchandise credits that would result from a lag of one month (more exactly, a lag of a third of a quarter) in reporting.

Consider the unadjusted fourth-quarter totals for world merchandise exports from *International Financial Statistics*. The divergence (measured as an excess of credits) which would result from a one-month lag in reporting the debiting of these goods can be calculated and compared with the observed excess of credits in the merchandise matrix for 1950-54 (in million dollars):

	<i>Fourth-Quarter Exports f.o.b.</i>	<i>One-Third Change</i>	<i>Excess of Mer- chan- dise Credit</i>	<i>Col. 3 Minus Col. 2 (4)</i>	<i>IMF Account, Net Goods and Services (5)</i>	<i>Col. 5 Minus Col. 2 (6)</i>
	(1)	(2)	(3)			
1949	12,700					
1950	17,052	1,450	1,222	- 230	163	- 1,290
1951	19,479	810	1,034	220	- 1,398	- 2,210
1952	18,320	- 390	172	560	- 1,653	- 1,260
1953	19,087	260	1,212	950	- 362	- 620
1954	20,350	420	1,943	1,520	169	- 250

Col. 1: *International Financial Statistics* with some supplementation.

Col. 3: From Table B-6 and Table 3.
Such a time lag would result in an excess of merchandise

The fact that the errors in reporting merchandise and services tend to offset each other can be traced, at least in part, to accounting difficulties, such as the treatment of government transactions. Purchases and sales by government are usually counted by most countries as merchandise, transportation, etc.; however, government transactions reported by the United

credits each year except 1952, amounting over the five years to \$2.5 billion, which would explain a part of the excess of merchandise credits in years of rising trade. However, the remaining "unexplained" merchandise matrix divergence (col. 4) tends to mount with time; the "unexplained" IMF net balance (col. 6) still shows a cyclical swing, but now with 1951 as the year of greatest "unexplained" deficiency in credits.

It is also possible that the lag in reporting may have increased over the five years. If it were as short as one-sixth of a quarter in 1950 and 1951 and increased to one-third of a quarter in 1952, to two-thirds of a quarter in 1953, and to a full quarter in 1954, most of the cyclical swing in the excess of merchandise credits would be explained. Such an increasing lag would also largely explain the year-to-year differences in movement in credit and debit totals for merchandise. There are reasons to suspect that the reporting lag may have increased: over this period the European middleman was being freed from rigorous exchange control, and as middleman trade increased, more of world trade was "in transit" or passed through bonded warehouses of processing plants for subsequent re-export. Presumably the lag would not go on increasing indefinitely, but it is possible that inventories in bond, in process, and in transit might expand and contract with swings in world trade.

The effect of the hypothetical increase in the reporting lag would be as follows (in million dollars):

	Excess of Credits	Lag	Effect on Divergence Between Credits and Debits	Unexplained
1950	1,222	¼ Q	730	490
1951	1,034	¼ Q	400	630
1952	172	½ Q	-390	560
1953	1,212	¾ Q	520	690
1954	1,943	1 Q	1,260	680
Change				
1950-51	-188		-330	140
1951-52	-862		-790	70
1952-53	1,040		910	130
1953-54	731		740	-10

It is clear from these calculations that the time sequence of the merchandise trade and reporting lag may well have produced a cyclical excess of merchandise credits, but, with a fixed reporting lag, there remains an unexplained residual which mounts with time; moreover, a fixed reporting lag only modifies and does not fully explain the cyclical swing in net goods and services, nor all the chronic deficiency of goods and services credits. However, it is possible that mounting excess credit error in merchandise was associated with an increasing lag in reporting. It could also be related to the mounting excess of net transfer debits (Chart 2 below) and/or net government debits (Chart 1).

States and the United Kingdom—by far the largest part of the total—are not given by the usual types of transactions. The government account as now reported by the U.S. and the U.K. cuts across the conventional categories and answers the question "who" rather than "what." Consequently, the government debit transactions in Table 3 include some purchases of goods, transportation, travel, and miscellaneous services (but both the U.K. and the U.S. include government interest transactions in investment income). According to the method we have followed in adjusting country accounts, we have kept these as government debits and, where possible, have adjusted the credits in the partner account consistently (e.g., those of oil sources supplying military purchases). But this adjustment has not been made in all suppliers' accounts, notably not in accounts of European suppliers, and we suspect that over the five years nearly half a billion dollars worth of unallocated petroleum exports by the Netherlands Antilles and Venezuela were sales to government.⁶

Consequently, the excesses of credits in the merchandise and miscellaneous services account and of debits in the government account very likely arise partly from the different classification of government purchases by the U.S. and the U.K. If the more conventional approach of distinguishing transactions by type had been maintained by the U.S. and the U.K., we might have arrived at larger totals for merchandise debits.

The division of transactions between merchandise and transportation is also somewhat uncertain because of the possible errors introduced by the adjustment of imports valued c.i.f. to an f.o.b. valuation. Our study of freight cost in relation to the value of merchandise leads us to believe that the countries making such adjustments themselves may have overstated the cost of freight and insurance on merchandise, thus understating merchandise imports f.o.b. and overstating transportation debits. Karreman found that gross freight payments (debits) in 1950-53 persistently exceeded receipts.⁷

In addition to these sources of systematic and offsetting divergence, some other sources of error can be identified. We have sought to include reinvested earnings on foreign investments in the investment

⁶ See p. 11.

⁷ Herman Karreman, *Methods for Improving World Transportation Accounts, Applied to 1950-1953*, NBER, Technical Paper 15, New York, 1961, Table A-9.

income matrix wherever possible and have succeeded for the U.S. and Canadian records and for the accounts we have prepared on transactions of petroleum source countries. But partner accounts may not always include such earnings either as debits or as credits, e.g., omission from the Netherlands account of reinvested oil company earnings in the U.K. mentioned in Chapter 2.⁸ The gross totals for investment income debits and credits are both probably understated. We have reached the totals in Table 3 for transportation and investment income only by adjusting the U.K. account extensively to add in gross petroleum company transactions.

The excess of transportation debits may partly reflect the inclusion of marine insurance on the paying side of many accounts and its absence from our transportation accounts for the United States and the United Kingdom. Finally, we suspect that the excess of travel debits is largely the result of omitted credits in the accounts for France and Italy, which did not come under the control of the official exchange agency on whose records the accountants re-

lied. In the case of France, it has been estimated that total travel receipts were understated by \$120 million in 1950 and \$150 million in 1951.⁹

It is also possible that the chronic excess of merchandise credits (see footnote 5 above) was partly related to a tendency for the account of unilateral transfers to show a chronic excess of debits. This is discussed in Section C below.

The two-valued matrix for goods and services together appears, from the closer agreement between over-all credit and debit totals, to be a more reliable account than either merchandise alone or the account combining goods, services, and transfers. The goods and services matrix is not entirely free of classification problems, but it is free from errors that arise in compiling the subclasses and that cancel out in the aggregate.¹⁰ This feature of the record provides a good statistical reason for preferring to work with the records of goods and services transactions, reinforcing the analytical advantages of comprehensiveness where that is important.

C. OVER-ALL ERRORS IN THE FINANCIAL ACCOUNTS

The financial accounts display a pattern of over-all divergence that indicates continuing structural error. The persisting excess of net transfer debits augmented, and the persisting excess of capital and gold credits offset, the tendency for all goods and services debits to exceed credits. Over the years 1950–54 the residual, uncompensated error (i.e., “net errors and omissions”) fluctuates, sometimes widely, around zero, and over the five-year period it was close to zero. It must be understood, therefore, that the over-all net error in the final multilateral settlements and error matrix only measures the balance of errors in the system of accounts not offset by compensating errors.

The balances (i.e., over-all discrepancies) in the financial accounts of all areas with all areas for 1950–54 are given in Table 4 and Chart 2.

A very small over-all net error of \$29 million emerges for the five-year period. It does not mean that the error in the accounts is small, but rather that errors tend to offset each other between types of transactions, over time, and (we shall see in the next section) between countries. The underlying

country distribution reveals large debit errors in several accounts, particularly those for oil-source countries. These might well represent unreported capital transfers and gold purchases since the sheikhs of the Persian Gulf are known to have invested part of their oil royalties in other countries and wealthy people in these lands like to hold gold. If the disposition of Arabian oil royalties were known, the over-all excess of reported net capital and gold credits might be smaller and the net error for all accounts might show a sizable credit balance.

The broad pattern of divergence in the balances for different types of transactions supplies prima-facie evidence that, over the five-year period, countries made current disbursements into the world (the excess of goods and services debits) which disappeared into

⁹ H. C. Eastman, “The Role of Speculation in French Foreign Exchange Crises,” *Journal of Political Economy*, June 1953, pp. 209, 218.

¹⁰ More is at issue than the well-known statistical proposition that the standard error of a sum of components subject to independent errors is less than the standard error of the individual components. Here there is evidence that the errors in the components are *systematically* related by virtue of classification inconsistencies in the accounting by the two countries party to certain types of transactions.

⁸ See p. 11.

TABLE 4
Balances of All Areas with All Areas from the Two-Valued Matrixes
and of Sixty-Eight Countries with All Areas, 1950-54
(million U.S. dollars)

	Net Goods and Services ^a	Net Transfers	Net Capital	Net Gold	Net Capital and Gold	Net Error
TWO-VALUED MATRIXES						
1950	205	-261	306	132	438	-382
1951	-1,209	-218	1,067	489	1,556	-129
1952	-1,644	-299	778	397	1,175	768
1953	-812	-373	869	397	1,266	-81
1954	92	-450	270	293	563	-205
1950-54	-3,368 ^b	-1,601	3,290 ^b	1,708	4,998	-29
SIXTY-EIGHT COUNTRIES ^c						
1950	+163	-352			201	-12
1951	-1,398	-604			1,422	580
1952	-1,653	-568			674	1,547
1953	-362	-693			977	78
1954	+169	-700			336	195

SOURCE: Appendix B and IMF *Yearbook*.

NOTE: Conceptually all entries should be zero.

^a Excludes nonmonetary gold.

^b The adjustments described in Chapter 2 to allocate the unallocated transactions reduced the net over-all discrepancies for net goods and services to - \$3,097 million and for net capital to \$2,419 million (Table A-4), mainly because of the addition of \$871 million of Royal Dutch Petroleum Company reinvested earnings to the Continental OEEC account.

^c IMF accounts.

unreported capital reserves and gold purchases. Over that period unreported purchases of capital assets and gold, measured by the excess of reported credits over reported debits for capital movements and gold transactions, amounted to approximately \$5 billion—a figure close to half as large as the increase in gold and foreign exchange reserves reported by countries outside the United States in the period.¹¹

Evidence for such a disappearance of exchange earnings into hidden reserves is not given in the over-all error term of the two-valued settlements matrix, but is to be inferred from the effort to strike a balance between total debits and total credits for the different types of transactions in the accounts of all countries with all countries and from an examination of the pattern of over-all errors in individual country accounts.

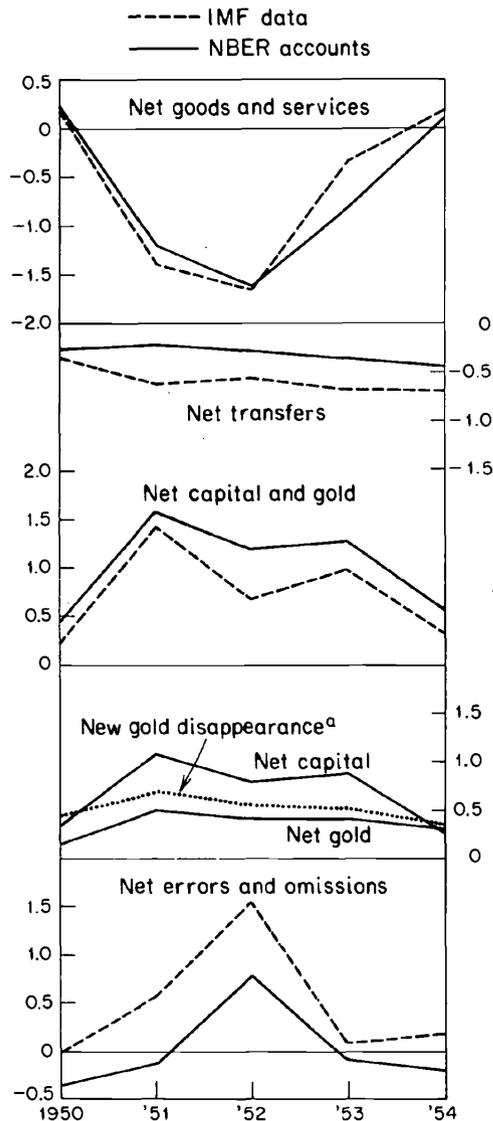
We have seen that the goods and services debit bal-

¹¹ *International Financial Statistics* (June 1955 and January 1957) shows gold and foreign exchange reserves of countries outside the U.S. rising from \$26,290 million at the end of 1949 to \$36,460 million at the end of 1954.

ance over the five years is composed of large net credits for merchandise valued f.o.b., offset by even larger net debits for services. This pattern does not fit in with the widely held view that capital flight was effected through undervaluing exports (and taking the unreported part of the true value in unreported earnings held abroad) or overvaluing imports (and remitting the excessive part of the value abroad to be held to the importer's account). To judge from the over-all excess of service debits over credits, it does seem likely that unreported purchases of gold and unreported capital debits were fed in good part from unreported service credits. Opportunities for unreported transportation and tourist earnings to move into capital accumulation and gold hoarding seem to have been particularly good.¹²

¹² The reader should bear in mind the possibility that part of the excess of services debits may represent classification errors against merchandise, but if all net excess of merchandise credits were explained thus, there would still remain a net excess of services debits (see also the explanation in footnote 5 above). The reader should also bear in mind

CHART 2
Over-All Discrepancies in Trade and
Financial Accounts, Annually, 1950-54
(balances of all areas with all areas)
(billion U.S. dollars)



SOURCE: Table 4 and footnote 14 in this chapter.

^a New gold production plus Russian gold sales less change in official gold reserves.

There are similar tendencies to err in the combined accounts of sixty-eight countries with the world given in Table 4 and Chart 2. Compared with our matrix accounts, there is, however, a greater excess of net transfer debits, a smaller excess of net capital

and gold credits, and a persisting tendency to require a net credit coverage in the over-all error account. Evidently, our efforts at supplementation and adjustment for 1950-54 have, on balance, reduced the discrepancies in accounting for transfers but have produced a greater discrepancy in accounting for capital and gold than appears from the sixty-eight accounts.¹³

In Chart 2 the Bank for International Settlements series for gold "disappearance" (which is measured by new production plus Russian gold sales less additions to official reserves in the free world) shows a continuing balance which in most years can be attributed largely to private hoarding but in 1954 was about equally divided between private hoarding and industrial use.¹⁴

The cyclical swing which we marked in the excess of goods and services debits, with large divergences characterizing times of great uncertainty in world affairs, was matched by a compensating swing in gold disappearance, unreported capital outflow, and net error. The swing in this last item, the residual, lends support to the thesis that the whole set of accounts has been influenced by periods of uncertainty which prompted funds to go into hiding.

The matrix of transfers (Table B-25) is primarily a record of official aid given by the U.S. and U.K. governments (mostly the former). The over-all discrepancy in the net transfers account is, therefore, very largely a difference in American (and British) accounts of aid extended and partner accounts of aid received. Perhaps the excess of transfer debits is related to a failure of some aid recipients to include in merchandise the debits for aid goods imported and in unilateral transfers the offsetting credits for dona-

our suspicion that unreported gold purchases and capital debits were met to some extent from the balances in nonoil sectors of oil-source country accounts which are represented by large error terms in those accounts (see pp. 32-33).

¹³ The U.S. account included in the IMF series is from the *Survey of Current Business* without adding reinvested earnings, whereas our matrix account includes such reinvested earnings both in the U. S. account and in partner accounts. This difference, however, does not explain the difference in the over-all divergence in the two series for net capital and gold since it affects both creditor and debtor accounts.

¹⁴ The Bank for International Settlements (in its *Twenty-Eighth Annual Report*) places gold use in industry in 1950-54 at \$140 to \$190 million annually. The difference between new supply of gold (production plus Russian sales) and additions to official reserves, as reported by the Bank in its annual reports, is as follows (in million dollars) for 1950 through 1954: 435, 665, 535, 505, and 345.

tions received. We have audited every country account against the record of U. S. foreign aid to ensure that every recipient country includes some record of aid received—though it may not be the same as the U.S. record. Still, areas generally show smaller aid received from the U.S. than the U.S. records of aid extended; over five years the difference came to about \$450 million, and more than half the difference was in the U.S. account with Continental OEEC countries. This seems too much to be accounted for by the (questionable) inclusion in the U.S. record of the services of U.S. foreign aid missions (which involves a corollary understatement of government services debits by aid recipients).

Net transfer debits tended to increase over the five years covered by the two-valued matrixes. This excess tends to augment rather than offset the goods and services debit excess, and the account for net goods, services, and transfers tends to show a larger over-all net excess of debits than the net goods and services account, along with a tendency for the excess of debits to mount with time. Moreover, the growing excess of transfer net debits seems unlikely to reflect a time lag in reporting (say, with U.S. debits recorded ahead of recipient country reports of credits) since the aid program was not rising; it declined from 1950 to 1952 and then held fairly steady. Rather, the explanation seems to lie either

in poor reporting in the accounts of the sixty-eight countries or in the tendency for more aid to go to countries not covered.

Divergences between credits and debits in the goods and services account and balances in the financial accounts, while not large relative to gross trade, were sizable relative to the balances of areas and between areas. Comparisons with the level of gross trade can be made directly with the aggregates given in Table 3. Over the five years, the net excess of goods and services debits was only 0.73 per cent of all trade, and the net excess for merchandise was 1.56 per cent of goods trade; the net excess for services was larger, 8.28 per cent of all services traded. The excess of capital and gold transactions together over the five years amounted to little more than 1 per cent of all goods and services trade.

However, compared with totals of *net* transactions of countries, the excesses of credits or debits for different types of transactions were large. For each type of transaction, Table 5 shows, in column 1, the combined balances of countries with all partners for the five years 1950–54 and, in columns 2 and 3, separate totals for countries with net credits over the period and for countries with net debits. A comparison of column 1 with columns 2 and 3 provides an idea of the size of the persisting errors. The excess of capital credits represented nearly a third of the net

TABLE 5
*Balances of All Areas with All Areas Compared with Total
Net Credits and Debits of Countries with All Areas, by
Type of Transaction, over the Five Years 1950–54
(million U.S. dollars)*

	Balance (discrepancy) (1)	Combined Balance ^a of Countries with		Ratio of Col. 1 to Mean of Cols. 2 and 3 ^b (per cent) (4)
		Net Credits (2)	Net Debits (3)	
Net merchandise	5,583	32,022	-26,439	19.1
Net services	-8,951	16,116	-25,067	43.5
Net goods and services	-3,368	21,892	-25,260	14.3
Net transfers	-1,601	13,307	-14,908	11.3
Net capital	3,290	11,941	-8,651	32.0
Net gold	1,708	6,152	-4,444	32.2
Net error	-29	7,307	-7,336	0.4

^a From country accounts (NBER files) with error in the account for the Netherlands Antilles offset against error in the Venezuelan account. In Table 6 these two countries have been kept separate, resulting in the larger figures for total net credit error, \$7,511 million, and debit error, \$7,540 million, shown in that table. The two were combined here because their opposite error terms are thought to reflect the single uncertainty attached to the valuation of Venezuelan oil exports to the Netherlands Antilles.

^b Col. 1 multiplied by two and divided by the sum of cols. 2 and 3.

MEASURING TRANSACTIONS BETWEEN WORLD AREAS

TABLE 6
 Net Error in Country Accounts, 1950-54
 (million U.S. dollars)

	1950	1951	1952	1953	1954	1950-54
<i>Total of All Areas</i>	-382	-129	768	-81	-205	-29
Sum of plus error	1,308	1,965	2,571	1,778	1,700	7,511 ^a
Sum of minus error	-1,690	-2,094	-1,803	-1,859	-1,905	-7,540 ^a
<i>Sterling Area</i>	204	-387	-156	-201	-257	-797
United Kingdom	71	-279	69	45	-122	-216
Rest of Sterling Area	133	-108	-225	-246	-135	-581
British Arabian oil sources	-5	-10	-124	-130	-145	-414
India	-59	-116	-145	-5	16	-309
Iraq	-7	-38	-35	-5	10	-75
Burma	5	-12	-6	4	-43	-52
Pakistan	-30	1	-5	—	-1	-35
Union of South Africa	-7	-10	-6	-4	14	-13
Iceland	-3	1	1	-1	-1	-3
Jordan	-2	-3	3	—	—	-2
So. Rhodesia (C.A. Fed.)	—	—	—	—	—	—
British Colonies	—	—	—	—	—	—
Libya	1	3	1	—	1	6
Ceylon	4	14	9	2	-5	24
New Zealand	-5	-24	36	20	2	29
Ireland	18	7	17	16	5	63
Australia	223	79	29	-143	12	200
<i>All Nonsterling EPU Area</i>	-194	-100	735	320	289	1,050
Continental OEEC countries	-844	-948	-498	-469	-450	-3,209
France	-517	-808	-844	-594	-441	-3,204
Germany	-34	-70	32	-50	-118	-240
Italy	-185	12	52	14	-23	-130
Belgium	43	-13	-11	-51	-81	-113
Netherlands	-4	-39	-1	-52	36	-60
Greece	1	-37	-22	-8	24	-42
Turkey	-97	-23	-14	104	—	-30
Sweden	1	1	1	-4	4	6
Denmark	—	10	37	8	-8	47
Norway	-9	-40	44	40	25	60
Switzerland	-46	14	107	-6	12	81
Austria	-39	-17	63	28	48	83
Portugal	42	62	58	99	72	333
Overseas Territories (excl. Netherlands Antilles)	487	844	1,109	797	720	3,957
French	508	843	1,098	845	739	4,033
Belgian	-4	28	5	-7	-5	17
Surinam	—	-2	-1	—	—	-3
Portuguese	-17	-25	7	-41	-14	-90
Netherlands Antilles	64	56	43	-5	46	204
EPU countries	99	-52	81	-3	-27	98
<i>U.S., Canada, and IO</i>	-34	471	507	298	175	1,417
U.S.	-33	472	509	296	178	1,422
Canada	-1	-1	-2	2	-3	-5
International Organizations	—	—	—	—	—	—

(continued)

TABLE 6 (concluded)

	1950	1951	1952	1953	1954	1950-54
<i>Latin America and PHL Fleet</i>	-145	-19	-145	-182	-341	-832
Venezuela	-79	-139	-204	-145	-295	-862
Argentina	-68	-13	45	33	-78	-81
El Salvador	-11	-8	-4	-6	-6	-35
Cuba	5	1	15	-22	-29	-30
Dominican Republic	-13	-4	3	10	-13	-17
Ecuador	—	-3	-1	-10	5	-9
Honduras	1	-3	-1	-3	1	-5
Guatemala	-6	1	2	—	-2	-5
Paraguay	2	—	-2	-5	2	-3
Columbia	-11	22	-12	18	-19	-2
PHL fleet	—	—	—	—	—	—
Haiti	—	-2	7	-5	3	3
Nicaragua	—	1	6	-1	-2	4
Uruguay	—	5	9	-2	-5	7
Peru	3	1	-1	3	3	9
Bolivia	4	2	-6	11	3	14
Chile	6	—	-16	5	22	17
Brazil	-14	121	-41	-108	61	19
Mexico	18	-24	23	30	-25	22
Costa Rica	7	8	13	2	—	30
Panama	11	15	20	13	33	92
<i>Other Countries</i>	-213	-94	-173	-316	-71	-867
Saudi Arabia	-163	-65	-151	-239	-315	-933
Soviet Bloc	16	-8	-61	-145	22	-176
Philippines	-83	5	-11	-33	—	-122
Indonesia	-9	-13	-29	-3	-31	-85
Iran	-74	-26	-5	11	43	-51
Taiwan	-4	-11	-7	-12	-10	-44
Egypt	3	-6	-9	-6	-4	-22
Yugoslavia	-9	-4	—	-1	-5	-19
South Korea	—	—	-2	-2	2	-2
Sudan	2	—	-5	3	-1	-1
Ethiopia	—	1	-1	1	2	3
Japan	-14	10	-3	3	9	5
Liberia	4	—	3	7	-1	13
Finland	3	1	26	-3	-9	18
Syria	15	23	20	-2	1	57
Thailand	18	17	-14	5	47	73
Lebanon	49	17	17	13	28	124
Spain and possessions	-28	-146	60	72	169	127
Israel	61	111	-1	15	-18	168

SOURCE: Country accounts, NBER files.

^a Vertical sum. Horizontal sums are \$9,322 million and -\$9,351 million. The smaller vertical sum reflects intertemporal offsetting of error in some country accounts.

capital flow out of capital-exporting countries into capital-importing countries; and the excess of gold credits represented about a third of the net gold transactions of countries selling or buying gold. The excess of transfer debits (mainly official American and British transfers) was more than 10 per cent of the net transfer flow out of and into countries; and the goods and services debit balance was 14.3 per cent of the trading balances of countries over the five years. The residual net error in the final settlements account, which appears as 0.4 per cent of the

sum of plus and minus error, must be interpreted differently. Because it is small and because there are evidently substantial errors in the other accounts, it signifies that an important feature of the record is the compensating nature of omissions—either entries omitted from both partner records or offsetting entries of different types omitted from individual country accounts.

Table 5 also gives some idea of the relative size of net financial flows between countries over the five-year period. Whereas net capital flows into and out

of countries were on the order of \$12 billion (taking the larger of the net credit and net debit totals), net gold sales were about half that size and net unilateral transfers were substantially larger than net capital flow. The sum of credit and debit error in the country accounts over the five years was larger than net gold movements between them. Totals such as those in columns 2 and 3 of Table 5, of course, greatly understate the *gross* asset flows between countries, es-

pecially since long-term outflows from the United States and the United Kingdom are known to have been offset by short-term capital inflows (see Table 8 below). Walther Michael's calculations indicate an increase in internationally held assets and liabilities of about \$25 billion over these years.¹⁵ The understatement of gross transfers, in contrast, is much less since reverse transfers received by the principal donor countries were comparatively small.

D. DISTRIBUTION OF NET ERROR BY COUNTRY

Further light on the nature of error in the matrixes can be obtained by examining the country distribution underlying the over-all net error in the residual settlement matrix (Table 6). Over the whole five-year period, the net error in all accounts balanced out to a tiny -\$29 million, but this was the result of offsetting positive errors aggregating \$7,511 million and negative errors aggregating \$7,540 million in the individual accounts.¹⁶ A good part of these aggregate errors lay in a few country accounts, the

¹⁵ "International Capital Movements: The Experience of the Early Fifties, 1950-54," unpublished Ph.D. dissertation, Columbia University, 1965.

¹⁶ The totals for the five-year period are smaller than the sum of annual totals for the five years (see note a to Table 6) because of intertemporal offsetting of error in some country accounts over the five years.

¹⁷ Since our accounts were prepared, a somewhat better record of transactions between France and her Overseas Territories has been published in the French national accounts and reported, with some rearrangement, in the IMF *Balance of Payments Yearbook*, Vols. 9 and 10, notes to area statements, beginning with 1953. Through 1954, these accounts show a much reduced error, but the error subsequently mounted with the political difficulties in Algeria.

IMF area statements for 1953-54 give the following balance for France with the rest of the franc area (in million dollars):

	1953	1954
Net goods and services	- 80	- 80
Economic aid	—	—
Capital, other donations, and monetary movements	- 80	- 20
Net error and settlements	160	100

For comparison, the balance on goods and services (transportation only) of France with the rest of the franc area in our account was \$540 and \$478 million in 1953 and 1954, respectively. It would thus appear that net French outlays for travel, investment income, government, and miscellaneous service in the Overseas Territories (items which we were unable to include) were well over half a billion dollars in both 1953 and 1954. The IMF secretariat suggests that the net error and settlements figures represented

largest in the accounts for France and her Overseas Territories because of the partial nature of our accounting for transactions between them.¹⁷ For the five years, nearly half the total of minus error was in the French account and more than half the plus error was in the account of French Overseas Territories. As we have no measure of transactions between France and her Overseas Territories except merchandise and an estimate of transportation, we understate the magnitude of payments in either direction for travel, government expenditures, investment income, and miscellaneous services. Since, however, both metropolitan and territorial accounts are in error, the omission does not affect the over-all discrepancy in the services account for all countries. It is not clear how the transfer and capital accounts between France and her Overseas Territories would be altered by better information; but here again the over-all discrepancies would not be affected since the lack of a debit entry on one side is offset, in the world totals, by the lack of a credit entry on the other.

A similar instance of related compensating error exists in our accounts for Portugal and her Overseas Territories, although the error is not as large. Portugal has a credit error term, her Overseas Territories have a debit error term, and undoubtedly the omitted transactions were investment income earnings or other other services earnings of Portugal in her colonies.

Three oil-source accounts—Saudi Arabia, Venezuela, and British Arabia—show a persisting year-to-year excess of credits for which a debit error entry is required; and Iraq, a fourth oil-source country, largely an unaccounted-for return flow of private capital back to France, which more than offset known capital and transfer outflows to the Overseas Territories.

TABLE 7
 Summary of Error Term in Country Accounts over
 the Five Years 1950-54
 (million U.S. dollars)

Credit Error		Debit Error	
United States	1,422	Five oil-source countries and Netherlands Antilles, net	-2,080
France and Overseas Territories, net	829	Other countries with debit error:	
Portugal and Overseas Territories, net	243	India and United Kingdom	-525
Other countries with credit error:		Germany, Belgium, Italy	-483
Israel, Spain and possessions, and Lebanon	419	Soviet Bloc	-176
Five Sterling Area countries	322	Philippines	-122
Five nonsterling EPU countries and EPU	392	Five Sterling Area countries	-105
Ten Latin American countries	217	Four nonsterling EPU countries	-135
Six other countries	169	Nine Latin American countries	-187
Total	4,013	Seven other countries	-224
		Canada	-5
		Total	-4,042

SOURCE: Table 6.

also shows a debit error entry in most years. Our account for the Netherlands Antilles shows the opposite tendency, probably because of the method of valuing Netherlands Antilles oil imports from Venezuela; the errors for these two countries are offsetting and both appear to reflect the problem of distributing the value of oil back through the stages of production.¹⁸

For the five oil-source countries together, our accounts show large foreign exchange earnings not offset by known imports of goods and services, purchases of gold, or outflow of capital. In the case of Venezuela, the error may lie in the valuation of oil exports, but it may also lie in either investment income or capital.

The debit error terms in the accounts for British Arabia and Saudi Arabia arise entirely in the nonoil sector, since in constructing accounts for the oil sectors we made investment income the balancing item. The sizable and rising excess of credits accruing to these countries reflects our ignorance of the disposition of the oil royalties accruing to the local economies. Possibly some of the error concerns merchandise imports or services purchases, but, as noted above, most of it probably represents capital out-

¹⁸Hence it is useful to think of the two accounts in combination. Our calculation of the value of Venezuelan oil exported exceeds the value included in the official balance-of-payments account published in the *IMF Yearbook*, to which the oil company investment income and capital entries in the Venezuelan account are related.

flow or gold purchases. There is no record of the net gold purchases by these countries, although it is known that Saudi Arabia for a long time took its oil royalties in gold coin, and it may well be that the unknown debits in its account were partly gold purchases. Because of the limited opportunity for the productive use of funds locally, it is also to be expected that these Middle East oil sources invested their surpluses wherever there were opportunities for return and security.

Table 7 summarizes the error terms in the country accounts so as to net out the related and partially offsetting errors which have been noted. There remains a sizable plus error for France and her territories, after consolidation, though much smaller than that for the U.S. The consolidated minus error for the oil-source countries stands out very prominently. Among others with relatively large minus error are India, the U.K., three Continental countries—Belgium, West Germany, and Italy—and the Philippines and the Soviet Bloc.

The last calls for special comment. We have only two types of transactions entered in the Soviet Bloc account—merchandise (f.o.b.) and gold sales. The cumulative net debit results from an offsetting of credit error entries in 1950 and 1954 by larger debit error entries in the intervening years. Services and capital flows for the Soviet Bloc over the whole period appear to have been debit entries. As the Soviet Bloc enjoyed substantial transfer credits according

to the Finnish account,¹⁹ the magnitude of the omitted debits is probably greater than indicated by the error term.²⁰

The error term in the accounts of Australia, India, and the U.K. also requires special comment. The Australian account has a large credit error in 1950 which may reflect an imperfect meshing of the extraordinarily large wool sales late in the year with short-term capital movements. The Indian account has sizable earnings in the first three years of the period not balanced by known debits, and in view of the well-known disposition for India to absorb gold, gold purchases may have been the true offset to these net credits. The over-all error in the official U.K. account arises in good part from the lack of adequate information about private capital movements but may also lie in the goods and services accounts, according to the IMF.²¹

Error terms in country accounts, of course, represent the inability of a country's statisticians to ac-

count for credits and debits equally, but not all country accounts carry error terms. Thus in the account of Canada, the balancing entry is regularly combined with the capital item. Not only do some countries not show error terms but, even for those which do, any error shown is net and does not reflect the compensating types of error arising from the omission of matching credit and debit entries (as, for example, the smuggling of goods compensated by related unreported capital or gold movements). Although the error terms in published country accounts are not an exact measure, they may give some idea of the location and order of magnitude of error. As they persist from year to year or swing from debit to credit, they provide clues as to the nature of the error. Error terms persisting in one direction are likely to indicate bias in the statistical techniques employed, whereas error terms fluctuating from plus to minus may result from difficulties in matching the timing of the debit and credit aspects of transactions.

E. CONCLUDING OBSERVATIONS

Examination of world totals for the several types of transactions has provided a useful introduction to the record for two reasons. First, they furnish new measures of the magnitudes traded internationally including services. Second, the over-all discrepancies in the two-valued record give an indication of the nature and extent of error in the accounts.

For gross trade, credit and debit totals are found to have differed by only small percentages, and the extent of agreement is better for goods and services than for individual components. Internal evidence in the accounts affords little reason to think that the trade totals are greatly in error; external evidence, however, indicates that total world transactions (notably services) are probably understated because of known omissions.

Differences between total credits and debits for merchandise and services and the net over-all discrepancies in financial accounts, while small in relation to total world trade, are sizable in relation to the five-year net position of countries, especially for services, capital, and gold accounts. Internal evidence

in the accounts thus indicates that matrixes of net transactions and especially of capital and gold flows are subject to considerable error. Cumulative errors in these accounts are found to be large in relation to the reported accretion in gold and foreign exchange reserves of countries outside the U.S. over the period.

The pattern of over-all discrepancies for transactions of different kinds persisted over the period and exhibited a movement related in time to the swing in world confidence associated with the Korean War. Its nature suggests that the flow of funds into hidden capital and gold holdings was fed mainly by unrecorded services transactions. Individual country accounts show sizable net credit or net debit error positions over the five years. In the face of this and the over-all discrepancies in trade and financial accounts, the over-all error for all accounts is practically zero. Clearly, more is to be learned about the nature of unrecorded transactions from a study of the whole record than can be observed from an examination of country accounts individually.

Bloc imports f.o.b. has sometimes been used, but such a balance overstates Bloc earnings unless all the trade both ways is carried on vessels operated by the Soviet Bloc, and even then port charges and charter fees would be incurred. (See *The Banker*, February 1957, p. 96, for an example of such a doubtful use of unadjusted trade statistics to show the trade balance of the Soviet Bloc with the Sterling Area.)

²¹ See IMF *Yearbook*, Vol. 8, comment on the U. K.

¹⁹ Finnish official donations to Eastern Europe were \$34 million in 1950, \$54 million in 1951, and \$36 million in 1952, a total of \$124 million.

²⁰ In assessing the balance of Soviet Bloc trade with the West, one should not disregard freight on imports. A trade balance between derived bloc exports c.i.f. and derived