

**Fifteenth Meeting of the  
IMF Committee on Balance of Payments Statistics  
Canberra, Australia, October 21–25, 2002**

**Global Discrepancies in the Transportation Account**

**Prepared by the IMF and the Banque de France**

## GLOBAL DISCREPANCIES IN THE TRANSPORTATION ACCOUNT

### Introduction

This note is an attempt to review the asymmetries in the data on sea freight drawing on data on international freight reported by member countries to the IMF and published in its annual yearbook on balance of payments statistics. As indicated in Appendix 1, tables 1 and 2, the discrepancy in the transportation account, according to data published in the 2001 *Balance of Payments Statistics Yearbook (BOPSY2001)* for the period from 1994 through 2000, has remained large and consistently negative, which was also the picture revealed by the review of transportation inflows and outflows during 1979 through 1983 by the IMF *Report on the World Current Account Discrepancy, 1987* (the Esteva report). A significant development in the *BOPSY 2001* data, however, has been the very large increase in 2000, which saw a \$14.3 billion increase in the negative discrepancy to a level of \$72.2 billion, markedly higher than the level in the previous year as well as the average level of \$56.1 billion for the period from 1994 through 1999. The imbalance in the transportation account throughout the period under review was almost entirely due to the imbalance in the freight account. For 2000, the negative imbalance in the freight account amounted to \$69.3 billion, compared with the average of \$52.9 billion for the period from 1994 through 1999.

The Esteva Report identified the main contributing factor to the global freight discrepancy as being the “missing fleet”; that is the fact that several economies with large maritime interests did not report the foreign earnings of their fleets registered in other countries. However, although the missing fleet problem remains, some Committee members believe that the common practice of estimating freight charges as a given percentage of the total c.i.f. value of imports, in absence of actual freight data, may lead to an overstatement of freight debits, contributing to the imbalance. While asymmetries in other accounts within the transportation account also contribute to the size of the discrepancy, this note has focused only on the sea freight account as the discrepancy in the international sea freight account is evidently the most significant factor underlying the discrepancy in the transportation account. It is intended as a contribution towards the discussion on how work to address these discrepancies, could be carried forward.

### Background

Discrepancies in the international freight account are not new and an attempt to analyze these discrepancies was made as early as 1987 in the Esteva Report. Essentially, the analysis focused on the investigation of possibilities for the underreporting of the receipts of international freight (credit entries) and an overestimation of the payments for international freight (debit entries). As mentioned earlier, the Esteva Report noted that responsible for the underreporting of credit entries would be the earning of the so-called “missing fleet”, while the cause of the over reporting of debit entries might be deficiencies in the c.i.f./f.o.b. ratio used by many countries to estimate their freight payments on imports. C.i.f./f.o.b. ratios that are too high contribute to higher levels of transportation outflows that not only increase the transportation discrepancy, but also decrease the level of imports of the reporting economy.

After analyzing the methodologies used to estimate international freight, the Esteva Report concluded that it was virtually certain that the large discrepancy on transportation reflected mainly the omission on the credit side of the revenues of a large portion of the world shipping fleet-principally the earnings of fleets operated by Greece and Hong Kong SAR, and by Eastern European countries that were not then Fund members and did not report to the Fund, from recorded balance of payments data. It tentatively concluded, that the existing asymmetries were reasonably well explained by the omission of the earnings of the “missing fleets” from the Fund’s data. In order to address this problem, it recommended that careful consideration be given to develop with the assistance of the authorities estimates for the earnings of the Greek and Hong Kong SAR shipping fleets. Further refinements in the analysis of the shipping discrepancy would also require the accumulation of much better data on the shipping tonnage actually operated by those authorities. For more details on the Esteva Report, see Appendix 2.

### **Methodology then and now**

The asymmetries in the global data for net flows of international freight as reported in *BOPSY 2001* are not comparable with the asymmetries in the data reported to the Fund for the period, reviewed for analysis in the Esteva Report. As mentioned above, countries in Eastern Europe did not report balance of payments data to the Fund. Moreover, the category shipment included insurance on merchandise and no breakdown on the mode of transport was available. As a result, the Working Party that prepared the Esteva Report made estimates of coverage adjustments to address deficiencies in the data. It estimated a coverage adjustment to account for the transportation flows to and from the Eastern European countries. Other adjustments to exclude insurance and modes of transportation other than sea transportation to estimate sea freight more precisely, also were made. These adjustments are now not necessary since under *BPM5* sea freight is defined more precisely. The data in the Esteva Report also excluded any earnings of the “missing fleet”. In contrast, international freight data for Hong Kong SAR are now included (indistinguishably under the transportation account) in the balance of payments data reported to the Fund. International freight data for Greece were excluded then and now as no estimates for the earnings of the Greek shipping fleet and payments for international freight on Greek imports are available for inclusion in the balance of payments. Other important missing fleet countries such as Bermuda and Liberia are also not included in the *BOPSY 2001* data.

### **Current imbalances**

An attempt has been made to make the data on sea freight in the Esteva Report comparable with the data in *BOPSY 2001* (see Appendix 1, tables 1 and 2). In the Esteva Report, the above mentioned adjustments for coverage to include Eastern European countries and other methodological adjustments to exclude airfreight and merchandise insurance from the shipment data were made only for 1983. The 1983 adjustments, calculated on the basis information provided by questionnaires, amounted to overall reductions in the totals reported for shipment inflows and outflows. The net result of the downward adjustment for the 1983 data to arrive at sea freight only and the upward adjustment to improve the coverage

amounted to a 16.2 percent downward adjustment for total shipment credits and an 8.8 percent downward adjustment for total shipment debits. In order to make the data for the previous periods comparable with the 1983 data, estimates for sea freight in the Esteva Report for the years 1979 through 1982 have been calculated by applying the same downward adjustments estimated for the shipment data for 1983. Secondly, data on the breakdown of freight into sea freight, airfreight, and other freight reported by some countries in the *BOPSY 2001* have been used to calculate a ratio to estimate the sea freight component of total freight. The Esteva report showed that the discrepancy between the reported inflows and outflows of international shipment expressed as a ratio to total shipment debits for the years 1979 through 1983 had remained stable hovering around 38 percent within a narrow range of three percent. In contrast, the discrepancies in sea freight inflows and outflows in the Esteva Report expressed as a ratio of total sea freight debits showed a similar range of variation, but averaging at a much higher level of 43.7 percent. In focusing only on the comparison in the Esteva Report and in *BOPSY 2001* of the outflows of sea freight expressed as a ratio to total freight debits, the discrepancy in the data reported in *BOPSY 2001*, also remained stable for the years 1994 through 2000, but averaging at a lower level of 39.6 percent. Thus, while the range in the data of the two sets of data was similar, the average level of the data on the discrepancy in the Esteva report expressed as a ratio to total debits was higher, suggesting that some improvements in the data collection has taken place. In absolute terms however, the discrepancy in the data for sea freight in *BOPSY 2001* is still significant, ranging from \$38.8 billion to \$58.0 billion compared to \$28.3 billion through \$35.6 billion in the Esteva Report. Even adjusted for inflation, it could be argued that again in absolute terms the *BOPSY 2001* data may not have improved at all. Finally, it is noted that the level of the discrepancy in sea freight, which through 1999 has remained more or less constant, is at odds with the sharp increase in the discrepancy recorded in 2000.

### **The c.i.f./f.o.b. ratio**

In order to explore whether discrepancies in the account for international sea freight could also arise from a deficiency in estimating payments for international sea freight, this note reviews the c.i.f./f.o.b. ratio. The attached table (Appendix 1, table 3) on the c.i.f./f.o.b. ratios derived from the data on international sea freight on goods import in *BOPSY 2001* show a distinct pattern of low ratios for the industrial countries and a significantly higher ratio for the developing countries. When the developing countries are broken down by regions, the data show that Africa has the highest ratio, followed by Asia, and the Western Hemisphere. While these results would be in line with expectations, the observed ratios may not necessarily be at the right level, but could be overstated or understated.

### **Conclusions**

Data on the asymmetries in the account for international sea freight as derived from data in the *BOPSY 2001* show that in spite of improvements made in response to the Esteva Report through the partial inclusion of data on the “missing fleet” (for Hong Kong SAR only), the discrepancy has not narrowed and even got worse in 2000. Therefore, to maintain the conclusion in the Esteva report that the “missing fleet” would reasonably explain the

underreporting of inflows, would in the current situation be more difficult to accept, as in absolute terms the discrepancy in the *BOPSY 2001* data is still substantial, in spite of the inclusion of some of the “missing fleet” earnings. This substantial discrepancy would have to be explained by the fleet earnings attributable to Greece, Bermuda, Liberia, and other countries being not included in the *BOPSY 2001* data. As far as the debit entries is concerned, even though the aggregate data appear generally to be plausible the over reporting of international sea freight payments as a result the use of c.i.f./f.o.b. ratios remains a possibility. The data in *BOPSY 2001* also show that the growing discrepancy in the transportation account could also be the result of inadequacies in the estimation methodology for air transport and other modes of transportation. These modes of transportation in the Esteva Report accounted for 8.8 percent and 16.2 percent of total debits and total credits respectively, compared to 40 percent of the total credits and 60 percent of the total debits respectively in the *BOPSY 2001* data. Since the discrepancies have remained, the next step would be an analysis of bilateral transportation flows as an additional tool to arrive at a better understanding of the underlying causes for the discrepancies, hampering the compilation of data on international freight.

### **Questions for the Committee**

To address the continuing discrepancy affecting the global accounts for sea freight and other modes of transportation, would the Committee consider it worthwhile to do more to identify the source of the problems and to improve national measurements in the problem areas. In support of this, should the Committee:

1. Request countries or institutions that have done work on bilateral transport flows or bilateral c.i.f./f.o.b ratios to (a) share their experiences with the Committee and (b) provide advice on how the scope of their work might be extended to other countries.
2. Consider proceeding with a research project to assess the size of the missing fleets? Would a Committee member or members be interested in doing this research.
3. Ask for suggestions about best practices in collecting compiling national data. Would countries be prepared to submit or prepare papers to illustrate good practices that they follow in their national statistics.

Table 1: Transportation Account (Data from Esteva Report)  
(In billions of U.S. dollars)

Shipment	1979	1980	1981	1982	1983
Credit	45.4	55	55.3	50.4	46.9
Debit	72.8	87	89.9	84.2	78.7
Discrepancy	-27.4	-32	-34.6	-33.8	-31.8
Ratio:Discrep/debits	-37.6	-36.8	-38.5	-40.1	-40.4
Sea freight					
Credit	38	46.1	46.3	42.2	39.3
Debit	66.4	79.3	82	76.8	71.8
Discrepancy	-28.3	-33.3	-35.6	-34.6	-32.5
Ratio:Discrep/debits	-42.7	-41.9	-43.5	-45	-45.2

Table 2: Transportation Account (Data from BOPSY 2001)  
(In billions of U.S. dollars)

Transportation (BOPSY2001)	1994	1995	1996	1997	1998	1999	2000
Credit	264.9	299.1	307	313.4	310.2	316.4	338.8
Debit	315	359.3	362.3	370.2	366.7	374.3	411.1
Discrepancy	-50.1	-60.1	-55.3	-56.8	-56.5	-57.9	-72.2
Freight							
Credit	119.3	136.6	141.6	152.7	151.7	151.4	164.1
Debit	164.1	190.8	196.6	208.5	203.9	206.5	233.4
Discrepancy	-44.8	-54.3	-55	-55.8	-52.2	-55.1	-69.3
Ratio:Discrep/debits	-27.3	-28.4	-28	-26.8	-25.6	-26.7	-29.7
Seafreight							
Credit	59.7	68.3	70.8	76.3	75.9	75.7	82
Debit	98.4	114.5	118	125.1	122.3	123.9	140.1
Discrepancy	-38.8	-46.2	-47.2	-48.7	-46.5	-48.2	-58
Ratio:Discrep/debits	-39.4	-40.4	-40	-39	-38	-38.9	-41.4

Table 3: Transportation Account (c.i.f./f.o.b. ratios)  
( In billions of U.S. dollars)

Imports	4139.6	4971.6	5238.2	5430.8	5350.7	5562.8	6292.9
Freight	164.1	198.8	196.6	208.5	203.9	206.5	233.4
Imports cif	4303.7	5170.4	5434.8	5639.3	5554.6	5769.3	6526.3
CIF/FOB ratio	3.81	3.84	3.62	3.7	3.67	3.58	3.58
CIF/FOB ratio (sea freight)	2.29	2.21	2.17	2.22	2.2	2.15	2.15
Freight: Regional Data							
Industrial Countries	1994	1995	1996	1997	1998	1999	2000
Goods Imports	2775	3309.2	3432.9	3517.2	3612.1	3809.5	4188.9
Freight	88.8	100.1	104.6	114.7	119.1	122.1	134
Imports c.i.f	2863.8	3409.3	3537.5	3631.9	3731.2	3931.6	4322.9
CIF/FOB ratio	3.1	2.94	2.96	3.16	3.19	3.11	3.1
Developing Countries							
Goods Imports	1364.6	1662.4	1805.3	1913.6	1738.6	1753.3	2104
Freight	75.3	90.7	92	93.8	84.8	84.5	99.4
Imports c.i.f.	1439.9	1753.1	1897.3	2007.4	1823.4	1837.8	2203.4
CIF/FOB ratio	5.23	5.17	4.85	4.67	4.65	4.6	4.51
Africa							
Goods Imports	82.3	98.8	98.8	104	103.9	101.6	106.6
Freight	7.4	8.8	8.4	8.8	8.7	8.6	9.2
Imports c.i.f.	89.6	107.5	107.1	112.8	112.6	110.2	115.9
CIF/FOB ratio	8.2	8.14	7.8	7.81	7.74	7.8	7.96
Asia							
Goods Imports	751.2	928.4	998.6	1021.8	846.3	916.8	1155.5
Freight	40.9	51.1	53.6	53.5	42.7	45.8	57.6
Imports cif	792.1	979.5	1052.1	1075.3	889	962.5	1213.1
CIF/FOB ratio	5.17	5.22	5.09	4.98	4.8	4.75	4.75
Western Hemisphere							
Goods Imports	210.3	237.2	262.7	310.9	329.3	317.6	368.9
Freight	11.9	12.8	10.4	11.8	12.3	10.6	11.7
Imports cif	222.2	250	273.1	322.7	341.6	328.2	380.6
CIF/FOB ratio	5.37	5.13	3.8	3.66	3.61	3.24	3.08

Philippe MESNY  
Banque de France  
2.09.2002

### The main findings of the ESTEVA REPORT (1987)

Incidentally the Working Party whose main task was to explain the origin of the growing discrepancy in the international investment income item of the b.o.p., also focussed its research on the structural imbalance in the « shipping and transportation » component of the current account.

In billions of dollars	1979	1983
<b>Shipment</b>		
Credit	45.4	46.9
Debit	72.8	78.7
Net	-27.4	-31.8
<b>Other transportation</b>		
Credit	64.0	70.2
Debit	65.3	73.6
Net	-1.3	-3.4

The Group realised in the course of their study that “while the debits on shipment could be overstated by some countries, it was virtually certain that the large asymmetry under this item reflected the omission on the credit side of the revenues of a large portion of the world shipping fleet” registered in offshore centres or in countries with weak or non-existent b.o.p. reporting systems. Thus, the WG had the merit to stress the influence of the “missing fleets” on the large and structural discrepancy in the transportation account.

The WG suggested that each country should test the internal consistency of the transportation figures with those of imports and exports, using all the information available on transportation and insurance cost in order to correct the reported amounts of the payments made for other purposes. In order to correct the shipping account, the Group made a large number of assumptions on :

- the average freight charges
- the insurance cost
- the share of sea transport in the global external trade

which thus gave fragile and disputable results.

To support its study, the Group launched a survey on “shipment” and “other transportation” including the 26 major maritime countries reporting to the Fund.

At the end of this exercise, several adjustments - one of them based on UNCTAD data regarding the world tonnage by country - were made by the Group to the reported b.o.p. shipment debits and credits for the year 1983 :



<b>Reported debits (in bns of dollars)</b>	<b>78.7</b>	<b>Reported credits</b>	<b>46.9</b>
Insurance	-3.8	Insurance	-1.0
Other means of transportation	-5.6	Other means of transportation	-6.6
Eastern Europe payments to other countries	+1.2		
Other non-reporting areas	+1.0		
Reporting areas	+0.3		
<b>Adjusted total</b>	<b>71.8</b>	<b>Adjusted total</b>	<b>39.3</b>

Assuming that debits were overstated, or more precisely that total credits were undervalued, the WG tried to split the debits out of the adjusted reported total debits between the “real” reported fleets and the “missing” fleets as follows :

In billions of dollars	<b>“reported” fleets</b>	<b>“missing” fleets</b>	<b>Total</b>
International earnings	39.3	32.5	71.8

The figure regarding the missing fleets was then added to the credits of the shipping account, contributing to reduce considerably the asymmetry under this b.o.p item.

The WG undertook a similar exercise supported by many assumptions in order to narrow the discrepancy related to the “Other transportation” account of the World b.o.p.

In its conclusions and subsequent recommendations the Group encouraged more research to be done on this subject, and more precisely stressed that :

- more attention should be paid to enlisting the support of several large maritime carriers countries (for instance Greece and Hong-Kong)
- more reliable data be collected on the shipping tonnage by country
- thorough research be undertaken on the estimate of the c.i.f./f.o.b. factors
- a specialised team be created in the Fund’s Bureau of Statistics to monitor the transportation data
- a survey be organised to improve the credits entries
- a consultation with shipping experts be held to establish more precise specifications to facilitate the b.o.p reporting in this area.