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# Some Estimates of Trade Flows in Banking Services

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SOME ESTIMATES OF TRADE FLOWS IN BANKING SERVICES

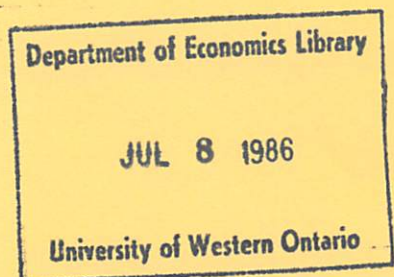
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This paper contains preliminary findings from research work still in progress and should not be quoted without prior approval of the authors.

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Some Estimates of Trade Flows  
in Banking Services<sup>1</sup>

by

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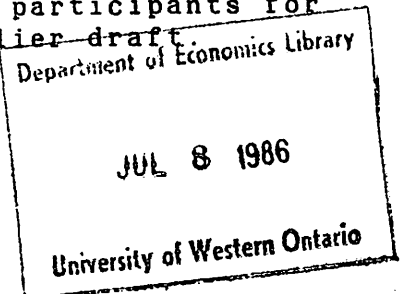
and

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## I. Introduction

Those who advocate including services in a future GATT negotiating round base their case, in part, on the alleged growing importance of trade in services. These claims are based on estimates of service trade derived from balance of payments (BOP) data, even though it is widely recognized that individual service items cannot be identified in these accounts since they are recorded both as part of merchandise trade estimates and as part of the broader receipts and payment of fees, royalties, and investment income (i.e., invisibles).

This paper presents some estimates of international trade in one key service category, banking services, obtained using an alternative method. In the process, we also raise the conceptual issue as to what the measurement of international trade in banking services should include and perhaps more importantly not include. This issue, it turns out, has substantial relevance to the wider debate on trade in services.

We use IMF data on assets and liabilities of both domestic banks and non-banks with foreign banks, and of foreigners with the domestic banking system to construct measures of the volume of transactions on which banking intermediation services are provided across national borders. We then use estimates of the spread between borrowing and lending rates for depositors and borrowers with the financial institutions involved to estimate the value of international flows of intermediation services. We apportion these estimates between depositors and borrowers; and

on this basis, make calculations of the value of financial intermediation services traded across national boundaries.

Estimates are presented for three years in the early 1980's for three countries: the U.S., the U.K., and Canada. For the early 1980's, our calculations suggest that the value of international trade flows in banking services is small. For the U.S., exports are perhaps around \$3-5 billion per year.

Our approach to measuring trade in banking services recognizes that the main service which banks provide is one of financial intermediation between depositors and borrowers. Depositors and borrowers both use banks to economize on transactions costs in locating one another for the purpose of effecting mutually advantageous trades. Depositors postpone consumption in return for interest payments by borrowers on their deposit. They also pool risks of default, reducing the variance of their expected returns on their savings. International flows of banking services occur where banks located in one country provide financial intermediation services to borrowers or depositors located in other countries.

This may seem to be a relatively straightforward concept on which to base a measure of international flows of banking services, but in the literature on service trade which has appeared thus far, international flows of banking services are often equated with the foreign source income of domestic banks. These, of course, are quite different. Our estimates of exports of banking services by the U.S. of \$3-5 billion in the early

1980's with estimates of foreign source income accruing to U.S. banks of \$23.2 billion for 1977 (the latest year for which official estimates are available; see Whichard (1984)).

The implication for the debate on trade in services is that international flows in banking services may be relatively small; but since the importance of the service trade issue is to a great extent measured in terms of foreign affiliate revenues it may well be overemphasized. The fundamental issue with trade in services which many authors have raised is whether the main issues for service industries in fact relate to questions of establishment rights and discriminatory regulations such as those faced by banks in their international operations. Strictly speaking, these are investment rather than trade-related issues, and our estimates seem to confirm this.

## II. Services, Balance of Payments Data, and the Treatment of Banking

In attempting to measure international trade in banking services, the wider issues involved in measuring trade in services are readily apparent. There is little, if any, consensus as to what constitute traded services, and available data is very limited. Definitions of service trade vary between two extremes; one restricted to services which actually cross national borders, the other incorporating all non-merchandise and non-transfer items reported in the Balance of Payments current account.

Nevertheless, the most widely used estimates of service trade

flows are all based (in one way or another) on Balance of Payments data. These accounts, reported on a national basis, record all transactions between residents of a country and the rest of the world (i.e., flows of real resources, transfers and change in assets or liabilities). The current account of the BOP reports merchandise trade and trade in invisibles.<sup>2</sup> The capital account records all financial transactions.

Table 1 summarizes the main BOP items from the IMF Balance of Payments Manual. Invisibles include a number of more readily identifiable service categories such as travel, transportation and freight. Remaining services appear in one miscellaneous category which includes insurance, fees, commissions, royalties and copyrights, construction services, communications and advertising (see the right-hand inset in Table 1).

Listing these items in this way demonstrates the difficulties in separating service transactions on a functional basis. Various services generate fees, royalties, copyrights and commissions. BOP data does not provide any information on the specific activities from which these arise. Constructing estimates of international services flows for such categories as accounting, data processing, education, engineering, franchising, health care, leasing and renting, management consulting, public relations, law and other professional, marketing and technical

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<sup>2</sup>It is important to note that invisibles refer to transactions which relate neither to goods flows nor to capital movements.

## Items Included in Typical Country Balance of Payments Accounts

- A. Goods and Services (Items 1 through 8)
1. Merchandise
    - 1.1 Exports f.o.b., Imports
    - 1.2 Other merchandise (net)
  2. Nonmonetary gold
  3. Freight and insurance on international shipments
    - 3.1 Freight
    - 3.2 Insurance
  4. Other transportation
    - 4.1 Passenger fares
    - 4.2 Time charters
    - 4.3 Post expenditures
    - 4.4 Other
  5. Travel
  6. Investment income
    - 6.1 Direct investment income
    - 6.2 Other dividends
    - 6.3 Other
  7. Government, not included elsewhere
    - 7.1 Military transactions
    - 7.2 Nonmilitary transactions
  8. Other services
    - 8.1 Nonmerchandise insurance
    - 8.2 Other
- Memorandum item: factor income  
(item 6 and part of items 7 and 8)
- B. Transfer Payments (Items 9 plus 10)
9. Private
    - 9.1 To and from foreign governments
    - 9.2 Other
  - 10 Central government
    - 10.1 Intergovernmental
    - 10.2 Other

Other Services Includes

1. Nonmerchandise insurance (1.1 through 1.4 = item 8.1)
  - 1.1 Premiums on direct insurance
  - 1.2 Claims on direct insurance
  - 1.3 Premiums on reinsurance
  - 1.4 Claims on reinsurance
2. Other (2.1 through 2.12 = item 8.2)
  - 2.1 Personal income
  - 2.2 Management fees
  - 2.3 Underwriters' commissions
  - 2.4 Agents' fees
  - 2.5 Construction activity
  - 2.6 Communications
  - 2.7 Advertising
  - 2.8 Subscriptions to press
  - 2.9 Film rentals
  - 2.10 Copyrights and patent royalties
  - 2.11 Real estate rentals
  - 2.12 Other
3. Total (1 plus 2 = item 8)
4. Memorandum item: <sup>2</sup> factor income

<sup>1</sup>All residents other than the central government.

<sup>2</sup>Item specified for reconciliation with national accounts.



service is simply not possible from BOP. Service transactions in the BOP are recorded by type of service only in a small number of cases (i.e., travel, transportation, insurance). The rest are classified according to the type of payment associated with services provided (e.g., royalties, fees, and commissions). Even the receipts and payments of investment income in effect include a service component.<sup>1</sup>

Banking is a good example of these problems. In the U.K. BOP,<sup>2</sup> for instance, the receipts from overseas operations of national banks include the net receipts of banks from services provided to "non-related" customers, (including arbitrage as well as banking charges and commissions); the net receipts for services rendered to overseas branches, subsidiaries and associates of national banks; the net receipts on lending and borrowing involving overseas residents; and the interest, profits and dividends accruing to nationals from overseas branches, subsidiaries and associates of national banks. The first two items are included in "other services", and the second two as

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<sup>1</sup>Stalson (1985) refers to "intractable conceptual difficulties" in both collecting and interpreting U.S. data on services.

<sup>2</sup>UK Central Statistical Office, United Kingdom Balance of Payments 1963-73, London. Her Majesty Stationery Office, 1974, p. 70.

part of investment income.<sup>1</sup>

These items, however, do not provide a measure of international trade in banking services, since the service provided by banks is that of financial intermediation. In most cases there is no explicit charge for this service, except for fees and commissions which are relatively minor. The charge for the service is implicit in the difference between the interest rate charged to borrowers, and the rate of interest paid to depositors. The BOP data record estimates of the income flows generated by banks from their international activities and (the value of intermediation services actually traded internationally (except for fees and commission)) is an unidentified portion of these estimates.

Moreover, for the most part, the activities included in the BOP do not relate to transactions which occur between countries. A U.S. bank affiliate acting as a financial intermediary between two non-residents is generating investment income for the parent bank, not engaging in international trade. While one can argue that it is establishing a presence abroad that allows such transactions to occur; and therefore some element of the income return should be included as trade, it is impossible to distinguish the trade element from the investment element.

What is required is a more direct measure of the value

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<sup>1</sup>This treatment is approximately the same in the BOP accounts for the U.S. and Canada. The U.K. BOP treatment is described here because of the clear description of sources and methods of construction provided for these accounts.

of banking services actually traded internationally. Ideally this estimate should include all fees and charges accruing to domestic banks from non-residents, including their foreign affiliates, plus an imputed financial service charge covering the value of intermediation services traded between non-residents; much the same as that used in the National Accounts to measure the value of services rendered by national banks to domestic residents.

### III. An Estimate of International Trade Flows in Intermediation Services Provided by Banks

Because the BOP estimates do not distinguish the various components of receipts and payments associated with banking activities, we have used an alternative method to construct estimates of international trade in intermediation services provided by both domestic and foreign banks. We have done this for three countries (the U.S., the U.K., and Canada), for the years 1982-84.

The method we use involves applying estimates of the spread between deposit and lending rates both for U.S., U.K., and Canadian banks, and banks in their largest partner countries to corresponding data on assets and liabilities of both domestic banks with non-residents, and non resident banks with residents. These yield an estimate of the value of intermediation services provided by domestic banks to both depositors and borrowers abroad, and by non-resident banks to domestic depositors and borrowers. The combined financial intermediation charge is

apportioned between the parties to calculate the internationally traded component.

International Financial Statistics (1985) provides data on inter-country asset and liability positions of resident and non-resident banks. Estimates of intermediation services exported by countries are based on the sum of foreign non-bank deposits with domestic banks (cross-border bank deposits of non-banks by residence of borrowing bank); loans to foreign non banks (cross-border bank credit to non-banks by residence of lending bank); and loans to foreign banks (cross-border inter-bank claims by residence of lending bank). Intermediation services imported by countries are based on the sum of deposits of domestic non-banks with foreign banks (cross border bank deposits of non-banks by residence of depositor); loans to domestic non-banks by foreign banks (cross border bank credit to non banks by residence of borrower); and loans to domestic banks (cross-border inter-bank liabilities by residence of borrowing bank).

Table 2 reports both the consolidated claims and liabilities of domestic banks and non-banks with foreigners, and claims and liabilities of foreign banks involving domestic residents. Data on rate spreads from OECD Financial Statistics Monthly are reported in Table 3. These clearly have to be interpreted with caution; but for the purposes of the calculation we make, are unfortunately all that is available. Data on rate spreads in Japan, for instance, are distorted by domestic financial regulation. Also, the variance in rate spreads by country

Table 2

Claims and Liabilities, Domestic and Foreign Banks,

U.S., U.K., and Canada, 1982 - 1984

(Billions of U.S. Dollars)

	<u>United States</u>			<u>United Kingdom</u>			<u>Canada</u>		
	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1982</u>	<u>1983</u>	
<u>Claims and Liabilities of Domestic Banks with Foreigners</u>									
Foreign Non-bank Deposits	45.55	58.83	67.45	137.61	149.66	147.08	18.99	25.00	27.18
Loans to Foreign Non-banks	107.95	121.23	118.61	142.79	149.67	144.85	7.13	7.76	7.44
Loans to Foreign Banks	294.06	308.74	324.21	320.08	335.53	344.78	31.02	33.21	34.04
TOTAL	447.56	488.80	510.27	600.43	634.86	636.71	57.14	65.97	68.66
<u>Claims and Liabilities of Foreign Banks with Domestic Residents</u>									
Domestic Non-bank Deposits	152.36	167.91	161.49	17.72	20.48	20.76	10.98	11.38	12.76
Loans to Domestic Non-banks	57.54	56.52	68.24	13.75	15.98	13.84	11.18	10.61	11.01
Loans to Domestic Banks	208.91	246.93	269.47	349.19	365.62	384.39	38.81	36.36	34.83
TOTAL	418.81	471.36	499.2	380.66	402.08	418.99	60.97	58.35	58.60

Source: International Financial Statistics, 1985 Yearbook, p. 64-75, IMF, Washington, D.C.

Table 3

Interest Rate Spreads Between Depositors and Borrowers By Country1982, 1983, 1984Countries for which Trade in Intermediation Services are Calculated

<u>United States</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
1) Large time deposits	12.27	9.07	10.47
2) Prime rate	14.86	10.79	12.05
Implicit service charge	1.29	0.86	0.79

United Kingdom

1) Sterling certificates of deposit	12.21	10.08	9.88
2) Overdraft (minimum rate)	12.93	10.79	10.68
Implicit service charge	0.36	0.35	0.40

Canada

1) 90-day deposit receipts	14.06	8.25	9.98
2) Chartered banks prime lending rate	15.99	11.23	12.09
Implicit service charge	0.96	1.49	1.05

Other Partner CountriesGermany

1) Time deposits (3 months)	7.54	4.56	4.86
2) Discount credits	9.53	6.00	6.09
Implicit service charge	0.99	0.72	0.61

Switzerland

1) 3-month deposits	4.29	3.35	3.81
2) Commercial bank's overdraft	7.14	5.82	5.91
Implicit service charge	1.42	1.23	1.05

Japan

1) Time deposits (1 year)	5.75	5.75	5.50
2) Standard rate	6.00	5.92	5.50
Implicit service charge	0.12	0.08	0

France

1) Time deposits (up to 6 months)	9.31	8.24	7.66
2) Bank's prime lending rate	13.62	12.25	12.15
Implicit service charge	2.16	2.01	2.24

Belgium

1) Overdrafts with commercial banks	16.93	13.68	14.41
2) 1-year cash certificates	9.00	8.79	8.96
Implicit service charge	3.97	2.44	2.72

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Source: Financial Statistics Monthly, OECD, January 1983, 1984, 1985.

reflects both differences in financial regulation across countries, and the form of financial transactions in which the various national banks engage. Spreads are smaller for the U.K. than for most other countries because charges for bank-to-bank intermediation services are smaller per dollar transacted than for bank-to-non-bank intermediation and U.K. banks engage in more bank-to-bank intermediation activity.

Despite these problems this data on rate spreads has been used along the consolidated country data on inter-country claims and liabilities reported in Table 2 to estimate the value of intermediation services traded by the U.S., the U.K., and Canada for each of three years. These are reported in Table 4. In making these calculations the value of intermediation services has been apportioned between borrowers and lenders using an equal weighting assumption. Because the number of partner countries is so large in each case, we use data on rate spreads for only the more important countries displayed in Table 3, and construct weighted averages using the country composition of assets and liabilities.

While clearly dependent on the interest rate spreads used, the striking feature of these estimates of international flows of banking services from Table 4 is their relatively small size. For the U.S., for instance, international trade flows in banking services are in the range of \$3-5 billion per year in the 1980's. This contrasts with estimates of foreign affiliate sales of U.S. banks of \$23.2 billion for 1977 (the latest year

Table 4

Estimates of International Trade in Financial Intermediation Services,

U.S., U.K., and Canada 1982-84

	<u>United States</u>		<u>United Kingdom</u>		<u>Canada</u>	
	1982	1983	1982	1983	1982	1983
Domestic Implicit Service Charge for Intermediation (%)	1.29	0.86	0.36	0.35	0.96	1.49
Foreign Implicit Service Charge for Intermediation (%)	0.79	0.67	1.49	1.11	0.99	0.68
Estimate of Bank Services Exports <sup>1</sup> (Billions of US dollars)	5.77	4.20	2.16	2.22	0.55	0.98
Estimate of Bank Services Imports <sup>1</sup> (Billions of US dollars)	3.31	3.16	5.67	4.46	0.60	0.40
			1984	1984	1984	1984
			0.79	0.40	0.40	1.05
			0.61	1.05	1.05	0.64
			4.03	2.55	2.55	0.72
			3.04	4.40	4.40	0.42

<sup>1</sup> Assuming intermediation costs are borne equally by depositors and borrowers.



available). This difference emphasizes that foreign investment income accruing to U.S. parent banks as a result of operations abroad does not appear to necessarily indicate large international trade in intermediation-type banking services. Service trade, as it relates to banking, may be an important investment issue, but does not appear to be that important a trade issue.

Bibliography

- Benz, S.F. "Trade Liberalization and the Global Service Economy", Journal of World Trade Law, Vol. 19, March/April 1985.
- Dillullo, A.J. "Service Transactions in the U.S. International Accounts, 1970-80", Survey of Current Business, November 1981, p. 29.
- Gibbs, M. "Continuing the International Debate on Services", Journal of World Trade Law, Vol. 190, May/June 1985.
- Hultman, C.W. "International Banking and U.S. Commercial Policy", Journal of World Trade Law, Vol. 19, May/June 1985.
- International Financial Statistics, 1985.
- International Monetary Fund, Balance of Payments Manual, 3rd Edition, Washington, D.C., 1966.
- OECD. The Internationalisation of Banking: The Policy Issues, Paris, 1983.
- OECD. Financial Statistics Part 1, Paris, January 1983, 1984, 1985.
- OECD. International Trade in Services: Banking, Identification and Analysis of Obstacles, Paris, 1984.
- Schott, J.J. "Protectionist Threat to Trade and Investment in Services", World Economy, June 1983.
- Shelp, R.K. Beyond Industrialization Praeger, New York, 1981.
- Stalson, H. U.S. Service Exports and Foreign Barriers: An Agenda for Negotiations, National Planning Association Report No. 219, Washington, D.C., 1985.

- Statistics Canada. The Canadian Balance of International Payments and International Investment Position: A Description of Sources and Methods, Ottawa, 1982.
- Sunya, D.S. "An Alternative to the Current Treatment of Interest as Transfer in the United Nations and Canadian Systems of National Accounts", The Review of Income and Wealth, Series 30, No. 4, December 1984.
- Task Force on Trade in Services. Background Report, Ottawa, 1982.
- UK Central Statistical Office, United Kingdom Balance of Payments 1963-73, London: Her Majesty's Stationery Office, 1974.
- U.N.C.T.A.D. Production and Trade in Services: Policies and Their Underlying Factors Bearing Upon International Service Transactions, New York, 1985.
- U.S. Government. U.S. National Study on Trade in Services. U.S. Government Printing Office, 1984.
- U.S. International Trade Commission. The Relationship of Exports in Selected U.S. Service Industries to U.S. Merchandise Exports, Washington, D.C., 1982.
- Whichard, O.G. "U.S. International Trade and Investment in Services: Data Needs and Availability", U.S. Department of Commerce (BEA), Staff Paper 41, Washington, September 1984.

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