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**U.S. BANKS, EXCHANGE MARKETS, AND THE DOLLAR, SEPTEMBER - NOVEMBER 1978**

**by**

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U.S. Banks, Exchange Markets, and the Dollar, September - November 1978

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I. Introduction and Summary

At the request of the Senate Banking Committee, the Federal Reserve System conducted in the spring of 1979 a survey of major U.S. banks' daily foreign exchange trading activity and position-taking during the September 15-November 15, 1978 period of exchange market turbulence. The survey was requested in hopes of shedding additional light on allegations that the speculative activities of large trading banks were responsible for the severe selling pressure on the dollar in October 1978 which led to the adoption of the November 1 package, including a tightening of monetary policy. This study analyzes the results of that survey. Actual aggregated data submitted to the Senate Banking Committee are appended. The principal analytical findings are:

(1) The daily data for the two-month period present a picture of bank position-taking that is consistent with that presented by the regular Treasury FC reports on bank positions as of the close-of-business each Wednesday.

(2) Banks' net positions and daily changes in those net positions were generally small when compared to their gross foreign currency positions, to their outstanding exchange contracts, and to their overall volume of exchange market transactions.

(3) Statistical tests show essentially no correlation between bank positions and dollar exchange rates during the period.

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The authors wish to acknowledge the help of Frank McCormick, formerly of the Board staff, for his major contribution in designing and overseeing the survey on which this article is based; David Laughton, for his assistance in computer programming; and Richard Meese, for his econometric suggestions. We also wish to thank the members of the International Reports Division of the Federal Reserve Bank of New York who collected and verified the survey data. This study was submitted along with the testimony of Henry C. Wallich to the Subcommittee on International Finance of the Committee on Banking, Housing and Urban Affairs of the U.S. Senate, December 14, 1979.

(4) The volume of exchange market transactions by this group of banks, both interbank and with non-banks, was fairly stable over the period. There is no statistical evidence of any relationship between the volume of transactions and decreases in the value of the dollar.

(5) There is a significant positive correlation between the variability of dollar exchange rates and the volume of trading. However, statistical tests were generally unable to provide evidence that higher volume "caused" greater exchange rate variability.

(6) About half of respondent banks reported that they had no formal daylight position limits (as opposed to close-of-business limits). Of those which did have daylight limits, none reported a change in those limits during the period.

(7) Quarterly foreign exchange trading profits of the banks generally rose over the period 1976-1978. This appears to have been related to the increase in variability of exchange rates over that period.

## II. Nature of the data collected.

Five separate report forms were sent to the fifteen U.S. banks which do the largest amount of foreign currency business. Both domestic and foreign offices of the banks were included, along with their Edge Act subsidiaries. The U.S. agencies and branches of five foreign banks were also asked to complete the relevant forms, although the figures reported here do not include data for these foreign banks since the analysis has focused on banks' trading activity and positions on a globally consolidated basis.

Form SBC-1 requested information on banks' home (U.S.) office foreign currency assets and liabilities, outstanding exchange contracts bought and sold,

and the net positions resulting from the difference between a bank's assets plus exchange contracts bought and its liabilities including exchange contracts sold. Data on the total volume of exchange contracts concluded each day, and on the volume concluded with non-bank customers were also requested. Separate reports were filed for each of five currencies: Canadian dollars, German marks, Japanese yen, Swiss francs, and U.K. pounds.

Form SBC-2 requested the same information for U.S. banks' foreign offices. Definitions of positions in forms SBC-1 and SBC-2 were designed to be consistent with those used by the Treasury in its weekly position data reports. The data from forms SBC-1 and SBC-2 were combined to obtain banks' positions on a consolidated basis. Aggregated data for the 15 banks for each foreign currency are reported in Tables 1.A through 1.E. Table 1.F gives the sum of the dollar equivalents of the five foreign currencies.

Forms SBC-3 and SBC-4 requested information on banks' daylight trading limits and on banks' procedures for supervising the observance of those limits. A summary of those responses is given in the Summary Notes attached to the report.

Information on banks' quarterly profits from foreign exchange transactions for the years 1976-1978 was reported on Form SBC-5. Thirteen of the 15 U.S. banks surveyed report such data publicly, and these data are presented in Table 8.

### III. Analysis of the data.

#### A. Positions.

Two major questions were posed in analyzing the banks' net positions in foreign currencies: 1) Do daily data give a different picture of bank behavior from that already available from the Wednesday data reported to the

Treasury? and, 2) Is there a significant relationship between banks' net foreign currency positions and changes in the exchange rate?

Visual examination of all daily figures compared with the Wednesday data does not suggest any consistent change or adjustment in banks' positions for window-dressing purposes on Wednesdays (see Charts 1.A through 1.F). There is no indication that banks reduce or increase their net positions on Wednesdays relative to their normal business practice. This is also true for the five agencies and branches of foreign banks, whose positions are not included in the consolidated banks' data in Tables 1.A-1.F, but who do file reports weekly with the U.S. Treasury. Moreover, formal statistical tests comparing the daily series with the Wednesday series show no statistically significant difference between them (see Table 2).

The daily figures confirm what the data from the weekly Treasury FC forms have indicated: banks' net positions are generally small, particularly in comparison with banks' foreign currency assets and liabilities, and even in comparison with their outstanding foreign exchange contracts. The Treasury data suggest that the changes in banks' position from week to week have also been relatively small, and the daily information does not give contrary evidence. This survey contributed the additional information that daily changes in banks' positions are very small relative to the volume of foreign exchange trading.

Regression analysis was used to see whether there is a statistically significant relationship between banks' net positions at close-of-business and exchange rates.<sup>1/</sup> Equations relating the level of the exchange rate to the level of banks' positions in the relevant currency showed a significant relationship

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<sup>1/</sup> All regressions using position or volume data were run with amounts expressed alternatively in foreign currency units and in dollar equivalents at current exchange rates. Results were not significantly different. Regression results reported in this article are those using dollar equivalents as listed in Tables 1.A through 1.F.

for three of the five foreign currencies. However, these equations uniformly exhibit a serious statistical deficiency (high autocorrelation), which results in an overestimate of the degree of significance of the relationship. In order to correct for this statistical deficiency the equations were re-estimated in first difference form -- changes in exchange rates were regressed on changes in positions. It was found that only in the case of the yen was there a statistically significant, though weak, relationship. (Regression results are shown in Table 3.)

This correlation in the case of the yen prompted more elaborate statistical testing to attempt to establish a direction of causation -- is the variation in the exchange rate caused by the variation in position, or does the variation in position cause the variation in the exchange rate.<sup>2/</sup>

These tests produced no evidence that, for any currency, causation ran from positions to exchange rates. For two of the five currencies (the mark and the Swiss franc) there is evidence that causation ran from exchange rates to positions. (See Tables 4.A and 4.B.)

In summary, there seems to be little correlation between the banks' positions and the exchange rates. This does not mean, of course, that changes in banks' positions had absolutely no effect on exchange rates. It merely reflects the fact that the variation in banks' positions was so small relative to the variation in other market participants' positions as to be statistically

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<sup>2/</sup> These tests are based on a comparison of the predictive power of an equation in which the dependent variable is explained by only past values of itself with an equation in which past values of other explanatory variables are also included. If the inclusion of these other variables does not significantly improve the predictive power of the equation, the additional explanatory variables are said not to cause the dependent variable.

insignificant. There is no indication that changes in U.S. banks' positions "drove" exchange rates in one way or the other during the September 15 through November 15 period. Indeed, in the period of greatest downward pressure on the dollar in the last half of October 1978, banks' aggregate net position in foreign currencies declined by nearly \$1 billion equivalent, tending to moderate rather than exaggerate the dollar's decline.

B. Volume.

The daily volume of transactions, total and non-bank, is reported in columns 6 and 7 of Tables 1.A-1.F and shown on Charts 2.A-2.F. As can be seen in the charts, trading activity remained fairly stable throughout this two-month period. Non-bank transactions were very small relative to the total, accounting for roughly 7-1/2 per cent of all transactions.

Regression analysis shows no statistically significant relationship between (algebraic) changes in exchange rates and the volume of trading. That is, no evidence to support the hypothesis that high volumes of trading contributed, somehow, to the decline of the dollar. However, there is a significant relationship between the variability in exchange rates, i.e., absolute changes, and the volume of both interbank and non-bank exchange market trading. (See Table 5.) In this respect, the exchange market appears to be similar to other well-developed financial asset markets in that new information that would tend to affect prices may be evaluated differently by various market participants and result in both a large volume of transactions and a large change in the rate, either up or down. For example, in the stock market days of large volume are also associated with large changes in prices.

More elaborate statistical analysis provides no evidence that a large volume of interbank trading "caused" exchange rates to change. (See Table 6.A.)

There is little evidence that variability of exchange rates influences the volume of interbank trading. (See Table 6.B.)

The same type of analysis also provides no evidence that a higher volume of trading by non-banks caused greater changes in exchange rates. (See Table 7.A.) There is some indication that the volume of non-bank trading was influenced by the absolute size of the previous day's change in the exchange rate. (See Table 7.B.) However, given the results reported earlier on the lack of significance in the relationship between exchange rates and the banks' positions, the data provided by this survey do not support the hypothesis that the banks "drove" the rate and triggered a reaction by non-banks.

C. Profits.

Bank profits from foreign exchange trading are reported in Table 8. These profits increased substantially over the period. With only 12 quarterly observations it is difficult to make strong statistical inferences, but an equation that relates banks' foreign exchange profits to the average daily absolute change in the value of the dollar has greater explanatory power than one in which profits are related to the net change in the exchange rate over a quarter.

The reason why banks appear to be able to make greater foreign exchange profits when markets are volatile than when markets are calm seems to lie in the nature of these banks' role in the exchange markets. These banks are all active dealers. As dealers, their role is to stand ready to take short-term positions or "make a market" in foreign currencies in order to accommodate quickly temporary imbalances between supply and demand by other market participants -- exporters, importers, international investors. To make a profit



from taking a position, a dealer has to buy at a price lower than that at which he sells. The better a dealer can anticipate future price movements, the more favorably can he position himself to take advantage of those movements. And the more rapidly he can turn over a position of given profitability, the greater his total profits.<sup>3/</sup>

Bank dealers in the foreign exchange market make profits by taking small positions and turning them over frequently. Since volume, or turnover, seems to be positively correlated with exchange-rate volatility, and since dealers are better able to anticipate very short-run price movements than are other market participants, it is perhaps not surprising that greater profits tend to be associated with periods of greater exchange-rate volatility.

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<sup>3/</sup> The data do not allow us to empirically determine the relative importance for profits of sheer volume, on the one hand, and shrewd position-taking, on the other. A simple cross-section regression of individual banks' profits against their volume suggests that variation in volume is a significant, though by no means exhaustive, determinant of variation in profits, i.e., it suggests that position-taking is also important.

## Summary Notes on Forms SCB-3 and SCB-4

### Part 1: Daylight Limits.

Banks were asked about their daylight trading limits and whether these limits were changed during the reporting period; these questions were posed in order to make inferences on whether banks' daylight positions, in contrast to their net overnight positions, changed dramatically during this period.

Of the banks included in this survey, about one half indicated that they have no formal daylight limits. Several respondents, however, emphasized that their traders' daylight positions were unlikely to be very different from the overnight positions since it was expected that overnight positions could be achieved without difficulty or substantial risk.

Of those banks which did have formal daylight positions, none changed their limits during September 15 through November 15, 1978.

### Part 2: Monitoring of traders' positions.

All respondents indicated that their banks had extensive procedures for monitoring the open positions of traders. Traders in individual currencies are expected to maintain a running tabulation on a blotter on which each transaction, the exchange rate, and the customer's name are recorded. Traders are supervised by a chief trader, who is continually in the room with the individual traders and may frequently check the trading blotters. The position of the trading room may be reported several times during the day to a senior foreign exchange officer or to the branch manager. These officials are responsible for verifying the foreign exchange transactions and positions at the close of business each day. These officers in turn report to higher-level officials and in many cases give the bank's Treasurer a report daily on the bank's foreign exchange positions.

SENATE BANKING COMMITTEE SURVEY OF BANKS' FOREIGN EXCHANGE ACTIVITY  
 TABLE 1.A  
 SEPTEMBER 15, 1978 THROUGH NOVEMBER 15, 1978  
 AMOUNTS IN MILLIONS OF U.S. DOLLARS EQUIVALENT  
 AGGREGATE OF 15 CONSOLIDATED U.S. BANKS  
 (FORMS SCB-1 + SCB-2)

CANADIAN DOLLARS

DATE	EXCHANGE RATE IN U.S. CENTS	ASSETS OTHER THAN CAPITAL ASSETS	LIABILITIES OTHER THAN CAPITAL LIABILITIES	OUTSTANDING EXCHANGE CONTRACTS		NET OVERALL POSITION	VOLUME OF EXCHANGE CONTRACTS CONCLUDED WITH NONBANK CUSTOMERS	
				BOUGHT	SOLD		TOTAL	7
91578	85.970	1730	1646	8210	8320	-27	1197	230
91878	85.560	1666	1585	8108	8235	-46	1401	198
91978	85.580	1668	1605	8230	8361	-68	1589	139
92078	85.440	1522	1458	8344	8473	-65	1782	246
92178	85.455	1702	1591	8449	8575	-15	1758	127
92278	85.285	1659	1590	8479	8591	-43	1988	232
92578	85.010	1636	1541	8482	8623	-46	1842	161
92678	84.930	1643	1546	8704	8862	-61	1969	189
92778	84.740	1513	1427	8838	8971	-47	2280	362
92878	85.170	1642	1573	8758	8864	-37	1654	282
92978	84.470	1608	1517	8317	8428	-19	2054	295
100278	83.950	1640	1557	8569	8699	-48	188	188
100378	84.380	1705	1643	8743	8880	-74	1963	325
100478	84.520	1550	1459	8826	8979	-61	2047	303
100578	84.880	1710	1593	9058	9198	-22	2355	306
100678	84.800	1688	1639	8931	9198	-52	1557	168
100978	84.800	558	589	8252	8261	-41	65	2
101078	84.620	1705	1640	8873	9007	-69	1873	228
101178	84.230	1569	1510	9123	9227	-45	2450	308
101278	84.520	1750	1612	9084	9276	-53	1652	134
101378	84.520	1755	1602	8822	9017	-42	1756	174
101678	84.260	1732	1632	8848	9015	-67	2016	138
101778	84.860	1737	1631	9024	9179	-49	1800	286
101878	84.560	1575	1537	9050	9138	-50	1963	272
101978	84.340	1762	1657	9013	9168	-75	1757	231
102078	84.420	1776	1678	8781	8954	-59	1261	159
102378	84.600	1770	1728	8867	8968	-59	1494	129
102478	84.640	1793	1696	8818	8978	-63	1593	234
102578	84.340	1633	1523	8898	9059	-51	1495	100
102678	84.630	1802	1668	8742	8931	-55	1249	80
102778	85.140	1847	1720	8862	8978	-9	1444	318
103078	85.810	1841	1739	9643	9755	-32	2815	756
103178	85.980	1968	1781	9407	9626	-10	1766	262
110178	85.910	1708	1587	9201	9332	-11	2340	308
110278	85.530	1829	1751	9658	9748	-11	2421	199
110378	85.630	1849	1772	9263	9373	-33	1260	134
110678	85.590	1836	1773	9186	9246	2	1399	176
110778	85.590	1843	1783	9267	9332	-5	239	1
110878	85.140	1707	1601	9409	9516	-2	1687	252
110978	85.240	1830	1736	9418	9523	-11	2216	178
111078	85.350	1842	1716	9378	9523	-19	1469	181
111378	85.360	796	789	9027	9114	-79	465	43
111478	85.070	1857	1752	9361	9483	-16	1657	249
111578	85.070	1684	1624	9249	9369	-60	1871	246

TABLE 1.B  
 SENATE BANKING COMMITTEE SURVEY OF BANKS' FOREIGN EXCHANGE ACTIVITY  
 SEPTEMBER 15, 1978 THROUGH NOVEMBER 15, 1978  
 AMOUNTS IN MILLIONS OF U.S. DOLLARS EQUIVALENT  
 AGGREGATE OF 15 CONSOLIDATED U.S. BANKS  
 (FORMS SCB-1 + SCB-2)

GERMAN MARKS

DATE	EXCHANGE RATE IN U.S. CENTS	ASSETS OTHER THAN CAPITAL ASSETS	LIABILITIES OTHER THAN CAPITAL LIABILITIES	OUTSTANDING EXCHANGE CONTRACTS		NET OVERALL POSITION	VOLUME OF EXCHANGE CONTRACTS CONCLUDED WITH NONBANK CUSTOMERS	
				BOUGHT	SOLD		TOTAL	TOTAL
		1	2	3	4	5	6	7
91578	50.518	27076	26102	36319	37029	265	4890	222
91878	50.710	27316	26268	35099	35857	290	7118	351
91978	50.800	27414	26475	37041	37879	101	9463	712
92078	51.046	27505	26618	38932	39455	363	10537	848
92178	51.282	27692	26727	38972	39301	537	8490	667
92278	51.387	27825	26880	37450	37785	361	5295	361
92378	51.507	28106	27012	36886	37415	564	8163	280
92678	51.374	27996	26876	38604	39255	469	10174	855
92778	51.701	28407	27133	39960	40751	483	10377	905
92878	51.746	28265	26940	39650	40789	186	10258	601
92978	51.453	27887	26670	37392	38441	368	7044	631
100278	51.738	27973	26626	37529	38375	500	8131	612
100378	52.411	28291	27001	39506	40279	517	10004	574
100478	52.715	28711	27452	40842	41664	437	9905	595
100578	52.784	28869	27613	40253	41120	390	9059	475
100678	52.288	28733	27387	38373	39155	563	6558	920
100978	52.288	28472	27041	40654	41436	649	5433	374
101078	52.918	29779	28427	39028	39880	500	7991	257
101178	53.639	29502	28406	40305	40946	454	8804	587
101278	53.333	29214	27991	41197	42012	407	10506	580
101378	53.763	29582	28445	40878	41327	688	6945	397
101678	54.333	29919	28844	40957	41483	549	9233	639
101778	54.377	30307	28749	43026	43881	402	12195	687
101878	54.487	29807	28303	43250	44490	264	10128	373
101978	54.579	30252	28895	42697	43793	261	10393	683
102078	55.386	30814	29536	42466	43325	420	8147	449
102378	55.188	30881	29526	42393	43509	239	9989	647
102478	55.310	30837	29355	43238	44402	319	9923	468
102578	56.354	31673	30234	45164	46344	259	12566	556
102678	56.338	31554	30192	45231	46301	293	10461	621
102778	57.078	32191	30846	44591	45584	352	8838	810
103078	58.309	32772	31420	45476	46642	187	10176	689
103178	57.208	32008	30756	45624	46812	64	13031	803
110178	52.220	28012	28014	43014	44139	139	12404	828
110278	53.433	29958	28776	45106	45956	332	12515	1070
110378	52.826	29619	28402	43303	44349	171	8771	625
110678	52.549	29640	28632	41726	42448	286	7979	557
110778	52.549	29551	28595	43850	44648	157	5419	434
110878	53.220	29603	28766	43682	44205	313	10519	503
110978	52.994	29808	28740	45256	46063	261	11842	929
111078	53.008	30193	28942	43804	44880	175	7764	301
111378	53.017	30441	29194	42901	43888	259	8108	465
111478	52.952	30378	29129	42871	43866	254	7538	388
111578	52.618	30743	29369	43064	44163	276	9401	1110

SENATE BANKING COMMITTEE SURVEY OF BANKS' FOREIGN EXCHANGE ACTIVITY  
 SEPTEMBER 15, 1978 THROUGH NOVEMBER 15, 1978  
 AMOUNTS IN MILLIONS OF U.S. DOLLARS EQUIVALENT  
 AGGREGATE OF 15 CONSOLIDATED U.S. BANKS  
 (FORMS SCB-1 + SCB-2)

JAPANESE YEN

DATE	EXCHANGE RATE IN U.S. CENTS	ASSETS OTHER THAN CAPITAL ASSETS	LIABILITIES OTHER THAN CAPITAL LIABILITIES	EXCHANGE BOUGHT	EXCHANGE SOLD	NET OVERALL POSITION	TOTAL	VOLUME OF EXCHANGE CONTRACTS CONCLUDED WITH NONBANK CUSTOMERS
		1	2	3	4	5	6	7
91578	0.526	6365	4707	14709	16443	-76	1457	74
91878	0.525	8050	6101	14307	16242	14	3724	199
91978	0.526	8047	6132	14299	16176	38	3469	150
92078	0.532	8261	6311	14417	16276	91	3811	114
92178	0.533	8218	6249	14806	16667	107	3792	161
92278	0.533	8364	6430	14561	16371	124	3130	102
92578	0.533	8365	6395	14502	16303	170	3572	166
92678	0.529	8269	6301	14849	16665	151	4231	232
92778	0.531	8367	6370	15047	16937	108	4210	258
92878	0.529	8466	6525	14468	16261	144	3139	111
92978	0.529	8662	6751	13453	15231	133	2605	121
100278	0.530	8099	6187	13208	14994	126	2487	44
100378	0.534	8197	6262	13800	15553	182	3302	87
100478	0.535	8235	6350	14337	16061	161	3420	98
100578	0.534	8207	6333	14226	15941	158	3220	91
100678	0.528	7838	6036	13307	14923	186	1778	53
100978	0.528	8071	6262	13852	15463	198	1240	59
101078	0.532	6452	4899	13782	15172	163	1966	136
101178	0.539	8142	6281	14364	16040	185	3706	136
101278	0.536	8110	6243	14683	16417	133	3825	97
101378	0.538	7989	6117	14247	15943	175	3036	66
101678	0.547	8251	6378	14769	16483	160	3675	180
101778	0.548	8312	6454	15874	17593	138	5076	183
101878	0.548	8319	6438	15749	17459	171	4513	161
101978	0.546	8340	6460	15376	17091	165	3814	109
102078	0.549	8150	6267	15547	17257	173	3914	162
102378	0.550	8346	6492	16356	17715	195	4531	149
102478	0.549	8302	6472	16370	18066	133	4473	219
102578	0.559	8656	6780	17112	18783	205	5629	233
102678	0.559	8639	6804	16986	18632	189	5326	238
102778	0.561	8511	6676	16640	18290	185	4400	180
103078	0.566	9271	7399	17144	18878	138	5771	288
103178	0.559	8859	7030	17537	18878	109	5999	200
103178	0.531	8126	6485	16664	18273	31	4884	204
110278	0.531	8144	6326	17179	18914	82	6043	292
110378	0.529	6483	4976	17476	18951	32	3027	183
110678	0.527	8227	6468	16315	18021	54	4836	225
110778	0.527	8497	6746	17299	18991	72	2103	25
110878	0.535	8470	6573	16580	18405	99	5041	98
110978	0.532	8393	6480	16891	18736	69	4811	142
111078	0.531	8145	6365	16743	18486	38	3684	89
111378	0.530	8226	6365	16031	17837	55	3382	56
111478	0.529	8290	6508	16477	18161	98	3644	120
111578	0.523	8217	6327	16555	18356	89	4416	161

SENATE BANKING COMMITTEE SURVEY OF BANKS' FOREIGN EXCHANGE ACTIVITY  
 TABLE I.D.  
 SEPTEMBER 15, 1978 THROUGH NOVEMBER 15, 1978  
 AMOUNTS IN MILLIONS OF U.S. DOLLARS EQUIVALENT  
 AGGREGATE OF 15 CONSOLIDATED U.S. BANKS  
 (FORMS SCB-1 + SCB-2)

SWISS FRANC

DATE	EXCHANGE RATE IN U.S. CENTS	ASSETS OTHER THAN CAPITAL ASSETS	LIABILITIES OTHER THAN CAPITAL LIABILITIES	EXCHANGE BOUGHT	OUTSTANDING CONTRACTS SOLD	NET OVERALL POSITION	TOTAL	VOLUME OF EXCHANGE CONTRACTS CONCLUDED WITH NONBANK CUSTOMERS
		1	2	3	4	5	6	7
91578	62.814	8232	7437	14472	15249	18	2302	163
91878	63.694	8174	7490	14329	15032	-19	2307	140
91978	63.776	8495	7739	15095	15865	-18	3732	182
92078	65.617	8588	7706	15757	16689	-51	3534	160
92178	66.007	8549	7599	15108	16099	-41	2599	153
92278	66.534	8733	7732	14906	15936	-29	2426	149
92578	67.114	8752	7789	14906	15880	-11	2501	215
92678	66.644	8699	7800	15254	16207	-55	3348	217
92778	67.114	8877	7909	15381	16391	-44	2568	153
92878	65.725	8626	7861	14958	15822	-99	3004	108
92978	64.350	8380	7652	14591	15411	-91	3490	181
100278	62.893	8238	7417	14821	15646	-4	3203	170
100378	63.694	8388	7576	15617	16404	24	3822	197
100478	63.371	8359	7510	15456	16309	-4	2666	247
100578	63.211	8346	7456	15204	16086	8	2479	171
100678	62.539	8302	7391	14394	15297	8	1247	74
100978	62.539	7864	6913	14705	15587	68	1191	78
101078	63.654	8223	7460	14801	15502	62	2624	69
101178	64.872	8498	7680	15448	16217	49	2341	84
101278	65.020	8343	7730	15497	16116	-5	2554	127
101378	65.488	8576	7691	15527	16405	7	2083	74
101678	66.445	8695	7704	15561	16506	46	2162	163
101778	66.116	8577	7596	15599	16550	30	2346	159
101878	66.181	8688	7715	16095	17101	-33	3097	72
101978	65.488	8646	7680	16109	17120	-45	2606	157
102078	65.963	8724	7682	15942	16875	8	2043	76
102378	65.359	8555	7541	15744	16799	-41	2986	140
102478	65.445	8526	7614	15848	16812	-52	2668	130
102578	66.094	8749	7781	15940	16975	-67	2352	118
102778	66.756	8503	7491	15764	16761	-107	2276	104
103078	68.097	8736	7804	15790	16887	-85	2239	126
103178	67.002	8662	7608	16495	17513	-86	2853	241
110178	62.305	7849	6935	15512	16644	-78	2080	98
110278	62.461	7844	6996	15030	16035	-91	3123	222
110378	61.633	7897	6996	15616	16497	-33	3075	178
110578	60.753	7732	6539	15372	16096	-67	3120	135
110778	60.753	7512	6855	14579	15505	-50	2235	233
110878	61.824	7722	6645	15108	16016	-41	1228	76
110978	61.576	7722	6835	15084	15985	-12	2717	299
111078	61.482	7697	6814	15331	16246	-7	2498	203
111378	61.463	7707	6739	14936	15917	-23	1948	86
111478	61.369	7656	6736	14830	15787	14	2259	69
111578	60.790	7585	6620	14751	15845	-59	1947	88
			6674	14850	15793	-32	2118	122

TABLE 1-E  
 SENATE BANKING COMMITTEE SURVEY OF BANKS' FOREIGN EXCHANGE ACTIVITY  
 SEPTEMBER 15, 1978 THROUGH NOVEMBER 15, 1978  
 AMOUNTS IN MILLIONS OF U.S. DOLLARS EQUIVALENT  
 AGGREGATE OF 15 CONSOLIDATED U.S. BANKS  
 (FORMS SCB-1 + SCB-2)

U.K. POUNDS

DATE	EXCHANGE RATE IN U.S. CENTS	ASSETS OTHER THAN CAPITAL ASSETS	LIABILITIES OTHER THAN CAPITAL LIABILITIES	OUTSTANDING EXCHANGE CONTRACTS		NET OVERALL POSITION	TOTAL	VOLUME OF EXCHANGE CONTRACTS CONCLUDED WITH NONBANK CUSTOMERS
				BOUGHT	SOLD			
91578	196.150	14239	14211	29819	30109	-263	3611	308
91878	196.250	14057	13989	29308	29702	-326	4673	412
91978	196.550	15290	15284	30332	30656	-318	5867	314
92078	198.350	15031	14815	31089	31617	-311	6446	424
92178	197.900	14259	14308	30332	30676	-394	4403	358
92278	197.350	14193	14160	29749	30102	-320	5202	302
92578	198.000	14123	14163	29884	30231	-386	4746	319
92678	196.900	14336	14315	30405	30703	-276	6261	561
92778	197.700	14383	14292	30353	30713	-269	5215	423
92878	197.480	14529	14469	30763	31105	-282	5486	415
92978	197.200	14307	14230	29623	29949	-248	4636	288
100278	196.780	14452	14278	29771	30275	-331	4805	329
100378	197.380	14419	14320	29838	30245	-308	6077	428
100478	198.400	14525	14428	30601	30911	-212	6039	377
100578	198.400	14444	14400	31105	31448	-300	5016	270
100678	197.800	14485	14372	30240	30586	-233	3458	220
100978	197.800	14077	13899	30774	31171	-220	1794	152
101078	198.600	14452	14329	30177	30582	-282	4866	346
101178	199.200	14408	14273	31151	31428	-151	4849	448
101278	198.600	14597	14492	31190	31575	-280	5058	562
101378	198.500	14588	14558	31228	31571	-314	4294	381
101678	199.700	14792	14714	31281	31670	-312	4090	377
101778	199.550	15080	15068	31465	31748	-271	4410	323
101878	199.600	14773	14655	31172	31571	-283	4910	423
101978	199.600	14768	14683	30914	31291	-291	5273	317
102078	199.950	14698	14634	31310	31538	-164	5033	384
102378	200.640	14653	14548	31721	32108	-283	6429	423
102478	201.000	14868	14685	32313	32695	-199	5610	450
102578	205.150	15249	14980	33238	33782	-275	6072	720
102678	205.900	15230	15022	33798	34225	-218	6716	533
102778	208.000	15444	15355	33555	33881	-237	5333	524
103078	210.500	15615	15390	33522	33966	-219	5006	625
103178	207.800	15396	15061	33406	33990	-249	6072	526
110178	198.000	14414	14224	32221	32747	-337	4982	574
110278	200.300	14840	14614	32657	33154	-270	5538	627
110378	197.750	14912	14663	31800	32324	-275	4145	399
110678	197.950	14807	14658	31583	32016	-285	4351	493
110778	197.950	14658	14423	32598	33103	-269	2334	198
110878	197.900	14777	14686	32082	32481	-309	5357	627
110978	197.200	14778	14589	32761	33195	-245	5064	481
111078	196.650	14641	14497	32268	32681	-269	3636	303
111378	197.250	14555	14451	31949	32365	-316	4464	383
111478	197.000	14529	14448	32529	32901	-292	5173	394
111578	196.350	14528	14445	31919	32335	-334	4084	418

SENATE BANKING COMMITTEE SURVEY OF BANKS' FOREIGN EXCHANGE ACTIVITY  
 SEPTEMBER 15, 1978 THROUGH NOVEMBER 15, 1978  
 AMOUNTS IN MILLIONS OF U.S. DOLLARS EQUIVALENT  
 AGGREGATE OF 15 CONSOLIDATED U.S. BANKS  
 (FORMS SCP-1 + SCB-2)

DATE	EXCHANGE RATE INDEX OF WEIGHTED AVERAGE U.S. DOLLAR	ASSETS OTHER THAN CAPITAL ASSETS	LIABILITIES OTHER THAN CAPITAL LIABILITIES	OUTSTANDING EXCHANGE CONTRACTS		NET OVERALL POSITION	VOLUME OF EXCHANGE CONTRACTS CONCLUDED WITH NONBANK CUSTOMERS	
				BOUGHT	SOLD		TOTAL	7
91578	89.714	57641	54133	103529	107150	-83	13456	997
91878	89.768	59264	55433	101151	105068	-87	19223	1301
91978	89.742	60914	57235	104997	108941	-766	24120	1497
92078	89.169	60906	56907	108538	112510	28	26111	1792
92178	88.882	60420	56474	107568	111318	196	21042	1467
92278	89.045	60774	56792	105144	108786	341	18042	1146
92578	88.669	60981	56900	104661	108452	291	20824	1141
92678	88.960	60943	56837	107815	111692	228	25943	2054
92778	88.797	61546	57131	109579	113763	231	24650	2101
92878	88.823	61528	57373	108598	112841	-88	23541	1517
92978	88.831	60844	56620	103377	107460	141	19829	1515
100278	88.876	60401	56366	103898	107989	244	20618	1343
100378	88.270	61000	56802	107504	111361	341	25169	1611
100478	87.903	61380	57198	110362	113923	321	24077	1620
100578	87.869	61576	57395	109845	113793	234	22129	1313
100678	88.073	61045	56926	105145	108892	471	14568	1435
100978	88.073	59341	54704	108236	111919	655	9724	665
101078	87.810	60612	56755	106661	110144	374	19319	1036
101178	87.050	62119	58150	110391	113867	493	22149	1564
101278	87.227	62014	58367	111652	115397	202	23636	1500
101378	86.873	62489	58413	110701	114264	514	18113	1092
101678	86.648	63389	59272	111416	119157	376	21176	1498
101778	86.209	63712	59498	114987	118952	250	25827	1638
101878	85.997	63161	58648	115315	119758	69	24610	1302
101978	86.208	63768	59375	114110	118462	40	23843	1497
102078	85.458	64162	59797	113945	117949	361	20368	1228
102378	85.282	64205	59836	114782	119101	51	25428	1489
102478	85.440	64326	59822	116586	120952	138	24266	1503
102578	84.367	65960	61299	120353	124943	71	28114	1727
102678	83.572	65667	61237	120522	124845	102	26028	1576
102778	83.441	66496	62089	119438	123620	225	22254	1557
103078	82.067	68235	63750	122281	126755	10	26619	2506
103178	83.073	66893	62236	121485	126328	-186	28949	1838
103178	86.683	60109	55979	116129	120527	-268	27733	2135
110278	87.254	62616	58463	120216	124269	69	29593	2366
110378	87.947	60760	56753	116914	121093	-172	20323	1476
110678	88.443	62242	58387	113389	117238	6	20800	1685
110778	88.443	62060	58191	118121	122089	-99	11322	733
110878	87.518	62280	58462	116836	120592	63	25321	1779
110978	87.829	62532	58360	119657	123763	66	26432	1933
111078	87.903	62518	58258	117130	121487	-98	18501	959
111378	87.979	61725	57534	114737	118995	-67	18679	1015
111478	88.062	62710	58456	115988	120255	-15	19959	1239
111578	88.474	62758	58438	115636	120016	-60	21890	2058



Chart 1.A

# Canadian Dollar

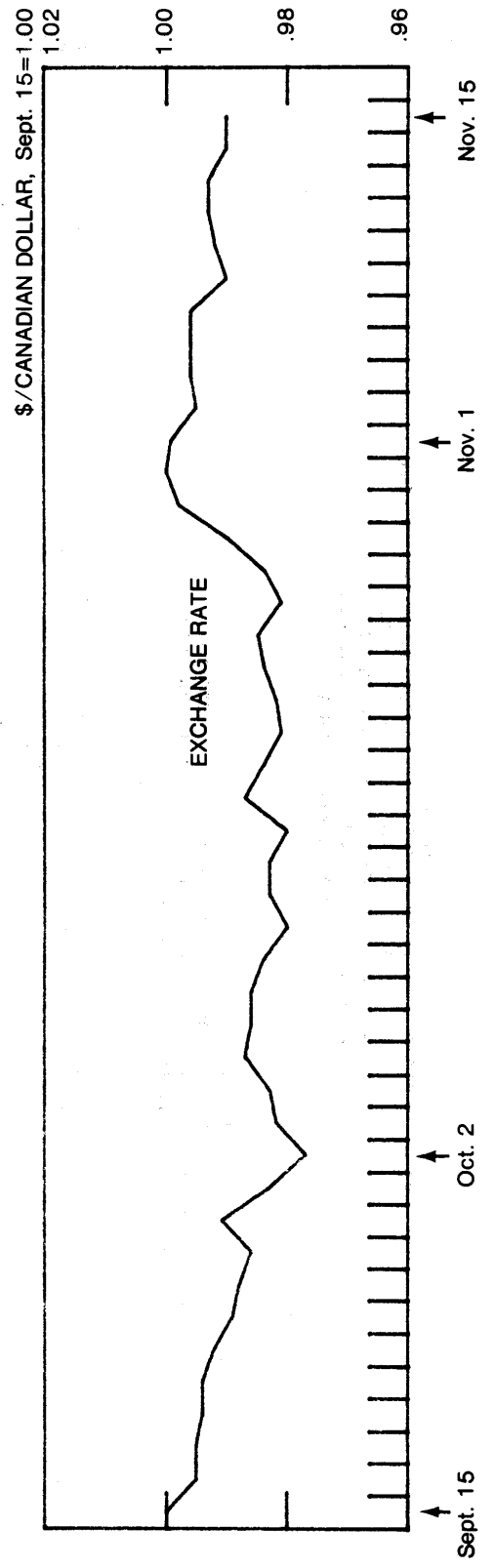
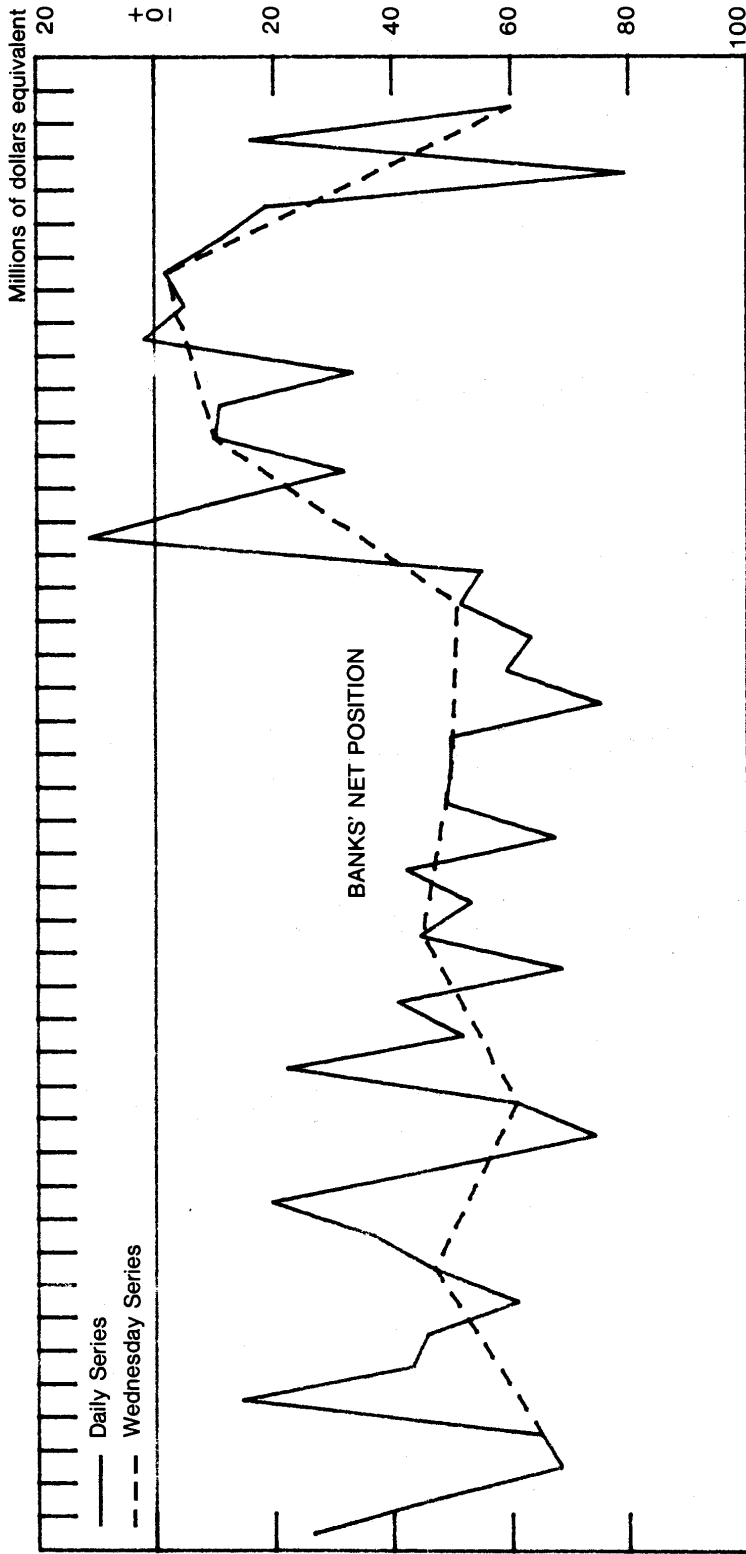


Chart 1.B

# German Mark

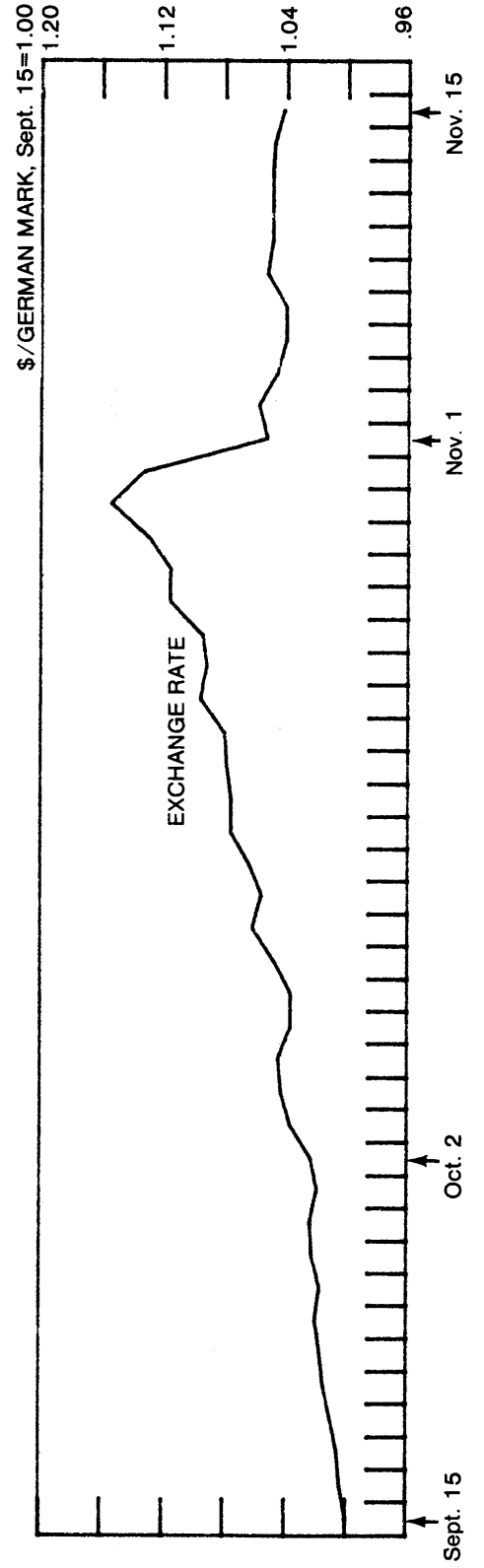
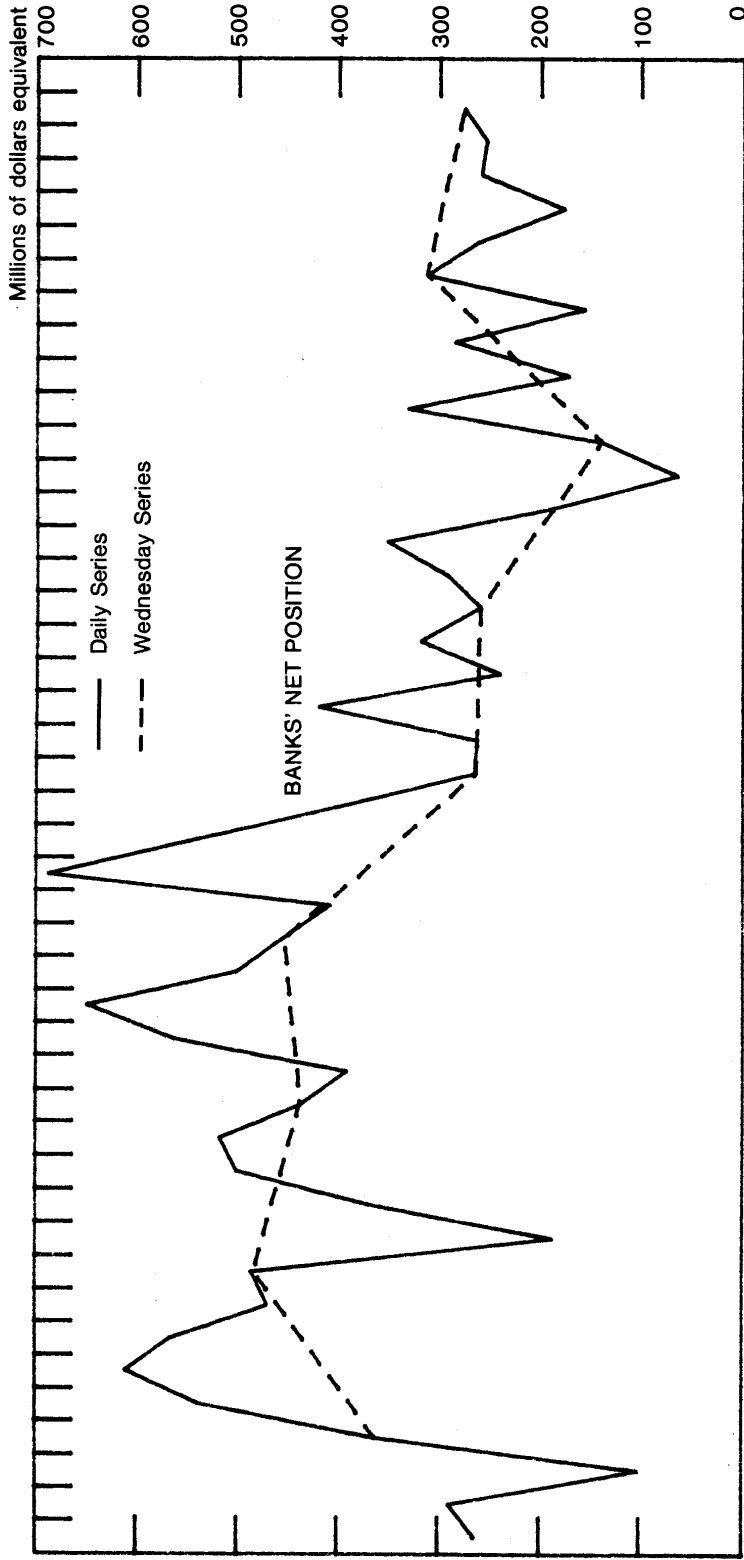


Chart 1.C

# Japanese Yen

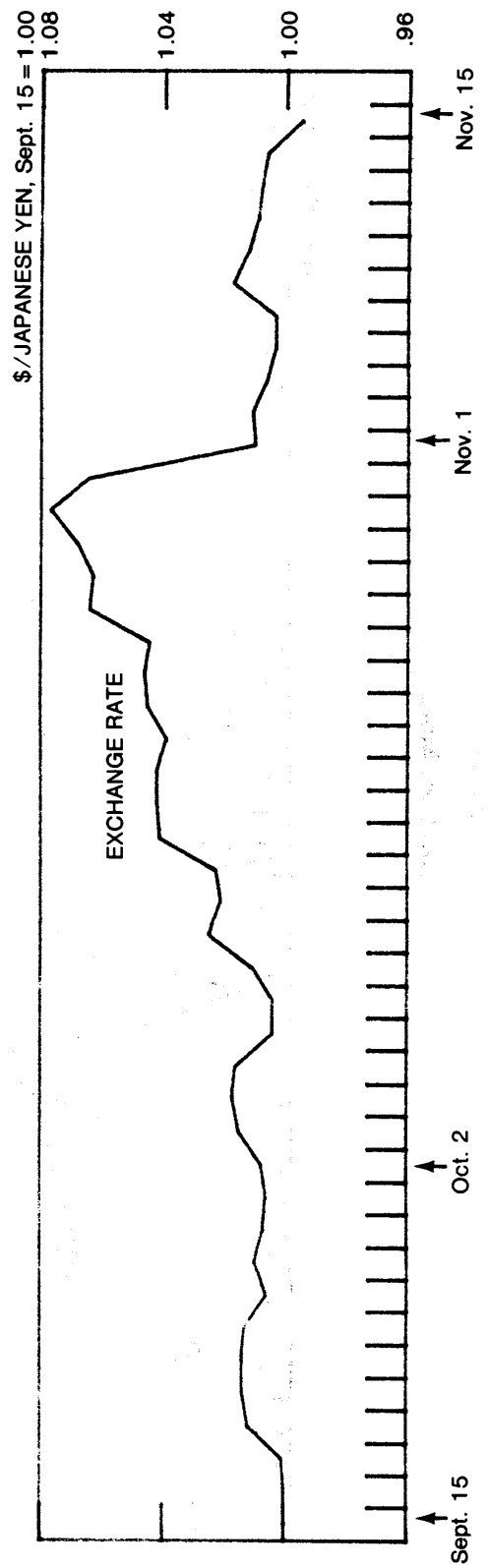
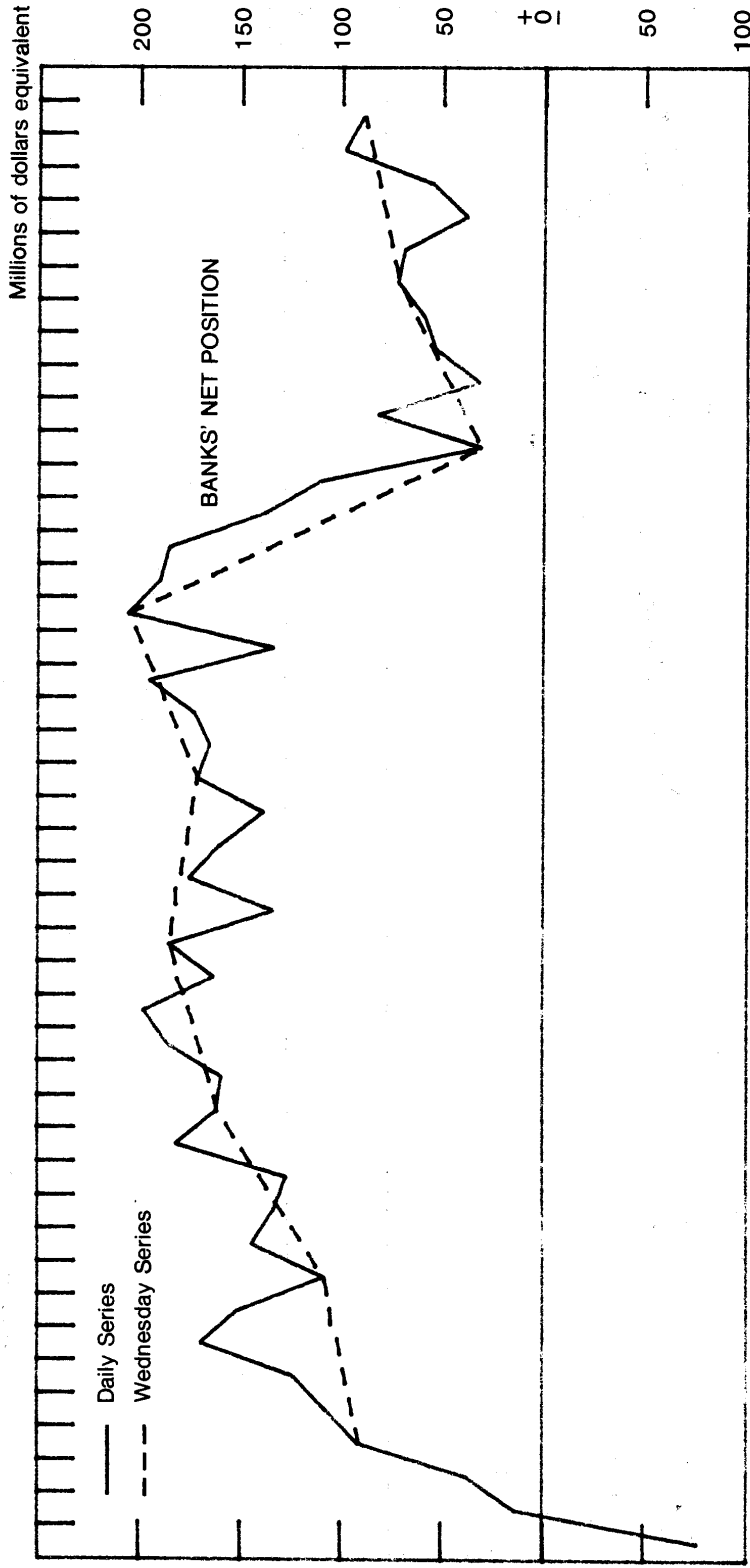


Chart 1.D

# Swiss Franc

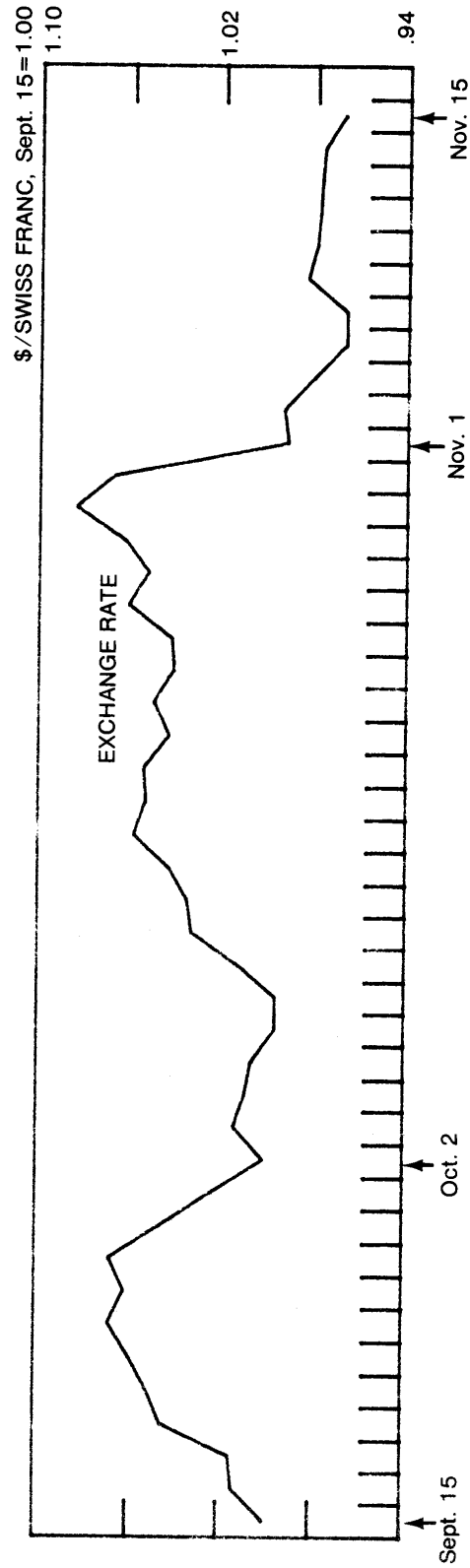
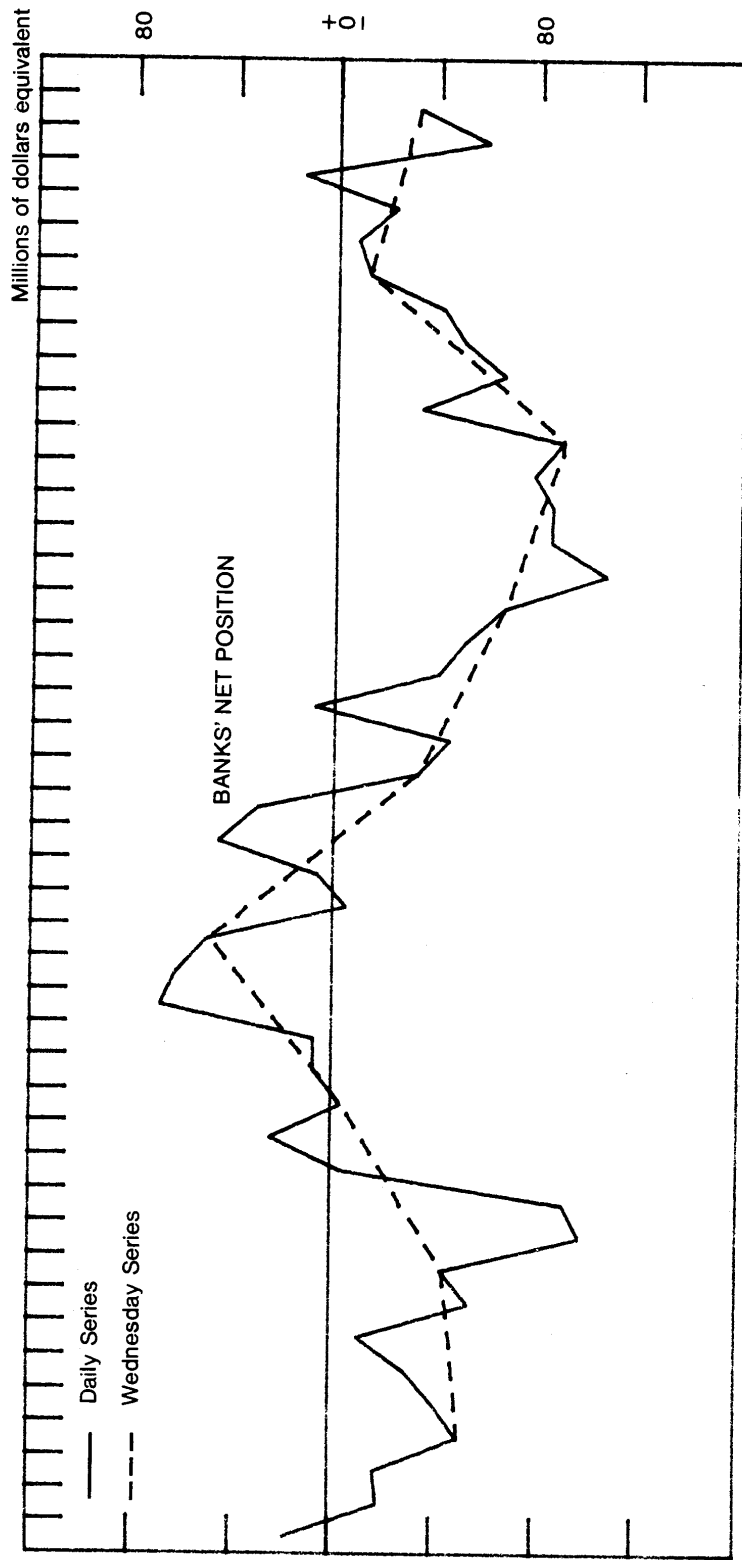


Chart 1.E

# U.K. Pound

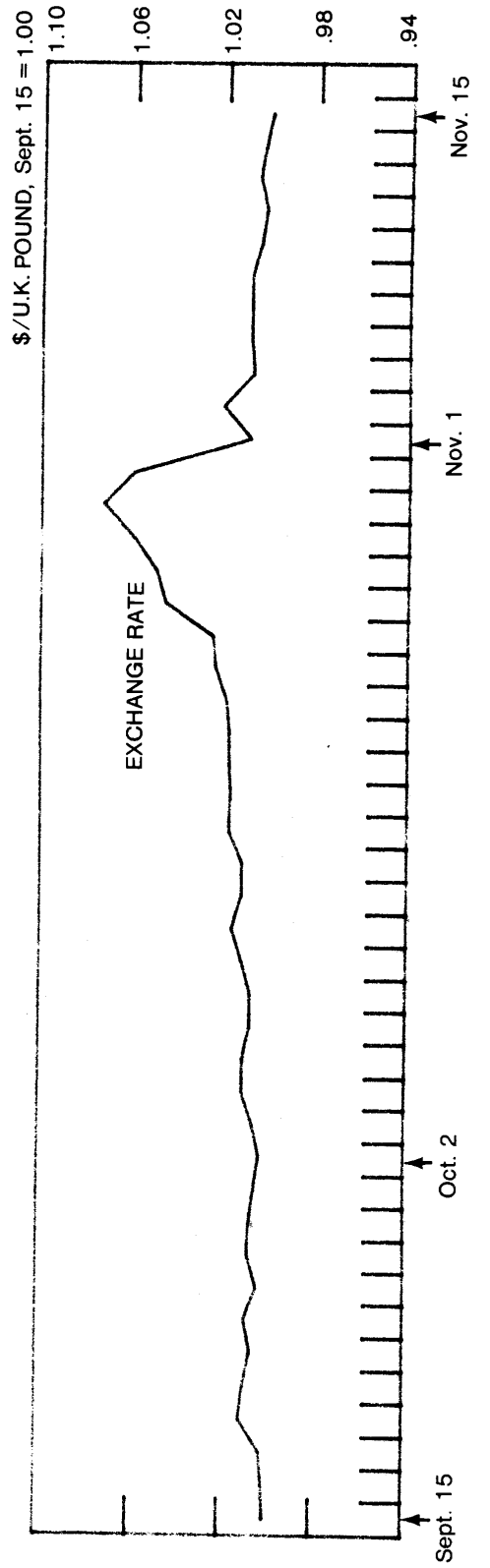
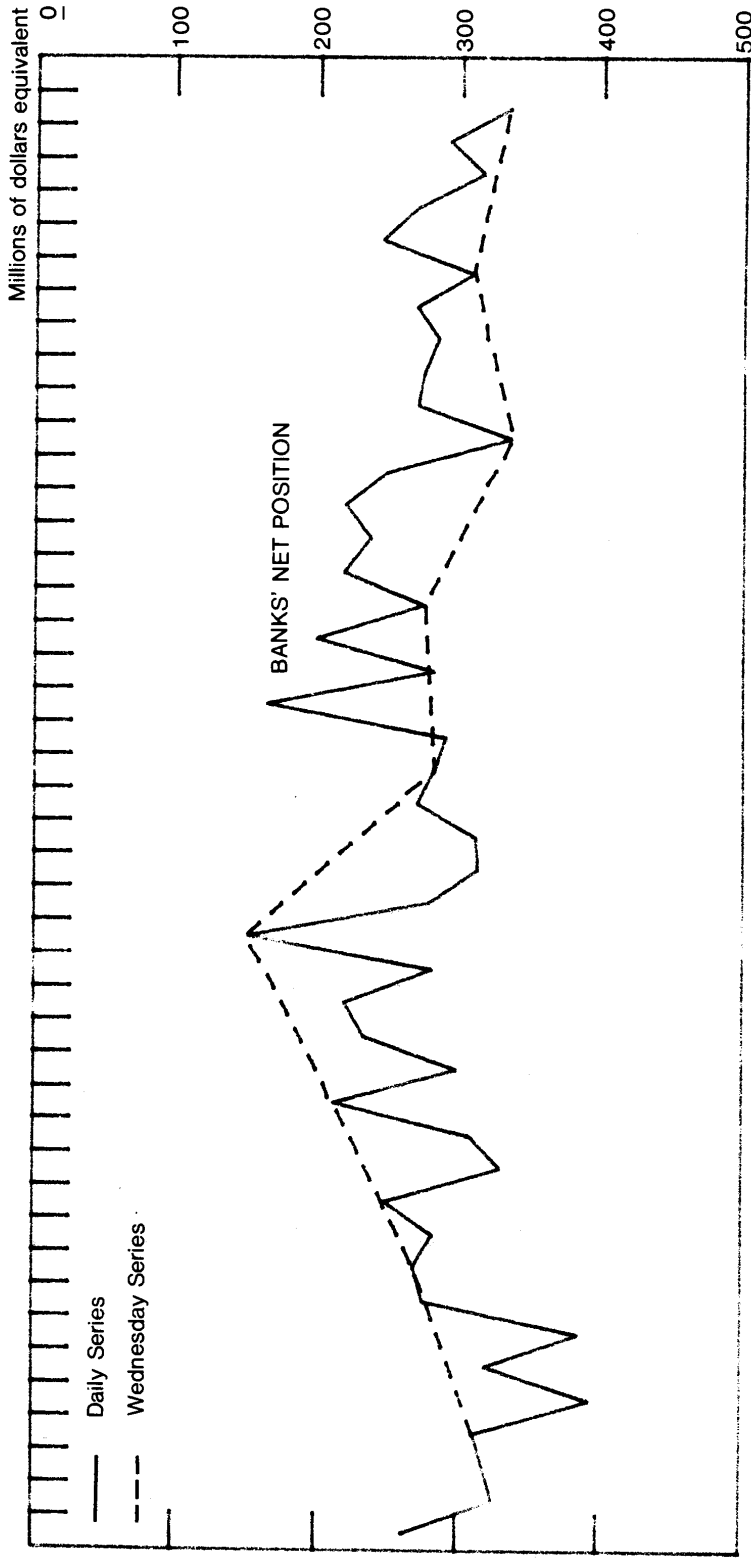


Chart 1.F  
**Sum of Foreign Currencies**

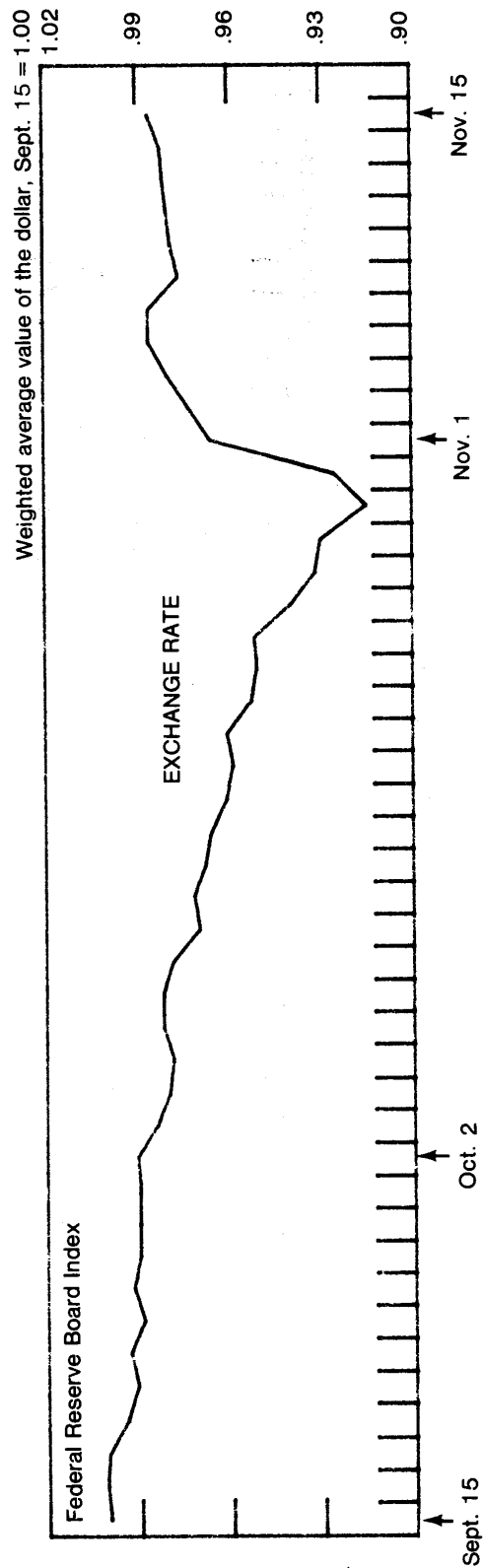
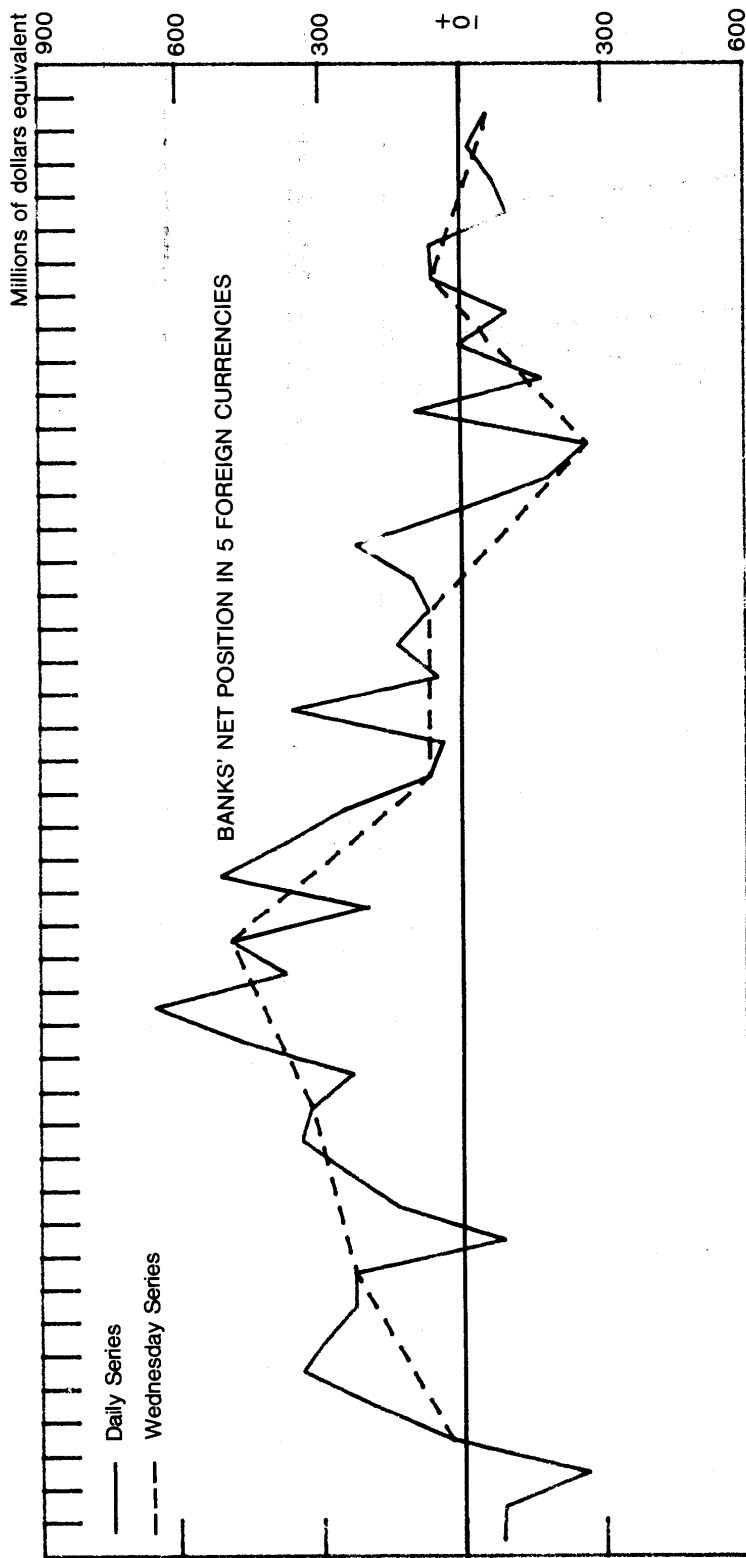


Chart 2.A  
**Canadian Dollar**

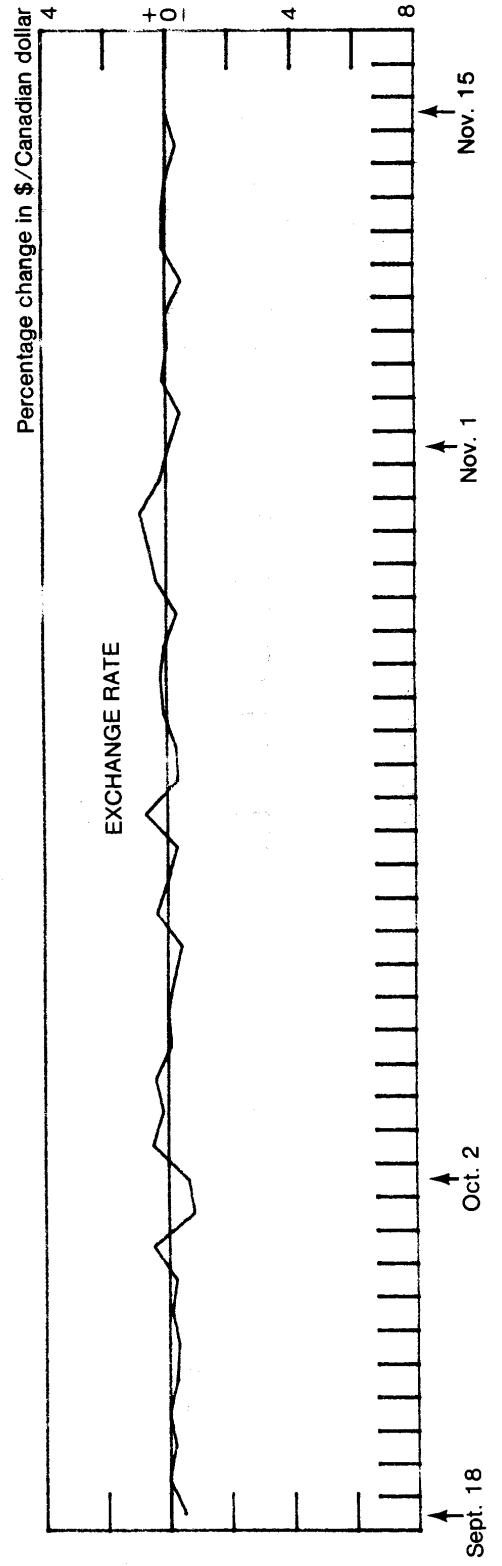
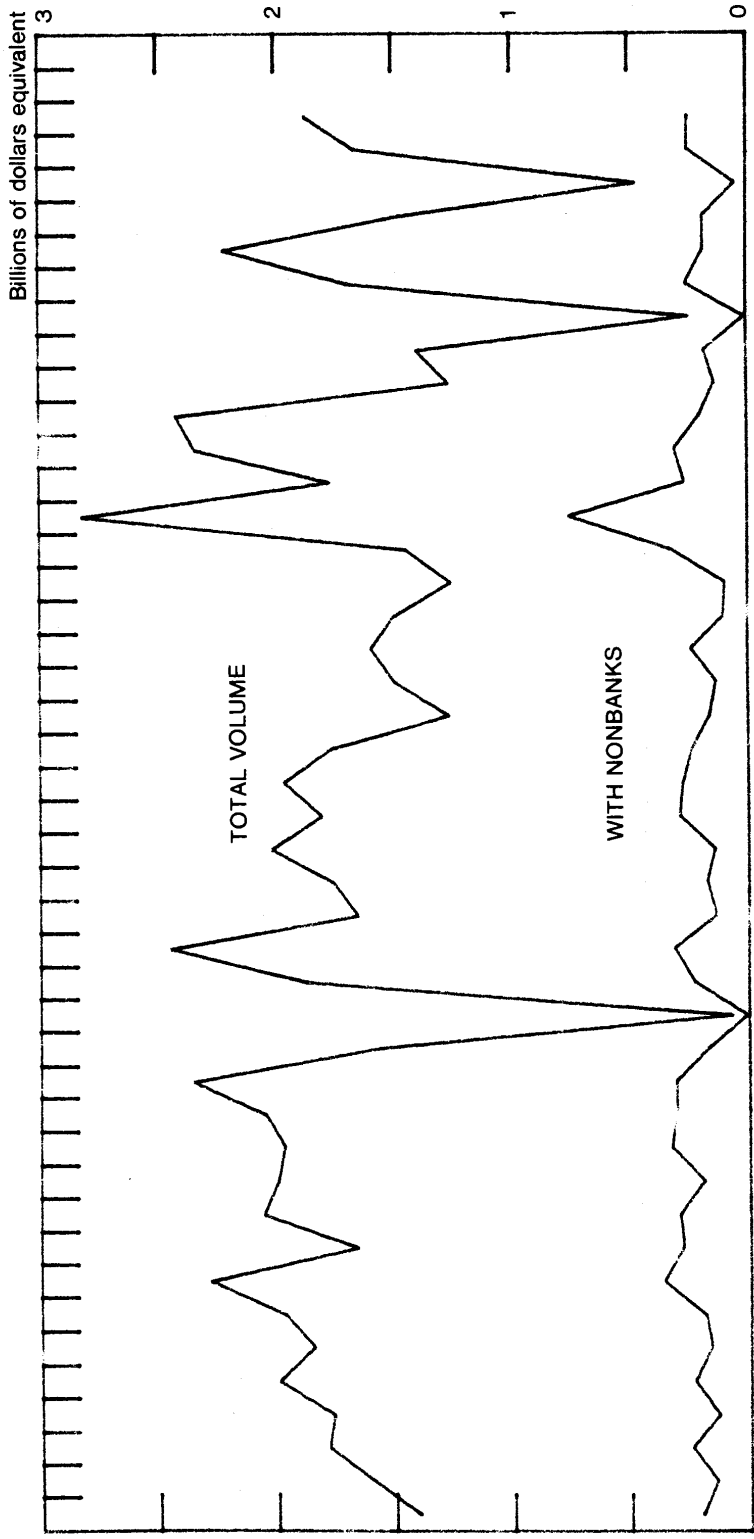


Chart 2.B

# German Mark

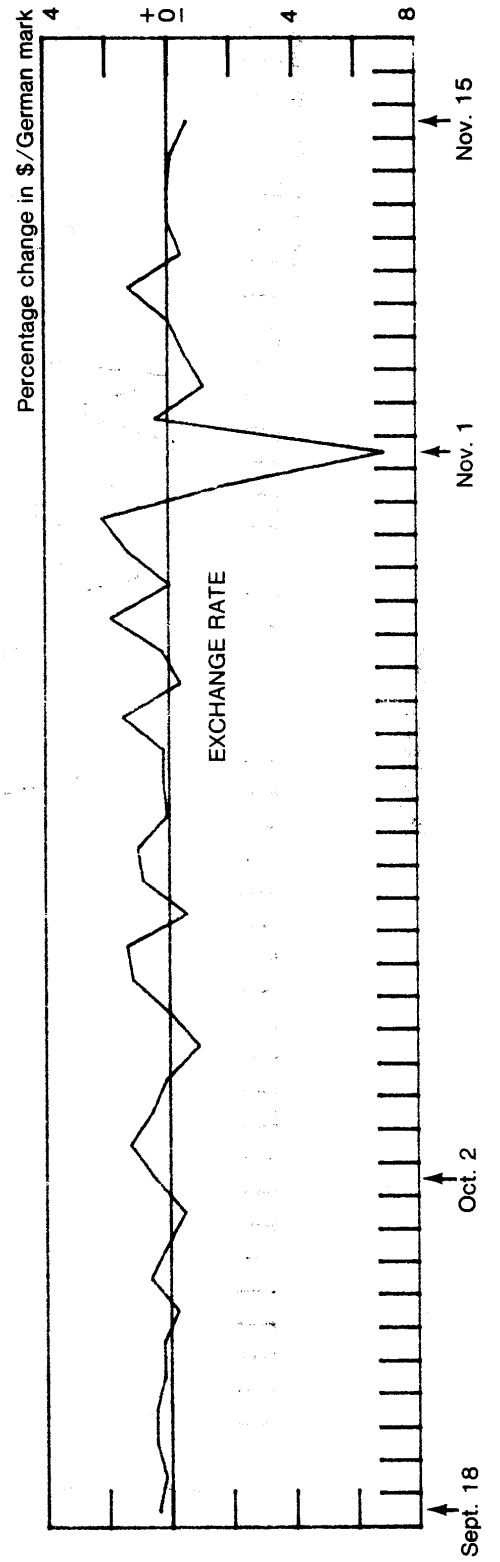
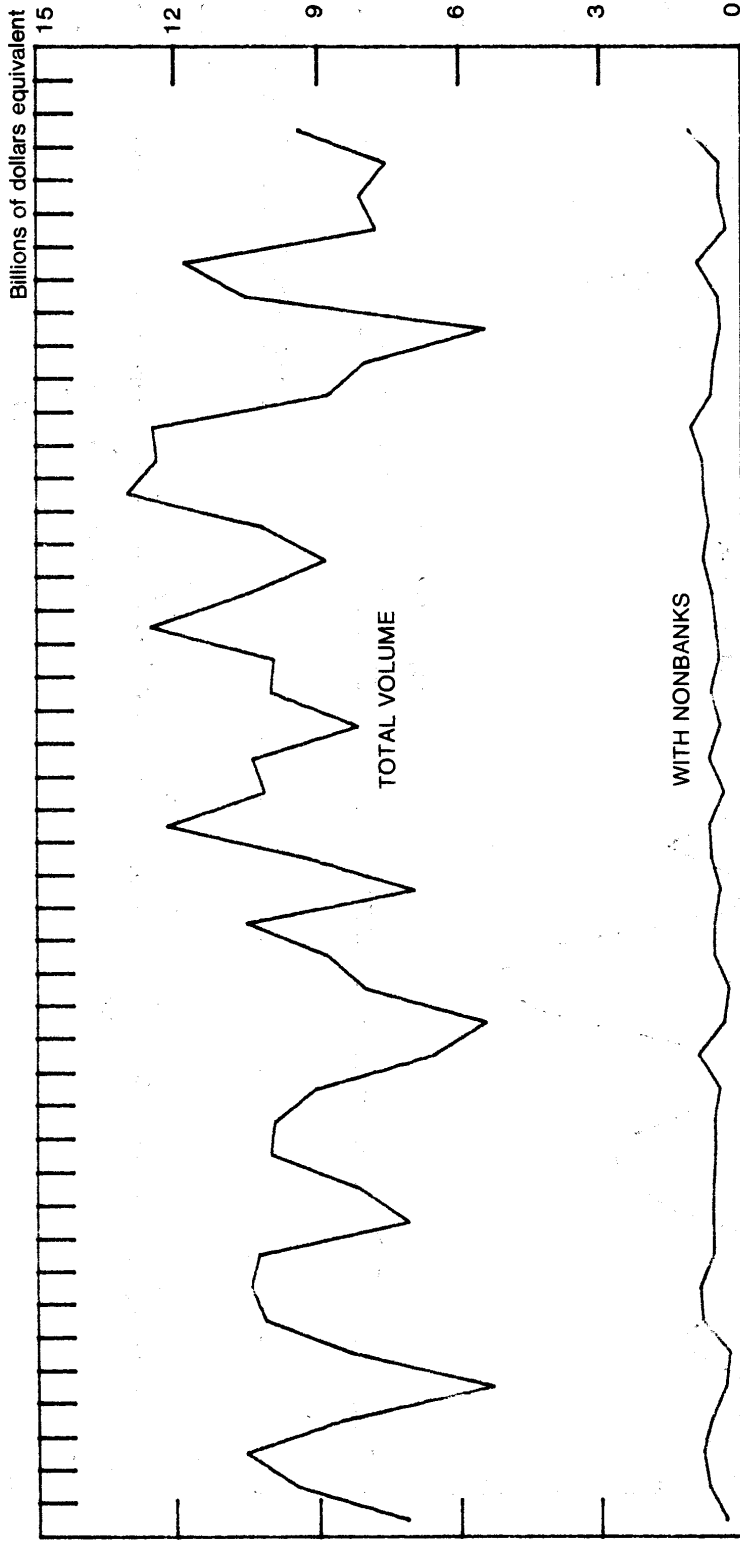




Chart 2.C

# Japanese Yen

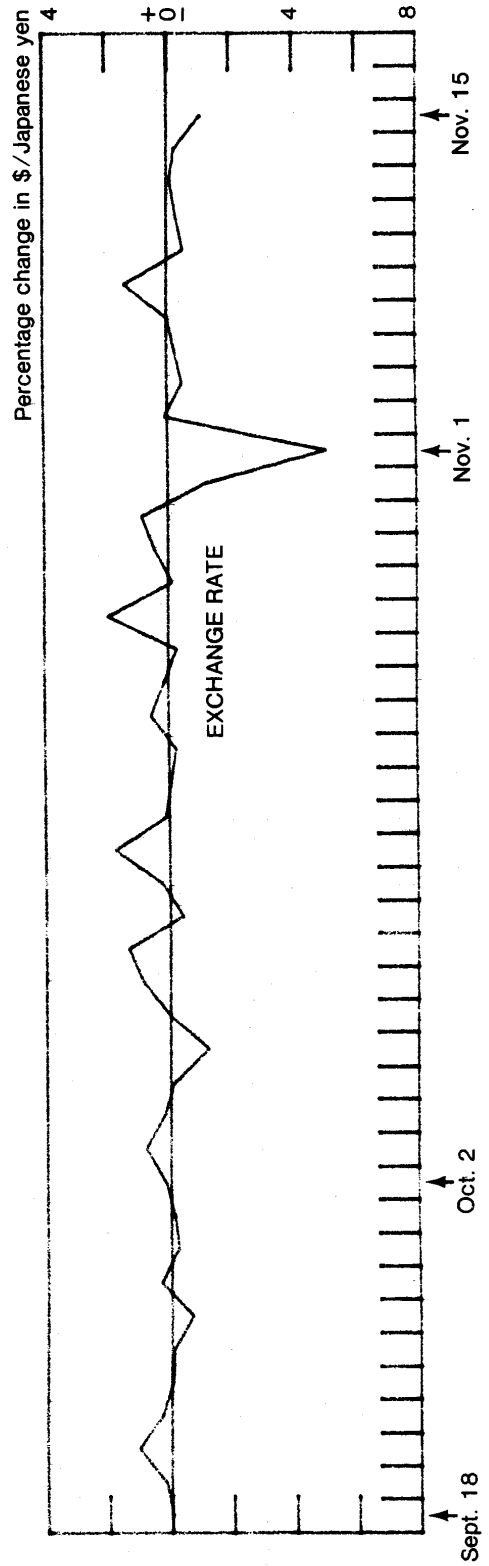
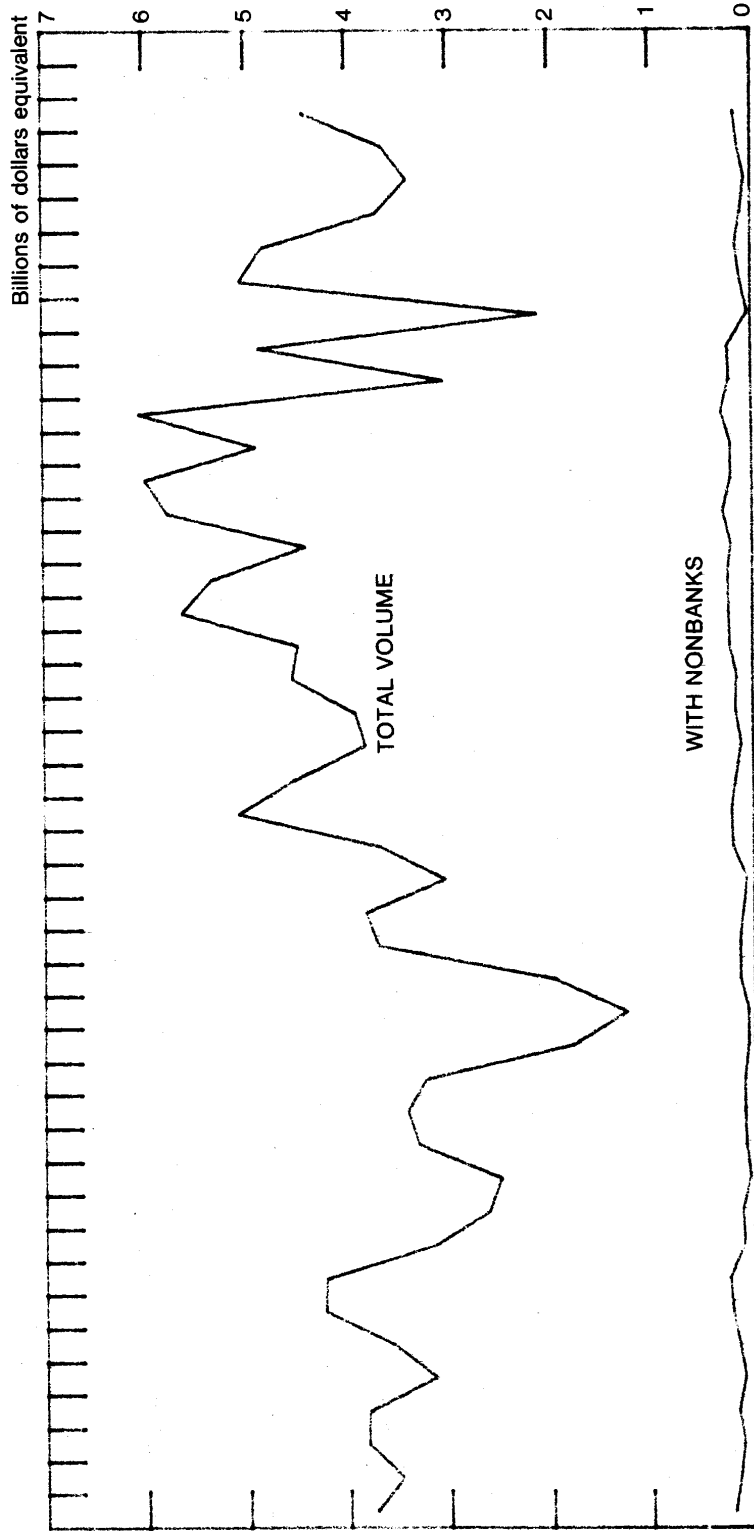


Chart 2.D

# Swiss Franc

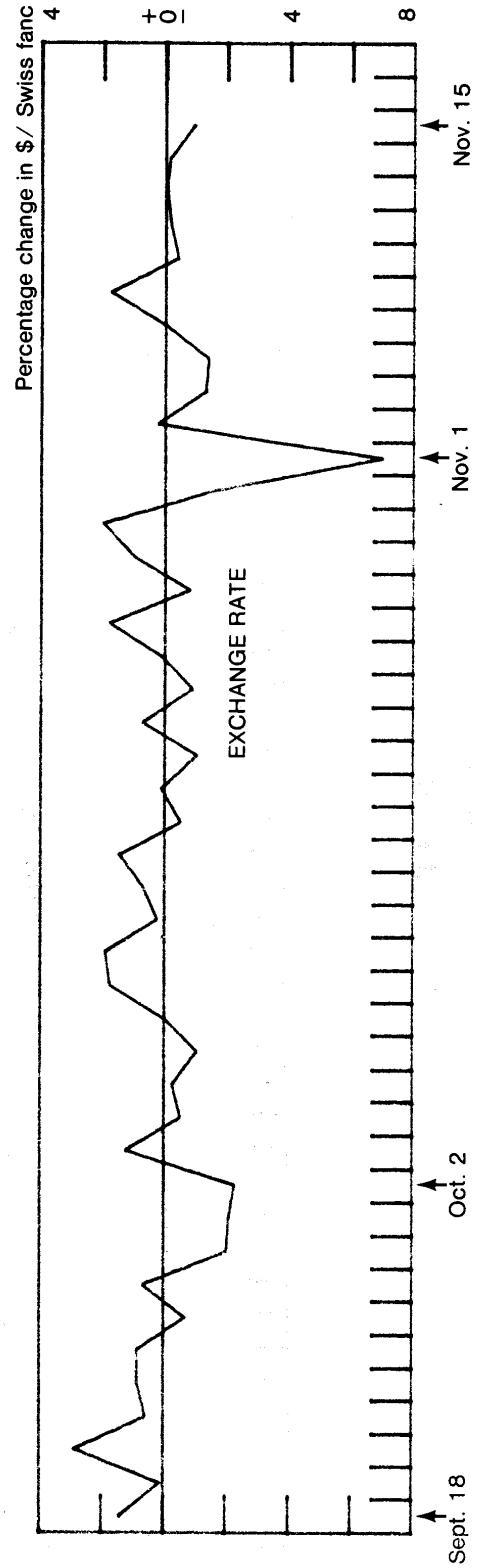
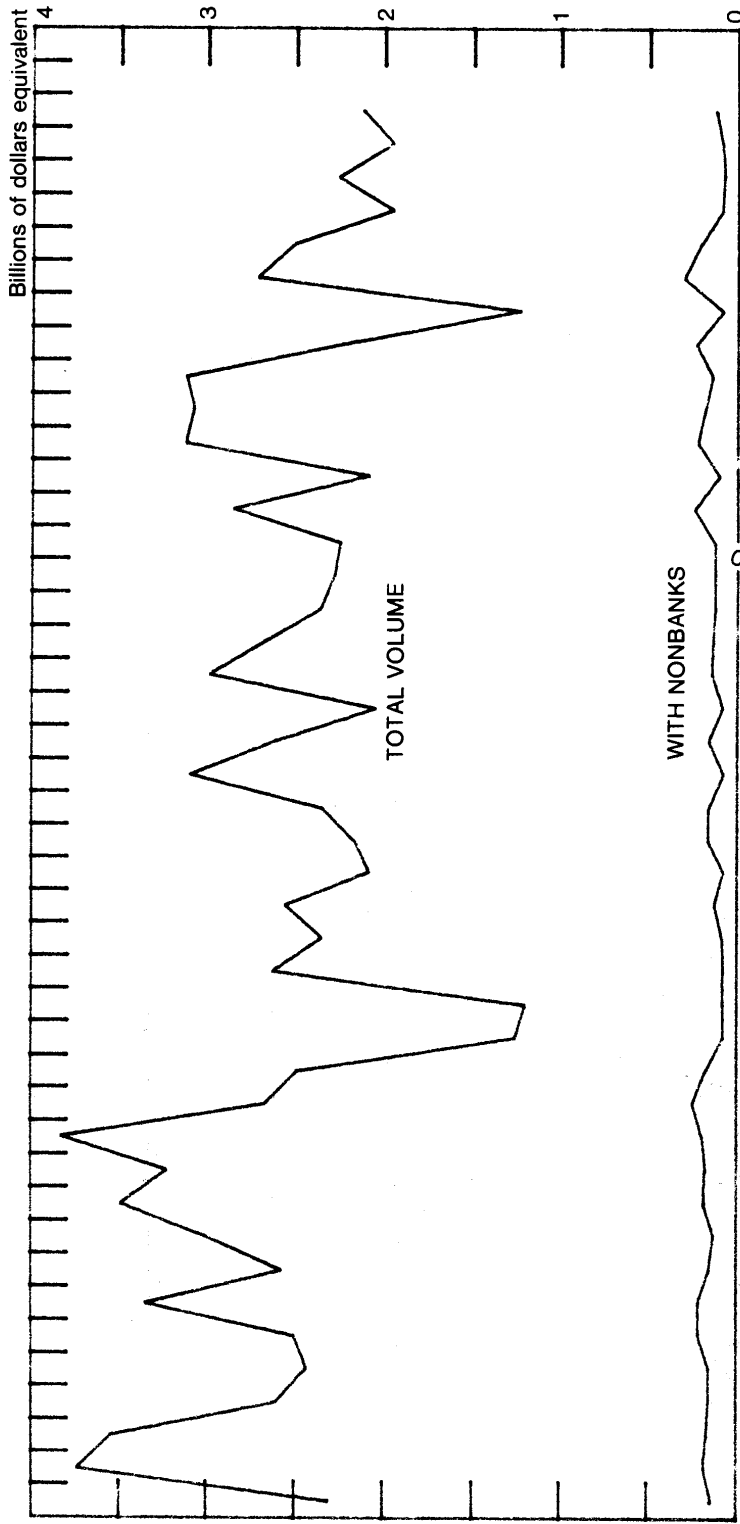


Chart 2.E

# U.K. Pound

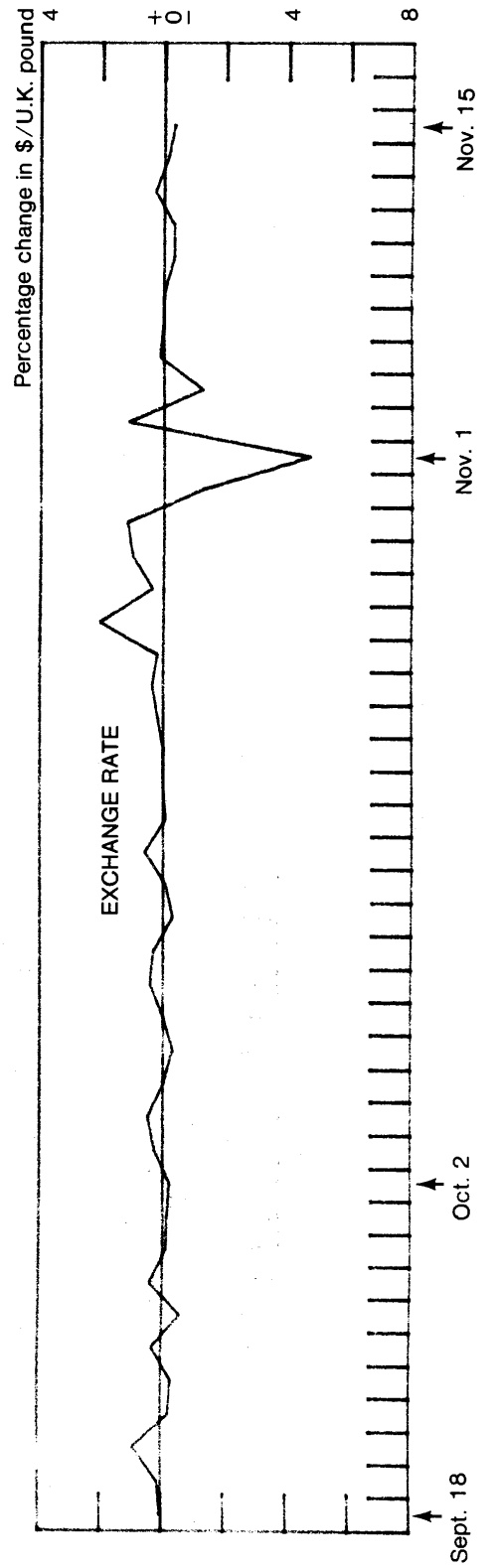
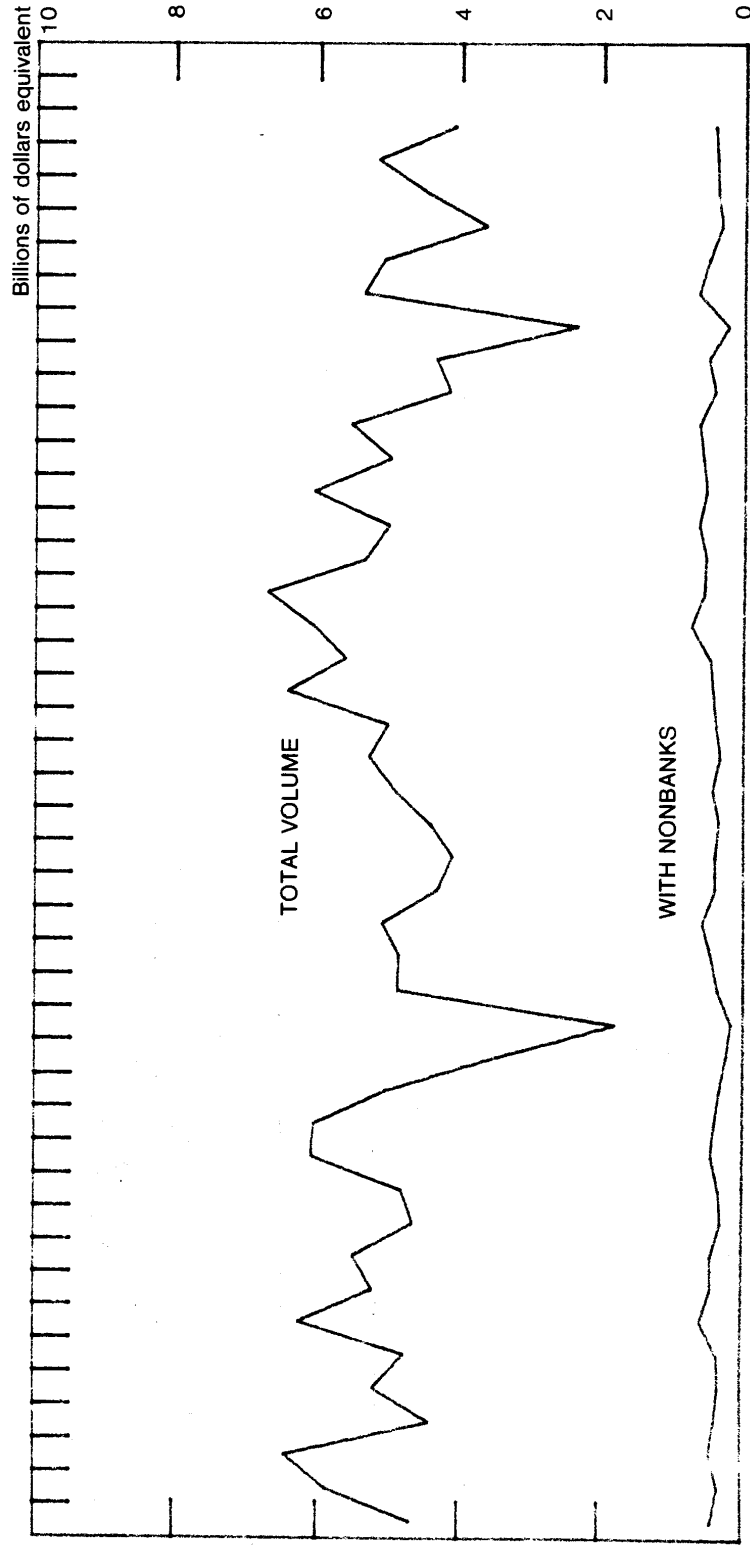


Chart 2.F

# Sum of Foreign Currencies

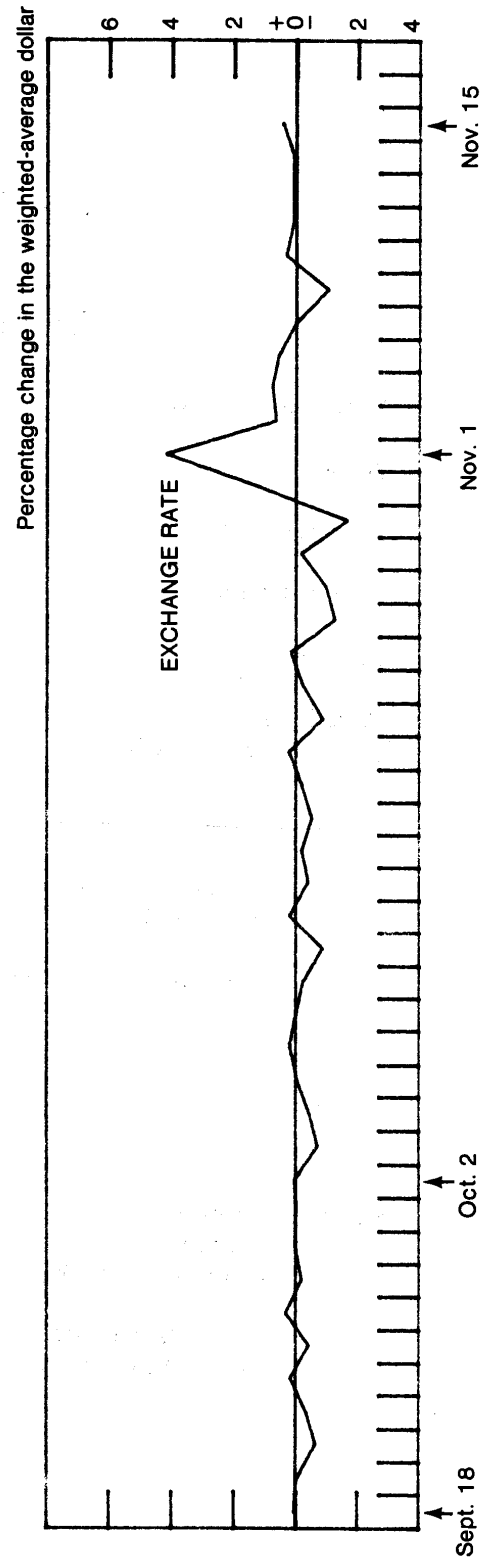
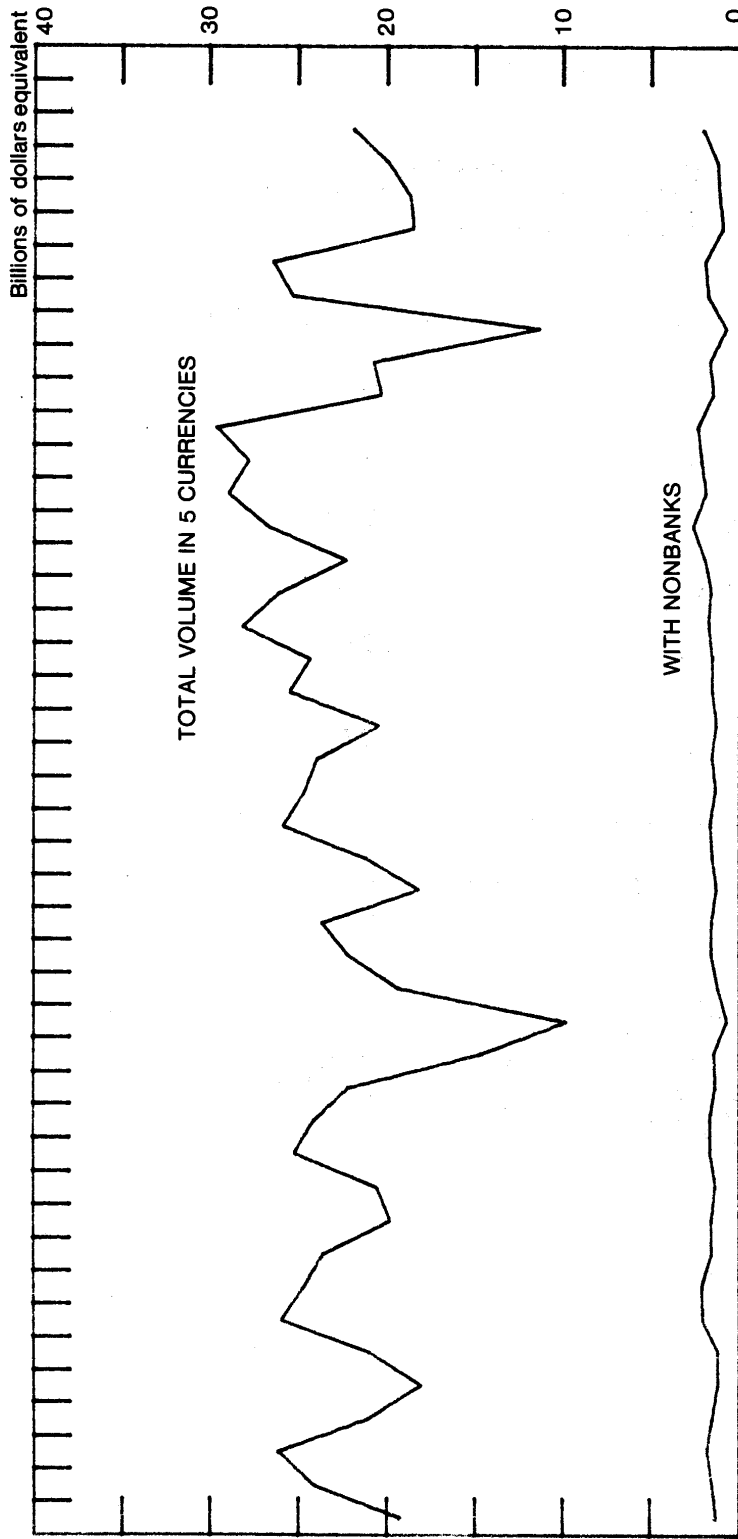


Table 2

Comparison of Means of  
Banks' Positions in Foreign Currencies  
(millions of \$ equivalent)

	<u>Mean of Wednesdays</u>	<u>Mean of other Days</u>	<u>t-ratio</u>
Canadian dollar	-43.33	-39.60	.937
German Mark	332.14	359.61	.866
Japanese yen	123.72	119.91	.935
Swiss franc	-31.62	-24.43	.926
U.K. pound	-275.71	-278.41	1.072
Total of Foreign currencies	105.20	137.09	.968

NOTE: Critical value of  $t = 2.02$  i.e., if  $t < 2.02$  the means are not statistically different.

t-ratio calculated as  $M_W - M_{AO}$

$$\sqrt{\left( \frac{n_w V_w + n_{AO} V_{AO}}{n_w + n_{AO} - 2} \right) \cdot \left( \frac{n_w + n_{AO}}{n_w n_{AO}} \right)}$$

where M = mean  
V = variance  
n = number of observations

subscript W = Wednesday  
AO = All other

Table 3

Regression Results  
Estimated Relationship Between the Absolute Percentage Change  
in the Exchange Rate and the Volume of Trading Activity

(1) Interbank Trading:  $|\% \Delta XR_t| = a + bIBVol_t$

	<u>Coefficient "b"</u>	<u>t-Statistic</u>	<u><math>\frac{R^2}{R}</math></u>	<u>D. W.</u>
Canadian Dollar	.0002	2.52	.11	1.43
German Mark	.0002	2.39	.10	2.10
Japanese Yen	.0002	1.70	.04	2.27
Swiss Franc	.0006	2.10	.07	2.15
U.K. Pound	.0001	0.90	-.00	1.43
Weighted-Ave. Dollar	.00008	3.14	.17	1.96

(2) Trading with Nonbanks:  $|\% \Delta XR_t| = a + bNBVol_t$

Canadian Dollar	.001	4.43	.31	1.57
German Mark	.001	1.46	.02	1.94
Japanese Yen	.003	1.30	.01	2.14
Swiss Franc	.006	2.05	.07	2.01
U.K. Pound	.003	3.71	.23	1.88
Weighted-Ave. Dollar	.0008	3.58	.22	1.99

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Note- $|\% \Delta XR|$  = absolute percentage change in the exchange rate.

For the weighted-average dollar equation, the exchange rate was the FRB index and the volume was the sum of the volume in 5 foreign currencies. The critical value for the t-statistic at the .05 significance level is 2.02.

Durbin-Watson statistics are generally satisfactory, i.e., they do not indicate serious auto-correlation.

Table 4.A  
Regression Results on the Relationship between  
the Exchange Rate and Banks' Foreign Currency Position

		A. Exchange Rate as the dependent variable						R <sup>2</sup>	Σ sq. res.	F
		XR(-2)	XR(-3)	FCP(-1)	FCP(-2)	FCP(-3)	Corrected		Ratio	
Canadian Dollar	1.	1,682 (2.04)	0.90 (5.54)	-0.16 (0.75)	0.06 (0.39)			32,588	.66	.82
	2.	2,822 (2.42)	0.85 (5.01)	-0.22 (1.00)	0.04 (0.27)	0.28 (1.16)	0.25 (0.96)	30,396	.65	
German Mark	1.	644 (1.76)	1.09 (6.66)	-0.33 (1.38)	0.12 (0.74)			217,036	.81	.68
	2.	385 (0.91)	1.03 (5.99)	-0.20 (0.76)	0.09 (0.48)	0.14 (1.28)	-0.02 (0.21)	204,690	.80	
Japanese Yen	1.	8.19 (1.71)	1.05 (6.29)	-0.24 (1.02)	0.04 (0.22)			12.5	.73	2.29
	2.	9.21 (1.68)	1.01 (5.39)	-0.45 (1.69)	0.26 (1.40)	0.0006 (0.19)	-0.005 (1.71)	10.4	.76	
Swiss Franc	1.	924 (1.59)	1.08 (6.54)	-0.16 (0.67)	-0.07 (0.40)			427,389	.76	1.24
	2.	8.07 (1.27)	1.00 (5.80)	-0.12 (0.43)	-0.01 (0.05)	0.30 (0.51)	0.82 (1.48)	385,797	.76	
U.K. Pound	1.	4,276 (2.10)	0.90 (5.46)	-0.01 (0.05)	-0.10 (0.61)			1,401,230	.65	.88
	2.	6,179 (2.43)	0.87 (5.00)	-0.04 (0.17)	-0.13 (0.75)	0.19 (0.27)	1.01 (1.45)	1,300,050	.65	
Weighted Average Dollar	1.	10.3 (1.83)	1.20 (7.28)	-0.36 (1.43)	0.04 (0.24)			19.3	.84	.55
	2.	8.76 (1.47)	1.12 (6.27)	-0.27 (0.98)	0.05 (0.28)	-0.0007 (0.91)	+0.0003 (0.46)	18.4	.83	

Code: XR = exchange rate; number in parentheses is the number of days lagged.

FCP = foreign currency position; number in parentheses is the number of days lagged.

Σsq. res. = sum of squared residuals.

F ratio =  $[(\sum \text{sq. res.}_1 - \sum \text{sq. res.}_2)/3] / [(\sum \text{sq. res.}_2)/34]$ . At the significance level of .05, the critical value of F = 2.9, i.e., if the F ratio is greater than 2.9, the foreign currency position data help explain exchange rates.

Numbers in parentheses under the coefficient are t-ratios. At the significance level of .05, the critical value of t = 2.02.

Table 4.B  
B. Foreign Currency Position as the dependent variable

	C	FCP(-1)	FCP(-2)	FCP(-3)	XR(-1)	XR(-2)	XR(-3)	R <sup>2</sup>	Σ sq. res.	F
Canadian Dollar	1. -19.6 (2.25)	0.26 (1.63)	0.22 (1.26)	0.02 (0.01)				.10	18,649	2.6
	2. -1,760 (2.13)	0.09 (0.55)	0.11 (0.63)	-0.08 (0.43)	0.27 (2.33)	-0.48 (0.30)	-0.28 (0.24)	.21	15,184	
German Mark	1. 139 (2.40)	0.60 (3.78)	-0.02 (0.12)	0.05 (0.33)				.34	563,439	6.7
	2. 1,902 (3.42)	0.61 (4.18)	-0.08 (0.49)	-0.02 (0.17)	-0.71 (3.12)	0.98 (2.84)	-0.59 (2.47)	.55	354,510	
Japanese Yen	1. 29.2 (2.11)	0.58 (3.59)	0.36 (2.00)	-0.16 (1.10)				.60	38,053	1.1
	2. 599 (1.89)	0.56 (2.93)	0.34 (1.62)	-0.03 (0.17)	-7.40 (0.69)	5.40 (0.35)	-8.79 (0.83)	.60	34,603	
Swiss Franc	1. -8.01 (1.24)	0.65 (3.96)	0.005 (0.03)	0.06 (0.36)				.43	42,055	2.9
	2. 284 (1.47)	0.62 (3.52)	0.06 (0.29)	0.11 (0.66)	0.13 (2.54)	0.10 (1.16)	0.01 (0.11)	.51	33,482	
U.K. Pound	1. -133 (2.17)	0.05 (0.29)	0.32 (2.10)	0.15 (0.90)				.08	85,395	.46
	2. -253 (0.40)	0.0008 (0.004)	0.32 (1.92)	0.17 (0.95)	0.04 (1.09)	-0.57 (1.01)	0.15 (0.36)	.04	82,070	
Total Foreign Currency	1. 54.1 (1.63)	0.46 (2.90)	0.23 (1.41)	-0.03 (0.24)				.37	1,020,350	3.45
	2. -3,089 (2.52)	0.50 (3.05)	0.18 (1.05)	-0.01 (0.08)	+83.6 (2.26)	-109 (1.88)	+61.5 (1.64)	.48	782,162	

Code: See other table



Table 5

Regression Results  
Relationship Between Exchange Rates  
and Banks' Foreign Currency Positions

$$(1) \quad XR_t = a + b FCP_t$$

	<u>Coefficient "b"</u>	<u>t-Statistic</u>	<u><math>\bar{R}^2</math></u>	<u>D. W.</u>
Canadian Dollar	1.13	3.75	.23	0.804
German Mark	-0.32	1.83	.05	0.237
Japanese Yen	0.009	3.87	.24	0.304
Swiss Franc	-1.03	1.41	.02	0.301
U.K. Pound	2.60	2.74	.13	0.586
Weighted-Ave. Dollar	.00003	.02	-.02	0.15

$$(2) \quad \% \Delta XR_t = a + b \Delta FCP_t$$

Canadian Dollar	.0009	0.41	-.02	1.99
German Mark	.0002	0.14	-.02	1.72
Japanese Yen	.01	2.86	.15	1.57
Swiss Franc	.003	.42	-.02	1.62
U.K. Pound	.002	1.02	.001	2.05
Weighted-Ave. Dollar	.0005	0.71	-.01	1.43

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Note-XR = exchange rate in U.S. dollars per foreign currency unit; weighted-average dollar is FRB index.

FCP = aggregate of 15 banks' foreign currency positions in millions of \$ equivalent at current exchange rates; in the weighted-average dollar equation, FCP is the sum of positions in 5 foreign currencies.

The critical value for the t-statistic at the .05 significance level is 2.02.

If the Durbin-Watson statistic is below 1.45, there is indication of serious autocorrelation which biases the estimates.

Table 6.A  
 Regression Results on the Relationship between  
 the Exchange Rate and Volume of Interbank Trading

A. Exchange Rate as the dependent variable

	C	XR(-1)	XR(-2)	XR(-3)	Vol.(-1)	Vol.(-2)	Vol.(-3)	R <sup>2</sup> Corrected	Σ sq. res.	F Ratio
Canadian Dollar	1.	0.23 (2.97)	0.32 (1.86)	-0.09 (0.48)	-0.06 (0.36)			.02	1.84	
	2.	0.28 (1.22)	0.38 (1.94)	-0.05 (0.27)	-0.07 (0.36)	0.0000 (0.73)	0.0000 (0.39)	-.03	1.78	.34
German Mark	1.	0.52 (1.92)	0.08 (0.51)	0.20 (1.24)	0.07 (0.43)			-.01	48.9	
	2.	0.22 (0.14)	0.04 (0.23)	0.17 (0.88)	0.13 (0.69)	-0.0000 (0.73)	0.0000 (0.08)	-.06	47.3	.39
Japanese Yen	1.	0.64 (2.77)	-0.02 (0.13)	-0.05 (0.27)	0.02 (0.09)			-.08	30.2	
	2.	-0.02 (0.03)	-0.08 (0.48)	-0.16 (0.87)	-0.009 (0.04)	0.0002 (0.92)	-0.0001 (0.76)	-.08	27.9	.90
Swiss Franc	1.	0.86 (2.35)	0.06 (0.04)	0.13 (0.80)	0.06 (0.37)			-.06	52.4	
	2.	1.77 (1.42)	0.05 (0.30)	0.15 (0.86)	0.13 (0.68)	0.0001 (0.27)	-0.0002 (0.60)	-.13	51.2	.26
U.K. Pound	1.	0.26 (1.61)	0.26 (1.56)	0.29 (1.75)	-0.07 (0.42)			.10	21.3	
	2.	-0.63 (0.70)	0.22 (1.25)	0.25 (1.42)	-0.01 (0.07)	-0.0000 (0.06)	0.0000 (0.23)	.07	20.3	.52
Weighted-Ave. Dollar	1.	0.30 (1.87)	0.17 (1.03)	0.25 (1.52)	-0.13 (0.80)			.04	17.6	
	2.	0.05 (0.04)	0.12 (0.60)	0.23 (1.18)	0.05 (0.27)	-0.0000 (0.48)	0.0000 (0.11)	-.03	17.2	.19

Code: XR=exchange rate; number in parentheses is the number of days lagged.  
 Vol.=volume of trading; number in parentheses is the number of days lagged.  
 Σ sq. res.=sum of squared residuals.

F ratio= $(\sum \text{sq. res.}_1 - \sum \text{sq. res.}_2)/3 / [(\sum \text{sq. res.}_2)/33]$ . At the significance level of .05, the critical value of F = 2.9, i.e., if the F ratio is greater than 2.9, the volume data help explain exchange rates.

Numbers in parentheses under the coefficient are t-ratios. At the significance level of .05, the critical value of t = 2.02.

Table 6.B  
B. Interbank Volume as the dependent variable

	<u>C</u>	<u>Vol.(-1)</u>	<u>Vol.(-2)</u>	<u>Vol.(-3)</u>	<u>XR(-1)</u>	<u>XR(-2)</u>	<u>XR(-3)</u>	<u>R<sup>2</sup></u>	<u>Σ sq. res. (in millions)</u>	<u>F</u>
Canadian Dollar	1. 1,514 (3.61)	0.23 (1.40)	-0.32 (1.99)	0.08 (0.48)				.05	7.5	
	2. 1,557 (3.45)	0.15 (0.77)	-0.38 (2.07)	0.07 (0.34)	243 (0.62)	328 (0.82)	130 (0.35)	.02	7.1	.6
German Mark	1. 7,545 (3.96)	0.45 (2.73)	-0.26 (1.50)	-0.06 (0.35)				.14	108	
	2. 8,551 (3.87)	0.34 (1.87)	-0.31 (1.71)	-0.08 (0.45)	585 (2.32)	-23.8 (0.09)	76.4 (0.29)	.20	92	2.0
Japanese Yen	1. 1,482 (2.32)	0.39 (2.35)	0.27 (1.57)	-0.05 (0.31)				.24	33	
	2. 1,298 (2.2)	0.57 (3.28)	0.19 (1.10)	-0.11 (0.77)	321 (2.03)	-469 (2.80)	212 (1.15)	.43	23	4.9
Swiss Franc	1. 1,641 (3.23)	0.42 (2.75)	-0.08 (0.50)	-0.03 (0.21)				.11	10	
	2. 1,750 (3.39)	0.27 (1.49)	-0.11 (0.66)	-0.002 (0.01)	79.9 (1.07)	143 (1.97)	-19.6 (0.25)	.10	9	2.0
U.K. Pound	1. 3,139 (3.07)	0.31 (1.91)	0.03 (0.17)	-0.04 (0.23)				.03	31	
	2. 3,190 (3.08)	0.23 (1.33)	0.02 (0.10)	0.63 (0.38)	279 (1.40)	-232 (1.17)	-234 (1.18)	.04	26	2.0
Total Foreign Currency	1. 16,835 (3.76)	0.45 (2.74)	-0.17 (0.99)	-0.08 (0.53)				.13	510	
	2. 18,083 (3.48)	0.37 (1.93)	-0.18 (0.96)	-0.09 (0.58)	1,809 (1.86)	-905 (0.94)	515 (.51)	.17	434	1.9

Code: See other table  
Vol.=volume  
XR=exchange rate

Table 7.A  
Regression Results on the Relationship between  
the Exchange Rate and Trading Volume with Nonbanks

		A. Exchange Rate as the dependent variable					R <sup>2</sup>	Σ sq. res.	F		
		C	XR(-1)	XR(-2)	XR(-3)	Vol(-1)	Vol(-2)	Vol(-3)	Corrected	Σ sq. res.	Ratio
Canadian Dollar	1.	0.23 (2.97)	0.32 (1.86)	-0.09 (0.48)	-0.06 (0.36)	-0.0003 (0.66)	-0.0002 (0.39)	0.00002 (0.06)	.02	1.84	.2
	2.	0.26 (2.31)	0.40 (1.80)	-0.03 (0.12)	-0.02 (0.09)	-0.0003 (0.66)	-0.0002 (0.39)	0.00002 (0.06)	-.04	1.81	
German Mark	1.	0.52 (1.92)	0.08 (0.51)	0.20 (1.24)	0.07 (0.43)	0.0002 (0.17)	0.00005 (0.04)	0.0004 (0.38)	-.01	48.9	.05
	2.	0.21 (0.18)	0.08 (0.42)	0.18 (0.92)	0.06 (0.31)	0.0002 (0.17)	0.00005 (0.04)	0.0004 (0.38)	-.10	48.7	
Japanese Yen	1.	0.64 (2.77)	-0.02 (0.13)	-0.05 (0.27)	0.02 (0.09)	-0.0003 (0.12)	0.004 (1.40)	-0.001 (0.49)	-.08	30.2	.7
	2.	0.36 (0.83)	-0.02 (0.09)	-0.10 (0.54)	-0.09 (0.49)	-0.0003 (0.12)	0.004 (1.40)	-0.001 (0.49)	-.10	28.3	
Swiss Franc	1.	0.86 (2.35)	0.006 (0.04)	0.13 (0.80)	0.06 (0.37)	-0.007 (1.93)	0.006 (1.62)	0.004 (1.10)	-.06	52.4	2.2
	2.	1.40 (1.86)	0.21 (1.20)	0.07 (0.39)	0.06 (0.40)	-0.007 (1.93)	0.006 (1.62)	0.004 (1.10)	.03	43.5	
U.K. Pound	1.	0.26 (1.61)	0.26 (1.56)	0.29 (1.75)	-0.07 (0.42)	0.0007 (0.56)	0.002 (1.39)	0.0007 (0.59)	.10	21.3	1.1
	2.	-0.84 (1.23)	0.15 (0.81)	0.14 (0.75)	-0.16 (0.84)	0.0007 (0.56)	0.002 (1.39)	0.0007 (0.59)	.11	19.4	
Weighted Average Dollar	1.	0.30 (1.87)	0.17 (1.03)	0.25 (1.52)	-0.13 (0.80)	0.0000 (0.03)	0.0005 (1.55)	0.0000 (0.23)	.04	17.6	.89
	2.	-0.52 (0.67)	0.14 (0.72)	0.12 (0.61)	-0.12 (0.62)	0.0000 (0.03)	0.0005 (1.55)	0.0000 (0.23)	.02	16.2	

Code: XR = exchange rate; number in parentheses is the number of days lagged.

Vol = volume of trading; number in parentheses is the number of days lagged.

Σ sq. res. = sum of squared residuals.

F ratio =  $[\Sigma \text{sq. res.}_1 - \Sigma \text{sq. res.}_2] / 3 / [(\Sigma \text{sq. res.}_2) / 33]$ . At the significance level of .05, the critical value of F = 2.9, i.e., if the F ratio is greater than 2.9, the volume data help explain exchange rates. Numbers in parentheses under the coefficient are t-ratios. At the significance level of .05, the critical value of t = 2.02.

Table 7.B  
B. Volume of Trading with Nonbanks as the dependent variable

	<u>C</u>	<u>Vol(-1)</u>	<u>Vol(-2)</u>	<u>Vol(-3)</u>	<u>XR(-1)</u>	<u>XR(-2)</u>	<u>XR(-3)</u>	<u>R<sup>2</sup></u>	<u>Σ sq. res. (in millions)</u>	<u>F</u>
Canadian Dollar	1. 219 (3.76)	0.19 (1.18)	-0.07 (0.42)	-0.12 (0.74)				-.01	.6	
	2. 214 (3.63)	-0.08 (0.38)	-0.24 (1.21)	-0.19 (0.96)	165 (1.45)	140 (1.23)	103 (0.89)	.04	.5	.19
German Mark	1. 787 (4.49)	0.03 (0.19)	-0.15 (0.85)	-0.18 (1.05)				-.01	1.7	
	2. 893 (4.79)	-0.15 (0.80)	-0.24 (1.29)	-0.24 (1.45)	84.2 (2.96)	16.5 (0.52)	20.5 (0.65)	.13	1.2	3.6
Japanese Yen	1. 61.5 (2.19)	0.43 (2.58)	0.12 (0.70)	0.03 (0.21)				.20	.1	
	2. 61.4 (2.31)	0.47 (2.71)	0.11 (0.62)	-0.09 (0.61)	23.7 (2.18)	-12.2 (1.08)	15.6 (1.37)	.30	.1	2.9
Swiss Franc	1. 100 (2.63)	0.12 (0.72)	0.14 (0.88)	0.03 (0.20)				-.03	.1	
	2. 98.1 (2.71)	0.03 (0.15)	0.11 (0.66)	-0.09 (0.52)	8.70 (1.05)	3.32 (0.40)	21.6 (2.74)	.12	.1	3.2
U.K. Pound	1. 232 (2.70)	0.30 (1.84)	0.16 (0.97)	-0.02 (0.10)				.08	.5	
	2. 275 (2.58)	0.25 (1.32)	0.16 (0.83)	-0.11 (0.60)	42.9 (1.48)	-26.2 (-0.92)	19.6 (0.68)	.09	.5	1.2
Total Foreign Currency	1. 1,045 (3.00)	0.36 (2.12)	-0.12 (0.64)	0.82 (0.48)				.04	6.2	
	2. 1,461 (3.30)	0.19 (0.93)	-0.15 (0.76)	-0.09 (0.48)	197 (1.75)	4.53 (0.04)	110 (1.01)	.08	5.2	1.7

Code: See other table.

Table 8

Individual and Aggregate Bank Profits  
(in millions of dollars)

Bank	1976				1977				1978			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.	13.5	10.6	10.3	8.0	10.8	11.1	11.0	14.1	14.9	15.2	17.4	21.7
2.	1.7	.1	1.1	- .5	-.4	.2	1.6	2.6	1.4	1.1	1.7	2.3
3.	1.4	1.5	.9	1.7	1.0	.5	1.5	1.7	3.4	1.3	3.6	4.5
4.	1.4	1.1	2.0	2.6	3.1	2.6	4.0	5.3	9.1	.1	.1	6.0
5.	.6	1.3	.7	1.0	.8	.5	.8	1.4	1.1	1.0	1.4	1.7
6.	3.0	1.9	2.4	1.0	2.3	2.6	2.1	2.3	2.9	3.8	4.3	3.5
7.	7.6	9.9	9.7	7.3	7.2	4.9	10.2	22.9	16.4	0	19.9	29.3
8.					.7	-.6	4.5	8.4	16.3	16.9	9.4	62.4
9.	3.1	2.5	3.5	4.5	2.7	3.5	4.5	3.8	4.3	6.5	6.9	7.2
10.	13.3	11.0	15.2	22.4	3.8	7.0	9.1	27.2	15.5	13.8	20.6	20.0
11.	2.3	2.9	.9	2.6	1.3	1.2	3.6	3.9	3.9	2.8	2.5	4.8
12.	0	1.3	1.8	1.7	-1.7	-1.0	-1.5	-2.5	-1.3	3.0	-9.4	10.3
13.	5.3	4.1	1.7	4.1	3.2	2.0	3.4	7.5	5.3	6.6	5.2	9.0
Total	53.2	48.2	50.2	56.4	34.8	34.5	54.8	98.6	93.2	72.1	83.6	182.7

NOTE: Two banks included in the survey do not publicly report foreign exchange profits and did not furnish this information.

Relationship between Bank Profits and Exchange Rate Changes.<sup>1/</sup>

(1) with average daily change in exchange rate,  $t$ -stat. = 6.75  
 $R^2 = .80$

(2) with net change in exchange rate over the quarter,  $t$ -stat. = 2.66  
 $R^2 = .35$

<sup>1/</sup> Estimates were made excluding Bank 8 which did not report quarterly profits in 1976.