

INTERNATIONAL MONETARY FUND

Review of the Method of Valuation of the SDR

Prepared by Finance Department

(In consultation with Legal and Other Departments)

Approved by Michael G. Kuhn

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EXECUTIVE SUMMARY ¹

This paper sets out the main issues for the 2005 review of the SDR currency basket and interest rate basket. It provides the basis for the quinquennial review by the Executive Board of the method of valuation of the SDR, in accordance with the Executive Board decision on the calculation of currency amounts for the SDR valuation basket adopted in the context of the 2000 review. The new valuation and interest rate baskets will come into effect on January 1, 2006, unless the Executive Board decides otherwise.

In the context of the 2000 review, the Executive Board agreed on a number of changes to the method of valuation of the SDR. The key modifications included the incorporation of the euro in the SDR basket by changing the method of SDR valuation from a member-based approach to a currency-based approach.

This review examines developments, during the period 2000–04, in the variables relevant to the SDR valuation. These variables include exchange rates, exports of goods, services and income, and reserve holdings.

The paper does propose to maintain the current valuation method for the SDR basket, the currency composition of the basket, and the method for determining the currency weights agreed by the Executive Board in the context of the 2000 review. In line with the current methodology, the paper proposes changes to the currency weights based on the agreed indicators for 2000–04. The proposed currency weights imply a change in the relative shares of three of the four currencies in the SDR basket as follows: the weights of the U.S. dollar and the Japanese yen would decline while the weight of the euro would increase. The weight of pound sterling would remain unchanged.

On the SDR interest rate, the paper proposes to replace three-month Euribor with the three-month Eurepo rate as the applicable rate for the euro. The market yields for three-month Treasury bills for the United Kingdom and the United States, and the rate on Japanese government thirteen-week financing bill would remain the applicable rates for the pound sterling, the U.S. dollar, and the Japanese yen, respectively.

It is proposed that the next review take place in 2010, with any changes taking effect January 1, 2011, unless developments in the international monetary system affecting the SDR valuation warrant an earlier review. In line with previous practice, it is also proposed that the decision by the Executive Board regarding this review be adopted some time before January 1, 2006 (when the proposed changes will become effective), in order to inform interested parties and to complete any consultations that might be required.

¹ This paper was prepared by a staff team consisting of Ms. Metzgen and Messrs. Visconti, Perrelli, and Schmittmann.

I. INTRODUCTION

1. This paper sets out the main issues for the 2005 review of the SDR currency basket and of the financial instruments used to determine the SDR interest rate (the interest rate basket). It provides the basis for the quinquennial review of the method of valuation of the SDR, in accordance with the Decision No. 12281-(00/98) G/S adopted October 11, 2000 (the 2000 Decision).²

2. As provided for in previous decisions³ on the valuation of the SDR, the Executive Board has conducted quinquennial reviews of the SDR valuation basket since 1980. The last review took place in 2000.⁴ On these occasions, the Executive Board agreed to revise the SDR valuation basket in line with the broad principles established in the 1970s for SDR valuation (Box 1 and Appendix I). In the context of the 2000 review, the Executive Board agreed a number of changes to the method of valuation of the SDR. Key among these was the full incorporation of the euro into the basket by changing the method of SDR valuation from a member-based approach to a currency-based approach.

3. **The current review is due to be completed by December 31, 2005.** The new currency and interest rate baskets will come into effect on January 1, 2006, unless the Executive Board decides otherwise. Traditionally, the Board has taken the decision on the method of valuation prior to the effective date in order to inform interested parties and to complete any consultations that might be required.

Box 1. Principles Guiding SDR Valuation Decisions

The broad principles guiding the decision on the valuation of the SDR were established by the Board in the 1970s with the aim of enhancing the attractiveness of the SDR as a reserve asset. According to these principles, the SDR's value should be stable in terms of the major currencies, and the currencies included in the basket should be representative of those used in international transactions. In addition:

- the relative weights of currencies included in the basket should reflect their *relative importance* in the world's trading and financial system;
- the composition of the SDR currency basket should be *stable* and change only as a result of significant developments from one review to the next; and
- there should be *continuity* in the method of SDR valuation such that revisions to the method of valuation occur only as a result of major changes in the roles of currencies in the world economy.

² See *Selected Decisions and Selected Documents of the International Monetary Fund, Twenty-Ninth Issue*, Washington, D.C., December 31, 2004, pp. 624–626, reproduced in Appendix I.

³ Decision No. 6631-(80/145) G/S, adopted September 17, 1980, which has since been superseded by the 2000 Decision.

⁴ See Press Release No. 00/55 (10/12/2000).

4. **The paper is organized as follows:** Section II outlines the current methodology for selection of currencies for the SDR valuation basket in light of the 2000 Decision. Section III reviews developments in the variables relevant to SDR valuation including exchange rates, exports, and reserve holdings and their implications for the current review.⁵ Section IV reviews the financial instruments that comprise the SDR interest rate basket. It also discusses the rationale for the proposal to replace the three-month Euribor with the three-month Eurepo rate. Section V applies the criteria to be used in the quinquennial review to the selection of currencies and the determination of currency amounts in the new SDR basket. This section also discusses technical issues and procedural matters concerning the transition to the new basket. Section VI revisits the possibility of extending the current methodology for currency weights to include supplementary financial variables. Section VII proposes the timing of the next review of the valuation of the SDR and Section VIII contains the proposed decisions. Appendices I and II present the past key Board decisions on SDR valuation and the formulas for calculating the SDR currency basket, respectively. Appendix III provides additional background on supplementary financial variables while Appendix IV outlines technical issues related to the weights for exports and reserves in SDR currency valuation. Appendix V discusses methodological aspects of the data used in calculating the weights used in the SDR valuation basket.

II. VALUATION OF THE SDR

5. In October 2000, the Executive Board reaffirmed the standard basket method, adopted in 1974, for determining the value of the SDR. The Board also agreed to incorporate fully the euro into the SDR basket by changing the method of SDR valuation from a member-based approach to a currency-based approach. Executive Directors noted that the proposed approach would be compatible with the principles of SDR valuation (see Box 1), and consistent with the evolution of the international monetary system. The decisions taken by the Board in the context of the 2000 review are summarized in Box 2.

⁵ In this paper, exports, exports of goods and services, and exports of goods, services and income are used interchangeably. The latter corresponds to the definition of the variable used in the methodology for SDR valuation.

Box 2. Decisions Under the 2000 Review

In 2000, the Executive Board agreed to shift to a currency-based method of SDR valuation. The 1980 Decision on SDR valuation was superseded by the 2000 Decision.

The agreed changes to the valuation methodology resulted in an SDR valuation basket comprising the currencies of the four largest exporting Fund members or monetary unions, defined as areas with a single currency and common central bank, and which have been determined by the Fund to be freely usable currencies in accordance with Article XXX (f) of the Fund's Articles of Agreement.

The relative weights of component currencies are to be determined by combining the value of exports (averaged over the relevant five-year period) and official reserves held by monetary authorities outside the country or monetary union that issues the respective currency. In accordance with these criteria, it was agreed that effective January 1, 2000, the currency composition of the SDR basket would be as follows: U.S. dollar (45 percent), euro (29 percent), Japanese yen (15 percent), and pound sterling (11 percent).^{2/}

In line with the guidelines applied by the Executive Board in previous reviews, Executive Directors emphasized that financial instruments should be broadly representative of the range of such instruments available to investors in a particular currency. In this regard, while adopting the Euribor as the representative interest rate for the euro area, the Board noted that no better alternative to the Euribor was available at that time. For the calculation of the SDR interest rate, the Board adopted the market yield for the three-month U.S. treasury bill, the three-month Euribor, the rate for the 13-week Japanese financing bill, and the market yield for the three-month U.K. treasury bill. In light of the marked increase of international flows, and considering the lack of experience on the use of the euro in international transactions, the Board asked for further analysis on the incorporation of supplementary financial sector variables in future reviews of the SDR valuation (Appendix III).

Finally, noting that regular periodic reviews of the SDR valuation basket had provided certainty and predictability to the benefit of users of the SDR and SDR-denominated assets, the Board agreed to maintain the quinquennial review period. However, it was agreed that an earlier review might be contemplated in case of major unforeseen developments in the international monetary system.

^{2/} Executive Board Decision No. 12281-(00/98) G/S, adopted October 11, 2000, *Selected Decisions and Selected Documents of the International Monetary Fund, Twenty-Ninth Issue*, Washington, D.C., December 31, 2004, pp. 624–626, reproduced in Appendix I.

6. The SDR currently derives its value from a basket of four currencies: the U.S. dollar, the euro, the Japanese yen and the pound sterling. The basket contains fixed amounts of the currency units which are valued at prevailing market exchange rates and summed to obtain the SDR's value. This "standard basket" method has been accepted as the method that best ensures the stability of the SDR in terms of the major currencies under floating exchange rates.⁶

7. The component currencies and their weights in the SDR basket are determined using the following criteria:

⁶ Decision No. 4233-(74/67) S, adopted June 13, 1974, effective July 1, 1974.

Selection: The currencies included in the SDR shall be the four currencies issued by Fund members, or by monetary unions that include Fund members, whose exports of goods and services during the five-year period ending 12 months before the effective date of the revision had the largest value and which have been determined by the Fund to be freely usable currencies in accordance with Article XXX (f). In the case of a monetary union, trade between members of the union is excluded from the calculation.

Weighting: The percentage weight of each currency selected shall reflect (i) the **value of the balances of that currency** held, at the end of each year of the relevant five-year period ending 12 months before the effective date of the revision, by the monetary authorities of other members or, in the case of the currency of a monetary union, by the monetary authorities of members other than those forming part of the monetary union; and (ii) **the value of exports of goods and services** of the members or monetary unions as defined in the method for selection (Appendix IV).

Review: The currencies and their weights in the valuation basket shall be reviewed every five years in order to keep the composition of the basket stable for at least that period of time, unless the Executive Board decides otherwise.

8. **The five-yearly Executive Board decisions specify the initial weights of the currencies in the basket, but the weights change over time with currency valuation.** Specific currency amounts consistent with the initial weights are fixed on the date on which the decision becomes effective (Box 3). Subsequent daily valuations of the SDR are based on these fixed currency amounts. Movements in exchange rates alter the relative weights of the component currencies, with appreciating currencies gaining a larger share in the basket (Figure 1).

Box 3. SDR Valuation: Determination of Currency Amounts and Actual Daily Weights

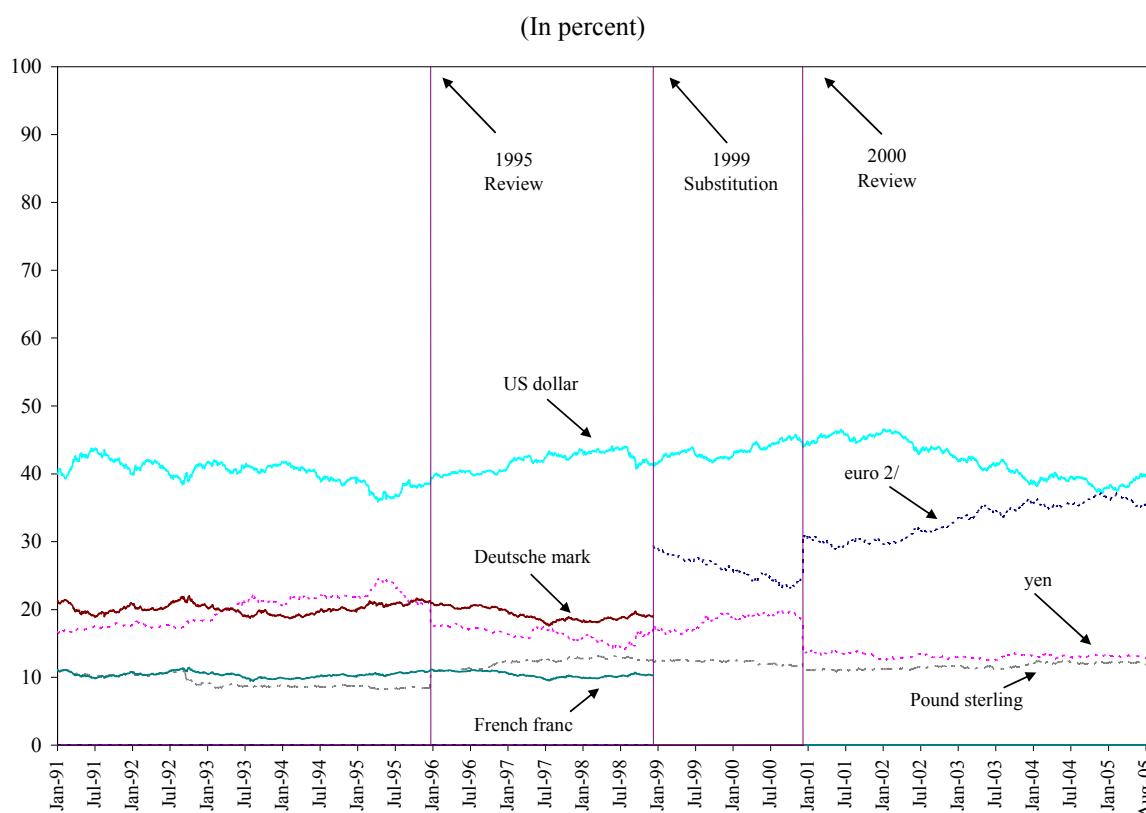
- Currency amounts are calculated on the last business day preceding the date the new basket becomes effective. On that day, currency amounts are derived from the weights decided by the Executive Board using the average exchange rate for each currency over the preceding three months. Currency amounts are adjusted proportionally to ensure that the value of the SDR is the same before and after the revision.
- The currency amounts remain fixed for the subsequent five-year period. As a result, the actual weight of each currency in the value of the SDR changes on a daily basis as a function of changes in exchange rates. As an example, the calculation of the SDR in terms of the U.S. dollar on September 22, 2005, and the corresponding weights, are shown below.

SDR Valuation on September 22, 2005

Currency	Initial weight decided in 2000	Currency amount under Rule 0-1	Exchange rate 1/ 9/22/05	U.S. dollar equivalent	Actual weight 9/22/05
U.S. dollar	45.0	0.5770	1.0000	0.5770	39.4
Euro	29.0	0.4260	1.2221	0.5206	35.6
Japanese yen	15.0	21.0000	111.2300	0.1888	12.9
Pound sterling	11.0	0.0984	1.8017	0.1773	12.1
SDR1 = US\$				1.4637	100.0

1/ Exchange rates in terms of U.S. dollar per currency unit except for the yen which is expressed as currency units per U.S. Dollar.

Figure 1. Actual Currency Weights in the SDR Basket, 1991–2005 1/



Sources: Finance Department; and IMF International Financial Statistics.

1/ Daily data are through September 22, 2005.

2/ For the period from January 1, 1999 to December 31, 2001, the euro represents the combined weights of Deutsche mark and French franc. Thereafter the weight of the euro is based on the entire euro zone.

III. REVIEW OF DEVELOPMENTS IN VALUATION-RELATED VARIABLES

9. This section reviews developments in the variables relevant to SDR valuation, including exchange rates, exports, reserves, and international financial transactions. The United States, euro area, Japan, and the United Kingdom remain the four largest exporters and Fund members continue to hold most of their reserves in the currencies comprising the SDR basket. The four currencies also account for the majority of international banking and financial transactions.

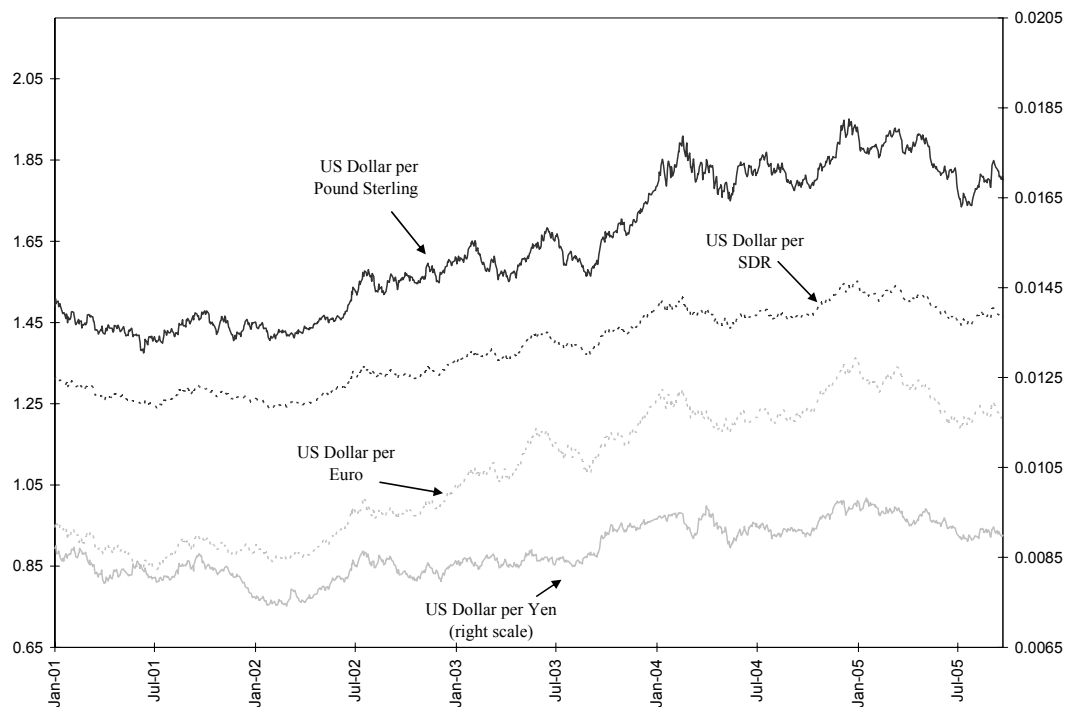
A. Exchange Rate Developments

10. **Since January 1, 2001, the date of effectiveness of the last SDR revision, the SDR has appreciated vis-à-vis the U.S. dollar.** This movement has largely reflected the decline in the U.S. dollar, especially against the euro (Figure 2). As a result, there was a reduction in

the actual weight of the U.S. dollar in the SDR basket and a corresponding increase in the weight of the euro. At end-2004, the weight of the U.S. dollar had fallen to 37 percent from the initial weight assigned in 2001 of 45 percent, while the weight of the euro had risen to 37 percent from its initial weight of 29 percent (Figure 3). The shares of the yen and the pound remained broadly stable. The rebound of the U.S. dollar in 2005 through July raised its actual weight to close to 40 percent.

11. **SDR movements against the major currencies have been less pronounced than those of the bilateral rates of exchange for these same currencies against each other.**⁷ Further, the day-to-day volatility of the SDR/U.S. dollar exchange rate has been significantly less than the volatility of its component currencies measured in terms of the U.S. dollar (Table 1). Both factors reflect the working of the standard basket method of valuation.

Figure 2. Exchange Rate Movements of the U.S. Dollar, 2001–05 1/
(U.S. dollar per currency unit)



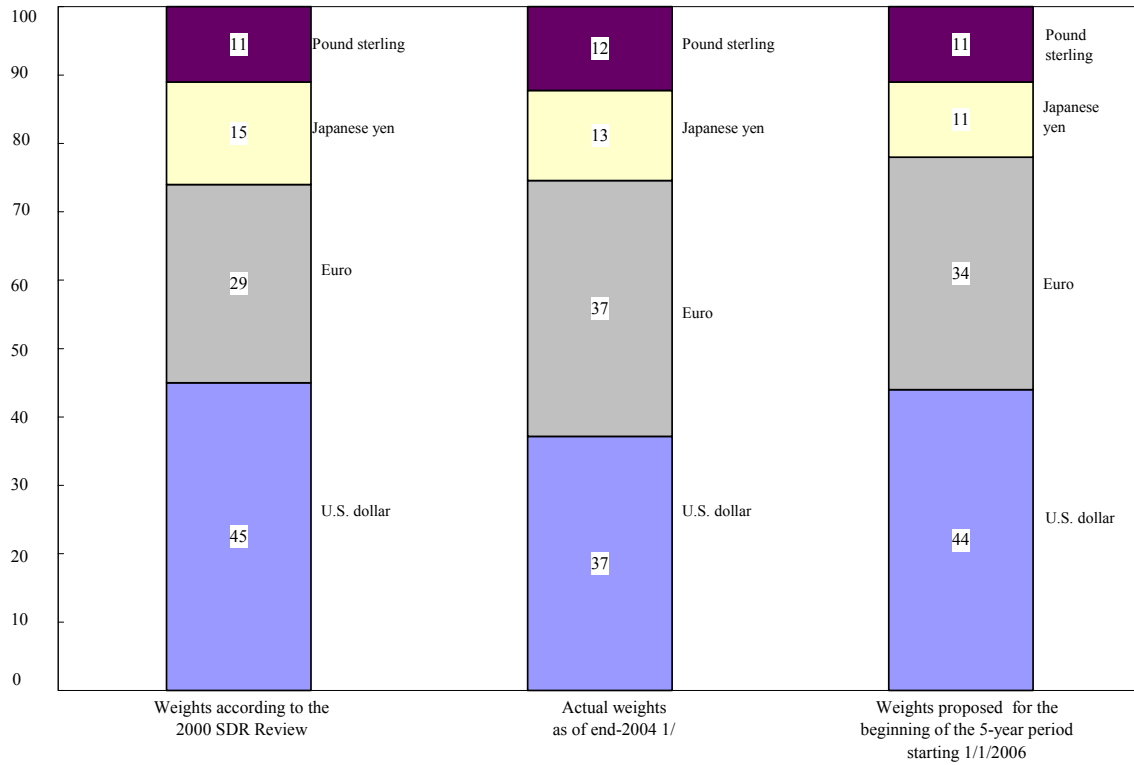
Sources: Finance Department; and IMF International Financial Statistics.

1/ Daily data are through September 22, 2005.

⁷ This would not necessarily hold if SDR basket currencies belong to the same pegged exchange-rate system as was the case, for example, with the ERM currencies, or if one SDR basket currency served as a nominal anchor of another currency included in the basket.

Figure 3. SDR Basket: Currency Weights

(In percent)



Source: Finance Department.

1/ Percentage shares do not add up to 100 due to rounding.

Table 1. Exchange Rate Volatility 1/

	2000	2001	2002	2003	2004
Euro	0.65	0.55	0.47	0.55	0.48
Japanese yen	0.47	0.49	0.46	0.43	0.47
Pound sterling	0.42	0.40	0.36	0.42	0.53
SDR	0.21	0.21	0.23	0.26	0.27

Sources: Finance Department; and IMF International Financial Statistics.

1/ Measured as the mean of absolute daily percentage change in spot exchange rates against the U.S. dollar, based on noon exchange rates in the London market.

B. Developments in Exports of Goods and Services and Reserve Holdings

12. **The four largest exporters, in terms of goods and services, remain the United States, the euro area, the United Kingdom, and Japan** (Table 2). Exports from the fifth largest exporter, China (including Hong Kong SAR), grew rapidly near the end of the period, surpassing the value of Japan's exports in 2003. However, China's exports were below those of the four largest exporters for the period as a whole.

Table 2. Exports of Goods, Services, and Income, 2000–04

(In SDR billions)

	2000	2001	2002	2003	2004	Period Average 2000-04
Largest Exporters						
Euro area 1/	1,078.5	1,145.8	1,197.9	1,290.3	1,459.1	1,234.3
United States	1,078.6	1,017.6	963.9	952.9	1,033.3	1,009.2
United Kingdom	461.2	467.9	463.6	477.1	531.1	480.2
Japan	474.6	433.0	426.9	444.8	506.2	457.1
China, P.R., and Hong Kong SAR 2/	360.5	371.0	403.9	460.4	554.4	430.0
Canada	268.4	257.2	250.0	250.4	274.8	260.2
Korea	161.6	147.0	153.5	169.8	207.8	167.9
Singapore	147.4	138.7	140.5	148.5	171.4	149.3
Switzerland	141.2	139.3	133.5	153.2	170.9	147.6
Mexico	140.9	139.1	137.6	131.0	139.7	137.7

Sources: Finance and Statistics Departments; and IMF International Financial Statistics.

1/ As reported by *IMF International Financial Statistics* for the entire euro area.

2/ Excluding China, P.R., and Hong Kong SAR intra-exports of goods.

13. **Global holdings of reserves have increased significantly since the last review, with the bulk of official reserves still being held in U.S. dollars** (Table 3). In addition, virtually all (about 98 percent) official reserve holdings reported by central banks continue to be denominated in the four currencies included in the SDR basket. As of end-2004, the shares of the U.S. dollar (66.2 percent) and the euro (24.8 percent) in the official reserves of Fund members accounted for 91 percent of the total.

C. International Banking and Financial Market Developments

14. **During the review period, international banking and financial transactions grew rapidly.** External bank liabilities increased on average 11 percent per year, outstanding amounts of international bonds, notes, and money market instruments by 16 percent a year; and outstanding amounts in over-the-counter interest rate and foreign exchange rate

derivatives rose 26 percent per year. Foreign exchange market turnover activity grew around 36 percent over the period (Appendix III).⁸

15. The four currencies used in the SDR basket currently account for the majority of international banking and financial transactions. These four currencies represent almost 92 percent of external banking liabilities, 95 percent of amounts outstanding on international bonds, notes, and money market instruments, 92 percent of outstanding amounts in over-the-counter interest rate and foreign exchange rate derivatives markets, and 82 percent of the global foreign exchange turnover (see Appendix III, Table A2).

Table 3. Official Reserve Holdings of Currencies Included in the SDR Valuation Basket 1/, 2/

	Average 1985-89	Average 1990-94	Average 1995-98	Average 1999-2002	End of Year					Average 2000-04
					2000	2001	2002	2003	2004	
<i>(In billions of SDRs)</i>										
U.S. dollar	232.4	326.3	546.2	821.9	802.3	889.4	884.3	982.9	1,115.4	934.9
Euro	...	...	...	237.3	213.9	240.3	315.1	373.1	417.4	312.0
Japanese yen	28.4	48.6	53.9	64.0	71.4	63.2	57.6	59.0	64.0	63.0
Pound sterling	10.0	18.7	21.5	32.9	31.5	33.7	37.2	38.6	54.0	39.0
Total of SDR basket currencies 3/	270.8	393.6	621.6	1,156.1	1,119.1	1,226.6	1,294.1	1,453.6	1,650.8	1,348.8
<i>(Percentage shares of total foreign exchange holdings)</i>										
U.S. dollar	62.1	46.7	64.2	69.9	70.5	71.4	67.0	66.1	66.2	68.0
Euro	...	...	...	20.2	18.8	19.3	23.9	25.1	24.8	22.7
Japanese yen	7.6	7.0	6.3	5.4	6.3	5.1	4.4	4.0	3.8	4.6
Pound sterling	2.7	2.7	2.5	2.8	2.8	2.7	2.8	2.6	3.2	2.8
Total of reserve holdings reported by authorities (in billions of SDRs)	374.1	698.3	850.2	1,176.5	1,138.4	1,245.6	1,319.6	1,486.3	1,685.6	1,375.1
<i>(Percentage shares of total SDR basket currencies 3/, 4/)</i>										
U.S. dollar	85.8	82.9	87.9	71.1	71.7	72.5	68.3	67.6	67.6	69.3
Euro	...	...	...	20.5	19.1	19.6	24.3	25.7	25.3	23.1
Japanese yen	10.5	12.3	8.7	5.5	6.4	5.2	4.4	4.1	3.9	4.7
Pound sterling	3.7	4.8	3.5	2.8	2.8	2.8	2.9	2.7	3.3	2.9

Sources: Finance and Statistics Departments.

1/ *IMF International Financial Statistics* definition of foreign exchange reserves. Includes monetary authorities' claims on nonresidents in the form of foreign banknotes, bank deposits, treasury bills, short- and long-term government securities, ECUs (for periods before January 1999), and other claims usable in the event of balance of payment needs.

2/ For reserve data from 1995 onwards, reserves held by nonreporting developing countries for which the currency composition was previously estimated are no longer apportioned.

3/ SDR basket composition as of 2004 including the U.S. dollar, Japanese yen, pound sterling and euro. Deutsche mark and French franc, part of the SDR currency basket before the adoption of the euro, are not included in data prior to 1999.

4/ Percentage shares may not add up to 100 due to rounding.

⁸ Percentage change in the average daily turnover from April 2001 to April 2004.

16. **While the U.S. dollar still dominates international banking and financial transactions, the euro is also actively used.** The U.S. dollar continues to account for the highest share of foreign exchange turnover. In comparison, the shares of the euro exceeded those of the U.S. dollar in outstanding international securities and over-the-counter derivatives by the end of 2004. Moreover, while in 2001 the ratio of euro-denominated to U.S. dollar-denominated bank liabilities was about one half, this ratio increased significantly to about 80 percent by end-2004 (see Appendix III, Tables A1 and A2).

IV. REVIEW OF FINANCIAL INSTRUMENTS IN THE SDR INTEREST RATE BASKET

A. The SDR Interest Rate Basket

17. **According to the criteria agreed by the Executive Board in previous reviews, the financial instruments in the interest rate basket should:**

- be broadly representative of the range of financial instruments that are actually available to investors in a particular currency, and the interest rate on the instrument should be responsive to changes in underlying credit conditions in the corresponding money market; and
- have risk characteristics that are similar to the official standing of the SDR itself, i.e., have a credit risk profile of the highest quality, fully comparable to that of government paper available in the market or, in the absence of appropriate official paper, comparable to the credit risk on prime financial instruments. Instruments should also reflect the actual reserve asset choice of reserve managers, for example, as regards the form of the financial instrument, its liquidity, and maturity.

These criteria for choosing the component financial instruments of the SDR basket were generally reaffirmed by the Executive Directors during the 2000 review of the SDR valuation and interest rate baskets.

18. **The benchmark rates currently used as representative interest rates for the four currencies are as follows:**

- U.S. dollar: Market yield for the three-month U.S. Treasury bills;
- Euro: Three-month Euro Interbank Offered Rate (Euribor);
- Japanese yen: Thirteen-week Japanese Government financing bills; and
- Pound sterling: Market yield for three-month U.K. treasury bills.

The yields on these instruments are used to calculate the SDR interest rate for each week (Box 4). Developments in the SDR interest rate since the 2000 review are shown in Figure 4.

Box 4. SDR Interest Rate Calculation

For the week of August 22, 2005 to August 28, 2005
(Data as of Friday, August 19, 2005)

Currency	Currency amount under Rule O-1 (A)	Exchange rate against the SDR 1/ (B)	Interest rate 2/ (C)	Product (A) x (B) x (C)
U.S. Dollar	0.5770	0.683688	3.5200	1.3886
Euro	0.4260	0.832937	2.1616	0.7670
Japanese Yen	21.0000	0.00618946	0.0020	0.0003
Pound Sterling	0.0984	1.2279	4.4700	0.5401
			Total	2.6960
			SDR Interest Rate 3/	2.70

1/ These rates are the representative exchange rates used in the SDR valuation basket.

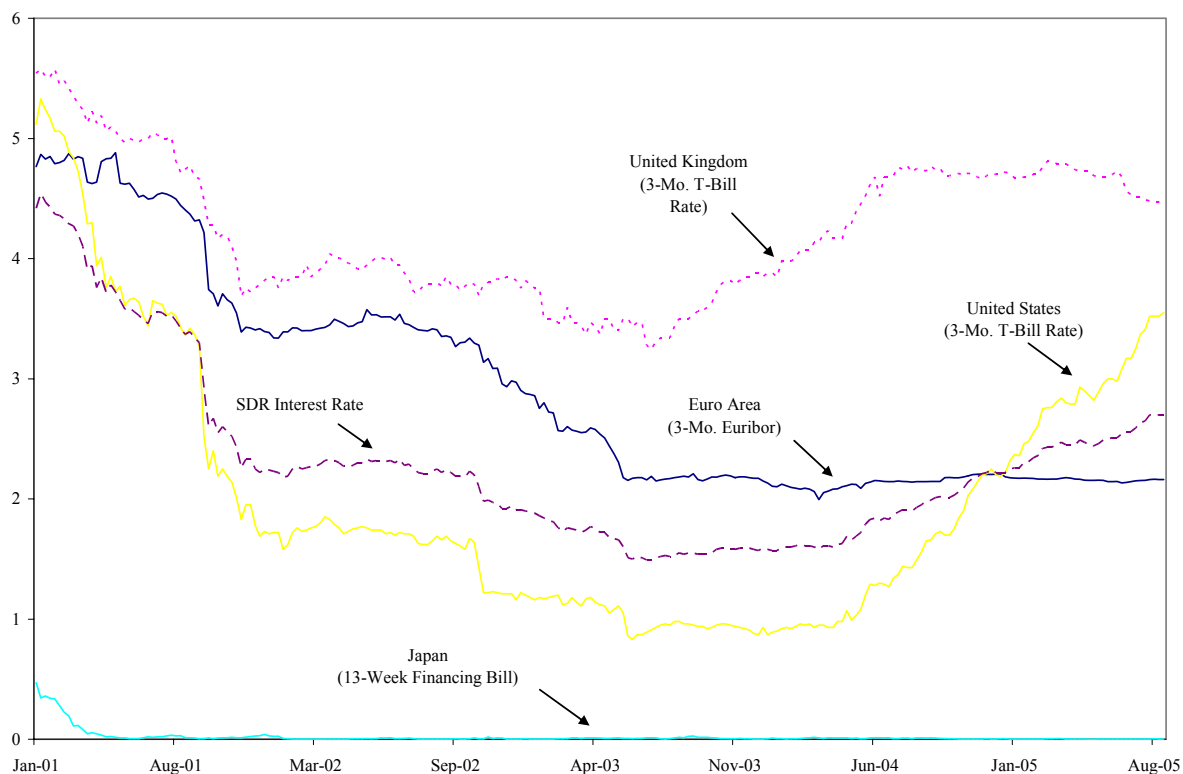
2/ Interest rate on the financial instrument of each component currency in the SDR basket, expressed as an equivalent annual bond yield: three-month Euribor (Euro Interbank Offered Rate); Japanese Government thirteen-week financing bills; three-month UK Treasury bills; and three-month US Treasury bills.

3/ IMF Rule T-1(b) specifies that the SDR interest rate for each weekly period commencing each Monday shall be equal to the combined market interest rate as determined by the Fund. Under IMF Rule T-1(c), the combined market interest rate is the sum, as of the Friday preceding each weekly period, rounded to the two nearest decimal places, of the products that result from multiplying each yield or rate listed above by the value in terms of SDRs of the amount of the corresponding currency specified in Rule O-1. If a yield or rate is not available for a particular Friday, the calculation shall be made on the basis of the latest available yield or rate.

B. Financial Instruments and Reference Rates

19. **As indicated, during the 2000 Review, changes in the SDR interest rate basket corresponding to the shift from a member-based to a currency-based approach were introduced.** In addition, decisions were taken to adopt (i) the three-month Euribor as the interest rate for the euro; and (ii) the interest rate on the 13-week financing bill as the interest rate for the yen. This section reviews the financial instruments in the SDR interest rate basket, in line with the criteria outlined above (paragraph 17). Staff has consulted with the authorities issuing the currencies in the SDR basket to determine the appropriate benchmark rates to use in the calculation of the SDR interest rate. In light of these consultations, the staff endorses the proposal of the European Central Bank to adopt the three-month Eurepo rate as the interest rate for the euro. There is no need to change any of the other existing financial instruments—for the yen, pound, or U.S. dollar—in the SDR interest rate basket.

Figure 4. Interest Rates on the SDR and its Financial Instrument Components, 2000–05 1/
(In percent per annum)



Source: Finance Department.

1/ Weekly data through August 26, 2005.

20. **The authorities of the United States consider that the three-month U.S. treasury bill continues to meet the criteria applied by the Executive Board for the selection of financial instruments in the SDR basket.** Noting that market rates on the U.S. three-month treasury bill have been used as the reference rate for the U.S. dollar since the 1970s, the staff concurs with this assessment.

21. **The Governing Council of the European Central Bank recommends that the three-month Euro repo replace the three-month Euribor as the interest rate for the euro.**⁹ The three-month Euribor was adopted in the 2000 review as the most appropriate reference

⁹ The Euro repo was introduced in 2002 as a reference rate for secured (collateralized) money market transactions. It is the rate at which one prime bank offers funds in euro to another prime bank if in exchange the former receives from the latter “Euro repo general collateral” (GC) as collateral. The GC is widely accepted due to its homogeneous composition of government paper. The rate is based on quotes from a sample of banks that are active in the euro area repo market.

rate for the euro area and this rate was introduced into the calculation of the SDR interest rate, in light of the absence of suitable alternative euro-denominated financial instruments, including government-issued securities. Notwithstanding this decision, some Executive Directors expressed concerns about the risk characteristics of the Euribor (Box 5).¹⁰ The use of the three-month Eurepo rate as an alternative rate for the euro was reviewed in 2003. At that time, the paper concluded that the Eurepo lacked a long enough track record as a widely-used reference rate across the euro area. Thus, it was concluded that the inclusion of the three-month Eurepo rate in the SDR interest rate basket would not be appropriate.

Box 5. The Adoption of the Euribor

The three-month Euribor was established as the rate for the euro at the time of the 2000 review. The Euribor is the rate at which euro interbank term deposits are offered within the euro area, and is the reference rate in many markets. The three-month Euribor replaced the market yield on the three-month treasury bill for France and the three-month interbank deposit rate for Germany.

Staff considered alternatives to the use of the Euribor, since it is not a treasury-type financial instrument, but rather a reference rate for the banking sector. Possible alternatives explored were: (i) a weighted average of three-month treasury bill rates; (ii) a representative repo rate; (iii) a bid rate in the unsecured market; and (iv) the rate on the ECB three-month refinancing facility.

The Euribor was ultimately chosen at the time of the 2000 review, since the alternatives compared unfavorably when benchmarked against the guidelines for the inclusion of interest rate instruments in the SDR interest rate basket. The main problems encountered with alternative instruments were highly segmented and largely domestically oriented markets, therefore reducing the representativeness of such instruments for the wider euro area, the fact that six countries in the euro area did not issue treasury bills, and the limited response to changes in underlying credit conditions. However, there remained misgivings by some Directors concerning the risk characteristics of the Euribor.

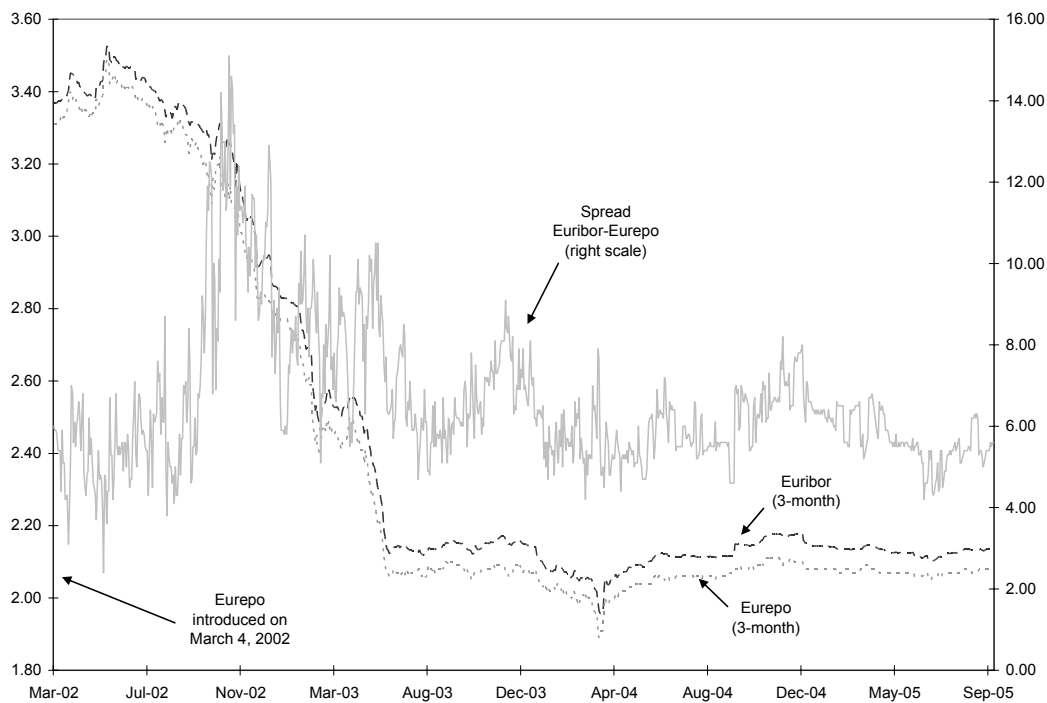
22. Recent developments in the euro money market, however, have consolidated the position of the three-month Eurepo rate as a suitable alternative to the three-month Euribor for the following main reasons:

- **Risk characteristics:** the Eurepo, as the Euribor, is a private sector reference interest rate. However, the Eurepo index has developed as a closer substitute for government paper-based interest rates than the Euribor, as reflected in its lower yield and lower credit risk profile (Figure 5). This feature results from the use of the so-called “general collateral” consisting of the government paper, upon which the repurchase agreement (repo) is based; and

¹⁰ From 1998 to 2000, although the euro was included in the SDR currency basket, no euro instrument was included in the interest rate basket. The representative interest rates for the euro area continued to be the three-month French treasury bill and the three-month interbank deposit rate in Germany. The decision to establish a euro-based reference rate can be found in *SDR Valuation—Amendment to Rule T-1* (Decision No. 12282-(00/98) G/S, adopted October, 11, 2000).

- **Representativeness:** the euro area repo or secured market segment (for which the Eurepo is the reference rate) shows an increased degree of integration since mid-2003, and has now reached a level of integration similar to that of the unsecured market (Euribor as reference rate). In addition, the turnover in the secured market has increased in the past years and is, since 2002, much larger than in the unsecured market.¹¹ Moreover, the euro area continues to lack a homogeneous market on government Treasury bills. As a result, no single national instrument or weighted average of national papers could be considered as representative for the euro area.

Figure 5. Euribor and Eurepo, 2002–05 1/
(In percent left scale, in basis points right scale)



Sources: Finance Department; and European Banking Federation (FBE).

1/ Daily data from March 4, 2002 through September 16, 2005.

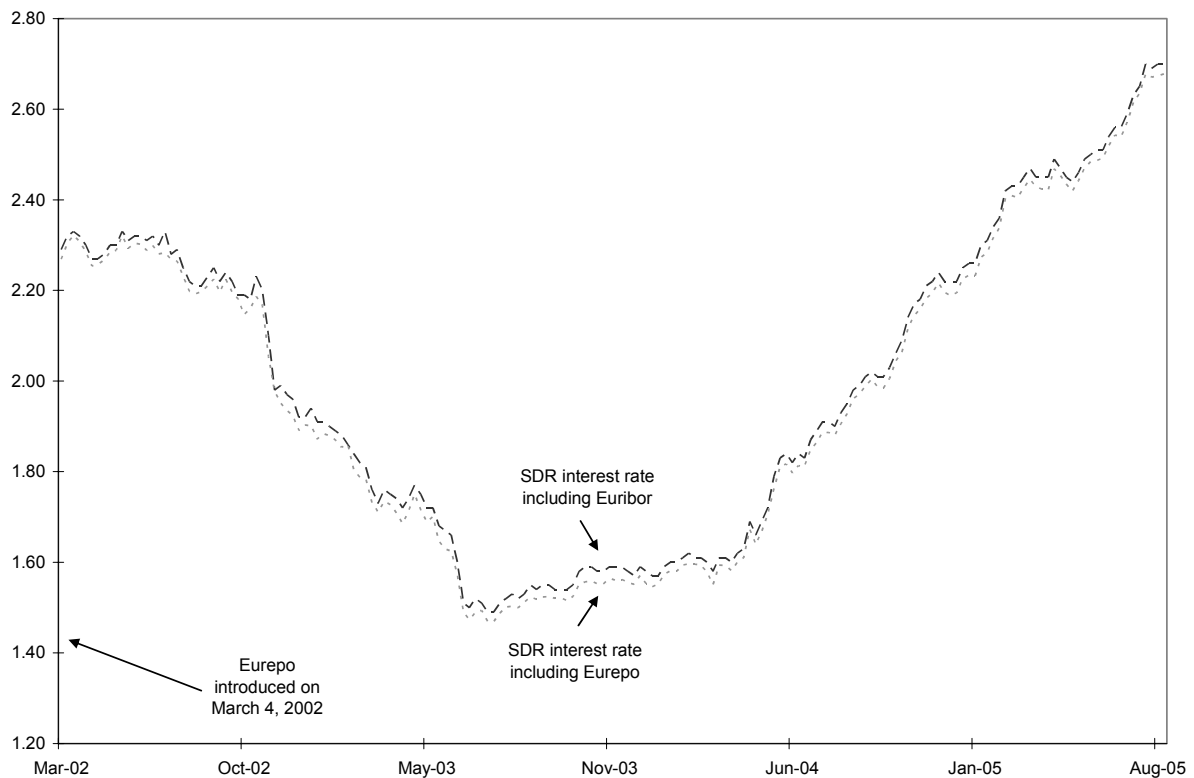
23. **In light of available evidence, the staff endorses the ECB assessment that the three-month Eurepo rate is a suitable replacement for the three-month Euribor in the SDR interest rate basket.** A track record longer than three years has now been established for the Eurepo and the secured market segment has developed rapidly with high turnover volumes and degree of integration. In addition, the representativeness of the Eurepo is

¹¹ In the second quarter of 2004, the average daily turnover in secured cash lending and borrowing was almost twice as large as that in the unsecured market segment (*Euro Money Market Study 2004*, ECB, May 2005).

attested to by its adoption as the benchmark rate in the euro area repo market. In terms of its appropriateness for the SDR interest rate basket, the Eurepo rate conforms more closely than the Euribor with the criteria applied by the Executive Board for the selection of instruments for inclusion in the SDR interest rate basket, particularly with respect to its risk characteristics. Finally, in light of the relatively small spread between the Euribor and the Eurepo, the adoption of the latter would imply a smooth transition in substitution between instruments in the SDR interest rate basket. Calculating the SDR interest using the three-month Eurepo rate instead of the three-month Euribor rate results in an SDR interest rate that is about 2 basis points lower, on average, during the period March 2002–August 2005 (Figure 6).

Figure 6. SDR Interest Rate including Euribor and Eurepo, 2002–05 1/

(In percent)



Sources: Finance Department; IMF International Financial Statistics; and European Banking Federation (FBE).

1/ Weekly data from March 4, 2002 through August 26, 2005.

24. **During the 2000 review, Directors agreed to replace the three-month interest rate on certificates of deposit (CDs) with the interest rate on thirteen-week government financing bill (FB), as the reference interest rate for the yen.**¹² This decision was taken based on structural changes that took place in the Japanese money market. As a result, while CDs lost their attractiveness to investors, the market for FBs grew and increased their importance as a representative financial instrument.

25. **The Japanese authorities are of the view that the interest rate on thirteen-week FB should continue to be used as the reference interest rate for the yen and the staff concurs with this assessment.** The market for the FB continues to be the most liquid and representative short-term money market segment. In this respect, two developments are worth noting. First, the outstanding stock of FB in short-term money markets has grown by 150 percent to ¥101 trillion at end-April 2005. Second, trading in FB in the Tokyo over-the-counter market (which includes both public and corporate bonds) has accounted for about one-quarter of total trading volume.¹³ In comparison, the secondary market for CDs continued to shrink with transactions in 2004 representing only 2 percent of those in 2000.

26. **The authorities of the United Kingdom assess the three-month U.K. treasury bill to continue to meet the criteria for the selection of financial instruments in the SDR interest rate basket.** The associated interest rate is responsive to changes in underlying credit conditions in the money market, the instrument risk characteristics remain compatible with the official standing of the SDR, and U.K. treasury bills continue as a major actual asset choice of reserve managers.

V. SELECTION AND WEIGHTING OF CURRENCIES IN THE SDR BASKET FOR 2006–10

A. SDR Currency Basket Composition

27. **The criteria for currency selection set out in the 2000 Decision point to the continued inclusion of the U.S. dollar, the euro, the yen and the pound sterling in the SDR basket.** Since 2000, there have been only relative changes among these currencies with the United Kingdom replacing Japan as the third largest exporter during this period although Fund members continue to hold a higher share of reserves in yen. In addition, these four currencies account for the majority of international banking and financial transactions. **Therefore, the staff proposes that the composition of the SDR exchange rate basket remain unchanged.**

¹² See *SDR Valuation—Amendment to Rule T-1* (Decision No. 12282-(00/98) G/S, adopted October 11, 2000).

¹³ As compared to about 15 percent in the case of T-bills.

B. Currency Weights and Rounding of Relative Weights

28. **Trends in trade and reserve holdings point to a decrease in the weight of the U.S. dollar, an increase in the weight of the euro, a lower weight for the yen and no change in the weight of the pound sterling** (Tables 4, 5, and 6). In terms of the relative importance of exports and reserve holdings, the data for the 2000–04 period suggest implicit weights of 70 percent for exports and 30 percent for reserve holdings, remaining unchanged from the 2000 review.¹⁴

29. With rounding to the nearest percentage point,¹⁵ the weights that have been calculated on the basis of the specified indicators for 2000–04, and the unrounded results shown in Table 4 would, from January 1, 2006 onward, result in a fall in the weight for the U.S. dollar from 45 percent to 43 percent and a fall in the weight for the yen from 15 percent to 11 percent. There would be a corresponding increase in the weight of the euro from 29 percent to 34 percent with the weight for the pound sterling remaining unchanged at 11 percent. These rounded weights sum to 99 percent, and in line with the approach followed in the context of the 1990 SDR review, it would seem appropriate to round up the weight for the U.S. dollar to the next percentage point, i.e., to 44 percent as indicated in Column 6, Table 4.¹⁶ While this approach to rounding would have the smallest impact in relative terms on the rounded calculations,¹⁷ as a legal matter it would constitute a change in the method of valuation of the SDR, and will require that the decision by the Executive Board be adopted by a 70 percent majority of the total voting power.

¹⁴ In the 2000 Review, official holdings of currency were measured at end-1999 and not as the average value of the relevant five-year period. This temporary change in methodology was driven by the lack of statistical information about the euro in the period preceding 1999.

¹⁵ Paragraph 4 (c) of the 2000 Decision states that the new weights for the currencies to be included in the basket shall be rounded to the nearest one percent or as may be convenient (Appendix I).

¹⁶ At the time of the 1990 Review, the same situation arose and the approach agreed by the Board in that context has been adopted for the current review. On that occasion, the unrounded weights with two decimal points were: U.S. dollar 39.11 percent, deutsche mark 21.39 percent, Japanese yen 17.23 percent, pound sterling 11.47 percent, and French franc 10.81 percent. After rounding to the nearest percentage point, the weights did not sum to 100 percent. In that case, it was proposed that the dollar be rounded up to 40 percent.

¹⁷ Rounding up the weight for the U.S. dollar implies an increase over the calculated weight by 2.52 percent, whereas rounding up the weights for the euro, the Japanese yen, and the pound sterling would increase the calculated weights by 2.53 percent, 4.51 percent, and 4.69 percent, respectively.

Table 4. Basis for Determining the Weights of Currencies in the SDR Valuation Basket

	Exports of Goods and Services 1/ (2000-04 average)	Official Holdings of Currency 2/ (2000-04 average)	Total of Cols. (1) and (2)	Weights as Percentage of Totals in Col. (3)	Rounded Percentage Weights 3/	Proposed Percentage Weights to be Decided by Board
	(1)	(2)	(3)	(4)	(5)	(6)
Currency	(In billions of SDRs)			(Percentages)		
U.S. dollar	1,009.2	934.9	1,944.1	42.92	43	44
Euro	1,234.3	312.0	1,546.3	34.14	34	34
Japanese yen	457.1	63.0	520.1	11.48	11	11
Pound sterling	480.2	39.0	519.2	11.46	11	11
Total	3,180.9	1,348.8	4,529.7	100.0	99	100
Relative weight, in percent	70.2	29.8	100.0			

Sources: Finance and Statistics Departments; and IMF International Financial Statistics.

1/ Including income credits.

2/ Official reserves held by monetary authorities outside the country or monetary union that issues the respective currency. Official data of the IMF Statistics Department.

3/ To nearest percentage point.

Table 5. SDR Weights

SDR Valuation Basket: Percentage Weights at Inception of Period						
	1981-85	1986-90	1991-95	1996-2000	2001-05	Proposed 2006-10
U.S. dollar	42	42	40	39	45	44
Euro	...	...	...	...	29	34
Deutsche mark	19	19	21	21	...	...
French franc	13	12	11	11	...	...
Japanese yen	13	15	17	18	15	11
Pound sterling	13	12	11	11	11	11

Source: Finance Department.

Table 6. Calculation of Illustrative Currency Amounts: Revised SDR Valuation Basket
(Based on Rounded Percentage Weights and on June 22 to September 22, 2005 Average Exchange Rates)

Current Basket				Illustrative Basket Based on 2000-2004 Data			Percentage Change, in Currency Amount
Currency	Initial percentage weight	Actual percentage share, as of September 22, 2005	Currency amount	Currency	Proposed percentage weights to be decided by Board	Currency amounts 1/	
U.S. dollar	45	39	0.5770	U.S. dollar	44	0.6470	12.1
Euro	29	36	0.4260	Euro	34	0.4070	-4.5
Japanese yen	15	13	21.0000	Japanese yen	11	17.7000	-15.7
Pound sterling	11	12	0.0984	Pound sterling	11	0.0889	-9.7

Source: Finance Department.

1/ For a given set of weights, the currency amounts shown are indicative amounts, which are likely to be different depending on (i) the average and end-period exchange rates of the base reference period (October-December, 2005) to be used for revising the SDR basket's currency components, and (ii) the rounding procedures to be applied to the currency amounts themselves. Appendix II reproduces the procedure and formulas used for rounding the currency amounts when the new basket is determined.

C. Currency Amounts

30. **At the time of the revision of the basket at the end of 2005, new currency amounts will be set consistent with the agreed percentage weights for component currencies, in line with current procedures** (Appendix II). Table 6 provides an **illustrative** calculation of the new currency amounts in the SDR basket that would come into effect on January 1, 2006, based on the rounded weights presented in Table 4 and using average daily exchange rates for the period June 22–September 22, 2005.

D. Transition to a New SDR Basket

31. The transition from the present to the new basket will ensure that the new currency amounts will yield the same transactions value for the SDR in terms of the U.S. dollar on the basis of the old and new currency amounts in the basket on the last business day before January 1, 2006.

32. From an operational perspective, it is desirable to provide users of the SDR, as well as members and institutions with outstanding loans to the Fund, advance notice of the new weights and the features of the new SDR valuation and interest rate baskets. Accordingly, the Executive Board has typically taken its decision a few months prior to the date when the revised SDR valuation and interest baskets become effective.

VI. INCLUSION OF SUPPLEMENTARY FINANCIAL VARIABLES IN SDR VALUATION

33. **No changes are proposed to the methodology for setting currency weights in the current review as noted. However, the staff revisited the topic of the inclusion of supplementary financial variables in the current methodology given the interest in this topic previously expressed by Executive Directors.** The starting point for the examination was the analysis presented in the 2000 review. In the 2000 Review, it was noted that the current methodology does not reflect the large increase in private international financial flows. In examining the inclusion of a financial indicator in 2000, staff combined external bank liabilities and external bonds and notes into a single financial indicator. Building on this work in the current review, staff constructed financial indicators based on the most prominent measures of the importance of the major currencies in international financial transactions: (i) external banking liabilities; (ii) external bonds, notes, and money market instruments; (iii) amounts outstanding in over-the-counter interest rate and foreign exchange derivatives markets; and (iv) foreign exchange market turnover.¹⁸

34. **These four financial variables were transformed into two financial sector indicators:**

- Indicator A: a simple average of each currency's shares of external bank liabilities, external bonds, notes, and money market instruments, and OTC derivatives (Table A1); and
- Indicator B: each currency's share of foreign exchange market turnover (Table A2).

These financial indicators were combined with the standard indicators of exports and reserves using two different weighting schemes (see Appendix III for details).

35. **Preliminary results suggest that given the magnitude of the supplementary financial variables, these indicators would dominate the determination of the currency weights in the SDR basket.** In addition, the importance of the U.S. dollar in financial transactions would tend to lead to larger weights for the US dollar in the SDR basket. In light of the large differences in scale between additional financial variables and exports and reserve holdings, the simple addition of the former could artificially produce wide swings in currency weights. Therefore, ensuring continuity in currency weights would require further work on a weighting scheme that would reflect the contributions of exports, reserves, and the financial variables based on agreed criteria. Further work examining the implications of different combinations of exports, reserves, and financial indicators could be useful if the

¹⁸ See *Bank for International Settlements Quarterly Review—International Banking and Financial Market Developments* (March 2005, various pages) and *Bank for International Settlements Triennial Central Bank Survey—Foreign Exchange and Derivatives Market Activity in 2004* (March 2005).

Board continues to see merit in incorporating a financial variable in SDR valuation as higher frequency data become available.

VII. TIMING OF THE NEXT REVIEW OF THE VALUATION OF THE SDR

36. **It is proposed that the next review of the SDR valuation basket take place in 2010, with any changes to become effective January 1, 2011.** Thus, there would be no change in the 2000 Decision with respect to the five-year frequency for reviewing the SDR valuation basket and adjusting weights as necessary. The regular frequency, with a significant period of stability between reviews, has provided certainty and predictability to the benefit of users of the SDR and SDR-denominated assets.

VIII. PROPOSED DECISIONS

The following draft decisions, which may be adopted by a seventy percent majority of the total voting power, are proposed for adoption by the Executive Board:

Decision 1

“The Executive Board, having reviewed the list and the weights of the currencies that determine the value of the special drawing right (SDR) in accordance with Decision No. 12281-(00/98) G/S, adopted October 11, 2000, decides that, with effect from January 1, 2006, the list of the currencies in the SDR valuation basket shall remain the same, and the weight of each of these currencies to be used to calculate the amount of each of these currencies in the basket will be as follows:

Currency	Weight (<i>in percent</i>)
U.S. dollar	44
Euro	34
Japanese yen	11
Pound sterling	11”

Decision 2

Effective January 1, 2006, Rule T-1. (c) shall be amended by replacing “Three-month Euro Interbank Offered Rate (Euribor)” with “Three-month Eurepo rate.”

Basic Decisions on SDR Valuation

I. SDR Valuation Basket—Revised Guidelines for Calculation of Currency Amounts

1. The value of the special drawing right shall be determined on the basis of the four currencies issued by Fund members, or by monetary unions that include Fund members (monetary unions), whose exports of goods and services during the five-year period ending 12 months before the effective date of this decision or any subsequent revision had the largest value, and which have been determined by the Fund to be freely usable currencies in accordance with Article XXX(f) of the Fund's Articles of Agreement. In the case of a monetary union, the determination of the values of exports of goods and services of the union shall exclude the trade of goods and services among members that are part of the union.

2. The percentage weights of each of the currencies selected in accordance with paragraph 1 above shall reflect (i) the value of the balances of that currency held at the end of 1999, and thereafter at the end of each year of the relevant five-year period referred to in paragraph 1 above, by the monetary authorities of other members or, in the case of the currency of a monetary union, by the monetary authorities of members other than those forming part of the monetary union, and (ii) the value of exports of goods and services, as defined in paragraph 1 above, of the members or monetary unions issuing the currencies over the relevant five-year period referred to in paragraph 1 above.

3. In accordance with the principles set forth in paragraphs 1 and 2 above, effective January 1, 2001, the value of one special drawing right shall be the sum of the values of specified amounts of the four currencies listed below. These amounts shall be determined on December 29, 2000 in a manner that will ensure that, at the average exchange rates for the three-month period ending on that date, the shares of each of the four currencies in the value of the special drawing right correspond to the weights specified below.

Currency	Weight <i>(in percent)</i>
U.S. dollar	45
Euro	29
Japanese yen	15
Pound sterling	11

4. The list of the currencies that determine the value of the special drawing right, and the amounts of these currencies, shall be revised with effect on January 1, 2006 and on the first day of each subsequent period of five years in accordance with the following principles, unless the Fund decides otherwise in connection with a revision:
 - a. The currencies determining the value of the special drawing right shall be determined in accordance with paragraph 1 above, provided that a currency shall not replace another currency included in the list at the time of the determination unless

- the value of the exports of goods and services of the member or of members of a monetary union, whose currency is not included in the list, during the relevant period exceeds that of the member or the monetary union issuing the currency included in the list by at least 1 percent.
- b. The amount of the four currencies referred to in (a) above shall be determined on the last working day preceding the effective date of the relevant revision in a manner that will ensure that, at the average exchange rates for the three-month period ending on that date, the shares of these currencies in the value of the special drawing right correspond to percentage weights for these currencies, which shall be established for each currency in accordance with (c) below.
- c. The percentage weights shall be established in accordance with the principles set forth in paragraph 2 above, in a manner that would maintain broadly the relative significance of the factors that underlie the percentage weights in paragraph 3 above. The percentage weights shall be rounded to the nearest 1 percent or as may be convenient.
5. The determination of the amounts of the currencies in accordance with 3 and 4 above shall be made in a manner that will ensure that the value of the special drawing right in terms of currencies on the last working day preceding the five year period for which the determination is made will be the same under the valuation in effect before and after revision. (SM/00/180, 7/24/00)

*Decision No. 12281-(00/98) G/S
October 11, 2000*

II. SDR Valuation Basket—Guidelines for the Calculation of Currency Amounts

1. Under all circumstances, the currency units will be determined in a manner which would ensure that the value of the SDR calculated on December 31 on the basis of the new basket will be the same as that actually prevailing on that day.
2. The currency amounts calculated for the new basket will be expressed in two significant digits provided that the deviation of the percentage share of each currency in the value of the SDR, resulting from the application of the average exchange rates for October–December, from the percentage weight as determined under paragraph 4(c) of Executive Board Decision No. 12281-(00/98) G/S, adopted October 11, 2000 is the minimum on average and will not exceed one half percentage point for any currency.
3. If a solution cannot be obtained by the application of the principles set forth in (2) above, the calculation shall be made applying the same principles but expressing the amount of each currency in three significant digits, and if no solution is found with three significant digits then the calculation shall be made applying the same principles but expressing the amount of each currency in four significant digits.

4. If more than one solution is found in the calculation at the level of two, three, or four significant digits, the solution that has the smallest average deviation will be employed.

*Decision No. 8160-(85/186) G/S,
adopted December 23, 1985, as amended by Decision No. 12283-(00/98) G/S, adopted
October 11, 2000.*

III. T—Interest, Charges, and Assessments in Respect of SDRs

T-1.

(a) Interest and charges in respect of SDRs shall accrue daily at the rate referred to in (b) below. The amount that has accrued during each quarter of the financial year of the Fund shall be paid promptly as of the beginning of the following quarter. The accounts of participants shall be credited with the excess of interest due over charges or debited with the excess of charges over the interest due. The accounts of holders that are not participants shall be credited with the interest due.

(b) The rate of interest on holdings of SDRs for each weekly period commencing each Monday shall be equal to the combined market interest rate as determined by the Fund at the beginning of the period in the manner described in (c) below.

(c) The combined market interest rate shall be the sum, rounded to the two nearest decimal places, of the products that result from multiplying each yield or rate listed below, expressed as an equivalent annual bond yield, for the preceding Friday by the value in terms of the SDR on that Friday of the amount of the corresponding currency specified in Rule O-1, as determined pursuant to Rule O-2(b). If a yield or rate is not available for a particular Friday, the calculation shall be made on the basis of the latest available yield or rate.

U.S. dollar:	Market yield for three-month U.S. Treasury bills
Euro:	Three-month Euro Interbank Offered Rate (Euribor)
Japanese yen:	Thirteen-week Japanese Government financing bills
Pound sterling:	Market yield for three-month U.K. Treasury bills

(d) Deleted.

Adopted September 18, 1969, amended June 13, 1974, June 30, 1976, April 1, 1978, June 15, 1978, effective July 1, 1978, September 17, 1980, effective January 1, 1981, and July 26, 1983, effective August 1, 1983; paragraph (b) amended October 25, 1978, effective January 1, 1979, and April 22, 1981, effective May 1, 1981; paragraph (c) amended April 22, 1981, effective May 1, 1981; October 5, 1990, effective January 1, 1991; September 21, 1998, effective January 1, 1999; and October 11, 2000, effective January 1, 2001; paragraph (d) deleted January 7, 1994

Formulas for the Calculation and Rounding of the Currency Components in the SDR Valuation Basket

The calculation of the amounts of each currency in a four-currency SDR valuation basket is presented algebraically below:

- Let W_i be the weight of currency i , expressed as a proportion;
- BEX_i be the base period average exchange rate for currency i , expressed as U.S. dollars per unit of currency i ;
- TEX_i be the exchange rate for currency i on the transition date, the last business day of the base period, expressed as U.S. dollars per unit of currency i ; and
- $\$/SDR$ be the value of the SDR in U.S. dollars on the transition date, calculated under the then Rule 0-1.

Step A: The components in the basket are determined as:

$$C_i = \left(\frac{W_i}{BEX_i} \right) \cdot \frac{\$/SDR}{\sum_{i=1}^4 \left(\frac{W_i}{BEX_i} \right) \cdot TEX_i}$$

where C_i is the units of currency i .

Step B: In rounding the results under Step A, the rounded currency amounts RCC_i will be determined in a manner that would ensure that the value of the SDR on the transition date on the basis of the new basket will be the same as that actually prevailing on that day. For each of the baskets that meet the test, the root mean square of the deviations of the rounded currency components (RCC_i) from their previously calculated values, i.e.,

$$\sqrt{\frac{\sum_{i=1}^4 \left(\frac{RCC_i - C_i}{C_i} \right)^2}{4}}$$

is calculated.

Step C: The currency amounts of the new basket will be expressed to two significant digits, provided that the percentage deviation over the agreed weight for each currency in the value of the SDR resulting from the application of the average exchange rates for the relevant three-month period ending on the transition date is the minimum on average and does not exceed one-half percentage point for any currency.

Step D: If no solution is found under Step C, the significant digits to which all currency amounts will be expressed may progressively exceed two digits (up to four digits) provided that the shares of component currencies over the three-month averaging period, when appropriately rounded, are the same as the agreed percentage weights.

At any level of number of significant digits used to express the currency amounts, the basket that meets the test of equality with the transition value of the SDR in U.S. dollars, expressed to six significant figures, and with the smallest root mean squared deviation is selected.

Inclusion of Other Supplementary Variables in the Methodology

37. **The SDR valuation method could be modified to combine a financial variable together with the standard exports and reserves indicators used in establishing currency weights.** In the 2000 Review, it was noted that the relative importance assigned to financial flows (as measured by official reserves) vis-à-vis trade flows (as measured by exports) in the method of SDR valuation did not reflect the large increase in private international financial flows. However, it was also acknowledged that the analytical basis for incorporating other financial variables in the criteria for determining currency weights in the SDR basket was not clear-cut. Moreover, the Board agreed that it would not be wise to incorporate supplementary financial variables into the valuation method until more comprehensive information on the international use of the euro was available.

38. **In examining the inclusion of a financial indicator in 2000, staff combined external bank liabilities and external bonds and notes into a single financial indicator.**¹⁹ The base period for the financial variable was end-1999 due to the paucity of data on euro-denominated transactions before 1999, consistent with the indicator of reserves for the euro area. Currency weights were then calculated by assigning shares to each of the standard variables—exports and reserves—and the financial indicator as follows:

	Exports	Reserves	Financial Variable
Scenario I	50%	25%	25%
Scenario II	33.3%	33.3%	33.3%

The results point to an increase in the weight of the U.S. dollar under both scenarios, when compared to the weights agreed in 2000. Specifically, the U.S. dollar weight increases by 5–11 percentage points after the introduction of the financial variable, while the weights of the euro, Japanese yen, and pound sterling decrease (by 2–5, 2–3, and 2–3 percentage points, respectively).

39. **In the current review, staff again considered external bank liabilities and external bonds, notes, and money market instruments (Table A1) as well as additional variables—OTC derivatives and foreign exchange market turnover—in calculating representative financial indicators:**

- Indicator A: a simple average of each currency’s shares of external bank liabilities, external bonds, notes, and money market instruments, and OTC derivatives (Table A1) ; and

¹⁹ Each SDR basket currency’s share at end-1999 in external bank liabilities and external bonds and notes was calculated and averaged.

- Indicator B: each currency’s share of foreign exchange market turnover (Table A2).²⁰

These two financial indicators were introduced as alternative measures together with exports and reserves in the weight for aggregation of the currencies in the SDR basket.²¹

40. Currency weights were then calculated by assigning shares to each of the standard variables—exports and reserves—and the financial indicators as follows:

	Exports	Reserves	Indicator A	Indicator B
Scenario I	50%	25%	25%	0%
Scenario II	33.3%	33.3%	33.3%	0%
Scenario III	50%	25%	0%	25%
Scenario IV	33.3%	33.3%	0%	33.3%

The unambiguous result (Table A4) across scenarios and independent of the choice of financial indicator is that the share of the U.S. dollar would increase compared to the weights proposed in this review for valuation of the SDR. However, the magnitude of the increase is smaller (by 2–6 percentage points) than reported in 2000 when the indicator used in the 2000 review is extended to include OTC derivatives (e.g., indicator A).

41. Differences in the scale of financial variables as compared to exports and reserves might require a specific method for computing their relative contribution for the determination of currency weights in the SDR basket. Besides the conceptual problem of aggregating relative contributions of variables that measure very different aspects of a currency’s significance in international transactions, the simple addition of any (or all) financial variable(s) to exports and reserves could artificially distort the currency weights in the SDR basket.

²⁰ Foreign exchange market turnover was previously examined by the staff. In the 2000 review, the staff did not reexamine this variable due to the lack of data for the euro area during that review period.

²¹ Foreign exchange market turnover data include spot transactions, outright forwards, and foreign exchange swaps. The data correspond to average daily turnover, measured by the triennial central bank surveys conducted by the Bank for International Settlements during the months of April 2001 and April 2004. While this variable is considered to be a good measure of currency usage in international financial transactions, the frequency and availability of the surveys make it difficult to compare this variable with exports and reserves. For instance, foreign exchange turnover data are available every three years whereas data on indicator A are available on a quarterly basis. For this reason, we consider the average of external bank liabilities, international bonds and notes, and over-the-counter derivatives data during the five-year review period (2000–04) as alternative financial indicators.

Table A1. External Bank Liabilities, International Debt Securities, and OTC Derivatives
Gross Market Values

	2000	2001	2002	2003	2004	2000-04 Average
External bank liabilities 1/						
	(In percent)					
U.S. dollar	52	53	49	46	44	49
Euro Area Currencies	25	26	30	34	35	30
Yen	7	5	5	4	4	5
Pound sterling	7	7	7	8	8	7
Other	9	8	9	8	8	8
Total 2/	100	100	100	100	100	100
Total in billions of SDRs 3/	7,366	8,299	8,909	9,793	11,031	9,079
External bonds, notes and money market instruments 4/						
	(In percent)					
U.S. dollar	49	50	46	40	36	44
Euro	30	32	38	44	47	38
Yen	8	6	5	4	4	5
Pound sterling	8	7	7	7	8	7
Other	5	4	4	5	5	5
Total 2/	100	100	100	100	100	100
Total in billions of SDRs	4,881	5,967	6,757	7,845	8,959	6,882
Amounts Outstanding in OTC Interest Rate and FX Derivatives Markets 5/						
	(In percent)					
U.S. dollar	38	44	45	42	32	40
Euro	29	27	33	37	48	35
Yen	16	15	9	8	7	11
Pound sterling	7	6	6	6	5	6
Other	10	8	7	8	8	8
Total 2/	100	100	100	100	100	100
Total in billions of SDRs	1,746	2,378	3,786	3,788	4,422	3,224
Indicator A 6/						
	(In percent)					
U.S. dollar	50	53	50	46	41	48
Euro	31	31	36	41	47	37
Yen	11	10	7	6	5	8
Pound sterling	8	7	7	7	7	7
Total 2/	100	100	100	100	100	100

Source: Bank for International Settlements.

1/ External bank liabilities denominated in domestic and foreign currency.

2/ Percentage shares may not add up to 100 due to rounding.

3/ Unallocated external banking liabilities not included in total.

4/ Includes international money market instruments and international bonds and notes.

5/ Gross market values, counting a single side of foreign exchange transactions.

6/ Simple average of the currency shares of external bank liabilities, external bonds, notes, and money market instruments, and amount outstanding in OTC interest rate and FX derivatives markets after excluding amounts denominated in other currencies.

Table A2. Currency Distribution of Foreign Exchange Market Turnover 1/

Currency	2001	2004	Average 2001-04	
	(In percent)		As % of All Currencies	As % of SDR Currencies
US dollar	45	44	45	55
Euro	19	19	19	23
Japanese yen	11	10	11	13
Pound sterling	7	8	8	9
Other currencies	18	18	18	n.a.
Total 2/	100	100	100	100
Total in billions of SDRs 3/	951	1295	1123	917

Source: Bank for International Settlements.

1/ Average daily turnover, adjusted for local and cross-border double-counting.

2/ Percentage shares may not add up to 100 due to rounding.

3/ Turnover at April 2004 exchange rates.

Table A3. Currency Breakdown of Valuation – Related Variables

(2000–04 Average) 1/

Currency	Exports of Goods and Services 2/		Official Holdings of Currency 3/		Foreign Exchange Mkt Turnover 4/		External Banking Liabilities		Amounts of International Debt Securities		Outstanding OTC Interest Rate and FX Derivatives	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Levels	<i>Shares</i>	Levels	<i>Shares</i>	Levels	<i>Shares</i>	Levels	<i>Shares</i>	Levels	<i>Shares</i>	Levels	<i>Shares</i>
U.S. dollar	1,009	<u>32</u>	935	<u>69</u>	502	<u>55</u>	4,401	<u>53</u>	2,972	<u>45</u>	1,285	<u>43</u>
Euro	1,234	<u>39</u>	312	<u>23</u>	210	<u>23</u>	2,791	<u>34</u>	2,717	<u>41</u>	1,184	<u>40</u>
Japanese yen	457	<u>14</u>	63	<u>5</u>	120	<u>13</u>	452	<u>5</u>	356	<u>5</u>	322	<u>11</u>
Pound sterling	480	<u>15</u>	39	<u>3</u>	86	<u>2</u>	671	<u>8</u>	516	<u>8</u>	184	<u>6</u>
Total 5/	3,181	<u>100</u>	1,349	<u>100</u>	917	<u>100</u>	8,314	<u>100</u>	6,561	<u>100</u>	2,975	<u>100</u>

Sources: Finance and Statistics Departments; IMF International Financial Statistics; and Bank for International Settlements.

1/ Levels are in SDR billions; shares are in percentages of the total.

2/ Including income credits.

3/ Official reserves held by monetary authorities outside the country or monetary union that issues the respective currency. Official data of the IMF Statistics Department.

4/ Daily averages in April 2001 and April 2004.

5/ Percentage shares may not add up to 100 due to rounding.

Table A4. Currency Weights Scenarios: Inclusion of Supplementary Financial Variables

2000 Review		2005 Review					
Weights based on Levels of Exports and Reserves	Actual Weights as of September 22, 2005, Following Exchange Rate Changes	Weighting of Currencies with Specific Weights Assigned to Exports, Reserves Holdings and Supplementary Financial Variables					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Weights based on Levels of Exports and Reserves	Weights based on Levels of Exports and Reserves	(1/2, 1/4, 1/4) Shares of Exports, Reserves, and FOREX Turnover	(1/3, 1/3, 1/3) Shares of Exports, Reserves, and FOREX Turnover	(1/2, 1/4, 1/4) Shares of Exports, Reserves, and Indicator A 1/	(1/3, 1/3, 1/3) Shares of Exports, Reserves, and Indicator A 1/
U.S. dollar	45	39	44	47	52	45	49
Euro	29	36	34	31	28	35	33
Japanese yen	15	13	11	12	11	10	9
Pound sterling	11	12	11	11	9	10	8
Total 2/	100	100	100	100	100	100	100

Source: Finance Department.

1/ Indicator A is a simple average of each currency's shares of external bank liabilities, external bonds, notes, and money market instruments, and over-the-counter derivatives.

2/ Percentage shares may not add up to 100 due to rounding.

The Weights of Exports and Reserves in SDR Currency Valuation

42. **In the current methodology, weights are implicitly assigned to each of the currencies in the basket, with the weights being determined by a combination of the values of exports and reserve holdings.** To arrive at the weights for each currency, the member's (or monetary area's) exports of goods and services during the five-year period ending twelve months before the effective date of the revision and the value of official holdings of reserves in that currency at the end of each year of the same five-year period are added, and weights as a percentage of the combined total are derived and assigned to currencies. As a result, the relative importance of exports and reserve holdings in the weights could change over time, depending on trends in trade flows and reserve holdings. Such flexibility is expected, given that currency weights should reflect their relative importance as measured by exports of goods and services and international reserve assets. Nevertheless, in practice, there has been for the past 25 years a relatively stable relationship between the shares of exports and reserve holding in the currency basket, with the former in the range of 70-80 percent (Figure A1 and Table A5).

43. **Staff reviewed the sensitivity of SDR valuation to different combinations of weights for exports and reserves.** Specifically, staff simulated potential weights for currencies in the SDR basket based on linear combinations of exports and reserves (Figure A2). The boundaries for the simulation are the two polar cases of assigning a weight of 100 percent to exports or assigning a weight of 100 percent to reserves. A basic result from the simulation is that for three of the four currencies (euro, yen, and pound sterling), increasing the weight of exports vis-à-vis reserves generates larger currency weights for these currencies. In comparison, for the U.S. dollar an increase in the weight for exports decreases the weight of the US dollar in the SDR basket. This result arises from the fact that the U.S. dollar is the only currency with a larger share in reserves than in exports (see Table A3).

Table A5. Relative Weights of Exports of Goods and Services and Official Holdings of Currency

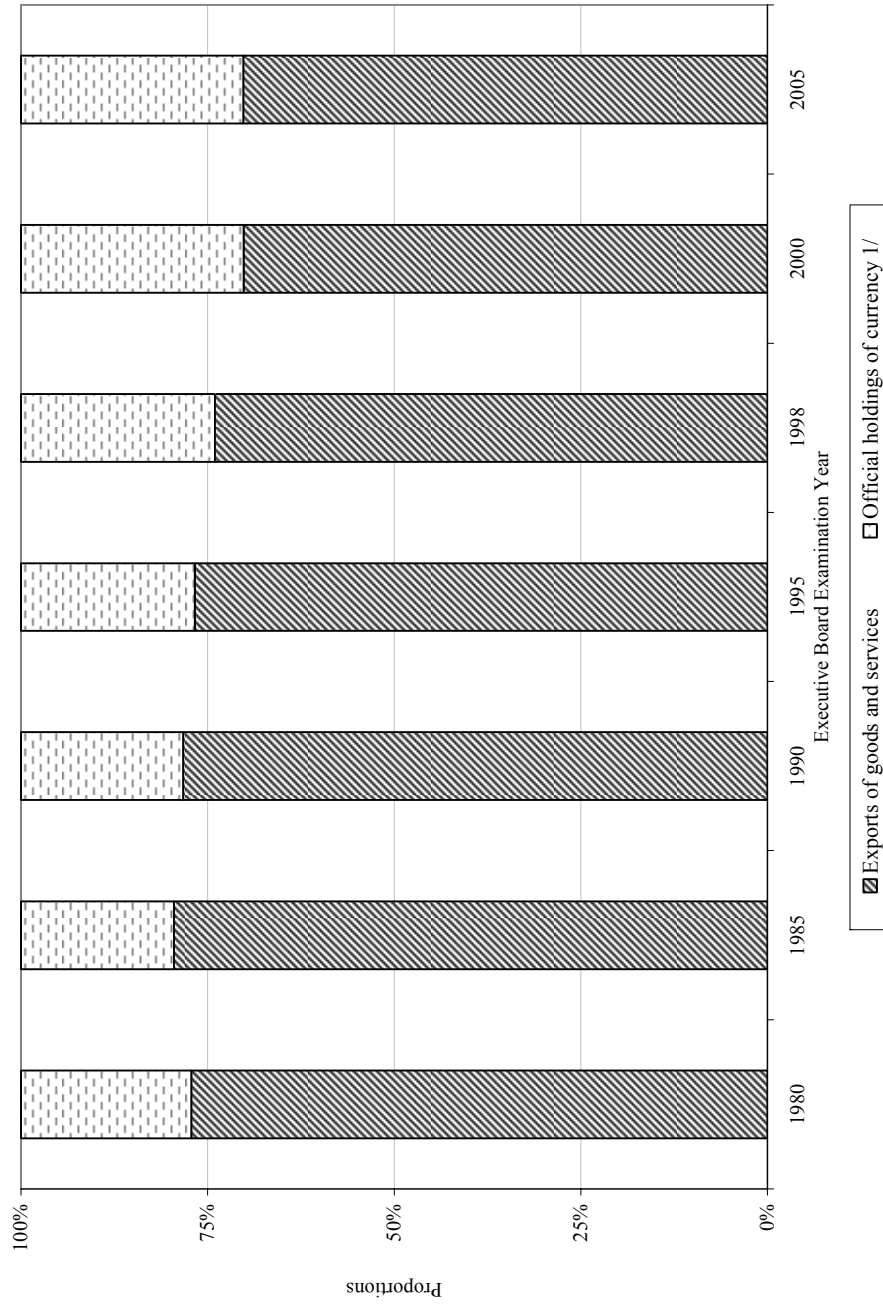
(In percentage)

Review	Base Period	Exports of goods and services	Official holdings of currency 1/	Total
1980	1975-79	77.2	22.8	100
1985	1980-84	79.5	20.5	100
1990	1985-89	78.3	21.7	100
1995	1990-94	76.7	23.3	100
1998	1993-97	74.0	26.0	100
2000	1995-99 1/	70.2	29.8	100
2005	2000-04	70.2	29.8	100
Historical Average		75.2	24.8	

Source: Finance Department.

1/ For the 2000 Review, the relative weights are based on end-1999 reserves data vis-à-vis 1995-99 average exports data.

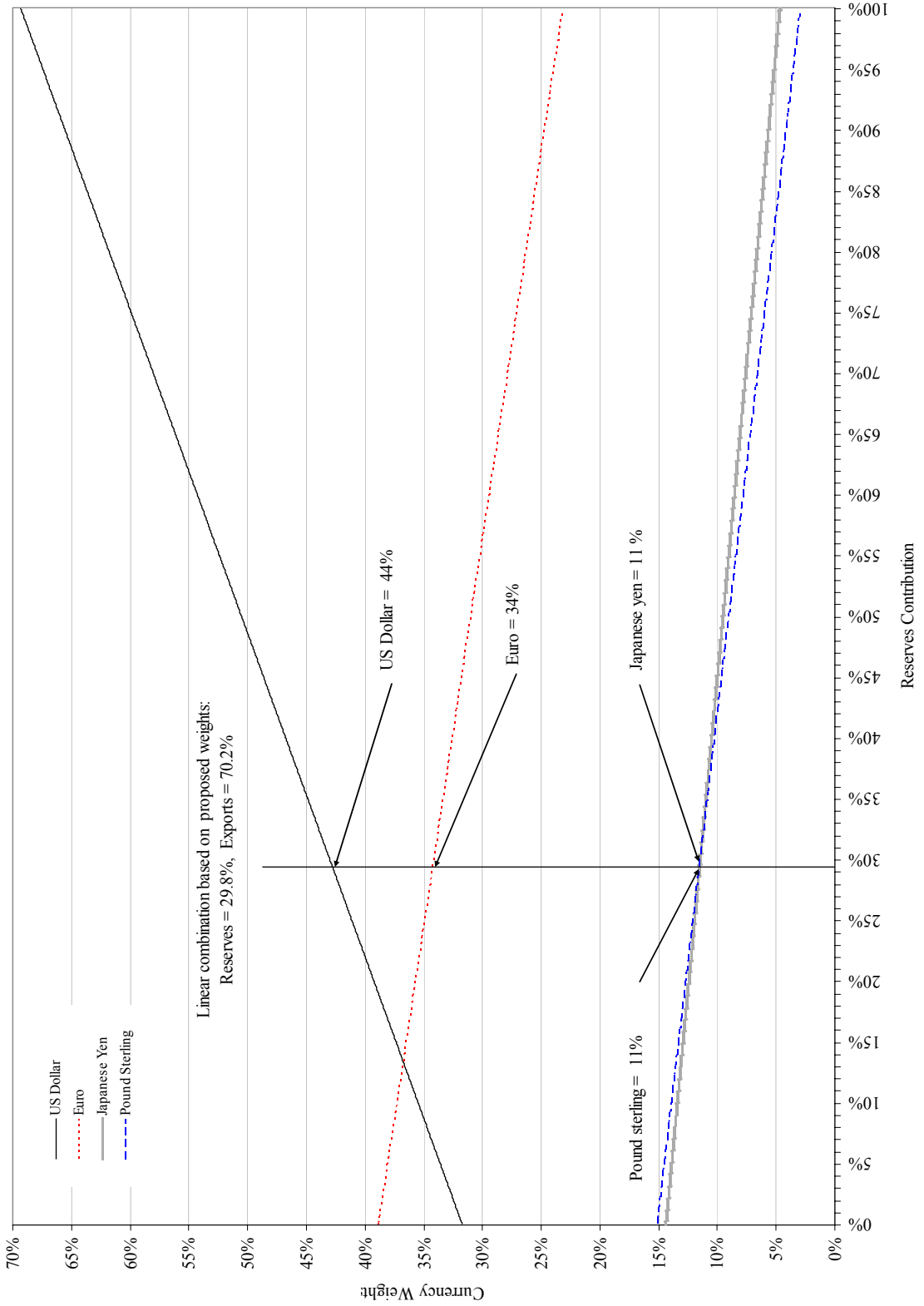
Figure A1. Relative Weights of Exports of Goods and Services and Official Holdings of Currency



Source: Finance Department.

1/ IMF IFS definition of foreign exchange reserves. Includes monetary authorities' claims on nonresidents in the form of foreign banknotes, bank deposits, treasury bills, short- and long-term government securities, ECUs (for periods before January 1999), and other claims usable in the event of balance of payment needs.

Figure A2. Simulation of Currency Weights Based on Linear Combinations of Exports and Reserves



Source: Finance Department

Selection of the Database and Other Issues²²

44. This appendix presents the required data and the derivation of the data series that were used for the calculation of the weights in the SDR valuation basket.

Required Data

45. The quantification of the currency weights in the SDR valuation basket requires the following data (converted into SDRs as the common denominator):

- **Current receipts** (goods, services, and income) for five years (2000–04). Current receipts are defined as the credit component of all economic transactions between resident and nonresident entities other than those relating to financial transactions and reserves. Following the SDR valuation methodology, current transfers are subtracted from total current receipts. The current receipts data series in U.S. dollars were converted to SDRs using period-average exchange rates.
- **Direction of trade between China, P.R., and Hong Kong SAR** for five years (2000–04). The direction of trade data series in U.S. dollars were converted to SDRs using period-average exchange rates.
- **Currency composition of official reserve holdings** for five years (2000–04). The IMF International Financial Statistics (IFS) defines foreign exchange reserves as monetary authorities' claims on nonresidents in the form of foreign banknotes, bank deposits, treasury bills, short- and long-term government securities, ECUs (for periods before January 1999), and other claims usable in the event of balance of payment needs. The reserve holdings data series in U.S. dollars were converted to SDRs using end-of-period exchange rates.

Current Receipts

Data Sources

46. The database containing the variables used in the SDR calculations would ideally be as follows: comprehensive; i.e., contain all required data—compiled in line with internationally accepted concepts and definitions—for all members; provided by official sources (central banks and national statistical agencies); and comparable (consistent and coherent) across time and countries. This would ensure similar treatment for all countries' data and facilitate the comparability of results in a transparent manner. It would also be helpful if the database could be updated without major additional use of staff resources.

²² Balance of payments data were compiled by STA in coordination with FIN. The STA team comprised Mmes. San José, He, and Laveda, and Messrs. Armknecht and Raiford.

47. The main source of data used for the compilation of current receipts was the Fund's central macroeconomic database of country, regional, and global statistics. This database is managed by the Statistics Department (STA) for international statistical cooperation and publication purposes, and to support the Fund's surveillance and use of Fund resources functions. This database, which encompasses a number of component databases and is collectively known as the Economic Data Facility (EDF), embodies the application of general methodological guidelines for the compilation of economic and financial data. These guidelines promote international comparability and methodological continuity in the database over time. The database is used to compile the Fund's publication—*International Financial Statistics*.

48. The *IFS* data are reported to STA by central banks and national statistical agencies, and are based on internationally consistent definitions, such as the fifth edition of the *Balance of Payments Manual (BPM5)* and the *1993 System of National Accounts (SNA)*. STA makes an effort to compile these data into long time series that are consistent across time and countries. However, gaps exist in some of the data.

49. Missing observations were largely supplemented using the *World Economic Outlook (WEO)* database. The *WEO* data are provided primarily by the Area Departments through their consultations with member countries.

50. Although *WEO* data should reflect a presentation of the balance of payments that is consistent with the *BPM5*, the definition of balance of payments variables does not necessarily need to exactly conform to *BPM5* until such time as (a) national compilers have revised the respective country's balance of payments accounts or (b) the staff report for the country reflects the new definitions.

51. STA is aware that for some member countries there exist large differences between the *IFS* and the *WEO* data sets. As noted above, some of these differences are related to the use of different classification systems, i.e., use of a national presentation in *WEO* while the standardized *BPM5* presentation was reported to STA. In other cases, the *WEO* may have contained updated information that had not yet been transmitted to STA. In the same vein, it is possible that some of the historical data may have been updated in only one of the two sets of data. There were instances where *WEO* data were used to fill gaps in an *IFS* data set where there were large differences in the periods where data were reported for both datasets.

Data Availability and Adjustments

52. The bulk of Fund members that report balance of payments statistics to STA (157 of the 178) do so on the basis of the *BPM5*. Data were prepared for current receipts (as defined above). Where members reported comprehensive balance of payments statistics to STA, the data stored in the *IFS* database were used without any adjustment. When data were not available for some members for the timeframe required for the calculations, estimates were made largely on the basis of the *WEO*. The estimation technique, or gap

filling, extrapolates from nearby non-zero data based on growth rates in comparable (but not necessarily identical) *WEO* series.

53. The following sections describe for each of the data categories the general procedures employed by STA to construct the required database for the SDR calculations.

Goods and services transactions

54. Data reported by members and maintained in *IFS* were used for each country. Where there were data gaps after the latest year of reporting to STA, estimates were made by applying the growth rates derived from the *WEO* for the missing year(s) to the latest reported annual data (debits and credits). When the data gaps were in respect of years prior to the latest reported data to STA, the *WEO* data were inserted for those years to complete the series.

55. For credit transactions, the *IFS* database is the source of data for 178 members, with *WEO* growth rates applied to 83 of these where there were data gaps. *WEO* data were substituted completely in the case of 13 members, and no *IFS* or *WEO* data were available for 6 members.

Income and current transfers

56. Data reported by members and maintained in *IFS* were used for each country. Where there were data gaps estimates were derived using *WEO* data series. As the *WEO* data for these series are available only on a net basis, the adjustment procedure involved adding the change in the balance on transactions from the *WEO* data to the STA data of the previous year—credits if *WEO* showed a net credit balance or debits if a net debit balance was shown. Where there were gaps in the data prior to the latest reported data to STA, the net credit figures from *WEO* were substituted directly to estimate income and current transfers credits.

57. For income and current transfers credit transactions, the *IFS* database is the source of data for 177 members, with the change from the *WEO* series applied to 77 of these. Net credit figures from *WEO* were substituted directly for 6 members, and no *IFS* or *WEO* data were available for 7 members.

Direction of trade between China, P.R., and Hong Kong SAR

58. Data from the Direction of Trade Statistics (DOTS) on trade flows from China, P.R. to Hong Kong SAR and Hong Kong SAR to China, P.R. were used to calculate total exports from China, P.R. and Hong Kong SAR to the rest of the world. The DOTS database presents figures on the value of merchandise exports and imports by trade partners. The data are reported to the Fund by official national agencies (statistical offices, customs offices, etc.). Data used in the calculations were reported by China, P.R. in U.S. dollars, and by

Hong Kong SAR in Hong Kong dollars. Data reported in national currency are converted to U.S. dollars at exchange rates published in the country pages of IFS.

Currency composition of official reserve holdings

59. Following STA's recent review of the COFER database, several significant changes have been made to the data compilation and presentation. The most important changes are a significant curtailment of estimation in producing the COFER data; redefinition of the category Claims in Other Currencies from a residual category to one that truly captures reserves held in currencies other than the major currencies identified in the tables; and other data improvements.

Data estimation and classification

60. The new set of COFER data was compiled following a new rule that the estimation of the currency composition of reserves be limited to data gaps of less than four quarters. As a result, the aggregate currency composition is now compiled almost exclusively on the basis of reserves data reported by the authorities to COFER. Reserves held by nonreporting developing countries for which the currency composition was previously estimated have been moved to a new category called *Unallocated Reserves*.²³

61. In the old COFER presentation, the *Other Currencies* category contained two components: (1) foreign exchange reserves held in currencies other than the major currencies identified in the tables; and (2) reserves held by those nonreporting countries for which the currency composition was not estimated. The new presentation now separates out these two components by classifying only the first component in a redefined *Other Currencies* category, and moving the second component, which is a residual, into *Unallocated Reserves*.

62. The new presentation also incorporates data improvements resulting in part from new and revised data reported by countries. The improvements entailed reclassifying part of the reserves that used to fall under *Other Currencies* into the major currencies identified in the tables.

²³ For presentational completeness, a line called "Allocated Reserves" has also been added. This line shows reserves whose currency composition is identified. The sum of allocated and unallocated reserves equals the total foreign exchange reserves reported in *International Financial Statistics (IFS)*. These methodological changes may have resulted in a lower weight of reserves in the SDR basket. On the other hand, changes mentioned in paragraph 62 may have had an offsetting effect.

Country coverage (in allocated reserves)

Industrial Countries

63. Virtually all the industrial countries, as defined in *IFS*, report to COFER. The allocated reserves data for industrial countries represent a fixed sample of countries whose reserves in 2004 represent 99.7 percent of the total reserves held by industrial countries.

*Developing countries*²⁴

64. The allocated reserves data for the developing countries, as defined in *IFS*, represent a moving sample of reporters in the sense that they include some countries that did not report on all the dates indicated. For the most part, though, the sample changes (due to countries either stopping their reporting or newly beginning to report) have involved countries with negligible reserves relative to the total for all developing countries. To identify major changes, the presentation will flag the dates whenever the sample changes involve countries the sum of whose reserves exceed 5 percent of the total allocated reserves for all developing countries. For the period 1995–2004, there was only one such year, 1996, where countries that stopped or began reporting had reserves exceeding 5 percent of total allocated reserves for developing countries.

Other characteristics of the sample of reporters for developing countries

65. The make-up of the sample of reporters is not random by construction because it depends on the willingness of individual country authorities to report COFER data. Over the 1995–2004 period, the number of developing country reporters range from 83 countries to 90 countries out of a total of 160 developing countries in *IFS*. The reserves held by these reporters accounted for between 53 percent to 64 percent of total developing country reserves over the same period.

66. On a regional basis, the rate of reporting compliance—measured in terms of the percentage of regional reserves accounted for by the reporters—is highest for countries in Europe and lowest for countries in Asia.

²⁴ To conform with the COFER presentation in the IMF *Annual Report*, the data for oil exporting and non-oil exporting developing countries have been added to show aggregate data for all developing countries.