

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS: U. S. DOLLAR VERSUS EURO

As Luke Anthony was riding the early morning Metro North train from Grand Central to Greenwich in early April 2009, the euro—soon to celebrate its 11th anniversary—dominated his thoughts. After bottoming out at about 0.85 USD/EUR in 2000 and 2001, the euro then appreciated sharply for a number of years, reaching a record of 1.59 USD/EUR in early 2008 (**Exhibit 1a**). Then, in late 2008, the dollar surged against the euro, appreciating by 20% in just a few months.

Anthony, a foreign-exchange (FX or forex) strategist at a hedge fund, had to form a view about the likely path of the USD/EUR rate going forward. Was the late 2008 dollar appreciation an aberration, perhaps caused by the global financial crisis, that would soon be reversed? Or was it the beginning of a new trend in global currency markets that would propel the dollar toward all-time highs against the euro?

Anthony knew that many factors influenced currency movements, and would use his entire toolkit in addressing this issue.¹ But he had become more and more convinced that to understand and predict currency movements required a good handle on patterns in international capital flows. The evidence was in no way clear cut. Some factors were pointing toward further euro appreciation, but others seemed to favor the dollar. To form an opinion on the likely path of USD/EUR, Anthony would have to sort through mounds of evidence. To filter the evidence required both relatively standard thinking about forex markets and an analysis of past and prospective international capital flows.

Background Information on the US and the Euro Area

The euro was launched at a rate of 1.16675 USD/EUR on January 1, 1999, when the currencies of 11 countries—Austria, Belgium, Finland, France, Germany, Ireland, Italy,

¹ For a short primer on models of exchange rate determination, see “Exchange Rate Models” (UVA-BP-0496).

Luxembourg, Netherlands, Portugal, Spain—ceased to exist.² At that time the 11 countries delegated monetary policy to the newly formed European Central Bank (ECB) in Frankfurt. After depreciating against the USD in the initial few years of its existence, the euro began a substantial appreciation phase—to be interrupted only briefly in 2005—that carried it to a record level against the dollar in April 2008. There were a number of factors that were thought to have weighed on the dollar. For example, since 2005 investors seem to have been driven by interest rate differentials (**Exhibit 1b**) and, perhaps, were less eager to finance the vast U.S. current account deficit than they once were (**Exhibit 2**).

ECB officials worried when the euro declined after its inception, and they worried as it appreciated. The dollar decline created tension between the euro area, America, and emerging markets such as China. Initially, European policymakers complained that the euro bore a disproportionate share of the dollar's decline, rising by roughly twice as much as the yen, sterling, or the Canadian dollar. The currencies of emerging Asian economies other than China moved only a little, while the Mexican peso had even fallen against the dollar. (Mexico was America's third biggest trading partner.) Overall, the dollar had fallen more modestly against a broad basket of currencies, but sharply against the euro (**Exhibit 3**).

Then the global financial crisis intensified in late 2008 and the dollar surged against almost every currency in the world. (Two notable exceptions were the yen and the yuan.) When the heightened risk aversion ended, would the euro again appreciate against the dollar?

Prospective Capital Flows

A striking figure in U.S. balance of payments data (**Exhibit 2**) is the extent to which U.S. investors liquidated investments in foreign securities and brought money home. After purchasing an average of \$300 billion annually for the past few years, in the second half of 2008 U.S. investors' net sales of foreign securities totaled \$160 billion (\$319 billion annualized).

Was this repatriation of U.S. investments abroad the beginning of a trend? If so, how far could it extend? Evidently, quite a long time. As **Exhibit 4** shows, as of end-2007 U.S. investors held over \$5 trillion in foreign equities, sharply higher than the \$2 trillion they held only a few years earlier. Would they resume adding to their foreign positions, or was this beginning of a massive repatriate wave?³

Changes in capital flows could greatly impact the dollar-euro rate in the short- to medium-term. Luke must consider the traditional BOP data (**Exhibit 2**), the potential repatriation

² For background information on the early years of the euro, see "FX Strategies in 2005: U.S. Dollar Versus Euro" (UVA-BP-0506). Note that the euro area has expanded from its original size of eleven countries, with Greece becoming the 12th member 2001 and Cyprus, Malta, and Slovenia joining more recently. The euro did not exist as a physical currency until 2002 but traded on financial markets starting in 1999.

³ U.S. holdings of foreign bonds were also extensive at \$2 trillion by end-2007, but almost all (76%) of those were denominated in dollars.

of U.S. investments abroad, and also likely action in foreign governments' accounts (see **Exhibit 5** for data on foreign official inflows into the US). Moreover, at times there has been a rather strong relationship between FDI flows and currency values (**Exhibit 6**).

The likely actions of foreign central banks weighed heavily on Luke. By the end of 2008 central banks held some \$2.7 trillion in reported dollar reserves compared to just \$1.1 trillion in reported euro reserves (**Exhibit 7**). The currency composition of another \$2.5 trillion in reserves was not identified, but a significant (but decreasing?) portion of those could be assumed to be in dollars.

Luke knew he had to be careful with the IMF's COFER (Currency Composition of Official Foreign Exchange Reserves) database.⁴ Yes, as in the IMF's IFS (International Financial Statistics) data, foreign exchange reserves in COFER consist of the monetary authorities' claims on nonresidents in the form of foreign banknotes, bank deposits, treasury bills, short- and long-term government securities, and other claims usable in the event of balance of payments needs.⁵ And, yes, the COFER was potentially informative. But the data had important limitations that included limited currency identification, limited country coverage, the voluntary nature of reporting, and the large portion of reserves for which the reporters chose not to identify the currency composition (the so-called "unallocated" reserves). Currencies identified in COFER included USD, euro, pound, yen, Swiss franc, and "other". There are 140 countries (32 developed and 108 emerging) that report the currency composition of their reserves, but some important ones (e.g., China) do not and, in general, the rate of reporting compliance—measured in terms of the percentage of regional reserves accounted for by the reporters—is highest for countries from Europe and the Western Hemisphere. Data for individual countries are considered to be strictly confidential, so only major grouping (total, developed, and emerging) are reported. Reserves numbers in COFER are "total" (identical to total reserves in the IFS data), "allocated" (those for which currency composition is provided to the IMF), and "unallocated" (difference between total and allocated). Unallocated reserves consist primarily of the total reserves of nonreporting countries (i.e., countries that do not report currency composition data to COFER), and any discrepancy between reporters' data on total reserves as reported to COFER and to IFS.⁶

Caveats notwithstanding, the COFER database suggested that since the inception of the euro, especially if one were to strip out valuation effects, the euro had hardly made a dent in

⁴ The COFER database is updated quarterly at <http://www.imf.org/external/np/sta/cofer/eng/index.htm>.

⁵ Foreign exchange reserves do not include holdings of a currency by the issuing country, such as the Fed's dollar assets.

⁶ According to the IMF: "Historically, a moving sample of countries report to COFER in the sense that the data include some countries that did not report on all the dates indicated. Overall, country coverage of the sample has increased over the years. Although the sample varied (as countries either stopped, started, or resumed reporting to COFER), the changes for the most part have involved countries with negligible reserves relative to the total for advanced economies or emerging and developing economies. To identify major changes, the COFER presentation will flag the dates whenever the sample changes involve countries whose combined reserves exceed 5 percent of the total allocated reserves of advanced economies or emerging and developing economies. There have been two such dates, 1996 and 1997, which are flagged in COFER tables."

global reserve allocations (**Exhibit 8**). Would this bias toward dollar reserves hold, or would countries begin to diversify out of dollars and into euros?

Global Shortage of Dollars?

Another perplexing issue was highlighted by a recent BIS piece:⁷

“The current financial crisis has highlighted just how little is known about the structure of banks’ international balance sheets and their interconnectedness. During the crisis, many banks reportedly faced severe US dollar funding shortages, prompting central banks around the world to adopt unprecedented policy measures to supply them with funds. How could a US dollar shortage develop so quickly after dollar liquidity had been viewed as plentiful? Which banking systems were most affected? And how have funding pressures affected lending to non-bank end users of funds?”

With information on both the *currency* and the type of *counterparty* for banks’ foreign assets and liabilities, we investigate how banks *funded* their foreign investments, and thus can better identify the vulnerabilities that threatened the financial system.

Global banking activity had grown remarkably between 2000 and mid- 2007. As banks’ balance sheets expanded, so did their appetite for foreign currency assets, notably US dollar-denominated claims on non-bank entities, reflecting in part the rapid pace of financial innovation during this period. European banks, in particular, experienced the most pronounced growth in foreign claims relative to underlying measures of economic activity.

We explore the consequences of this expansion for banks’ financing needs. In a first step, we break down banks’ assets and liabilities by currency to examine *cross-currency funding*, or the extent to which banks fund in one currency and invest in another (via FX swaps). After 2000, some banking systems took on increasingly large net on-balance sheet positions in foreign currencies, particularly in US dollars. While the associated currency exposures were presumably hedged off-balance sheet, the build-up of large net US dollar positions exposed these banks to *funding risk*, or the risk that their funding positions could not be rolled over.

To gauge the magnitude of this risk, we next analyse banks’ *US dollar funding gap*. Breaking down banks’ US dollar assets and liabilities further, by counterparty sector, allows us to separate positions vis-à-vis non-bank end users of funds from interbank and other sources of short-term funding. A lowerbound estimate of banks’ funding gap, measured as the net amount of US dollars channelled to non-banks, shows that the major European banks’ funding needs were substantial (\$1.1–1.3 trillion by mid-2007). Securing this funding became more difficult after the onset of the crisis, when credit

⁷ Patrick McGuire and Goetz von Peter, “The US Dollar Shortage in Global Banking” (BIS Quarterly Review, March 2009)

risk concerns led to severe disruptions in the interbank and FX swap markets and in money market funds.”

The Federal Reserve was very much aware of the liquidity problems and set up swap lines with many central banks (see **Exhibit 9** for FAQs on these central bank swap lines). The question was how this global shortage of dollars might play out in the coming months. Was it a short-lived phenomenon, or could it persist into the future? And how might it affect the dollar vs. the euro?

The Decision

Luke Anthony’s task was clear. He had to sift through the various reports his analysts sent him (**Exhibits 10 and 11**), the traditional data he always analyzed, and detailed data on capital flows and international positions in order to understand why the dollar was at its current level and what was already priced into the market. He also knew that the recent Fed and ECB press releases (**Exhibits 12 and 13**) were relevant and would be good to read, but he feared GFM fatigue was nigh. He then had to form a view on the many possible scenarios going forward in order to make an informed call—dollar up, down, or sideways—and identify possible risks that could blow his prognostication out of the water.

Exhibit 1a

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

U.S. Dollar/Euro Exchange Rate

EMU: FRB US\$ Exchange Rate

Avg, US\$/Euro

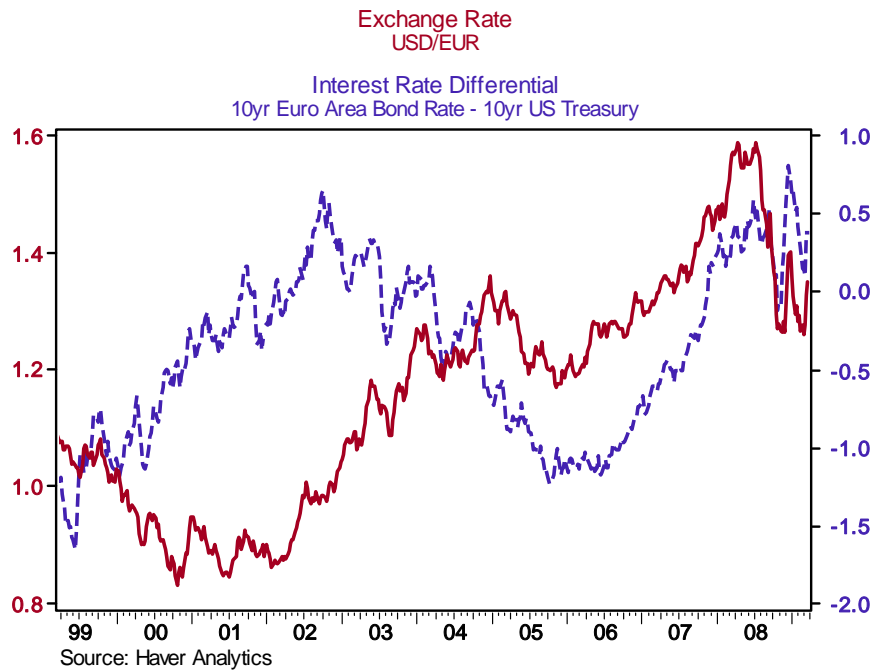
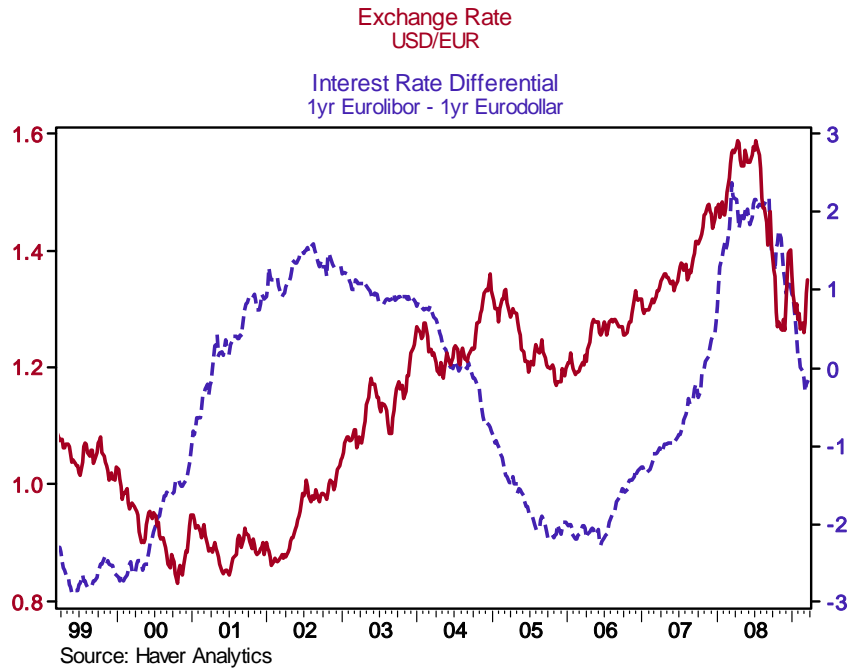


Source: Federal Reserve Board /Haver Analytics

Weekly data. Last data point: Week ending 3/27/09.

Exhibit 1b

U.S. Dollar/Euro Exchange Rate and 1-year Interest Rate Differentials



Weekly. Last data point: 3/27/09. Interest rate differentials are on right axes.

Exhibit 2
PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS
 U.S. Balance of Payments (in billions of U.S. dollars)

	1975- 1984	1985- 1994	1995- 2004	2005	2006	2007	2008 Year	2008 H1	2008 H2
Current Account Balance	-14	-98	-331	-729	-788	-731	-673	-718	-628
Trade balance	-30	-94	-301	-712	-753	-700	-681	-720	-643
Exports of Goods and Services	223	494	971	1,284	1,457	1,646	1,836	1,854	1,818
Imports of Goods and Services	-253	-588	-1,272	-1,995	-2,210	-2,346	-2,517	-2,573	-2,460
Income balance	27	21	27	72	57	82	128	123	132
Income receipts	64	136	291	535	685	818	755	793	718
Income payments	-37	-115	-264	-463	-628	-736	-628	-670	-586
Current transfers	-10	-25	-56	-90	-92	-113	-120	-122	-118
Capital Account Balance	0	-1	-2	-4	-4	-2	-3	-2	-3
Financial Account Balance	-3	97	319	701	809	768	547	637	456
Net DI Inflows	-2	0	-8	76	1	-96	7	14	1
Foreign direct investment in the U.S.	12	43	150	113	242	238	325	375	276
U.S. direct investment abroad	-14	-43	-158	-36	-241	-333	-318	-360	-275
Net Private Securities Flows	5	23	187	331	260	442	275	114	436
Private Flows into U.S. securities	11	61	309	583	625	731	184	251	117
U.S. flows into foreign securities	-6	-38	-123	-251	-365	-289	91	-137	319
Official Flows	4	32	114	279	496	389	-113	558	-784
Foreign official flows into the U.S.	11	33	114	259	488	411	421	638	205
U.S. government assets abroad	-7	-1	-1	20	8	-22	-534	-80	-989
Net Banking Flows	-12	32	12	5	51	44	342	-48	732
Statistical Discrepancy	17	2	14	32	-47	-41	144	105	183

Memo: Nominal GDP 2,700 5,588 9,460 12,422 13,178 13,808 14,265

Notes: All data, except memo items, **are in balance of payments terms**. All data are **annual averages**.

Sources: Bureau of Economic Analysis and Haver Analytics.

Exhibit 3
PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS
Nominal Trade-weighted Dollar

Nominal Broad Trade-Weighted Exchange Value of the US\$
Jan-97=100



Source: Federal Reserve Board /Haver Analytics

Monthly. Last data point: 3/09

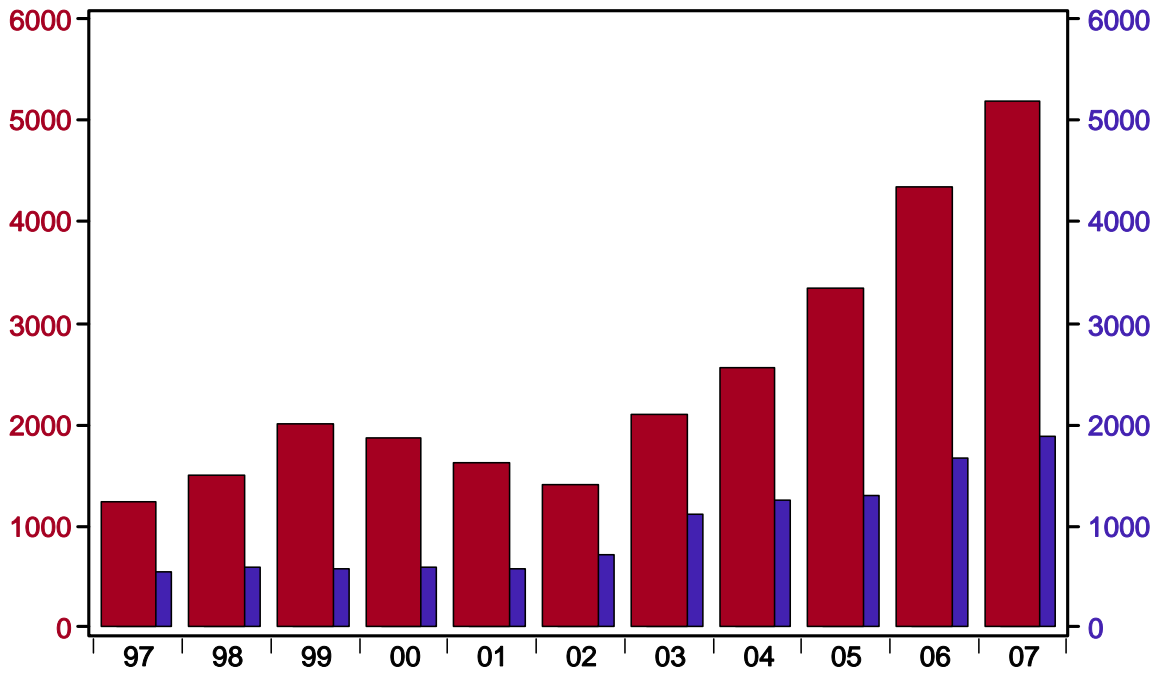
Exhibit 4

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

U.S. International Investment Position: U.S. Holdings of Foreign Securities

US Holdings of Foreign Equities

US Holdings of Foreign Bonds



Sources: International Monetary Fund /Haver Analytics

Billions of U.S. dollars. Note that as of end-2007 76% of the \$1,964 billion in U.S. investors' foreign bond holdings were USD-denominated and 10% were euro-denominated.

Exhibit 5

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

Foreign Official Flows into the United States (in billions of U.S. dollars)

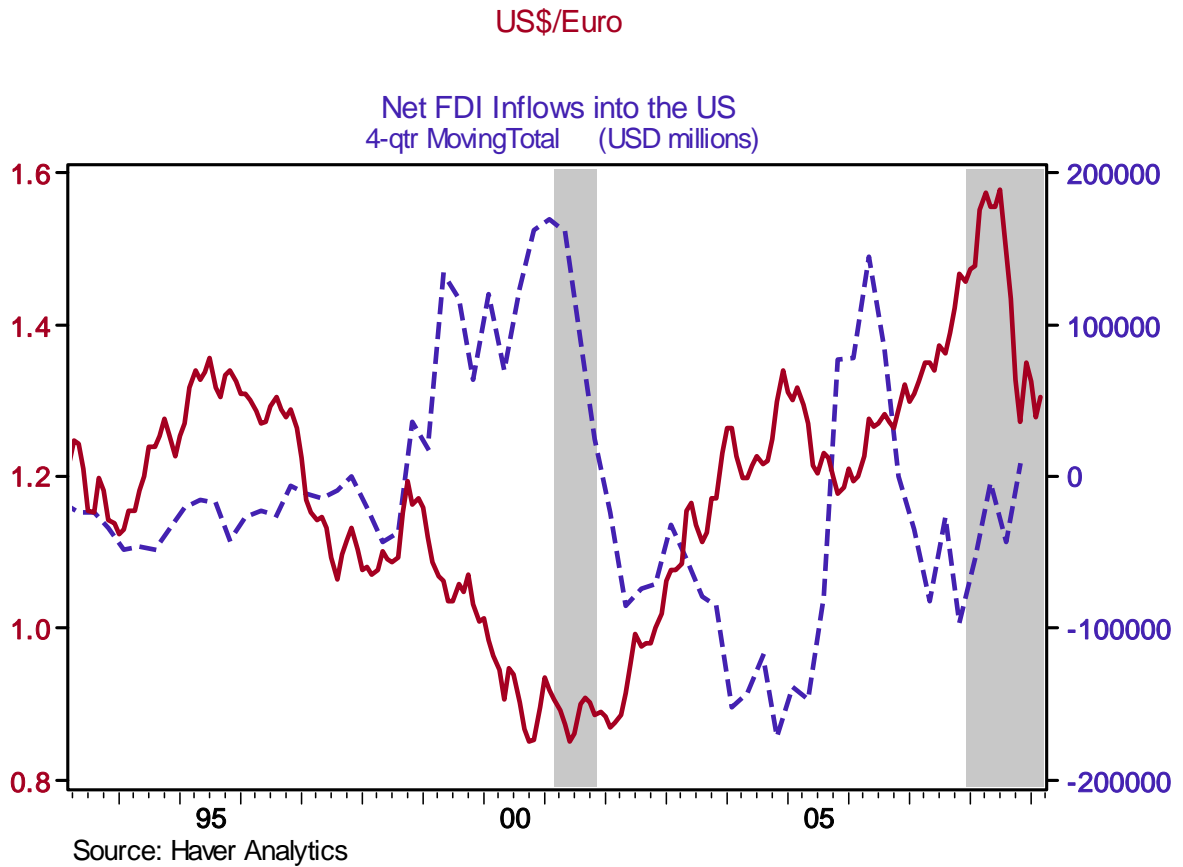
	2003	2004	2005	2006	2007	2008	2008H1	2008H2	Positions as of end-2008
Foreign official assets in the United States	278	398	259	488	411	421	638	205	3,776
Treasury securities	185	273	113	209	59	442	294	591	2,247
Agency securities	40	42	100	220	171	66	345	-213	908
Bank deposits	49	69	26	22	109	-154	-114	-193	253
By area:									
Europe	8	44	25	107	73	-36	131	-204	563
Canada	-2	2	0	-1	1	2	0	3	13
Latin America and Caribbean	16	25	6	45	80	8	64	-47	296
Asia	252	317	226	325	278	431	422	440	2,838
Africa	0	1	6	-2	7	10	11	9	38
Other	4	9	-3	15	-29	7	9	5	27

Notes: 2008H1 and 2008H2 are at **annual rates**. Source: Bureau of Economic Analysis.

Exhibit 6

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

Dollar-Euro Rate and Net FDI Flows into the United States



Source: Federal Reserve Board/International Monetary Fund/Haver Analytics

Exhibit 7

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

A. Currency Composition of Official Foreign Exchange Reserves (in billions of U.S. dollars)

	1995	2001	2006	2007	2008
Total foreign exchange holdings	1,390	2,050	5,037	6,398	6,713
Allocated reserves 1/	1,034	1,569	3,315	4,119	4,213
Claims in U.S. dollars	610	1,122	2,171	2,642	2,698
Claims in pounds sterling	22	42	145	193	172
Claims in Japanese yen	70	79	102	120	138
Claims in Swiss francs	3	4	6	6	6
Claims in euros*	279	301	832	1,082	1,117
Claims in other currencies	49	20	60	76	84
Unallocated reserves 2/	356	480	1,721	2,279	2,499
Memorandum Items					
Exchange Rates					
Pound sterling per USD	0.645	0.689	0.509	0.499	0.686
Japanese yen per USD	102.83	131.8	118.95	114	90.75
Swiss franc per USD	1.151	1.677	1.22	1.126	1.064
Euro per USD	...	1.135	0.759	0.679	0.719

Source: IMF Statistics Department COFER database (<http://www.imf.org/external/np/sta/cofer/eng/index.htm>).

* Pre-1998 is the sum of legacy currencies. 1/ This line shows reserves data, whose currency composition has been identified. 2/ This line captures the difference between the total reserves data reported to IFS (for the world table on Foreign Exchange) and to COFER.

B. Top Ten Holders of Foreign Exchange Reserves (in billions of U.S. dollars)

	2001	2005	2006	2007	2008H1	2008
China (Mainland) 2/	216	822	1068	1530	1759	
Japan	402	847	895	973	1002	1031
Eurosystem 1/	346	378	429	511	558	534
Russia	0	182	304	478	568	427
India	0	0	0	275	312	256
Korea	0	210	239	262	258	201
Brazil	36	54	86	180	201	194
Singapore	76	116	136	163	177	174
China,P.R.:Hong Kong	111	124	133	153	158	183
Malaysia	30	70	82	101	126	92

Source: IMF Statistics Department Reserves database (<http://www.imf.org/external/np/sta/ir/index.htm>).

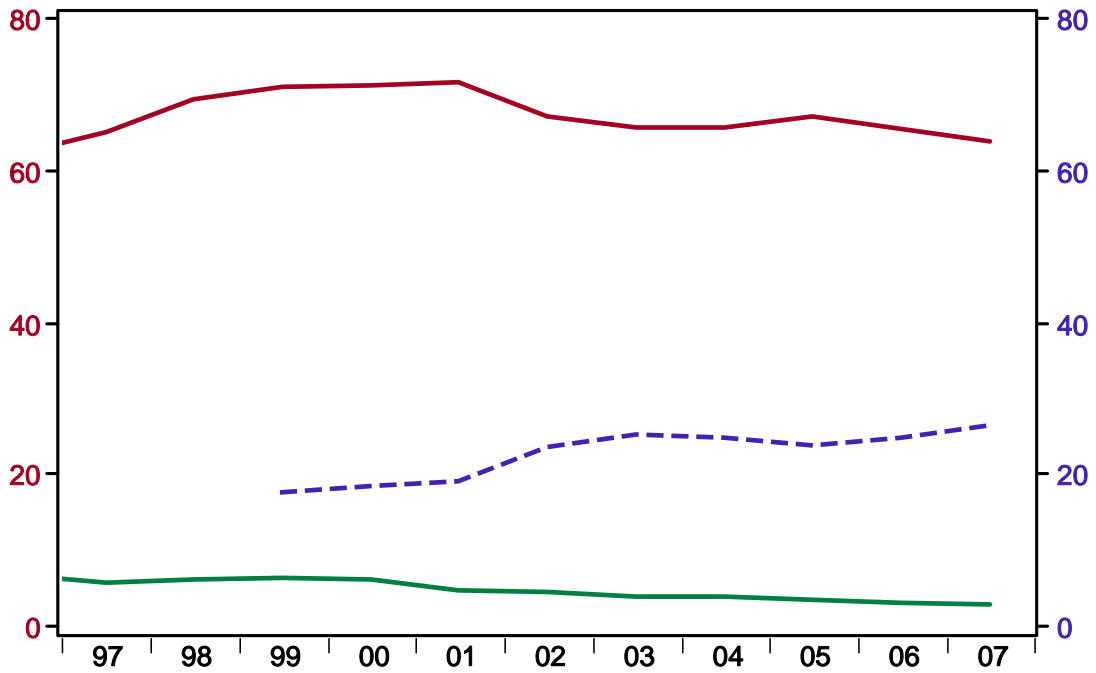
1/ Eurosystem includes the ECB and all Member States that had adopted the euro at the time to which the data refer.

2/ Not reported through the international reserves template, but available through IFS. Last data point: April 2008.

Exhibit 8
PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

Currency Composition of 'Allocate' Reserves

Currency Composition of 'Allocated' Reserves
USD, Euro, and Yen
(%)



Sources: International Monetary Fund /Haver Analytics

Annual. Last data point: 2007

Exhibit 9

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

The Federal Reserve's Central Bank Swap Lines

FAQs from http://www.federalreserve.gov/monetarypolicy/bst_swapfaqs.htm.

What is the purpose of the swap lines?

The swap lines are designed to improve liquidity conditions in U.S. and foreign financial markets by providing foreign central banks with the capacity to deliver U.S. dollar funding to institutions in their jurisdictions during times of market stress.

What circumstances led to the implementation of these facilities?

The swap arrangements were introduced to address stresses in U.S. dollar funding in overseas markets. These difficulties were adding materially to pressures in funding and credit markets in the United States and abroad.

Who authorizes the use of the swaps?

The arrangements are authorized by the Federal Open Market Committee (FOMC) of the Federal Reserve System and the policy boards or executives of the respective foreign central banks. The Federal Reserve has the right to approve or deny requests by foreign central banks to draw on their swap lines. The FOMC has authorized these arrangements through October 30, 2009. The foreign central banks may request draws on their swap lines up to that date.

Which central banks can currently engage in swaps?

The Federal Reserve has established swap arrangements with the Reserve Bank of Australia, the Banco Central do Brasil, the Bank of Canada, Danmarks Nationalbank, the Bank of England, the European Central Bank, the Bank of Japan, the Bank of Korea, the Banco de Mexico, the Reserve Bank of New Zealand, the Norges Bank, the Monetary Authority of Singapore, the Sveriges Riksbank, and the Swiss National Bank.

How are the swaps structured?

The Federal Reserve provides U.S. dollars to a foreign central bank. At the same time, the foreign central bank provides the equivalent amount of funds in its currency to the Federal Reserve, based on the market exchange rate at the time of the transaction. The parties agree to swap back these quantities of their two currencies at a specified date in the future, which may be the next day or as far ahead as three months, using the same exchange rate as in the first transaction. Because the terms of this second transaction are set in advance, fluctuations in exchange rates during the interim do not alter the eventual payments. As such, these swap operations carry no exchange rate or other market risks.

How do foreign central banks distribute the U.S. dollar funding they receive through these swaps?

The foreign central banks distribute the U.S. dollars they draw through a variety of methods, including variable-rate tenders, fixed-rate tenders, bilateral transactions, and foreign exchange swap tenders against various types of collateral, including both foreign currency and securities denominated in foreign currency. In each case, the arrangement is between the foreign central bank and the institutions obtaining the funding in these operations. The foreign central banks determine the acceptability of the collateral offered and the eligibility of the institutions to participate in the operations they conduct. The terms on which funds are tendered are

released to the public by the foreign central banks. The Federal Reserve's contractual relationship is with the foreign central bank and not with the institutions obtaining dollar funding in these operations.

What revenues and costs arise for the Federal Reserve?

When a foreign central bank draws on its swap line to fund its dollar tender operations, it pays interest to the Federal Reserve in an amount equal to the interest the foreign central bank earns on its tender operations. The Federal Reserve holds the foreign currency that it acquires in the swap transaction at the foreign central bank (rather than lending it or investing it in private markets) and does not pay interest. The structure of the arrangement serves to avoid domestic currency reserve management difficulties for foreign central banks that could arise if the Federal Reserve actively invested the foreign currency holdings in the marketplace.

What is the impact of swaps on U.S. monetary operations?

The drawing of U.S. dollars by a foreign central bank results in an increase in the level of reserve balances held at the Reserve Banks. Similarly, the repayment of U.S. dollars to the Federal Reserve when a swap is unwound results in a drain of these balances.

Where can I find information on Federal Reserve swap market activity?

The Federal Reserve Board issues a [weekly release](#) that includes information on the aggregate value of swap drawings outstanding. The Federal Reserve Bank of New York also publishes information on the swaps in its quarterly report on [Treasury and Federal Reserve Foreign Exchange Operations](#). In addition, the aggregate value of swap drawings outstanding can be found in section II,2,(a) of the U.S. Department of the Treasury's weekly release on the [U.S. International Reserve Position](#). This information is posted as well on the IMF's website on [U.S. International Reserves and Foreign Currency Liquidity](#). ■

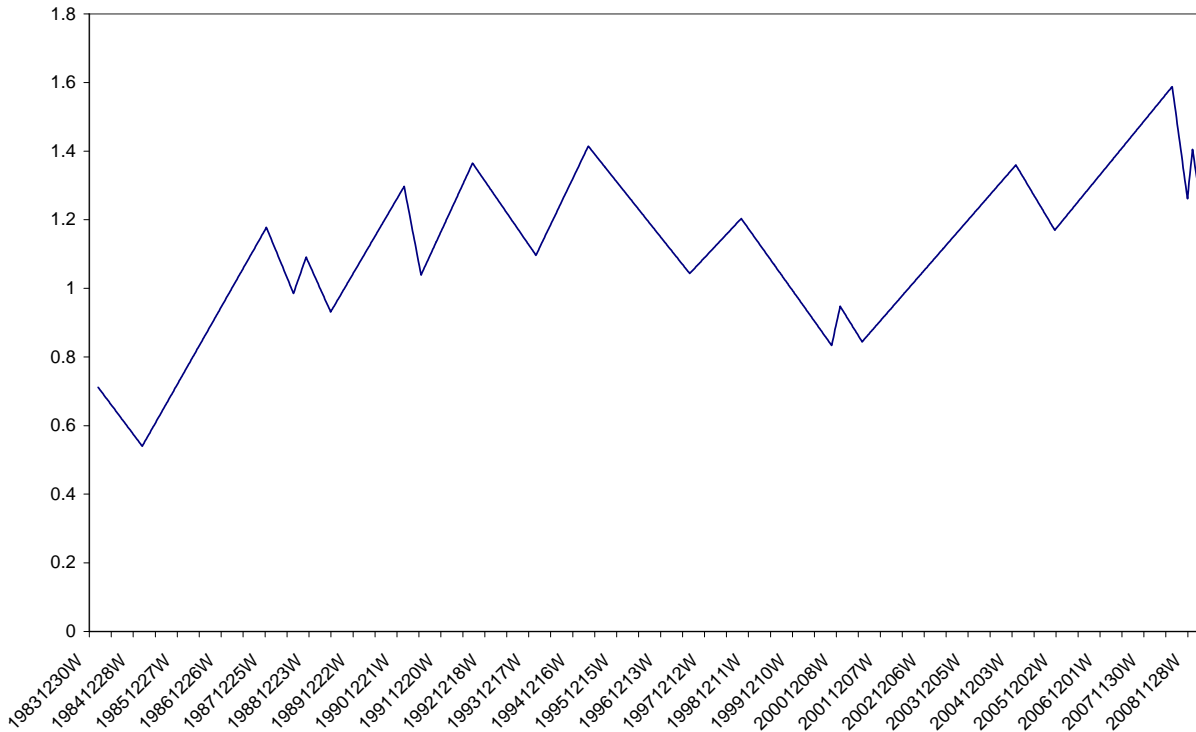
Exhibit 10

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

Key Tops in the Euro (v. the USD)

The “Swing” indicator is a simple measure that shows when a time series began a "swing" (peak to trough) of x%. In the below, weekly data are used and x is 10. Thus, a turning point in the below is defined as a week (average) that started a move of at least 10%.

Swing Lines (USD/euro)



Date	SwingPoint	PctMove	#weeks	Date	SwingPoint	PctMove	#weeks
19850308W	0.540	-24%	52	19981009W	1.203	15%	61
19880101W	1.178	118%	147	20001027W	0.834	-31%	107
19880812W	0.985	-16%	32	20010105W	0.948	14%	10
19881125W	1.091	11%	15	20010706W	0.844	-11%	26
19890616W	0.931	-15%	29	20041231W	1.360	61%	182
19910215W	1.297	39%	87	20051118W	1.170	-14%	46
19910705W	1.039	-20%	20	20080718W	1.588	36%	139
19920904W	1.365	31%	61	20081121W	1.261	-21%	18
19940211W	1.097	-20%	75	20090102W	1.405	11%	6
19950421W	1.414	29%	62	20090306W	1.260	-10%	9
19970808W	1.043	-26%	120				

7 major tops in the euro

- 1) 1/1/1988 – 8/12/1988 EUR fell 16%
 - G3 FX intervention to support the USD – about US\$6b are bought Oct 87 to Jan 88
- 2) 2/15/1991 – 7/5/1991 EUR fell 20%
 - USD supported by concerted intervention
 - Weak US payrolls prompted final USD fall
- 3) 9/4/1992 – 2/11/1994 EUR fell 20%
 - G3 intervention starts in July
- 4) 4/21/1995 – 8/8/1997 EUR fell 26%
 - USD fall prompts FED intervention in April.
 - Top in Fed rate cycle
- 5) 10/9/1998 – 10/27/2000 EUR fell 31%
 - EUR launch – politics of EMU and Maastricht doubted.
 - Post LTCM
 - Oil prices falling and forming a bottom
- 6) 12/31/2004 – 11/18/2005 EUR fell 14%
 - Heavy CB diversification at end of 2004 ends
 - Homeland Investment Act brings USD back home
- 7) 7/18/2008 – 11/21/2008 EUR fell 21%
 - Heightened risk aversion during financial crisis results in rush to US Treasuries

Exhibit 11

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

Short-end Inversions and the USD

One gauge of whether the Fed is ahead or behind the curve is the slope of the short-end of the yield curve. If one views liquidity or risk premia at the short end of the yield curve as minimal, then the expectation hypothesis holds at least approximately and the 2-year rate, for example, can be viewed as a predictor of the future Fed Funds rate. If the short end of the yield curve is inverted (for example, with the Fed Funds rate greater than the 2-year rate), the market is expecting further Fed cuts. The chart below depicts short-end inversion, defined as the Fed Funds rate minus the 2-year Treasury rate, and the Euro/US\$ rate. In many cases, after a prolonged period of short-end curve inversion ends (end-1990, end-1995, early 1999). Once during this sample the USD fell after the end of the inversion, but that could potentially be explained away by the coincidence of Sept. 11. Does the late 2008 ending of short-end curve inversion signal that the Fed is ahead of the curve and the dollar will appreciate?

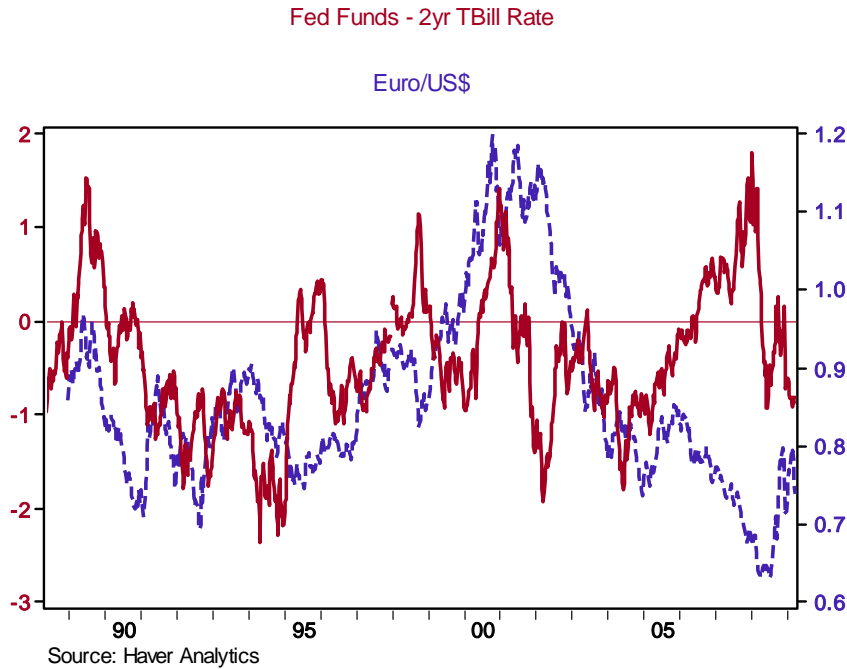


Exhibit 12

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

March 2009 FOMC Statement

Release Date: March 18, 2009

For immediate release

Information received since the Federal Open Market Committee met in January indicates that the economy continues to contract. Job losses, declining equity and housing wealth, and tight credit conditions have weighed on consumer sentiment and spending. Weaker sales prospects and difficulties in obtaining credit have led businesses to cut back on inventories and fixed investment. U.S. exports have slumped as a number of major trading partners have also fallen into recession. Although the near-term economic outlook is weak, the Committee anticipates that policy actions to stabilize financial markets and institutions, together with fiscal and monetary stimulus, will contribute to a gradual resumption of sustainable economic growth.

In light of increasing economic slack here and abroad, the Committee expects that inflation will remain subdued. Moreover, the Committee sees some risk that inflation could persist for a time below rates that best foster economic growth and price stability in the longer term.

In these circumstances, the Federal Reserve will employ all available tools to promote economic recovery and to preserve price stability. The Committee will maintain the target range for the federal funds rate at 0 to 1/4 percent and anticipates that economic conditions are likely to warrant exceptionally low levels of the federal funds rate for an extended period. To provide greater support to mortgage lending and housing markets, the Committee decided today to increase the size of the Federal Reserve's balance sheet further by purchasing up to an additional \$750 billion of agency mortgage-backed securities, bringing its total purchases of these securities to up to \$1.25 trillion this year, and to increase its purchases of agency debt this year by up to \$100 billion to a total of up to \$200 billion. Moreover, to help improve conditions in private credit markets, the Committee decided to purchase up to \$300 billion of longer-term Treasury securities over the next six months. The Federal Reserve has launched the Term Asset-Backed Securities Loan Facility to facilitate the extension of credit to households and small businesses and anticipates that the range of eligible collateral for this facility is likely to be expanded to include other financial assets. The Committee will continue to carefully monitor the size and composition of the Federal Reserve's balance sheet in light of evolving financial and economic developments.

Voting for the FOMC monetary policy action were: Ben S. Bernanke, Chairman; William C. Dudley, Vice Chairman; Elizabeth A. Duke; Charles L. Evans; Donald L. Kohn; Jeffrey M. Lacker; Dennis P. Lockhart; Daniel K. Tarullo; Kevin M. Warsh; and Janet L. Yellen.

Exhibit 13

PROSPECTIVE CAPITAL FLOWS AND CURRENCY MOVEMENTS

April 2009 ECB Statement

**Jean-Claude Trichet, President of the ECB, Lucas Papademos, Vice President of the ECB
Frankfurt am Main, 2 April 2009**

Ladies and gentlemen, the Vice-President and I are very pleased to welcome you to today's press conference. We will now report on the outcome of today's meeting of the Governing Council.

On the basis of its regular economic and monetary analyses, the Governing Council decided to reduce the **key ECB interest rates** by a further 25 basis points. This decision brings the total reduction in the interest rate on the main refinancing operations of the Eurosystem since 8 October 2008 to 300 basis points.

Today's decision takes into account the expectation that price pressures will remain subdued, reflecting the substantial past fall in commodity prices and the marked weakening of economic activity in the euro area and globally. The latest economic data and survey information confirm that the world economy, including the euro area, is undergoing a severe downturn. Both global and euro area demand are likely to remain very weak over 2009, before gradually recovering in the course of 2010. Available indicators of inflation expectations over the medium to longer term remain firmly anchored in line with the Governing Council's aim of keeping inflation rates at levels below, but close to, 2% over the medium term. A cross-check with the outcome of the monetary analysis confirms that inflationary pressure has been diminishing. After today's decision we expect price stability to be maintained over the medium term, thereby supporting the purchasing power of euro area households. The Governing Council will continue to ensure a firm anchoring of medium-term inflation expectations. Such anchoring is indispensable to supporting sustainable growth and employment and contributes to financial stability. Accordingly, we will continue to monitor very closely all developments over the period ahead.

Let me now explain our assessment in greater detail, starting with the **economic analysis**. Reflecting the impact of the financial market turmoil, economic activity has weakened markedly in the euro area, as domestic demand has contracted in parallel with the downturn in the world economy. Available data and survey indicators suggest that economic activity in the euro area has remained very weak in early 2009. It is likely to remain very subdued for the remainder of the year but is expected to gradually recover in 2010. The substantial fall in commodity prices since the summer of 2008 is supporting real disposable income and thus consumption. In addition, external as well as domestic demand should increasingly benefit from the effects of the significant macroeconomic stimulus under way as well as from measures taken to restore the functioning of the financial system both inside and outside the euro area.

Taking these effects into account, we see the risks to this outlook for economic activity as being broadly balanced. On the one hand, there may be stronger than anticipated positive effects due to the decrease in commodity prices and to policy measures taken. On the other hand, there are concerns that the turmoil in financial markets could have a stronger impact on the real economy, as well as that protectionist pressures could intensify and that there could be adverse developments in the world economy stemming from a disorderly correction of global imbalances.

Annual HICP inflation has fallen further, from 1.2% in February to 0.6% in March, according to Eurostat's flash estimate. As explained on earlier occasions, the decline in inflation since last summer primarily reflects the sharp fall in global commodity prices over this period. Moreover, signs of a more broad-based reduction in inflationary pressure are increasingly emerging. Looking ahead, base effects stemming from past energy price effects will play a significant role in the shorter-term dynamics of the HICP. Accordingly, we expect to see headline annual inflation rates declining further in the coming months and temporarily reaching negative levels around mid-year. Thereafter, annual inflation rates should increase again. Such short-term movements are, however, not relevant from a monetary policy perspective. Looking further ahead, over the policy-relevant horizon, annual HICP inflation is expected to remain below 2% in 2010, reflecting mainly ongoing sluggish demand in the euro area and elsewhere. Available indicators of inflation expectations over the medium to longer term remain firmly anchored in line with the Governing Council's aim of keeping inflation rates at levels below, but close to, 2% over the medium term.

The risks surrounding this outlook are broadly balanced. They relate in particular to the risks to the outlook for economic activity as well as to risks to commodity prices.

Turning to the **monetary analysis**, the latest data confirm the high month-to-month volatility of developments in M3 and its components observed since the intensification of the financial turmoil in September 2008. Looking through this volatility, the pace of monetary expansion in the euro area has continued to decelerate markedly and supports the assessment of diminishing risks to price stability in the medium term.

Developments within M3 clearly reflect market participants' specific investment responses to the intensification of the financial turmoil, but increasingly also the impact of the past reduction in the key ECB interest rates. As this reduction has narrowed the gaps between the interest rates paid on the different categories of short-term deposits, it has fostered shifts in the allocation of funds. For example, the demand for overnight deposits further strengthened in February and contributed to the rise in the annual growth rate of M1 to 6.3%, while the demand for short-term time deposits weakened considerably.

The flow of MFI loans to non-financial corporations and households has remained very subdued. The slightly negative flow of lending to non-financial corporations in February reflects a decline in the outstanding amount of loans with a shorter maturity, while the net flow in loans with longer maturities remained positive. The decline in short-term lending may be indicative of a reduction in loan demand related to the weakening of economic activity. However, supply effects have probably also affected loan developments. In this respect, developments over the past few months may in part reflect ongoing efforts of banks as well as the corporate and household sector to reduce the highly leveraged positions built up in past years.

To sum up, today's decision takes into account the expectation that price pressures will remain subdued, reflecting the substantial past fall in commodity prices and the marked weakening of economic activity in the euro area and globally. The latest economic data and survey information confirm that the world economy, including the euro area, is undergoing a severe downturn. Both global and euro area demand are likely to remain very weak over 2009, before gradually recovering in the course of 2010. Available indicators of inflation expectations over the medium to longer term remain firmly anchored in line with the Governing Council's aim of keeping inflation rates at levels below, but close to, 2% over the medium term. A **cross-check** with the outcome of the monetary analysis confirms that inflationary pressure has been diminishing. After today's decision we expect price stability to be maintained over the medium term, thereby supporting the purchasing power of euro area households. The Governing Council will continue to ensure a firm anchoring of medium-term inflation expectations. Such anchoring is indispensable to supporting sustainable growth and employment and contributes to financial stability. Accordingly, we will continue to monitor very closely all developments over the period ahead.

Regarding **fiscal policies**, it is necessary that countries' commitments to a path of consolidation in order to return to sound fiscal positions are credible, respecting fully the provisions of the Stability and Growth Pact. This is essential to maintain the public's trust in the sustainability of public finances, which is important both for the economy to recover and for supporting long-term growth. Countries subject to the excessive deficit procedure need to comply strictly with the ECOFIN Council recommendations for correcting their deficits. Many countries will need to specify further credible consolidation measures for 2010 and beyond. Full and consistent implementation of the EU's legal provisions for sound fiscal policies is a prerequisite for the maintenance of their credibility as one of the pillars of the institutional framework of Economic and Monetary Union.

Turning to **structural reforms**, the Governing Council welcomes the commitment of the spring European Council to make full use of the renewed Lisbon strategy for growth and jobs in the current situation. The updated recommendations for the euro area countries call for an accelerated implementation of reforms to support the economy, facilitate necessary adjustments and ensure a high level of growth potential. It remains essential that government support measures do not distort competition or delay necessary structural adjustment processes and that governments remain firmly committed to avoiding protectionism.

We are now at your disposal for questions.

While the ensuing Q&A are not yet posted on the ECB's site, here's one analyst's (Michael Woolfolk, BNY) take:

"The key comments once again came during the Q&A session that followed the prepared remarks. The first market-moving comment came in response to the first question, which addressed the size of today's rate cut. Trichet said that the decision to cut -25 bps was not unanimous, but was rather a "consensus" following "deep debate." He indicated that his view was that the market was pricing in only a 50% chance of a -50 bps rate cut, so the -25 bps step should not be much of a surprise if any. Moreover, Trichet said that the current 1.25% benchmark refi rate should not be considered the lower limit, and that any future rate cuts would be "measured." When asked if he would characterize today's rate cut as "measured," he said that it was. Trichet mentioned repeatedly that some members of the ECB Governing Council were concerned about changing the current interest rate corridor, with the marginal lending rate 100 bps above the refi rate at 2.25% and the deposit rate 100 bps below the refi rate at 0.25%. Trichet said the deposit rate at 0.25% was at its lower limit and could not be reduced further. The ECB was concerned that cutting the benchmark rate by more than -25 bps would force them to narrow the interest rate corridor given the deposit rate should go no lower than 0.25%. Trichet didn't clarify what these concerns were, only that the current interest rate corridor "has served well." However, he would not exclude narrowing the corridor in the future.

The second market-moving comment during the Q & A period came in response to a question concerning discussion of any new "non-standard" monetary measures. Trichet said that the ECB continues to discuss new non-standard measures and will make a decision and discuss its reasoning at next month's meeting. He refused to pre-commit to what may or may not be decided and whether or not new non-standard measures would accompany further rate cuts. Trichet added that the ECB was also examining new measures to enhance credit support and said that it was important to implement measures to help the European banking system. The ECB will continue to monitor money market rates, with Trichet specifically citing that European 6-month and 12-month money market rates are lower than in the US, and will do everything possible to revive the money market in Europe. Recall at last month's press conference that Trichet said "I don't exclude anything" with respect to new non-standard measures. However, he qualified this by saying that non-standard measures are more likely to be further credit easing than quantitative easing. Moreover, Trichet made a specific reference to the interest rate corridor at last month's meeting, adding that the deposit rate of 0.5% was "already at a very, very low rate." We conclude from this that the ECB has left the door open to further rate cuts this spring and that the ECB may adopt both zero interest rates and quantitative easing later this year."