

# **Euro versus dollar: who goes with which?**

by

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## *Abstract*

It is commonly believed that the dollar is a more attractive and more widely used anchor currency than the euro. This paper uses some simple statistics to identify the trends of exchange rates, and exploits the sharp divergences between the two major currencies over the period 1999-2004, in order to assess the extent to which countries anchor to one or the other. The key finding is that rather more countries anchor consistently to the euro than to the dollar; this is not because more countries than expected anchor to the euro, but because less countries than expected anchor consistently to the dollar.

*Keywords:* exchange rate, anchor currency, euro, dollar, de facto classification

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The purpose of this note is to identify the relative roles of the dollar and the euro as anchors for other currencies. It seems to be generally believed by macroeconomists that considerably more currencies anchor to the dollar than to the euro, and this is borne out by the data for the first few years of the euro in two recent reclassifications of exchange rate regimes by Reinhart and Rogoff (2004) and Levy-Yeyati and Sturzenegger (2005). The IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* for 2004 shows a smaller disparity, but in the same direction.

Given that the emphasis is on anchors rather than exchange rate regimes, we focus on the levels of countries' exchange rates against the dollar and the euro, and we consider four subperiods: (a) February 1994 to October 1998 ('1994-98'), which begins after the 1992-3 upheavals in the European Monetary System and after the January 1994 devaluation of the CFA franc; (b) November 1998 to June 2001 ('1999-2001'), which covers a strong depreciation of the euro/appreciation of the dollar; (c) July 2001 to December 2004 ('2001-4'), which covers a strong appreciation of the euro/depreciation of the dollar; and (d) January 2005 to December 2006 ('2005-6') when the euro / dollar rate fluctuated but ended near to where it had started.

Section 1 explains the methodology and the initial results for each subperiod. Section 2 considers groups of subperiods as a way of discriminating between countries that are really anchoring on one or other of the major currencies and those that are just depreciating at a time when one of them is also depreciating. Section 3 concludes.

## 1 Methodology

We use three measures to examine the trend of each currency against each of the two possible anchors: the percentage *change* in the exchange rate over a subperiod; the *band* within which the exchange rate moves (the maximum *minus* the minimum as a percentage of the mean); and the *interdecile ratio* (ninth decile minus first decile as percentage of the fifth decile). On the change measure we identify very close anchoring as a change which is  $< 0.5$ ; close anchoring as  $< 2.0$ ; and not so close anchoring as  $< 5.0$ . For the band measure we set these criteria 20% wider ( $< 0.6$ ,  $< 2.4$ ,  $< 6.0$ ); and for the interdecile ratio we set them 40% narrower ( $< 0.3$ ,  $< 1.2$ , and  $< 3.0$ ). We also calculate for countries which do not anchor to the dollar or the euro on any of these criteria an indicator of whether they are significantly more aligned with one than with the other: this requires that the measure (change, band or interdecile ratio) against the dollar (euro) is less than two-thirds that against the euro (dollar).

The results of applying these criteria are then coded on a scale from -4 to +4, where -4 (+4) indicates a very close anchor to the dollar (euro); -3 (+3) indicates a close anchor to the dollar (euro); -2 (+2) indicates a less close anchor to the dollar (euro); and -1 (+1) indicates that a country does not fit into any of the preceding categories but is relatively more aligned with the dollar (euro) than with the euro (dollar). A zero indicates that none of these criteria are fulfilled for the dollar or euro respectively.<sup>1</sup>

The data used are monthly (end-period) exchange rates against the dollar taken from *International Financial Statistics (IFS)*, which are also converted into rates against the

euro by applying the euro / dollar exchange rate.<sup>2</sup> The countries included are those listed in *IFS* with the exception of countries whose 2006 population was < 250,000;<sup>3</sup> countries for which data is poor or lacking, e.g. Iraq; and the anchors themselves, i.e. the US in all subperiods and the Eurozone countries from 1999 onwards.

Table 1 provides some illustrative results for Argentina and Estonia. First, it should be noted that there is strong agreement in each country/subperiod case between the band and interdecile measures/criteria, but some differences on the change measure, particularly for the first and fourth subperiods. Second, on the band and interdecile range measures there are no cases where a country has a non-zero code against both the dollar and the euro, and this is true of the whole dataset, but on the change measure there are cases in the first and/or last subperiods both here and in the wider dataset where countries appear to anchor more or less closely to both major currencies (since the latter do not change much against each other between the start- and end-points). With respect to the particular countries here, Argentina anchors closely to the dollar in the first and second subperiods where on all three measures it reports -4 on the dollar and 0 on the euro (its currency board on the dollar operated from 1991 to 2001), but not in the other subperiods. Estonia has a weak relationship to the euro in the first subperiod but a stronger one in the others.

Table 2 provides summary statistics for the number of countries in the dataset which come into each category on each measure in each of the subperiods. It should be noted, first, that the percentage change measure tends to identify more close relationships in the first and fourth subperiods than the other measures, while the band and interdecile ratio

measures are stricter, particularly in the third and fourth subperiods where the CFA franc zone countries are identified as anchoring closely rather than very closely to the euro.

With respect to the contrast between the dollar and the euro, over the first subperiod there is not much difference on the change measure but on the band and interdecile range measures there are more countries anchoring closely or very closely to the dollar than to the euro. Over the later subperiods there is a trend towards more euro anchors in the second subperiod and then towards more dollar anchors in the third subperiod. First, more countries appear to be anchoring to the euro in the second subperiod than before or after: for example, on the change/interdecile ratio measures, the number of countries anchoring very closely or closely to the euro goes from 29/0 in the first subperiod to 37/22 in the second and 24/21 in the third. Second, there is an even larger difference in the number of countries which are relatively more aligned with the euro than with the dollar, which goes from 2/50 in the first subperiod to 47/45 in the second and only 14/21 in the third; while the number more aligned with the dollar than with the euro goes from 15/27 in the second subperiod to 65/61 in the third and 6/33 in the fourth. These trends are almost certainly the reflection of the fact that the euro was depreciating against the dollar in the second subperiod and the dollar against the euro in the third, and a range of mainly developing countries (e.g. Burundi, Colombia, Eritrea, Sri Lanka) were depreciating against the stronger and with the weaker of these two in each subperiod.

## 2 Groups of subperiods

In order to avoid drawing spurious conclusions about which countries, and how many, anchor seriously to one currency or the other it is useful to consider more than one subperiod from 1999, when the euro was created, onwards. First, an average is taken of the code each country receives on each of the three measures in each subperiod, on each of the dollar and the euro. These averages are then added to create a single-dimension index (which goes from -4 for a very close anchor to the dollar through 0 for no strong relation to either currency to 4 for a very close anchor to the euro). For the second and third subperiods this is unproblematic, because there are no cases in which there is a non-zero code for a country against both dollar and euro on any of the measures. But in the fourth subperiod there are many countries which on the change measure are more or less closely related to both. For that subperiod, therefore, the average covers only the band and interdecile range measures, since with them this problem does not occur. Next, groups of subperiods are considered, with the following criteria used to distinguish between anchors: if the absolute average is  $\geq 3.0$  in each period included, then the currency is ‘very strongly’ anchored on the euro or dollar (depending on the sign); if the average is  $\geq 2.0$  in each period, the currency is ‘strongly’ anchored, and if the average is  $\geq 1.0$  in each period, it is ‘weakly’ anchored.

Table 3 presents data on this basis.<sup>4</sup> The first two columns cover the two middle periods when the euro and dollar were moving sharply against each other: a currency which moved with the euro (dollar) over both these periods might be considered as truly anchored to that currency. Here there are rather more countries anchored to the euro than

to the dollar. The next two columns present comparable data for the three subperiods from 1999, that is the two middle periods plus 2005-6 when the euro / dollar rate was more or less stable. The number of countries in each category is little changed: those anchored very closely or closely to the euro are unchanged, but the dollar loses two, while the dollar loses three weakly anchored but the euro loses eight. On the other hand the next two columns which cover only the last two periods (dollar depreciation and rough stability) show more countries anchoring to the dollar, particularly in the 'weak' category. Finally, for contrast, the last two columns cover 1999-2001 (euro depreciation) and 2005-6 (rough stability); they show a pattern much closer to the 1999-2004 or 1999-2006 cases. The general implications seem to be that on the whole slightly more countries anchor to the euro than to the dollar; and that countries anchoring to the euro are more consistent in their behaviour than those anchoring to the dollar (particularly those in the 'weak' category).

Table 4 lists the countries which anchor more or less strongly to the two currencies for the 1999-2004 subperiods. It is notable that most of those which anchor to the euro are CFA countries, European Union member countries (many of them new accession countries), or European countries which are close to the EU (Bosnia & Herzegovina, Macedonia FYR, Montenegro, Iceland, Norway, Switzerland). The exceptions (all in the 'weak' category) are some African countries (members of the southern African Common Monetary Area) and New Zealand. The countries which anchor to the dollar, on the other hand, are in most cases either small countries in the western hemisphere (eg Belize, El Salvador) or Middle Eastern countries (Israel, Jordan, Lebanon and the main Arab oil

producers); the major exceptions are China (in the ‘very strong’ category), and (in the ‘weak’ category) India, Mexico and Vietnam.

### **3 Conclusions**

It is commonly believed that the dollar is a more attractive and more widely used anchor currency than the euro. This paper has used some simple statistics, which stress the nature of the trend rather than the underlying volatility and exploit the sharp divergences between the two major currencies over the period 1999-2004, in order to assess the extent to which countries anchor to one or the other. The key finding is that rather more countries appear to anchor consistently to the euro than to the dollar; this is not because more countries than had previously been imagined turn out to anchor to the euro, but because less countries than expected turn out to anchor consistently to the dollar. There is also less variation over time in the countries anchoring to the euro than in those anchoring to the dollar. In particular, two of the major countries in the latter category over 1999-2004 – China and Malaysia – are classified here as anchoring only weakly to the dollar in 2005-6, after in both cases anchoring to it very strongly over 1999-2004. On the other hand, the UK is classified here as anchoring weakly to the euro in 2001-4 and in 2005-6.

## Notes

<sup>1</sup> The algorithm which creates the codes goes from the narrowest criteria to the broadest in each case, so it picks out, for example, -3 for a country which anchors closely to the dollar even if that country relates much more strongly to the dollar than to the euro.

<sup>2</sup> For the pre-1999 subperiod a synthetic euro / dollar exchange rate calculated by the OECD is used.

<sup>3</sup> This excludes the islands of the East Caribbean Currency Union (a currency union with the US), on the one hand, and the European 'microstates', French territorial communities and French overseas territories, on the other hand.

<sup>4</sup> The Appendix shows the summary results for each country in the three individual subperiods from 1999.

## References

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**Table 1: Illustrative examples of codes for individual countries**

	Argentina		Estonia	
	\$	€	\$	€
<b>1994-98</b>				
<b>change</b>	-4	0	0	3
<b>band</b>	-4	0	0	1
<b>interdecile ratio</b>	-4	0	0	1
<b>1999-01</b>				
<b>change</b>	-4	0	0	3
<b>band</b>	-4	0	0	3
<b>interdecile ratio</b>	-4	0	0	3
<b>2001-4</b>				
<b>change</b>	-1	0	0	4
<b>band</b>	0	0	0	3
<b>interdecile ratio</b>	0	0	0	3
<b>2005-6</b>				
<b>change</b>	-2	3	-2	4
<b>band</b>	-1	0	0	3
<b>interdecile ratio</b>	-1	0	0	3

**Table 2: Summary of results by measure and subperiod: number of countries in each category**

	% change		band		interdecile range	
	\$	€	\$	€	\$	€
<b>1988-98</b>						
-4/+4	18	16	15	0	16	0
-3/+3	10	13	2	0	3	0
-2/+2	9	9	4	1	2	0
-1/+1	14	2	6	38	12	50
<b>0</b>	110	121	134	122	128	111
<b>1999-01</b>						
-4/+4	19	7	19	16	20	17
-3/+3	8	30	3	6	3	5
-2/+2	1	9	1	3	1	3
-1/+1	15	47	23	36	27	45
<b>0</b>	109	59	106	91	101	82
<b>2001-4</b>						
-4/+4	20	22	17	16	18	16
-3/+3	4	5	4	4	3	5
-2/+2	12	3	4	3	4	3
-1/+1	65	14	59	22	61	21
<b>0</b>	50	107	67	106	65	106
<b>2005-6</b>						
-4/+4	20	34	18	17	17	18
-3/+3	25	19	14	6	12	6
-2/+2	52	34	14	11	7	7
-1/+1	6	4	19	6	33	11
<b>0</b>	49	61	87	112	83	110

**Table 3: Cross-period indexes: number of countries in each category**

	1999-2004		1999-2006		2001-6		1999-01+05-6	
	\$	€	\$	€	\$	€	\$	€
<b>very strong</b>	18	21	16	21	17	21	16	21
<b>strong</b>	1	2	1	2	2	4	2	3
<b>weak</b>	13	15	10	7	37	9	11	6

**Table 4: Countries which anchor consistently 1999-2004**

	€	\$
very strong	Benin, Bosnia & Herzegovina, Bulgaria, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Rep., Côte d'Ivoire, Denmark, Equatorial Guinea, Estonia, Gabon, Guinea-Bissau, Mali, Montenegro, Niger, Senegal, Togo	Bahamas, Bahrain, Barbados, Belize, China Mainland, China Hong Kong, China Macao, Djibouti, El Salvador, Jordan, Lebanon, Malaysia, Maldives, Oman, Panama, Qatar, Saudi Arabia, UAE
strong	Cyprus, Macedonia FYR	Trinidad & Tobago
weak	Croatia, Czech Rep., Hungary, Iceland, Lesotho, Malta, Namibia, New Zealand, Norway, Slovak Rep., Slovenia, South Africa, Swaziland, Sweden, Switzerland	Armenia, Bhutan, Brunei Darussalam, Cambodia, India, Israel, Kuwait, Mexico, Nepal, Singapore, Solomon Islands, Sudan, Vietnam