

Monetary-Policy Targets and Exchange Rates

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Abstract: This article is an examination of the distribution of the types of exchange-rate policy and of monetary policy in 2014. In particular, the changes since 2011 are examined. Exchange-rate systems range from free floating, in which intervention occurs only exceptionally, to hard pegs, in which a country has no monetary sovereignty. Monetary-policy systems include exchange-rate anchors, monetary-aggregate targets, and inflation targets. The mix of exchange-rate regimes and monetary-policy frameworks has not changed substantially since 2011. In the context of the lingering effects of the global crisis that began in 2007, this conclusion is important.

Keywords: exchange-rate policy, monetary policy

***Journal of Economic Literature* classification:** E42, E58, F33

Using data published by the International Monetary Fund in 2011, Mushin (2013) analyzed the distribution of exchange-rate policies and of monetary-policy frameworks. The purpose of this article is to repeat this analysis using January 2014 data. This work is also related to the analysis by Mushin (2004, 2008) of the distribution of exchange-rate régimes between 1978 and 1998 and between 1996 and 2004.

These studies show that there has been rapid evolution of exchange-rate policies since the collapse, in the early 1970s, of the Bretton Woods system of fixed (but adjustable) exchange rates. Fixed exchange rates have survived but, with the notable exception of China, are not used by most of the major trading nations. The nature of monetary policy, which is necessarily ineffective under a fixed exchange rate, has also evolved. Countries that have not chosen a rigidly fixed exchange rate may target their monetary policy towards the value of a monetary aggregate, the rate of inflation, the value of their currency, or another macroeconomic variable.

In recent years, the distribution of exchange-rate policies has become more stable. In addition, it has become polarized, with almost all countries choosing either a fixed exchange-rate régime (especially in low-GDP countries) or a floating exchange-rate régime (especially in high-GDP countries). Limited-flexibility exchange-rate systems have become unimportant. The analysis was complicated by the introduction in 2010 of new definitions in the data published by the International Monetary Fund.

This article is an examination of the distribution of exchange-rate policies, and of monetary-policy frameworks, in January 2014. The source of the data is the International Monetary Fund (2013a). The data have been adjusted to recognize that, since the data source was published, Latvia has been admitted to the euro zone.

Classification of exchange-rate régimes by the International Monetary Fund

Since 2010, the International Monetary Fund has classified the exchange-rate régimes of its members into ten categories, and has grouped these into four larger categories. The categories are:

- Hard pegs
 - No separate legal tender (dollarization)
 - Currency-board arrangements
- Soft pegs
 - Conventional pegged arrangements
 - Stabilized arrangements
 - Crawling pegs
 - Crawl-like arrangements
 - Pegged exchange rates within horizontal bands
- Other managed arrangements
- Floating régimes
 - Floating
 - Free floating

Anderson, Habermeier, Kokenyne, and Veyrune (2009) explained and discussed the definitions of these categories and compared them to the definitions that were used by the International Monetary Fund until 2010. The primary distinction is between those *de facto* arrangements that are *floating* (largely market-determined) and those that are not. A floating exchange rate will be classified as *free floating* if intervention occurs only exceptionally. Hard pegs, in which monetary independence is surrendered, comprise the use of another country's currency (*dollarization*) or a legislative commitment (or *currency board*) to exchange local currency for a specified foreign currency at a fixed rate. Mushin (2010) described examples of dollarization. The unofficial use of currencies, especially the United States dollar, outside their countries of issue, which occurs in many countries, is not the same as dollarization and is not within the scope of this article. The allocation of countries to each of the types of soft pegs depends on the nature of official intervention in the currency market. Under a *conventional pegged arrangement*, the exchange rate has fluctuated, for at least six months, within narrow margins of less than $\pm 1\%$, around a central rate that has been notified. Under a *stabilized arrangement*, the same official intervention occurs but it is not notified. Under a *crawling peg*, there are frequent changes of parity in response to notified changes in a specified indicator. A *crawl-like arrangement* means that the outcome of official intervention is similar, but the criteria were not notified. A *pegged*

rate within horizontal bands confirms a country's *de jure* exchange-rate arrangement in which the exchange rate fluctuates within at least $\pm 1\%$ of a fixed rate. The residual category (*other managed arrangements*) is for countries that do not satisfy the definitions of any of the others. This includes countries that have changed their exchange-rate policies frequently.

In this article, the number of categories of exchange-rate arrangement has been decreased from four to three by assuming that the countries in the residual category are operating soft pegs, which probably approximates the truth in most cases. This simplifies the analysis and does not cause a significant change in the conclusions.

Until 2009, International Monetary Fund statistical publications referred to eight categories of exchange-rate policy, and the data cannot be exactly converted to the new definitions.

Each member of a monetary union is classified by the International Monetary Fund not according to its exchange-rate policy relative to the currency of the other members of the union, which is necessarily a hard peg, but according to the exchange-rate policy of their common currency relative to external currencies. The members of the euro zone are classified as free floating. The members of the Eastern Caribbean Currency Union, whose currency is pegged to the United States dollar, are classified as using a currency board. The members of the *Communauté Financière Africaine*, whose currency is pegged to the euro, are classified as using a conventional peg. The members of the *Comptoirs Français du Pacifique* (Wallis and Futuna Islands, French Polynesia, and New Caledonia), whose currency is pegged to the euro, are not members of the International Monetary Fund. Mushin (2010, 2011, 2014) described these monetary unions.

Classification of monetary-policy frameworks by the International Monetary Fund

The operation of monetary policy is not independent of exchange-rate policy and, for this reason, the International Monetary Fund also classifies the monetary-policy framework of its members according to the target variable of each country. There are four categories:

- Exchange-rate anchor
- Monetary-aggregate target
- Inflation targeting framework
- Other

Monetary policy is classified as using an *exchange-rate anchor* if official intervention is directed towards maintaining a specified exchange rate. Countries that use an exchange-rate anchor are categorized into those that specify it in terms of the United States dollar, the euro, another currency, or a weighted basket of currencies. The choice of *numéraire* may depend on historical and institutional connections, current political pressures, the degree of current and predicted (or planned) integration with a major trading partner, the currency in which a major output (for example, oil), is usually traded, and the need to increase confidence in the stability of the currency.

Monetary policy is classified as using a *monetary-aggregate target* if official intervention aims to achieve a target growth rate of a specified definition of the money supply. The probable long-run objective is a low and stable rate of increase of prices. An *inflation-targeting framework* involves a commitment, over the medium term, to achieve a specified rate of increase of a specified price index. *Other* is the residual category, which includes countries that have not specified a nominal anchor. It is probable that, in a large

proportion of such countries, even when it is not explicit, the long-run objective is also a low and stable inflation rate.

Almost all countries of significant size are members of the International Monetary Fund. Notable exceptions are Cuba (since 1964), Republic of China [Taiwan] (since 1981), and People's Democratic Republic of Korea [North Korea]. In January 2014, this organization had 188 members. Since it lists Aruba and Curaçao-St Maarten separately from Netherlands, and Hong Kong separately from China, it publishes data for 191 economies. Since 2011, South Sudan has joined the International Monetary Fund and no countries have left.

Analysis of the distribution of exchange-rate régimes and monetary-policy frameworks in January 2014

The distribution of exchange-rate arrangements and monetary-policy frameworks of International Monetary Fund members in January 2014 is summarized in Table 1, in Figure 1, and in Figure 2. These show that, when measured by the number of countries that have adopted each type of policy, the dominant type of exchange-rate arrangement is a soft peg, which is used by 52% of countries, and the dominant type of monetary-policy framework is an exchange-rate anchor, which is used by 48% of countries. These figures are not very different to the 2011 data (52% and 51% respectively). Substantial proportions of countries use each of the remaining types of exchange-rate arrangements and of monetary-policy frameworks.

Between 2011 and 2014, only a small minority of countries changed their exchange-rate system from one category to another. These changes are listed in Table 2. In 2014, Latvia did not change its *de facto* exchange-rate regime when it changed from a euro peg to using the euro. A larger number of countries changed their exchange-rate system from one sub-category to another. For example, without ceasing to operate soft pegs, Singapore changed from an Other Managed Arrangement to a Crawl-like Arrangement, Iran changed from a Stabilized Arrangement to an Other Managed Arrangement, and Bangladesh changed from a Crawl-Like Arrangement to an Other Managed Arrangement.

Between 2011 and 2014, only a small minority of countries changed their monetary-policy frameworks from one category to another. These changes are listed in Table 3. Additional countries changed their monetary-policy frameworks from one sub-category to another. For example, Vietnam changed from basing its exchange-rate anchor on the United States dollar to basing it on a currency composite.

It is, of course, misleading to allocate the same weight to economies of different size. Annual GDP data for 2013, published by the International Monetary Fund, range from US\$16,724.272bn, in the United States, to US\$0.038bn, in Tuvalu. The multiple between these two extremes is more than 440,000, so this is not a trivial matter.

TABLE 1
Number of International Monetary Fund members using each combination of exchange-rate arrangement and monetary-policy framework, January 2014

Exchange-rate arrangement	Exchange-rate anchor				Monetary-aggregate target	Inflation targeting	Other			
	US \$	euro	composite	other						
No separate legal tender	8 ¹	3 ^{2,3}		2 ⁴				13		
Currency board	8 ⁵	3 ⁶		1				12	25	hard pegs
Conventional peg	15	18 ^{7,8}	5	5			1	44		
Stabilized arrangement	7	1	1		4	1	5	19		
Crawling peg	1		1					2		
Crawl-like arrangement	4	1	1		4	2	3	15		
Pegged within horizontal bands			1					1	81	soft pegs
Other managed arrangement	1		4		6	1	7	19	19	other managed
Floating					12	19	4	35		
Free floating						11	20 ⁹	31	66	floating régimes
	44	26	13	8	26	34	40	191		

¹ The United States dollar is also the sole legal tender in the US overseas possessions (American Samoa, Guam, Northern Mariana Islands, Puerto Rico, US Virgin Islands), in two British territories (Turks and Caicos Islands, British Virgin Islands), and in Caribbean Netherlands, which are not members of the IMF.

² The euro is also the sole legal tender in Andorra, Monaco, and Vatican, which are not members of the IMF.

³ The euro is the sole legal tender in French Guiana, Guadeloupe, Martinique, Mayotte, Réunion, and St Pierre-Miquelon that, as *départements d'outre-mer*, are constitutionally part of France.

⁴ Additional examples are Liechtenstein (Swiss franc), Nauru (Australian dollar), Niue (New Zealand dollar), and Northern Cyprus (Turkish lira), which are not members of the IMF.

⁵ Including six members of the Eastern Caribbean Currency Union (Antigua-Barbuda, Dominica, Granada, St Vincent-Grenadines, St Kitts-Nevis, St Lucia). Two additional members of the ECCU (Anguilla, Montserrat) are not members of the IMF.

⁶ Including Bulgaria and Lithuania, which are members of the European Union that have not adopted the euro.

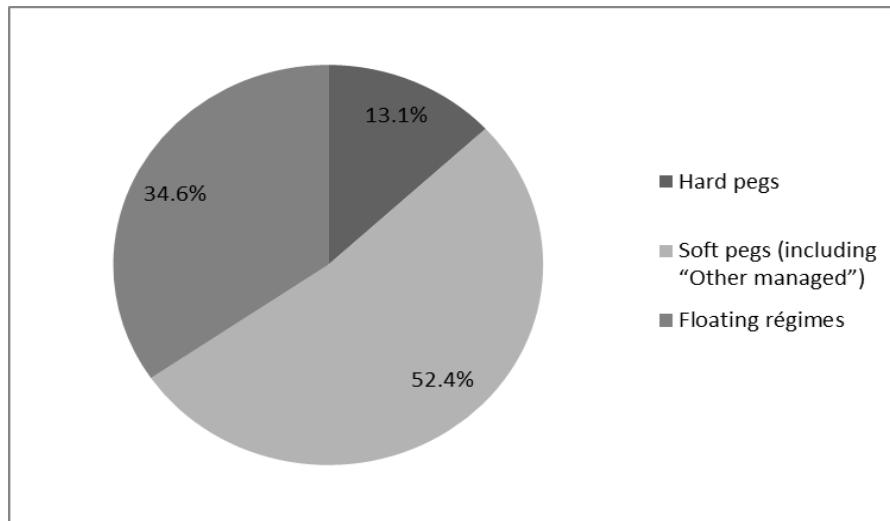
⁷ Including fourteen members of the *Communauté Financière Africaine* (Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Congo Republic, Côte d'Ivoire, Equatorial Guinea, Gabon, Guinea-Bissau, Mali, Niger, Sénégal, Togo).

⁸ Including Denmark, which is a member of the European Union that has not adopted the euro.

⁹ Including eighteen members of the euro zone (Austria, Belgium, Cyprus (South), Estonia, France, Finland, Germany, Greece, Irish Republic, Italy, Latvia, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, Spain).

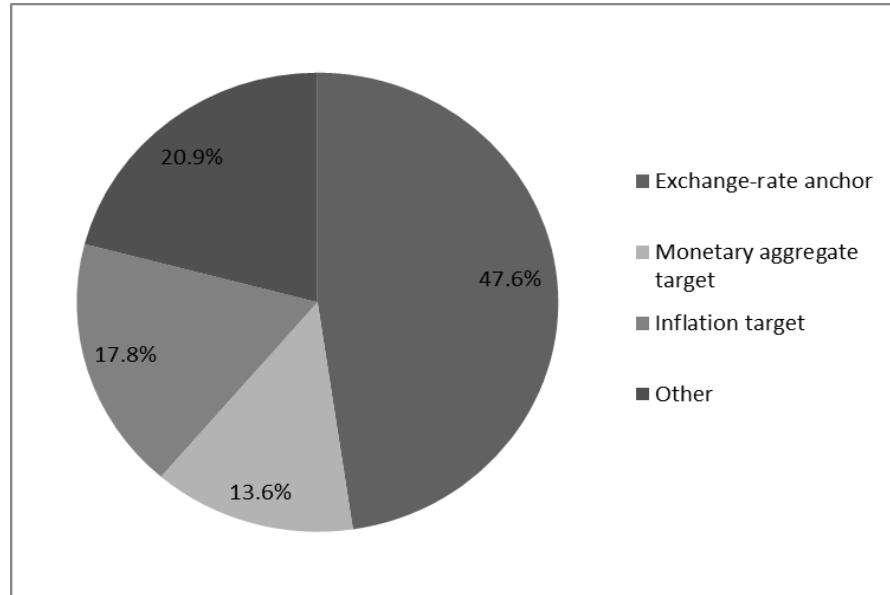
Source: International Monetary Fund, *Annual Report of the Executive Board*, 2013 (adjusted for Latvia's membership of the euro zone)

FIGURE 1
Exchange-rate arrangements, January 2014



Source: International Monetary Fund, *Annual Report of the Executive Board*, 2013
 (adjusted for Latvia's membership of the euro zone)

FIGURE 2
Monetary-policy frameworks, January 2014



Source: International Monetary Fund, *Annual Report of the Executive Board*, 2013
 (adjusted for Latvia's membership of the euro zone)

TABLE 2
Changes in exchange-rate arrangements, 2011–2014

From Soft Peg to Floating	Latvia Pakistan Sri Lanka
From Floating to Soft Peg	Georgia Indonesia Switzerland
New member of IMF to Soft Peg	South Sudan

TABLE 3
Changes in monetary-policy frameworks, 2011–2014

From Exchange-Rate Anchor to Monetary Aggregate Target	Malawi
From Exchange-Rate Anchor to Other	Angola Belarus Latvia Laos Sudan Tunisia
From Monetary Aggregate Target to Inflation Targeting	Dominican
Republic	Ghana Paraguay
From Monetary Aggregate Target to Other	Pakistan Solomon Islands
From Other to Monetary Aggregate Target	Kyrgyzstan
New member of IMF to Exchange-Rate Anchor	South Sudan

Analysis of 2014 weighted data of exchange-rate régimes

In Figure 3 and in Figure 4, which are attempts to deal with this problem, each country's policy decisions have been weighted by the annual value at current prices, in United States dollars, of its GDP. Data have been obtained from the International Monetary Fund (2013b). However, there are several reasons why the US-dollar value of its GDP is an imperfect proxy for the importance of each country in this exercise. First, international GDP data are, despite the diligence of International Monetary Fund and national statisticians,

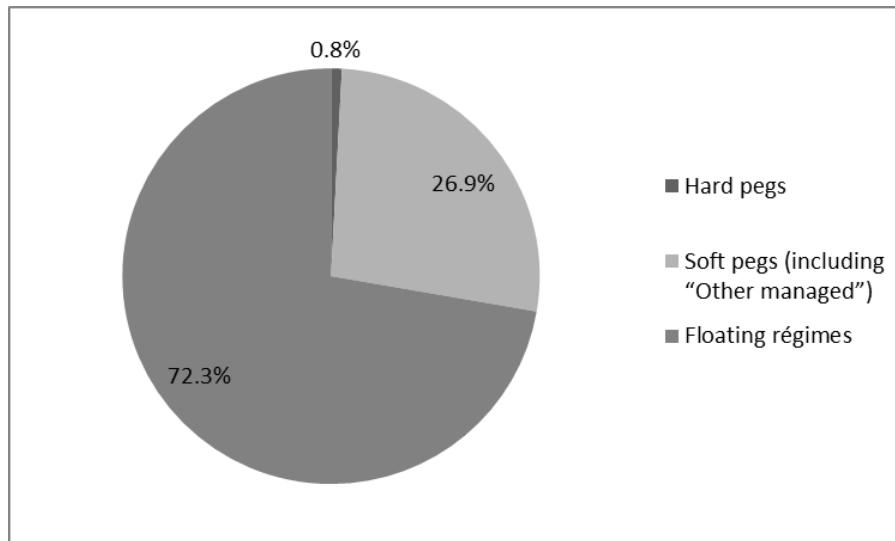
likely to include inaccuracies. Second, the relative importance of international trade and payments varies substantially between countries and is unlikely to be proportional to the GDP of each country. Third, the exchange rates that have been used to convert values from local currencies to US dollars might not indicate their domestic purchasing power. Fourth, currencies whose values are pegged to the US dollar, or to composites that include it, are likely to show greater variation between their exchange rates and their domestic purchasing power than are other currencies. Fifth, GDP data are not available in 2013 for Aruba, Curaçao-St Maarten, and Syria (which use soft pegs), and Somalia (which uses a floating régime). These four economies have therefore been ignored in the GDP-weighted analysis. This has an unimportant effect on the result.

Figure 3 shows that, when GDP-weighted data are used, hard pegs are unimportant. The weighted proportion of countries that use this type of exchange-rate arrangement is less than 1%. This has not changed since 2011.

Figure 3 shows that the weighted proportion of countries that have floating régimes is 72%, so this type of exchange-rate policy is dominant, especially among large countries. In 2011, this figure was 77%. The weighted proportion of countries that use soft pegs has increased from 22% to 27%. The countries that, between 2011 and 2014, changed from one category of exchange-rate régime to another are listed in Table 2. Table 4 facilitates the comparison of 2011 and 2014 data of the distribution of exchange-rate arrangements.

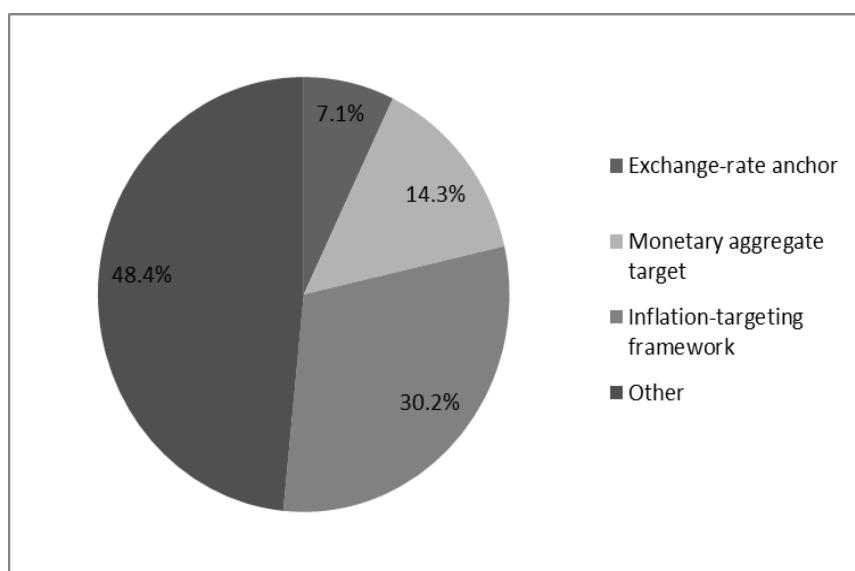
Analysis of 2014 weighted data of monetary-policy frameworks

Figure 4 shows that weighting of data also changes the distribution of monetary-policy frameworks. When GDP-weighted data are used, exchange-rate anchors are of very little importance. The weighted proportion of countries that use this type of monetary policy is 7%, which has not changed since 2011. This type of policy is used mostly by smaller countries. The dominant type of monetary-policy framework remains the residual ("Other") category, where the weighted proportion is 48%. In 2011, this proportion was 57%. Countries in this category, which include Russia, India, Japan, United States, and the members of the euro zone, operate their monetary policy by monitoring a range of indicators and do not have a nominal anchor (as defined by the International Monetary Fund). This is perhaps misleading because most of the countries in this group strenuously pursue low and stable inflation rates. An inflation-targeting framework, as defined by the International Monetary Fund, is used by a weighted proportion of 30% of countries (24% in 2011). An explicit monetary-aggregate target is used by a weighted proportion of 14% of countries (12% in 2011). It might be argued that, with the exception of countries that have chosen an explicit exchange-rate anchor for their monetary policy, almost all countries have a *de facto* inflation-targeting approach. This implies that, as in 2011, a weighted proportion of 93% of countries use monetary policy to stabilize their price levels. The countries that, between 2011 and 2014, changed from one category of monetary-policy framework to another are listed in Table 3. Latvia did not change its *de facto* monetary-policy target when it joined the euro zone. Table 5 facilitates the comparison of 2011 and 2014 data of the distribution of monetary-policy frameworks.

FIGURE 3**Exchange-rate arrangements [GDP-weighted], January 2014**

Source: International Monetary Fund, *Annual Report of the Executive Board*, 2013
 (adjusted for Latvia's membership of the euro zone)
 International Monetary Fund, *World Economic Outlook Database*, 2013

FIGURE 4
Monetary-policy frameworks, [GDP-weighted], January 2014



Source: International Monetary Fund, *Annual Report of the Executive Board*, 2013
 (adjusted for Latvia's membership of the euro zone)
 International Monetary Fund, *World Economic Outlook Database*, 2013

TABLE 4
Distribution of exchange-rate arrangements, 2011–2014

	Hard pegs	Soft pegs (inc. "Other managed")	Floating régimes
<i>Percentages of number of countries</i>			
2011	13%	52%	35%
2014	13%	52%	35%
<i>Percentages of total GDP (in US\$)</i>			
2011	1%	22%	77%
2014	1%	27%	72%

TABLE 5
Distribution of monetary-policy frameworks, 2011–2014

	Exchange-rate anchor	Monetary-aggregate target	Inflation targeting	Other
<i>Percentages of number of countries</i>				
2011	51%	15%	16%	18%
2014	48%	14%	18%	21%
<i>Percentages of total GDP (in US\$)</i>				
2011	7%	12%	24%	57%
2014	7%	14%	30%	48%

Interaction of exchange-rate régimes and monetary-policy frameworks in 2014

The interaction between exchange-rate arrangements and monetary-policy frameworks is clearly shown in the data. However, the classification scheme is necessarily arbitrary, and it is not the same as the pre-2010 classification scheme, so precise conclusions should be treated with care. Despite this, it is clear that, among large countries, the dominant combination is *de facto* inflation targeting and a floating exchange-rate régime. Among small countries, the dominant exchange-rate arrangements are a hard peg, which must necessarily be combined with an exchange-rate anchor, or a soft peg, which, especially not in the very smallest countries, is likely to be combined with a monetary-aggregate target.

The detailed analysis of 2011 data of the interaction of exchange-rate régimes and monetary-policy frameworks by Mushin (2013) remains valid. The differences between 2011 data and 2014 data are negligible.

The countries that are listed in Table 2 and in Table 3 do not include any of the dominant trading nations of the global economy. Latvia joined the euro zone in 2014 (without a change in *de facto* monetary-policy target) and South Sudan joined the International Monetary Fund in 2013. Of the remaining countries, only Pakistan is listed in both of these tables. Further, it is probable that almost all of the countries that have changed their exchange-rate arrangements and/or their monetary-policy frameworks have moved from one interpretation of *de facto* inflation targeting to another. Ignoring South Sudan and Latvia, the proportion of countries that changed their exchange-rate régime is 2.6%. The weighted proportion is 2.5%. Similarly, the proportion of countries that changed their monetary-policy framework is 6.3%. The weighted proportion is 0.9%. All aspects of the 2014 data indicate a high degree of stability relative to 2011 data.

Conclusions

The principal conclusion of this analysis is that the distribution of exchange-rate policies and of monetary-policy frameworks showed little change between 2011 and 2014. This stability is an important observation, especially in the context of the residual effects of the global crisis that began in 2007, which include continuing problems in some of the countries that use the euro. Earlier studies have shown much greater instability in the mix of exchange-rate régimes.

Monetary authorities in the United States, and in other major economies, responded to the global crisis by operating very loose monetary policies (with very low discount rates and substantial “quantitative easing”). Despite this, the International Monetary Fund taxonomy indicates a high degree of stability of monetary and exchange-rate instruments and targets. This might indicate weaknesses in the International Monetary Fund classification.

The detailed commentary by Mushin (2013) remains valid. His six conclusions, which are briefly summarized here, are as valid in 2014 as they were in 2011.

1. There is a positive correlation between a country’s GDP and the probability of its using a floating exchange-rate régime. The smallest and poorest countries are likeliest to use pegged exchange rates, especially hard pegs, and *vice versa*.
2. Each country’s choice of exchange-rate arrangement is constrained, to a variable extent, by its choice of monetary-policy framework, and *vice versa*. Countries that use hard pegs always use exchange-rate anchors, although the reverse is not always true. Countries that use floating régimes are likely to use inflation targeting (at least *de facto*). Countries that use inflation targeting always use floating régimes. Countries that use monetary-aggregate targeting are likely to use soft pegs.
3. Although exchange-rate policy and monetary policy are economic issues, they are also determined by the historical and political context of each country.
4. A weakness of this analysis is that it uses data whose categories have arbitrary definitions.
5. This analysis is not a forecasting model. Exchange-rate arrangements and monetary-policy frameworks are not homogeneous.
6. The classification of exchange-rate arrangements and monetary-policy frameworks by the International Monetary Fund has weaknesses. For example, it does not recognize that countries may target a low unemployment level.

Using the taxonomy introduced by the International Monetary Fund in 2010, and

subject to its deficiencies, this article has described the important features of the distribution of exchange-rate arrangements and monetary-policy frameworks of its members. In particular, it has identified, despite the turbulence and uncertainties in other aspects of the global economy, the increasing stability of these types of macroeconomic policy.

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