



Stabilizing Properties of Flexible Exchange Rates: Evidence from the Global Financial Crisis

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There is a long-standing debate among economists and policymakers on the benefits of flexible versus fixed exchange rates (Klein and Shambaugh 2010). In principle, flexible exchange rates allow a country's central bank to focus on stabilizing economic growth and inflation, which are the ultimate goals of monetary policy. However, some argue that in practice central banks often do not use their powers wisely and it may be better to restrict their freedom by requiring them to peg their currency to that of an important trading partner. Others note that flexible exchange rates are far more volatile than fundamental factors can explain (Flood and Rose 1995), raising the possibility that they may introduce wasteful cross-sectoral fluctuations in economic activity. One common viewpoint is that flexible exchange rates may be fine for large countries but that the smallest countries are better off with fixed exchange rates (Åslund 2010).

After the Asian financial crisis of the late 1990s, many argued that either a flexible or a very firmly fixed exchange rate may be a good regime but that loosely fixed exchange rates lead to poor outcomes (Fischer 2001). Around the same time, a new monetary policy regime known as inflation targeting gained many adherents, starting in the smaller advanced economies (Truman 2003). Inflation targeting provides a framework for

the conduct of monetary policy that helps central banks to use their currency flexibility wisely.

My 2011 book, *Flexible Exchange Rates for a Stable World Economy*, showed that countries with independent central banks can achieve more stable rates of economic growth, employment, and inflation with flexible exchange rates than with fixed rates. Many of the more successful examples of countries with flexible exchange rates are inflation targeters. In a recent paper, Andrew Rose (2013) argues that countries with tightly fixed exchange rates (hard fixers) have had macroeconomic experiences similar to those of inflation targeters with flexible exchange rates during and after the global financial crisis. This finding is noteworthy because financial crises historically are associated with stresses on, and changes in, monetary regimes. Thus, they provide a useful environment in which to test the staying power and stabilization properties of different monetary regimes.

This Policy Brief examines the same countries as Rose over the same period of 2007 through 2012. In line with Rose's results, there is little difference in the average outcomes of inflation targeters and hard fixers with respect to the growth rate of GDP or the inflation rate. However, in terms of some other measures that Rose does not examine, including the change in the unemployment rate and the variability of growth, inflation, and unemployment, the outcomes are always better for inflation targeters.¹ The better performance of inflation targeters is even clearer when one controls for other factors that affect economic performance and when one defines the group of hard fixers more appropriately.

COUNTRY GROUPINGS

Following Rose, the analysis here focuses on small and medium countries. Rose defines large economies to include China, the euro area, Japan, the United Kingdom, and the United States. In order to make use of data for individual euro area coun-

1. Rose examines effects on a number of measures that are not examined in this Policy Brief, such as capital flows, trade flows, asset prices, and budget deficits. He finds that inflation targeters receive significantly more net capital inflows than hard fixers, but there is no significant difference on any other measure.

Table 1 Macroeconomic performance in the global financial crisis and its aftermath (group averages for 2007–12 in percentage points)

Monetary regime	Growth rate of real GDP (1)	CPI inflation rate (2)	Total change in unemployment rate (3)	Standard deviation of real GDP growth rate (4)	Standard deviation of CPI inflation rate (5)	Standard deviation of nominal GDP growth rate (6)	Standard deviation of unemployment rate (7)
Inflation targeters	2.8 (25)	4.0 (25)	-0.7 (24)	2.7 (25)	1.5 (25)	3.7 (25)	1.0 (24)
Continuous hard fixers	2.9 (58)	4.2 (58)	0.6 (20)	3.0 (58)	2.6 (58)	6.3 (57)	1.7 (20)
Dropout hard fixers	3.6 (22)	8.1 (22)	0.6 (16)	3.7 (22)	4.0 (22)	8.8 (22)	1.0 (16)
Euro area (small)	0.3 (10)	2.2 (10)	5.2 (10)	3.1 (10)	1.3 (10)	4.0 (10)	2.3 (10)
Large countries	1.6 (7)	2.1 (7)	0.9 (7)	2.5 (7)	1.1 (7)	2.9 (7)	1.0 (7)
Other	4.8 (64)	8.5 (63)	-0.3 (27)	2.7 (64)	3.8 (63)	5.4 (63)	1.0 (28)
Total	3.5 (186)	5.9 (185)	0.5 (104)	2.9 (186)	2.9 (185)	5.7 (184)	1.3 (105)

CPI = consumer price index

Note: All statistics are based on six annual observations, 2007–12. The number of countries in each group is in parentheses. The first three country groupings are from Rose (2013, table 2) except that Libya, a continuous hard fixer, is excluded owing to its civil war. Smaller euro area countries include Austria, Belgium, Finland, Greece, Ireland, Luxembourg, Netherlands, Portugal, Slovak Republic, and Spain. Large countries include China, France, Germany, Italy, Japan, the United Kingdom, and the United States. Other countries include all countries with available data that are not in one of the first five groups. Inflation and nominal GDP are excluded for Zimbabwe owing to errors in the source data.

Sources: International Monetary Fund, *World Economic Outlook*, October 2013 database and author's calculations.

tries, I include France, Germany, and Italy with the other large countries, while treating the smaller euro area countries as a separate group.

Rose divides the nonlarge countries into groups based on the de facto monetary classification published by the International Monetary Fund (IMF), known as the *Annual Report on Exchange Arrangements and Exchange Restrictions*. Hard fixers are countries with (1) no separate legal tender; (2) a currency board arrangement; or (3) a conventional peg. There are two groups of hard fixers: countries that maintained a hard fix continuously between 2006 and 2012 and those that were hard fixers in 2006 but dropped out for at least one year thereafter.² Inflation targeters are defined as countries that have a flexible exchange rate and monetary policy that targets a specific rate of inflation. All countries that were inflation targeters in 2006 remained so through 2012.³ The remaining countries are grouped together as

“other.”⁴ These include countries with crawling pegs, pegs that have wide bands, and a variety of other managed or stabilized arrangements, as well as countries with flexible exchange rates and a monetary target other than inflation. A few countries that were in the other category in 2006 switched to either inflation targeting or a hard fix later on, but Rose retains these in the other category.

Table 1 presents averages of seven summary statistics for each group. The first column shows the growth rate of real GDP during the six years from 2007 through 2012. Growth was essentially identical in the inflation targeters and continuous hard fixers, and both grew more slowly than the dropout hard fixers or the other countries. Inflation (column 2) also was essentially identical in the inflation targeters and continuous hard fixers, and it was considerably lower than in either the dropout hard fixers or the other countries. The results in columns 1 and 2 are

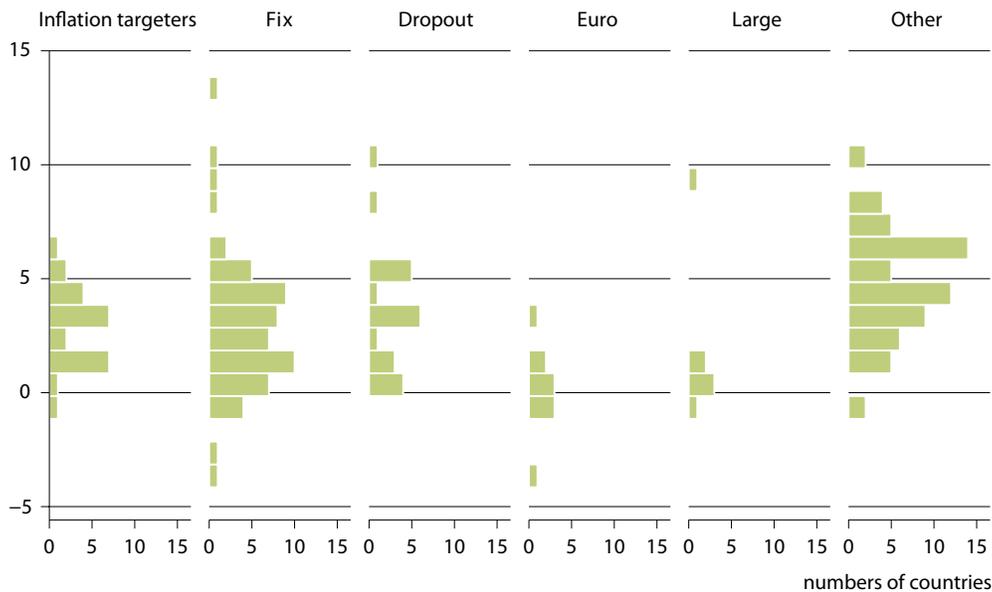
2. Rose includes Libya with the continuous hard fixers but it is dropped from the analysis here because of the civil war. Dropping Libya improves the performance of the hard fixers, but not by a statistically significant amount.

3. There appears to be an error in Rose's categorization of the Slovak Republic as an inflation targeter in 2006, which subsequently left the inflation targeters group to join the euro area. The IMF lists the Slovak Republic as having a peg with horizontal [wide] bands in 2006, so it was neither an inflation targeter

nor a hard fixer. I have included the Slovak Republic with the group of smaller euro area countries because it had a peg to the euro in 2006 through 2008 (albeit loosely) before joining in January 2009, which is early in the period examined here.

4. Zimbabwe is excluded from measures of inflation and nominal GDP owing to errors in the source data. In any event, Zimbabwe experienced hyperinflation in 2007–09, which would greatly distort any comparison across countries.

Figure 1 Distribution of real GDP growth rates by monetary regime, 2007–12
(percentage points)



Note: See table 1 for definitions and sources.

similar to those displayed in Rose’s tables 9 and 10. Two groups not included in Rose’s analysis—the smaller euro area countries and the large countries—had lower growth and lower inflation than the inflation targeters and continuous hard fixers.

The remaining columns display measures that Rose did not examine: the change in the unemployment rate and the standard deviations (a measure of variability) of real growth, nominal growth, inflation, and unemployment.⁵ Inflation targeters on average experienced a decline in their unemployment rates during the crisis, whereas hard fixers had an increase (column 3).⁶ The group that stands out on this measure is the smaller euro area countries, where unemployment rates rose by more than 5 percentage points on average.

It is important to examine measures of variability because the appropriate goal of monetary policy is commonly viewed as stabilizing economic output, employment, and inflation (Woodford 2003). The standard deviations of real growth and inflation (columns 4 and 5) were lower in inflation targeters

than continuous hard fixers, and the difference for inflation is more than a percentage point. Some economists argue that central banks should aim to stabilize nominal GDP growth, which effectively averages real growth and inflation. On this measure (column 6) inflation targeters performed far better than both categories of hard fixers and the other countries.⁷ Finally, the variability of the unemployment rate was noticeably lower in inflation targeters than in continuous hard fixers and smaller euro area countries, but not much different than in the remaining groupings.

Figure 1 displays the distribution of real GDP growth rates for each monetary regime shown in table 1. Although inflation targeters and continuous hard fixers have a similar mean, the hard fixers exhibit greater dispersion around that mean. Some hard fixers have double-digit growth rates whereas others have significantly negative growth rates. Figure 2 shows that, with one exception, continuous hard fixers have a mean and distribution of inflation that are similar to those of inflation targeters.⁸ Dropout hard fixers and other countries have more dispersed inflation outcomes. Figure 3 shows the relatively good performance of inflation targeters in terms of the change in the unem-

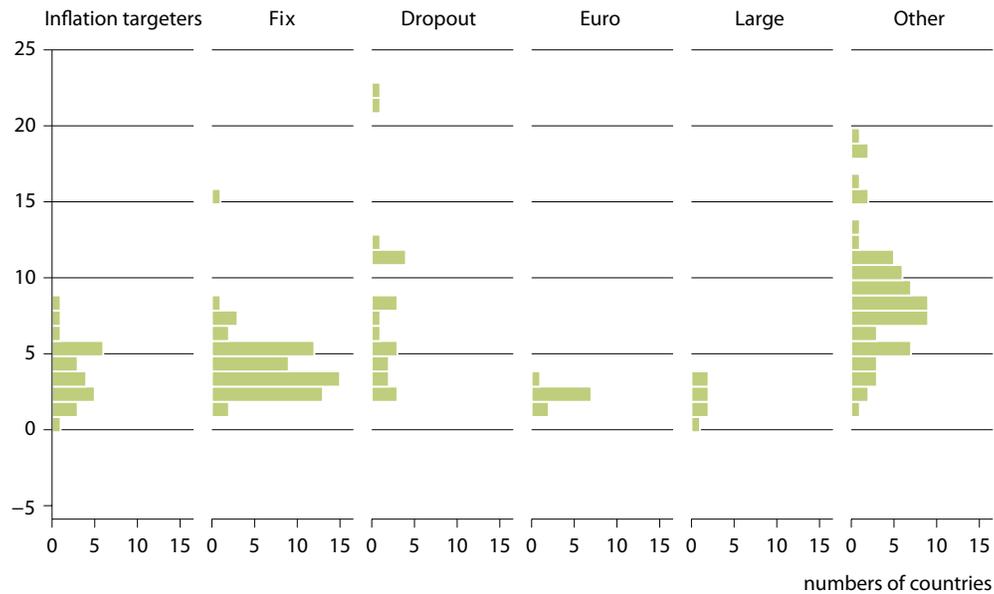
5. The standard deviation of a variable may be described as the typical amount by which it deviates from its average value.

6. Some of the difference in results for unemployment compared with growth may reflect a smaller sample of countries that report unemployment. Note that nearly all inflation targeters report unemployment, whereas only a third of continuous hard fixers do. The average GDP growth rate for continuous hard fixers that report unemployment is moderately lower than the overall average at 2.3 percent. However, continuous hard fixers that report unemployment tend to have less variability of real and nominal GDP and inflation than the overall group.

7. Statistics on the average rate of nominal GDP growth are not displayed here because faster nominal GDP growth is not necessarily better or worse than slower growth. The components of nominal GDP growth are real GDP growth and inflation. Faster real GDP growth is desirable but slower inflation is (usually) desirable.

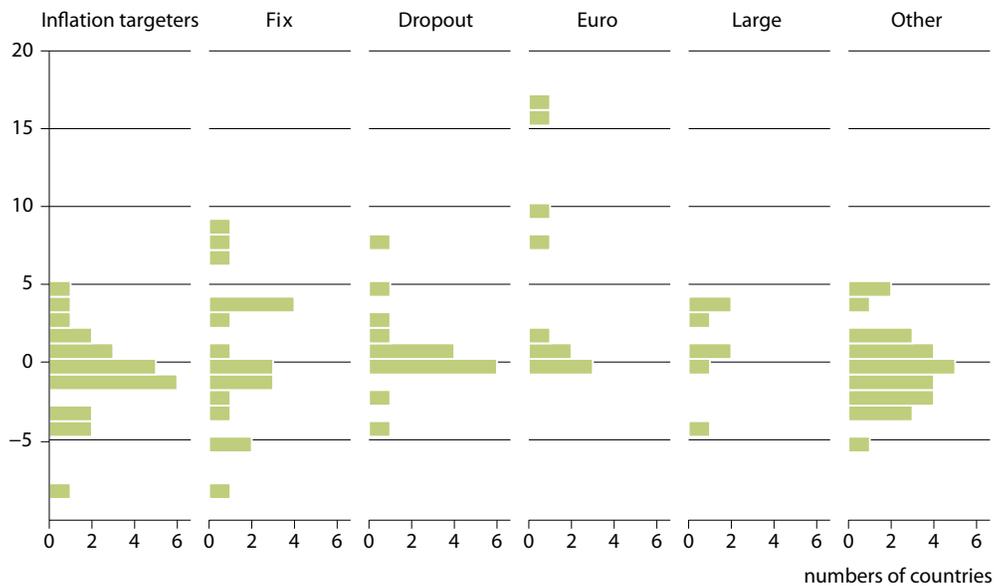
8. The exception is Eritrea.

Figure 2 Distribution of inflation rates by monetary regime, 2007–12
(percentage points)



Note: See table 1 for definitions and sources.

Figure 3 Distribution of changes in unemployment rates by monetary regime, 2007–12
(percentage points)

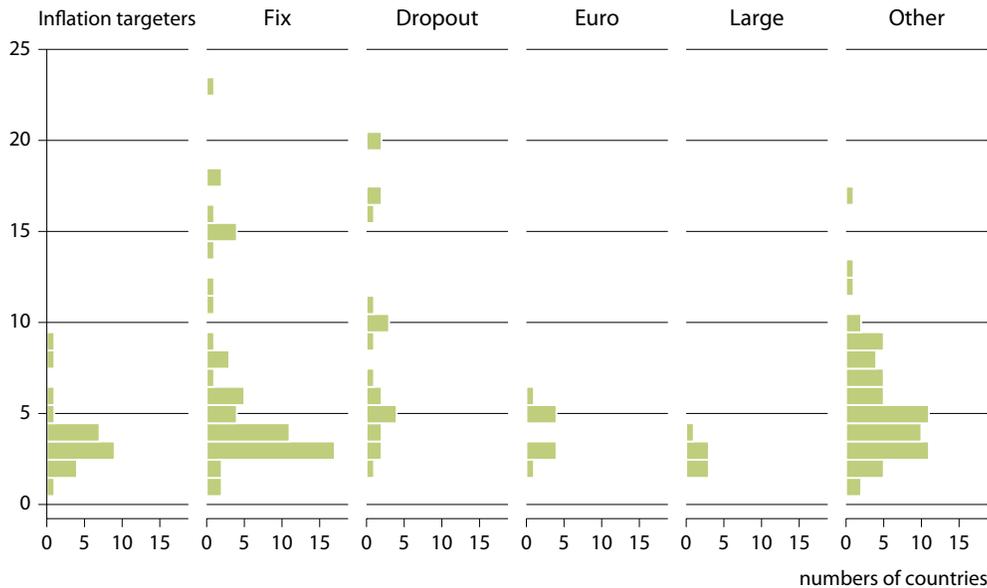


Note: See table 1 for definitions and sources.

ployment rate. Interestingly, the other group also performs well on this measure. Switching to variability, figure 4 shows that standard deviations of nominal GDP growth are lower and less

dispersed for inflation targeters than for either category of fixers or for other countries. Smaller euro area countries and large countries also have low levels of variability with little dispersion.

Figure 4 Distribution of nominal GDP variability by monetary regime, 2007–12
(percentage points)



Note: See table 1 for definitions and sources.

REGRESSION ANALYSIS

Many factors affect macroeconomic performance besides the monetary regime. Regression analysis enables us to control for the effects of other factors in order to better isolate the effect of the monetary regime. Of particular concern are the effects of economic size, the stage of development, and the state of the business cycle.⁹ The control variables are the logarithm of GDP per capita at purchasing power parity (PPP) prices in 2006, the logarithm of population in 2006, the general government budget balance in 2006 as a percent of GDP, the current account balance in 2006 as a percent of GDP, the growth rate of GDP between 2000 and 2006, and the inflation rate between 2000 and 2006. To compare GDP growth rates across countries, it is important to control for different underlying trend growth rates. The logarithm of PPP GDP per capita in 2006 and the lagged GDP growth rate help to control for trend growth, but as an additional control, the regressions of GDP growth rates also include a second lag of the GDP growth rate (from 1994 to 2000) to allow for the possibility that countries that have a long track record of strong growth are likely to continue to grow strongly for reasons unrelated to the monetary regime.

9. Smaller countries tend to experience greater variability. Poorer countries tend to grow faster. Countries at a business cycle peak tend to grow slower and to experience higher inflation. The exclusion of large countries from the regressions provides an additional control for country size.

Table 2 displays the estimated effects of the monetary regime on the same macroeconomic indicators that were examined in table 1. The top half of the table uses the same country groups as Rose (2013). The row labeled “IT dummy” displays the estimated coefficients on a variable that equals one for countries that were inflation targeters in every year from 2006 through 2012 and zero for all other countries. The row labeled “HF dummy” displays the estimated coefficients on a variable that equals one for countries that were hard fixers in every year from 2006 through 2012 (the continuous hard fixers of table 1) and zero for all other countries. These coefficients can be interpreted as the effects of either an IT regime or an HF regime relative to the non-IT, non-HF countries. Large countries and smaller euro area countries are not included in the regressions displayed in the top half. The non-IT, non-HF countries are the “dropout HF” and “other” countries as described above.

On every measure, IT countries perform better than HF countries. The differences are often of a size that is economically important and statistically significant as indicated by the pvals.¹⁰ For example, the change in the unemployment rate is nearly two percentage points lower in IT countries than in HF countries (column 3), although the difference between the

10. The pvals display the probability of finding a difference between the coefficients that is equal to or greater than that shown, under the assumption that the true difference is zero. A pval below .05 implies a difference that is strongly significant by conventional standards. A pval between .05 and .10 is weakly significant.

Table 2 Regression results with control variables

	Growth rate of real GDP (1)	CPI inflation rate (2)	Total change in unemployment rate (3)	Standard deviation of real GDP growth rate (4)	Standard deviation of CPI inflation rate (5)	Standard deviation of nominal GDP growth rate (6)	Standard deviation of unemployment rate (7)
Rose (2013) groups							
IT dummy	-0.4	-3.3	-2.4	-0.2	-1.3	-2.2	-0.1
HF dummy	-0.5	-2.1	-0.6	-0.1	-0.5	0.5	0.3
pval IT-HF	.94	.08	.10	.91	.06	.00	.17
Number of observations	150	162	86	162	162	161	87
Alternative groups							
IT dummy	-0.4	-2.4	-3.1	0.1	-0.9	-0.1	-0.5
HF dummy	-0.9	-0.8	0.4	0.3	0.2	1.3	0.1
pval IT-HF	.27	.02	.00	.27	.01	.00	.08
Number of observations	160	172	96	172	172	171	97

CPI = consumer price index

Note: This table presents results of cross-country regressions. The dependent variables are listed at the top of the table and are based on the period 2007–12. The regressors include a constant and dummy variables for inflation targeters (IT) and hard fixers (HF) plus the following control variables dated as of 2006: the logarithm of purchasing power parity (PPP) GDP per capita, the logarithm of population, the general government budget balance in percent of GDP, the current account balance in percent of GDP, the growth rate of GDP from 2000 to 2006, and the inflation rate from 2000 to 2006. For the regression of GDP growth, an additional lag of the GDP growth rate (1994 to 2000) is added. The probability values (pvals) for the test of equal coefficients on the IT and HF dummies are robust to heteroskedasticity. Results in the top half of the table are based on dummies for inflation targeters and continuous hard fixers as defined in table 1. Results in the bottom half define the HF countries as continuous hard fixers, plus dropout hard fixers, plus the smaller members of the euro area. Large countries are excluded from all regressions and euro area countries are excluded from the regressions in the top half. See table 1 for further details on the sample data.

Sources: International Monetary Fund, *World Economic Outlook*, October 2013 database and author's calculations.

two groups is only weakly statistically significant. The differences are strongly statistically significant only for the standard deviation of nominal GDP growth.

Both IT and HF regimes perform better than other regimes in terms of a lower level and variability of inflation and a larger decline in unemployment. Nevertheless, both perform worse in terms of real GDP growth, despite controlling for past growth

The greater staying power of inflation targeting regimes during and after the crisis is itself evidence of superior performance.

and despite the better performance on unemployment. This is a puzzle, but it is consistent with Rose's results for various measures of detrended GDP growth.

The bottom half of the table addresses two concerns with Rose's groupings. First, by limiting the hard fixers to countries that succeeded in maintaining their pegs throughout the past six years, he may have biased the results in favor of hard fixers. An important reason that some hard fixers in 2006 dropped out in later years may be because hard fixers create excess macroeco-

nomical volatility. Rose shows that his results are little changed when the regime dummies are instrumented by population and measures of political institutions, which are plausibly exogenous to subsequent macroeconomic performance. A simpler approach that is adopted here is to include all countries with hard fixes as of 2006 in the HF category. No change is needed for the IT category since no IT countries dropped out. (Note that the greater staying power of IT regimes during and after the crisis is itself evidence of superior performance.) The second change in the bottom half of table 2 is to include the smaller euro area countries in the HF group because they meet the IMF criteria for HF countries as of 2006 and there is no apparent reason to exclude them. Large countries continue to be excluded from the regressions.

In most columns, the differences between the IT and HF coefficients increase in the bottom half relative to the top half, although the levels of both sometimes change in the same direction. The alternative groups provide stronger evidence of the relative superiority of IT over HF outcomes. IT and HF regimes perform worse than other regimes on the rate and variability of GDP growth and better than other regimes on the rate of inflation. For the change and variability of unemployment and the variability of inflation and nominal GDP growth, IT regimes

have better outcomes than other regimes and HF regimes have worse outcomes.

The pvals in the bottom half of the table are consistently lower than those in the top half. The superiority of IT outcomes is statistically significant for all measures except the growth rate

Flexible exchange rates enable countries to weather crises better than fixed rates and the benefits of flexible rates are not limited to large countries.

and variability of real GDP (columns 1 and 4). Dropping the smaller euro area countries from the regressions (not shown) has little effect on any pval except for the variability of the unemployment rate (column 7), for which the pval rises to .40.

CONCLUSION

There is considerable evidence that inflation targeting countries with flexible exchange rates performed better during the global financial crisis and its aftermath than countries that had a fixed exchange rate, especially when countries are grouped according to their monetary regimes just before the onset of the crisis. Countries that were able to maintain a hard fixed exchange rate throughout the past six years performed somewhat better than those that abandoned a hard fix, but abandoning a hard fix during a crisis is itself evidence of the economic costs of a hard fixed exchange rate. It is particularly telling that no inflation targeting country with a flexible exchange rate abandoned its regime during the crisis.

The differences between inflation targeters and hard fixers in terms of the growth rate of real GDP and its variability are

not statistically significant. But the differences are statistically significant for the rate of inflation, the change in the unemployment rate, and the variabilities of inflation, nominal GDP growth, and unemployment.

Policymakers in many countries exhibit a well-known aversion to volatile exchange rates or “fear of floating” (Calvo and Reinhart 2002). The results of this Policy Brief suggest strongly that flexible exchange rates enable countries to weather crises better than fixed rates and that the benefits of flexible rates are not limited to large countries. Perhaps policymakers should replace their fear of floating with a fear of fixing.

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