

Does a Less Active Central Bank Lead to Greater Economic Stability? Evidence from the European Monetary Union*

**Elham Mafi
and
Russell S. Sobel**

*Department of Economics
P.O. Box 6025
West Virginia University
Morgantown, WV 26505
elmafi@mail.wvu.edu
rsobel2@wvu.edu*

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Abstract

Substantial disagreement exists among economists about the degree to which central banks should pursue discretionary stabilization policy. Activists believe that central banks can promote greater macroeconomic stability through the use of discretionary policy, while nonactivists (such as the monetarists) do not. In particular, monetarists believe that lags and timing problems will result in even the best-intentioned discretionary policy actually resulting in less (rather than more) macroeconomic stability. The formation of the European Monetary Union provides a unique opportunity to test whether a shift to a less active central bank has resulted in more or less macroeconomic stability for these countries.

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1. Introduction

On January 1, 1999 eleven European countries gave up the independence of their monetary policy by joining the European Monetary Union (EMU). Since that time, these countries have shared a common currency, the Euro, and more importantly are all now under the direction of a common European Central Bank (ECB) that controls monetary policy for the entire Euro area. In accordance with Article 105(1) of the Maastricht Treaty, the primary objective of the ECB is to maintain price stability. The institutional designs of the ECB as well as their stated primary objective lead most economists to believe that the new ECB is a relatively inactive central bank in the pursuit of short-run macroeconomic stabilization. Thus most, if not all, of the countries in the EMU are now under a central bank that is much less active than was their previous national central bank. In this paper, we examine whether this shift in the activism of the monetary regime has resulted in more or less macroeconomic stability for these countries.

Even prior to the official starting date for the EMU, a substantial academic literature speculated on how the move toward a common central bank would affect the macroeconomic stability of these countries. This literature has generally concluded that the movement toward a common central bank would make these economies more unstable because of the inability of a common central bank to tailor monetary policy to the needs of each country. As each country experiences country-specific shocks, the ECB will not be able to counter these shocks as well as a system of autonomous central banks. Thus, this previous academic literature has concluded on theoretical grounds that the

EMU-member countries will suffer wider swings in real economic activity after the move to a common central bank.¹

A monetarist critique of this position has yet to appear in the literature, however. The monetarists have long argued that monetary policy is the main source of economic instability, even when the policy is well-intentioned. Brunner (1985) states the monetarist position concisely in his quote (p.12): “Discretionary management ultimately fails to deliver, even with the best intentions, on its promise.” The monetarists believe that problems with lags and proper timing result in policy errors that induce less, rather than more, economic stability. If this position is correct, it suggests that having a common central bank that is unable to optimally respond to individual country-specific shocks could actually result in greater economic stability in the EMU member countries. In other words, a common policy that is less responsive to country-specific shocks will result in greater stability because there will be fewer macroeconomic swings induced by monetary policy errors. However, for some countries that used to have a very inactive national central bank (such as Germany’s Bundesbank), the new ECB might actually be more active than the old national central bank. In this case, the monetarist position would argue that these economies would become more unstable after moving under a more active ECB.

Three decades ago, a substantial academic debate raged about the relative effectiveness of fiscal and monetary policy at providing economic stabilization. Now, a consensus appears to have emerged that fiscal policy is generally less effective than

¹ For a discussion on the possible effects of a common central bank refer to Feldstein (1997, 2000), De Grauwe (2000), Salvatore (2002) and Martin-Das (2002).

monetary policy to promote short-run economic stability.² In this modern view, fiscal policy should primarily be concerned with promoting long-run economic growth through maintaining reasonably low marginal tax rates, constraining deficit finance, and removing regulations and taxes that interfere with domestic or international economic transactions. Monetary policy, on the other hand, should be the method with which countries conduct economic stabilization. The main debate that remains is whether well-intentioned monetary activism is *actually* effective at promoting stability, a debate that is more important today than ever before with fiscal policy no longer being considered an effective stabilization tool.

The formation of the EMU provides a unique opportunity to see how a change in the activism of monetary policy affects the economic stability of a country. The evidence from this European monetary transformation will clearly help to resolve the substantial disagreement among economists on the issue of whether monetary activism provides more or less macroeconomic stability. If well-intentioned activist monetary policy cannot promote economic stability, it would suggest that the main focus of central banks should be on long-run price stability, rather than on short-run macroeconomic stabilization.

This paper proceeds by first reviewing some of the previous literature on the EMU and presenting a monetarist critique of this literature. We then proceed to measure how active each country's national central bank was prior to the formation of the EMU and compare this with how active the new ECB has been since it was created. Finally, we examine which countries have seen the greatest increases (or decreases) in economic

² Rasche and Thornton (2001) present arguments on the ineffectiveness of fiscal policy in achieving short-run stability.

stability since joining the EMU, and attempt to find a correlation between the change in the activism of monetary policy and the change in economic stability.

2. The EMU: It's Origins and the Previous Literature

The Maastricht Treaty signed in February 7, 1992 by the fifteen members of the European Union called for the creation of a new ECB by January 1, 1999. The ECB would be assigned the task of conducting the single monetary policy for the eleven EMU members.³ The statute of the ECB (Protocol, Article 2) states that the primary and overriding goal of the European monetary authority is to “maintain price stability.”⁴ Following almost perfectly the monetarist view, constant growth rate rules for the money supply have a prominent role in the statute of the ECB (the Euro area M3 money supply has a 4.5 percent growth rate reference value, for example). Undeniably, the ECB is based on a more monetarist framework similar to that of the old German Bundesbank, where the weight that monetary policy puts on long-run price stability significantly exceeds the weight put on maintaining short-run economic stability.

Furthermore, in his address to the Federal Reserve Bank of Kansas in 1999, the president of the ECB, Wim Duisenberg, reemphasized the commitment to price stability of the ECB. Duisenberg stated that monetary policy should never be reoriented away

³ Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, The Netherlands, Spain and Portugal satisfied the economic criteria imposed by the Maastricht Treaty and formed the EMU on January 1, 1999. Greece met the criteria to join the EMU in January 1, 2001. The United Kingdom and Denmark opted out of the EMU because of their concern about the loss of national sovereignty.

⁴ The statute defined price stability as maintaining the yearly increase in the Harmonized Index of Consumer Price to be less than 2% for the Euro area.

from its primary objective of maintaining price stability. He continued by emphasizing that low and predictable inflation is necessary for maintaining sustainable output growth and high levels of employment. Duisenberg made it clear that the ECB believes that even moderately high rates of inflation are harmful to economic growth.⁵

Even prior to the ECB formally coming into existence in 1999, an academic literature began to emerge speculating on how the move toward a common central bank would affect the economic stability of the European member countries. The consensus that emerged from this literature contained little hope that there would be an increase in economic stability. Eichengreen (1992), Bayoumi and Eichengreen (1993, 1997), for example, pointed out that the members were not forming an optimum currency area as was defined by Mundell (1961). An optimum currency area consists of a group of countries that share similar economic shocks and between which labor and capital can flow freely. Because of the dissimilarity of the shocks historically experienced by the EMU member nations, there are likely to be situations in the future where the optimal monetary policy will differ across these countries. A common central bank will be unable to tailor monetary policy to suit the needs of each nation simultaneously, however. Because the new ECB will be unable to optimally respond to these asymmetric (country-specific) shocks, the economies of these nations will become less stable as a result.

Similarly, De Grauwe (2000) shows that for asymmetric shocks the ECB would stabilize too little from the point of view of what would be optimal for the individual member states because it will be reacting to an average across all countries. Stevens

⁵ This argument is shared by Barro (1996) who found a negative relation between inflation and economic performance in 100 countries from 1960-1990.

(1999) claims that the inability of the ECB to respond to individual country needs could eventually lead to members withdrawing from the EMU. Likewise, Salvatore (2002) claims that when a country is hit by an asymmetric shock, the country will ultimately have to wait for the economy to self-correct. Salvatore believes that the self-correcting process may be lengthy, and no government could politically afford to tolerate such a drawn-out process. Salvatore provides evidence that Italy and Spain are the EMU members that will most often face asymmetric shocks, and therefore, will face the highest cost of the shared monetary policy.

3. A Monetarist Critique of the Previous Literature

The previous literature on the likely effects of moving toward a common ECB is rooted in a fundamentally activist theoretical framework. However, a substantial disagreement exists among macroeconomists about the validity of this position. In particular, monetarists believe that there are problems in monetary policy implementation that may significantly reduce the potential for active monetary policy to stabilize an economy.

The monetarist view can be summarized by a belief that lags in the implementation of monetary policy create a situation in which it is generally impossible to properly time monetary stimulus and contraction. Thus, the use of activist stabilization policy will frequently result in errors that result in wider business cycle swings than would be present if the central bank simply did not respond to economic shocks. The main conclusion of the literature in this area, typified by Friedman (1961, 1968), Brainard (1967), Phelps (1968), Brunner (1985), Meltzer (1987) and Orphanides (1998, 2000, 2002), is that monetary policy should primarily be concerned with long-run price

stability, rather than short-run stabilization and that the economy will be more stable as a result.⁶

The monetarist view would suggest a much different picture about the likely effects of moving to a common central bank than has been painted by the previous literature. If, as the monetarists believe, well-intentioned monetary activism actually results in less economic stability, then the inability of a common central bank to respond to all of these asymmetric shocks will actually result in greater economic stability. In addition, the countries that will find the largest increases in economic stability are precisely the ones that used to have the most active central banks. On the other hand, for some countries that used to have very inactive national central banks, such as Germany, it is possible that the new ECB is actually more active than the old national central bank. If this is true, it is possible that they will see less economic stability after moving under a more active central bank.

Thus, there are two competing models that produce totally different predictions for how the economic stability of each country will change after the formation of the EMU. The activist model that has served as the foundation for the previous literature predicts that a common central bank that is less active with respect to asymmetric shocks will result in less economic stability, while the monetarist model predicts just the

⁶ Ellison and Valla (2000) show that strategic interactions between central banks and private agents create additional motivation for less activism in monetary policy. In particular, activism by central banks will lead to more fluctuations in inflation expectation by private agents, which may eventually translate into more volatile output and less social welfare. Furthermore, this theory apply that a central bank, which takes into account the fact that its actions affect learning, should choose to be less active than a central bank that ignores learning effects.

opposite. The monetarist model predicts that the lack of response to these shocks should result in greater economic stability. Thus, by examining how the economic stability of these countries has changed since the move to a common central bank, and how this change is related to the activism of the old national central bank, it is possible to test the predictions of these competing schools of thought.

4. How Active Were The Old Central Banks?

In this section, data are presented on how active the central banks of Austria, Belgium, France, Germany, Italy, and Spain were prior the formation of the EMU.⁷ However, measuring the activism of monetary policy is not an easy task, and there exists no consensus on how to empirically measure the size and direction of changes in monetary policy. Sims (1972), and Grier (1984, 1989) identify changes in monetary policy by measuring changes in the stock of money, defined as M1.⁸ More recently, alternatives to M1 have also been used. For example, Sims (1992), Bernanke, and Blinder (1992), Bernanke, and Mihov (1995), and Caporale and Grier (1998) use changes in the U.S. federal funds rate as their measure of monetary policy.

The debate over measures of monetary policy has centered on the choice of monetary aggregates versus interest rates. While monetary aggregates are endogenous and not under direct control of central banks, monetary aggregates are highly correlated

⁷ This is the set of countries for which consistent and reliable data were available.

⁸ Hafer and Kutan (2002) showed that money, measured by M1 or M2, provides a good measure of the monetary policy stance.

with movements in inflation.⁹ Therefore, movements in monetary aggregates reflect the policy actions of the central banks. Table 1 presents several measures of monetary activism for each country based on M2, as well as real and nominal short-term money market interest rates.

[Table 1 about here]

The first two columns of Table 1 report data on the volatility of M2 money growth for the period 1987:01 to 1998:12.¹⁰ The larger the number, the more active was the central bank during the period. The absolute value computes each country's M2 volatility relative to the mean of its own series using the variance formula

$$\text{Absolute Variance } (\Delta M2) = \sum_{t=1}^T \frac{(\Delta M2_{N,t} - \mu \Delta M2_N)^2}{T} \quad (1)$$

where M2 is the log of the money supply, $\Delta M2$ is money supply growth, $\mu \Delta M2$ is the mean of $\Delta M2$, N is a particular EMU member country (or the ECB), and T is the number of monthly observations. The relative value computes each country's M2 volatility relative to the same-period value for the United States, rather than to the mean of the own series using

⁹ For a discussion on the relationship between money and prices refer to Hafer and Wheelock (2001) and Meltzer (2001).

¹⁰ The monthly data on M2 are taken from the Banque De France statistical office, and the choice for the starting date is dependent on the availability of the data, as well as the fact that it coincides with the debut of Alan Greenspan's chairmanship at the Fed, which is useful in later measures of the old central banks' activism relative to the Fed. We wish to thank Dr. Virginie Coudert from the Banque de France for providing us with the data.

$$\text{Relative Variance } (\Delta M2) = \sum_{t=1}^T \frac{(\Delta M2_{N,t} - \Delta M2_{US,t})^2}{T} \quad (2)$$

where US refers to the contemporaneous value for the United States.

We compute this second measure, variance relative to the United States, as a way to check the robustness of our results. Because the old national central banks and the new ECB operated in different time periods that may be structurally different, adjusting the data relative to the United States helps to make sure that any such difference is not driving our results. In other words, economic conditions in the post-ECB era may have been significantly different from the economic conditions in the pre-ECB era, and normalizing the variance around the United States can help to adjust for this, particularly because the Fed retained the same chairman during the period we consider.

The results in Table 1 show that the volatility of M2 growth was the greatest for Italy, France, and Spain and the lowest for Austria, Belgium, and Germany.¹¹ This implies that the old national central banks of Italy, France, and Spain were relatively more active than the national central banks in Austria, Belgium, and Germany. To check the robustness of these conclusions on the activism of the national central banks obtained from information on M2 volatility, we performed the same calculations (in absolute and relative terms) using monthly data on both nominal and real short-term market interest rates (r) as

¹¹ In all the analysis in this section, to account for the structural break due to the unification between West and East Germany, German data omit the years 1990 and 1991. All other countries have a full data set however, if the same years are omitted for all other countries the results show even stronger distinction between the group Germany, Belgium and Austria and the group France, Italy and Spain.

$$\text{Absolute Variance (r)} = \sum_{t=1}^T \frac{(r_{N,t} - \mu r_{N,t})^2}{T} \quad (3)$$

and

$$\text{Relative Variance (r)} = \sum_{t=1}^T \frac{(r_{N,t} - r_{US,t})^2}{T} \quad (4)$$

where the value subscripted US refers to the U.S. federal funds rate.

The second and third sets of columns in Table 1 show the results using interest rates as a measure of monetary activism are shown in, and lead to virtually the same conclusion as the monetary aggregate measures. Specifically, the results for both nominal and real interest rates reemphasize that the old national central banks of Spain, France, and Italy were more active than those of Austria, Germany, and Belgium. Moreover, the volatility of an EMU member country's nominal and real interest rates relative to the mean of its own series and also relative to the real and nominal federal funds rate in the United States gives virtually the same results.

The results presented in Table 1 are based on what might be considered simple measures of monetary activism. They are simple in that they incorporate information on all changes in these variables, not just those changes that were made by the central bank in response to short-run economic fluctuations. This has the potential to be troublesome because activism is traditionally defined as the degree to which central bank policy responds to short-run fluctuations in real economic activity. Thus, a good measure of monetary activism would only include changes in monetary policy associated with changes in short-run economic conditions. In an attempt to obtain more precise measures

of monetary activism, we estimated a forward-looking Taylor rule model for each country to estimate the old national central banks' response to real economic conditions following the approach taken by Faust, Rogers, and Wright (2001). This type of policy reaction function assumes that the central banks have a targeted nominal interest rate, r_t^* , that depends on the expected output gap, $E_t(y_t)$, and expected inflation, $E_t(\pi_{t+n})$ following the equation:

$$r_t^* = \alpha + \beta E_t(\pi_{t+n}) + \gamma E_t(y_t) \quad (5)$$

The model incorporates interest-rate smoothing such that:

$$r_t = \rho r_{t-1} + (1 - \rho) r_t^* + v_t \quad (6)$$

Where $1 \geq \rho \geq 0$ and v_t is a random shock to the interest rate that is assumed to be i.i.d.

Substitution produces the equation to be estimated

$$r_t = \rho r_{t-1} + (1 - \rho) \alpha + (1 - \rho) \beta \pi_{t+n} + (1 - \rho) \gamma y_t + \varepsilon_t \quad (7)$$

Where $\varepsilon_t = v_t + (1 - \rho) \beta u_{t+n}^\pi + (1 - \rho) \gamma u_t^y$, $u_{t+n}^\pi = \pi_{t+n} - E_t(\pi_{t+n})$, and $u_t^y = y_t - E_t(y_t)$.

In the equation, r_t is the nominal interest rate, π_{t+n} is the targeted inflation rate (with $n=12$) and y_t is the output gap. The output gap is measured as the percent deviation of log-industrial production from its trend.¹² The estimated parameters from each central bank's reaction function can be used to measure the degree to which they target long-run price stability versus smoothing short-run economic fluctuations. These are reflected in the estimates β and γ respectively. Thus, an obvious measure of central bank activism is the ratio γ/β . A higher magnitude of the ratio γ/β shows that central bank policy was

¹²We measured the output gap by the percent deviation of the log-industrial production from a linear trend.

The results using a linear trend are close to those using deviations from a quadratic trend.

relatively more active in targeting the output gap, and thus exhibited a higher degree of monetary activism.

We estimate this Taylor rule model for each country using monthly data from January 1979 to December 1998.¹³ Again following Faust, Rogers, and Wright (2001), we used an instrumental variable approach. For instruments of the targeted inflation rate and the output gap, we used six lagged values of the interest rate, inflation, and the output gap. The resulting γ/β ratios from our estimations are presented in the final column of Table 1 for easy comparison to the more simple measures of monetary activism.

The results of this estimation process are similar to the three simple measures. According to the ratios, the national central banks again show two clear groupings with Italy, France, and Spain being the most active and Austria, Belgium, and Germany being the least active of the old national central banks prior to the formation of the EMU.¹⁴

¹³ Clarida, Gali and Gertler (1997, 2000) advise the use of long time spans to improve the accuracy of the coefficient estimates. To see whether it significantly affected our results, the estimations were also run omitting the years 1990-1993, the period referred to as the hard Exchange Rate Mechanism. These years were omitted because Clarida, Gali and Gertler (1997) argued that the national central banks had lost all control of their monetary policy to the dominant Bundesbank during this period. Results after the omission showed an even clearer distinction between the two groupings of central banks than the ones presented in table 1. We estimated the Taylor rule using data from the International Financial Statistic CD-ROM.

¹⁴ While we do not present the individual estimates for γ and β it is worthwhile to mention that Germany, Austria and Belgium had the lowest magnitude of the parameter γ even without it being in ratio with β . In addition, only Germany, Austria, and Belgium had values of $\beta > 1$ (implying that the central bank increased the nominal interest rate in response to inflationary pressures enough so that the real interest would rise) and therefore actively fought inflation, again showing their more monetarist stance.

As was discussed earlier, the charter of the new ECB explicitly guides it toward a less active, and more monetarist, policy stance. However, we thought it still might be worthwhile to compute our measures of monetary activism for the new ECB for comparison. Unfortunately, there are two problems. First, there exists a significantly shorter length of data available on the ECB relative to the old national central banks. Not only does this lessen the accuracy of any estimates, but it also makes it impossible to obtain meaningful estimates from the Taylor rule model. Thus, we are only able to present our simpler measures of activism for the new ECB. We are encouraged, however, that our earlier results suggest that these simpler measures appear to provide essentially the same results as does the more sophisticated Taylor rule model.

The second problem is that underlying economic conditions in the post-EMU era may have been significantly different from the underlying economic conditions in the pre-EMU era, clouding any meaningful comparison. Had the ECB been around during this earlier period, and had followed the same policy rules, its observed behavior might have either been more or less active than its observed behavior in the post-EMU era. This is precisely the reason why we have presented the measures both in absolute terms and also relative to the United States. By normalizing around U.S. policy, this might help to control for any differences in underlying economic conditions that might have caused a change in observed activism, particularly because the Fed retained the same chairman during the entire sample period. This procedure allows us to make sure that differences in the economic conditions between the two time periods are not driving the results we find by looking at the absolute measures. However, we still present the data for the absolute

measures (the ones not relative to the United States) to show the strong robustness of our results regardless of whether we make this adjustment or not.

The results on relative volatility of the ECB's money supply growth rate, as well as the volatility of both nominal and real short-term market interest rates are shown in the final row of Table 1.¹⁵ For all of the indicators, the ECB shows much less activism than the old national central banks. This would suggest that all of these countries are now under a less active central bank than they were previously. In the only other related study of the new ECB, Faust, Rogers, and Wright (2001) find that the ECB is a little less "hard-nosed" on inflation when compared to the old German Bundesbank. This is not directly at odds with our findings, though, because we attempt to look at activism, rather than the degree to which they attempt to maintain stringent price stability. However, it might suggest that it would be possible to construct alternative measures that might find the new ECB to be slightly more active than the old German Bundesbank, and perhaps almost equally as active as the old central banks of Austria and Belgium.

5. Have Their Economies Become More or Less Stable?

Our results suggest that the new ECB is a very inactive central bank in the pursuit of short-run economic stabilization, particularly when compared to the old national central banks of countries such as Italy, Spain, and France. In this section we attempt to see whether the economies of these countries have become more or less stable now that they are under a central bank that is less responsive to the short-run economic fluctuations

¹⁵ For further comparisons, results are presented for the Federal Reserve Bank for the periods 1987:01 to 1998:12 and 1999:01 to 2001:12. The data on the U.S. M2 is from the Federal Reserve Bank of St Louis.

they face. Several measures of the change in economic stability for these countries since the creation of the ECB are shown in Table 2.

[Table 2 about here]

The volatility of the output gap, measured as the variance of the percent deviation of log-monthly industrial production from its trend was used to measure the stability of each economy. The first column of Table 2 reports the changes in output gap variance measured as the variance post-EMU minus the variance pre-EMU.¹⁶ Thus, a negative number implies that the country's economy has become more stable under the new ECB, while a positive number would imply the economy has become less stable. The changes in the output gap variance show that all countries have experienced more stability under the new ECB, in contrast to what the previous literature on asymmetric shocks predicted. This is evidence in favor of the monetarist critique of this position because it suggests that the new ECB's inability to respond to these asymmetric shocks has actually resulted in greater economic stability for these countries. Most importantly, the increases in stability are undeniably bigger for the three countries whose old national central banks were the most active in pursuing short-run economic stabilization (France, Spain, and Italy) than they are for the three countries with the least active old national central banks (Germany, Austria, and Belgium).¹⁷ Thus, the countries experiencing the largest stability

¹⁶ For the period prior the EMU the data set spans from 1979:01 to 1998:12, and for the period post EMU the data spans from 1999:01 to the most recent data available which is on average Fall 2001.

¹⁷ Due to the German unification, all analyses in this section leave out the years 1990 and 1991 for Germany. All other countries have a complete set however, by excluding the same years our results are

gains from being under the ECB are precisely those countries whose old national central banks were the most active. This would appear to be very strong evidence again in favor of the monetarist view that an active central bank, even though it has good intentions, results in less economic stability.

One obvious critique of these data is that it is possible that the post-EMU era has just simply been different from the pre-EMU era in that all of the world's economies have been more stable. However, this would not explain why it is precisely those countries with the most active old national central banks that have experienced the greatest gains in economic stability. Nonetheless, in an effort to ensure this alternative explanation was not responsible for driving our results, we decided to compare the output gap variance in the post-EMU period against all *equally-sized* smaller windows of data in our pre-EMU data. The second column of Table 2 reports the percent of pre-EMU windows that had higher output gap variances compared to the single post-EMU window. It is interesting to note that Italy, France, and Spain had 100%, 78%, and 74% of their pre-EMU window variances that were higher than the post-EMU variance, respectively. Thus, this group of countries with the most active old national central banks is exhibiting greater stability under the ECB than in the vast majority of equally-sized windows in the pre-EMU period. On the other hand, the percentages for Germany, Belgium, and Austria (the three countries with relatively inactive old national central banks) are substantially lower at 54%, 18%, and 10%, respectively. Again, this group of countries has experienced smaller stability gains than the countries with the more active national central banks.

much stronger in the fact that smaller gains appear for Belgium and Austria and greater gains appear for the group France, Italy and Spain.

To further check the robustness of our results, Table 2 also reports similar data for the volatility of financial markets in these countries measured with each country's monthly stock market index (including withholding taxes).¹⁸ We thought this would be an interesting second variable to consider because not only is financial stability closely linked to the overall stability of the economy, but also because stock prices incorporate a significant amount of discounted information about future economic conditions. A decrease in the volatility of stock market returns implies greater stability of the financial system. The third column of Table 2 reports the changes in the volatility of stock market returns, again measured as the variance post-EMU minus the variance pre-EMU.¹⁹ The results suggest that all countries but Germany have been experiencing a more stable stock market since the monetary transformation. This is interesting because Germany's old central bank has long been viewed as one of the least active in the world. Finding that the relatively inactive ECB created no stability gains for Germany is consistent with the monetarist position. Also consistent with this position is the fact that the countries with the most active old national central banks (Italy, Spain, and France) again appear to have experienced the largest increases in economic stability since being under the ECB even under this alternative measure.

The fourth column of Table 2 reports the percent of equally-sized pre-EMU windows of data that had higher financial market volatility compared to the single post-EMU window of data. The results are again very similar to those obtained using data on

¹⁸ The period pre-EMU covers the period 1979:01 to 1998:12 and the period post-EMU covers the period 1999:01 to 2001:07. The data are from Morgan Stanley Capital International.

¹⁹ Stock market return is calculated as the log difference of the stock market index.

the volatility of the output gap for these countries. Italy, Spain, and France had 99%, 81%, and 59% of their pre-EMU window variances that were higher than the post-EMU, respectively. Thus, again we find that the countries with the most active national central banks are experiencing the greatest gains in stability since coming under the ECB. On the other hand, Germany, Belgium, and Austria had 28%, 43%, and 54% of pre-EMU window variances higher than the post-EMU window, respectively. Again, this group of countries with the most inactive old national central banks are experiencing smaller gains in economic stability.

The evidence presented in this section strongly suggests two conclusions. First, there is little evidence to support the previous literature's contention that these economies would become less stable after coming under the new ECB because of its inability to tailor monetary policy to the needs of each country. In fact, the evidence seems to suggest just the opposite. We find that the economies of these countries have become more stable under the new ECB. Thus, the inability of the new ECB to be able to react to all of the asymmetric shocks occurring in these countries has resulted in more stability, a finding consistent with a monetarist view of monetary-policy effectiveness. The second major conclusion suggested by these findings is that the countries whose economies have exhibited the greatest gains in economic stability since coming under the new ECB are precisely those countries whose old national central banks were the most active in pursuing short-run economic stabilization. In particular, Italy and Spain, the two countries predicted by Salvatore (2002) to be most adversely affected by the movement to a single monetary policy (because they experienced the most asymmetric shocks and needed the most active monetary policy to offset these shocks), have been the ones that

have shown the greatest *improvements* in stability. This finding can be explained by one of two things: either Spain and Italy have benefited from being under a central bank that is unable to respond to their asymmetric shocks (the monetarist position), or the two countries have yet to experience asymmetric disturbances. The fact that Italy has experienced more economic stability in the post-EMU era than in all or virtually all (100% and 99% with our two measures) of the equally-sized periods of time during the twenty years prior to the formation of the EMU seems to suggest the former. Our results clearly seem to indicate a strong relationship between short-run stabilization gains and radical shifts to a less activist monetary policy.

6. Conclusion

The results of this paper have significant implications, both for the future of the EMU specifically and for the effectiveness of activist stabilization policy more generally. Despite the predictions that these European economies would begin to suffer wider swings in economic activity under a common central bank that is unable to "optimally" respond to the asymmetric shocks faced by each nation, they have not. In fact, they have become more stable. Because this prediction of increased instability was the basis for predictions that claimed that the EMU would be doomed in the long run, our results suggest a much rosier picture for the future of the EMU. Our explanation for the observed data is that well-intentioned activist policy is simply unable to deliver on its promise, and that it actually is counterproductive to the achievement of economic stability. If this explanation is correct, it brings into question the entire theory of optimal currency areas. If common central banks are activist, but react to the average economic conditions in the

entire area, and these activist policies are actually counterproductive, then it would appear that merging unlike economies into a common currency area actually results in more stability gains than would merging similar economies.

Not only do our results find increased economic stability after coming under the relatively inactive ECB, but they also show that the countries experiencing the greatest gains in stability are precisely those whose old national central banks practiced the highest degree of activist stabilization. This is highlighted by the stability gains of Italy and Spain, whose national central banks were characterized by highly active responses to short-run output fluctuations. This is our strongest evidence against the alternative explanation that all of these countries have simply had greater underlying economic stability in the post-EMU era. The increase in stability that we find is consistently and predictably related to the degree of activism of the old national central bank, and is not simply a uniform improvement across all of the countries. The countries that have had the greatest reductions in monetary activism have gained the most. The results suggest that a less active central bank that is committed to price stability results in greater macroeconomic stability.

The underlying implications of this latter finding should be obvious. Activist stabilization policy on the part of central banks, while well-intentioned, actually leads to greater economic instability. Because the effectiveness of activist monetary policy has been an area of significant debate among economists over the past three decades, being able to find such a unique opportunity to test it in such a clear, straightforward manner has significant value. Monetary theories based on mathematical models that build in an assumption that monetary activism is effective (such as the asymmetric shock theory for

the EMU or theories of optimum currency areas) are simply unable to deliver predictions that fit the real-world data for the EMU. We hope that our findings would encourage readers to be skeptical of the predictions of monetary theories that do not incorporate the monetarist critique and simply assume the effectiveness of monetary activism.

Of course, it has only been three years since the formation of the EMU, a period of time finally long enough to begin to test for many of the economic changes that have occurred as a result of this transformation in Europe. However, as more time passes, and greater spans of post-EMU data become available, more reliable estimates will be possible. While the data now available are sufficient from an econometric standpoint to allow us to get reliable estimates, more data always improves the accuracy of the estimates obtained from any empirical analysis. We are confident that the study of the effects of the formation of the EMU will generate many new and significant insights that will allow the profession to settle some of the major debates remaining in macroeconomic theory about the effectiveness of monetary activism.

Table 1 - Measures of Central Bank Activism

Country	Standard Deviation Of M2 Growth Rate in Percent		Variance of Nominal Short-Term Interest Rate		Variance of Real Short-Term Interest Rate		Weight on Output Gap Relative to Expected Inflation (γ/β)
	Absolute value	Relative Value	Absolute value	Relative Value	Absolute value	Relative Value	
Prior to formation of EMU (before January 1999)							
Germany	0.54	0.55	4.3	10.3	1.0	3.6	0.03
Austria	0.48	0.48	5.4	8.5	2.6	6.1	0.09
Belgium	0.48	0.58	5.1	9.1	3.1	9.3	0.14
Spain	0.61	0.61	14.8	37.7	7.3	23.3	0.25
France	0.85	0.75	6.8	10.2	4.1	13.8	0.35
Italy	1.17	1.10	7.0	28.0	2.7	16.1	0.45
U.S.	0.23		3.3		1.9		0.15
After formation of EMU (since January 1999)							
ECB	0.33	0.34	0.8	3.5	0.1	1.1	
U.S.	0.33		1.6		1.0		

Table 2 – Change in Economic Volatility Since Joining the EMU

Country	Change In Variance Of Output Gap	Percentage Of Pre-EMU Windows With More Output Volatility	Change In Variance Of Stock Returns	Percentage Of Pre-EMU Windows With More Stock Market Volatility
Germany	-8	54%	0.00009	28%
Belgium	-5	18%	-0.00002	43%
Austria	-7	10%	-0.00031	54%
France	-10	78%	-0.00026	59%
Spain	-15	74%	-0.00035	81%
Italy	-14	100%	-0.00048	99%

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