Stabilization of the Economy: Some More International Evidence*

Currently, there exists no clear consensus among economists with respect to the stability of a mixed economy and the implied need for active stabilization policies. As pointed out by Argy (1988), the Keynesian view that the private sector is very unstable due to the deficiencies in the working of markets has been challenged by monetarist and new-classical economists who firmly believe in the strength and efficacy of unhampered market forces.[1] Hoogduin (1988) has recently argued that the influence of the two branches of economic theory on economic policy is likely to fluctuate over time, partly depending on recent economic experience. Indeed, "economists hostile to the neo-classical concept of a natural rate of unemployment typically interpret events since 1979 as confirmation of its invalidity, regarding the attempts by monetarists to explain the rise in the natural rate as mere ex post rationalisation" (Healey, 1987, p. 494).

Despite disagreement about the feasibility and efficacy of macroeconomic stabilization policies, most economists accept the view that during the 20th century economic fluctuations have flattened out. Tobin argues, for instance, that: "The view that the market system possesses, for unchanging settings of government policy instruments, strong self-adjusting mechanisms that assure the stability of its full employment equilibrium is supported neither by theory nor by capitalism's long history of economic fluctuations... On this point, Martin Bailey has proved once more that a picture is worth a thousand words. His picture ... shows how much more

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[1] See LAIDLER (1986) for a critical assessment of the new-classical contribution to macroeconomics.

stable real output has been under conscious policies of built-in and discretionary stabilization adopted since 1946 and particularly since 1961." (Tobin, 1980, p. 46-48).[2]

Recently this view has, however, been challenged by Romer. In a series of papers, she has argued that the apparent decrease of economic fluctuations in the US is a direct consequence of inappropriate techniques used in constructing the datasets involved.[3] The stabilization of the economy suggested by official time series for GNP, industrial production and unemployment is a figment of those data, albeit for different reasons. Romer's findings have, in turn, been criticized. According to Weir (1986) the US unemployment data demonstrate stabilization since the end of World War II. Balke and Gordon (1986, 1988) present alternative GNP data that also show increased stability of the US economy.

Two recent papers have addressed the question from a broader perspective. Shapiro (1988) has used asset price data to study the volatility of real activity in the US economy after World War II, relative to earlier periods. His findings suggest that stock market returns show no reduction in variance when the pre-World War I or pre-Depression period is compared to the post-World War II period. Sheffrin (1988) has analyzed the pattern of economic fluctuations in a number of European countries. Comparing the standard deviations of the growth rates of either GNP or GDP for five countries (UK, Denmark, Sweden, Italy and Norway) for the periods 1871-1914, 1922-1939 and 1951-1984, he has found that for all countries, except Sweden, the standard deviations of real income growth are roughly of the same order of magnitude for the 1871-1914 and 1951-1984 periods, whereas the interwar years exhibit considerably more variability. Sheffrin concludes that, with the exception of Sweden, the countries in his sample did not experience a substantial reduction in the severity of the business cycle.

There are several reasons why an investigation of the severity of economic fluctuations in other industrial countries may increase our understanding, even for the case of the United States. First, the decrease in the severity of the business cycle in the US is sometimes

[2] Bailey (1978) pictures economic growth in the United States in the period 1901-1975.

[3] See Romer (1986a-d). In a recent paper Romer (1988) challenges the conventional belief that movements in aggregate demand were a crucial determinant of output movements in the pre-World War II era.

attributed to structural changes and perhaps the knowledge by the private sector that the government would intervene in an economic emergency, and not to the explicit stabilization policies followed. These structural changes and implicit commitments were common throughout the industrial countries in the post-World War II era. So, if the United States shows stabilization of the economy, one would expect a similar outcome for other industrial countries. Second, there are reasons to believe that the underlying data for other countries for periods before 1914 is better than those for the United States.

The purpose of this paper is to examine the stabilization properties of GDP for some other industrial countries than the US. To that end, we extend Sheffrin's analysis in various ways. First, we enlarge the number of observations by including some non-European countries. Our data have been corrected to take account of territorial changes. Second, we use several measures of volatility. Third, we examine whether our results are sensitive to the time periods chosen.

The paper is organized as follows. Section I describes the data used and discusses the sample periods selected for comparison purposes. Section II contains our results. Finally, section III offers some concluding comments.

I. Data

Our data have been taken from two sources. Data on GDP for the 1960-1984 period are from the OECD *National Accounts, 1960-1985*, volume 1. For the years prior to 1960 GDP data are from Maddison (1982), appendix A, tables A4-A8. One attractive property of Maddison's data is that they have been corrected for frontier changes. The author has used various sources to construct his GDP index. For 1950 onwards, he generally employs OECD data. We have therefore combined Maddison's series with recent OECD data. Our sample consists of Australia, Austria, Canada, Denmark, Germany, Italy, Norway, Sweden and the UK. Because Maddison notes that his data for Belgium, Finland, France, the Netherlands and Switzerland are not very reliable, these countries are not included in the sample.

Next consider the periods to be used for comparison purposes. We concentrate on two periods: 1871-1913 (the pre-World War I period) and 1951-1984 (the post-World War II period). From 1871 onwards data are available for all countries in our sample.[4] The first subsample covers the period up to the beginning of World War I and the collapse of the gold standard. The second subsample is the same as used by Sheffrin (1988). However, one may wonder whether all years of the 1951-1984 period are similar enough to be included in one sample period. Maddison (1982), for instance, distinguishes four phases within the capitalist epoch, covering periods of unequal length. His third period (the "golden age") is 1951-1973; the years after 1973 constitute the "phase of blurred objectives". Therefore, we will also examine whether the results are sensitive to the definition of the post-World War II period. Some data for the 1921-1939 period, which includes the years of the Great Depression, will also be presented.

II. Results

Table 1 presents standard deviations of GDP growth rates for our sample of industrial countries. From a comparison of the standard deviations of GDP growth rates during the post-World War II period with those of the interwar period, it follows that GDP has stabilized in all countries considered here. The data also indicate that in Australia, Canada, Italy, Norway, Sweden and the UK the standard deviation of GDP growth decreased during the post-World War II era when compared to the pre-World War I years. In the last four countries mentioned the decrease was modest. In Austria, Denmark, and Germany the standard deviation of GDP growth has, however, increased. It is also clear that — with the exception of Italy — the standard deviations of GDP growth rates during 1951-1973 hardly differ from standard deviations for the years 1951-1984.[5]

[4] Maddison confines his empirical analysis primarily to the 1870-1913 period, arguing that "the evidence available suggests that in most respects the 1820-70 experience was similar to that in 1870-1913". (MADDISON, 1982, p. 85).

[5] It is interesting to note that the choice of starting year of the after-World War II period seriously affects the results for European countries that were defeated in World War II. In Germany, for instance, the standard deviation of GDP growth is 0.094 for the period 1946-1984 which is almost three times the standard deviation of the 1951-1984 period. In Italy the standard deviation is 0.053 during 1946-1984 compared to 0.027 for 1951-1984.

TABLE 1

STANDARD DEVIATIONS OF GDP GROWTH RATES

	1871-1913	1921-1939	1951-1984	1951-1973
Australia	0.060	0.033	0.022	0.021
Austria	0.023	0.066	0.027	0.025
Canada	0.078	0.077	0.026	0.025
Denmark	0.018	0.037	0.026	0.024
Germany	0.023	0.083	0.032	0.028
Italy	0.033	0.040	0.027	0.017
Norway	0.018	0.049	0.015	0.014
Sweden	0.024	0.038	0.019	0.016
UK	0.022	0.040	0.021	0.018

Our results for the UK, Italy and Norway are quite similar to the findings of Sheffrin (1988), but for Denmark and Sweden our standard deviations for the 1871-1914 period are remarkably lower than Sheffrin's. This is probably due to the fact that Maddison has used other sources than Sheffrin to construct his indexes.[6] It is also possible that the difference is (partly) due to the fact that Sheffrin employs GNP data, whereas Maddison generally uses GDP data.

Table 2 presents two other measures of volatility: mean cyclical amplitude and standard deviation of relative deviations from trend.[7] The last measure indicates the variability of yearly cyclical movements. The mean cyclical amplitude shows the average percentage fall in GDP between peaks and troughs of the business cycle. The cyclical amplitude is calculated as the peak-to-trough change in the relative deviations from trend. For the calculations in Table 2, the peaks and troughs are defined as the actual turning points in the detrended series.[8]

[6] Maddison's data for Denmark are based upon S.A. HANSEN, *Oekonomisk vaekst i Danmark*, vol. II, Institute of Economic History, Copenhagen, 1974. This source seems to be more reliable than Sheffrin's. Sheffrin indicates that the authors of his data source were worried about the effects of tax evasion on their estimates, which are based largely on tax records. Maddison's data for Sweden are from a study by O. Krantz and C.A. Nilsson in which they use a new method and new sources to construct GDP, whereas SHEFFRIN (1988) uses an older study for which these new methods and sources have not been used. Indeed, the author of the latter study warns against use of his series for the analysis of cyclical movements (see SHEFFRIN, 1988, p. 81).

[7] The deviation of GDP from trend is divided by trend. The trend value has been estimated as the fitted value of a regression of the natural logarithm of the GDP index on $\sum_{i=0}^{4} \alpha_i t^i$. The same method has been applied to the pre-World War I and post-World War II periods. We have also experimented with other techniques to determine trend GDP, but the choice of an alternative technique hardly influences our results.

[8] If the amplitude proved to be less than 1.5%, it was not included.

TABLE 2

OTHER MEASURES OF VOLATILITY

	standard deviation of deviation from trend		mean amplitude of peak-to-trough	
	1871-1913	1951-1984	1871-1913	1951-1984
Australia	0.059	0.020	0.066	0.040
Austria	0.017	0.023	0.035	0.038
Canada	0.065	0.020	0.113	0.053
Denmark	0.012	0.017	0.031	0.044
Germany	0.025	0.018	0.045	0.044
Italy	0.024	0.017	0.047	0.040
Norway	0.024	0.014	0.037	0.047
Sweden	0.021	0.015	0.047	0.032
UK	0.024	0.016	0.067	0.034

The results reported in Table 2 are often, but not always, in accordance with the results in Table 1. In most countries the standard deviation of deviations from trend is smaller during the post-World War II period than in the pre-World War I era. The only exceptions here are Austria and Denmark, where fluctuations show a mild increase. The data on mean cyclical amplitude show a similar pattern; only Norway has a different outcome under both measures.

Table 3 presents the results of various tests on the equality of economic fluctuations. Column (Ia) shows the F-value of the test that the variance of the GDP growth rate has decreased if we compare the pre-World War I era with the 1951-1984 period. In Australia and Canada GDP fluctuations have clearly diminished, while for Italy and Sweden the F-statistic is significant at the 10% level. Column (Ib) contains the outcome of the test that fluctuations in GDP growth have increased. In Denmark and Germany the variance of the GDP growth rate has increased.

Column II contains similar tests for the variance of deviations from trend. In seven countries fluctuations have decreased, as follows from column (IIa). Australia, Canada, Italy and Sweden are now joined by Germany, Norway and the United Kingdom. It is remarkable, that while the variance of the GDP growth rate in Germany has increased, the variance of the deviation from trend has decreased. In Denmark fluctuations have increased, and this is also true in the case of Austria.

Column III shows the outcomes of the test that the mean cyclical amplitude has changed. If the test-statistic is positive volatility has decreased; a minus sign indicates that it has increased. In

TABLE 3

TESTING FOR EQUALITY OF ECONOMIC FLUCTUATIONS
1871-1913 versus 1951-1984

	I tests on growth rates		II tests on deviation from trend		III test on cyclical amplitude
	(a)	(b)	(a)	(b)	
Australia	7.21**	0.14	9.09**	0.11	1.09
Austria	0.75	1.34	0.54	1.84**	−0.34
Canada	8.80**	0.11	10.38**	0.10	1.76**
Denmark	0.49	2.02**	0.49	2.03**	−1.84**
Germany	0.48	2.07**	2.07**	0.48	0.08
Italy	1.58*	0.63	1.92**	0.52	0.72
Norway	1.38	0.72	2.91**	0.34	−0.74
Sweden	1.67*	0.60	1.93**	0.52	1.63*
UK	1.16	0.86	2.23**	0.45	2.79**

Column (Ia) shows the F-value of the test that the variance of GDP growth rates has decreased; column (Ib) shows the results of the test that the variance has increased. Column (II) shows the statistics to test whether the variance of deviations from trend decreased (IIa) or increased (IIb). In column III we test for changes in the cyclical amplitude. The significance levels in column III are for two different alternatives, *i.e.* the mean of the amplitude has decreased or it has increased; if the statistic is positive it has decreased, if negative it has increased.

** 5% significance level.
* 10% significance level.

Canada, the UK and Sweden the amplitude has decreased, while in Denmark it has increased. This test is, however, less reliable than the previous tests, because the number of peak-to-trough amplitudes is sometimes very small; it also differs considerably across countries, ranging from 5 (the UK) to 12 (Canada) in the 1871-1913 period.

It is interesting to note, that the stabilization results are heavily influenced by the choice of the measure of volatility. Only for two countries (Canada and Denmark) do the tests of Table 3 all point in the same direction. In Denmark economic fluctuations have increased, while in Canada they have decreased.

We conclude this section by some formal tests on the equality of fluctuations of the pre-World War I era and those of the 1951-1973 period. Table 4 presents the results of the first two tests of Table 3; the outcomes of the test on the cyclical amplitude are not given, because the 1951-1973 period does not contain enough business cycles to allow for a meaningful comparison. Some differences between Tables 3 and 4 are worth mentioning. In Italy and Sweden the F-statistic of the test that fluctuations of GDP growth decreased (column Ia) is now significant at the 5% level, while in Norway the

TABLE 4

TESTING FOR EQUALITY OF ECONOMIC FLUCTUATIONS
1871-1913 versus 1951-1973

	I tests on growth rates		II tests on deviation from trend	
	(a)	(b)	(a)	(b)
Australia	8.32**	0.12	8.02**	0.12
Austria	0.88	1.14	0.43	2.32**
Canada	9.64**	0.10	9.45**	0.11
Denmark	0.56	1.80*	0.46	2.19**
Germany	0.66	1.52	1.92*	0.52
Italy	3.83**	0.26	2.46**	0.41
Norway	1.73*	0.58	3.22**	0.31
Sweden	2.35**	0.43	2.05**	0.49
UK	1.56	0.64	2.54**	0.39

Column (Ia) shows the F-value of the test that the variance of GDP growth rates has decreased; column (Ib) shows the results of the test that the variance has increased. Column (II) shows the statistics to test whether the variance of deviations from trend decreased (IIa) or increased (IIb).

** 5% significance level.

* 10% significance level

test now also indicates (at the 10% significance level) stabilization of the GDP growth rate. Column (Ib) suggest that in Germany the standard deviation of GDP growth rate did not increase, while for Denmark the significance level is lower than in Table 3. The tests on the standard deviation of deviations from trend GDP are similar in Tables 3 and 4; only in Germany the significance level is now lower.

III. Concluding comments

The question of whether economic fluctuations have decreased is important for the ongoing debate on the merits of macroeconomic stabilization policies. If there is little evidence that economic fluctuations have been dampened, we can no longer simply assert that government stabilization policy is obviously effective. However, government policies are, of course, only one of the many factors determining various phases of capitalist development. If there are indications that the severity of economic fluctuations has decreased, it is not clear whether this is due to structural changes in the economy or to active demand management.

Another caveat is that one may wonder whether the quality of the data (especially for the periods before 1914) is sufficient to allow for cyclical analysis and standard statistical testing. We have used the best data available, but the debate on the reliability of pre-World War I data for the US provides us with a clear warning as regards the quality of older data. Still, analysis of economic fluctuations in other industrial countries may shed some light on the stabilization issue.

Our results give no clear answer to the question of whether economic fluctuations have flattened out. The answer is definitely *yes* if we compare the post-World War II period with the interwar period. A comparison of the 1871-1913 and the 1951-1984 periods yields mixed results: in 4 countries out of our sample of 9 the standard deviation of GDP growth has decreased; in two it has increased. If we concentrate on the deviation from trend measure of volatility, stabilization occurred in 7 countries; in 2 countries fluctuations increased. So, comparing the pre-World War I and post-World War II periods there is some evidence in favour of the stabilization hypothesis.

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REFERENCES

ARGY, V., "A Post-War History of the Rules vs Discretion Debate", in this *Review*, June 1988, 147-177.

BAILEY, M.N., "Stabilization Policy and Private Economic Behavior", *Brookings Paper on Economic Activity*, 1:1978, 11-60.

BALKE, N.S. and GORDON, R.J., "The Estimation of Prewar GNP Volatility", *NBER Working Paper* No. 1999, 1986.

BALKE, N.S. and GORDON, R.J., "The Estimation of Prewar GNP: Methodology and New Evidence", *NBER Working Paper* No. 2674, 1988.

HEALEY, N.M., "The UK 1979-82 'Monetarist Experiment': Why Economists Still Disagree", in this *Review*, December 1987, 471-499.

HOOGDUIN, L.H., "On the Character of Macroeconomics, Macroeconomic Policy and Econometrics: The Need for Another Macroeconomic Policy Conception", in this *Review*, March 1988, 105-125.

LAIDLER, D. "The New-Classical Contribution to Macroeconomics", in this *Review*, March 1986, 27-55.

MADDISON, A., *Phases of Capitalist Development*, Oxford: University Press, 1982.
ROMER, C.D. (1986a), "Spurious Volatility in Historical Unemployment Data", *Journal of Political Economy*, February 1986, 94, 1-37.
ROMER, C.D. (1986b), "Is the Stabilization of the Postwar Economy a Figment of the Data?", *American Economic Review*, June 1986, 76, 314-334.
ROMER, C.D. (1986c), "New Estimates of Prewar Gross National Product and Unemployment", *Journal of Economic History*, June 1986, 46, 341-352.
ROMER, C.D. (1986d), "The Prewar Business Cycle Reconsidered: New Estimates of Gross National Product, 1869-1918", *NBER Working Paper* No. 1969, 1986.
ROMER, C.D., "World War I and the Postwar Depression", *Journal of Monetary Economics*, July 1988, 22, 91-115.
SHAPIRO, M.D., "The Stabilization of the US Economy: Evidence From the Stock Market", *American Economic Review*, December 1988, 78, 1067-1079.
SHEFFRIN, S.M., "Have Economic Fluctuations Been Dampened?", *Journal of Monetary Economics*, January 1988, 21, 73-83.
TOBIN, J., *Asset Accumulation and Economic Activity*, Oxford: Basil Blackwell, 1980.
WEIR, D.R., "The Reliability of Historical Macrocconomic Data for Comparing Cyclical Stability", *Journal of Economic History*, 1986, 46, 353-365.