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Globalisation, economic volatility and insecurity

Sonja Fagernas and Ajit Singh
University of Cambridge

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For correspondence please contact Prof. Ajit Singh, Faculty of Economics, Sidgwick Avenue,
Cambridge, CB3 9DD, England
Email: ajit.singh@econ.cam.ac.uk
Tel. 44 - 1223 350 434
Fax: 44 - 1223 740 470

Globalisation, economic volatility and insecurity

1 Introduction

This paper is concerned with variations in economic growth rather than the average rate of growth. It is a subject not often studied particularly in relation to developing countries. Compared with hundreds of studies on the level of economic growth, there are very few studies at all on instability of economic growth in poor countries.

The present paper hopes to fill this gap to some extent by documenting and establishing some stylised facts about economic instability in rich and poor countries alike. The specific issues discussed are: Has economic instability increased or decreased over time in the two groups of countries. Are developed countries more stable than developing countries? These questions derive their significance from four different literatures.

Firstly, the literature on globalisation and specifically financial globalisation. One important claim of the proponents of globalisation is that globalisation would lead to faster economic growth, although it may be more unstable than before (ILO, 2004, IMF Outlook, 1999). This is the reason why the international financial institutions (IFIs) recommended that there should be a safety net for those who are left behind by globalisation to mitigate the effects of instability.

Opinion is divided on how financial globalisation affects instability in rich and poor countries. The proponents argued that by providing liquidity, financial globalisation would help smooth the consumption paths of economies subject to various internal and external shocks. The opponents led by Joseph Stiglitz suggested that in the case of developing countries there is widespread evidence that volatility has increased without necessarily leading to faster economic growth. A theoretical basis for this observation was provided by information theory, which argued that a financial contract is rather different from a normal contract involving commodities or goods.

The second closely related literature, which the study on instability is connected with looks at the outcomes of globalisation in terms of economic growth and economic instability. For the 1980s and in fact up to 1995 it was observed that the average growth rate of the OECD economies during the post-globalisation period had been comprehensively lower than during the golden age, i.e. almost every OECD country except Turkey had lower growth in the 1980 to 1995 period than in the period

1950-1973. It was also found that most developing countries had recorded both lower growth and greater volatility both in the 1980s and 1990s compared with before.

In the analysis below we will find that post-globalisation period performances have varied a great deal. In both rich and poor countries, there are clear gainers and losers. It is not the case of comprehensive failure or comprehensive success.

The third strand of literature, which is relevant is the concern with social security for the poor. How should the governments in societies deal with the poor subject to the loss of jobs and income as a result of economic instability? What kind of insurance arrangements would be feasible and appropriate? Volatility can have detrimental effects especially on the poor and women. Even if economic instability is temporary, its effects on the poor can be long lasting.

The fourth strand of literature to which the analysis of instability is related to is the whole grand question of business cycle in economic analysis. Has the business cycle become obsolete or have we learned to tame it better than before, and what are the prognoses for the future? As we shall see below, many rich countries have enjoyed unprecedented stability. One question is whether it is likely to last. This question is important as it involves the question of how the large American current account and budget deficits will be brought under control without jeopardising world economic growth.

This paper is very much work-in-progress rather than a completed piece of research. Apart from establishing stylised facts on economic instability we will review some of the available hypotheses for explaining these facts. We will concentrate on the Indian case, where there has been a trend increase in GDP growth over the last two decades and the standard deviation of GDP growth has also declined over this period. We will present some preliminary results of our analysis and examine the consequences of a U.S. hard lending as a result of current international monetary imbalances. The implications of the analysis for the various literatures outlined above will also be considered.

The order of presentation of material is as follows. Section 2 focuses on industrial countries. Section 3 focuses on developing countries. Section 4 looks at India. Section 5 explores the relationship between volatility and insecurity. Section 6 comments on reasons for changes in volatility, and section 7 concludes.

2 Economic volatility in industrial countries

Rowthorn and Martin (2004) look at four economic regions – the US, the Euro area, the UK and Japan, and with the use of a small macroeconomic model attempt to explain the forces behind the noticeable drop in economic volatility. The authors divide the 50 year period into four periods: 1954-1973 being the “Golden age”, 1974-1983 the turbulent decade of large oil price and other shocks, 1984-1993 the decade of disinflation and 1994-2003 the benign decade of clear moderation in business cycle activity. The measure used for volatility is standard deviation.¹

Volatility of both inflation and GDP growth volatility in the world as a whole has declined somewhat in the last two decades; in the case of real GDP growth this has occurred mainly in the period 1994-2003, and in the case of inflation in the last two decades. The volatility of both GDP growth and inflation is lower in the period 1984-2004 than in 1954-1983 in nearly all the industrial seven countries. The frequency of severe recessions (table 3) has also dropped in some of these countries, and increased only in Japan.

Table 1 Standard deviations of annual real GDP growth

GDP growth volatility				
%	1954-1973	1974-1983	1984-1993	1994-2003
World	4,3	5,3	4,3	3,0
United States	2,5	2,8	1,9	1,2
Germany	2,4	2	1,9	1
France	1,2	1,4	1,6	1,2
Italy	1,5	2,7	1,4	0,9
United Kingdom	1,8	2,2	2,0	0,8
Japan	2,4	1,9	2,0	1,5

Source: Rowthorn and Martin (2004)

Table 2 Standard deviations of annual GDP price inflation

Inflation volatility				
%	1954-1973	1974-1983	1984-1993	1994-2003
United States	1,6	1,9	0,7	0,4
Germany	1,9	1,2	1,1	0,8
France	2,5	1,2	1,6	0,6
Italy	3,0	2,4	2,2	1,2
United Kingdom	2,4	6,0	1,7	0,7
Japan	2,7	5,4	1,0	0,9

Source: Rowthorn and Martin (2004)

¹ Much more sophisticated measures of volatility can be used but it turns out that simple standard deviation conveys the main stylised facts very well.

Table 3 Frequency of severe recessions, percentage share

	1954-1973	1974-1983	1984-1993	1994-2003
United States	10	40	10	0
Germany	5	20	10	10
France	0	10	10	0
Italy	0	10	10	0
United Kingdom	0	40	10	0
Japan	0	10	0	20

Source: Rowthorn and Martin (2004)

Number of years when GDP growth is less or equal to 0% shown as a percentage share of number of years in period

3 Economic volatility in developing countries

This section looks at economic volatility in the developing world. It presents evidence of volatility of GDP growth and inflation over the years 1960-2004, and focuses on Asia, Latin America and Africa, with a special section dedicated to India. Volatility is measured as standard deviation.² Middle Eastern and transition countries are excluded due to lack of time series data. The regional figures are based on all available countries as opposed to just those shown in the tables below.

When the two years immediately following the East Asian crisis are removed (last column in table), this is no longer the case. For most Asian countries consumer price volatility is highest in the period 1972-1981 and then falls, with the exceptions of Indonesia and the Philippines.

In South Asia, GDP volatility has declined clearly in India, Pakistan and Bangladesh in the past two decades. The variance of real GDP growth for the period 1982-2004 is significantly lower than for the period 1961-1981 at the 99% level for the South Asia aggregate. Despite the East Asian financial crisis of 1997, the variance is also significantly lower for the period 1982-2004 than 1961-1981 at the 99% level for the East Asia and Pacific aggregate. However, from the individual countries, volatility has declined considerably only in China in 1982-2004 and appears to have increased somewhat in Malaysia, Thailand the Philippines (statistically significant).

This evidence suggests that volatility has declined over the last two decades in South Asia and less so, but also in the East Asia region as a whole. Among the latter country group, volatility has clearly declined for China, but whether this is the case for the other countries is not clear; it is more so the case for inflation than GDP growth. There has been a statistically significant fall in inflation in most of the Asian countries shown here. Thus, the evidence does not suggest that there would have been a marked increase in economic instability in the last two decades, when these countries

² Using the coefficient of variation instead of standard deviation led to broadly similar results.

were opening up their economies, and the volatility induced by the East Asian crisis appears to have been short-lived.

ASIA

Table 4 Asia: Real GDP growth (%)

		1960-1971	1972-1981	1982-1991	1992-2004	1992-2004*	Ratio-test p-value
South Asia	St. Dev	2,6	3,6	1,8	1,3		0,001***
	Mean	4,0	3,6	5,2	5,7		
India	St. Dev	3,2	4,4	2,4	1,5		0,001***
	Mean	3,9	3,5	5,3	6,1		
Bangladesh	St. Dev	4,9	6,7	1,2	0,5		0,000***
	Mean	3,2	2,0	3,7	5,0		
Sri Lanka	St. Dev	1,9	2,2	1,5	2,1		0,38
	Mean	4,3	4,9	4,1	4,8		
Nepal	St. Dev	3,1	3,1	3,5	2,1		0,29
	Mean	2,2	3,1	4,6	4,3		
Pakistan	St. Dev	3,0	2,8	1,1	1,9		0,03**
	Mean	6,6	5,5	6,0	3,9		
East Asia & Pacific	St. Dev	7,4	2,0	1,5	2,5	1,7	0,000***
	Mean	4,9	6,5	7,7	7,9	8,6	
China	St. Dev	14,2	3,8	3,6	2,3	2,3	0,000***
	Mean	4,9	6,1	9,8	9,7	10,1	
Hong Kong, China	St. Dev	4,3	5,0	4,3	3,8	3,8	0,3
	Mean	5,3	4,0	3,1	3,8	3,8	
Korea, Rep.	St. Dev	3,6	3,8	1,7	4,2	2,0	0,44
	Mean	8,3	7,1	9,1	5,5	6,2	
Singapore	St. Dev	5,1	2,6	3,9	4,4	4,2	0,47
	Mean	10,1	8,7	7,1	6,3	6,9	
Thailand	St. Dev	2,0	2,6	3,2	5,4	3,2	0,000***
	Mean	7,9	7,0	8,2	4,5	5,8	
Philippines	St. Dev	1,0	1,8	5,0	2,1	1,8	0,000***
	Mean	5,0	5,7	1,4	3,7	4,1	
Malaysia	St. Dev	1,4	3,1	3,7	4,9	3,0	0,01**
	Mean	6,4	8,0	6,3	6,1	7,4	
Indonesia	St. Dev	4,1	1,2	2,6	5,6	1,6	0,11
	Mean	4,4	8,0	6,5	4,1	5,9	

* excludes years 1998 and 1999 for East Asia and Pacific countries

Source: World Development Indicators

Ratio test is a one-sided F-test for whether the variance is significantly different for the 1982-2004 period than for 1960-1981. In case this difference is statistically significant, it means that the larger number is statistically larger.

***, **, * = significant at the 99 and 95 and 90% levels respectively

Table 5: Asia: Consumer price inflation (%)

		1960-1971	1972-1981	1982-1991	1992-2004	Ratio-test
						p-value
India	St. Dev	4,7	9,5	2,4	3,4	0,000***
	Mean	6,1	9,2	9,0	7,1	
Bangladesh	St. Dev			1,6	2,5	
	Mean			7,2	4,7	
Sri Lanka	St. Dev	2,5	7,5	5,4	3,2	0,03**
	Mean	2,9	10,4	11,8	9,4	
Nepal	St. Dev	7,4	6,2	4,4	4,2	
	Mean	5,5	9,1	10,6	6,9	
Pakistan	St. Dev	2,6	7,6	2,4	3,7	0,000***
	Mean	3,6	13,1	7,0	7,5	
China	St. Dev			7,8	8,4	
	Mean			10,2	6,0	
Hong Kong, China	St. Dev			2,9	5,5	
	Mean			1,7	3,8	
Korea, Rep.	St. Dev	2,2	7,8	2,7	1,8	0,000***
	Mean	12,7	17,3	5,2	4,3	
Singapore	St. Dev	1,1	7,8	1,7	1,1	0,000***
	Mean	1,2	7,4	1,8	1,3	
Thailand	St. Dev	2,5	6,8	1,8	2,4	0,000***
	Mean	2,1	11,2	3,7	3,6	
Philippines	St. Dev	6,2	8,3	13,4	2,0	0,2
	Mean	7,1	14,1	14,2	6,3	
Malaysia	St. Dev	1,6	4,6	1,8	1,3	0,000***
	Mean	1,0	6,8	2,7	2,8	
Indonesia	St. Dev	325,5	10,5	2,2	14,3	0,000***
	Mean	191,8	18,3	8,3	12,9	

Source: World Development Indicators

Ratio test is a one-sided F-test for whether the variance is significantly different for the 1982-2004 period than for 1960-1981. In case this difference is statistically significant, it means that the larger number is statistically larger.

***, **, * = significant at the 99 and 95 and 90% levels respectively

LATIN AMERICA

Table 6 Latin America: Real GDP growth (%)

		1960-1971	1972-1981	1982-1991	1992-2004	Ratio-test
						p-value
Latin America &	St. Dev	1,8	2,2	2,4	2,2	0,79
Caribbean	Mean	5,4	5,1	1,6	2,8	
Mexico	St. Dev	2,5	2,2	3,0	3,5	0,07*
	Mean	6,5	7,2	1,5	2,9	

Argentina	St. Dev	5,0	5,1	6,7	6,7	0,,11
	Mean	4,2	1,9	0,5	2,8	
Brazil	St. Dev	3,7	5,2	4,2	2,1	0,07*
	Mean	6,7	6,9	2,2	2,7	
Chile	St. Dev	2,9	6,6	6,4	3,6	0,47
	Mean	4,6	2,7	4,3	5,5	
Colombia	St. Dev	1,4	2,1	1,7	2,6	0,11
	Mean	5,3	5,2	3,6	2,7	
Ecuador	St. Dev	2,6	3,9	3,4	3,1	0,37
	Mean	4,5	6,7	2,3	2,4	
Bolivia	St. Dev	5,5	3,2	3,6	1,5	0,02**
	Mean	3,0	3,5	0,7	3,3	
Peru	St. Dev	2,4	2,9	8,0	3,9	0,000***
	Mean	5,2	4,0	-1,0	4,0	
Paraguay	St. Dev	2,2	2,8	3,4	2,0	0,12
	Mean	4,4	9,2	2,2	1,8	
Uruguay	St. Dev	2,5	2,7	6,3	6,1	0,000***
	Mean	1,3	3,2	0,4	2,1	

Source: World Development Indicators

Ratio test is a one-sided F-test for whether the variance is significantly different for the 1982-2004 period than for 1960-1981. In case this difference is statistically significant, it means that the larger number is statistically larger.

***, **, * = significant at the 99 and 95 and 90% levels respectively

Table 7 Latin America: Consumer price inflation (%)

		1960-1971	1972-1981	1982-1991	1992-2004	Ratio-test
						p-value
Mexico	St. Dev	1,5	7,7	39,3	10,5	0,000***
	Mean	3,0	19,1	68,6	14,2	
Argentina	St. Dev	8,8	118,2	1038,3	9,5	0,02**
	Mean	22,7	148,6	793,7	6,6	
Brazil	St. Dev			902,1	760,5	
	Mean			647,0	392,0	
Chile	St. Dev	11,7	177,5	5,9	4,4	0,000***
	Mean	26,5	174,8	20,7	6,4	
Colombia	St. Dev	8,7	5,5	4,6	7,6	0,19
	Mean	11,3	23,1	24,0	15,3	
Ecuador	St. Dev	1,6	4,3	18,2	24,4	0,000***
	Mean	4,3	6,2	2,1	2,3	
Bolivia	St. Dev	5,9	3,0	3,5	1,4	0,000***
	Mean	2,7	3,3	0,5	3,2	
Peru	St. Dev	4,58	24,7	2413,1	21,8	0,000***
	Mean	9,1	38,8	1257,0	15,4	

Paraguay	St. Dev	5,2	8,2	8,9	4,5	0,48
	Mean	3,5	14,2	22,8	12,0	
Uruguay	St. Dev	36,6	18,9	26,5	21,0	0,41
	Mean	45,7	65,0	69,3	25,1	

Source: World Development Indicators

Ratio test is a one-sided F-test for whether the variance is significantly different for the 1982-2004 period than for 1960-1981. In case this difference is statistically significant, it means that the larger number is statistically larger.

***, **, * = significant at the 99 and 95 and 90% levels respectively

The picture for Latin America looks different from that for Asia. The variance of real GDP growth for the period 1982-2004 is not significantly different than for the period 1961-1981 at the 95% level for the Latin America aggregate. This viewed together with the changes in standard deviations for individual countries suggests that GDP volatility may not have declined or changed much in Latin America over the last two decades compared with earlier years. There has been a statistically strongly significant increase in volatility in Peru and Uruguay. The volatility of inflation is extreme at times, and significantly higher in several countries in the latter decade. Inflation volatility is clearly lower in the latter decades only in the case of Chile. As mentioned earlier, there were several major crises in Latin America in the last decade, and these are evidently reflected in the inflation volatility figures.

The variance of real GDP growth for the period 1982-2004 is not significantly different than for the period 1961-1981 at the 95% level for the Sub-Saharan Africa aggregate. However, standard deviation of GDP growth does appear to have fallen in some individual countries such as Ghana, Cote d'Ivoire, Nigeria and Botswana. It has also declined in the case of Middle East and North Africa. On the other hand, the volatility of consumer price inflation has not fallen in Africa, and in some cases there has been a statistically significant increase (Nigeria, Cameroon, Zimbabwe).

AFRICA

Table 8 Africa: Real GDP Growth (%)

		1960-1971	1972-1981	1982-1991	1992-2004	Ratio-test
						p-value
Middle East & North Africa	St. Dev		5,5	3,3	1,1	0,001***
	Mean		3,8	3,7	3,8	
Algeria	St. Dev	14,9	7,4	3,0	2,5	0,000***
	Mean	3,1	7,8	2,4	2,9	
Egypt	St. Dev	3,1	4,7	2,6	1,0	0,000***
	Mean	5,3	6,7	5,2	4,4	
Sub-Saharan Africa	St. Dev	1,95	1,88	1,47	1,69	0,15
	Mean	5,1	3,2	1,7	2,9	

South Africa	St. Dev	1,7	2,2	2,4	1,7	0,42
	Mean	5,8	3,5	0,9	2,5	
Cote d'Ivoire	St. Dev	5,9	6,5	2,6	3,6	0,001***
	Mean	8,9	4,9	0,4	1,5	
Ghana	St. Dev	3,5	6,0	4,9	0,6	0,02**
	Mean	3,2	-0,4	3,2	4,4	
Nigeria	St. Dev	12,0	7,7	5,7	2,6	0,000***
	Mean	5,9	2,2	3,1	3,1	
Zimbabwe	St. Dev	6,6	6,8	3,1	6,5	0,17
	Mean	6,7	3,7	3,8	-0,2	
Cameroon	St. Dev	4,6	8,5	6,4	3,3	0,04**
	Mean	2,3	8,1	1,5	2,8	
Botswana	St. Dev	6,5	5,8	4,0	1,5	0,03**
	Mean	10,2	13,6	10,8	4,9	

Source: World Development Indicators

Ratio test is a one-sided F-test for whether the variance is significantly different for the 1982-2004 period than for 1960-1981. In case this difference is statistically significant, it means that the larger number is statistically larger.

***, **, * = significant at the 99 and 95 and 90% levels respectively

Table 9 Africa: Consumer Price Inflation (%)

		1960-1971	1972-1981	1982-1991	1992-2004	Ratio-test
						p-value
Algeria	St. Dev	2,8	4,3	6,2	12,1	0,01**
	Mean	4,6	9,7	10,9	11,9	
Egypt	St. Dev	5,0	4,9	3,4	4,7	0,28
	Mean	3,2	10,2	17,9	7,1	
South Africa	St. Dev	1,3	2,4	2,1	2,9	0,38
	Mean	3,0	11,6	14,7	7,5	
Cote d'Ivoire	St. Dev	3,9	6,9	3,4	7,0	0,11
	Mean	3,5	13,3	4,5	5,6	
Ghana	St. Dev	10,5	38,5	31,6	14,3	0,02**
	Mean	8,4	54,2	37,1	25,6	
Nigeria	St. Dev	6,6	9,3	18,0	22,8	0,000***
	Mean	5,4	15,9	19,9	27,2	
Zimbabwe	St. Dev	1,0	4,8	5,8	36,1	0,03**
	Mean	2,1	8,6	15,0	47,1	
Cameroon	St. Dev	3,6	3,2	6,5	10,4	0,02**
	Mean	2,9	11,3	7,2	5,4	
Botswana	St. Dev		2,3	1,4	2,9	0,5
	Mean		2,3	1,4	2,9	

Source: World Development Indicators

Ratio test is a one-sided F-test for whether the variance is significantly different for the 1982-2004 period than for 1960-1981. In case this difference is statistically significant, it means that the larger number is statistically larger.

***, **, * = significant at the 99 and 95 and 90% levels respectively

The tables 10-12 below show the percentage of years within the specified time periods when real GDP growth has been less than 0.5% as an indication of the frequency of recessions in the regions. The frequency of such recessions has fallen clearly in South Asia over the last two decades, but not in the case of East Asia. On the other hand, in Latin America and Sub Saharan Africa, recessions appear to have become more frequent in the 1982-2004 period. There may be a variety of reasons, but what emerges is that globalisation has been accompanied with a varying record of economic volatility in the world as a whole.

Table 10 Asia: Frequency of recessions, percentage share of years

	1961-1971	1972-1981	1982-1991	1992-2004
South Asia	9	20	0	0
India	18	20	0	0
Bangladesh	27	20	0	0
Sri Lanka	0	10	0	8
Nepal	27	20	10	8
Pakistan	9	0	0	0
East Asia & Pacific	27	0	0	0
China	36	10	0	0
Hong Kong, China	0	10	10	15
Korea, Rep.	0	10	0	8
Singapore	9	0	10	15
Thailand	0	0	0	15
Philippines	0	0	30	15
Malaysia	0	0	10	15
Indonesia	9	0	0	8

Number of years when GDP growth is less than 0.5% shown as a percentage share of number of years in period

Table 11 Latin America: Frequency of recessions, percentage share of years

	1961-1971	1972-1981	1982-1991	1992-2004
Latin America & Caribbean	0	10	30	31
Mexico	0	0	30	15
Argentina	27	40	50	38
Brazil	0	10	30	15
Chile	9	30	20	8
Colombia	0	0	0	8
Ecuador	9	0	30	15
Bolivia	18	30	50	8
Peru	9	20	50	23
Paraguay	0	0	30	31
Uruguay	36	20	40	38

Number of years when GDP growth is less than 0.5% shown as a percentage share of number of years in period

Table 12 Africa: Frequency of recessions, percentage share of years

	1961-1971	1972-1981	1982-1991	1992-2004
Middle East & North Africa	0	30	20	0
Algeria	36	0	40	15
Egypt	0	0	0	0
Sub-Saharan Africa	0	0	10	15
South Africa	0	10	60	8
Cote d'Ivoire	9	10	60	54
Ghana	18	60	20	0
Nigeria	36	30	40	8
Zimbabwe	9	40	10	46
Cameroon	9	20	50	23
Botswana	0	0	0	0

Number of years when GDP growth is less than 0.5% shown as a percentage share of number of years in period

4 Economic volatility in India

India emerges as one of the developing countries where economic volatility has declined over the period 1980-2004. Table 13 shows standard deviations for Indian GDP growth over the last five decades. The evidence confirms that there has been a fairly considerable decline in GDP growth volatility in the period 1980-2004 compared with the period 1960-1979. The variance of real GDP growth for the period 1980-2004 is significantly lower than for the period 1951-1979 at the 99% level.

Table 13 Growth of real GDP by sector (%)

	1951-1959	1960-1969	1970-1979	1980-1989	1990-2004	Ratio	Ratio test p-value
GDP							
St. dev.	2,6	3,7	4,2	2,3	1,8	1,8	0,001***
Mean	3,6	4,0	2,9	5,8	5,8	0,6	0,003***
Coeff. of var.	0,7	0,9	1,4	0,4	0,3		
Agriculture							
St. dev.	4,6	7,2	8,1	6,1	4,7	1,3	0,08*
Mean	2,7	2,5	1,3	4,4	2,7	0,6	0,2
Coeff. of var.	1,7	2,9	6,4	1,4	1,7		
Industry							
St. dev.	1,4	3,3	3,7	2,6	3,5	0,9	0,6
Mean	5,8	6,2	4,4	7,4	6,0	0,8	0,07*
Coeff. of var.	0,2	0,5	0,8	0,4	0,6		
Services							
St. dev.	2,0	1,3	2,0	1,2	1,8	1,1	0,3
Mean	4,3	5,2	4,1	6,4	7,4	0,6	0,000***
Coeff. of var.	0,5	0,2	0,5	0,2	0,2		
***, * significant at the 99% and 90% percent levels respectively							

Source: Reserve Bank of India, Handbook of Indian statistics

Ratio = ratio between periods 1951-1979 and 1980-2004, Ratio = ratio between periods 1967-1977 and 1978-2004, Ratio test is an F/t-test for whether the variance is significantly lower or mean significantly higher between these two periods.

The volatility decrease is not as clear if one looks at the three components of GDP: agriculture, industry and services. Volatility in agricultural GDP has declined since the 1980s from that in 1960-1979, and the decline is significant at the 90 percent level, but no noticeable decline has occurred in the case of industry or services. However, there has been a statistically significant increase in the service sector growth rate. The composition of GDP has changed remarkably over the time period. The share of agriculture in GDP has fallen from 58% in 1950 to 21% in 2004, and the share of services has risen from 32% to 58%.

A wealth of literature tries to identify the break points in the GDP growth rate for the Indian economy. It is fairly generally agreed that the turning point in Indian growth rate occurred in the year 1980. However, some claim that there have also been other earlier or later breaks. A simple one tailed t-test for differences in means between the periods 1951-1979 and 1980-2004 reveals that there was a statistically significant increase in the growth rate for aggregate GDP (see table 13 above).

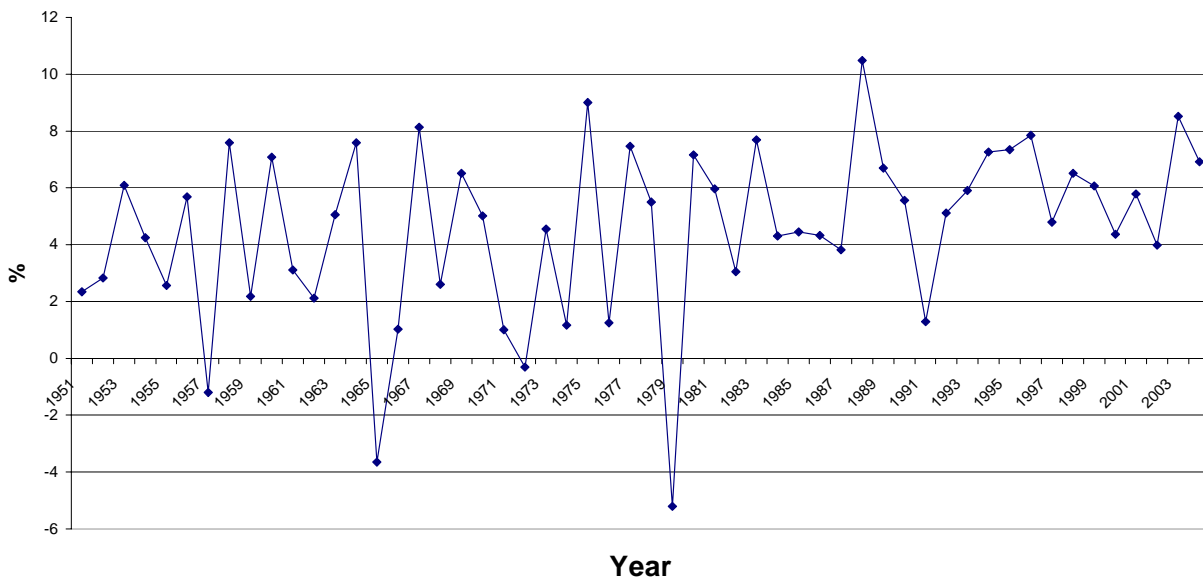
The existing literature uses slightly more sophisticated methodologies. Using sequential F-tests for statistical significance for the all years between 1951 and 2001, Wallack (2003) confirms that the aggregate annual GDP growth rate increased significantly and permanently in the year 1980. She also finds a significant break in the GNP growth series in the year 1987. Alike our analysis, she reports that the variation in growth rates has decreased after the 1980 break year.

By examining the separate components of GDP, Wallack (2003) finds statistically significant additional break dates in the year 1992 for trade, transport and communication and in 1974 for finance, insurance, real estate and business. She suggests that these breaks in different sectors can be linked roughly to policy changes in the areas, such as the trade liberalisation and reforms in the telecommunications sector and growth of the IT sector in 1992, and a period of extremely low interest rates in 1974. She associates the break in the overall growth rate in 1980 to an investment boom.

Using a similar method to identify break points (Chow test), Virmani (2005) also locates the change in overall growth on the year 1980. This is when India departed from the "Hindu" growth rate. While Wallack appears to find some evidence that there might be another break in the year 1993,

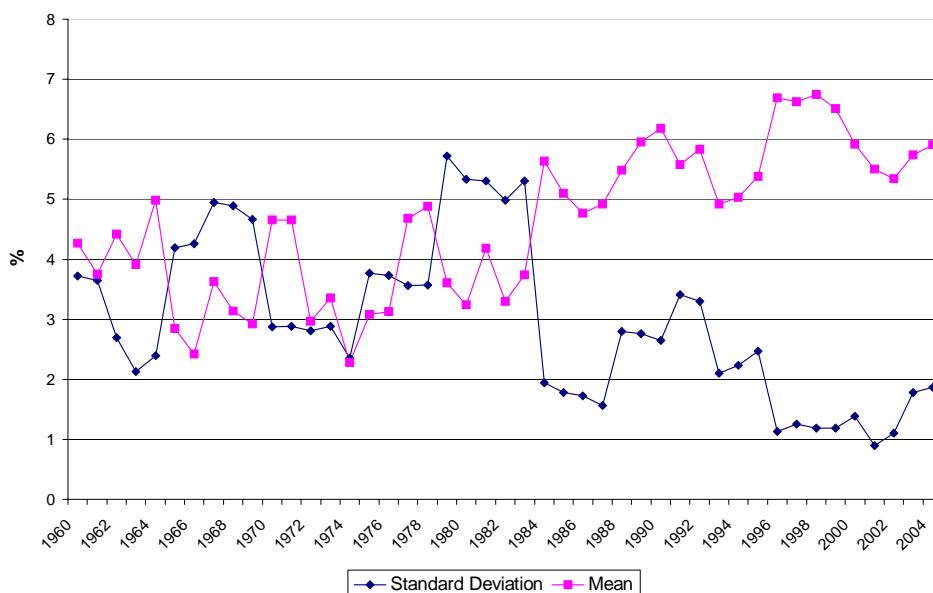
Virmani finds that taking into account the 1980 break and variation in rainfall, there are no additional breaks in GDP growth. He thus concludes that the reforms of the early 1990s did not mark a beginning of a new phase – the phase that began in 1980 is still going on. Sarkar (2004) also finds no change in trend behaviour of real GDP since 1991 in comparison with the earlier period. A simple F-test of our figures in table 13 reveals that the variance of GDP growth is not statistically different in 1990-2004 from that in 1980-1989.

Figure 1 Real GDP Growth



Source: Reserve Bank of India, Handbook of Indian Statistics

Figure 2 "Moving" 5-year real GDP growth rates



This evidence broadly confirms that the growth rate increased in 1980, and the volatility of growth dropped. The change in volatility can be seen in the figures 1 and 2. Figure 2 shows the 5-year moving average and standard deviation of the GDP growth series. It reveals that there is a significant decline in volatility (standard deviation) and an increase in the average growth rate in year 1980 (in the figure 2 the decline is located at year 1984 as it shows the standard deviation and mean over the past 5 years).

In addition to GDP volatility, the volatility of inflation has also declined over the decades in India, as can be seen from table 14 below, which shows the standard deviation and mean of agricultural worker CPI (CPIAL). The standard deviation of CPIAL for the period 1978-2004 (5.1) is significantly lower than for the period 1967-1977 (14.1) at the 99% level. As figure 3 below suggests, the fall in deviation occurs in the late 1970s. However, the difference in average inflation between the two periods is not statistically significant. Figure 3 below shows a 5-year moving average/standard deviation for inflation, and the decline in volatility can be situated approximately around the year 1977.

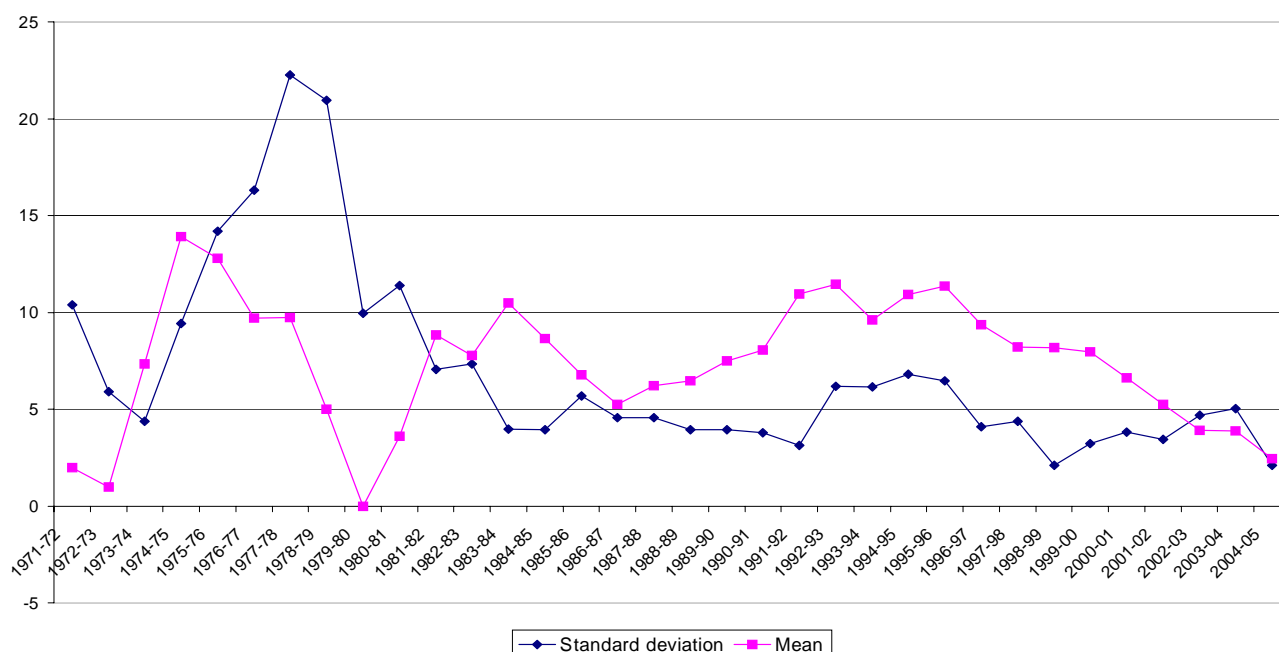
Table 14 Consumer Price Inflation (CPIAL, Agricultural labourer), %

	1967-1977	1978-1988	1989-1996	1997-2004	Ratio	Ratio test
						p-value
St. dev.	14,1	5,3	5,3	3,6	2,7	0,000***
Mean	6,3	7,5	10,0	4,3	0,9	0,6
*** significant at the 99% level						

Source: Reserve Bank of India, Handbook of Indian statistics

Ratio = ratio between periods 1967-1977 and 1978-2004, Ratio test is an F/t-test for whether the standard deviation is significantly lower or mean significantly higher between these two periods.

Figure 3 "Moving" 5-year inflation rate for agricultural labourers (CPIAL), %



Source: Reserve Bank of India, Handbook of Indian Statistics

5 Insecurity and economic volatility

The purpose of this chapter is to assess the developments in a few indicators of security or well-being in the countries described above. Lack of time series data prohibits a more detailed analysis, so the section focuses on developments in unemployment, poverty and income inequality for the periods for which data is available. The measurement of these indicators is not without problems, and even comparability between countries can be questionable, but the purpose here is to provide a brief overview.

Tables 15-17 below show the average total unemployment rate for different countries for the period 1980-2000.³ It is questionable whether unemployment is a meaningful concept in low-income countries, and data was unavailable for African countries.

³ The data was not available in World Development Indicators for earlier years.

Table 15 Latin America: Average unemployment rate (% of total labour force)

	1980-1984	1985-1989	1990-1994	1995-2000
Argentina	3,9	5,7	8,4	15,9
Brazil	4,0	3,2	5,5	7,9
Chile	14,0	8,1	5,2	6,5
Colombia	10,1	11,4	8,9	13,6
Mexico		2,5	3,4	3,7
Peru		6,0	8,5	7,6
Paraguay	6,3	5,5	5,3	8,2
Uruguay		9,1	8,8	10,5
Venezuela	8,5	10,1	8,6	11,9

Source: World Development Indicators

Over the 1980-2000 period, the previous section revealed that economic stability had not declined, and had perhaps even increased in some Latin American countries. Unemployment rates appear to have increased in many of the countries over this period, and have fallen only in Chile, where economic volatility has declined in the 1990s in comparison with the 1980s.

Table 16 Asia: Average unemployment rate (% of total labour force)

	1980-1984	1985-1989	1990-94	1995-2000
Bangladesh	1,8	1,2	1,9	2,5
China	3,2	2,1	2,5	3,0
Korea (Rep.)	4,4	3,2	2,5	4,0
Malaysia	5,8	7,2	3,9	2,9
Pakistan	3,7	3,3	5,0	5,8
Philippines	5,5	7,7	8,6	8,8
Singapore	2,9	4,2	2,3	3,4
Thailand	2,1	3,5	1,8	2,0

Source: World Development Indicators

Table 17: Industrial countries: Average unemployment rate (% of total labour force)

	1960-1969	1970-1979	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004
France			8,1	9,5	10,0	11,2	9,1
Germany			5,3	6,4	6,3	8,5	8,3
Italy			7,2	9,2	9,3	11,2	8,9
Japan	1,3	1,8	2,4	2,6	2,4	3,7	5,0
UK				10,2	9,8	7,2	5,1
US	4,8	6,4	8,3	6,2	6,6	4,9	4,8

Source: OECD Main Economic Indicators

In Asia, the changes in unemployment rates over the last two decades vary by country, and cannot be clearly related to findings on economic volatility for these decades. In industrial countries, despite the stabilisation of the economy, with the exception of the UK, unemployment rates have not declined within 1980-2004. For the two countries with data from 1960 onwards – Japan and the

US – unemployment has not fallen in the latter decade compared with the former. In Japan it has increased. Although probably imprecise, this evidence does suggest that the increase in economic stability in the industrial world may not have strengthened security, if measured as changes in unemployment.

There are other dimensions in the area of employment, relating to changes in the nature of employment contracts and impact of external pressures on wages that might provide deeper insights to changes in insecurity, but time series data is not available or easily obtained. The rest of this section examines briefly changes in income inequality and poverty.

Inequality and poverty are the other indicators we use to assess social developments. Measuring inequality is not straightforward. The most comprehensive database on income inequality for a large number of countries, the WIDER WIID database, includes a number of series per country constructed from different sources. To obtain some insights into possible changes in income inequality in some of the countries examined, this note relies on existing work. The results for individual countries can be debated, as the evidence below does not utilise country-specific studies, but are there to provide a general picture.

Ravallion and Chen (1997) look at changes in income inequality and poverty over the time period 1981-1994 in 42 developing countries. The data is based on household surveys. They look at 64 spells for these countries, where one spell is defined as a period between two surveys conducted in a country. Even though data availability on income distribution for developing countries has improved in the time period they consider, there are still considerable deficiencies, especially in the case of Sub-Saharan Africa. For this reason spells that could be analysed for this region were identified only for four countries.

The authors' conclusions for the regions examined above are summarised in tables 18 and 19. Inequality rose more often than fell only in the case of East Asia between 1981 and 1994. The figures suggest no clear link between inequality and economic instability of regions outlined in the previous section. On the other hand, poverty fell in 7 out of 9 spells in East Asia whereas it rose for 6 out of 14 spells in Latin America 5 out of 7 cases in Sub-Saharan Africa.

Table 18 Income inequality

	No. of spells	Fell	Rose	Mean rate of change (%)
East Asia	9	3	6	1,1
Latin America	14	10	4	-0,3
Middle East and North Africa	3	1	2	0,7
South Asia	10	6	4	0
Sub-Saharan Africa	7	4	3	-1,5
Latin America excludes Argentina				

Source: Ravallion and Chen (1997)

Table 19 Poverty

	No. of spells	Fell for all three poverty lines	Trend ambiguous	Rose for all three poverty lines
East Asia	9	7	1	1
Latin America	14	7	1	6
Middle East and North Africa	3	2	0	1
South Asia	10	4	2	4
Sub-Saharan Africa	7	2	0	5

Source: Ravallion and Chen (1997)

Poverty is measured using poverty lines that are relative between countries (3 different possibilities, see paper for details).

Sala-i-Martin and Mohapatra (2002) use a more extended dataset to estimate income distributions for all G20 countries for the years 1970, 1980, 1990 and 1998. Their estimates on income distributions are used to produce table 20 below that compares changes in poverty and income distribution for the years 1970 and 1998. The results are based on approximate interpretations of the type of figures shown below for India and China (see figures 4 and 5 below).

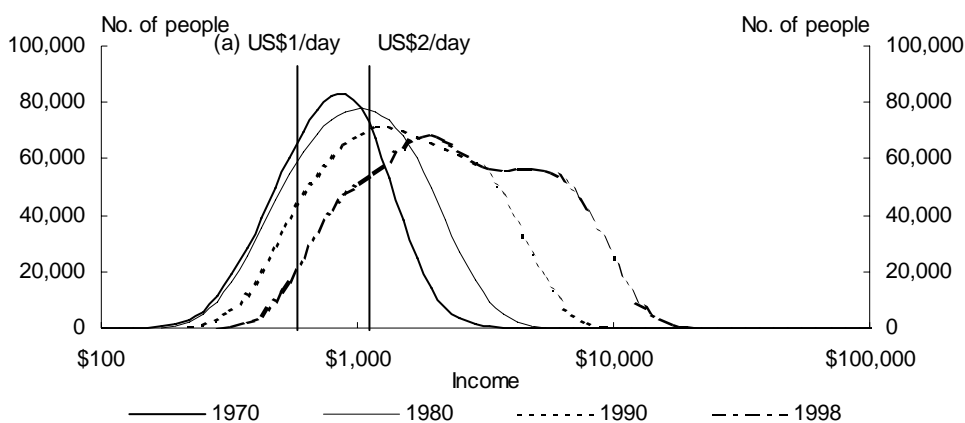
Table 20 Changes in inequality and poverty from 1970 to 1998

	Poverty	Inequality
Argentina	rose	rose
Brazil	fell	roughly same
Mexico	fell	fell
China	fell	rose
Korea	fell	roughly same
India	fell	roughly same
Indonesia	fell	fell
France	fell	roughly same
Germany	fell	roughly same
Italy	fell	fell
Japan	fell	fell
UK	fell	roughly same
USA	fell	rose
South Africa	rose	rose

based on Sala-i-Martin and Mohapatra (2002)

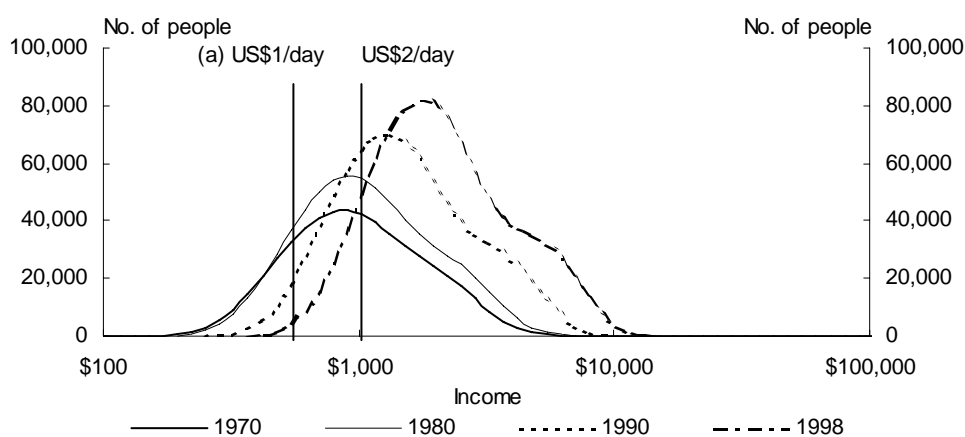
The message on the relationship between inequality and economic instability remains ambiguous. Whereas poverty appears to have declined, excluding South Africa, and Argentina (where economic stability has increased), the picture on inequality is less clear-cut. Economic volatility was shown to have declined in China and USA, but income inequality appears to have risen in these cases. In Argentina, where economic volatility has accelerated, both inequality and poverty appear to have increased. On the other hand, economic volatility has not changed much over the decades in South Africa, but both inequality and poverty have also risen.

Figure 4 Income distribution: China



Source: Sala-i-Martin and Mohapatra (2002)

Figure 5 Income distribution: India



Source: Sala-i-Martin and Mohapatra (2002)

The evidence suggests that economic stability does not have a clear link with inequality in the developing world.

6 Explaining volatility and how to reduce it

Industrial countries

Rowthorn and Martin (2004) find that the rise and fall in GDP growth over the entire period coincides with rises and falls in inflation. They attribute the decline in growth volatility from the 1970s to improved monetary policy and changes in inflation behaviour. Inflation became less persistent, less responsive to output, and less volatile, and monetary policy improved as interest rates became more responsive to changes in inflation. Improvements in monetary policy have in turn led to a decline in the volatility of economic shocks. However, they conclude that for stability to continue sound counter-inflation policies as well as absence of extreme geopolitical and natural disasters are required, as such would induce volatility. Stock and Watson (2003) do a detailed study on the US and conclude that the decline in volatility is attributable to a combination of improved policy, “good luck” in productivity and commodity price shocks and other unknown forms of good luck.

Developing countries

Easterly et al. (2000) also find that economic volatility (volatility of inflation, GDP growth, real wage, fiscal balance, private sector credit, money growth, inflation and terms of trade) is higher in non-OECD than OECD countries. Their regressions results imply the volatility of GDP growth cannot be attributed to wage rigidities. Private capital flows or their volatility are not very relevant either, but they do find that financial depth reduces volatility (up to a point) and economic openness tends to increase it. They also find some positive correlation between terms of trade volatility and output volatility, although this is not tested econometrically.

India: Explaining volatility and how to reduce it

There are a number of specific hypotheses concerning the reduced volatility of the Indian economy, which have important policy implications, and therefore deserve systematic examination. This exercise is currently going on and the econometric analysis tests the following hypotheses:

- An elementary hypothesis is the change in the structure of the economy from agriculture to manufacturing and services. To what extent is the reduced volatility due to the structural changes in the economy?
- The role of international capital flows. Do such flows raise or reduce volatility?
- It has been argued by leading policymakers that the government’s ability to manage the economy has improved. The hypothesis is the government’s ability to manage the economy. A strong form of this hypothesis is that there has been a trend reduction in the volatility of

GDP growth because of greater knowledge of the economy by policy makers and their ability to anticipate how to cope with economic shocks.

- Another hypothesis concerns the impact of trade openness on volatility. It is argued counter-intuitively that this should not lead to greater, but to lower volatility.
- The role of financial sector development and financial liberalisation has been emphasised by some economists as being an important determinant of volatility.
- The role of shocks, such as changes in terms of trade and rainfall will also be considered.

To sum up, in the context of a multivariate analysis, volatility may be regarded as being influenced by openness, financial development, management by the government, shocks, and the structure of the economy. These hypotheses will be investigated by means of time series analysis. It may be supplemented by a cross-sectional analysis for the Indian states. Policy implications for India on how to maintain stability or reduce volatility will be derived from the results of the analysis.

7. Optimal degree of instability and implications for globalisation

Here we shall examine two questions: (a) what is the optimal degree of instability for an economy and (b) what is the relationship between instability and other relevant economic and social variables. We shall also comment on whether there are any lessons from the experience of advanced countries for developing countries in this regard. The implications of the whole analysis for theories of globalisation mentioned in the introduction will be analysed.

Concluding remarks

By way of conclusion to this presentation, we examine the important question of huge monetary imbalances in the world economy, and their implications for global GDP volatility. In other words, we ask the question of whether or not in the present circumstance, the US likely to have a hard landing? What is the probability of this for the US and how will this affect the world? What will be the implications for India of a US hard landing?

We shall argue that those who predict a hard landing for the US in the near future do not in our view give adequate weight to the intrinsic strength of the US real economy. The US is a frontier technology country, which has managed to achieve an appreciable trend increase in its growth rate in the last ten years. Our conclusion is that there are a number of reasons why a hard landing is not very probable, and a soft landing is more likely to occur as it did in the 1980s, despite all predictions to the contrary at the time. In the event of a hard landing, India will of course be very much affected by the fall in its trade, investments and other foreign capital inflows.. But, since all

these make up for a relatively small contribution to the Indian economy, the economy is capable of taking the necessary adjustments in its stride. China will be much more affected than India by a US hard landing.

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