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Abstract: This paper analyses shifts in economic power over the last half century, and in particular the growing importance of developing countries. The paper examines what effect the 2008 crisis has had on the distribution of economic power. We look specially at the importance of large emerging economies. It uses a number of indicators such as the share of countries in GDP, per capita GDP and exports. It also uses a set of indicators of economic power to estimate an index of economic power. This index is ordinal and the US remains the predominant economic power. We measure the distance of countries from the US on the basis of these indicators to examine whether there has been convergence with the US. We find that there have been few changes in the ranks of countries in economic importance. China has risen in the ranks. Only Korea shows a consistent steady progress upwards.

JEL codes: F02, F50, G60, G01

Keywords: Financial Crisis, Economic Power.

Introduction

There has been considerable debate over whether the United States is losing its stronghold over the world economy and its power declining, giving way to new leadership from the Emerging Economies (EEs) such as China. It is not easy to define the concept of power in the sphere of international relations (Gilpin, 1981, Baldwin, 2013).[1] Power can be interpreted in a dual sense - actively, in terms of the influence that a state can exert on the working of other states, and, passively, as ability to resist pressure from others and so the freedom to navigate its own policy

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space. (Friedberg 1988, Cohen, 2015). A second issue that arises in an analysis of power is whether it can be measured. Broadly speaking there are two schools of thought, one believing whether a country is powerful is one of perception (Morgenthau 1948; Kissinger 1994) and the other is that power can be measured. There is also the question of how one deals with different components of power, economic military, soft etc. and the interrelations between the different concepts of power.

Another question that is important is the source of power. Some analysts believe that power is relational arising from the manner in which states relate to each other in the international system (Hirschman, 1969, Keohane and Nye, 1977). Others contend that power arises from the resources available to a state. The extent of resource influences, for instance, such as the ability to wage war (Singer *et. al* 1972). Where power arises from the resources available to a state it is amenable to measurement. A number of indices have been calculated to measure power.[2]

This paper attempts to analyse whether power has shifted since the financial crisis of 2008. Analysts have been contending for many years that the US is declining in power. In the views of most analysts, this decline in US power occurs because of a fall in confidence in the dollar either gradually as in Triffin or because of a sudden shift in confidence in the stability of the US financial system and thus the stability of the dollar. Triffin warned in 1960 (p 230) of "the imminent threat to the once mighty dollar".[3] Kindleberger declared that the dollar was finished after the dollars gold convertibility was removed in 1971. Again, after the 2008 crash Eichengreen (2011 p 121) wrote: "Doubts are pervasive as to whether the dollar will retain its international role". A bit later in 2014, Jonathan Kirshner (2014 p 140) stated unequivocally of a "dollar dimunition".[4] We examine whether such views are correct by examining the effect on relative economic power of the 2008 financial crisis which originated in the US.

We use a number of different ways to measure the changing importance of countries in the world economy. In section 2 we study the changes in the share of different countries and regions in the increases in world GDP and world exports. Then in Section 3 we examine the change in ranks according to GDP during the period 1965-2015. Next, in Section 4 we examine the relation between the GDP and GDP per capita of different countries and regions relative to that in the US to see whether there is convergence. In Section 5 we aggregate a number of indicators to get an index of economic power in order to examine whether the ranks given by the measure have changed over time. We construct two indices, one that includes financial indicators and another that excludes financial indicators. This will help us to analyse the role that the US financial system and the dollar plays in economic power. These indices give an ordinal ranking of the countries at different points of time but cannot tell whether there is convergence to the US level. For this we measure in Section 6 the distance between the US and other countries on the basis of the values of the indicators. In particular, we analyse whether China and India are catching up with the US. Section 7 provides the conclusions.

This paper uses a mix of an elements-of-power approach and a relational power approach (Cohen, 2015).[5] The former approach uses quantitative metrics to identify power with resources owned by the State, be it in tangible terms of natural resources or military strength, or the ability to provide a certain standard of living in terms of health and education. The latter is concerned with power derived out of the interdependence between states, such as through trade relations or financial relations.

Emerging Role of Developing Economies in the World Economy

Developing economies have increasingly over the decades become more important in the world economy if we are to measure their contribution in terms of their share in the increase in world income (measured in

constant 2010 US$) and in the increase in world exports. Developing economies have witnessed a continuously growing share in additional world income. While they accounted for only around 16 per cent of the increase during 1965-73, this share rose to around 25 per cent in the 1980s where it remained until 2000. During 2000-07, developing economies accounted for nearly half of the increase in world income, and they have contributed 66 per cent of the additional world income over the post financial crisis period, 2008-15 (Table 1).

Table 1: Share of Major Countries in Increase in World GDP (At constant 2010 US$)

	1965-73	1974-82	1983-1990	1991-2000	2001-07	2008-15
High-Income countries	**77.37**	**71.44**	**78.27**	**74.61**	**51.84**	**33.37**
Of which (o.w.) G-7 countries	73.47	54.56	60.65	52.83	32.55	20.82
Canada	2.56	2.53	2.42	3.03	1.88	1.64
France	5.41	4.77	3.92	3.63	2.26	0.92
Germany	22.32	5.28	5.65	3.67	2.16	1.95
Italy	4.80	4.66	3.85	2.46	1.13	-1.35
Japan	14.37	15.48	15.80	4.42	3.90	1.80
United Kingdom	3.83	2.24	3.94	3.94	3.07	1.70
United States	20.19	19.60	25.08	31.66	18.14	14.16
Other Developed Countries	**8.70**	**12.34**	**8.47**	**9.25**	**7.30**	**2.89**
o.w. Australia	1.46	1.62	1.77	2.06	1.62	1.84
Austria	0.73	0.60	0.48	0.59	0.42	0.12
Belgium	0.93	0.62	0.66	0.66	0.51	0.23
Netherlands	1.50	0.75	1.20	1.66	0.76	0.10
Norway	0.54	0.90	0.52	0.90	0.46	0.29
Spain	2.85	1.26	2.29	2.20	2.23	-0.62

Table 1 continued...

Sweden	0.69	0.48	0.61	0.69	0.70	0.49
Switzerland	0.00	6.11	0.93	0.51	0.60	0.44
Developing Countries	**16.04**	**21.37**	**44.34**	**25.17**	**48.20**	**66.43**
EAP	2.47	6.03	6.97	14.46	21.43	40.45
ECA	0.00	0.00	28.48	-3.36	8.55	4.35
LAC	8.26	10.69	4.79	7.02	7.76	6.81
MNA	2.73	1.17	0.96	2.25	2.58	1.73
SA	0.81	2.08	2.20	3.54	4.81	9.42
SSA	1.76	1.40	0.95	1.26	3.06	3.66
BRICSAM	**8.28**	**13.70**	**26.57**	**16.29**	**31.15**	**47.48**
Brazil	4.25	4.88	2.91	2.84	3.25	2.46
China	1.16	2.87	4.54	11.52	17.77	34.54
India	0.63	1.49	1.68	2.87	4.02	8.18
Mexico	1.65	3.75	0.95	2.04	1.30	1.44
Russian Federation	0.00	0.00	16.20	-3.39	4.12	0.43
South Africa	0.59	0.70	0.29	0.40	0.69	0.43
Other Developing Countries	**5.63**	**4.10**	**4.93**	**6.15**	**7.22**	**9.91**
Argentina	0.61	0.10	-0.19	0.73	0.84	0.42
Indonesia	0.56	1.45	1.16	1.06	1.40	2.76
Korea, Rep.	0.59	1.35	2.03	2.68	2.05	2.22
Saudi Arabia	3.07	0.20	0.60	0.36	0.89	1.48
Turkey	0.80	0.99	1.32	1.33	2.05	3.04

Note: The regions are as defined by the World Bank. EAP is East Asia and Pacific, ECA is Europe and Central Asia, LAC is Latin America and Caribbean, MNA is Middle East and North Africa, SA is South Asia and SSA is Sub-Saharan Africa. All data for the regions excludes high income countries.

Source: http:// databank.worldbank.org/data/home/aspx

World Development Indicators, World Bank, Washington D.C.

The East Asia and Pacific (EAP) region is the major developing country region contributing to this increase, with Latin America and Caribbean (LAC) and South Asia (SA) having a significant influence as well. The non-OECD members of the G20 saw a rise in their share from about 12 per cent in 1965-73 to around 48 per cent in 2008-15. The share of BRICSAM increased significantly as well, and China is the main contributor to this increase, though India is also significant. The G-7 countries, however, saw a considerable decline, especially for US, Germany and Japan, though the US still accounted for about two-thirds of the increase in income contributed by the G-7. The US contribution at over 12 per cent is larger than that of every other emerging economy except China. The contribution of Germany since 1973 has been less than its share of world income so its share of world income has been steadily decreasing, as we shall see in Section 3. The share of Japan in incremental world income has also been less than its share of world income since 1990 presaging a declining share of world income.[6]

Similarly, for the increase in world exports, developing economies have been increasing their share, with a concomitant decrease on the part of the developed countries, especially the G-7 (Table 2). The incremental share of many of the G7 countries has fallen during 2008-15. However, the share of the US was second to only China.

EAP continues to be the major region accounting for the increase in the share of developing economies, along with LAC and SA. BRICSAM has consistently increased its share in additional world exports; however most other segments of the developing economies do not show any consistent pattern. For both Indonesia and Korea, the share in increase in world exports decreased in 2000-2007 before showing a rise in 2008-15.

Furthermore, an increasing share of developing countries exports is going to other developing countries. This share which had increased gradually till the 2008 crisis surged after that (Agarwal, 2013b). The share of developing country exports destined for other developing countries had

increased from 42.6 per cent in 1995 to 46 per cent in 2005 but then shot up to over 55 per cent in 2011. Among the larger emerging economies, Mexico had in 2011 the lowest share of its exports destined for DCs, only 11 per cent, followed by Russia at 22 per cent and Turkey at 31 per cent. The other large emerging economies had 50 per cent or more of their exports destined for DCs with Argentina having the largest share at almost 70 per cent (Agarwal 2013b). Asia was the leader in this with almost 60 per cent of exports going to other developing countries. This suggests a weakening of the reliance of developing countries on growth in developed countries. Developing countries have, in general, performed well in this century even though the developed countries have performed poorly, whereas in an earlier period, 1965-73, developing countries had performed well and so had the developed countries; the developed countries had performed better than most developing countries.

Table 2: Share of Major Countries in Increase in World Exports (in per cent, current US$)

	1965-73	1974-82	1983-1990	1991-2000	2001-07	2008-15
High-Income countries	**81.90**	**80.13**	**87.93**	**75.49**	**68.30**	**30.32**
Of which (o.w.) G-7 countries	52.68	47.47	52.19	39.72	31.61	4.00
Canada	4.25	3.38	2.95	5.25	1.98	-2.55
France	6.97	5.50	6.47	3.37	3.52	-4.58
Germany	13.04	6.74	11.44	4.65	8.92	-3.53
Italy	3.96	4.44	5.79	2.35	3.17	-5.98
Japan	6.99	8.08	7.15	4.84	3.63	-6.47
United Kingdom	5.05	6.26	5.70	4.62	3.76	1.05
United States	12.42	13.06	12.68	14.64	6.63	26.07
Other Developed Countries	**18.44**	**14.11**	**18.32**	**11.16**	**13.50**	**-6.18**
o.w. Australia	1.19	1.21	1.06	0.83	0.89	3.49
Austria	1.19	1.03	1.73	0.73	1.19	-1.68

Table 2 continued...

Table 2 continued...

Belgium	3.31	1.98	3.39	1.31	2.04	-2.22
Netherlands	5.00	3.57	4.10	2.77	3.30	-3.21
Norway	1.18	1.24	1.01	0.89	0.99	-4.18
Spain	1.81	1.71	2.39	2.31	2.14	-1.12
Sweden	2.13	1.28	1.80	1.22	1.36	-1.85
Switzerland	2.62	2.09	2.84	1.09	1.58	4.60
Developing Countries	**9.65**	**12.07**	**16.91**	**26.90**	**31.71**	**69.11**
EAP	2.48	4.09	3.65	11.68	14.02	73.26
ECA	0.00	0.00	8.89	2.69	6.23	-8.92
LAC	4.20	4.84	2.59	6.24	4.27	6.69
MNA	0.00	0.00	0.00	3.60	2.71	-8.78
SA	0.45	0.85	0.70	1.46	2.22	10.30
SSA	2.52	2.29	1.09	1.23	2.27	-3.43
BRICSAM	**3.65**	**5.63**	**7.99**	**12.71**	**18.31**	**65.30**
Brazil	1.04	1.09	0.68	0.42	1.22	0.18
China	0.71	1.30	1.31	5.80	10.37	59.18
India	0.35	0.60	0.46	1.10	1.99	8.22
Mexico	0.64	1.72	0.95	3.74	1.23	6.00
Russian Federation	0.00	0.00	4.33	1.33	2.90	-7.93
South Africa	0.92	0.93	0.27	0.32	0.60	-0.36
Other Developing Countries	**5.28**	**7.26**	**3.11**	**6.83**	**6.56**	**3.83**
Argentina	0.48	0.22	0.24	0.49	0.35	-0.95
Indonesia	0.70	1.06	0.26	1.04	0.67	1.86
Korea, Rep.	0.66	1.41	2.14	3.44	2.76	7.79
Saudi Arabia	3.18	4.10	-0.10	0.92	1.83	-6.47
Turkey	0.27	0.47	0.57	0.94	0.94	1.61

Note: The regions are as defined by the World Bank. EAP is East Asia and Pacific, ECA is Europe and Central Asia, LAC is Latin America and Caribbean, MNA is Middle East and North Africa, SA is South Asia and SSA is Sub-Saharan Africa. All data for the regions excludes high income countries.

Source: http:// databank.worldbank.org/data/home/aspx.
World Development Indicators, World Bank, Washington D.C.

A similar picture emerges regarding capital flows. DCs have been increasing their share of world foreign direct investment (FDI) inflows and this has continued even during the current financial crisis because the decrease in FDI inflows has been less in the case of DCs (UNCTAD 2010). The share of DCs in FDI inflows increased from 26.9 per cent in 2007 to 42.9 per cent in 2009. Their share of FDI outflows has also increased rapidly though these shares still are much smaller than the share of the developed countries. The share increased from under 10 per cent in 2007 to 20.3 per cent in 2009. Most of the regions increased their share of inward and outward flows of FDI. This is also true for BRICSAM.

Changing Economic Size

According to World Bank data, the US economy was the largest in 2015, 24.3 per cent of the global economy (as measured in GDP in current US$), closely trailed by China at 14.8 per cent. The Asian economies together comprise around a third of global GDP as compared to North America, which accounts for a little more than a quarter.

We take the 25 of the largest economies by GDP in 2015 and examine their relative ranks in earlier years (Table 3).[7] We find that on the whole, the relative ranking has not significantly changed between 1965 and 2015 (Spearman's correlation coefficient is 0.804 between 1965 and 2015 which is significant at the 1 per cent level). Except for improvement for Korea (by 11 places), Brazil and Indonesia (by 6 places each), and deterioration for Sweden (by 8 places) and Belgium (by 5 places), most other economies have not significantly altered in ranking beyond a couple of places.

Table 3: Countries ranked by size of economy

Countries	1965	1981	1990	2007	2011	2015
U.S.	1	1	1	1	1	1
Japan	5	2	2	2	2	3
Germany	2	3	3	3	5	4
China	6	8	10	4	3	2

Table 3 continued...

UK	3	5	6	5	4	5
France	4	4	4	6	6	6
Italy	7	6	5	7	7	8
Spain	11	11	8	8	13	13
Canada	8	7	7	9	11	10
Brazil	15	10	9	10	9	9
India	9	13	13	11	8	7
Mexico	13	9	14	12	12	14
Korea	22	21	15	13	10	11
Australia	10	12	11	14	14	12
Netherlands	14	14	12	15	15	17
Turkey	19	23	22	16	16	16
Switzerland	17	18	17	17	18	18
Sweden	12	16	16	18	17	20
Belgium	16	17	18	19	21	21
Saudi Arabia	23	15	23	20	20	19
Indonesia	21	19	20	21	19	15
Norway	20	22	21	22	23	22
Austria	18	20	19	23	22	23

Source:http:// databank.worldbank.org/data/home/aspx
World Development Indicators, World Bank, Washington D.C.

The ranks have also not changed significantly since the financial crisis. Only three countries have experienced a large change in their rank after the financial crisis. Spain fell by 5 ranks, India improved its position by 4 ranks and Indonesia by 6 ranks. Korea continued to improve its position after the financial crisis. Before the crisis Korea had witnessed a steady improvement from 22nd rank in 1965 to 13th in 2007, and after the financial crisis its rank further improved to 11th in 2015. Turkey also improved its rank in the period 1965-29015, going from 23rd in 1981 to 16th in 2015. However, it had achieved this rank before the financial crisis and has seen no improvement since the crisis. China until the financial crisis was at number 4 and as of 2015, occupies rank 2, having

displaced Japan from its erstwhile position from 2 to 3. India slipped two places from 9 to 11 between 1965 and 2007, before recovering to 7 in 2015. The positions of Sweden and Austria worsened between 1965 and 2015 by 8 and 5 positions respectively.

The financial crisis saw an improvement in the situation for Korea, China and India while the position of several of the developed economies deteriorated, e.g. Germany (2 positions), Spain (5 positions) and Belgium (2 positions). However, a very high Spearman's rank correlation coefficient between 2007 and 2015 ranks (0.94) and for the ranks between any two consecutive periods of analysis in general (above 0.9) indicates that any transition in the balance of the world economy based on economic size is a very gradual process.

GDP and GDP per Capita Relative to that in the US

In this section, we analyse whether other countries are converging to the levels achieved by the US in terms of GDP and GDP per capita. We compare GDP per capita and GDP in these economies as a per centage of that in the US, both are measured in terms of constant 2010 US dollars. We find three phases in the evolution of per capita GDP of countries relative to that in the US. Most economies showed a steady increase from the 1960s to the 1980s, stagnation in the 1990s before exhibiting a tendency to improve again in the 2000s (Table 4). The slower increase (and decline for several economies) post 2007 may be attributed to the financial crisis of 2008.

Table 4: GDP Per Capita in Constant 2010 US Dollars (as a per cent of US GDP)

	1965	1973	1982	1990	2000	2007	2011	2015
High Income Countries								
Canada	105.2	106.4	109.5	100.5	96.9	97.1	99.3	96.9
France	79.6	88.4	97.6	89.8	85.5	83.4	84.8	80.6
Germany		84.5	92.0	89.1	84.3	83.7	90.5	87.5

Table 4 continued...

Table 4 continued...

Italy	66.7	75.8	87.1	84.9	80.3	76.5	73.8	65.6
Japan	62.3	84.2	95.4	104.4	93.6	91.4	91.3	91.0
United Kingdom	77.2	78.6	77.8	78.8	78.2	81.8	79.9	79.6
Other Developed Countries								
Australia	107.8	104.1	108.6	98.7	98.2	101.9	107.4	106.2
Austria	77.8	86.8	98.5	93.0	93.1	94.5	98.0	92.1
Belgium	80.5	89.6	97.2	91.3	89.3	90.1	91.3	87.1
Netherlands	98.8	103.9	102.7	97.7	102.4	102.9	104.4	99.1
Norway	138.3	141.8	173.1	166.0	181.4	183.3	179.1	173.3
Spain	52.3	61.6	61.4	61.9	62.9	64.9	62.2	58.9
Sweden	111.8	108.4	111.3	103.3	99.2	106.9	108.8	106.7
Switzerland	0.0	0.0	190.5	175.9	149.3	149.4	153.3	146.1
Developing Countries								
EAP	1.5	1.5	2.1	2.6	4.0	6.4	8.8	10.6
ECA				17.5	11.0	15.4	16.9	17.2
LAC	19.9	21.1	22.6	17.3	15.8	16.6	18.3	17.6
MNA		11.5	10.0	7.5	6.8	7.6	8.1	7.6
SA	1.7	1.4	1.5	1.5	1.7	2.1	2.7	3.1
SSA	6.0	5.5	4.9	3.4	2.6	2.9	3.2	3.2
Brazil	18.3	24.0	27.0	22.0	19.5	20.5	23.7	21.9
China	0.9	1.0	1.4	2.0	3.9	7.0	10.2	12.6
India	1.6	1.4	1.4	1.5	1.7	2.3	2.9	3.4
Mexico	22.2	22.1	27.2	20.0	19.2	18.5	18.8	18.6
Russian Federation				26.3	14.4	21.1	22.8	21.5
South Africa	26.8	24.2	23.2	16.7	13.2	14.7	15.4	14.7
Argentina	30.9	28.6	24.7	16.4	18.2	19.7	22.1	20.3
Indonesia	3.3	3.4	4.6	4.7	4.8	5.5	6.7	7.4
Korea, Rep.	5.8	9.0	14.7	23.3	33.5	40.8	46.6	48.1
Saudi Arabia		136.6	91.7	49.6	40.5	38.3	42.2	41.6
Turkey	17.6	17.8	18.2	18.7	18.3	21.3	23.9	26.9

Source: http:// databank.worldbank.org/data/home/aspx

World Development Indicators, World Bank, Washington D.C.

As far as the developed countries are concerned almost all the other G7 have seen a decline in their per capita incomes relative to that in the US between the 1980s and 2007 and this has mostly continued since the financial crisis. Only the UK saw an increase in its per capita GDP relative to the US between 1982 and 2015. Japan which saw some decline between 1990 and 2007 has seen no further decline since the crisis. Most of the other developed countries have also seen their position slip as against the per capita income of the US.

As far as developing country regions are concerned, the East Asia and Pacific (EAP) and South Asia (SA) regions have significantly closed the gap with the US. Some of the other regions have seen a slight improvement, whereas LAC has fallen further behind. Among the large emerging economies. Asian economies such as China, India, Indonesia, and, particularly Korea, have steadily closed the gap with the US. Turkey has also closed the gap. But countries in the other regions have fallen further behind the US.

Comparing GDP of the economies to that in the US, we find a similar trend of increase until the 1990s followed by a period of stagnancy and decrease among the developed countries (Table 5). Among developing countries, most regions have been catching up with the US, particularly EAP and SA. The only region falling behind is LAC.

It is interesting to compare the behaviour of total and per capita GDP for the developed and developing economies. In 2015, four developed economies had a relatively higher GDP than in 1965 as a per cent of US GDP whereas 10 economies had a lower one. But in terms of per capita GDP, only four developed economies had a figure lower than that of US in 2015 than in 1965 while 10 economies had a higher value. The performance of the developing countries has been very different. Seven had raised their GDP as a per cent of US between 1965 and 2015, and most were in Asia, while four had a lower one. In terms of per capita income also only six countries out of 11 have a value higher in 2015 than

in 1965. This difference can be explained by differences in population growth rates. Most of the developed countries show a slower growth in population than the US so their catch up in terms of GDP is slower than in terms of GDP per capita. The developing countries, owing to faster population growth, catch up faster in terms of GDP than in per capita terms (indicative of productivity differentials).

Table 5: GDP in Constant 2010 US Dollars (as a per cent of US GDP)

	1965	1973	1982	1990	2000	2007	2011	2015
Canada	10.66	11.23	11.91	11.19	10.56	10.61	10.95	10.82
France	20.50	22.29	23.53	21.04	18.46	17.73	17.77	16.73
Germany		31.49	31.10	28.34	24.57	22.86	23.30	22.27
Italy	17.90	19.57	21.26	19.30	16.21	14.84	14.06	12.41
Japan	31.72	42.96	48.79	51.66	42.07	38.84	37.45	36.07
United Kingdom	21.59	20.84	18.91	18.08	16.33	16.66	16.22	16.16
Other Developed Countries								
Australia	6.32	6.57	7.11	6.74	6.66	7.05	7.70	7.87
Austria	2.91	3.11	3.22	2.86	2.64	2.60	2.64	2.48
Belgium	3.92	4.12	4.14	3.65	3.24	3.18	3.24	3.06
Netherlands	6.25	6.59	6.35	5.85	5.78	5.60	5.59	5.23
Norway	2.65	2.65	3.07	2.82	2.89	2.86	2.85	2.80
Spain	8.61	10.18	10.06	9.63	9.04	9.75	9.32	8.52
Sweden	4.45	4.16	4.00	3.54	3.12	3.25	3.30	3.26
Switzerland			5.26	4.73	3.80	3.75	3.89	3.77
Developing Countries								
EAP	7.42	8.80	12.85	16.71	26.00	40.83	56.18	67.44
ECA				27.42	15.47	20.36	21.98	22.20
LAC	24.24	28.99	35.04	29.35	28.07	30.16	33.83	33.09
MNA	5.12	7.51	7.68	6.82	6.81	8.01	8.92	8.72
SA	5.49	5.07	6.13	6.86	8.19	11.12	14.28	16.84
SSA	7.97	8.19	8.59	7.05	6.17	7.90	9.34	10.03
Brazil	7.86	11.61	14.79	13.16	12.10	13.00	15.11	14.05
China	3.41	4.08	5.95	9.15	17.60	30.53	43.95	53.67
India	4.12	3.84	4.54	5.15	6.31	8.85	11.62	13.87

Table 5 continued...

Table 5 continued...

Mexico	5.10	5.98	8.52	6.83	6.93	6.87	7.19	7.29
Russian Federation	.	.	.	15.60	7.48	9.99	10.46	9.83
South Africa	2.73	2.78	3.07	2.46	2.10	2.38	2.55	2.52
Argentina	3.55	3.40	3.09	2.14	2.39	2.61	2.95	2.74
Indonesia	1.70	2.00	3.05	3.42	3.57	4.26	5.27	5.95
Korea, Rep.	0.86	1.45	2.49	4.00	5.59	6.59	7.46	7.64
Saudi Arabia	.	4.33	4.37	3.24	2.98	3.21	3.82	4.09
Turkey	2.81	3.14	3.62	4.03	4.10	4.92	5.64	6.55

Source: http:// databank.worldbank.org/data/home/aspx
World Development Indicators, World Bank, Washington D.C

In brief, DCs are accounting for an increasing share of incremental world income and exports over the years. But whether the US or other richer countries have suffered a decline in their power is not clear. The relative ranking of the GDP of the largest economies is very stable as the rank correlation coefficient is very high. Furthermore, few developing countries have caught up with the US in terms of per capita income. Many of the developed economies were catching up till the mid-1980s but this process has slowed down. Many large developing countries also were catching up till the mid-1980s and again the process slowed down after that.

Indicators of Economic Importance

GDP, however, may not be a good indicator of economic power. In economic theory power usually means the ability to influence the working of the market and is often measured by the ability to influence the price of a good because of monopoly or monopsony power. Many proponents believe that economic power is an important component of power if not the predominant component as the ability to develop one's military power depends itself on economic power (Gilpin 1987; Kennedy 1988). The faster growth of the US and Germany at the end of the 19th century was taken as a sign of the declining power of the UK. Similarly, faster growth in Germany and Japan after the Second World War was seen as a sign

of declining US power. More recently more rapid growth in China and India particularly is seen to herald a shift in power. Without getting into a detailed discussion of these issues we choose a number of indicators which could reflect economic power and we aggregate them to derive an index of overall economic power. We aggregate the different indicators into one index using the Nagar-Basu method (2002).

The Nagar–Basu Method

The Nagar–Basu methodology constructs the index as a weighted sum of a normalised version of the identified indicators, where the weights are the outcome of multivariate statistical analysis of principal components. Principal components (PC) have special statistical properties in terms of 'variances'. The first PC is the linear combination that accounts for the maximum variance of the original indicators. The second PC accounts for the maximum of the remaining variance, and so on. Maximising variances helps us to maximise information involved among the set of indicators.

There are two alternatives methods to get the standardised indicators that can be used in the analysis

$$X_k = \frac{x_k - \overline{x_k}}{S_{xk}}$$

Where $\overline{x_k}$ is the arithmetic mean and S_{xk} is the standard deviation of observations on xk; and

$$X^*_k = \frac{x_k - min\ x_k}{max\ x_k - min\ x_k}$$

We use the first method in the analysis that follows. The index is an abstract conceptual variable and is supposed to be linearly dependent on a set of observable indicators plus a disturbance term capturing error.

Let Index $= \gamma + B1X1+......... BkXk + e$,where X1, X2 ...Xk is the set of indicators used to capture the phenomenon of interest.

The total variation in the Index is composed of two orthogonal parts: (a) variation due to the set of proposed indicators; and (b) variation due

to error. Each of the indicators is standardised and the correlation matrix R computed from the standardised indicators. Then the determinantal equation $|R - \lambda I| = 0$ is solved for λ the eigenvalues. If R is a K × K matrix; this equation provides a Kth degree polynomial equation in λ and hence K eigenvalues. Next we arrange the λ's in descending order of magnitude, and corresponding to each λ, we calculate the eigenvector α. Each vector is normalised by the condition that $\alpha'\alpha = 1$. Now if X1, X2,..Xk are the K indicators used to construct the index then we weight these by the components of the eigenvectors to generate the principal components.

P1 = α11X1 +... + α1kXk

.Pk = αk1X1+ ... + αkkXk

The Ps are the successive principal components and are constructed by weighting the individual indicators by the elements of the eigenvectors. For instance, the first principal component is calculated by multiplying the first indicator by the first element of the first eigenvector, the second indicator by the first element of the second eigenvector and so till the kth indicator is multiplied by the first element of the ktheigen vector, and these products are then all added. Similarly the second principal component is calculated by multiplying the indicators by the second element of the eigenvector. We estimate the index as weighted average of K principal components, where the weights are the eigenvalues of the correlation matrix R:

$$\hat{I}_i = \frac{\lambda_1 P_1 + \lambda_2 P_2 + \cdots \lambda_k P_k}{\lambda_1 + \lambda_2 + \cdots \lambda_k}$$

Where i = 1, 2…n (# of countries).

The Indicators Used

The indicators used reflect the different dimensions of economic power such as the standard of living measured by GDP per capita and access to

education, health and water and sanitation facilities. They also reflect the country's importance in the world economy as well as the vulnerability this imposes because of fluctuations of the world economy. A number of indicators measure the potential of the economy for productivity growth.

The indicators used were : 1) GDP per capita (PPP $), 2) population density (people per Sq. Km.), 3) net inflows of foreign direct investment (per cent of GDP), 4) trade (per cent of GDP), 5) world trade share, 6) current account balance (per cent of GDP), 7) Reserves (per cent of GDP), 8) net energy imports (per cent of total energy use), 9) food imports (5 of merchandise imports), 10) public expenditure on health (per cent of GDP), 11) Public expenditure on education (per cent of GDP), 12) under 5 mortality (per 1000 live births) 13) internet users (per 1000 people), 14) Patent applications by residents (per million persons), 15) expenditures on R&D (per cent of GDP), 16) Researchers in R&D (per million people), 17) population using an improved water source (per cent of population), 18) military expenditure (per cent of GDP), 19) tertiary enrolment (per cent of relevant age population) 20) mobile users (per 100 persons) 21) Number of companies in Fortune Global 500 ranking 22) FDI inflows (as a per cent of total inflows) and 23) FDI outflows (as a per cent of total outflows).

Some of the indicators are expected to reflect strength, e.g. GDP per capita, share of world trade, current account balance or social expenditures on education, health or population using an improved water source. Others such as military expenditures may have a positive or negative effect, though they are usually a drain on resources, people often talk of a peace dividend and military expenditures usually have a smaller multiplier than civilian expenditures. A country's share of world trade should reflect its ability to influence international agreements and rules to serve its national interest while the share of trade in GDP reflects its vulnerability to instability in the world economy. The last three indicators, namely, number of fortune 500 companies, FDI inflows and outflows as a per cent of total have been used to make the index a more comprehensive one, accounting for financial power as well.

We report the weights for 1995 and usually they are similar for the other years.

Table 6: Results of the Aggregation of Indicators

	Weights of indicators	1995
1	GDP per capita (PPP$)	8.84%
2	Population Density (people per sq km)	-1.70%
3	Net inflows of FDI (% of GDP)	-1.97%
4	Trade (% of GDP)	3.37%
5	World trade share	7.47%
6	Current Account Balance (% of GDP)	-0.002%
7	Reserves (% of GDP)	0.24%
8	Net Energy Imports (% of total energy use)	-1.57%
9	Food Imports (% of merchandise imports)	3.19%
10	Public Expenditure on health (% of GDP)	7.47%
11	Public Expenditure on education (% of GDP)	8.93%
12	Under 5 mortality (per 1000 live births)	-3.55%
13	Internet Users (per 1000)	8.12%
14	Patent applications by residents (per million persons)	3.13%
15	Expenditures on R&D (% of GDP)	6.60%
16	Researchers in R&D (per million people)	6.85%
17	Population using an improved water source (% of population	5.24%
18	Military Expenditures (% of GDP)	4.08%
19	Tertiary Enrolment (% of relevant age population)	7.42%
20	Mobile users (per 100 persons)	8.09%
21	Global 500	6.60%
22	FDI inflows as a % of total	5.50%
23	FDI outflows as a % of total	7.65%

Source: Authors' calculation based on data in World Bank, World Development Indicators.

Human Capital contributes the most to economic power across all three years of analysis (Table 6). Patent applications by residents, researchers in R&D, expenditures on R&D and tertiary enrolment contribute about a quarter of the index, 24 per cent in 1995, 22.26 per

cent in 2005 and 21.28 per cent in 2015. Within the indicators included in human capital, researchers in R&D have become more important while patent applications have become a less important factor. Internet and mobile phone users contributed 16.22 per cent and 14.95 per cent to the index in 1995 and 2015 respectively. Social services such as expenditures on health, education and an improved water supply contributed 21.64 and 19.29 per cent in 1995 and 2015 respectively. Furthermore, the three financial variables accounted for almost 20 per cent of the total weight. The high weights attached to human capital type variables and financial variables does not augur well for developing countries replacing the developed countries.[8]

Both share of world trade and share of trade in GDP have a positive contribution while share of energy imports in total imports have a negative sign for both 1995 and 2015. Food imports as a per cent of merchandise imports had a positive sign in 1995 but a mildly negative one in 2015.[9] The current account balance has a very small negative effect in both 1995 and 2015. While reserves as a per cent of GDP had a very small effect in 1995, interestingly, this becomes a very important factor in 2015 and goes up to around 9.1 per cent. The level of under-five mortality has a considerably negative effect on economic power. The negative sign on FDI in 1995 is surprising as FDI has a very positive effect on growth; the coefficient on FDI is usually about four times the coefficient on domestic investment in cross country growth regressions (Barro and Sala-i-Martin 2004). But it is positive across 2005 and 2015.

The overall ranks are given in Table 7. The rank correlation between 1995 and 2005 is 0.95, which is highly significant, and the ranks are mostly unchanged. The main improvements in rank are seen for - Korea (3 places), China (4 places) and Turkey (4 places). Among the economies that lose ranks the most are Saudi Arabia (3 places), South Africa (4 places) and Iran (4 places).

Table 7: Ranks according to the composite index

Country	1995	2005	2015
United States	1	1	1
Germany	3	4	2
Korea, Rep.	9	6	3
Japan	2	2	4
Israel	8	9	5
France	6	5	6
United kingdom	4	3	7
Canada	5	7	8
China	18	14	9
Italy	7	8	10
Turkey	17	13	11
Russian Federation	10	10	12
Argentina	12	11	13
Brazil	11	12	14
Saudi Arabia	13	16	15
Mexico	16	15	16
South Africa	15	19	17
Iran, Islamic Rep.	14	18	18
India	21	20	19
Egypt, Arab Rep.	20	17	20
Indonesia	19	21	21
Pakistan	22	22	22
Nigeria	23	23	23

Source: Authors' calculations.

The rank correlation between 2005 and 2015 is 0.94, with the major gainers being China (5 places), Israel (4 places) and Korea (3 places). Among the economies that worsen are Egypt (3 places) and United Kingdom (4 places). The high correlation between the ranks for 2005 and 2015 seems to indicate the lack of any major power restructuring post the financial crisis of 2008.

We repeated the calculations dropping the three financial variables.

Table 8 Ranks without financial variables

	2005	2005
Korea	4	1
Germany	5	2
Israel	9	3
US	1	4
Japan	2	5
France	6	6
UK	3	7
Canada	7	8
Italy	8	9
Turkey	13	10
Russia	10	11
Argentina	11	12
China	16	13
Saudi Arabia	15	14
Brazi	12	15
Mexico	14	16
South Africa	19	17
Iran	18	18
India	20	19
Egypt	17	20
Indonesia	21	21
Pakistan	22	22
Nigeria	23	23

Source: Authors' calculation based on data in World Bank, World Development Indicators.

As can be seen, the ranks are very similar to the ranks with the full set of indicators. The only significant changes are that without the financial variables the US would have lost its rank of first power and the fall in the rank of Korea. The financial power of the US is much less a liability, as many in the literature have suggested, than a source of strength.

Are Countries Converging on the US?

Convergence with the US

Throughout the rankings the US continues to maintain its position at number one, although there has been much debate over whether this situation is likely to change. The decline of the US has been oft proclaimed, as noted above. The high correlation between the index ranks for 1995 and 2005 (0.95), for 2005 and 2015 (0.94) and even 1995 and 2015 (0.88) point towards the fact that the relative ordering of economies in the world hierarchy remains unaltered for the most part.

If we compare the distance of economies from the US between 1995 and 2015 (Table 8) it emerges that most economies, developed and developing are closing in on the US. If we take the ratio of 2015/1995 distance, among the developed economies, Germany and the United Kingdom have fallen away from the US, while the other four are closer. Among the developing economies, China heads the list in terms of closing the gap with the US with a value of 0.66. But the other developing countries have fallen further away from the US after the 2008 crisis [The distance C/A is large than the distance B/A, Table 8(b)].

Table 8 (a) Distance from the US

	1995 (A)	2005 (B)	2015 (C)
Developing Countries			
Argentina	10.36	8.46	9.17
Brazil	10.25	8.31	8.84
China	11.22	8.92	7.45
Egypt, Arab Rep.	12.60	10.20	10.32
India	11.69	9.86	10.19
Indonesia	11.55	10.10	10.52
Iran, Islamic Rep.	11.30	9.18	9.96
Israel	10.41	9.29	9.63
Korea, Rep.	10.22	7.90	9.71

Table 8 (a) continued...

Mexico	10.88	8.79	9.42
Nigeria	13.44	12.66	12.61
Pakistan	12.08	10.27	11.53
Russian Federation	10.58	8.36	9.28
Saudi Arabia	12.05	11.02	11.70
South Africa	10.71	9.91	10.05
Turkey	11.05	8.76	8.89
Developed Countries			
Canada	8.32	7.04	7.93
France	7.80	6.61	7.34
Germany	7.25	7.64	7.75
Italy	9.27	7.33	8.58
Japan	8.49	6.19	7.71
United kingdom	7.10	8.26	8.54

(b) Distance from the US -Ratio

	B/A	C/A
Developing Countries		
Argentina	0.82	0.88
Brazil	0.81	0.86
China	0.80	0.66
Egypt, Arab Rep.	0.81	0.82
India	0.84	0.87
Indonesia	0.87	0.91
Iran, Islamic Rep.	0.81	0.88
Israel	0.89	0.93
Korea, Rep.	0.77	0.95
Mexico	0.81	0.87
Nigeria	0.94	0.94
Pakistan	0.85	0.95
Russian Federation	0.79	0.88
Saudi Arabia	0.91	0.97
South Africa	0.93	0.94
Turkey	0.79	0.81

Table 8 (a) continued...

Developed Countries		
Canada	0.85	0.95
France	0.85	0.94
Germany	1.05	1.07
Italy	0.79	0.93
Japan	0.73	0.91
United kingdom	1.16	1.20

Source: Authors' calculations.

China, India and the US

Between, 1995 and 2015, China has been closing in on the US while there does not seem to have been any significant movement as far as India is concerned. When we examine the differences in shares for individual indicators, we find that for India the decrease in gap for internet users has been balanced by an increase in other factors such as FDI inflows and outflows as a per cent of total flows. (Table 9). For China, on the other hand, the steady decrease in gap between 1995 and 2015 is attributable to the effect of most of the individual indicators that balance the increase in distance for public expenditure on education, and patent applications by residents.

Table 9: Behaviour of the different indicators for China, India and the US

	Shares of indicators	India-US			China-US		
		1995	**2005**	**2015**	**1995**	**2005**	**2015**
1	GDP per capita (PPP$)	8.06	9.76	9.71	7.83	8.73	6.75
2	Population Density (people per sq km)	5.36	6.51	7.32	0.61	0.60	0.55
3	Net inflows of FDI (% of GDP)	0.01	0.01	0.00	9.85	2.88	0.01
4	Trade (% of GDP)	0.00	1.12	0.56	0.64	5.41	0.43
5	World trade share	14.32	14.12	9.64	11.45	5.69	0.18
6	Current Account Balance (% of GDP)	0.00	0.23	0.12	0.40	1.57	1.52

Table 9 continued...

7	Reserves (% of GDP)	0.60	0.27	0.60	3.10	5.44	2.26
8	Net Energy Imports (% of total energy use)	0.00	0.01	0.13	0.04	0.06	0.01
9	Food Imports (% of merchandise imports)	0.01	0.01	0.00	0.12	0.02	0.04
10	Public Expenditure on health (% of GDP)	4.31	5.45	6.59	3.12	4.21	3.75
11	Public Expenditure on education (% of GDP)	1.12	1.04	1.53	4.04	7.18	7.89
12	Under 5 mortality (per 1000 live births)	4.13	3.07	2.40	0.61	0.18	0.02
13	Internet Users (per 1000)	20.24	6.18	4.61	20.33	5.07	1.15
14	Patent applications by residents (per million persons)	2.86	5.37	1.72	2.48	1.70	10.45
15	Expenditures on R&D (% of GDP)	3.83	2.33	2.24	4.10	1.14	0.28
16	Researchers in R&D (per million people)	3.68	3.95	2.61	3.00	2.52	1.47
17	Population using an improved water source (% of population	3.24	2.04	0.56	3.74	1.81	0.29
18	Military Expenditures (% of GDP)	0.18	0.27	0.11	0.69	0.90	0.26
19	Tertiary Enrolment (% of relevant age population)	9.02	7.92	5.28	9.29	6.12	2.73
20	Mobile users (per 100 persons)	9.69	2.97	1.80	9.26	1.21	0.74
21	Global 500	11.91	18.92	13.41	11.59	16.55	0.82
22	FDI inflows as a % of total	15.83	5.36	17.00	2.23	0.60	8.31
23	FDI outflows as a % of total	18.17	0.22	15.98	17.43	0.01	5.64
		136.57	97.12	103.90	125.95	79.61	55.56

Source: Authors' calculations.

Given that human capital continues to be one of the most important determinants of this index, it is important to note that China is almost at par with the US when it comes to tertiary enrolment, researchers in R&D and expenditures on R&D and has surpassed US in terms of patent applications by residents. India, on the other hand, has seen a significant decrease in distance only in terms of patent applications. Given its lagging productivity, the Indian economy is likely to take much longer to pick up pace, unlike China, which is in a situation of advantage when it comes to wielding global economic power, and could catch up to the US in the near future.

Conclusions

While developing economies have been consistently contributing an increasing share of incremental world income, exports and capital flows, it might be premature to claim this as indisputable evidence of their increasing economic power. This is owing to the fact that their GDP and GDP per capita is considerably lower than that in the developed economies. In terms of ranking by economic size, there does not seem to have been a significant reordering of countries in the global hierarchy. While several economies tend to be moving towards the US, this increase is gradual at best when we look at the measure in terms of per capita GDP. An index of economic power formed by aggregating 23 indicators does not show very significant evidence of convergence post the financial crisis of 2008. India continues to be at a considerable distance given the large initial gap. However, China seems to be rapidly catching up to the US, having improved its rank to 2 in terms of economic size and 9 in terms of the economic power index (in 2015 vis-a-vis rank 18 in 1995).

Developing countries seem to have increased their power sufficiently to be able to defend their interests in organisations for international economic governance. But not sufficiently to get meaningful concession from the developed countries. This increase in passive power but not active power has resulted in stalemate in these organisations. The Doha Round of trade negotiations is going nowhere. The quota changes in the

IMF faced inordinate delay. In the face of this developing countries are setting up their own organisations, The Asian Infrastructure Investment Bank, The Contingent Reserve Arrangement, New Development Bank etc.

Endnotes

[1] On page 13 of his book Gilpin (1981) calls the idea of power, "as one of the most troublesome in the field of international relations, while Baldwin (2013) on page 213 of his book notes "the unsatisfactory state of knowledge about this topic".

[2] A few such indices are the Global Power Index developed by the National Intelligence Council,2012, Global Trends 2030: Alternative Worlds Wash D.C. National Intelligence Council, China's Comprehensive National Power (Shambaugh David, 2013, China goes Global : The partial power, New York, OUP) and India's National Security Index FNSR Group of Experts 2102, National Power Index, New Delhi, Foundation for national Power Research.

[3] This would be because of the "Triffin paradox". Growth of the world economy and trade required increase in availability of foreign exchange reserves. Because of slow growth in gold supplies this would mean an increase in dollar holdings of other countries. Increase in such dollar holdings would jeopardize the convertibility of dollars into gold, as required then. So the choice was a collapse of the monetary system or slow growth of reserves and stagnation in the world economy.

[4] Chinn and Frankel (2005) aopted a more conditional position that the dollar would decline if the pound became a part of the euro and dollar's depreciation continued.

[5] This paper extends the earlier analysis (Agarwal and Samanta 2006, 2013) to incorporate latest data for 2015 for 23 economies,

[6] This should put to rest the earlier fears that the US would be supplanted by Germany and/or Japan.

[7] There are countries which were in the top 25 in 1965 but were not so in 2015 and these countries are not considered in the analysis .So there would be countries which would have been in the top 25 in 2015 but not in 1965. Furthermore, data for Russia and Poland was not available for earlier years so that these countries were dropped from this analysis.

[8] We have seen above that developing countries are increasing their share of world exports. Unfortunately, this is only for goods and is not true for exports of financial services and services that use information technology (Agarwal, 2013).

[9] This might reflect the generally declining agricultural particularly in the 1990s so dependence on imports was not a liability. Since the 2007-08 food crisis agricultural prices have been high with at least two periods of very high prices.

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Index Values: 1995-2015

1995 rank	Country	Index Value
1	United States	8.06
2	Japan	5.09
3	Germany	3.40
4	United kingdom	2.96
5	Canada	2.90
6	France	2.79
7	Italy	1.30
8	Israel	1.08
9	Korea, Rep.	0.59
10	Russian Federation	-0.37
11	Brazil	-0.89
12	Argentina	-0.98
13	Saudi Arabia	-1.14
14	Iran, Islamic Rep.	-1.48
15	South Africa	-1.58
16	Mexico	-1.93
17	Turkey	-2.02
18	China	-2.31
19	Indonesia	-2.59
20	Egypt, Arab Rep.	-2.60
21	India	-2.65
22	Pakistan	-3.34
23	Nigeria	-4.28

2005 rank	Country	Index Value
1	United States	5.54
2	Japan	4.68
3	United kingdom	4.35
4	Germany	3.34
5	France	2.93
6	Korea, Rep.	2.32
7	Canada	2.28
8	Italy	2.00
9	Israel	1.30
10	Russian Federation	0.02
11	Argentina	-0.96
12	Brazil	-1.04
13	Turkey	-1.08
14	China	-1.36
15	Mexico	-1.51
16	Saudi Arabia	-1.99
17	Egypt, Arab Rep.	-2.06
18	Iran, Islamic Rep.	-2.17
19	South Africa	-2.36
20	India	-2.58
21	Indonesia	-3.06
22	Pakistan	-3.31
23	Nigeria	-5.28

2015 rank	Country	Index Value
1	United States	5.23
2	Germany	3.65
3	Korea, Rep.	3.31
4	Japan	3.10
5	Israel	2.56
6	France	2.32
7	United kingdom	1.63
8	Canada	1.56
9	China	1.33

10	Italy	0.86
11	Turkey	-0.04
12	Russian Federation	-0.11
13	Argentina	-0.47
14	Brazil	-0.59
15	Saudi Arabia	-0.84
16	Mexico	-1.05
17	South Africa	-1.64
18	Iran, Islamic Rep.	-1.98
19	India	-2.41
20	Egypt, Arab Rep.	-2.73
21	Indonesia	-3.45
22	Pakistan	-4.42
23	Nigeria	-5.82

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