Perspectives

ARBUTHNOT BANKING GROUP PLC

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The New Year: time for a long-term look

Introduction

The New Year heralded the usual economic assessments for the forthcoming year. The growth prospects of the Eurozone, in particular, look especially worrying amidst the lack of resolution of the Eurozone crisis.[1] There is more optimism in the USA and the latest employment data were encouraging (December's non-farm payrolls rose by 200,000). But expectations are still for relatively modest 2 to 2½% GDP growth in 2012. Japan will probably bounce back after a Tsunami-induced recession last year but at around 2% growth this is hardly blistering. Japan's days of rapid growth seem long behind it.

There have been some better survey results recently for the UK, but the Bank of England's latest *Credit Conditions Survey* indicated that credit for UK companies was becoming scarcer and more expensive. This will inevitably drag down economic activity this year.[2] The OBR's forecast of an effectively flat economy in 2011Q4 and the first half of 2012 looks reasonable under the circumstances.

The IMF still expects strong expansion in the BRICs.[3] China's growth may slow to 9% according to the IMF after 9½% in 2011, though reports of slowing exports and a collapsing property prices may augur worse to come.[4] But even the more pessimistic forecasts are for growth of 8% so China should continue to make remarkable progress. The IMF is upbeat about India (growth is expected to be 7½% in 2012), and fairly upbeat about Brazil (3½% growth) and Russia (4% growth).

But rather than join the soothsayers for 2012, this Perspective is about medium to long-term crystal ball gazing.[5] This is all the more topical because it was reported recently that, according to Goldman Sachs, Britain's economy could be the biggest in Europe by 2050.[6,7] Given Europe's demographic trends, this is not unfeasible. And the IMF expects China's economy to exceed the USA's in Purchasing Power Parities (PPP) terms in 2016.[8] The IMF also estimates that the Brazilian economy edged ahead of Britain's in size in 2011.[9] The European economies are slipping down the ranks, giving way to the fast-growing emerging economies. The seismic shifts in the world economy continue apace.

The world's biggest economies: to 2016

Chart 1a shows the eleven largest economies, ranked by size of their nominal (market exchange rate (MER)) GDP in 2010, along with the IMF's estimates for 2011 and their forecasts for 2016. The US retains its position throughout this period as the largest economy, though China is catching up. Japan retains its third position and there are few signs of any other economy overtaking it in the near-term. Reflecting the slippage of the Western European economies, Brazil probably edged ahead of Britain in 2011 to become the 6th largest economy, as already indicated, and by 2016 Russia and India could be larger than Italy - and indeed Canada. The detailed figures are in annex table 1.

Chart 1a The 11 largest economies in 2010, GDP (nominal), $tn

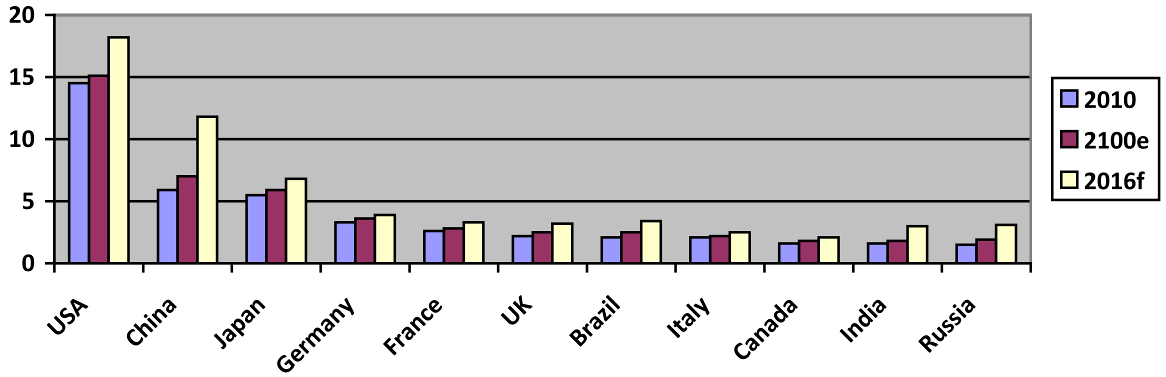
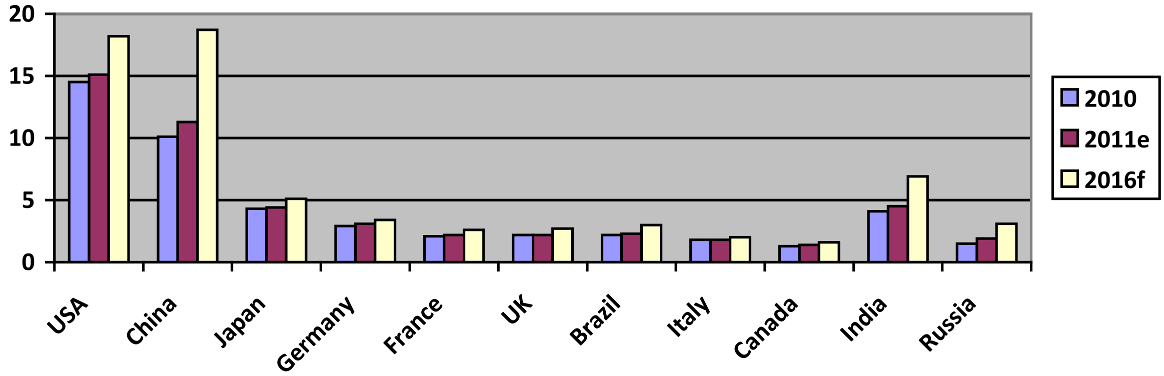


Chart 1b shows the GDP in Purchasing Power Parity (PPP) terms for the same eleven countries (listed in the same order). Estimates in PPP terms allow for the differences in the purchasing power of different currencies for a given basket of goods and services, including non-tradeables. These estimates provide a better guide to the living standards of the countries. The discrepancies between the nominal GDP data using market exchange rates and in PPP terms, can also be part explained by the undervaluation (or overvaluation) of the currencies of the countries under examination. It should also be noted that, as countries get richer, their currencies tend to appreciate and the nominal GDP estimates (MER) tend to converge with the PPP GDP estimates. We will return to the latter point below.

As can be seen from the chart, the relative size of China, India and Russia are significantly lifted by using PPP estimates, whilst Japan falls back. The PPP data confirm the dramatic increase in China's economy, which the IMF expects to become the largest economy in 2016 dislodging the US from its top position. If/when this happens it must be regarded of historical significance. Less spectacularly Brazil's economy probably edged ahead of the UK's in 2011 (as for MER estimates) to become the 7th largest economy in PPP terms. India's economy probably exceeded Japan's to become the 3rd biggest, also in 2011.

Chart 1b The 11 largest economies in 2010, GDP (PPP), $tn

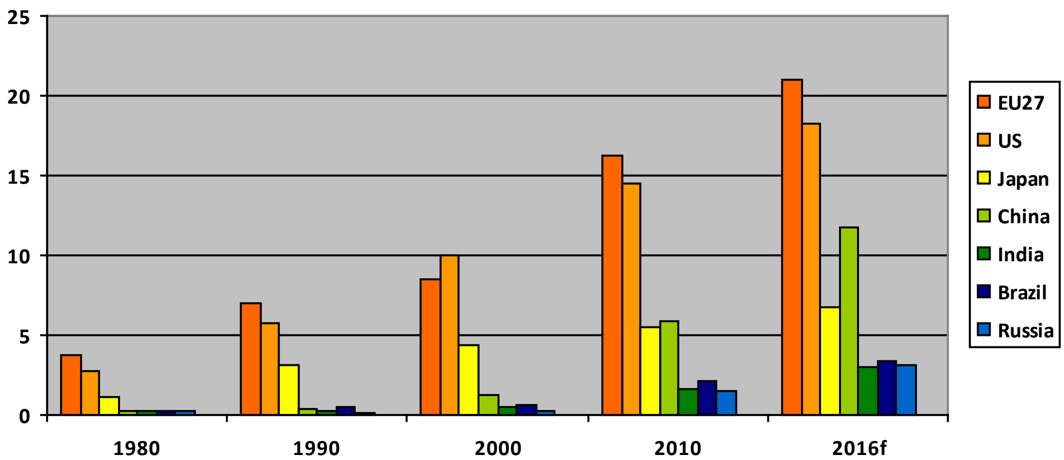


Source: IMF, *World Economic Outlook, database*, September 2011.

Developments since 1980

The IMF data go back to 1980 and their forecasts stretch to 2016, so trends can be assessed for 36 years. Chart 2 shows the rapid increase in the nominal GDP (MER basis) of the world's main economies, economic blocs. But, as much of the increase is due to inflation and the equivalent constant prices data are not available, some caution is required. However, the rise in India and, especially, China is apparent. They were relative economic minnows in 1980. They are not any more. Annex table 2 gives the detailed figures.

Chart 2 World GDP (nominal (MER)), $tn

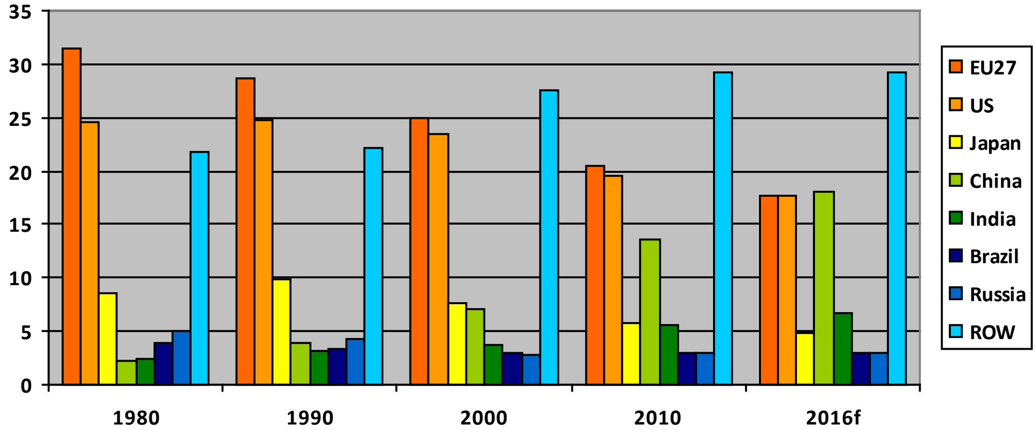


Source: IMF, *World Economic Outlook database*, September 2011.

Chart 3 approaches relative growth trends from 1980 by using GDP as a share of the world total and comparing PPPs rather than the nominal data. It gives a better idea of the shifts in relative sizes over the period. Again the explosive growth of China's economy is the most eye-catching development, whilst the EU27 slips back from accounting for over 30% of GDP in 1980 to about 18% in 2016.

The US's share similarly drops but less acutely – from nearly 25% in 1980 to about 18% by 2016. China's share has exploded from 2% (1980) to 18%, a tad ahead of the USA, by 2016.

Chart 3 Shares of world GDP (PPP), %



Source: IMF, *World Economic Outlook database*, September 2011. ROW = rest of world.

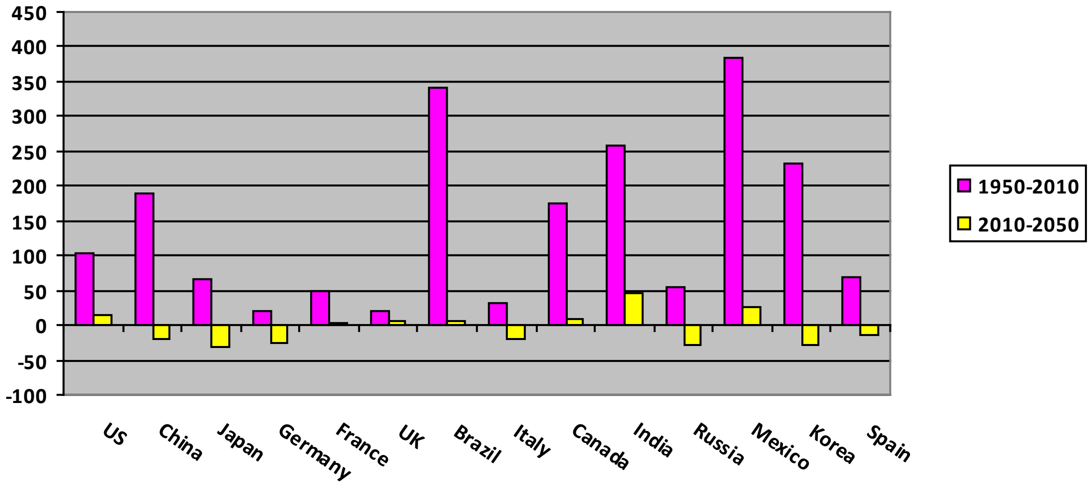
Trends to 2050: the demographics are important

Extrapolating data forwards to 2050 requires some heroic assumptions and is not to be regarded, under any circumstances, as an exact science. But, insofar it demonstrates the extraordinary shifts in the global economy in the first half of the 21st century, it is not without value. The future prospects for potential GDP growth will, very broadly, depend on productivity developments and demographics. Demographics, too often ignored, will play a highly significant role in the way the world changes.[10]

The UN estimates that between 2010 and 2050, the US's working population will increase by 16% and India's by 45%.[11] In contrast Germany's working population will fall by 25%, Italy's by 21% and Spain's by 14%; but the UK's is expected to rise by 5% and France's by 2%. Note too that other big fallers include Japan (31%), China (19%) and Russia (27%). Brazil's working population is expected to change very little (+6%), compared with explosive growth from 1950 to 2010. The demographic declines will clearly have major implications for Europe (Western and Eastern), Japan and China.

The key population data are shown in chart 4 below (details in annex table 3). This chart also covers Mexico, Korea and Spain as well as the eleven big nations discussed above.

Chart 4 Working population (15-64 years old), % changes



Source: UN, *World Population Prospects*, medium variant, 2010 revision (data are for working populations), author's calculations.

GDP trends to 2050

Concerning productivity growth estimates, our extrapolations to 2050 should be regarded as illustrative. Nevertheless, they allow for:

- The observation that, as developing economies grow, they have the potential to achieve very high productivity growth rates as they catch up with the developed world. This high growth potential, currently experienced by India and China in particular, reflect the possible combination of a high growth of the capital stock (China) and the use of the technology of developed countries to "catch up" on developed country techniques (India). As countries develop, these forces fade and growth rates tend to slow towards developed country levels.
- The observation that, as countries become richer, the incentives for rapid growth weaken. Extrapolating as far ahead as 2050 covers an extensive period in which China, Russia and Brazil can be expected to become "rich" countries by today's standards, if growth continues as projected. India could attain GDP per capita (PPP basis) of Argentina and/or Poland (as forecast by the IMF for 2015). Under these circumstances, demographic effects apart, growth rates can be expected to slow significantly.

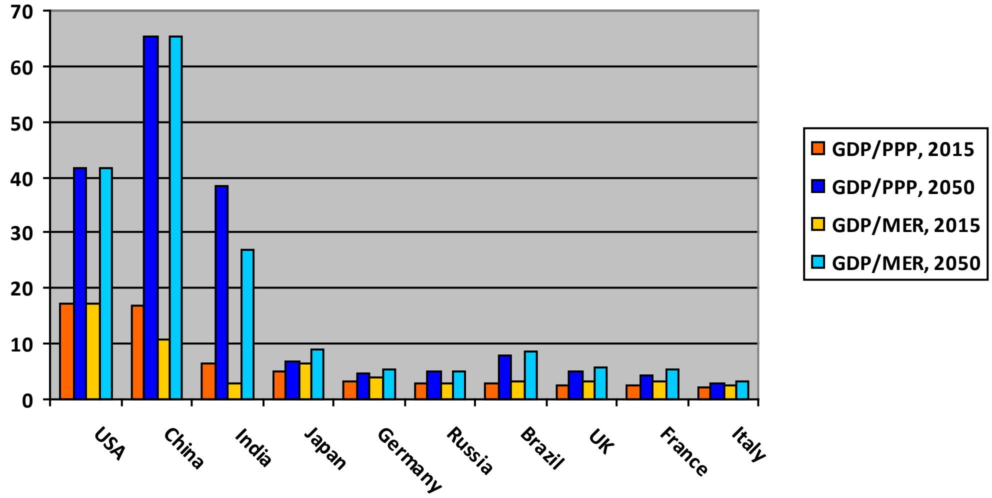
Taking the UN's working population projections and productivity growth extrapolations together provides our GDP growth projections. We have calculated GDP growth projections for both:

- GDP (PPP).
- GDP (nominal (MER)). As noted above, as countries get richer, their currencies tend to appreciate and nominal GDP (MER) tends to converge with the GDP (PPP) estimates. Under these circumstances, the "undervaluation" of China's and India's currencies can be expected to diminish or even be totally eliminated over the forecast period. In our calculations we have assumed the "undervaluation" of China's currency is totally eliminated by 2050 - so nominal GDP merges with GDP (PPP). In India's case we have assumed that there is still a 30% gap – much in line with Poland today (see annex table 4b).[12]

Chart 5 graphs our projections (see annex table 4a). The main conclusions are:[13]

- In both PPP and MER terms China is the biggest economy in 2050, followed by the USA and India.
- In PPP terms Brazil is the 4th largest economy, followed by Japan. The positions are reversed in MER terms.
- Of the Western European countries the UK does indeed become the biggest economy ahead of Germany helped by its demographics. The economies of Germany and Italy (and Russia) are significantly hampered by their falling working populations.

Chart 5 GDP (PPP) and GDP (MER) at 2015 "prices", 2015 & 2050



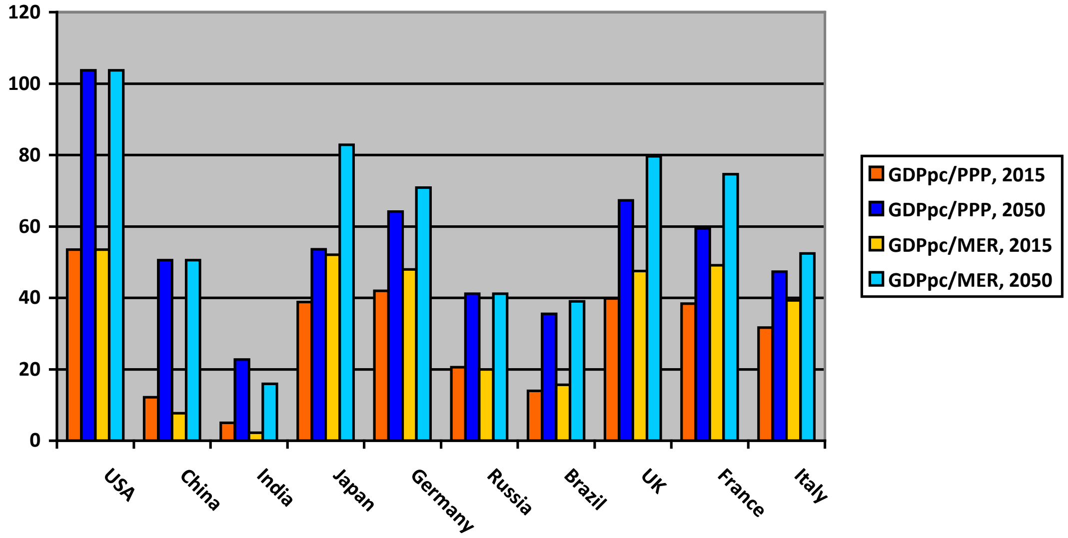
Sources: (i) IMF, *World Economic Outlook database*, September 2011, for 2015 GDP data; (ii) author's extrapolations for productivity growth rates to 2050.

GDP per capita trends to 2050

We have already suggested that China, Russia and Brazil could become rich countries by today's standards by 2050 and India could achieve the GDP pc (PPP basis) of Argentina and/or Poland (as projected by the IMF for 2015). Chart 6 shows our GDP per capita projections (see annex table 5 for details):

- Of the ten major countries we have analysed here, the USA remains the most prosperous country in terms of GDP per capita in 2050. There will, no doubt, be several small states that will be "richer" than the USA in 2050, as there are today (for example Luxembourg). For the combination of total GDP and prosperity, the US's lead is unchallenged.
- Japan remains a rich country, but is slipping down the prosperity rankings.
- China, Russia and Brazil have indeed become rich countries by today's standards, though even China's per capita income is less than half the US's in 2050, and Russia and Brazil have per capita incomes about 40% of the level of the US's in 2050.
- The UK is richer than France, Germany and Italy by 2050, partly reflecting its favourable demographics.

Chart 6 GDP per capita (PPP) and GDP per capita (MER) at 2015 "prices", 2015 & 2050



Sources: (i) IMF, *World Economic Outlook database*, September 2011, for 2015 GDP per capita data; (ii) author's GDP p.c. forecasts for 2050.

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References

1. See Ruth Lea, “Britain will struggle to avoid a “double dip” recession, as Eurozone growth prospects sour”, *Arbuthnot Banking Group Perspective*, 7 November 2011.
2. Bank of England’s latest *Credit Conditions Survey: 2011Q4.*
3. IMF, *World Economic Outlook*, September 2011.
4. Michael Sheridan, “The cracks in China’s great wall of growth”, *Sunday Times*, 1 January 2012.
5. See also Ruth Lea, “The global economy in transition: a two-tier world”, *Arbuthnot Banking Group Perspective*, 15 August 2011.
6. Hugo Duncan, “Finally some good news (but not until 2050); British economy will be biggest in Europe in four decades, say experts”, *Daily Mail*, 13 December 2011.
7. Dominic Wilson and Roopa Purushothaman, “Dreaming with the BRICs: the path to 2050”, *Goldman Sachs*, Global Economics Paper no 99, October 2003, also suggested this would be the case.
8. Mark Weisbrot, “2016: when China overtakes the US: after more than a century as the world’s largest economy, the US will need to adjust to its declining global hegemony”, *Guardian*, 27 April 2011.
9. IMF, *World Economic Outlook database*, September 2011.
10. See also Ruth Lea, “Adverse demographic trends in Europe: ageing populations and relative economic decline”, *Arbuthnot Banking Group Perspective,* 28 February 2010.
11. UN, *World Population Prospects*, medium variant, 2010 revision.
12. IMF, *World Economic Outlook database*, September 2011.
13. Dominic Wilson and Roopa Purushothaman, “Dreaming with the BRICs: the path to 2050”, *Goldman Sachs*, Global Economics Paper no 99, October 2003. Our results are not hugely out of line with this research paper.

Annex

Table 1: 14 largest economies, GDP (nominal) and GDP (PPP), $tn, ranked by size in 2010, current price data

	GDP, nominal ($tn)				GDP, PPP ($tn)		
	2010	2011	2016		2010	2011	2016
US	14.5 (23.1)	15.1 (21.6)	18.2 (19.8)	US	14.5 (19.5)	15.1 (19.1)	18.2 (17.6)
PRC	5.9 (9.4)	7.0 (10.0)	11.8 (12.9)	PRC	10.1 (13.6)	11.3 (14.4)	18.7 (18.0)
Japan	5.5 (8.7)	5.9 (8.4)	6.8 (7.4)	Japan	4.3 (5.8)	4.4 (5.6)	5.1 (4.9)
Germany	3.3 (5.2)	3.6 (5.1)	3.9 (4.3)	India	4.1 (5.5)	4.5 (5.7)	6.9 (6.9)
France	2.6 (4.1)	2.8 (4.0)	3.3 (3.6)	Germany	2.9 (4.0)	3.1 (3.9)	3.4 (3.4)
UK	2.2 (3.5)	**2.5 (3.6)**	**3.2 (3.5)**	Russia	2.2 (2.9)	2.4 (3.0)	3.0 (2.9)
Brazil	2.1 (3.3)	**2.5 (3.6)**	**3.4 (3.7)**	UK	2.2 (2.9)	**2.2 (2.9)**	**2.7 (2.6)**
Italy	2.1 (3.3)	2.2 (3.1)	2.5 (2.7)	Brazil	2.2 (2.9)	**2.3 (2.9)**	**3.0 (2.9)**
Canada	1.6 (2.5)	1.8 (2.6)	2.1 (2.3)	France	2.1 (2.9)	2.2 (2.8)	2.6 (2.6)
India	1.6 (2.4)	1.8 (2.6)	3.0 (3.3)	Italy	1.8 (2.4)	1.8 (2.3)	2.0 (1.9)
Russia	1.5 (2.4)	1.9 (2.7)	3.1 (3.4)	Mexico	1.6 (2.1)	1.7 (2.1)	2.1 (2.0)
Spain	1.4 (2.2)	1.5 (2.1)	1.8 (2.0)	Korea	1.5 (2.0)	1.6 (2.0)	2.0 (1.9)
Mexico	1.0 (1.6)	1.2 (1.7)	1.5 (1.6)	Spain	1.4 (1.8)	1.4 (1.8)	1.6 (1.6)
Korea	1.0 (1.6)	1.2 (1.7)	1.7 (1.9)	Canada	1.3 (1.8)	1.4 (1.8)	1.6 (1.6)
EU	16.2 (26.0)	18.0 (25.7)	21.0 (22.9)		15.2 (20.4)	15.8 (20.0)	18.3 (17.7)
World total	62.9 (100.0)	70.0 (100.0)	91.6 (100.0)		74.3 (100.0)	78.9 (100.0)	103.5 (100.0)
NAFTA	17.1 (27.2)	18.1 (25.9)	21.8 (23.8)		17.5 (23.6)	18.2 (23.1)	21.9 (21.2)

Source: IMF, *World Economic Outlook*, September 2011, the % of the world total is shown in brackets. The data for $ conversions are in current prices. The IMF database only provides constant prices data in national currencies, and their annual rates of change.

Table 2a: Biggest economies, GDP (nominal (MER)), $tn

	1980	1990	2000	2010	2016f
EU27	3.7	7.0	8.5	16.2	21.0
US	2.8	5.8	10.0	14.5	18.2
Japan	1.1	3.1	4.4	5.5	6.8
China	0.2	0.4	1.2	5.9	11.8
India	0.2	0.3	0.5	1.6	3.0
Brazil	0.2	0.5	0.6	2.1	3.4
Russia	[0.2]	0.1 (1992)	0.3	1.5	3.1

Table 2b: Biggest economies, GDP (PPP), shares of world total (%)

	1980	1990	2000	2010	2016f
EU27	31.4	28.7	25.0	20.4	17.7
US	24.6	24.7	23.5	19.5	17.6
Japan	8.6	9.9	7.6	5.8	4.9
China	2.2	3.9	7.1	13.6	18.0
India	2.5	3.2	3.7	5.5	6.7
Brazil	3.9	3.3	2.9	2.9	2.9
Russia	5.0+	4.2 (1992)	2.7	3.0	2.9
Total of the above	78.2	77.9	72.5	70.7	70.7
Rest of world	21.8	22.1	27.5	29.3	29.3

Source: IMF, *World Economic Outlook database*, September 2011.
+ Russia: 1980 figure an "interpolation"

Table 3: 10 largest economies, ranked by GDP (PPP) in 2010: working population projections, to 2050

	Working population, millions				% changes			
	1950	2010	2015	2050	1950-2010	2010-2050	2015-2050	
								Annual change
US	102.2	207.5	211.9	241.7	103%	16%	14%	0.4%
PRC	337.6	970.5	995.8	790.0	188%	-19%	-21%	-0.7%
Japan	49.1	80.9	76.6	55.4	65%	-31%	-28%	-1.0%
India	220.8	789.8	861.1	1,143.1	258%	45%	33%	0.8%
Germany	45.9	54.4	53.4	40.8	19%	-25%	-24%	-0.8%
Russia	66.7	103.2	99.7	75.7	55%	-27%	-24%	-0.8%
UK	33.8	41.0	41.4	43.1	21%	5%	4%	0.1%
Brazil	30.0	131.7	140.0	140.0	340%	6%	0	0
France	27.6	40.7	40.6	41.6	48%	2%	2%	0.1%
Italy	30.2	39.7	39.3	31.4	31%	-21%	-20%	-0.6%

Source: UN, *World Population Prospects*, medium variant, 2010 revision (data are for working populations), author's calculations. These data are for the age group 15-64.

Table 4a: GDP (PPP) and GDP (MER) at 2015 "prices", 2015 & 2050

	Growth rates, annual average (%)			GDP, $tn		GDP (PPP)
	Labour productivity	Working age population	GDP	2015	2050	Ratio 2050 to 2015
GDP (PPP)						
US	2.1	0.4	2.5	17.4	41.8	2.4
PRC	4.7	-0.7	4.0	16.8	65.5	3.9
India	4.5	0.8	5.3	6.3	38.4	6.1
Japan	2.0	-1.0	1.0	4.9	6.9	1.4
Germany	1.8	-0.8	1.0	3.4	4.8	1.4
Russia	2.5	-0.8	1.7	2.9	5.2	1.8
Brazil	3.0	0	3.0	2.8	7.9	2.8
UK	1.7	0.1	1.8	2.6	4.9	1.9
France	1.5	0.1	1.6	2.5	4.3	1.7
Italy	1.5	-0.6	0.9	2.0	2.7	1.4
GDP (MER)						
US	2.1	0.4	2.5	17.4	41.8	2.4
PRC	6.0	-0.7	5.3	10.6	65.5	6.2
India	7.6	0.8	6.8	2.7	26.9	10.0
Japan	2.0	-1.0	1.0	6.6	9.0	1.4
Germany	1.8	-0.8	1.0	3.9	5.3	1.4
Russia	2.6	-0.8	1.8	2.8	5.2	1.9
Brazil	2.9	0	2.9	3.2	8.7	2.7
UK	1.7	0.1	1.8	3.1	5.8	1.9
France	1.4	0.1	1.5	3.2	5.4	1.7
Italy	1.4	-0.6	0.8	2.4	3.1	1.3

Table 4b: GDP (nominal (MER)) and GDP (PPP), comparisons, 2015 & 2050

	2015			2050		
	GDP (PPP) $tn	GDP (MER), $tn	Ratio, MER to PPP (%)	GDP (PPP), $tn	GDP (MER), $tn	Ratio, MER to PPP (%)
US	17.4	17.4	100	41.8	41.8	100
PRC	16.8	10.6	63	65.5	65.5	100
India	6.3	2.7	43	38.4	26.9	70
Japan	4.9	6.6	135	6.9	9.0	130
Germany	3.4	3.9	115	4.8	5.3	110
Russia	2.9	2.8	97	5.2	5.2	100
Brazil	2.8	3.2	115	7.9	8.7	110
UK	2.6	3.1	124	4.9	5.8	118
France	2.5	3.2	128	4.3	5.4	125
Italy	2.0	2.4	120	2.7	3.1	115
Footnote:						
Poland	0.908	0.656	72			
Argentina	0.869	0.531	61			

Sources: (i) UN, *World Population Prospects*, for changes to working age populations; (ii) IMF, *World Economic Outlook database*, September 2011, for 2015 GDP data; (iii) author's extrapolations for productivity growth rates to 2050. There are rounding errors in the tables.

Table 5 GDP per capita (PPP) and GDP (MER) per capita at 2015 "prices", 2015 & 2050

	2015		2050		
	GDP, $tn	GDP pc, $k	GDP, $tn	Population (millions)	GDP pc, $k
GDP (PPP)					
US	17.4	53.5	41.8	403.1	103.7
PRC	16.8	12.2	65.5	1,295.6	50.6
India	6.3	5.0	38.4	1,692.0	22.7
Japan	4.9	38.8	6.9	108.5	63.6
Germany	3.4	42.0	4.8	74.8	64.2
Russia	2.9	20.6	5.2	126.2	41.2
Brazil	2.8	14.0	7.9	222.8	35.5
UK	2.6	39.8	4.9	72.8	67.3
France	2.5	38.4	4.3	72.4	59.4
Italy	2.0	31.7	2.8	59.2	47.3
GDP (MER)					
US	17.4	53.5	41.8	403.1	103.7
PRC	10.6	7.7	65.5	1,295.6	50.6
India	2.7	2.2	26.9	1,692.0	15.9
Japan	6.6	52.1	9.0	108.5	82.9
Germany	3.9	48.0	5.3	74.8	70.9
Russia	2.8	20.0	5.2	126.2	41.2
Brazil	3.2	15.7	8.7	222.8	39.0
UK	3.1	47.5	5.8	72.8	79.6
France	3.2	49.1	5.4	72.4	74.6
Italy	2.4	39.3	3.1	59.2	52.4

Sources: (i) UN, *World Population Prospects*, for populations; (ii) IMF, *World Economic Outlook database*, September 2011, for 2015 GDP & GDP p.c. data; (iii) author's GDP & GDP p.c. forecasts for 2050.