

Global growth: redefining strength

- Working age population growth has fallen far more rapidly than most seem to realize. This is distorting our perception of which economies are doing well and which are not
- On a per-capita basis, the US is not leading the global recovery; Japan is not lagging it. Their positions are reversed
- There has been no change in trend growth in output per working age person in the G3 since 1980. The recent slowdown in GDP growth appears to be due entirely to demographics
- Japan and Europe have been growing at-or-above their potential rates for the past two years. The US has been doing so for the past five
- With G3 growth already at-or-above potential, there is nothing to be gained from further QE, ZIRP and NIRP. Indeed, this partly explains why monetary policies have failed to lift growth in the first place

In a recent commentary, former Minneapolis Fed president Kocherlakota argued that “The US recovery is not what it seems” [1]. Specifically, the Princeton mathematician and Chicago PhD noted that differences in population growth among countries are distorting our perception of which countries are doing well and which are not. “What really matters,” he said, “is how much output-per-person has changed”, not how much output in the aggregate has.

We couldn’t agree more [2]. In fact we’d take it a few steps further. Population growth – especially working-age population growth – has fallen far more rapidly than most seem to realize and this is distorting not just our perception of which countries are doing well, but how well they are doing compared to the past, how

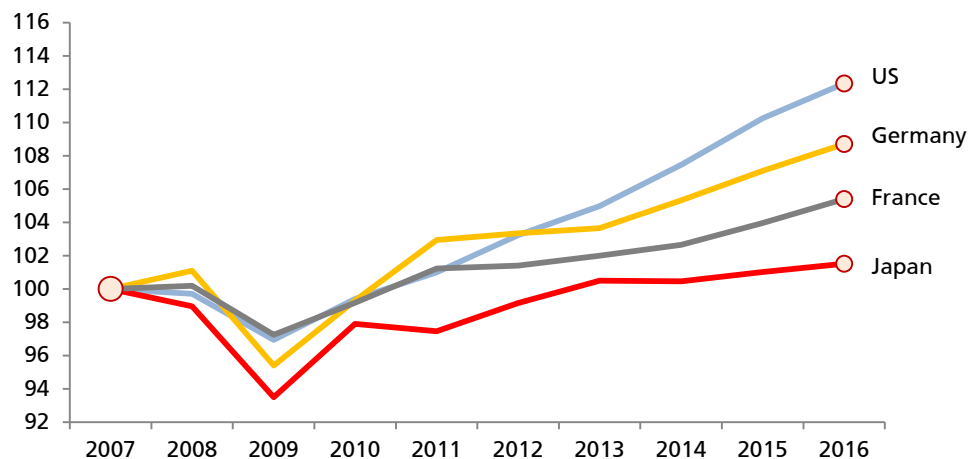
Nomenclature

Economic regions in this report adhere to the following conventions:

- Asia-10: CH, HK, TW, KR, SG, MY, TH, ID, PH, IN
- Asia-9: A10 less CH
- Asia-8: A10 less IN, CH
- Asean-5: TH, MY, ID, PH, SG
- Asean-4: TH, MY, ID, PH
- Asia Big3: CH, IN, ID
- G4: US, EU4, JP, A10
- G3: US, EU4, JP
- EU4: GE, FR, IT, UK
- EU3: GE, FR, IT

Global – real GDP

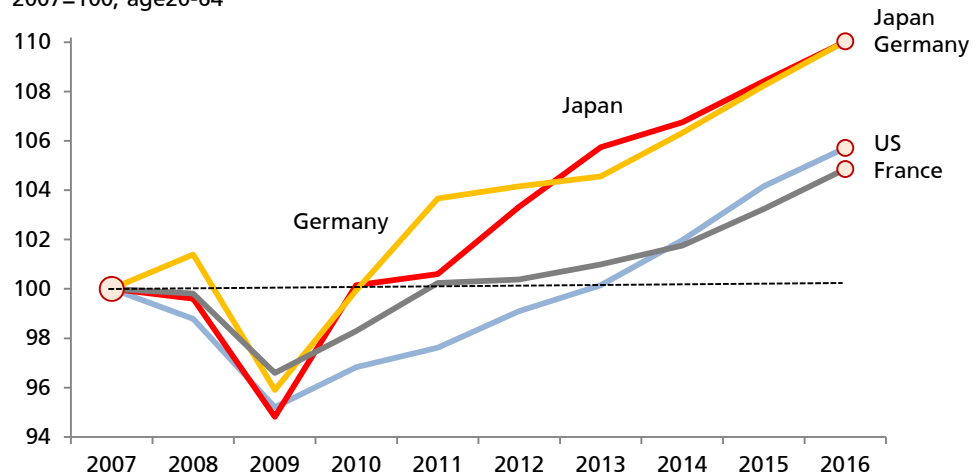
2007=100



Global – real GDP per person of working age

2007=100, age20-64

On a per-capita basis,
the US is not leading
the global recovery.
Japan is not lagging
it. The reverse is true



fast they could / should be growing today, whether growth is likely to go back up soon, whether current policies – especially monetary policies – aimed at achieving faster growth are futile and, indeed, the very question of whether today's slower growth is a good thing or a bad thing. There's a lot of fundamental issues here so let's start right at the top: which countries are doing well and which ones aren't?

The conventional wisdom

The picture on page 1 sums up the conventional wisdom. Since the Lehman Brothers collapse of September 2008, the US recovery has been the strongest in the G3. Germany has recovered solidly. France, not so much. And poor Japan, even after three years of Abenomics, has barely grown at all.

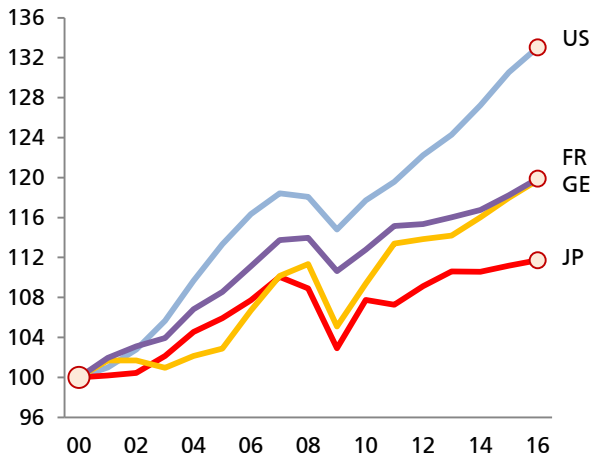
But as Kocherlakota says, "US population is growing much faster than those of either Europe or Japan, so its economy should almost automatically grow faster as well." Any meaningful comparison would ask how these countries have fared on a per-person basis. In fact, if you're comparing performance, you need to ask how well they have grown per working-age person (WAP), because babies and grandparents don't bring home the bacon.

When you do that, the picture changes radically (chart above). Germany still does well. But now Japan does just as well. Reprobate Japan – with all the QE and negative interest rates and 'why can't they ever do things right?' sentiment – has performed just as well as world-beater Germany. The US, it turns out, has grown only half as well as Germany and Japan. And France, with all its bureaucratic / socialistic tendencies, has grown about the same as the US.

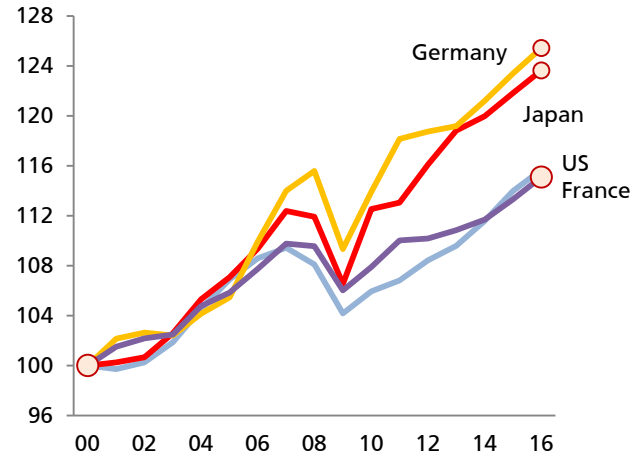
Importantly, the picture does not change if one looks at the past sixteen years instead of just the past eight (charts top of next page). In aggregate terms, the US economy has again grown by the most – by nearly a factor of two over Germany and France. But in working-age per-capita terms, Germany and Japan again take first place – still by a wide margin and still on an equal footing. Look back 8 years, look back 16 – the German hare and the Japanese tortoise are one and the same. And both countries beat the pants off the US and France.

What's going on?

Global – real GDP
2000=100



Global – real GDP per working age person
2000=100, age 20-64



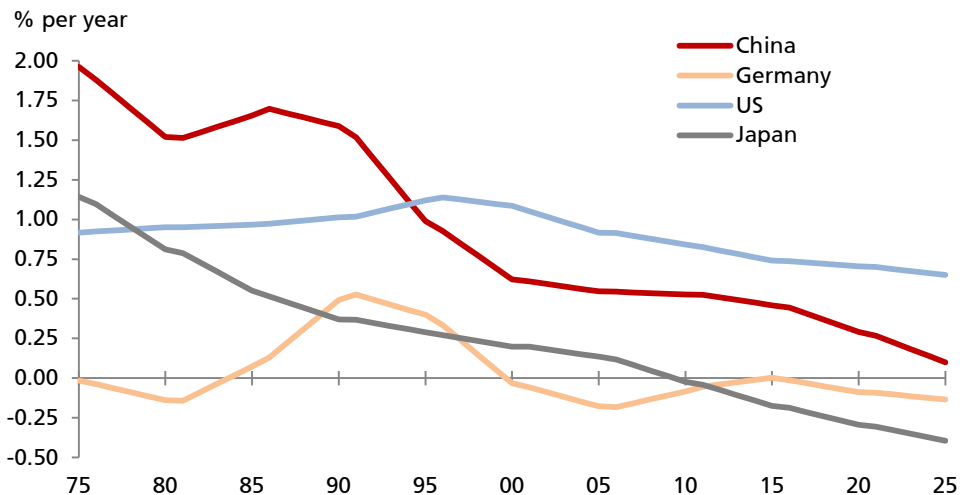
Working-age population growth

The answer is populations aren't growing like they used to. In the US, Japan, Europe and most countries in Asia [3], population growth has fallen sharply over the past decade and, according to the UN's World Population Prospects, it will continue to fall for the next 2-3 decades [4]. In Japan, population growth has fallen from 1% back in 1980 to negative 0.2% at present (chart below). In China, it has fallen by three-quarters – to 0.5% from 2% on the same time frame. US population growth has fallen to 0.7% from 1.2% twenty years ago and Germany's population has been shrinking for the past fifteen years.

Falling population growth isn't the half of it. Societies are aging too. Put these two facts together and it means that working-age population growth is falling much faster than population growth overall. This is important because it's the working age guys and gals who, well, go to work everyday.

The difference between total and working age population is large. In Japan, total population growth has fallen to negative 0.2% per year but the working age

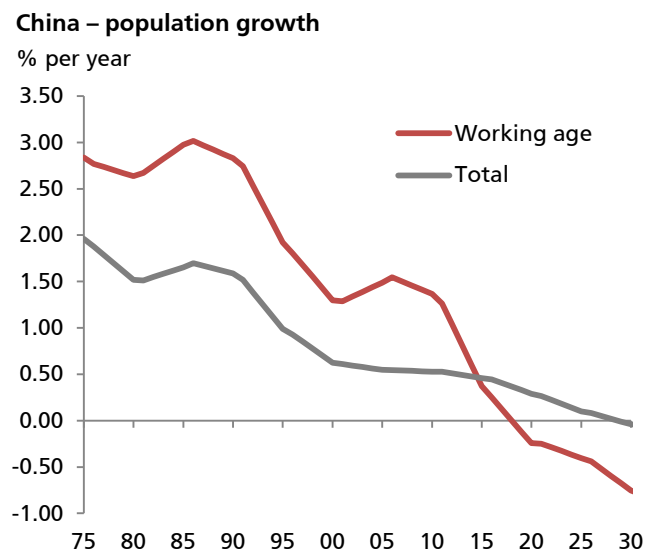
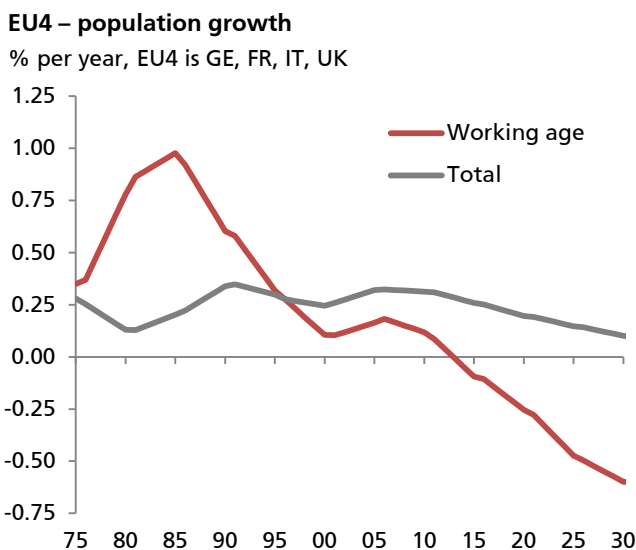
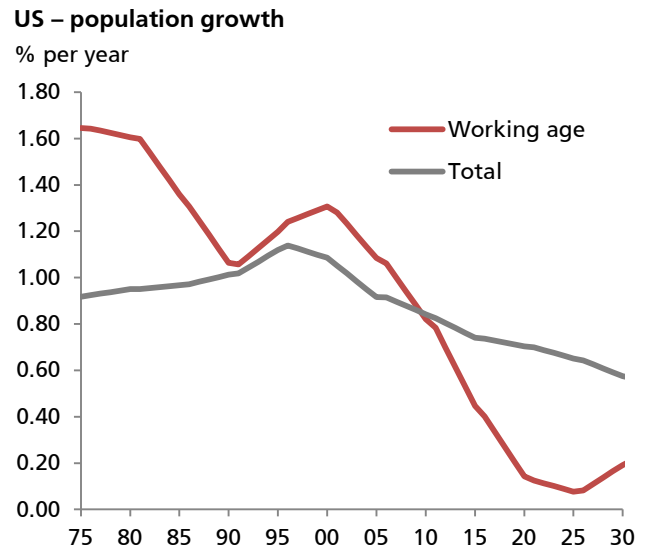
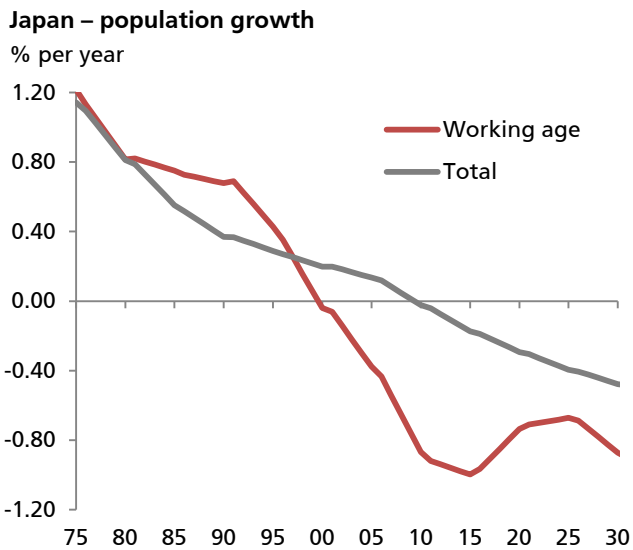
Global population growth



Working age population growth is falling much more rapidly than most seem to realize

population is shrinking five times faster – by 1% per year (chart below left). The difference between total and working age population growth is just as stark in the US (chart below right). After WWII, the country experienced the ‘baby boom’ that brought so much growth in the 1980s and 1990s. But the baby boomers began retiring five years ago and working age population growth is falling like a rock. US WAPG is now 0.4% per year. Eight years ago, on the eve of the Lehman Brothers collapse, it was double that, or 0.8%. Five years before that, WAPG was 1.2%. In a dozen years, US WAPG has fallen by two-thirds.

In Europe, steady total population growth disguises the drop in WAPG more than anywhere else in the world. Total population growth has run at 0.1%-0.2% since 1975 (chart bottom left). But WAPG, has dropped in straight-line fashion from 1% in 1985 to zero by 2015 and is now minus 0.1% per year. In China, the one-child policy is working through the system and working age population growth has fallen to 0.25% from 1.5% just 8 years ago. In 1985, it grew by 3% per year (chart bottom right).



Growth implications

The implications for GDP growth are straightforward. Since GDP is output-per-worker times the number of workers, GDP *growth* is the sum of output-per-worker *growth* and labor force *growth*, or in simple terms, WAP growth. Thus the sharp fall in WAP growth in the US, Japan Europe and Asia over the past decade has brought equally sharp falls in potential GDP growth, the rate than can be expected to prevail through the cycle.

What is potential today?

Now go back to those fundamental questions posed earlier on. First, what sort of GDP growth should investors be expecting today? That depends on productivity growth. In the developed world, most consider 1.5% annual productivity growth pretty impressive, partly because it hasn't been that high for 10-15 years. But take that generous assumption and add today's WAP growth rates to it. What do you get? In Japan, potential GDP growth comes to 0.5% per year (1.5% productivity growth minus 1% WAPG). In Europe, potential growth comes to 1.4% (1.5% minus 0.1%). And in the US, potential growth comes to a lowly 1.9% per year (1.5% plus 0.4%).

This is a pretty relevant observation given the despair in global markets over weak global growth. In all cases, GDP growth is currently running at or above potential. In Japan, where potential growth is 0.5% per year, GDP grew by 0.5% in 2015 and is expected to grow by another 0.5% this year and by 0.6% in 2017. In Europe, where potential is 1.4%, GDP grew by 1.6% in 2015 and is expected to grow by 1.5% this year and next. In the US, growth has run at a 2.1% pace for the past five years – two ticks above its 1.9% potential rate.

But if GDP is running at potential, why are markets so worried? Why are the IMF and G20 finance ministers urging governments to take 'urgent' action to lift growth by 'all available means'. Why are the BoJ and ECB pursuing QE and negative interest rate policies? And why is the Fed still effectively at zero?

Will growth be faster tomorrow?

No doubt because the multi-laterals and central banks hope growth can be raised higher than it currently is. Can it be? Not for long if we're already at potential. Moreover, if the UN's population projections are anything to go by – they can't be far off because tomorrow's working age population already lives in today's 1-19 age group – GDP growth isn't going to go back up. It's going to drop further.

What sort of magnitudes are likely? Based on demographics alone, US potential GDP growth will fall to 1.6% by 2021 and to 1.5% by 2026. Europe's potential growth, currently 1.4%, will fall to 1.2% by 2021 and to 1% by 2026. The UN reckons that Japan's WAPG is already at

bottom and therefore potential growth should rise by 2-3 tenths over the coming decade. That would raise Japan's potential growth to 0.8% in 2026 from 0.5% at present. (Assuming in all cases productivity growth of 1.5% per year).

The message is clear: if you're worried about slow growth today, get used to it. Growth is likely to be even slower five years from now and slower yet five years after that.

Growth in the G3 has been running at-or-above potential for two years. Why all the despair over 'slow' growth?

If you're worried about slow growth today, get used to it. It's likely to be slower five years from now and slower yet five years after that

Working age population growth projections

% per year

	US	JP	EU4	G3	Asia-10
2016	0.40	-0.97	-0.11	-0.02	0.99
2021	0.12	-0.71	-0.28	-0.16	0.57
2026	0.08	-0.69	-0.50	-0.25	0.36
Change (pct pts)					
2016-21	-0.27	0.26	-0.17	-0.14	-0.42
2021-26	-0.04	0.03	-0.22	-0.09	-0.21

To the extent slower growth owes to slower population growth, it's a false concern. Small families can be just as rich, or richer, than big ones

Is slower growth 'bad'?

The obvious premise is that slow growth is bad. Is it really? Not necessarily, and we don't mean this from a 'green' / save the planet perspective. We mean it from an old-fashioned, hardball capitalism perspective. To the extent that slower GDP growth results from slower population growth, the response should be: who cares? It's a false concern. It's GDP per person that matters – your income, my wage – not GDP in the aggregate. Small families can be just as rich or richer than big ones.

The question then becomes: how much of the slowdown in GDP growth is due to slowing / negative population growth and how much of it is due to slower growth in output-per-person – a true concern?

Productivity growth

Judging by the growth in output per working-age person, the slowdown in GDP growth in the G3 appears to be due entirely to demographic changes. None of it appears due to slower productivity growth. The quickest way to gain a feel for this is to look again at the chart of GDP per working-age person shown at the top right-hand side of page 3. While sharp drops in GDP/WAP were experienced during the global financial crisis of 2007/08, it's hard to see any structural shift in the upward-trending trend of GDP/WAP since 2000 anywhere in the G3.

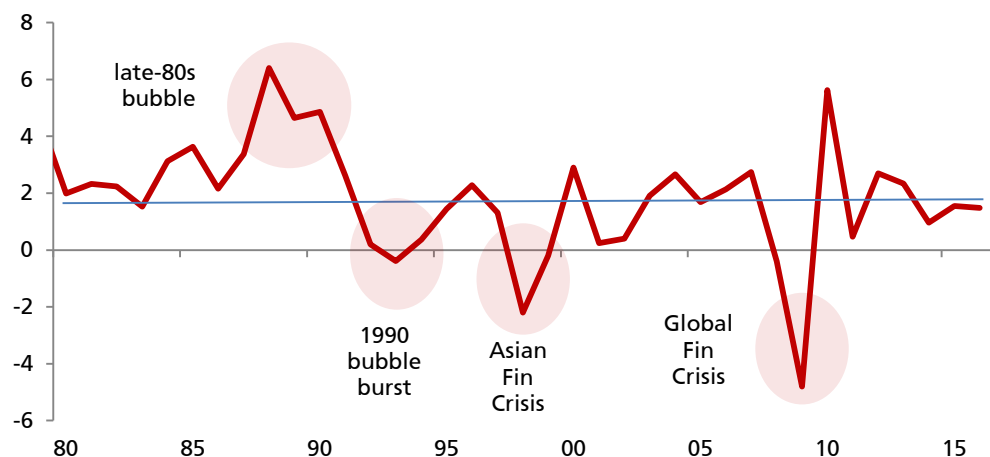
Nor does there appear to be any structural shift in productivity growth if one looks at longer periods of time. Take Japan, for starters (chart below). Growth in output per working age person was high during the late-1980s thanks to the cyclical boom underway at the time. As most are aware, boom ended in bust in 1990 and productivity growth then fell below trend accordingly. It dipped again following the Asian financial crisis of 1997/98 and again during the global financial crisis of 2008/09.

For all Japan's recent woes, however, productivity growth has averaged 1.6% per year since 2011. That's not far off the 1.8% growth averaged since 1980 and considerably better than the 1.2% growth averaged since 1990. The bottom line is there doesn't appear to be any structural shift in Japan's output per working age person for the past 35 years. Indeed, given the very respectable performance since 2011, one wonders once again why the BoJ continues its strenuous pursuit of QE and negative interest rates [5].

Plainly, the chart below shows how tricky measuring productivity growth is because it bounces around so much. You need a lot of years of data before you can draw conclusions. How many years are enough? Not even 24 in the case of Japan, as the

Japan – real GDP per working age person

% YoY, age 20-64



Twenty-four years is not enough time to accurately measure Japan's productivity growth. It may not be sufficient in other countries either

Japan – real GDP per working age person

% YoY, age 20-64

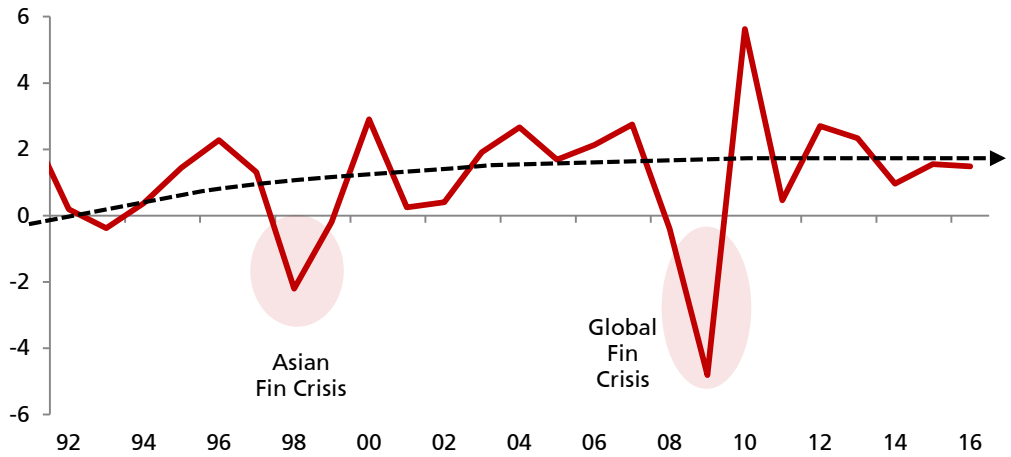


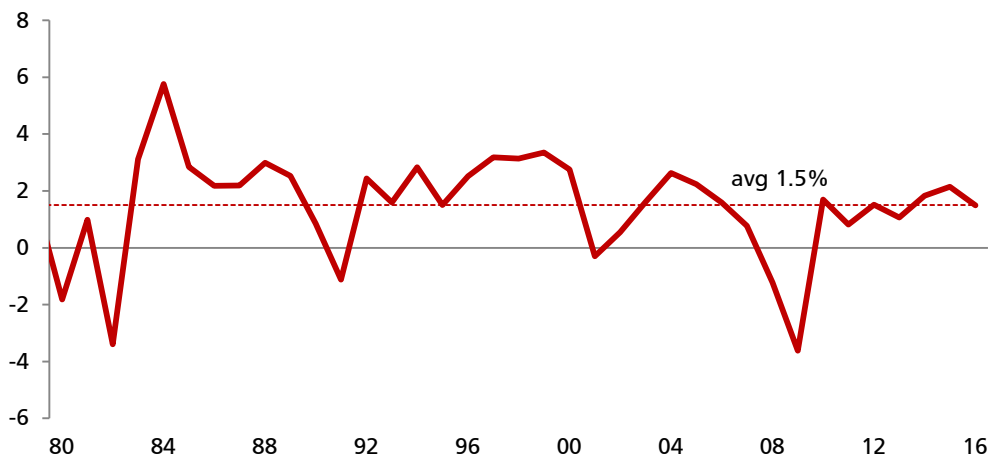
chart above shows. If one looks at the period since 1992, productivity growth appears to be improving instead of running sideways or getting worse, as many fear it is today. Of course we know the improvement is illusory because the late-1980s and early-90s are missing from the picture. Twenty four years is not sufficient time to gauge changes in productivity growth in Japan and it may not be sufficient in other countries either.

Against that backdrop, consider the US experience shown below. Many worry that productivity growth there has fallen too but, once again, output per working-age person doesn't show much change. Importantly, for the past three years, output per working age person has grown by 1.8% per year. That's three ticks higher than the 1.5% growth averaged since 1980. It's four ticks higher than the 1.4% averaged since 1990. The bottom line again is that there doesn't appear to be any shift in trend productivity growth whatsoever for the past 36 years. The corollary follows immediately: slower US GDP growth in recent years is due entirely to demographics, i.e., slower WAP growth. None of it is due to slower productivity growth.

There has been no slowdown in the growth in output per working age person in the US for 36 years. In short, slower GDP growth of late owes entirely to slower population growth

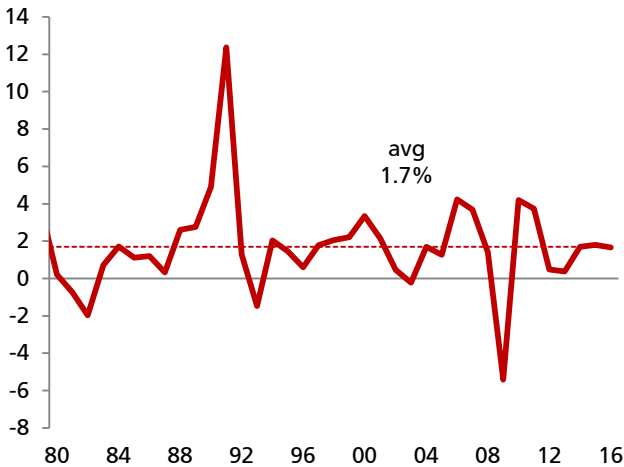
US – real GDP per working age person

% YoY, age 20-64



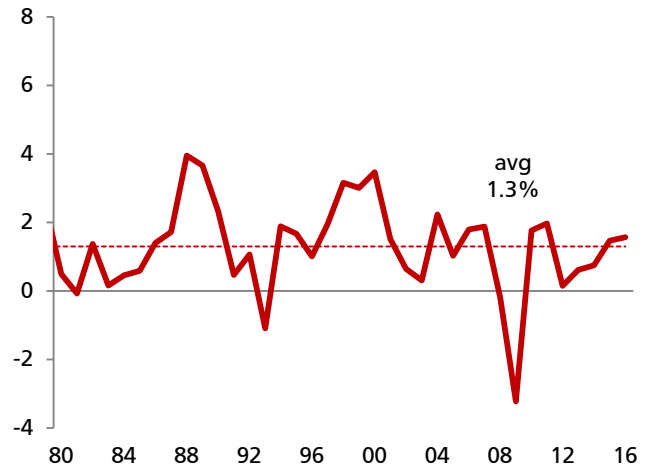
Germany – real GDP per working age person

% YoY, age 20-64



France – real GDP per working age person

% YoY, age 20-64



The same is true in Germany and France (charts above). Do you see a change in trend output per-WAP growth? We don't either. Germany's average productivity growth has been higher than France's – by 4 tenths of a point per year – but neither country shows any change in trend. As in the US and Japan, the recent slowdown in aggregate GDP growth in Germany and France owes to falling population growth and not falling output per person.

Asia

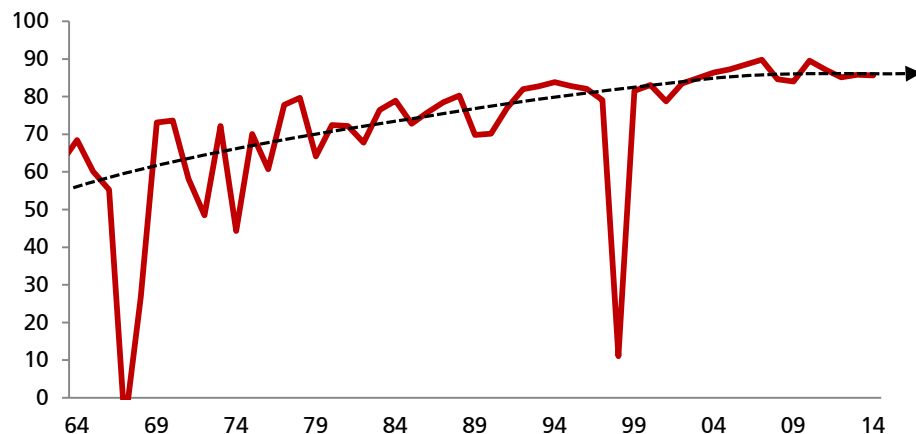
Asia's growth is slowing too of course but here the reasons are reversed from the G3. In Asia, the main driver of slower GDP growth is not demographics – though slower WAP growth is a factor – the main driver is falling productivity growth. This shouldn't come as a surprise because productivity growth accounts for the lion's share of GDP growth in Asia. Nor should it be a cause for alarm because productivity growth falls when incomes go up. And Asia's incomes continue to rise rapidly.

Take these thoughts in order. In Asia, a 'young' developing economy might grow by 9% and its population by 2%, implying productivity growth of 7%. If so, productivity would have accounted for 7/9ths of GDP growth. That wouldn't be untypical. Historically, productivity growth has accounted for 80%-85% of all economic growth in the Asia-10 since the end of WWII (chart below). Population growth has accounted for a far lower 15%-20%.

The slowdown in Asia is due to slower productivity growth. This should neither surprise nor alarm. Higher incomes are driving slower growth and it's higher incomes that are the ultimate goal, not growth per se

Asia-10 – share of GDP growth due to productivity growth

per cap GDP growth as % of total GDP growth



When incomes go up, growth rates go down. 'Twas ever thus

The bigger point to grasp, however, is that when incomes go up, productivity growth goes down. The way to see this is to think about where productivity growth comes from. It comes from roads and bridges and electricity grids and other kinds of hard infrastructure. But it comes from software too – transparent legal systems, effective reward and incentive systems, better management practices and so on. Many believe (and we would agree) that, at the end of the day, the three most important drivers of productivity growth are education, education and education.

But all these things come slowly to low income countries starting out on the development path. It takes decades, for example, to raise education levels. For low income countries, the fastest way to lift productivity is to import technology and machinery from countries that developed it 10, 20 and 30 years earlier. Why reinvent the wheel when you can buy an old one cheaply? Foreign techniques and equipment allow a developing economy to raise output almost immediately and low wages mean the output can be readily sold into global markets. Output and incomes jump sharply.

But to keep incomes growing, a developing economy has to raise the technology bar again. Techniques, machinery and ideas developed 20 years ago are not as cheap as those developed 30 years ago. You get less bang for the buck. Local wages are now higher too so it's tougher to break new ground (steal market share) in global markets. For both reasons, the second jump in productivity and wages is smaller than the first. The third less than the second, and so on.

Productivity and wage growth continue to slow as local incomes and education / technological levels get closer and closer to those of the globally most advanced countries. Ultimately, productivity growth can't be taken "off the shelf anymore" – it has to come from raw research and development, and these gains come grudgingly and sporadically. Productivity growth of 1.5% per year is typical in the US, Japan and Europe. It will become the norm in Asia too as incomes continue to rise.

This progression is nothing new. Japan grew fast in the 1950s and 60s. But when wages and incomes and technological capabilities rose, the fast growth passed to Singapore and Hong Kong. From there it went to Korea and Taiwan and later to Malaysia, Thailand, China and so on. Rising incomes were the biggest reason behind this migration and the inexorable slowdown in GDP growth. No one wants slower growth but it's important to remember that rising incomes are the cause of it and higher incomes are the goal, not growth per se. To the extent higher incomes are driving the slowdown in growth – as is the case in Asia – slower growth is unequivocally a good thing, not a bad thing.

Growth slows when things go right, not just when things go wrong

Fundamental issues

It's time to summarize. Population growth has fallen much more rapidly than most realize. Working age population has fallen even more rapidly. This has distorted our perception of what economic performance across the globe is and what it should be. The implications are numerous and fundamental:

- 1) On a per-capita basis, growth in Japan and Germany has far surpassed that of the US and France since 2007. The US is not leading the global recovery, Japan is not lagging it. The reverse is true. The same is true if one looks 10, 20 or 30 years further into the rear-view mirror;
- 2) Given the sharp drops in working age population growth, the US, Japan and Europe have all been growing at-or-above their potential rates for the past three years;
- 3) Further expected drops in working age population growth mean that GDP growth in the G3 is likely to be slower in five years than it is today, not faster. If you're worried about slow growth, get used to it;
- 4) To the extent slower growth derives from slower population growth, this is a false concern. We concur with Kocherlakota: what matters is income per

person, not income in the aggregate. Small families can be just as rich, or richer, than big families;

- 5) There does not appear to have been any slowdown in trend growth in output per working age person in the G3 since 1980. The slowdown in GDP growth owes entirely to slower population growth;
- 6) In Asia, the drivers of slower GDP are reversed from the G3. In Asia, most of today's slower GDP growth owes to slower productivity growth, in turn the result of rapid increases in per capita income. Growth slows when things go right, not just when they go wrong.

With growth already at-or-above potential, QE, ZIRP and NIRP won't lift it any further. It's time to normalize global monetary policies

Central bank policy

The implications for global central banks are clear. First, with growth currently running at-or-above potential, there is little need for further QE or negative interest rates in Japan and Europe and no need for near-zero interest rates in the US. Second, at-or-above potential growth means continued QE, ZIRP and NIRP policies are unlikely to lift growth. Indeed, thirdly, the fact that economies are already running at potential partly explains why QE, ZIRP and NIRP policies have failed to lift growth in the first place.

Finally, slower growth does not imply that inflation will remain low. Inflation rises or falls depending on whether actual growth rises above / falls below its potential rate, not on the absolute rate of growth. Lower potential growth implies inflation would rise sooner rather than later other things equal. Core (ex-food and energy) inflation is rising rapidly in the US and it has risen considerably in Europe and Japan over the past year. Continued GDP growth at-or-above potential will further this trend.

Notes:

- [1] <https://www.bloomberg.com/view/articles/2016-08-18/the-u-s-recovery-is-not-what-it-seems>. Kocherlakota served as Minneapolis Fed president from 2009 until January 2016.
- [2] "Global growth: what is potential and where is it going?", DBS Group Research, 25Feb16.
- [3] Only India, Indonesia and the Philippines continue to experience steady-to-rising population growth.
- [4] <http://esa.un.org/unpd/wpp/>
- [5] The usual answer one gets is that the BoJ wants higher inflation. But the BoJ doesn't want higher inflation for its own sake, it wants higher inflation because it thinks that would raise GDP growth. If GDP growth is already at potential, inflation is moot.

Sources:

Population data are from the United Nations. Other data are from CEIC Data, Bloomberg and DBS Group Research (forecasts and transformations).

GDP & inflation forecasts

	GDP growth, % YoY					CPI inflation, % YoY				
	2013	2014	2015	2016f	2017f	2013	2014	2015	2016f	2017f
US	1.5	2.4	2.4	1.9	2.7	1.5	1.6	0.1	1.6	2.3
Japan	1.4	-0.1	0.5	0.5	0.6	0.4	2.7	0.8	-0.1	0.6
Eurozone	-0.3	0.9	1.6	1.7	1.8	1.5	0.6	0.0	0.2	0.8
Indonesia	5.6	5.0	4.8	5.1	5.4	6.4	6.4	6.4	4.4	5.2
Malaysia	4.7	6.0	5.0	4.2	4.5	2.1	3.1	2.1	2.1	2.4
Philippines	7.1	6.1	5.9	6.6	6.3	2.9	4.2	1.4	1.8	2.8
Singapore	4.4	2.9	2.0	1.5	1.9	2.4	1.0	-0.5	-0.5	0.9
Thailand	2.9	0.9	2.8	3.4	3.6	2.2	1.9	-0.9	0.7	1.9
Vietnam	5.4	6.0	6.7	6.3	6.4	6.6	4.1	0.6	2.0	3.4
China	7.7	7.3	6.9	6.5	6.5	2.6	2.0	1.5	2.0	1.8
Hong Kong	3.1	2.5	2.4	1.0	2.0	4.3	4.4	3.0	2.6	1.5
Taiwan	2.2	3.9	0.7	0.9	1.8	0.8	1.2	-0.3	1.1	0.9
Korea	2.9	3.3	2.6	2.6	2.8	1.3	1.3	0.7	1.1	1.5
India*	6.7	7.3	7.6	7.8	7.9	9.5	6.0	4.9	5.4	5.6

Source: CEIC and DBS Research

Policy & exchange rate forecasts

	Policy interest rates, eop					Exchange rates, eop				
	current	3Q16	4Q16	1Q17	2Q17	current	3Q16	4Q16	1Q17	2Q17
US	0.50	0.75	1.00	1.25	1.50	...	...	...	...	...
Japan	0.10	0.10	0.10	0.10	0.10	100.5	101	101	101	101
Eurozone	0.00	0.00	0.00	0.00	0.00	1.129	1.10	1.10	1.10	1.10
Indonesia	5.25	5.25	5.25	5.25	5.25	13,237	13,793	13,973	14,152	14,331
Malaysia	3.00	3.00	3.00	3.00	3.00	4.02	4.10	4.10	4.10	4.10
Philippines	3.00	3.00	3.00	3.25	3.50	46.4	47.4	47.8	48.1	48.4
Singapore	n.a.	n.a.	n.a.	n.a.	n.a.	1.35	1.40	1.40	1.41	1.41
Thailand	1.50	1.50	1.50	1.50	1.50	34.6	36.6	37.1	37.5	38.0
Vietnam^	6.50	6.50	6.50	6.50	6.50	22,305	22,359	22,359	22,359	22,359
China*	4.35	4.35	4.35	4.35	4.35	6.67	6.59	6.64	6.69	6.73
Hong Kong	n.a.	n.a.	n.a.	n.a.	n.a.	7.75	7.78	7.78	7.78	7.78
Taiwan	1.38	1.25	1.25	1.25	1.25	31.7	32.9	32.9	33.0	33.1
Korea	1.25	1.25	1.25	1.25	1.25	1,115	1,194	1,196	1,199	1,201
India	6.50	6.50	6.25	6.25	6.25	67.1	69.6	70.6	71.6	72.7

^ prime rate; * 1-yr lending rate

Market prices

	Policy rate	10Y bond yield		FX		Equities		
	Current (%)	Current (%)	1wk chg (bps)	Current	1wk chg (%)	Index	Current	1wk chg (%)
US	0.50	1.56	-2	94.7	0.2	S&P 500	2,172	-0.7
Japan	0.10	-0.06	2	100.5	-0.3	Topix	1,295	0.0
Eurozone	0.00	-0.07	1	1.129	-0.3	Eurostoxx	2,988	-0.3
Indonesia	5.25	7.07	22	13243	-0.6	JCI	5,441	0.5
Malaysia	3.00	3.56	6	4.02	-0.1	KLCI	1,681	-0.4
Philippines	3.00	3.48	11	46.4	0.1	PCI	7,818	-1.4
Singapore	Ccy policy	1.77	4	1.352	-0.4	FSSTI	2,868	0.8
Thailand	1.50	2.17	10	34.6	0.2	SET	1,550	0.7
China	4.35	...	...	6.67	-0.2	S'hai Comp	3,082	-0.8
Hong Kong	Ccy policy	0.92	6	7.75	0.0	HSI	22,959	0.1
Taiwan	1.38	0.64	0	31.7	-0.1	TWSE	9,128	1.0
Korea	1.25	1.42	0	1115	0.2	Kospi	2,039	-0.8
India	6.50	7.12	2	67.1	-0.4	Sensex	27,836	-1.0

Source: Bloomberg

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