

### The Great Equalizer

#### The Rise of the Emerging Market Global Middle Class

SIEMS Issue Report SKOLKOVO Institute for Emerging Market Studies



"THE MOST PERFECT POLITICAL COMMUNITY IS ONE IN WHICH THE MIDDLE CLASS IS IN CONTROL, AND OUTNUMBERS BOTH OF THE OTHER CLASSES"

Aristotle



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THE GREAT EQUALIZER / THE RISE OF THE EMERGING MARKET GLOBAL MIDDLE CLASS

#### Introduction

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The economies of the emerging markets have made great strides in recent years and in some cases decades. Hundreds of millions have been lifted out of poverty in both China and India. For the first time in history, these economies are leading the world economic recovery. Collectively, their foreign exchange reserves amount to 20% of world GDP. Despite all this progress however, they still essentially lack a sizeable global middle class. While hundreds of millions may no longer be classified as living in poverty, as defined by the World Bank, relatively few have the purchasing power of the great middle classes in the rich, developed world.

This is all about to change. The next twenty years will very likely witness the emergence of a global middle class in the developing economies that will quickly come to dwarf their brethren in the rich world. This paper will examine what this rise might look like and some of its economic consequences for the global economy.

The highlights from this month's brief include:

- This is history's third great middle class surge, and this time, it is coming exclusively from the emerging markets.
- China has at least 400 million people on the threshold of becoming globally middle class. It will lead the world in adding people to these ranks over the next 15 years.
- India will replace China as the biggest contributor to the global middle class around 2027.
- Asia, currently home to 28% of the world's global middle class, is projected to account for two-thirds by 2030.
- In terms of its impact on global economic growth, consumer spending between the emerging and developed market economies is now roughly equal.
- While income inequality may be rising rapidly within most countries, the distribution of global income among countries is rapidly becoming more equal.

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# WHO ARE THE MIDDLE CLASS?

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The metrics for what comprises "middle class" vary enormously in the academic literature and among business practitioners. Even within individual countries, there is seldom a generally accepted definition and attempts to compare middle classes across countries makes a complicated subject matter even more problematic. Current estimates of India's middle class, for example, range from as little as 30 million to as high as 300 million.

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Research on the middle class is generally defined as 'relative' or 'absolute'. Under the relative approach, the middle class in a country is typically defined as the middle income band of that nation. For example, including the three middle quintiles of income while leaving out the poorest and richest 20%. Unfortunately, with this approach each country has a different median level of income, so the definition of middle class shifts significantly across borders.

The absolute approach avoids this pitfall but its shortcoming is finding an appropriate level of income. Many economists on the subject have used the World Bank guideline range of \$2 to \$13 a day (at 2005 PPP prices). Two dollars a day has been a commonly accepted definition of the poverty line in developing countries; people above this line are middle-class in the sense that they have moved out of abject poverty. Thirteen dollars a day is the poverty line in America, so this category might be described as people who are middle-class by developing country standards but not by a developed country's standards.

In a practical sense, emerging markets really possess two distinct middle classes. One consists of those who are middle class by any standard in the world. For example, they include those possessing an income between the average earnings of a Brazilian and an average German. This "global middle class" is growing fast but only makes up a small fraction of the developing world.

The other, much larger group consists of those who are middle-class by the standards of the developing world. This "developing middle class" is growing very rapidly and by many definitions recently became a majority of the developing world's population for the first time in history.

So what is the best definition of middle class? That depends on what the end user wants to do with it. If you want to estimate the number of people in the developing world who have moved out of poverty then the World Bank's "\$2-\$13 per day" estimate is a reasonably decent indicator. If you are a McKinsey or General Motors, however, and wanted to know many people could become customers of Western brands – you will need a significantly higher hurdle. Households with daily expenditures between \$10 and \$100 per person (in PPP) are considered a good standard bearer today. The lower bound is chosen with reference to the average poverty level in Portugal and Italy, the

two advanced European countries with the strictest definition of poverty. The upper bound is chosen as twice the median income of Luxemburg, the richest advanced country.<sup>1</sup> This upper bound would exclude those considered rich in the advanced economies. We will use this reference as the benchmark for the global middle class throughout this paper.

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#### GLOBAL MIDDLE CLASS DRIVER – PER CAPITA INCOME GROWTH



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While the developing world is currently home to two-thirds of the world's population, the impetus behind the recent surge in the Emerging Market (EM) middle class population has largely been two decades of strong economic growth and rising per capita incomes in both India and China. Stronger economic performance in many other EM economies starting at the turn of this century is accelerating the shift in the economic center of gravity. Measured in purchasing power parity (PPP), at the turn of the century, the EM economies collectively accounted for 36% of world GDP (PPP) but this share had risen to 46% by 2009. The EM economies are projected to reach parity with the Developed Market (DM) economies by 2017, and then account for 57% or world output by 2030.<sup>2</sup> By that same year, the BRIC economies are expected to account for four of the top six economies by size (please see Appendix I for a detailed description of our forecasting methodology).

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As recently as 2000, China's and India's per capita GDPs (measured in PPP) were only \$2,352 and \$1,583, respectively (projected levels for 2010 are



<sup>2/</sup> Measured at current exchange rates (non-PPP measurement), the EM economies currently account for onequarter of world output and this share is expected to rise to at least 36% by 2030.

\$7,500 and \$3,500). By our projections<sup>3</sup>, China will be solidly middle class within twenty years, with per capita income hovering around \$40,000. While India's per capita income is projected to be half that level, with an estimated population of 1.5 billion by 2030, the potential size of its global middle class is still enormous.



This rise in EM per capita incomes will set the stage for the third large scale middle-class ascendancy since 1800. The first occurred during the 19th century as a direct result of the industrial revolution, creating sizeable middle classes in Western Europe and America. The second occurred in the western democracies and Japan and parts of East Asia during the post World War II baby-boom (1950-1980). The current expansion, easily the largest in history in terms of population, is happening exclusively in the EM economies.

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<sup>3/</sup> China's GDP growth (PPP) is assumed to average 7% during 2010-2020 then drop off sharply to 4.3% from 2020-2030. India is assumed to average economic growth of 7% from 2010-2020. It decelerates less quickly than China's during 2020-2030, however, averaging 5.8%.

# THE EMERGING MIDDLE



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According to the World Bank's "\$2-\$13 per day" standard (the developing middle class), the growth in the emerging market middle class has already been enormous the past two decades.<sup>4</sup> Between 1990 and 2005, the total almost doubled, from 1.4 billion to 2.6 billion, rising from one-third of the developing world's population to one-half. In China the number of people living on \$2-\$13 a day leaped from 174 million to an astonishing 806 million in just 15 years. The rise in India was much more modest but still impressive. Under this standard their middle class numbers rose from 147 million to 264 million.

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Using the much higher "global" middle class hurdle (\$10-\$100 per day), however, only approximately one-quarter (1.8 billion people) of the world's total population fit this standard. Approximately 60% of these people reside in developed economies with another fifth found in the BRIC economies (India and China are discussed separately in the next section). Less than 2 percent of the world's population is rich by this definition and a significant majority, 70%, is poor.

A number of recent and detailed studies on the potential sizes of the global middle class have found broadly similar results. A report from Goldman Sachs

<sup>4/</sup> These figures were provided by Martin Ravallion in an unpublished research paper from the World Bank.

(2008) estimates that the global middle class could expand from 29 percent of world population in 2008 to approximately 50 percent by 2030. Using the assumption that total factor productivity growth in the EM economies remains robust in the years ahead, Kharas and Gertz (2010) project that over the next twenty years the world evolves from being mostly poor to mostly middle class. They project 2022 as the first year more people in the world are middle class than poor and that by 2030, 5 billion people – nearly two-thirds the world's population – could be global middle class.

This potentially enormous growth in wealth will be associated with a massive geographical redistribution, with most of the new global middle class coming from Asia. Today there are 500 million middle-class consumers in Asia (with one-quarter of these in Japan) but within twenty years there could be a six-fold increase to some 3.2 billion people. Asia's share of the global middle class would rise from just over one-quarter today to two-thirds by 2030. North America and Europe could see their combined share drop from over one-half to just 17 percent, largely the result of slow population growth in these regions.

SIZE OF THE MIDDLE CLASS, REGIONS (millions of people and global share)							
	2009		2020		2030		
North America	338	18%	333	10%	322	7%	
Europe	664	36%	703	22%	680	14%	
Central & South America	181	10%	251	8%	313	6%	
Asia Pacific	525	28%	1740	54%	3228	66%	
Sub-Saharan Africa	32	2%	57	2%	107	2%	
Middle East & North Africa	105	6%	165	5%	234	5%	
World	1845	100%	3249	100%	4884	100%	
Source: Kharas and Gertz (2010)							

The middle class population may not properly represent the spending power of that group. Given the broad range of expenditures that fall within the middle class definition, some countries have more affluent middle classes than others. For example, today's middle class in Europe and North America may be 54 percent of its population, but they account for 64 percent of total spending by the world's global middle class.

On this basis, Asia's middle class growth is even more rapid. In 2009, Asia accounts for only 23 percent of the expenditures of the global middle class. By 2030, it may account for 59 percent.

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## SPECIAL FOCUS – INDIA AND CHINA



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Given their disproportionate expected contributions to the global middle class growth over the next two decades, in this section we focus primarily on the outlook for both India and China. Using assumptions on the rate of economic growth (see appendix I for a description of the methodology), the existing size of the middle class and the distribution of income, we make estimates for the future size of the global middle class for each country.

#### CHINA – ONE BILLION MIDDLE CLASS CUSTOMERS?

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By our estimates, the current size of China's global middle class is approximately 150 million people or 11% of its population.<sup>5</sup> In absolute numbers, only the United States has a larger global middle class.<sup>6</sup>

How much bigger could China's global middle class become over the next twenty years? Potentially enormously larger because decades of rapid economic growth has lifted hundreds of millions Chinese out of "absolute poverty" and brought a significant share of the population close to our lower-bound definition of global middle class. Today approximately one-quarter of the population (330 million) live on between \$5 and \$10 a day, and approximately 40 percent (520 million) live on between \$2 and \$5 a day. These two "up and coming" middle class cohorts sum to approximately 850 million.

Given our growth projections, by 2020, we expect China to have a per capita income of almost \$20,000 (PPP), a level equivalent to middle-income Slovakia today. By that year and at that level of income, we project almost 500 million more Chinese will have entered the global middle class. That comes out to 50 million additions per year between 2010 and 2020, making it China's "middle class decade".

By 2030, when China's per capita income is expected to reach approximately \$41,000 (equal to today's oil rich Kuwait), placing it more solidly in middle-income territory. We project most of China's remaining cohorts will join the global middle class by then, adding an additional 350 million and bringing the collective size to approximately one billion.<sup>7</sup> In what could be the

<sup>5/</sup> Estimates for the China's existing middle class were partly drawn from "Basic Conditions of Urban Households (2008)" and "Basic Conditions of Urban Households (2008)".

<sup>6/</sup> By the World Bank's less restrictive \$2-\$13 per day definition, China easily has the world's largest middle class in absolute size.

<sup>7/</sup> This transition will obviously be more complex and dynamic than this, with some of today's very poor in China becoming globally middle class by 2030 while some of the "up and coming" cohorts not experiencing any mobility.

greatest generational shift of wealth of all time, the share of China's population that is globally middle class could rise from today's 15% to 70% of its population within the next two decades.

What would have to happen for this one billion scenario to play itself out? Most crucially, China would have to significantly substitute its export and investment led growth model of the past three decades with one much more tilted toward domestic consumption. Chinese consumption only accounted for 35% of GDP in 2009 (down from 46% in 2000), excruciatingly lower than the global average of 60% and below India's average of 57%. Incredibly, the labor income share in Chinese GDP has fallen from two-thirds in 1980 to just over one-half of GDP today. With income and consumption so small compared to aggregate output, China's middle class is actually disproportionately small for its level of development.



While there is much skepticism in the west about China's ability to correct these imbalances, particularly over the short or medium term, economic history shows us there is reason for optimism. First, we know that countries undergoing rapid industrialization often experience declining shares of consumption and rising shares of investment. This phenomenon, however, slowly unwinds as these economies "mature". In South Korea, for example, the boom between 1960 and 1990 – when industry's share of output grew from 16%

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to 42% – saw consumption drop from above 80% of GDP down to 52%, as investment rose from 11% of GDP to 38%. Over the past two decades this trend has begun to reverse, as consumption has risen to account for 55% of GDP (2010).<sup>8</sup> The other East Asian tigers, Hong Kong, Taiwan and Singapore experienced similar investment – consumption cycles. There is good reason to believe that China, sharing some of the same economic characteristics, is a good fit within this group. Our model assumes China's consumption share of GDP rising fairly rapidly, from 51% and 58%, by 2020 and 2030, respectively.

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A second factor on China's side for correcting these imbalances is that its per capita income surpassed \$6,000 (in PPP) in 2008 for the first time. Historical patterns show that domestic consumption typically starts accelerating in most countries when per capita incomes reach somewhere around the \$6,000 mark. This has clearly been the case as China's growth rate in domestic private consumption has significantly accelerated in recent years.



#### **INDIA – WAITING IN THE WINGS**

Not long ago almost everyone in India was considered poor by World Bank standards. In 1985, over 90% of the population lived on less than \$1 per day.

<sup>8/</sup> World Bank, World Development Indicators and from Kharas and Gertz (2010).

The economic reforms that started in 1991 dramatically reduced poverty and by 2005 the proportion of people living under poverty had been cut to approximately 50%.

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As recently as 1990, China and India had identical per capita incomes. But what a difference a growth gap can generate over two decades. Per capita income (PPP) in 2010 is expected to be roughly twice as high in China than in India (\$7,500 versus \$3,500). According to our growth projections, India is projected to first achieve that critical per capita income level of \$6,000 in 2017, or about a decade after China. India's per capita income is then expected to reach \$8,300 and \$18,500 by 2020 and 2030, respectively. This puts India approximately ten years behind China in per capita income levels.<sup>9</sup>

While reforms have lifted hundreds of millions of Indians out of abject poverty, economic growth has not been either strong or long enough to produce a global middle class of any consequence. We estimate its current size of roughly 5% of the population or about 50 million people. The relative sizes of India's and China's global middle class is self-evident in motor vehicle sales. India's has been growing rapidly recently, but at 2 million annual units, is currently one-fifth the size of China's.



<sup>9/</sup> Private consumption has already played a much larger role in India's growth than it has in other developing economies. In 2009 it was 57% of GDP (\$645 billion), or 22% higher than China's share.



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But 2020-2030 will be India's middle class breakout decade. By 2030 (its per capita income would have risen 5-fold from 2010) approximately one-third of India's population or 475 million people are projected to be global middle class. India's net annual contribution to the global middle class is expected to exceed China's sometime around 2027, and probably remain much stronger for sometime thereafter.

Naturally the global middle story stretches beyond the borders of China and India. If their numbers reach 5 billion by 2030 (see section IV), then India and China would only account for one-half of aggregate growth over the next two decades. The Middle East, North Africa and South America are also expected to see sizeable advances in their global middle classes.

## AIMING FOR THAT "SWEET SPOT"!



For developmental economists the "sweet spot of growth" is the point at which the poor start entering the middle class in the millions, as has been the case for China and India for some time now. For consultancies that study the spending habits of the middle classes, the "sweet spot" occurs when a "sizeable" percentage of the population enters the global middle class. This allows them to start buying things like refrigerators, cars or even apartments.

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The power of reaching this sweet spot, when coupled with large population bases, can produce dramatic results on final product demand over a relatively short period of time. For example, the sweet spot for growth in motor vehicle ownership occurs at per capita income levels between \$5,000 -\$12,000 (PPP). This is roughly a level that corresponds to U.S. \$2,500-\$8,000 per capita at current exchange rates for most of the developing nations. As per capita income reaches \$3,000, vehicle ownership begins accelerating and continues rising until peaking at approximately \$8,000-\$9,000.



This is precisely how China became the largest motor vehicle market practically overnight, because its per capita income hit this sweet spot last decade. It is hard to imagine now, but early last decade, the auto market barely existed in China. Autos sales were less than 800,000 in 2001 but then matched US sales at 10.3 million units in 2009. India's sweet spot will likely occur around 2020-2030, if not earlier, given the price compression in the industry.

The table below provides a hypothetical timeframe of when some of the larger EM economies (in terms of population) are projected to reach a per capita income level of \$6,000 for the first time.<sup>10</sup> As mentioned in section V, this has historically been the income level where EM consumption has started accelerating. By 2030 the accumulative populations of these eight nations will be approaching 3 billion, or over one-third of the world's population.

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THE YEAR THEY HIT THEIR SWEET SPOT (Projected year each country reaches a per capita income of \$6,000, PPP)				
Country	Year			
EGYPT	2011			
INDONESIA	2015			
INDIA	2017			
PHILIPPINES	2019			
VIETNAM	2019			
PAKISTAN	2024			
NIGERIA	2025			
BANGLADESH	2029			
Source: EIU				

There is also strong statistical evidence that being in this sweet spot can create a virtuous circle. The larger a country's middle class, the faster its rate of economic growth it experiences. According to Surjit Bhalla (2010), an India economist, a nation's growth rate rises by one-half a percentage point every time the size of its middle class increases by ten percentage points. For example, if a country's middle class accounts for 40% of the population, it will, other things being equal, command a growth rate one percentage point faster than a country whose middle class makes up 20% of its population. It this relationship holds over the next two decades, then China's growth rate could be elevated by approximately 2.5% by 2030 due to this "middle class effect", more than erasing the impact of its demographic deficit it will be undergoing at the same time.<sup>11</sup> For India, the elevation in growth, holding everything else constant, would be 1.5% by 2030.

<sup>10/</sup> The other big EM economies including China, Russia, Brazil and South Africa have already passed the \$6,000 threshold.

<sup>11/</sup> Assuming its global middle class increases from 15% to 70% of its population.

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#### CAN EM CONSUMPTION RESCUE THE GLOBAL ECONOMY NOW?



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It's clear that the global EM economies are likely to deliver middle classes in size and scope that will eventually power the global economy some day. The long-run looks great but what about now? The global economy has clearly lost its spender of last resort (the American consumer) and no one seems big enough to fill those shoes. With many of the OECD economies saddled with highly leveraged private and public sectors, the global economy will sorely need a new source of aggregate demand over the next few years. The multi-trillion dollar question is whether EM consumption is large enough today to give the much needed lift to global consumption and economic activity over the next few years.

At a first casual glance at the data, the short answer appears to be an unqualified no. During the 2001 recession (the last major global slowdown preceding the 2008-09 crisis), EM consumption<sup>12</sup> was just 18% of world total. A decade later that share has risen to an estimated 23% in 2010, still less than one-quarter of the world's total consumer spending. This share is expected to reach just one-quarter of world consumption by 2015 then reach 32% and 40% by 2020 and 2030, respectively.

Take the two EM market giants, India and China, for example. In 2009, their combined share of real consumer spending amounted to only 20% of the U.S. total. While this share is projected to rise rapidly toward one-half of US consumption by 2020 and approximately two-thirds by 2030, India and China's combined consumption spending does not seem sufficient in magnitude, at least until later on this decade, to compensate for a battered and retrenched American consumer.

Comparing the current global divisions in consumption shares, however, can be deceiving when you ignore their growth rates. EM consumption spending grew by an annualized average pace of 5.4% last decade and we conservatively estimate this will rise to an annualized pace of 6% (during both 2010-2020 then 5.8% from 2020-2030). DM consumption, conversely, is expected to expand at an annual pace of only 1.8% over the next decade (down from 2.2% from 2000-2009). This means EM consumer spending is currently growing about three and one-third times faster than DM consumption. Because DM consumer spending is currently about 4 times larger than EM consumer spending, the EM economies are contributing almost as much growth in global consumption for the very first time.<sup>13</sup>

While this probably is not enough to return the global economy to the

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<sup>12/</sup> We are looking at "total" consumption spending, not just middle class consumption.

<sup>13/</sup> As an example, in 2010, a year of global recovery for most of the DM economies, total consumption spending is expected to total \$7 and \$23 trillion for the EM and DM economies, respectively. But the net increase in consumer spending (over 2009) is estimated to be \$347 and \$358 billion for the EM and DM economies, respectively.

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# A MORE EQUAL WORLD



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spectacular growth rates it posted during 2003-2007 (when the DM economies were growing at trend), it is probably enough to keep global consumption, and in turn, global economic activity, from recessionary conditions over the next couple years. Naturally this scenario assumes that growth in the big EM economies do not falter over the short-run.<sup>14</sup>



14/ While 6% annualized growth in EM consumption spending would clearly bolster the global economy over the next few years, it is difficult to predict the level of benefit accruing to the DM economies from such increased activity.



For many of the emerging market economies the past decade, faster economic growth and rising per capita incomes have been accompanied by sharply rising income inequality. Chinese urban household incomes are more than three times rural ones – the highest difference in the world – and coastal incomes more than double those in the interior. India's exceptional growth spurt since 2003 may be lifting millions into the middle class but it is also increasing income disparity. Russia has no reliable figures on income distribution but income inequality clearly rose during its economic boom last decade.

Despite widening income inequality within countries, what has gone entirely unnoticed is that the global distribution of income has been narrowing considerably in recent years. In fact, the distribution of world income may be changing faster now than at any time in history. As recently as a decade ago, the division of per capita incomes between nations largely congregated around two peaks; one roughly around \$25,000 for many of the DM economies and the other around \$2,000-\$5,000 for many of the EM economies. Interestingly, relatively few nations were clustered in between these two large income peaks.

The last decade witnessed considerable compression between these two peaks, largely through extraordinary fast growth throughout the developing world.<sup>15</sup>

<sup>15/</sup> The EM economies did not experience any growth advantage over the DM economies from 1980 through



#### FIGURE 11/ 2030: The Twin Peaks are Gone ...

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Source: SIEMS's calculations
By 2030, two decades of relatively faster growth in most of the emerging market economies is expected to have effectively eliminated the second income peak, with the world distribution of per capita income now resembling more of a continuous flow from top to bottom.

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The narrowing in the global distribution of income can be illustrated by examining the standard deviation of incomes (measured in logs) from the world distribution. While income inequality has been rising in many developing and developed economies, measured how it is distributed globally, it has been quickly declining.

From 1980 through 2000, the fall in global income inequality was largely an Indian and Chinese phenomenon. In fact, without these two emerging market giants, global income inequality did not fall during that period. Interestingly, last decade witnessed a sharp fall in inequality without the help of India and China as strong economic growth in many emerging markets lifted their per capita incomes. Even assuming slower than expected growth throughout much of the emerging market world over the next two decades, we project the distribution of global incomes to continue narrowing considerably. Income and wealth are being divided less equally inside countries, but between nation states, the inequality is quickly narrowing.

2000. From 2000 through 2009, however, the EM economies enjoyed an average growth advantage of 6%.

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# CONCLUSION



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In commenting on economic growth and the emergence of the middle class in the emerging markets, Nobel Laureate Robert once said, "the consequences for human welfare involved in questions like this are simply staggering: once one starts to think about them it is hard to think about anything else."

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The rise of this global middle class, however, is no fait accompli. The World Bank separates the developing world middle class into upper and lower tiers, with \$9 a day as the dividing line. The numbers in the upper tier (\$9-\$13) rose by only 95 million between 1990 and 2005, from 139 million to 233 million people. But by their definition the number of middle-class people as a whole during that period increased by 1.2 billion, which means more than ten times as many people joined the lower tier (\$2-\$9) than the upper.<sup>16</sup> A lot of people are clustered at the very bottom with only a tenuous hold on middle-class status and risk slipping backwards if economic progress stalls.

While this scenario is possible I find it not probable given the current economic momentum of the EMs and more critically, their largely free market oriented policies. Paradoxically, while the rich economies are questioning globalization and the efficacy of free markets in the post-crisis economy, the developing economies are increasingly embracing both.

While we have ignored the possible impact on the DM economies in this paper, they will be enormous beneficiaries of the EMs new affluence. American consumption will no longer have to be the primary engine of global demand and western companies, large and small alike, will find the consumption habits of the new global middle class not unlike those at home.

There is also likely to be a geo-political dividend from all of this. Economies dominated by the middle classes are a lot more stable and less prone to civil wars, terrorism and corruption. Middle classes advance the rule of law and freedom (China being an obvious exception for now). The emergence of a global middle class has all the makings of a better world.



### Appendix

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#### EIU METHODOLOGY FOR LONG-TERM FORECASTS (PROVIDED BY EIU)

The Economist Intelligence Unit (EIU) has traditionally produced five-year forecasts. However, many companies make strategic business decisions over timeframes in excess of five years. Therefore, the Economist Intelligence Unit has developed a methodology for producing long-term economic forecasts, which has been applied to the 60 largest economies. Our long-term projections will provide information to facilitate such decisions made over these longer timeframes. Longterm forecasts and scenarios are also key to understanding some of the big economic issues that will shape global business in the coming decades.

The methodology is distinct from that used to generate our five-year forecasts, which is based on a "demand side" forecasting framework which assumes that supply adjusts to meet demand either directly by changes in output, or by the drawing down (or building up) of inventories. Such a framework is appropriate for constructing short- and medium-term projections where output can deviate substantially (but temporarily) from its long-run sustainable level. But a demand side framework is not appropriate for forecasting over the long term. Instead, we utilize a supply side framework, in which output is determined by the availability of labor and capital equipment, and the growth in productivity.

The key output of our long-term model is a forecast of real GDP growth per capita, which can be combined with population growth forecasts to give a forecast for each country for real GDP growth. From this building block, we are then able to make projections for a series of market sizing variables important for long term business planning. These include GDP in US dollar terms and at PPP conversion rates, consumer spending, and exports and imports.

The Economist Intelligence Unit is well placed to produce long-term projections and scenarios-we have considerable experience in tracking and forecasting a series of economic and institutional factors which our analysis suggests are closely related to long-term growth prospects. These factors include the availability of an educated workforce, the openness of the economy to trade, the quality of institutions (including the legal framework and the quality of the bureaucracy), fiscal policy, the degree of government regulation, movements in the population of working age relative to the overall population, and the development of information and communication technology infrastructure. In addition, the income gap between each country and the global technological leader (the US) is important as this illustrates the potential for economic catch-up by importing ideas and techniques. Forecasts of GDP growth per capita can then be combined with demographic projections (taken mainly from the US Census Bureau) to give forecasts for overall GDP growth. This is explained in more detail below.

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#### **GROWTH PROJECTIONS**

The main building blocks for the long-term forecasts of key market and macroeconomic variables are long-run real GDP growth projections. We have estimated growth regressions (based on cross-section, panel data for 86 countries for the 1970-2000 period) that link real growth in GDP per head to a large set of growth determinants. The sample is split into three decades: 1971-80, 1981-90 and 1991-2000. This gives a maximum of 258 observations (86 countries for each decade); given missing values for some countries and variables, the actual number of observations is 246. The estimation of the pooled, crosssection, panel data is conducted on the basis of a statistical technique called Seemingly Unrelated Regressions to allow for different error variances in each decade and for correlation of these errors over time.

The regressions, which have high explanatory power for growth, allow us to forecast the long-term growth of real GDP per head for sub-periods up to 2030, on the basis of demographic projections and assumptions about the evolution of policy variables and other drivers of long-term growth.

#### **PRODUCTIVITY GROWTH**

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The forecasts of GDP growth, of capital stock growth (based on estimated investment shares and assumed depreciation rates) and of growth in labor supply (based on projections of working-age population and assumptions on labor force participation) yield labor productivity growth and total factor productivity growth forecasts. The latter utilize the growth accounting identity, GY=b\*GK+c\*GL+A, where GY is growth of real GDP, GK growth of the capital stock and GL growth of human capital (the labor force adjusted for changes in skills). "A" stands for growth in total factor productivity; "b" and "c" are the shares of capital and labor in income.



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