



Productivity and Structural Reform: Why Countries Succeed & Fail, and What Should Be Done So Failing Countries Succeed

by Ray Dalio

In this report the drivers of productivity are shown and are used to create an economic health index. That index shows how 20 major countries are doing as measured by 19 economic health indicators, and it shows what these indicators portend for real GDP growth in each of these countries over the next 10 years. As you will see, past predictions based on this process have been highly reliable. For this reason this economic health index provides a reliable formula for success. By looking at these cause-effect relationships, in much the same way as a doctor looks at your genetics, blood tests and regimes for exercise and diet, we can see each country's health prospects and also know what changes can be made so that these countries can become economically healthier.

We are making this research available in the hope that it will facilitate the very important discussions about structural reforms that are now going on and will help both the public and policy makers to look past their ideological differences to see the economy as a machine in much the same way as doctors study bodies and look at the relationship of cholesterol and heart attacks analytically rather than ideologically.

The Template

This study is presented in three parts:

- In Part 1, "The Formula For Economic Success," we show how indicators of countries' productivity and indebtedness would have predicted their subsequent 10-year growth rates going back 65 years, and how these economic health indicators can be used to both predict and shape the long-term economic health of countries. By knowing the linkages between a) indicators of productivity such as the costs of educated people, the amount of bureaucracy in the government, the amount of corruption in the system, how much people value working relative to enjoying life, etc., and b) the subsequent 10-year economic outcomes, policy makers can decide how to change these determinants to affect long-term outcomes.
- In Part 2, "Economic Health Indices by Country, and the Prognoses that They Imply" we show each of the 20 countries' economic health indices by component and aggregated, and how these lead to the projected growth over the next 10 years. In this section you can see a synthesis for each country based on an objective review of each of the indicators and their relative importance. Because our understanding has been completely systematized, there is no qualitative judgment used in describing these estimates. In fact, the texts have been computer generated.
- In Part 3, "The Rises and Declines of Economies Over the Last 500 Years", we will look at how different countries' shares of the world economy have changed over the last 500 years and why these changes have occurred.

Part 1: The Formula for Economic Success

What determines which countries prosper and which countries don't? What determines different countries' future growth rates? For our investment purposes we look at relationships between causes and effects that we hope will be useful to others in answering these questions.

While many people have provided opinions about why countries succeed and fail economically, they have not shown linkages between causes and effects. As a result, their opinions can be misleading. Often, even commonly agreed-upon indicators of what is good for an economy have not been properly analyzed and correlated with subsequent results. For example, everyone knows that having a more educated population is better than having a less educated population, so naturally we hear that improving education is important to improving productivity. However, indicators of the cost-effectiveness of education are lacking and correlations of the factors with subsequent growth don't exist, at least to my knowledge. That is dangerous. For example, if policy makers simply educate people without considering the costs and paybacks of that education, they will waste resources and make their economies less productive even though we will become more educated people. To make matters worse, the views of those who influence policies typically reflect their ideological inclinations (e.g., being politically left or right) which divides people. For this reason, I believe that objective good indicators that are correlated with subsequent results are needed so that the facts speak for themselves and help people reach agreement about what should be done. That is what I believe I provide here. The economic health indicators that I will show would have predicted the subsequent 10-year real growth of the 20 countries shown over the last 65 years within 2% of the realized growth about 80% of the time and within 1% half of the time, with the average miss around 1%.

While I believe that the body of evidence I will show you is compelling, I certainly don't claim to have all the answers or expect people to blindly follow what is presented here without poking at it. On the contrary. I am putting these cause-effect relationships on the table to help foster the debate to bring about progress. I hope that people of divergent views will explore and debate how the economic machine works by looking at both the logic and the evidence presented here, then see what it portends for the future, and then explore what can be done to make the future better. Having said that, we are confident enough in these estimates to bet on their accuracy, which we do in our investments.

The Determinants of Economic Health Are Timeless and Universal

As with human bodies, I believe that the economies of different countries have worked in essentially the same ways for as far back as you can see so that the most important cause-effect relationships are timeless and universal. In this study I review these cause-effect relationships and look at many countries in different timeframes to show how they worked. I will lay these out for you to consider. I don't believe that it's good enough to just show the correlations between changes in these factors and their outcomes. I believe that it's necessary to be so clear on the fundamental cause-effect relationships that it seems obvious that they must be so; otherwise you can't be confident that a relationship is timeless and that you aren't missing something. I will first present the concepts and then take you into the indicators to show how they worked in the past and what they portend for the future.

What are the Keys to Success?

I Will Start With a Top-Down Perspective: As with health, many factors (reflected in many statistics) produce good and bad outcomes. You can approach them by looking down on the forest or building up from the trees. In presenting them I wrestled with whether to start at the top and work our way down through all the pieces or start with all the pieces and work ourselves up to the big picture. I chose to approach this from the top down as that's the perspective that I'm more comfortable with. I prefer to simplify and then flesh out the picture. Receiving

information presented this way will require you to be patient with the sweeping generalizations I make until I get down to the particulars that make them up, which will show both the norms and the exceptions.

Productivity Influences on Growth Are Intertwined With Debt Influences: While my objective is to look at productivity in this section, in doing so I wanted to tie that into looking at the drivers of growth over the next 10 years, which is affected by debt as well as the drivers of productivity. In other words, productivity influences on growth and debt influences on growth are unavoidably entangled. As explained in “How the Economic Machine Works,” while productivity growth is ultimately what matters for long-term prosperity, and the effects of debt cycles cancel out over time, the swings around that productivity long-term trend arising from debt cycles cancel out over such long amounts of time (upwards of 100 years because of long-term debt cycles) that it is impossible to look at growth periods without debt cycles playing a role in driving the outcomes. Of course, when one lengthens the observed timeframe, the shorter-term volatility that is due to debt swings diminishes in importance. We chose to look at rolling 10-year periods of 20 countries which gave us a sample size of 159 observations (where we measure every 5 years).

The Big Picture: Stepping away from the wiggles of any given day, and looking from the top down, one can see that the big shifts in economic growth are about two-thirds driven by productivity and one-third driven by indebtedness. “Luck” (e.g., having a lot of resources when the resources are valuable) and “conflict” (especially wars) are also drivers.

Productivity

A country’s production (GDP) will equal its number of workers times the output per worker (productivity). One can increase one’s productivity either by working harder or by working smarter. Productivity is driven by how cost-effectively one can produce, so relative productivity—i.e., competitiveness—will have a big effect on relative growth. In a global economy those producers who are more competitive will both 1) sell more in their own country and other countries, and 2) move their production to countries where they can produce more cost-effectively. Likewise, investors will follow these opportunities.

Competitiveness (i.e., relative productivity levels) is driven by what you get relative to what you pay in one country versus another. Countries are just the aggregates of the people and the companies that make them up. As you know with the individuals you hire and from the products you buy, those that offer the most value for money are the most competitive and do better than those that don’t.

Specific Indicators: Since people are the largest cost of production, it follows that those countries that offer the best “value” (i.e., the most productive workers per dollar of cost) will, all else being equal, experience the most demand for their people. That is why the per-hour-worked cost differences of educated people (i.e., their income after adjusting for hours worked each year) is one of the best indicators of productivity. Other obvious and important factors that influence productivity include cost of uneducated people, levels of bureaucracy, attitudes about work, raw material costs, lending and capital market efficiencies—i.e., everything that affects the value of what is produced relative to the cost of making it. In other words, there is a world market for productive resources that increases the demand, and hence the growth rates, for the countries that are most competitive because of “the cost of production arbitrage.” That cost of production arbitrage has been a big driver of growth—in fact overwhelmingly the largest. To reiterate, the magnitude of this competitiveness arbitrage is driven more by the cost of the workers relative to how hard they work, their education, and investment levels, than by anything else. These variables characterize the value of hiring a worker in a given country and doing business there (i.e., what you pay for what you get).

Of course, barriers to the flow of trade and capital (like China’s closed door policies until the early 1980s, geographic isolation, etc.) can stand in the way of people, companies and countries being allowed to compete. As these barriers break down (e.g., transportation becomes cheaper and quicker, telecommunications reduces impediments to intellectual competition, etc.) or increase (e.g., trade barriers are put up), the ability to arbitrage the costs of production, and in turn the relative growth rates, is affected.

While countries that operate efficiently will grow at faster paces than countries that operate inefficiently, the countries that will grow the fastest are those that have big inefficiencies that are disposed of. As an example, in the 1970s and 1980s, China had a well-educated, intelligent labor force that could work for cheap, but faced a closed door policy. Opening the door unleashed China's great potential. Looking forwards, while the United States is relatively efficient, it would not grow as fast as a Russia (i.e., which has competitively priced educated people with low debt) if Russia could significantly reduce its barriers to productivity (e.g., corruption, lack of development of its debt/capital markets, lack of investment, lack of innovation, bad work attitudes, lack of adequate private property laws, etc.). That is why I am most optimistic about inefficient countries that are undertaking the sort of reforms that are described in this report.

Culture are one of the biggest drivers of productivity. It's intuitive that what a country's people value and how they operate together matters for a country's competitive position. Culture influences the decisions people make about factors such as savings rates or how many hours they work each week. Culture can also help explain why a country can appear to have the right ingredients for growth but consistently underperform, or vice versa. For example, in Russia, which has a lot of untapped potential, the culture that affects lifestyles (e.g., alcoholism, the low drive to succeed, etc.) causes it to substantially under-live its potential, while in Singapore, where high income levels make their labor relatively uncompetitive, their lifestyles and values (e.g., around working, saving and investing) allow them to realize a higher percentage of their potential. While lots of elements of culture can matter, the ones that I find matter most are: 1) the extent to which individuals enjoy the rewards and suffer the penalties of their productivity (i.e., the degrees of their self-sufficiency), 2) how much the people value savoring life versus achieving, 3) the extent to which innovation and commercialism are valued, 4) the degree of bureaucracy, 5) the extent of corruption and 6) the extent to which there is rule of law. Basically, countries that have people who earn their keep, strive to achieve and innovate, and facilitate an efficient market-based economy will grow faster than countries that prioritize savoring life, undermine market forces through highly redistributive systems, and have inefficient institutions. To be clear, I am not making any value judgments. It would be illogical for me to say that people who savor non-work activities are making a mistake relative to people who love working. It is however not illogical for me to say that people who savor non-work activities are likely to be less productive than those who love working.

Indebtedness

At the risk of repeating myself too many times, I will review the way I look at debt cycles because I carry that perspective into my calculations in explaining 10-year growth rates.

As explained, short-term volatility is more due to debt cycles than productivity, but this volatility cancels out over time because credit allows people to consume more than they produce when they acquire it, and it forces people to consume less than they produce when they pay it back. Undulations around long-term productivity are driven by debt cycles. Remember, in an economy without credit, the only way to increase your spending is to produce more, but in an economy with credit, you can also increase your spending by borrowing. That creates cycles. When debt levels are low relative to income levels and are rising, the upward cycle is self-reinforcing on the upside because rising spending generates rising incomes and rising net worths, which raise borrowers' capacity to borrow, which allows more buying and spending, etc. However, since debts can't rise faster than money and income forever, there are limits to debt growth.

Think of debt growth that is faster than income growth as being like air in a scuba bottle—there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. In the case of debt, you can take it out before you put it in (i.e., if you don't have any debt, you can take it out), but you are expected to return what you took out. When you are taking it out, you can spend more than is sustainable, which will give you the appearance of being prosperous. At such times, you and those who are lending to you might mistake you as being creditworthy and not pay enough attention to what paying back will look like. When debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse.

You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt. For these reasons **I expect countries that have a) low amounts of debt relative to incomes, b) debt growth rates that are low in relation to income growth rates and c) easier monetary policies to grow faster over the next ten years than countries with d) high amounts of debt relative to incomes, e) debt growth rates that are high in relation to income growth rates and f) tighter monetary policies.** That is true with one exception, which is when adequate financial intermediaries don't exist. Institutions and capital markets that facilitate these transactions have to be in place for the system to work. For that reason, when forecasting long-term future growth rates we have taken into consideration the levels of development of countries' financial intermediaries.

Luck and Wars: As mentioned, they can play a role. For example, the US having shale gas was lucky. Potential conflicts should always be watched. While to some extent these can be anticipated, they are not part of our formula and they don't typically matter much—i.e., they are exceptional.

The Interaction of These Forces is Driven By Human Nature

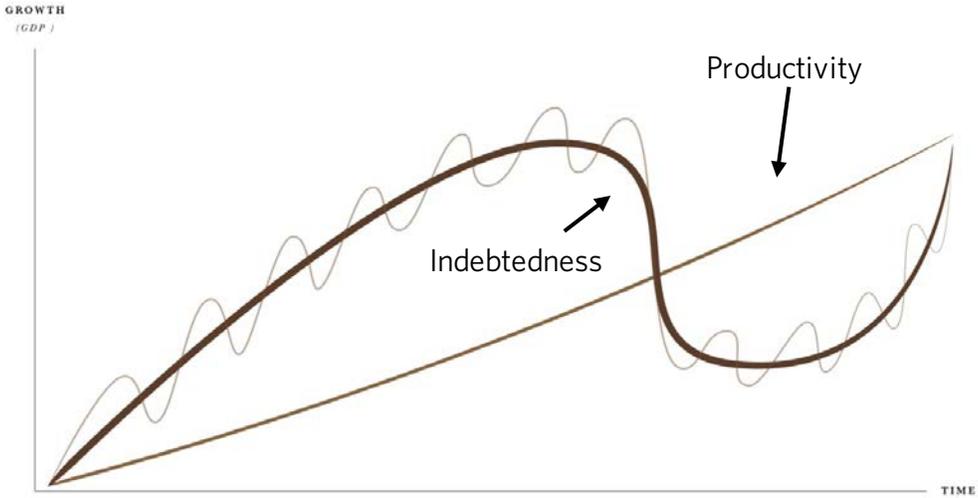
While productivity and indebtedness can be thought of as separate concepts, they are ultimately a function of the choices people make and their psychology. I briefly touched on culture as an influence on these choices and their outcomes. Also, I observe important shifts in attitudes from one generation to the next which are due to their different experiences. In Part 3, "The Rises and Declines of Economies Over the Last 500 Years," I show how psychology tends to shift as countries move through their economic life cycles. It is worth touching on this influence here before I delve into an examination of what all the economic health indicators are pointing to for the 20 major economies.

In addition to productivity and the debt cycles I spoke about, there tends to be a psychologically motivated cycle that occurs as a function of one's past level of prosperity and whether one experienced improving or worsening economic conditions. When a country is poor and focused on survival, its people who have subsistence lifestyles don't waste money because they value it a lot and they don't have any debt to speak of because savings are short and nobody wants to lend to them. Even though the country's labor is low-cost, it is not competitive, and the lack of investment stymies future productivity gains. Some emerge from this stage and others don't, with culture and location being two of the biggest determinants. For those that do—either because a country removes a big barrier like being closed to the world (as China did in 1980) or simply because a more gradual evolution makes their labor attractive—a virtuous cycle can kick in. At this stage, the investments are not just inexpensive; the stock of infrastructure and other physical capital is also typically low and there is lots of room to adopt existing technologies that can radically improve the country's potential. Leveraging up (increasing one's indebtedness) can feed back into higher productivity and competitiveness gains, which produce high returns that attract more investment at a time when the capacity to leverage is high. The key is that this money and credit must be used to produce investments that yield enough returns to pay for the debt service and finance further growth (so that incomes rise as fast as or faster than debts). Yet as countries grow wealthier, more and more of the credit tends to fuel consumption rather than investment. A process that was once virtuous can become self-destructive. The decreased investment in quality projects means productivity growth slows, even as the borrowing and spending makes incomes grow and labor more expensive. People feel rich and begin taking more leisure—after all, asset prices are high—even though their balance sheets are starting to deteriorate. At this point, debt burdens start to compound and incomes grow faster than productivity growth. In other words, the country tends to become over-indebted and uncompetitive. The country is becoming poor even though it is still behaving as though it is rich. Eventually the excess tends to lead to bubbles bursting, a period of slow decline and deleveraging. Suffice it to say that when looking at a country's potential to grow, it is critical to look at the country's productivity and indebtedness holistically, as part of its stage of development.

A Formula for Future Growth

As explained, my research team and I built the formula for future growth from the top down. We started with my concepts of how productivity and indebtedness affect growth, then fleshed these forces out with specific indicators, and then saw how the formula created this way worked. I followed this approach because I believe that one should be able to describe the cause-effect relationships and the logic behind them without looking at the data and that only after doing that should one look at the data to see how well the descriptions square with what happened because otherwise one would be inclined to be blinded by data and not force oneself to objectively test one's understanding of the cause-effect relationships.

As mentioned, from what I can tell, about two-thirds of a country's 10-year growth rates will be due to productivity and about one-third will be due to indebtedness. The visual below conveys these two forces. Our productivity indicators aim to measure how steep the productivity growth line will be over time, and our indebtedness measures aim to measure how debt cycles will influence growth over the medium term.



Below is a list of what I have come to learn about these things along with the names of the indices my research team and I created to reflect them. Based on the reasons outlined there, we created 1) a simple logic-weighted index of productivity and 2) a simple logic-weighted index of indebtedness. We used the same set of factors weighed the same way for each gauge across all the countries and across all timeframes. That way there was no fitting the data and our measures for productivity and indebtedness are timeless and universal. We put two-thirds of the weight on productivity and a third on indebtedness.¹ After creating these indices, we observed how each predicted the subsequent 10 years' growth rates for each country (which we measure every 5 years). In other words, we observed rather than fit the data. The table below shows the concepts, their weights, and their correlations with the next 10 years' per capita growth rates for our universe of 20 countries. Together these indicators were 84% correlated with the countries' subsequent growth rates. Below we show how well these measures related to future growth across countries and time.²

Future Growth Estimate - A Summary of Our Reasons			
Concept	Gauge	Weight	Correlation
Aggregate Estimate	-	100%	84%
Productivity: Producing more by working harder or smarter.	-	65%	64%
<u>I. Value: What You Pay vs. What You Get:</u> Countries that offer the most value for money do better than those that don't. The most important attributes are whether its people work hard, invest, are educated and productive in their jobs.	-	45%	63%
<u>i. Education:</u> A better educated worker will likely be more effective today and offers more promise for tomorrow than his/her peer.	Cost of a Quality Adjusted Educated Worker	11%	66%
<u>ii. Labor Productivity:</u> A worker of similar education who produces more in the same amount of time is more attractive than the one producing less.	Cost of a Productivity Adjusted Educated Worker	11%	49%
<u>iii. Working Hard:</u> Hard workers will generally produce more and find ways to improve faster than those who opt more for leisure.	Working Hard Relative to Income (2 pieces)	11%	66%
<u>iv. Investing:</u> Countries that save and invest in productive capital and infrastructure will improve their potential more than those that don't.	Investing Rel. Inc. (2 pcs)	11%	59%
<u>II. Culture:</u> Culture influences the choices people make and the effectiveness of an economic system.	-	20%	58%
<u>i. Self-Sufficiency:</u> The need and the ability to independently support oneself is healthy and important to being successful.	Self-Sufficiency Ex. Inc. Effect (3 pcs, 9 sub-pcs)	3%	42%
<u>ii. Savoring Life vs. Achieving:</u> Those who value achievement over savoring the fruits of life will be more successful in finding ways to work harder and smarter.	Savoring v. Achieving Ex. Inc. (2 pcs, 8 sub-pcs)	3%	40%
<u>iii. Innovation & Commercialism:</u> Countries that value new ideas and invest in them will find new better ways to produce faster.	Innovation & Commerc. Ex. Inc. (2 pcs, 10 sub-pcs)	3%	49%
<u>iv. Bureaucracy:</u> Lots of red tape and regulations stymies business activity.	Bureaucracy Ex. Inc. (3 sub-pcs)	3%	32%
<u>v. Corruption:</u> Corruption deters investment and distorts market incentives.	Corruption Ex. Inc. (4 sub-pcs)	3%	58%
<u>vi. Rule of Law:</u> Investors and business people need to feel secure their agreements and property will be protected.	Rule of Law Ex. Inc. (4 sub-pcs)	3%	57%
Indebtedness: Swings in credit drive swings in spending and economic growth.	-	35%	44%
<u>I. Debt and Debt Service Levels:</u> Countries with high debt burdens have less room to leverage and take on new debt.	Debt and Debt Service Levels	12%	26%
<u>II. Debt Flow:</u> A country can rely on credit growth to boost spending above incomes, but only for so long. When that rate of credit cannot be sustained, spending must slow.	Debt Flow	6%	-18%
<u>III. Monetary Policy:</u> Monetary policy can make new borrowing more or less attractive.	Monetary Policy	18%	30%

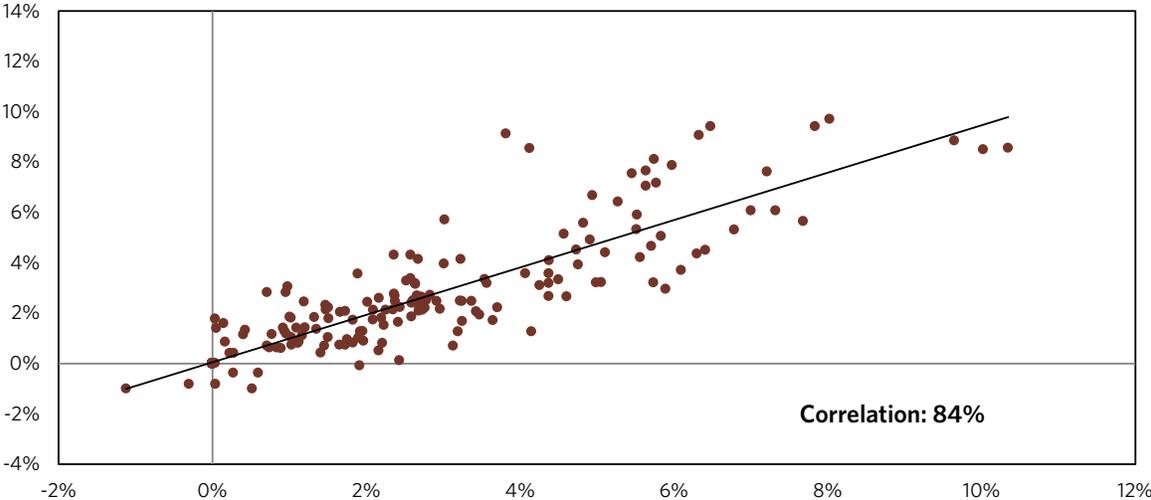
¹ As mentioned, our gauges of productivity and indebtedness are constructed using simple logic-based weights. Within productivity, we put two-thirds weight on what you pay versus what you get and one-third on culture. Within each of these gauges we put equal weight on the different sub-pieces. Within our indebtedness gauge, we put half the weight on debt cycle dynamics and half on monetary policy.

² My approach to research is to first think through what makes sense to me and to look at the data to stress test my thinking. This is a very different approach compared to optimization methods (or data mining) which typically go to the data first, and fish for relationships and conclusions. Because I was asked how much better the results would be if we let the computer fit the equations, we ran the data fitting exercise and observed that if we do that, the correlations with future growth don't change much (they range from 80% to 85% correlated with future growth results depending on the process used).

These measures of productivity and indebtedness can be used to predict each country’s absolute and relative growth rates over the next ten years, or longer periods. They also can be used by policy makers to indicate what levers they can move to influence future growth. To reiterate, my goal is to get the big picture right—i.e., to reliably be approximately right by focusing on the most important drivers rather than to try to be precise by focusing on the details.

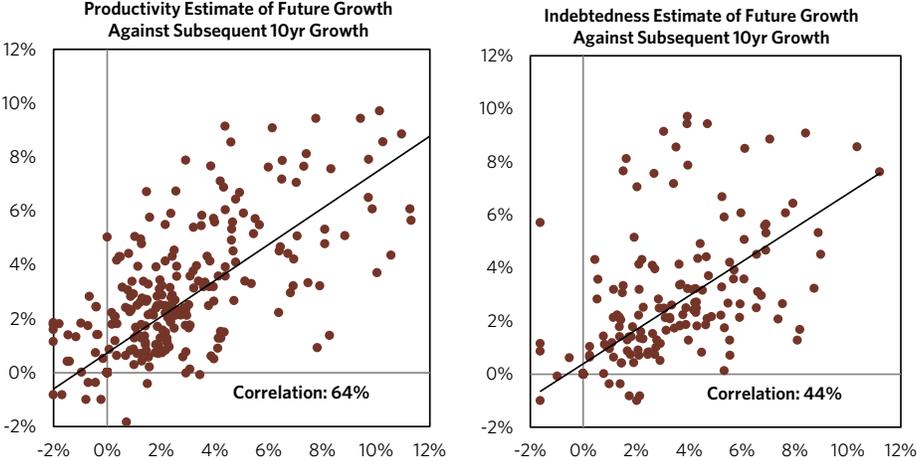
Before looking at the picture we will show you how our aggregate indicator would have predicted growth versus what actually occurred. While staring at the observations helps us ground ourselves in reality and test our logic, we know there is no precision in the specific numbers and what matters most to us is whether our logic is strong. Our examination covers 159 separate observations across 20 different countries over the last 65 years, which provides a wide range of different environments to test our indicator. Along with the correlation of our predictions and what growth actually materialized (shown below), another test is how reliably we predicted something reasonably close to what happened. In our set, our aggregate predictions for a country’s average growth over the next decade were within 1% of the actual about half of the time, and within 2% around 80% of the time.

Aggregate Estimate of Future Growth (x-axis) Against Subsequent 10yr Growth



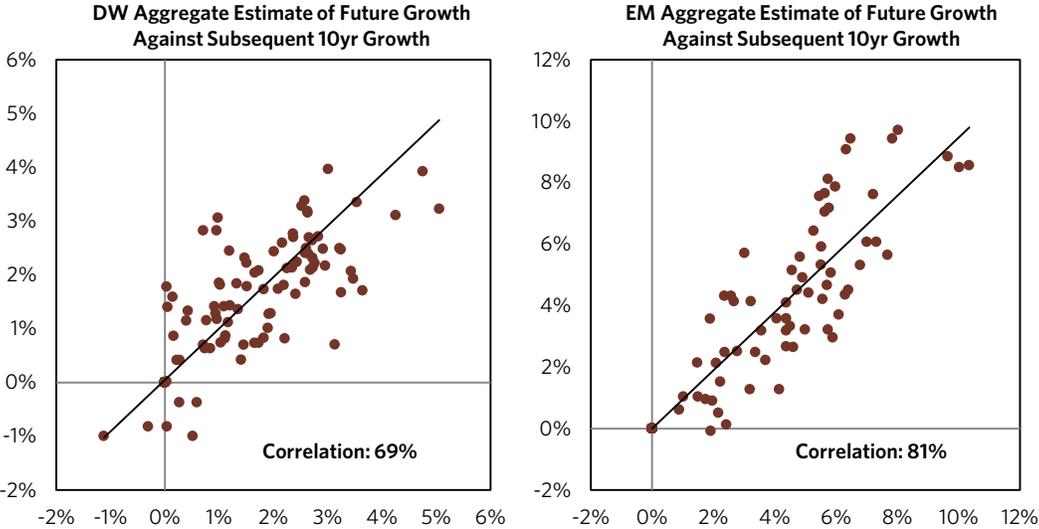
Note: For periods where we have productivity and indebtedness. 159 datapoints over 20 countries.

Below we show the same perspective for each of our productivity and indebtedness gauges, comparing what they implied individually for a country’s growth versus what happened. As you can see our measure of productivity is more strongly correlated with each country’s growth than our indebtedness measure is (64% vs. 44%), which makes sense given it is the more important driver over the timeframes tested. Still, each has a fairly good relationship on its own.



Note: Growth is measured as growth in income per worker in above charts.

Because these are timeless and universal drivers, we expect them to be just as important in developed countries as they are in emerging ones. The type of investment or education that matters may shift, but ultimately whether a country sees productivity growth is still going to be largely a function of the basic building blocks of productivity—whether its workers offer value, whether it is investing in its culture and creating a culture of success—as well as how its indebtedness is evolving. Across the countries we have examined, our aggregate indicator is about as correlated with future growth for developed and emerging countries (69% correlated with the growth in income per worker in developed countries and 81% correlated in emerging countries). Of course, which countries are “developed” or “emerging” changes over very long periods as discussed in “The Rises and Declines of Economies Over the Last 500 Years.” So in the tests shown below, we adjust for that, for example excluding Japan in the 1960s when it was much more like an emerging country.



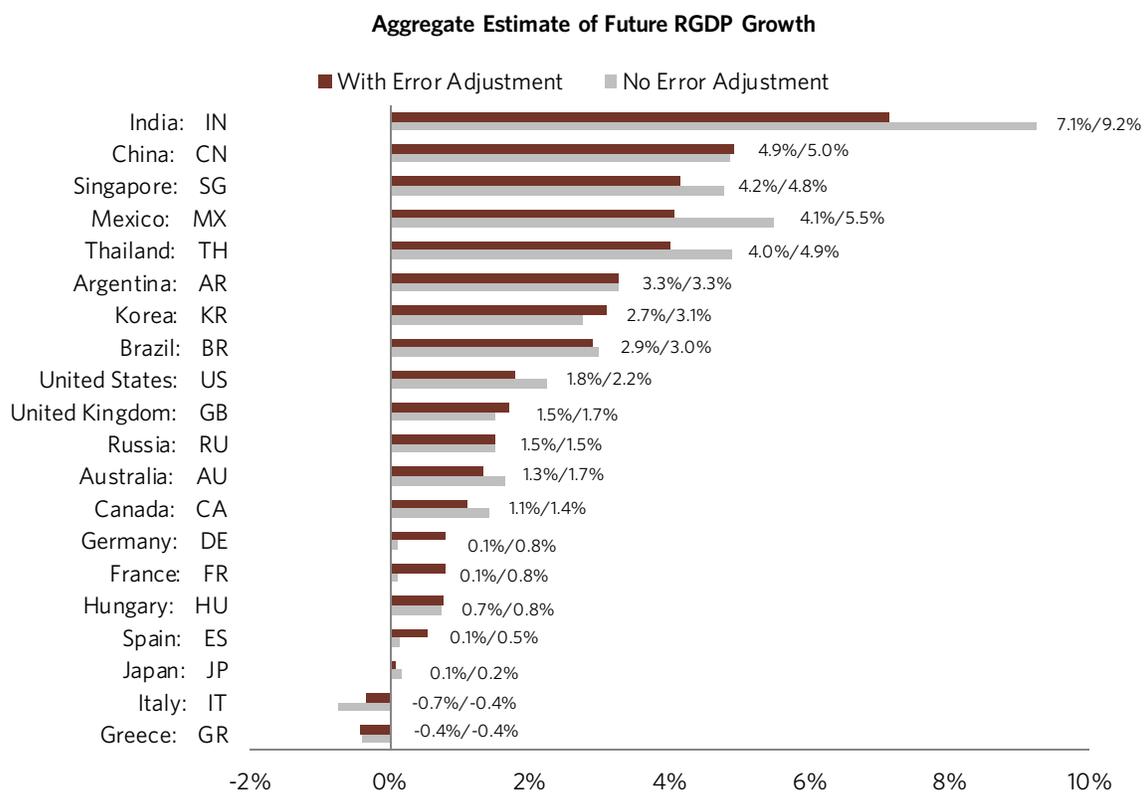
To reiterate, I believe getting to this fundamental level is critical to understanding and predicting the growth of countries. Naïve measures of a country’s future growth, for example just income on its own or a country’s trailing growth, won’t get you much because they won’t help you get at the drivers. They also tend to be much worse predictors than the formula I have described here (about 25% as good by traditional statistical measures). Looking at the economy as a machine and granularly measuring the cause-effect relationships makes all the difference.

Projections

I will start with our projections and then explain how they were derived.

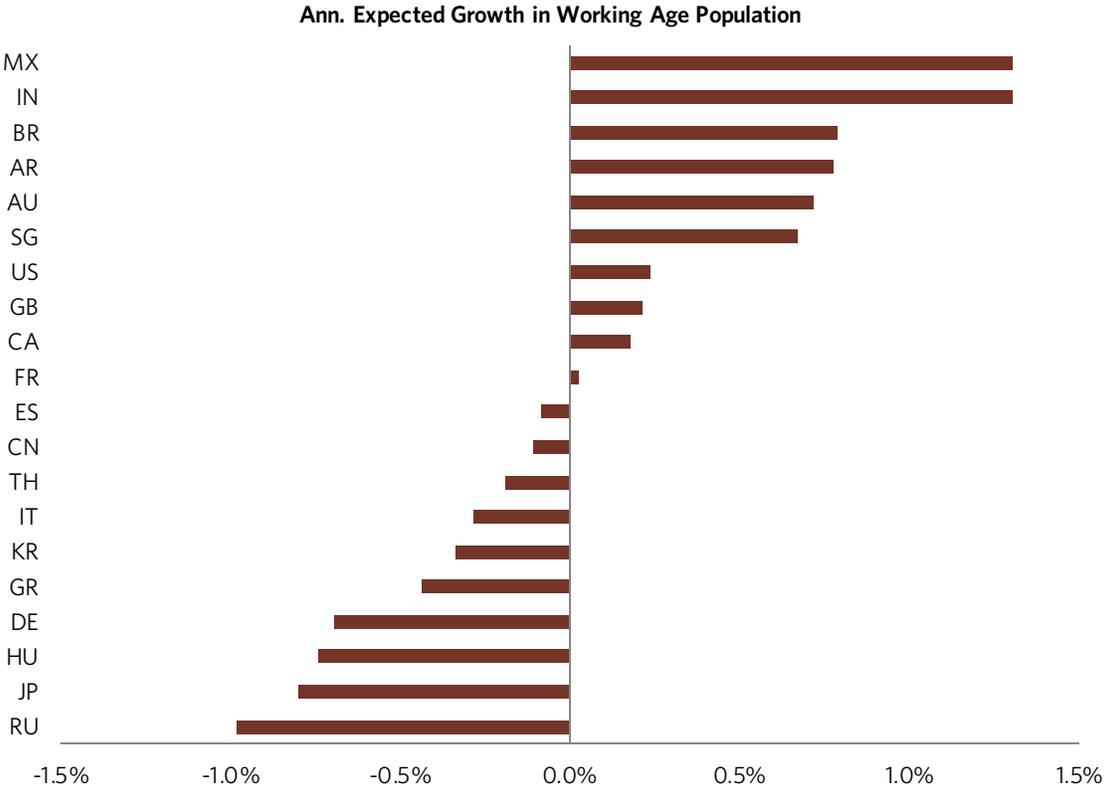
As discussed, by looking at the elements that drive productivity and indebtedness you can arrive at a view of how fast a country will grow its output per worker. Since economic growth is mechanically just a function of growth in its a) output per worker and b) number of workers, it's then a simple step for us to estimate economic growth. In the following section we quickly scan what our projections show. We will then go into depth on the reasons behind them.

The chart below shows our estimate in aggregate for real GDP growth in these major countries. We provide two estimates: one that is based on the exact same formula for all countries and one that is that estimate corrected for the average past error. This additional step notes whether we were systematically over-optimistic or pessimistic in our predictions for a given country, and adjusted for that, to account for the fact that we may be missing a factor specific to that country.³ We simply found how much the universal formula was off in the past on average (e.g., 1%) and assumed that it would be off by that amount over the next ten years. That adjustment is meant to account for unexplained factors. These two estimates typically don't yield meaningful differences and typically don't affect the order of the countries' rankings. We don't know which one is better so we look at both. Overall, we expect India to grow fastest, followed by China, Singapore and Mexico. Our expectation is for the US and the UK to be among the fastest-growing developed nations and for Japan and southern European countries to be the slowest growing in the world.

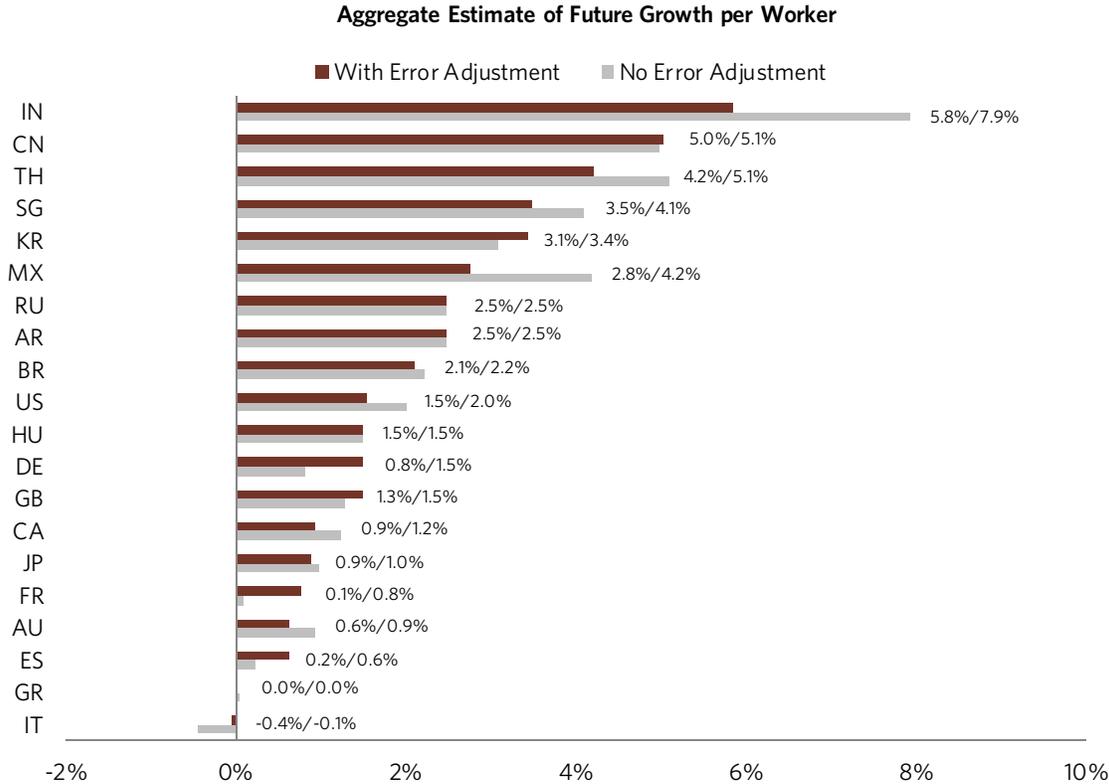


³ Note: In studying our misses, we realized that sometimes for a given country we were systematically over-optimistic about its growth or pessimistic. Overall these biases are pretty small but they also raise the question of whether we are missing a specific factor that is particularly important for that country (we know we can't capture everything). The correlation shown above of 84% includes our adjustment for these country-specific misses (for lack of a better term our 'error adjustment'). It's not a big deal—if we don't make this adjustment the correlation is 77% (i.e., a 77% correlation between our prediction for a country's growth in income per worker over the next decade and the growth in income per worker that materialized, across our sample of 20 countries and 159 datapoints). This allows us to show a type of range in our estimates for countries, which highlights what we have gotten wrong in the past and its magnitude.

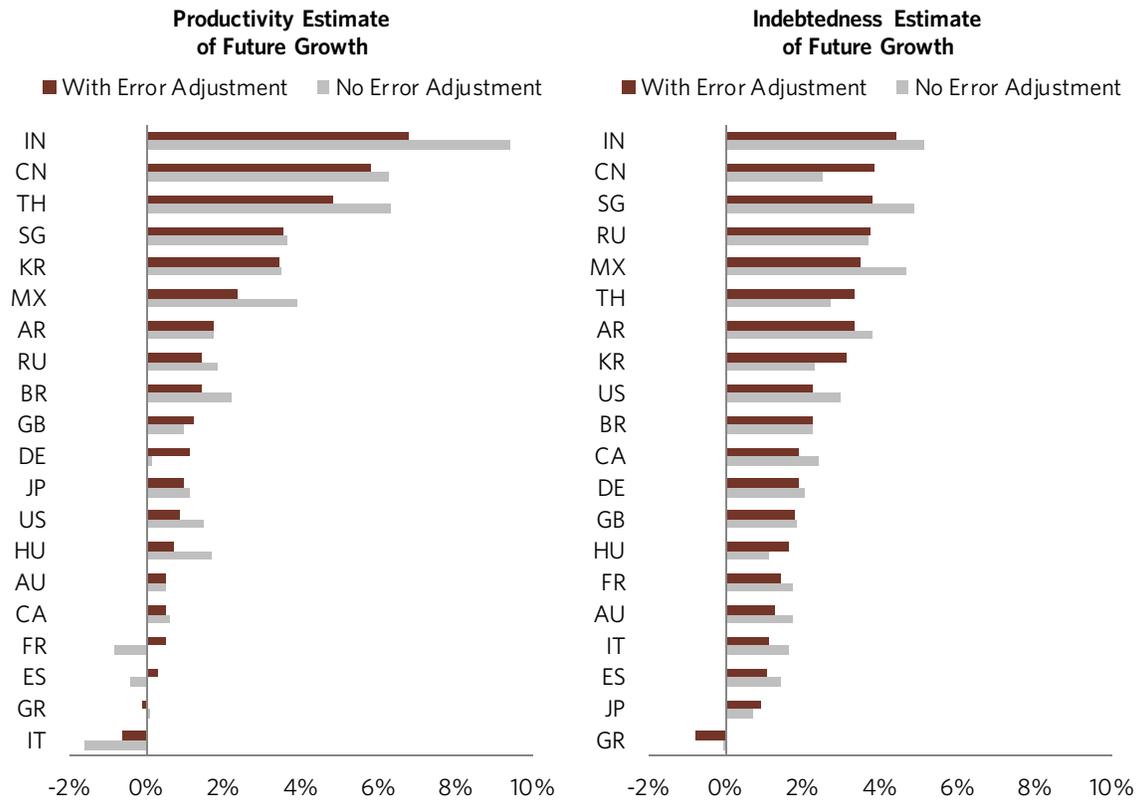
Because GDP is just output per worker times the numbers of workers, that estimate includes two major pieces: demographic trends (or more specifically the expected change in workers), and an estimate of future growth per worker. We show the chart of the expected change in workers first, below. On this measure, you can see that Europe, Russia and Japan's challenges are compounded by an aging and shrinking workforce, while countries like Mexico and India will enjoy a growth in workers as a support to their potential growth.



The next chart gives a picture of what we would project income growth per worker to be over the next 10 years, again highlighting our estimates with and without the error adjustment.



Our future growth per worker estimate includes two major components: a productivity estimate, and an indebtedness estimate. We show both of these estimates below. They highlight the general attractiveness of the labor arbitrage between most emerging countries relative to the developed world. There is also much more room for these countries to leverage up whereas much of the developed world has reached its long-term debt top and is deleveraging, which means there is much more limited room for spending and income growth to come from credit expansion.



Below, we describe in depth our measures of productivity—both what you pay for what you get, and culture.

Productivity and Competitiveness Measures

Before getting more into our specific measures of productivity/competitiveness I want to start by reviewing our concepts pertaining to it.

A country's competitiveness is driven by the value of all that it offers relative to the value of what others offer—most importantly the value of its people relative to their cost. In a global economy, countries that are more productive will not only produce better value products, but they will also attract investment and new businesses, and they will compel the means of production to move. We expect the producers who are more competitive to both 1) sell more in their own country and other countries, and 2) move their production to countries where they can produce more cost-effectively.

As explained, the most important way countries differentiate themselves is through their labor: whether it is more attractive for a company to hire their workers than to hire workers in a different country. This is not just a function of whether the workers are more productive today. It's a function of the attributes that make them more attractive to hire and invest in the long term. Since ultimately the only way one can become more productive is through working harder or working smarter, it makes intuitive sense to us that education and work ethic are the most important attributes that matter. Those countries that offer these most cost-competitively tend to do the best. A country may also be more attractive because it's a cheap place to build a factory or because the returns of building new capital and technologies are higher. Additionally, countries that save and invest more tend to grow faster by creating new innovations, capital equipment and infrastructure that help improve the productivity of their workforce relative to other countries with more limited investment rates.

These are the most important ingredients for the productivity growth of a country. But that's not all there is to it. Partly, culture drives the decisions people make about factors like savings rates or how many hours they work each week. But culture can also help explain why a country can appear to have the right ingredients for growth but consistently underperform.

Culture matter a lot. Ultimately how a country develops is a function of human behavior and the decisions its people make. Many of those decisions are captured in the attributes that go into a country's relative productivity (like how much people save or how hard they work). But you can learn a lot about the psychology of the different players in the economy and their motivations by staring at different cultural elements. Over very long stretches of time a country's cultural evolution is at the core of its long-term cycles (from being poor and believing it's poor to becoming rich). Over any decade, the way we think about culture is that it can help explain why a country can appear to have the right ingredients for growth but consistently underperform or outperform. For us it makes intuitive sense that countries that emphasize individual self-reliance and striving to achieve are more likely to succeed by creating a meritocratic environment where incentives are based largely on market forces. Countries can also outperform if they are more innovative in producing new products and ideas of value and more commercially minded in harvesting them. On the other hand, countries can underperform if they are corrupt or bureaucratic, or if the rule of law is unsound. To be clear, we are not assessing whether one culture is good or bad; our focus is on the cultural elements that are most important for economic prosperity.

Our Productivity Gauge

For these reasons, when we look at gauging the productivity of a country we create a measure of 1) the relative value it offers and 2) its culture. We weigh the relative value of a country the most since it is the most important determinant.

Our productivity gauge is just based on the logic we have described. It is mostly a function of the relative value of a country's workers (the labor arbitrage aspect): how educated they are relative to their cost and how hard the people work relative to their cost. These measures give us a sense of whether a country's workers have the ingredients to grow their productivity by working harder or smarter. To triangulate the cost of an educated worker we look at two measures, one that adjusts for the quality of education and one that looks at their observed productivity today. Moving beyond a country's human capital, we also look at investment relative to the cost, which gives us a lens into whether a country is investing to grow its productivity in the future and whether the returns are likely to be attractive (i.e., another perspective on the "cost of production arbitrage").

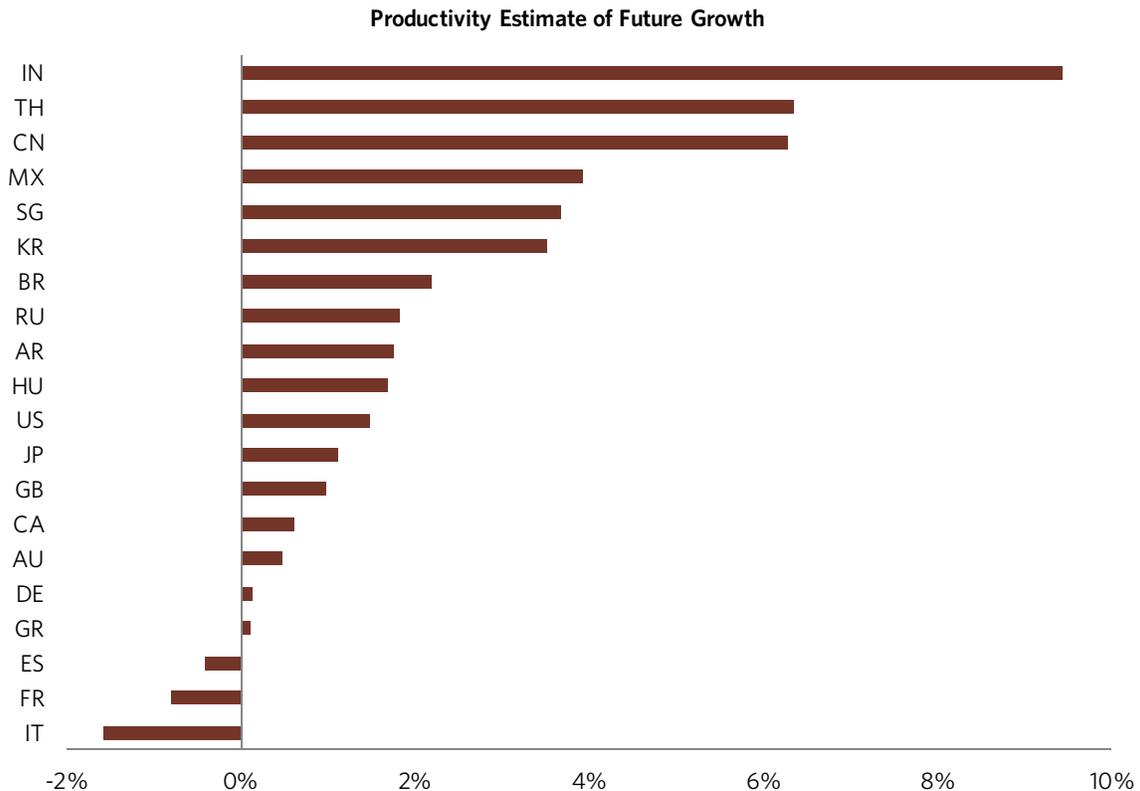
To measure culture, we create a gauge for each of the concepts we have outlined: 1) whether a country values self-sufficiency, 2) whether it values savoring the fruits of life or achieving, 3) whether it is innovative and commercially oriented, 4) its degree of bureaucracy, 5) corruption and 6) rule of law. Self-sufficiency encourages productivity by tying the ability to spend to the need to produce. The concept of savoring life versus achieving captures how much the people in a country are focused on enjoying the things they have versus trying to increase their success and achieve, earn, and create more. Innovation and commercialism captures whether a society is oriented towards seeking profit or generating new insights. The last three get at the basic questions of how difficult it is to get business done in a country—i.e., whether a given country is one where businesses could get off the ground and operate smoothly, where business can be conducted fairly (without corruption) and whether investors and businesses can be confident that contracts and laws will be well enforced.

Together our indicators of productivity were 64% related to countries' subsequent growth rates. To repeat, these estimates were made by applying the exact same factors to all countries in all time periods to determine their subsequent growth.

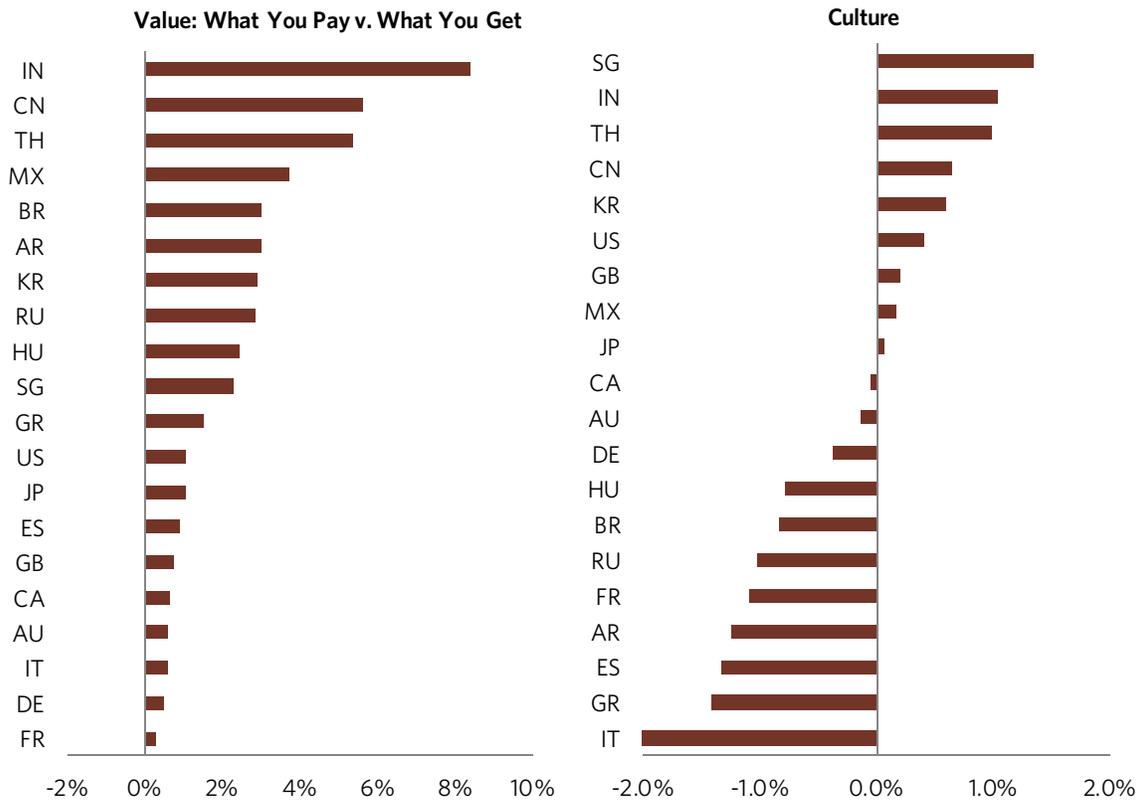
Productivity	Correlation	Contribution to Estimate
Aggregate	64%	65%
Value: What You Pay vs. What You Get	63%	45%
Cost of a Quality Adjusted Educated Worker	66%	11.3%
Cost of a Productivity Adjusted Educated Worker	49%	11.3%
Working Hard Relative to Income (2 pieces)	66%	11.3%
Investing Rel. Inc. (2 pieces)	59%	11.3%
Culture/Values	58%	20%
Self-Sufficiency Excluding Income Effect (3 pieces, 9 sub-pieces)	42%	3.3%
Savoring Life vs. Achieving Ex. Inc. (2 pieces, 8 sub-pieces)	40%	3.3%
Innovation & Commercialism Ex. Inc. (2 pieces, 10 sub-pieces)	49%	3.3%
Bureaucracy Ex. Inc. (3 pieces)	32%	3.3%
Corruption Ex. Inc. (4 pieces)	58%	3.3%
Rule of Law Ex. Inc. (4 pieces)	57%	3.3%

The chart below gives a picture of how we would rate countries today on productivity based on the same logic described above. Our ratings are represented in terms of what a given country's productivity would imply for that country's future growth in income per worker over the next 10 years.

According to our measures, India is best placed to see productivity growth at this point—driven by a very cheap and achievement-oriented labor force, even accounting for poor education, chronic corruption and a generally ineffective system. Together these factors imply India has the ingredients to grow income per worker around 9% annually over the next decade. It also has sizable potential to boost its growth rate if it can reduce its inefficiencies through reforms. China is also highly competitive by our measures, with a growth rate implied by its competitiveness/productivity of about 6% or so. Its workforce is inexpensive and fairly well educated relative to its cost, works hard and provides huge savings for investments. Moreover, as a country that is becoming rich and starting to realize it, China has a huge amount of potential to realize by adopting existing technologies, building out its infrastructure in the underdeveloped parts of the country, and investing in businesses to serve a massive population that is quickly accumulating spending power. Nearly all developed world countries are measured to be relatively uncompetitive, with Italy, France, Spain and Greece uniquely uncompetitive for reasons that will be apparent in the indicators that follow. Most importantly, these countries' labor is expensive, they don't work that hard, and they invest less than most other countries. This is compounded by a social system that prioritizes savoring life over achieving and insulates workers from market forces with rigid labor markets and substantial government safety nets, low levels of innovation and high levels of bureaucracy. It should be noted that we are starting to see some structural reforms to improve productivity and competitiveness, especially in Spain, and that such reforms have the potential of considerably boosting growth because the barriers that reforms would bring down are such drags on growth. Japan is also somewhat uncompetitive but more because its labor is expensive and investment levels stagnant, as opposed to cultural reasons (the work ethic in Japan and level of innovation, for example, remain quite supportive). In such cases, declines in the exchange rate can help. Also, Prime Minister Abe's "three arrow" policies can help a lot if pursued forcefully—more forcefully than currently pursued. The US is the most competitive of the major developed countries we measure. Labor is more competitively priced compared to other developed countries (though expensive compared to many emerging countries), and the culture is supportive, including elements like relative hard work, a drive to achieve and orientation to innovate.



The following two charts give you a summary of where countries stand on our assessment of value (i.e. what you pay for what you get) in each country and whether its culture are a support to or drag on income growth. Overall, the strong value proposition of Asia’s workers—especially how hard they work and their level of investment relative to their expense—is supported by cultural attitudes around achievement. In contrast, Europe, once on the frontier of productivity, now invests little and takes more leisure than any other region. And after years of incomes rising faster than underlying productivity, its workers are some of the most expensive in the world and the vibrancy of its labor market is undermined by a system of protections. Japan and Singapore are in the middle of the pack when you look at their high cost of labor and low levels of investment, but we expect them to be helped by cultural factors (e.g., their orientation toward innovation and commercialism and rule of law). In contrast, cultural factors—like corruption, a desire for leisure over achievement—act as a drag for otherwise competitive workforces in Russia and Argentina. We will examine each of the components of these gauges next.⁴



⁴ The right chart above shows the adjustment (or “bump”) to the productivity estimate we make based on a country’s culture (e.g., based on our assessment of what you pay for what you get for Singapore’s labor, we would project growth in income per worker of about 2.3%, but we add another 1.3% based on our assessment that Singapore’s culture is very supportive to growth).

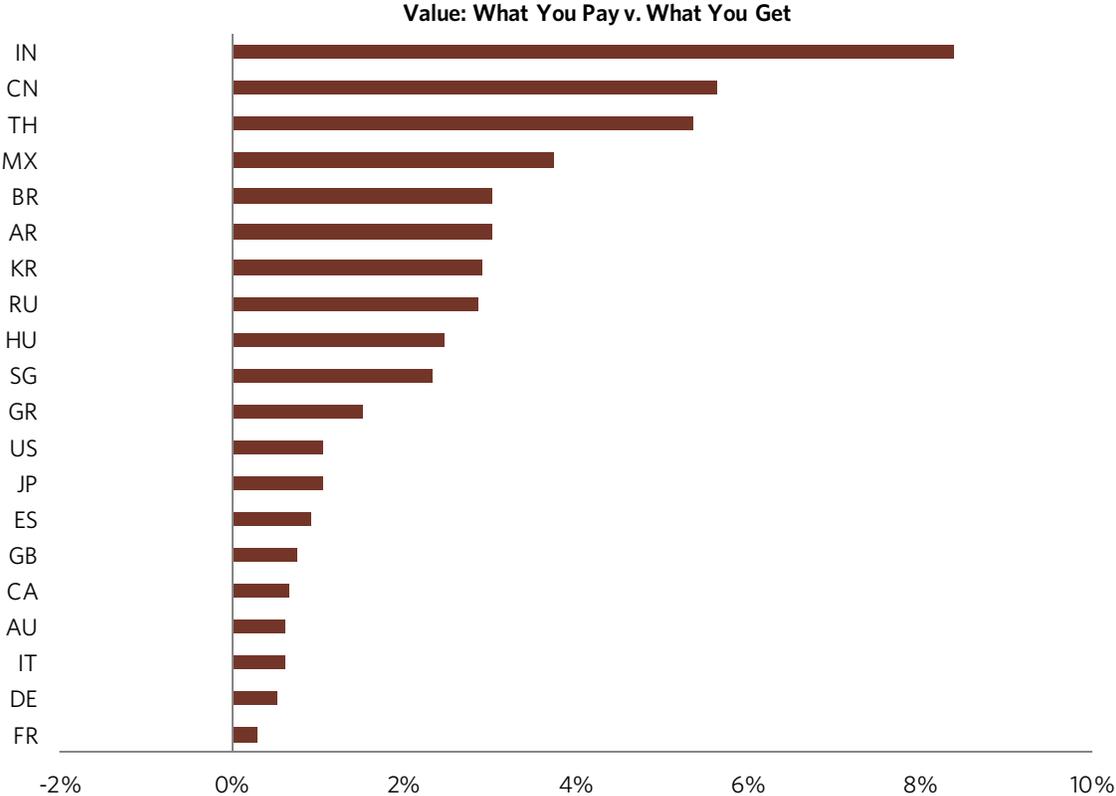
Value: What You Pay Versus What You Get

As previously discussed, a country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

To construct this gauge we first looked at the average cost of an educated worker, adjusted for the average hours worked (including the average workweek, vacation time, and holidays) and adjusted for the quality of education (based on international tests). We also created a gauge of the productivity-adjusted cost of labor (a spot picture of how much workers offer relative to what you pay). And we created a gauge of working hard, where we look at the portion of the population working, and then how many hours each of those workers put in (again adjusting for things like vacation). In addition, this gauge considers demographic shifts that change how much that society is of working age relative to those who are very young or old and dependent. We weighted these equally. This gives us perspective on the cost and value of employees. We also added in a gauge of savings and investment that was also weighted equally. As shown in the correlations, all of these measures were individually highly effective predictors of future growth, as was the aggregate of them. On its own this gauge is 63% correlated to future growth. Most interesting are the individual country rankings by measure, which are shown in the charts that follow. We suggest picking a few countries that you are most interested in and seeing where they stand in these rankings. As we progress through the charts in this report, clear pictures will emerge.

Value: What You Pay vs. What You Get	Correlation to Growth	Contribution to Estimate
Aggregate	63%	45%
Cost of a Quality Adjusted Educated Worker	66%	11.3%
Cost of a Productivity Adjusted Educated Worker	49%	11.3%
Working Hard Relative to Income (2 pieces)	66%	11.3%
Avg. Hours Worked Rel Inc.	63%	7.5%
Demographics Rel. Inc.	50%	3.8%
Investing Rel. Inc. (2 pieces)	59%	11.3%
Investing %NGDP	42%	5.6%
Household Savings	64%	5.6%

India and China rank at the top of our measure of whether a country is cheap or expensive. India's work ethic is very strong, and they're investing a lot in their economy. And while their education scores in absolute terms are not very strong, their income levels are low enough to more than compensate. Before adjusting for cost, China scores better than India along most measures of what a country offers, but Chinese incomes have grown considerably over the last two decades and India's workforce is cheaper. The US scores towards the top of the developed countries thanks to a well-educated workforce that is fairly cheap compared to other developed countries. Spain rates better in the cut below, which doesn't weigh cultural elements like Spanish attitudes toward savoring life versus achieving and self-sufficiency. With labor that is expensive compared to workers of similar education levels elsewhere, Germany and France are at the bottom of the list.



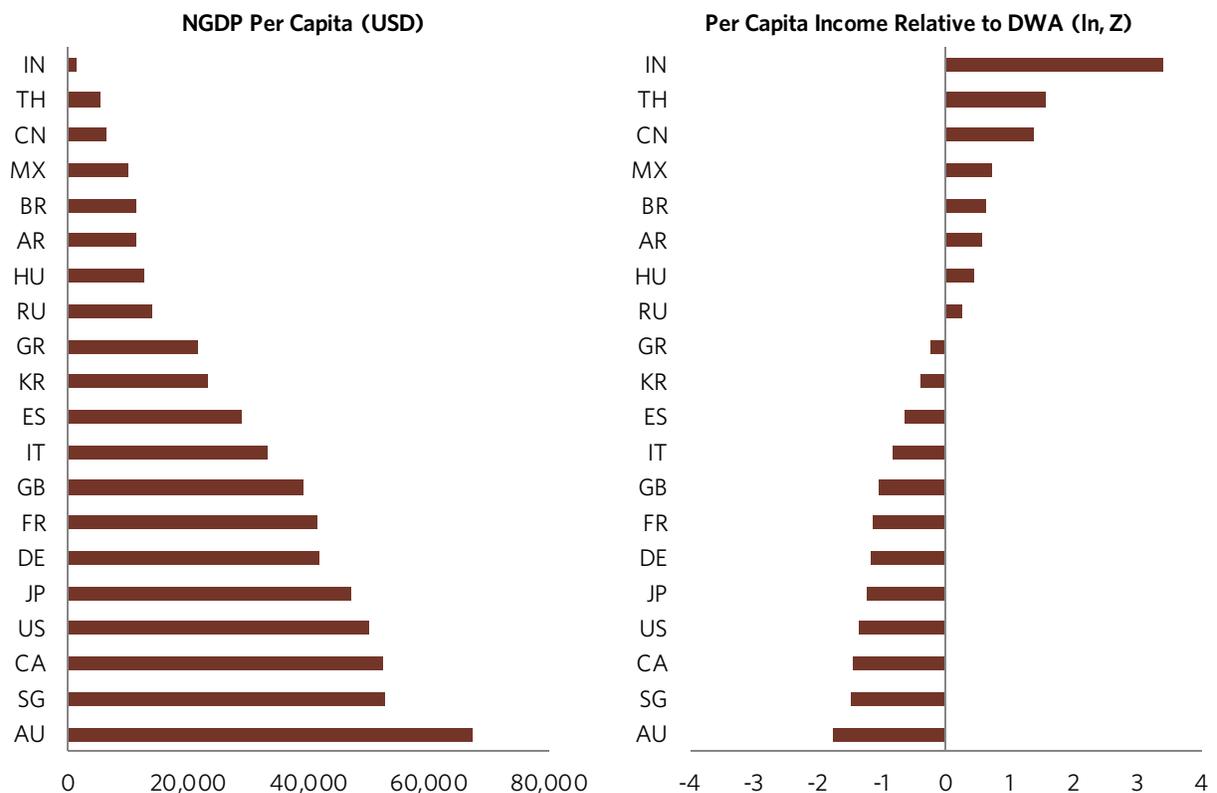
Below we look at the components of our "value: what you pay versus what you get" indicator.

A Simple Measure of Cost: Per Capita Income

To make any assessment of value we want to look at the attributes of a country relative to their costs. Absent other indications of productivity or indications of what you get for workers, we'd expect relative income levels alone to give you some indication of a country's relative future growth, albeit a naïve one. Through time, countries with cheap workers and low skills can leverage existing technology to increase their productive ability. Similarly, the richest countries generally do not continue to outperform the rest of the world, as their competitive advantages are eaten away by technology transfers to less competitive economies, and the normal behavior of most economies is to increasingly savor the fruits of success by working and investing less.

Our measure of cost simply compares the nominal GDP per capita of a given country relative to the developed world average in log terms, which we believe is more reflective of the impact of differences in income levels. That's based on our intuition that, from a competitiveness perspective, a \$2,000 difference is more meaningful between one country that makes \$500 and one that makes \$2,500 than between countries that make \$40,000 and \$42,000 respectively. Again, this measure of cost is one side of the picture. We combine it with our assessment of various indications of what a country offers to understand its productivity and competitiveness (what it offers relative to its cost).

Today, India is by far the lowest-cost country in our sample. Indian per capita GDP is about \$1500, which is much lower than that of many of the major developing world countries like China, Mexico, Brazil, Russia, or Korea. Even with its significant increase in cost in recent years, China's cost is still one of the lowest in the world. Its per capita income sits at just \$7,000, roughly 70% that of Mexico. However, the differences in cost by area are significant so that growth in China will largely depend on how development will occur in areas, and among people, that are inexpensive. While developed world countries in general have relatively high incomes, it's worth noting some differentiation between those countries—for example, GDP per capita in the poorest European countries like Spain and Greece is only about two-thirds as high as the per capita incomes of the richest developed countries, like the US and Japan. You'll see below that based on how we look at cost, we don't make much of the difference in cost between the developed countries—all are pretty expensive—but we believe there is a big difference between the cheapest emerging countries, like India and China, and the rest (including other countries like Argentina and Brazil).



Education

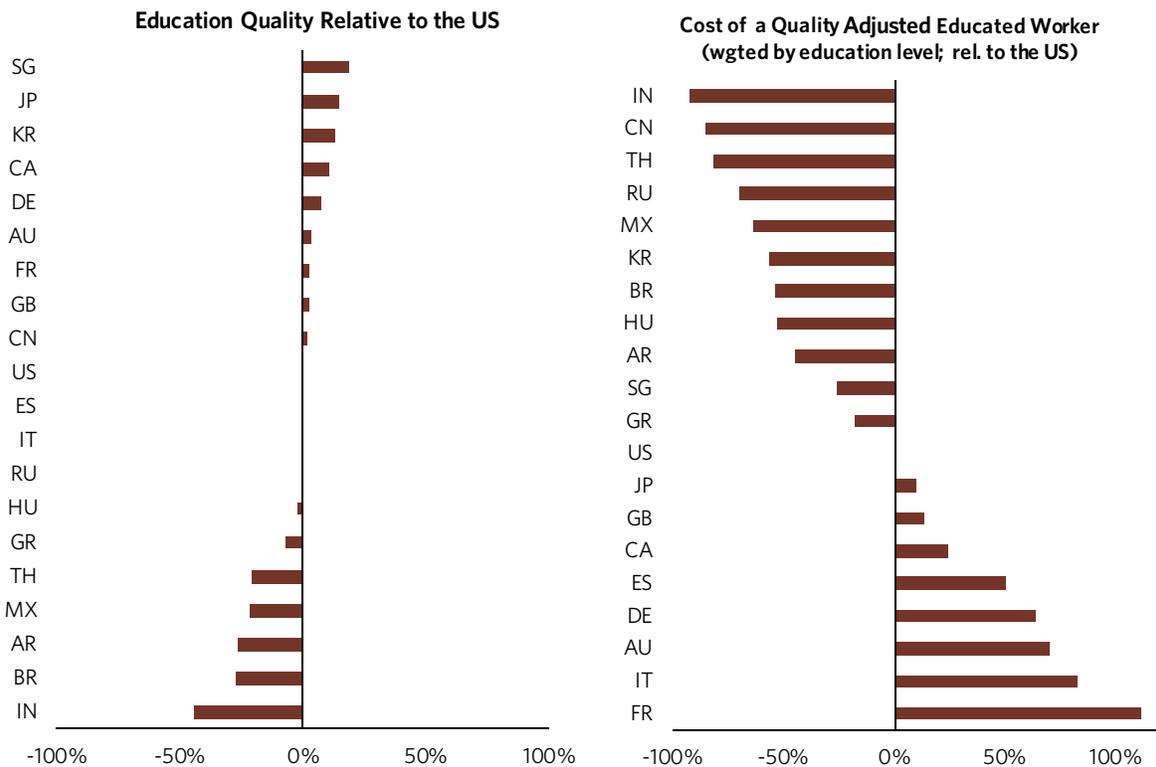
Cost of a Quality Adjusted Educated Worker

Our single best measure of productivity is the relative cost of a country's educated workforce adjusted for the quality of that education. To construct our measure we look at the relative cost of different cohorts of educated workers (college, high school, those without education), allowing us to get closer to the individuals where the competition occurs. We can then look at the average cost of those workers per hour worked (adjusting for differences like vacation). Further, we take into account the quality of education in one country versus another (e.g., if a high school graduate in the US costs the same as one in France, we also want to ask whether the quality of high school education is the same in both countries). For this adjustment, we use an internationally accepted measure of education quality.⁵ That allows us to compare for a given cohort the relative quality of workers' education compared to the relative cost. To come up with an aggregate measure for a country we weight proportionally how much of its population is in each group because if a country's workforce is highly educated, then most of the labor competition happens with other countries at those levels (e.g., between the drug researcher in the US and their peers in Germany). Of course we recognize there is some labor arbitrage across cohorts but this approach lets us capture the dynamic reasonably well.

While there is, if anything, a negative relationship between a country's level of education and its level of future growth (because more expensive countries tend to have more educated people who are more expensive), there is a high correlation between the relative cheapness of a country's educated people and that country's subsequent growth rate. To convey how important it is to consider whether these educated people are expensive or cheap, consider that while there is a -17% correlation between the average level of a country's education and its future growth rate, there is a +66% correlation between cost-adjusted educated level and its future growth rate.

⁵ Our measure of education quality is based on the education quality measures of the OECD's Program for International Student Assessment (PISA). PISA's assessments are designed to test the ability to apply knowledge rather than mastery of a specific curriculum. Our aggregate measure takes into account PISA's measures of education quality across mathematics, science and reading. While we would not put too much weight on the specific placement/ranking of a country, where countries place across the range is indicative. Over 65 countries participated in the most recent PISA study in 2012. The PISA surveys are designed in coordination with participating countries and reviewed to minimize cultural bias. In some cases, as in China, recent assessments have only been conducted in a few cities, which we make an adjustment for.

We show our aggregate measure below on the right, next to our measure of education quality⁶ on its own for perspective. Overall, India looks to have the most attractively priced educated population, followed by China, with Russia and Mexico not far behind. Looking across education levels, workers in India with similar levels of education cost a fraction as much as their peers in the US (around 1/20th). When we adjust for the quality of education in India being about 50% worse on average, the cost of a quality-adjusted worker in India is still about 1/10th that of a worker in the US. This isn't all that different from how China's workers looked 20 years ago. Remarkably, even as wages in China have risen substantially, so too have education levels and the quality of education—today the quality-adjusted cost of a worker in China is still highly attractive. Within the developed world, the US looks to have the most attractive educated workers, despite the quality of a US high school education now being worse than in other developed countries. In contrast, Europe's educated labor appears to be the most expensive in the world by this measure. Despite quality being relatively good, the cost of workers there, particularly below college level, is high.



Cost of a Quality Adjusted Educated Worker																				
Country	IN	CN	TH	RU	MX	KR	BR	HU	AR	SG	GR	US	JP	GB	CA	ES	DE	AU	IT	FR
Cost of a Quality Adjusted Educated Worker rel. to the US	-93%	-86%	-82%	-70%	-64%	-57%	-54%	-53%	-45%	-26%	-18%	0%	10%	13%	24%	51%	64%	70%	83%	112%
Education Quality Relative to the US	-44%	2%	-21%	-1%	-22%	13%	-27%	-2%	-27%	19%	-7%	0%	15%	3%	10%	0%	7%	3%	0%	3%
% of Working Age Pop - Attained at least Primary School	65%	86%	75%	97%	80%	96%	80%	100%	92%	82%	94%	99%	97%	97%	97%	89%	97%	97%	93%	97%
% of Working Age Pop - Attained at least Secondary School	34%	55%	32%	83%	36%	77%	36%	70%	42%	68%	54%	90%	72%	73%	76%	44%	76%	69%	46%	61%
% of Working Age Pop - Attained at least Tertiary School	5%	3%	10%	25%	10%	30%	6%	15%	3%	30%	23%	27%	19%	15%	23%	15%	13%	19%	7%	11%
NGDP Per Capita rel. to US	3%	13%	11%	29%	21%	49%	22%	26%	23%	108%	43%	100%	90%	79%	106%	58%	86%	135%	66%	84%
Cohort Level Costs																				
Country	IN	CN	TH	RU	MX	KR	BR	HU	AR	SG	GR	US	JP	GB	CA	ES	DE	AU	IT	FR
Cost of Tertiary Educated Worker rel. to the US, Adj. for Ed. Quality	-96%	-89%	-90%	-72%	-70%	-71%	-50%	-71%	-62%	-43%	-56%	0%	-43%	-10%	-13%	-28%	-5%	17%	-8%	20%
Cost of Secondary Educated Worker rel. to the US, Adj. for Ed. Quality	-94%	-87%	-84%	-72%	-66%	-59%	-49%	-59%	-44%	-37%	-31%	0%	-9%	7%	18%	17%	52%	67%	50%	87%
Cost of Primary Educated Worker rel. to the US, Adj. for Ed. Quality	-88%	-82%	-75%	-60%	-53%	-33%	-40%	-34%	-36%	10%	16%	0%	77%	44%	75%	105%	134%	115%	131%	176%
Cost of Literate, Uneducated Worker rel. to the US	-93%	-88%	-86%	-61%	-76%	-35%	-78%	-45%	-80%	10%	-31%	0%	109%	8%	60%	29%	122%	36%	27%	84%
Cost of Illiterate, Uneducated Worker rel. to the US	-94%	-91%	-89%	-59%	-83%	-36%	-89%	-40%	-84%	-23%	-35%	0%	123%	3%	56%	11%	131%	24%	8%	88%

⁶ While we would not put too much weight in the specific placement/ranking of a country for educational quality, where countries place across the range is indicative.

Below we take a more granular look at our measure for each cohort of education level, which we use to build up to the aggregate picture. This approach gives us a much richer picture. For example, in the US college-educated workers adjusted for quality are more expensive than college-educated workers in Spain. But at the high school level and below, workers in the US are much cheaper than those in Spain. And since that's where the competition occurs between most workers for these countries, overall the US comes out more attractive. We show below some other points we find interesting.

Both India's and China's workers cost a fraction relative to the US, and India's workers are 2/3 the cost of China's when adjusting for quality. India's workers are least costly at higher levels of education (especially tertiary).

Educated Persons Cost Per Hour Worked, Adjusted for Education Quality (Indexed to US, by Education Level)						
Country	Wt Avg	Tertiary	Secondary	Primary	Literate	Illiterate
IN	-93%	-96%	-94%	-88%	-93%	-94%
CN	-86%	-89%	-87%	-82%	-88%	-91%
TH	-82%	-90%	-84%	-75%	-86%	-89%
RU	-70%	-72%	-72%	-60%	-61%	-59%
MX	-64%	-70%	-66%	-53%	-76%	-83%
KR	-57%	-71%	-59%	-33%	-35%	-36%
BR	-54%	-50%	-49%	-40%	-78%	-89%
HU	-53%	-71%	-59%	-34%	-45%	-40%
AR	-45%	-62%	-44%	-36%	-80%	-84%
SG	-26%	-43%	-37%	10%	10%	-23%
GR	-18%	-56%	-31%	16%	-31%	-35%
US	0%	0%	0%	0%	0%	0%
JP	10%	-43%	-9%	77%	109%	123%
GB	13%	-10%	7%	44%	8%	3%
CA	24%	-13%	18%	75%	60%	56%
ES	51%	-28%	17%	105%	29%	11%
DE	64%	-5%	52%	134%	122%	131%
AU	70%	17%	67%	115%	36%	24%
IT	83%	-8%	50%	131%	27%	8%
FR	112%	20%	87%	176%	84%	88%
Dev. World	70%	1%	48%	136%	93%	89%
EM. World	-62%	-70%	-65%	-49%	-63%	-67%

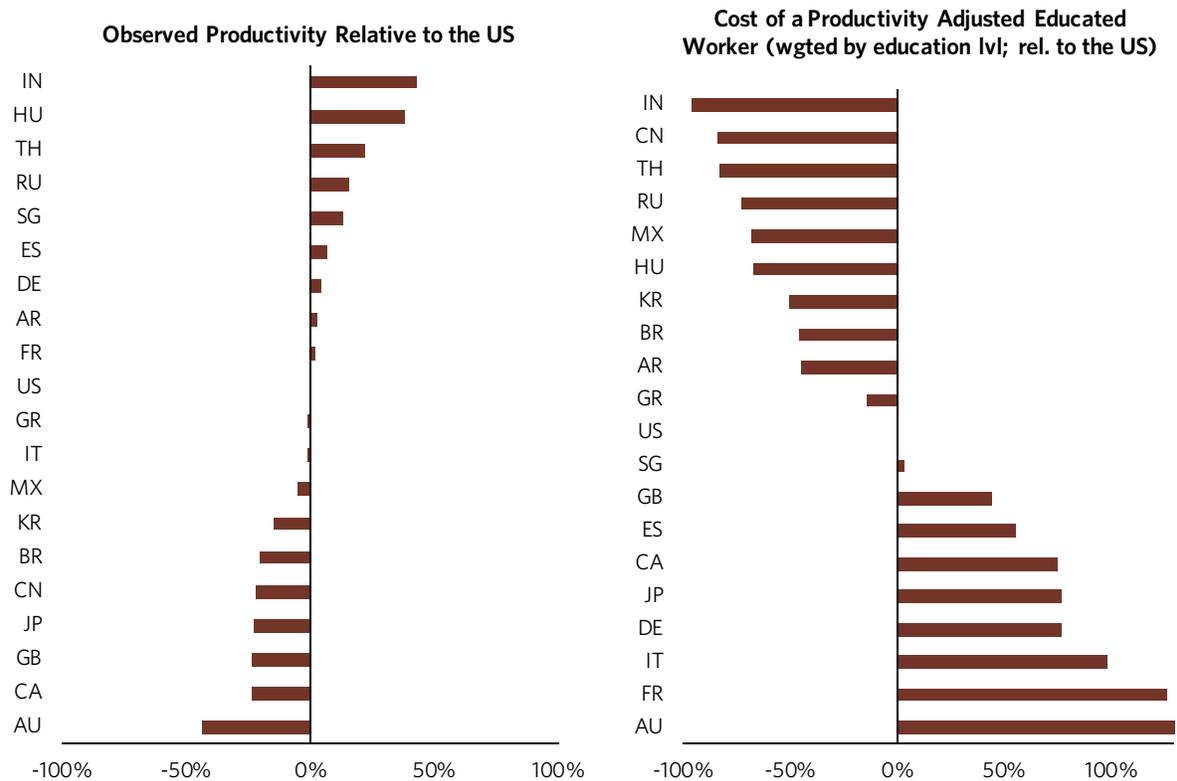
1/25 the US

Less educated workers in the US appear much lower cost than in the rest of the developed world. European labor looks especially expensive at these levels.

Cost of labor in Emerging World is less than half developed, and least expensive at lower education levels.

Cost of a Productivity Adjusted Educated Worker

To triangulate our picture of the cost of an educated worker, we also look at the cost adjusting for observed differences in productivity (output per hour worked) rather than education quality. With this measure, we take the same approach of looking at the cost of the different cohorts. By adjusting for differences in observed productivity today we can get a better sense of the effective cost. Imagine you hire two workers of the same cost: one has a better education, but the other is more productive from day one on the job. This measure helps us weigh that second perspective, though it is somewhat less correlated with future incomes than our quality-adjusted measure, about 49%. Our measures are below. The overall picture isn't all that different. India looks even stronger on this measure since their observed productivity is quite strong. In contrast, Japan falls lower down.



Cost of a Productivity Adjusted Educated Worker

Country	IN	CN	TH	RU	MX	HU	KR	BR	AR	GR	US	SG	GB	ES	CA	JP	DE	IT	FR	AU
Cost of a Productivity Adjusted Educated Worker rel. to the US	-96%	-83%	-83%	-72%	-68%	-67%	-50%	-46%	-44%	-14%	0%	3%	45%	56%	75%	77%	77%	98%	126%	156%
Observed Productivity rel. to the US	43%	-22%	22%	16%	-5%	38%	-15%	-20%	3%	-1%	0%	14%	-23%	7%	-24%	-23%	4%	-1%	2%	-43%
Cost of Tertiary Educated Worker rel. to the US	-98%	-89%	-92%	-73%	-77%	-71%	-67%	-63%	-72%	-59%	0%	-33%	-8%	-28%	-4%	-34%	2%	-8%	24%	20%
Cost of Secondary Educated Worker rel. to the US	-97%	-86%	-88%	-72%	-73%	-60%	-54%	-63%	-59%	-36%	0%	-25%	10%	17%	30%	5%	63%	50%	92%	72%
Cost of Primary Educated Worker rel. to the US	-93%	-82%	-80%	-61%	-63%	-36%	-25%	-56%	-53%	8%	0%	31%	47%	105%	93%	104%	151%	129%	184%	122%
Cost of Literate, Uneducated Worker rel. to the US	-93%	-88%	-86%	-61%	-76%	-45%	-35%	-78%	-80%	-31%	0%	10%	8%	29%	60%	109%	122%	27%	84%	36%
Cost of Illiterate, Uneducated Worker rel. to the US	-94%	-91%	-89%	-59%	-83%	-40%	-36%	-89%	-84%	-35%	0%	-23%	3%	11%	56%	123%	131%	8%	88%	24%

Working Hard

Just like hard-working individuals, hard-working countries will generally be more productive and find ways to improve faster than those who are less hard working. We believe a country's work ethic impacts both the level of its relative advantage today and the pace at which it learns and improves over time. Working hard doesn't just mean working a lot of hours; it means having a certain ethic, a determination to achieve quality outcomes and to improve. Demographics can also impact the work ethic of a society—when a society ages and the number of dependents rises relative to those in the workforce, it can impact the overall work ethic of the society. Similarly, when there is a boom of young professionals, it can improve the vibrancy, initiative and determination of the society. We expect a country with a hard-working society that is low-cost to be more competitive and grow faster than a country with a population that prefers leisure and is expensive.

To construct a simple measure of working hard, we look at two pieces, 1) average weekly hours of actual work by men in the labor force, adjusting for things like vacation time and holidays, and 2) shifts in the amount of the population as a whole that is working. While the number of hours worked is just one measure of the effort a country puts in, and doesn't account for the determination and effort put in during those hours, it gives us a decent starting point; we return to some other measures that triangulate our picture when we look at culture. Just using this gauge on its own yields a 53% correlation with future growth, but when combined with cost indications, it is 66% correlated with subsequent 10-year growth.

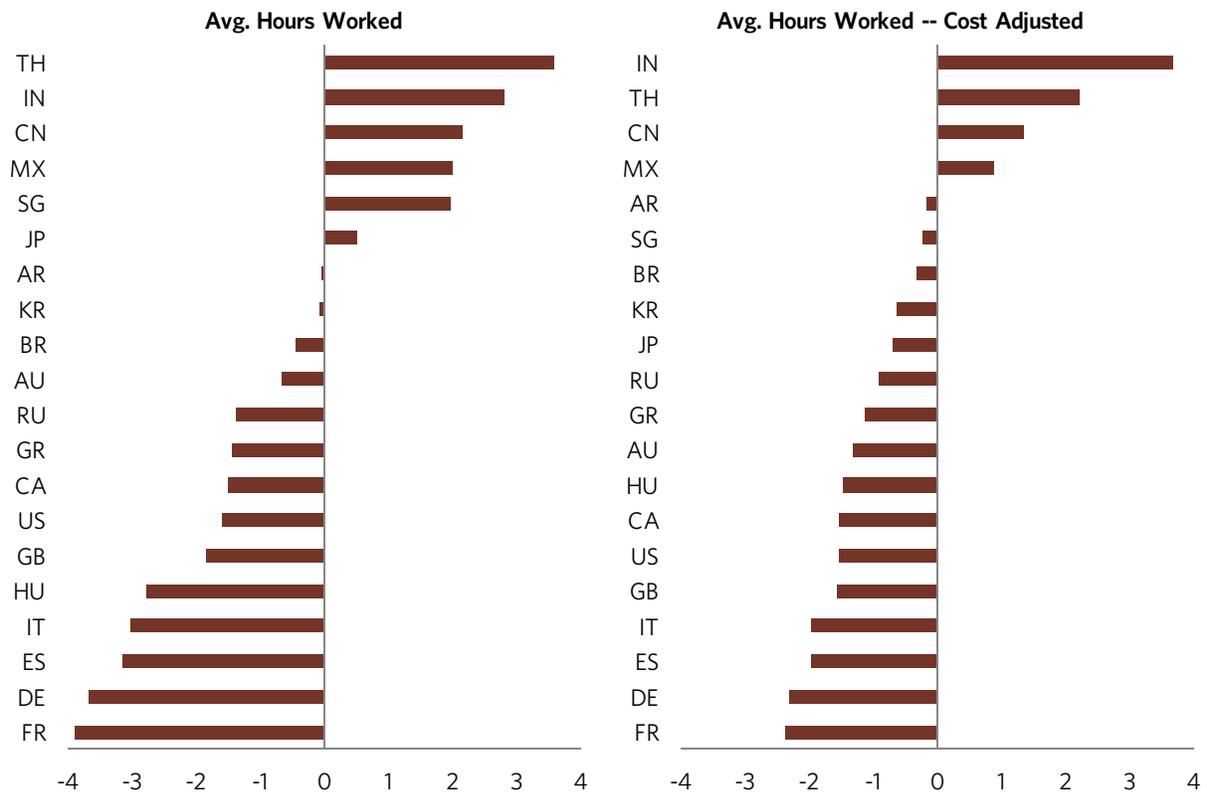
We look at our aggregate measure below first, followed by components. Emerging Asian workers are generally the hardest workers in the world, including China, India and Thailand. Mexico also stands out as particularly hard-working. Among the richer countries, Singapore is by far the hardest working (competitive with much poorer countries), and Japanese workers are some of the most hard-working of developed countries, followed by the English-speaking developed countries. Continental European workers are generally the least hard-working in the world. Adjusting for cost largely keeps these divergences in place, though India's relative cheapness makes it look more attractive.



Working Hard Subcomponent: Average Hours Worked

When looking at whether a country works hard, we look at the portion of the population working, and then how many hours each of those workers put in. Regrettably, we must look at this measure for just men in the labor force because different social norms across countries around women in the workforce distort the numbers, and we must adjust for things like labor force participation, vacation time and holidays where data is limited. Again, these measures are designed to be simple—we triangulate them when we look at work ethic as part of the concepts of self-sufficiency and achievement orientation in our culture indicator.

When we look at hours worked on its own, Thailand, India and China are at the top, with Mexico not far behind and Singapore by far the hardest working of the wealthier countries. The Europeans work the least. Japanese workers, who used to be among the very hardest working in the world, still rank well on this metric but are now towards the middle. When we look at this measure of working hard adjusted for cost, we see some countries really stand out on either end—the dollar cost of effort, if you will, is particularly attractive in India, and especially bad in Europe.



Avg. Hours Worked

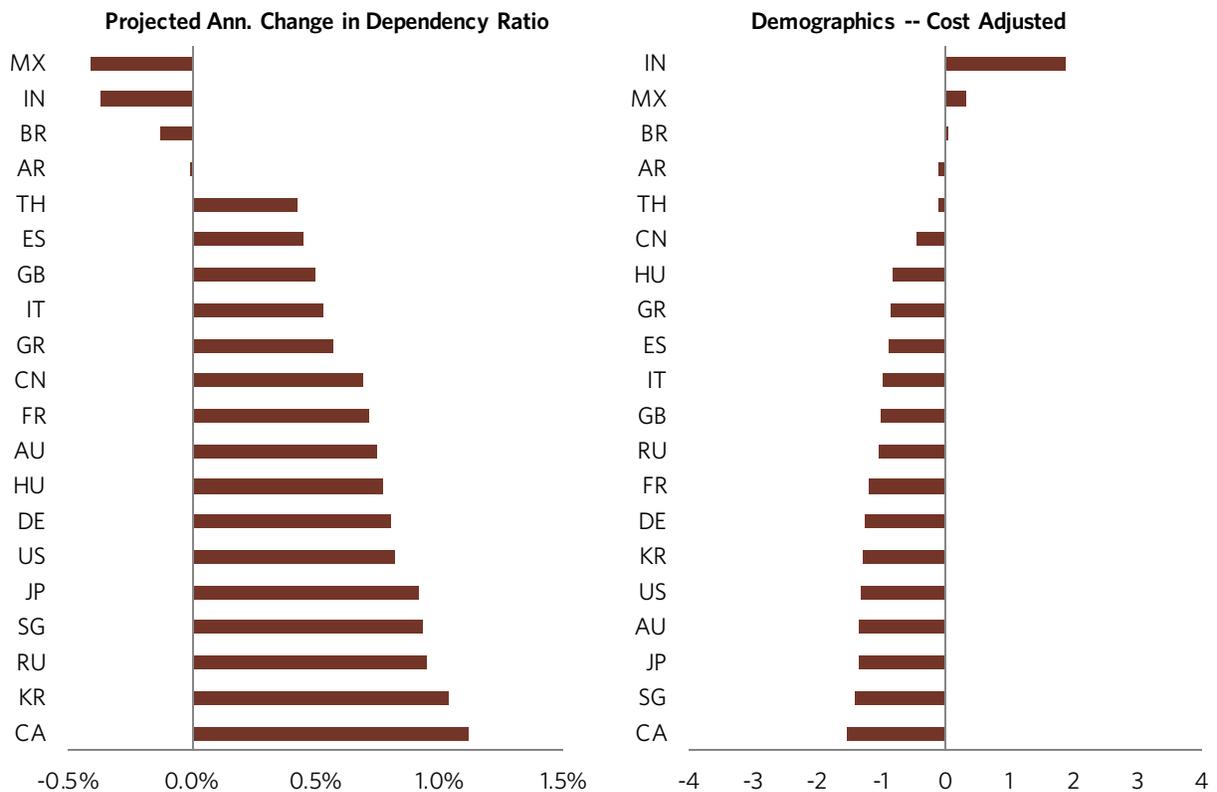
Country	TH	CN	SG	MX	IN	AR	JP	BR	KR	CA	GB	AU	US	RU	GR	DE	ES	IT	HU	FR
Avg. Actual Hours Worked per Working Aged Male	40	35	35	35	37	29	31	28	29	24	23	27	24	25	25	18	20	20	21	17
Male Reported Avg. Hours Worked (ex Vacation)	51	47	46	46	47	44	45	38	41	36	37	39	37	38	43	30	34	36	37	31
Male Labor Force Participation	81%	78%	78%	80%	81%	75%	70%	81%	72%	71%	69%	72%	70%	71%	63%	66%	67%	59%	60%	62%
Unemployment Rate (10yr Avg.)	1%	4%	2%	4%	4%	9%	4%	8%	3%	7%	7%	5%	7%	7%	10%	9%	16%	8%	9%	9%

Working Hard Subcomponent: Demographics

There is a natural cycle to how hard a person works and what they contribute, and typically one's working years are the most hard-working and productive ones. So it follows that societies go through long ebbs and flows in terms of how hard they work in aggregate, based on how much of that society is of working age versus very young or old and dependent.

Demographic pressures are measured by the projected change in the dependency ratio over the next 10 years. This represents the projected rise or decline in the proportion of a country's population that is young or old relative to those of working age. Our expectation is that a rise in the proportion of dependents (e.g., elderly individuals) would be a negative for the overall work effort in society and thereby for growth, all else equal.

In general, most major developed countries in the world today are likely to see a drag on their future growth in income per worker from these demographic shifts, due to increasingly aging populations. This impact is particularly acute for Japan but significant in the US, Europe, and UK. The picture is more mixed in the emerging world. Demographic pressures are a support in India but a drag in China, Russia and Korea, due to their aging populations. Adjusting for cost levels exacerbates the negative picture for the developed world. In the emerging world India is the one country that stands out as having a positive pressure after adjusting for cost; the pressure looks more muted in most of the rest, including China.

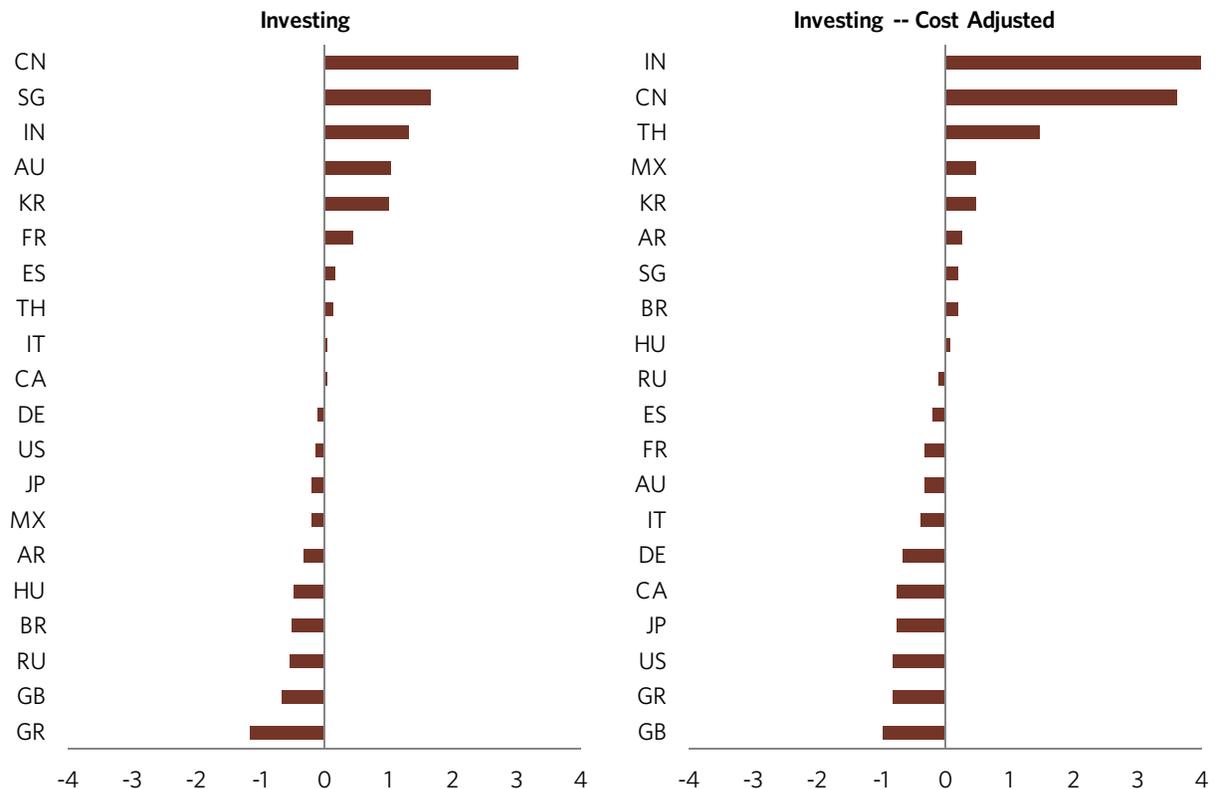


Investing

Countries that save and invest in their future tend to grow faster by creating capital equipment and infrastructure that helps improve the productivity of their workforce relative to other countries with more limited investment rates. Further, high rates of savings provide the capital needed to invest in the most innovative companies. Of course, there are always risks that this investment is unproductive. Typically the investments that yield the most productivity gains occur in emerging countries that are just becoming rich. At this stage, the investments are not just inexpensive; the stock of infrastructure and other physical capital is also typically low and there is lots of room to adopt existing technologies that can radically improve the country's potential.

Investing is measured by looking at 1) the rate of total non-residential fixed investment in a given economy and 2) the household savings rate. Looking at investing on its own has historically had a 20% correlation with future growth, but when combined with cost it has had a 59% correlation with future growth.

The rate of Chinese investment and savings is the highest in the world, though increasingly inefficient. The development of modern infrastructure and increasing business investment has been an important contributor to the productivity growth of the Chinese workforce over the last few decades—though an increasing share of this investment is going to less productive uses. The UK, Japan and the US are on the lower end of investing rates for the developed world. Brazil, Hungary and Russia have some of the lowest investment rates in the emerging world (with investment in Brazil and Hungary particularly depressed and much of the investment in Russia oriented toward resources and related infrastructure). When you consider how inexpensive it is to make investments in many emerging countries, how limited their existing stock of capital is, and how early they are in adopting existing technologies, not to mention building their own, India and China really stand out. On the flipside, we become more concerned about the US and Japan maintaining their technology advantage when we consider their expense and their lower levels of investment. (The innovativeness of countries is a question we return to in culture, and on that dimension both countries look more promising.)



Investing Subcomponents: Aggregate Fixed Investment Rates

The impact of investing on long-term prosperity takes time to flow through, so when we look at investment rates in a country we want to see what the trend has been, not just what happened recently. And we want to pay attention to the level of investment rates, not the wiggles. Moreover, not all types of investment produce income. While it's hard to assess that well, one thing we know is that real estate investments are generally not productivity enhancing, so we want to exclude those as best we can.

For these reasons we measure the rate of investment for a given country by looking at the average level of fixed investment as a percentage of GDP in the economy over the last seven years, stripping out residential real estate.

As highlighted above, on this measure China is ranked at the top. The US and Germany are towards the bottom—investment levels in those countries stagnated for some time. The impact of adjusting for cost puts India at the top just above China, but Germany and the US remain near the bottom, and Japan is modestly above them.

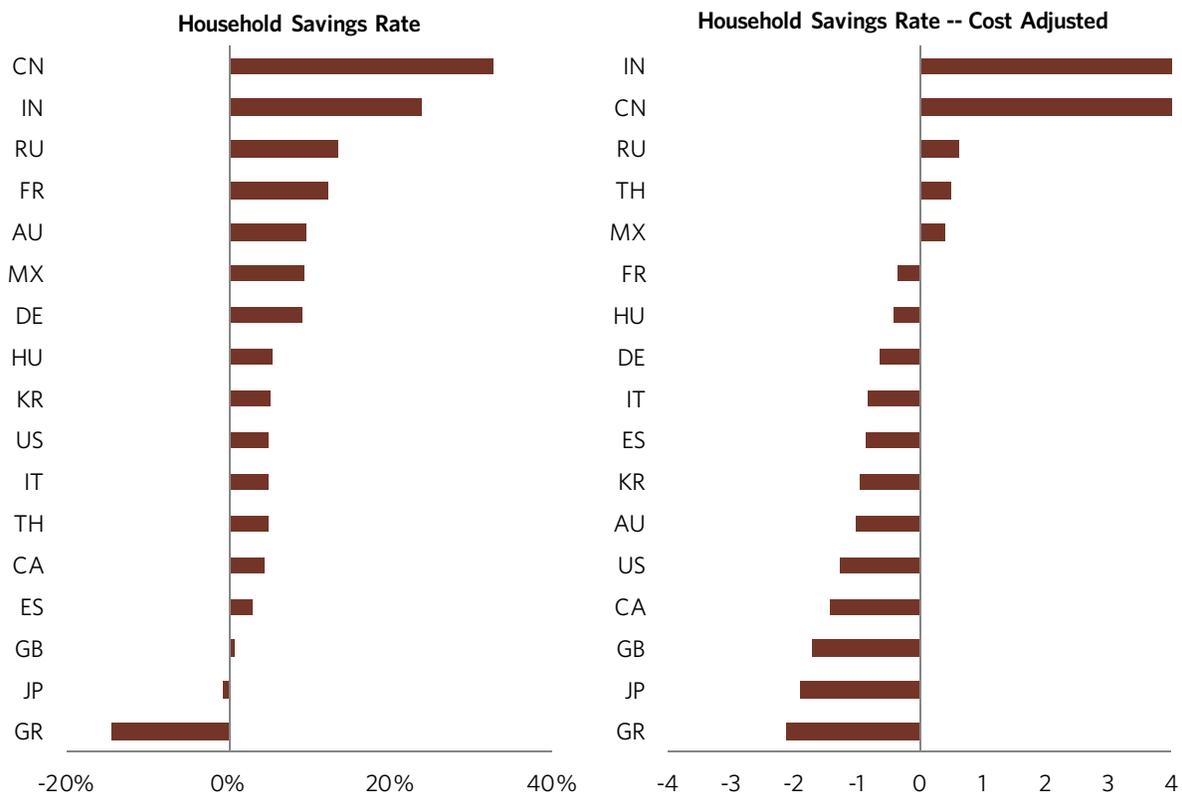


Investing Subcomponents: Household Savings Rates

Savings provide financing for investments, so measuring savings provides another perspective into the resources a country has to productively invest. When you look at a country that is saving a lot when it is still poor, that is the period that its savings typically yield the highest productivity gains, for the reasons we have explained. Patterns of savings also relate to countries moving through the process described previously—countries that are fast becoming rich tend to save a lot, and richer countries past their peak tend to draw down their savings.

We measure the propensity for households to save by looking at average household savings as a percentage of household income over the last seven years.

Once again, China and India rank at the top for household savings. Major European countries measure as having fairly high household savings rates relative to other developed countries, while household savings rates in the US are notably lower. Adjusting for cost levels again exacerbates the differences between the emerging and developed world along this dimension, with the high level of Indian and Chinese savings standing out and savings rates in the US and Japan quite low.



Culture Components

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform. While some people shy away from examining culture because it is perceived as a sensitive subject and/or that it's difficult to measure, I think those views are mistaken. I don't see any reason why we shouldn't look at culture objectively as we do any other element of an economy; also, it can be well measured. I think that it's unfortunate that this important influence on economic well-being has not been well studied.

To be clear, I don't mean to judge whether a culture is good or bad any more than I could judge whether working hard is a better way to live one's life than savoring the pleasures of life. I am, however, confident that people who prefer savoring life over working hard will work and produce differently in ways that we should understand. Similarly, it makes intuitive sense that countries that emphasize individual self-reliance and striving to achieve are more likely to succeed than countries that don't. Countries can also outperform if the people in them are more innovative in producing new products and ideas of value and more commercially minded in harvesting them. It makes fundamental sense that countries will underperform if they are corrupt, bureaucratic or if the rule of law is unsound. In this section we will look at the relationships between measures of such factors and future growth, and we will examine how different countries stack up against these measures and what that implies for their future growth rates.

Some additional observations worth noting are as follows: people in poorer countries typically appear to value achieving because they need to work hard to sustain themselves, but as countries get richer, people tend to put more emphasis on enjoying their success. On an individual level, people spend more time relaxing; nationally, you can see it in countries turning away from policies that maximize growth towards policies that try to make society more equal or protect the environment. There is a strong correlation between the quality of a system's institutions (whether the system works) and a country's level of income. Similarly, richer countries seem more innovative because they can afford to invest more in conducting research or educating researchers, and developed capital markets in rich countries make it easier to start businesses and reap the potential rewards.

Our goal with the culture indicator is to capture the essence of whether a country's culture is conducive to growth, regardless of the influence of their stage of development. So, for each dimension of our culture gauge, we take out the effect of income on that dimension (using income as a proxy for the country's development stage).

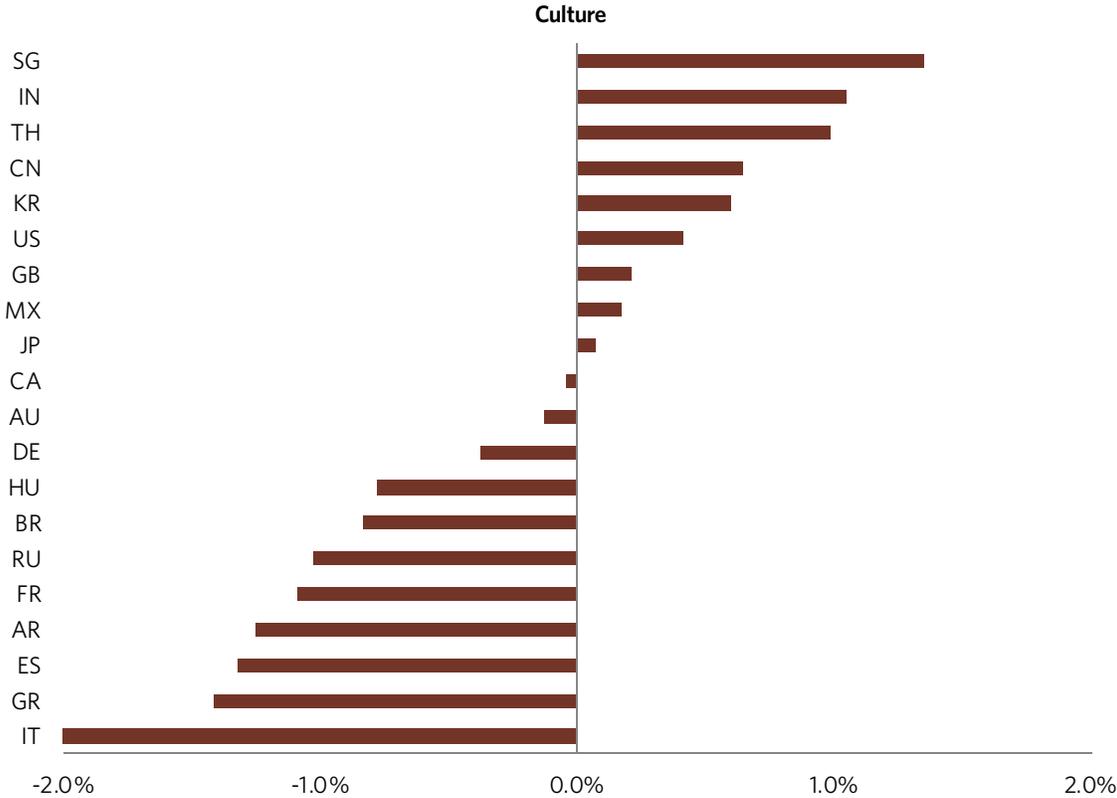
For the reasons we have described above, the culture gauge focused on the elements of culture we believe matter most for a country's future growth: 1) self-sufficiency, 2) savoring life versus achieving, 3) whether their society fosters innovation and commercialism, 4) bureaucracy, 5) corruption and 6) rule of law. For simplicity we put equal weight on each of our culture indicators, which balances measures related to the motivations of the individual and how the system operates. Because we took out the effect of income, each of the pieces is correlated to growth without being correlated at all to the income level of the country. The table below summarizes our weighting of the various gauges. Overall this gauge is about 58% correlated with future growth.

Culture/Values	Correlation to Growth	Contribution to Estimate
Aggregate	58%	20%
Self-Sufficiency Excluding Income Effect (3 pieces, 9 sub-pieces)	42%	3.3%
Savoring Life vs. Achieving Ex. Inc. (2 pieces, 8 sub-pieces)	40%	3.3%
Innovation & Commercialism Ex. Inc. (2 pieces, 10 sub-pieces)	49%	3.3%
Bureaucracy Ex. Inc. (3 pieces)	32%	3.3%
Corruption Ex. Inc. (4 pieces)	58%	3.3%
Rule of Law Ex. Inc. (4 pieces)	57%	3.3%

Again, the way we think about culture is that a country's competitiveness and productivity is mainly a function of its value proposition, but culture can be a drag or additional boost. So we use our gauge of culture to adjust our measure of a country's productivity by shifting it up or down based on whether the country's culture is likely to be a pressure for the country to perform above or below its potential (we call it a "bump" for lack of a better term).

Below we look at our culture indicator's current readings before diving into its individual pieces and describing in more depth our logic behind them.

Culture shifts our predictions for future growth some. Based on this gauge, culture is the strongest support to growth in Asia, particularly in Singapore, India, Thailand, Korea, and China. Singapore’s culture is strong across all four of our measures. In contrast, China’s institutions aren’t nearly as effective (due to bureaucracy and corruption), but China’s culture shows an extremely strong work ethic, desire to achieve and self-sufficiency. For Korea, its orientation toward innovation and work ethic offset relatively weak institutions. The US stands just behind Korea with a highly innovative spirit and achievement orientation, but with a system that prioritizes redistribution over maximizing growth. Culture is a more moderate support in Japan, more neutral in the rest of the English-speaking developed world and Germany, and a drag in Latin America and most European countries, especially the periphery. In Europe’s periphery, corruption, a focus on savoring life, relatively low self-sufficiency, and stagnant commercial and scientific environments appear to be a material drag on growth. Russia and Argentina, two of the countries where our measures of what you pay versus what you get are attractive, also score near the bottom of the list because of corruption in Russia, and low self-sufficiency and a high value on savoring life relative to achieving in Argentina.⁷



⁷ Again, what we are showing is the adjustment (or “bump”) to the productivity estimate we make based on a country’s culture (e.g., based on our assessment of what you pay for what you get for Singapore’s labor, we would project growth in income per worker of about 2.3%, but we add another 1.3% based on our assessment that Singapore’s culture is very supportive to growth).

Self-Sufficiency

It is both logical and consistent with the evidence to believe that self-sufficiency (i.e., the need and the ability to independently support oneself) is an important ingredient for individuals and societies to be successful. It is not controversial to say that people spend the money that they earn differently than the money that others give them—i.e., that the connection between earning and spending is a healthy one. If people have to earn money to spend it, they have to be more productive. Over the long run, living standards rise as a function of increases in productivity. So, it is not a big leap to presume that countries with greater amounts of self-sufficiency do better than those with less. Since self-sufficiency creates capability and independence in addition to fostering increased production, it also produces self-esteem. For these reasons, it is logical to conclude that self-reliance is rewarding, both economically and psychologically. The evidence clearly shows this to be true.

Below, we show how self-sufficiency varies by country and how it has been correlated with subsequent economic growth. You will see that there are significant differences in self-sufficiency levels between countries and that these differences occur for different reasons. For example, in some cases they are chosen (e.g., the amounts of transfer payments developed economies have are largely chosen) while in other cases they are not (e.g., high self-sufficiency in the poorest societies is primarily the result of necessity rather than choice). Nonetheless, the evidence is clear. Societies in which individuals are more responsible for themselves grow more than those in which they are less responsible for themselves.

To measure self-sufficiency, we weigh 50% how hard a society works and 50% the system of supports and protections, which is a function of the magnitude of government supports and how rigid labor markets are (e.g., how easy it is to hire and fire). While no one of these perfectly measures self-sufficiency, together they paint a picture that is highly indicative. Once we used the process below to construct a score, we took out the role income plays in encouraging self-sufficiency and used the resulting measure in our culture indicator. Overall our indicator of self-sufficiency is about 42% correlated to growth once you strip out the effect income has on self-sufficiency. Prior to excluding the income effect, our indicator of self-sufficiency was about 50% correlated to future growth.

Self-Sufficiency	Correlation to Growth	Contribution to Estimate
Aggregate Ex. Income Effect	42%	100%
Aggregate	50%	--
Hard Working	49%	50%
Average Hours Worked	53%	25%
Labor Force Participation	32%	8.3%
Effective Retirement Age (% of Life Expectancy)	20%	8.3%
Actual Vacation + Holidays Per Year	48%	8.3%
Government Support	44%	25%
Transfer Payments to HH, % PGDP	62%	12.5%
Gov Outlays as % of PGDP	46%	12.5%
Rigidity of Labor Market	13%	25%
Unionization as % of Workforce	8%	8.3%
Ease of Hiring/Firing	21%	8.3%
Minimum Wage as % of Average Income	-23%	8.3%

Note: the correlation of transfers to future growth is for a shorter time period and smaller sample set, and will have some bias because of countries with lower growth having higher transfers.

The charts below convey those countries that are most self-sufficient today. As shown, India and Singapore are measured as most self-sufficient, followed by other Asian countries and Mexico. The US is towards the middle, and European countries are the least self-sufficient. The chart below shows these ratings. Look at it to see if you are surprised and note those surprises so that you can see what they are attributable to when we show you the composition of our barometer. For example, you might find it notable that “communist” China has greater self-sufficiency than the capitalist US. This is the case in both outright terms and once you adjust for income.

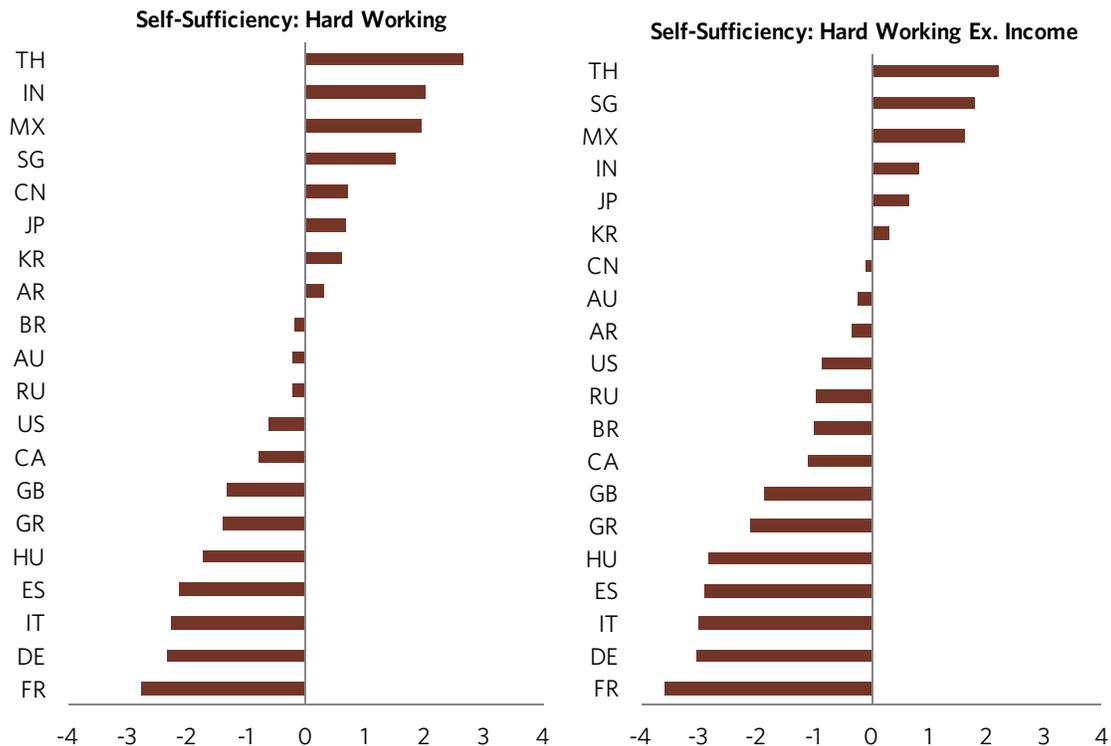


Self-Sufficiency Subcomponent: Hard Working

Societies that are self-sufficient have a high percentage of their population working hard each day to be self-reliant. People who work hard both produce more in the near-term and generally find ways to improve faster through time than those that care more for leisure. They also tend to exhibit a drive to earn what they consume, which is an essential quality of being self-reliant and generally successful in a market-based system.

While we think average hours worked accomplished our basic goal within productivity of getting a gauge of how hard people worked, here we wanted to capture a little more richness about the work ethic of each country, so we also looked at measures like the typical retirement age, how many vacation days people in each country typically take and male labor force participation on its own. Again, regrettably we must look at our hours worked and labor force measures for just men because different social norms across countries around women in the workforce distort the numbers. Since we expect richer countries to take more leisure than poorer ones, this is one of the measures we expect to have a fairly strong relationship with a country's income level.

When we scan across countries, we see emerging countries at the top of the list, including India and Mexico. Overall, emerging Asia comes through as working the hardest, followed by Latin America. Among rich countries, Singapore and then Japan have the hardest workers. The US is fairly hard-working among developed countries, whereas workers in Europe appear to opt for leisure more than anyone else based on these measures. Once we take into account the tendency for wealthier countries to take more leisure time, Japan really stands out as exceptionally hard-working (as do Korea and Singapore). Argentina and Brazil move down a bit. Still, the relative ordering of most countries is fairly stable since the differences in how hard each country works are fairly extreme. Any way you cut it, Mexico and India remain among the hardest-working countries and workers in Europe some of the most leisure-taking.

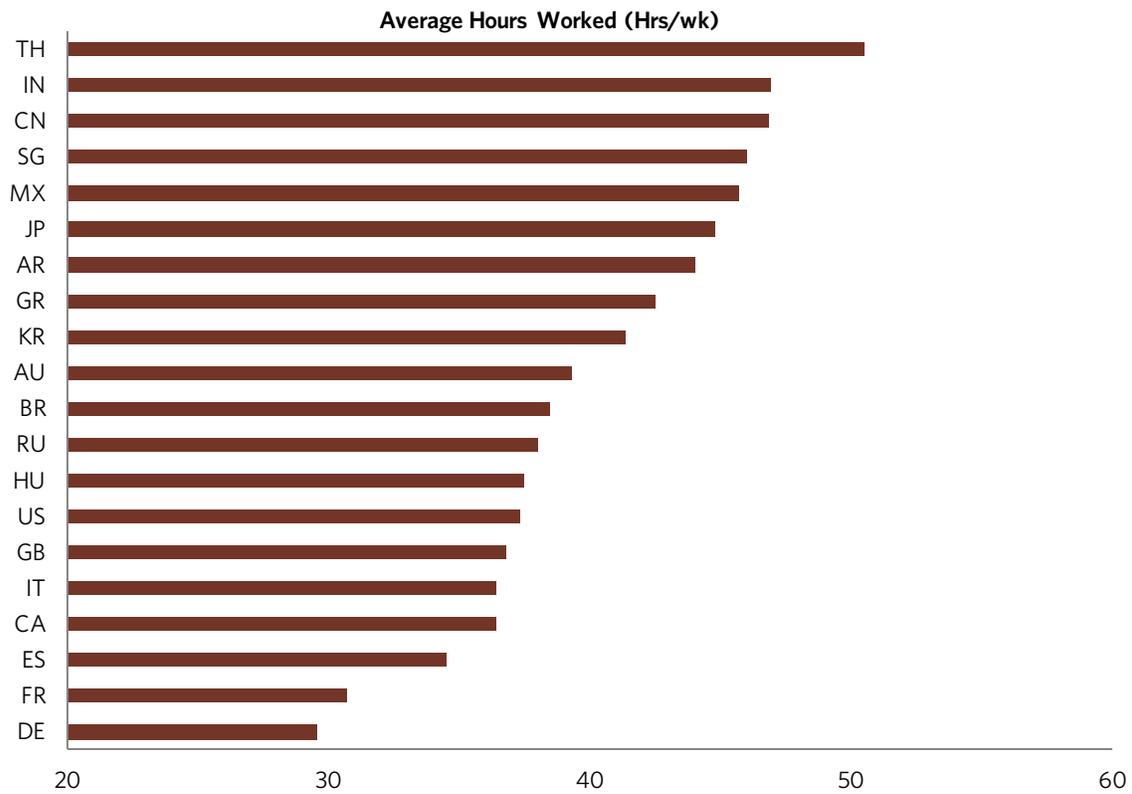


Below we show the individual pieces of our hard working gauge.

Hard Working Measures																				
Country	TH	IN	MX	SG	CN	JP	KR	AR	BR	AU	RU	US	CA	GB	GR	HU	ES	IT	DE	FR
Avg. Actual Hours Worked (Hrs/wk)	40	37	35	35	35	31	29	29	28	27	25	24	24	23	25	21	20	20	18	17
Male Reported Avg. Hours Worked (ex Vacation)	51	47	46	46	47	45	41	44	38	39	38	37	36	37	43	37	34	36	30	31
Labor Force Participation (% Working Age Population)	81%	81%	80%	78%	78%	70%	72%	75%	81%	72%	71%	70%	71%	69%	63%	60%	67%	59%	66%	62%
Effective Retirement Age (% of Life Expectancy)	--	92%	98%	--	72%	88%	94%	91%	78%	82%	93%	87%	81%	82%	80%	87%	79%	79%	81%	77%
Actual Vacation+Holidays Per Year (Weeks)	---	2.3	1.9	2.0	2.6	1.0	1.6	---	4.3	2.3	3.8	3.3	3.6	6.5	5.9	5.5	6.8	5.9	7.0	7.0

Self-Sufficiency Subcomponent: Hard Working - Average Hours Worked

Hard work is a sign that someone is driven to be self-reliant, that he or she has grit. This determination is essential to having a society where self-sufficiency is promoted and rewarded. A simple way to see it is just by looking at how many hours those who have a job put in. This gives us a sense of how hard-working the employed members of a society are (and, more loosely, the society in aggregate). Below we zoom in on the simple measure: the average work week (we triangulate our picture with a broader set of measures next). On this measure we see emerging countries at the top of the list, including Thailand, India, and China. Overall, emerging Asia comes through as working the hardest, followed by Latin America. Among rich countries, Singapore and then Japan have the hardest workers. The US is fairly hard-working among developed countries, whereas workers in Europe appear to opt for leisure more than anyone else based on these measures.

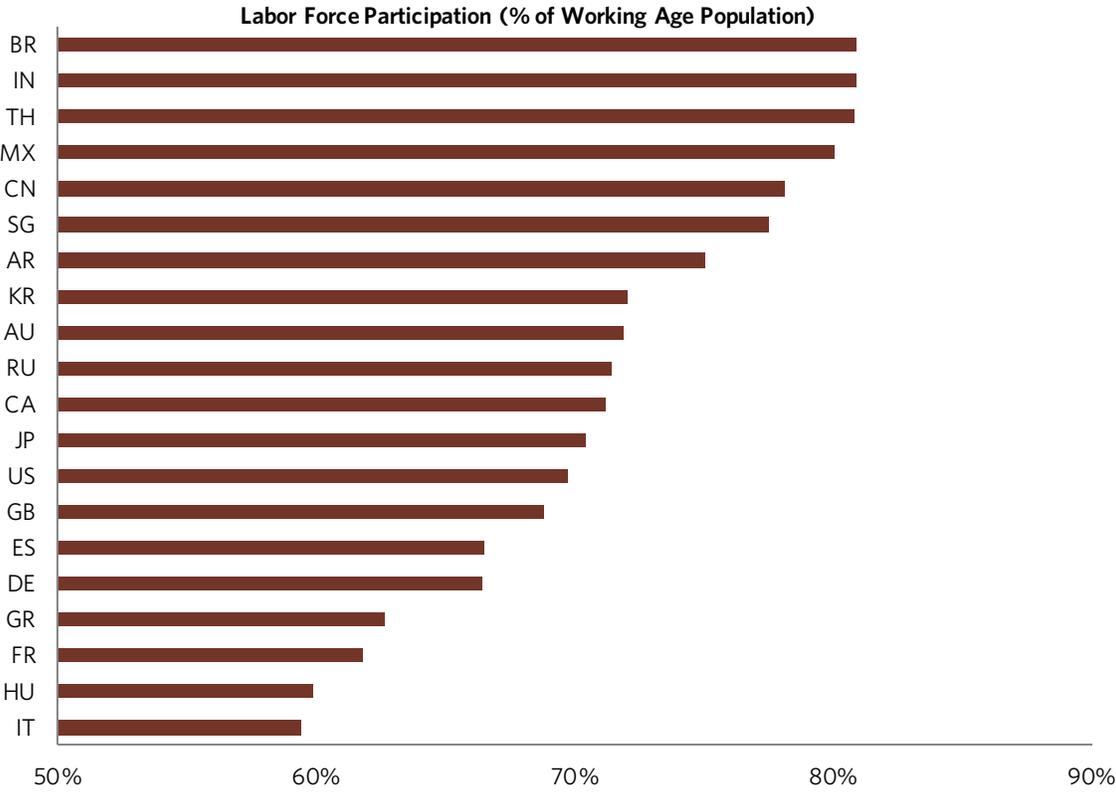


Avg. Hours Worked

Country	TH	CN	SG	MX	IN	AR	JP	BR	KR	CA	GB	AU	US	RU	GR	DE	ES	IT	HU	FR
Avg. Actual Hours Worked per Working Aged Male	40	35	35	35	37	29	31	28	29	24	23	27	24	25	25	18	20	20	21	17
Male Reported Avg. Hours Worked (ex Vacation)	51	47	46	46	47	44	45	38	41	36	37	39	37	38	43	30	34	36	37	31
Male Labor Force Participation	81%	78%	78%	80%	81%	75%	70%	81%	72%	71%	69%	72%	70%	71%	63%	66%	67%	59%	60%	62%
Unemployment Rate (10yr Avg.)	1%	4%	2%	4%	4%	9%	4%	8%	3%	7%	7%	5%	7%	7%	10%	9%	16%	8%	9%	9%

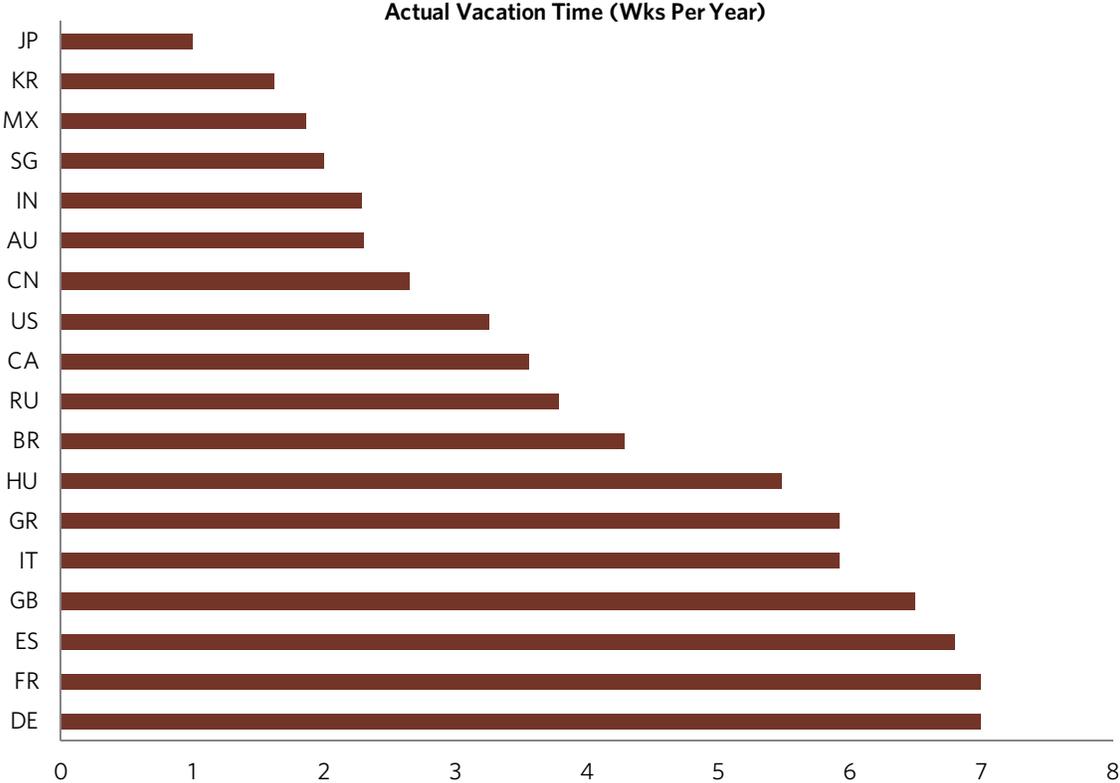
Self-Sufficiency Subcomponent: Hard Working - Labor Force Participation

Remember what we are trying to get at with this concept is the work ethic of a society, not just how much it is actually working. Labor force participation is one indication (albeit crude) of how much a society wants to work. It gives you a rough sense of what proportion of the society is actively looking for a job (though it may miss some who have the drive but are in the informal economy). Because of cultural differences across countries and data limitations, here again we are unfortunately limited to looking at male labor force participation. By and large the emerging world has much higher male labor force participation rates than the developed world, though there are exceptions. Brazil, India, Thailand, Mexico and China have some of the highest rates (all around 80%). There is still a high participation of men in the workforce in Singapore (above 75%), despite its wealth. Japan has a high male labor force participation rate among developed countries (above 70%, though its female participation is low compared to other developed countries). This measure is a bit lower in the US and UK. Labor force participation is lowest among men in Western Europe, particularly Italy, France and Greece (60% to 65%), though Germany and Spain are not far behind, along with parts of Eastern Europe, especially Hungary.



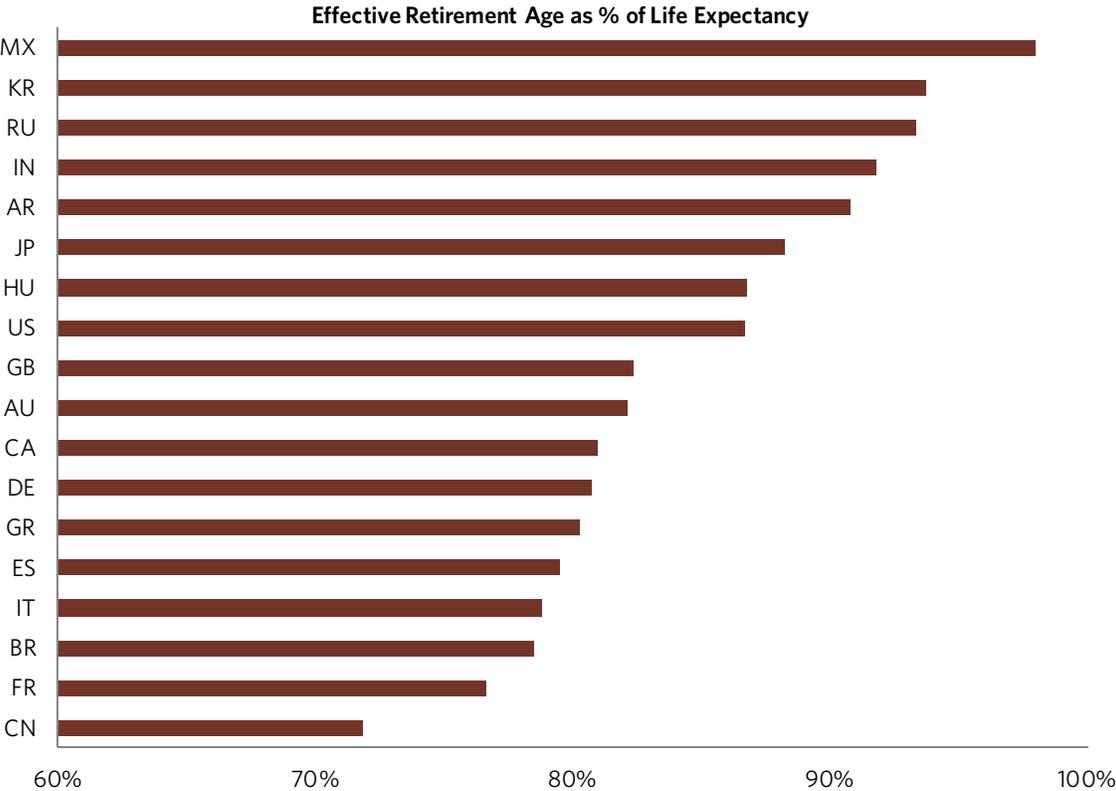
Self-Sufficiency Subcomponent: Hard Working - Actual Vacation Time

How much vacation a society takes each year is just another intuitive measure of how much it values leisure versus hard work and its rewards. When we look at this measure, the picture isn't all that different from what we have seen so far. Japanese workers appear to take very few vacations (about one week per year on average), consistent with a strong work ethic reflected in our other measures. India and China are toward the top of the list, with the average vacation time around two weeks per year. The norm in the US is about three-and-a-half weeks. German, French and Spanish workers appear to take the most vacation, with Italian and Greek workers not far behind. On average, Europeans take six to seven weeks of vacation per year.



Self-Sufficiency Subcomponent: Hard Working - Retirement Age as Percentage of Life Expectancy

One dimension of how hard you work is how many days you put in each year, but another is how long you work over the course of your lifetime. To capture this we want to look at when people tend to retire in a society relative to their life span. We measured this by looking at the effective retirement age as a percentage of life expectancy. Interestingly, this picture shows some notable differences from the earlier patterns we saw and appears less related to a country's income (a simple measure of its stage of economic development). While the countries at the top are mostly emerging, Japan and the US are ahead of many low-income countries. Japanese and US workers appear to work to 85% or more of their life expectancy before retiring. On the other hand, workers in China retire much earlier, working closer to 70% of their life expectancy before retirement. Consistent with other measures, Europeans fall in the bottom half of this measure.

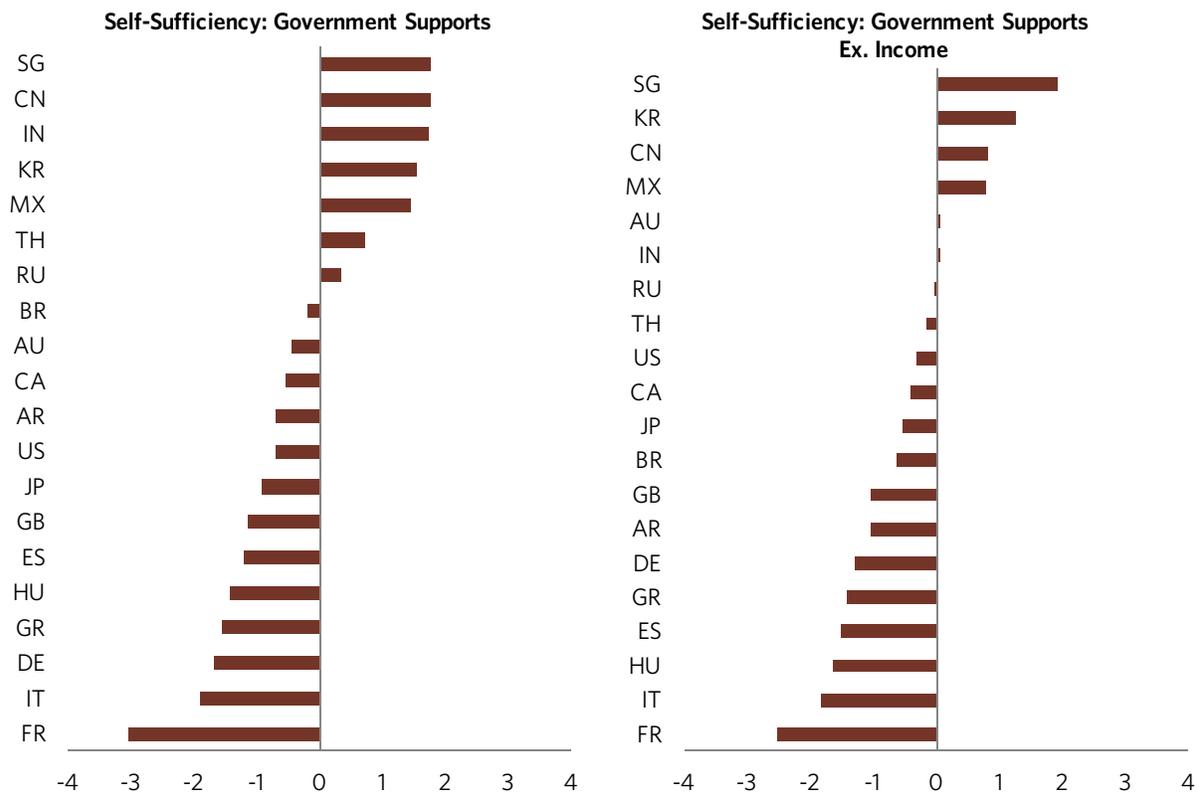


Self-Sufficiency Subcomponent: Government Supports

A country's government policy both tells you something about what it values, and also shapes the incentives and motivations of its citizens. In general, societies that value self-reliance highly will provide less public support. And large government supports, directly through transfers that redistribute incomes or indirectly through services, are the primary means of enabling individuals to consume more than they earn. These supports risk undermining self-reliance, which is such a fundamental value in a market-based system (i.e., the drive to earn your keep). To be clear, we aren't arguing for or against such payments; we are just measuring self-sufficiency and, since this is one of the biggest influences on it, it is a significant part of our gauge. For these reasons, we would expect countries that have fewer transfers, smaller welfare systems and more limited social services to grow faster than those that place a higher priority on redistribution and government safety nets.

We measure the degree of government supports in a society in a few ways, looking at the magnitude of its outlays (which often include indirect transfers in the way of services, for example) and the magnitude of its direct transfers to households. As countries develop and get richer, they tend to weigh considerations like redistribution more heavily, so this is another measure where we expect and find a fairly strong relationship between the country's income and its level of government supports, which we control for to account for the stage of development the country is in and get a sense of the underlying ethic.

In our current rankings, emerging Asia holds the top four spots, with European countries ranking as the least self-sufficient along this measure. Once you exclude the effect of income, this pattern basically holds, though the developed English-speaking world moves up some, particularly Singapore, whose limited amount of government supports is unusual given the wealth of the country. Italy and France end up looking particularly bad on this measure.

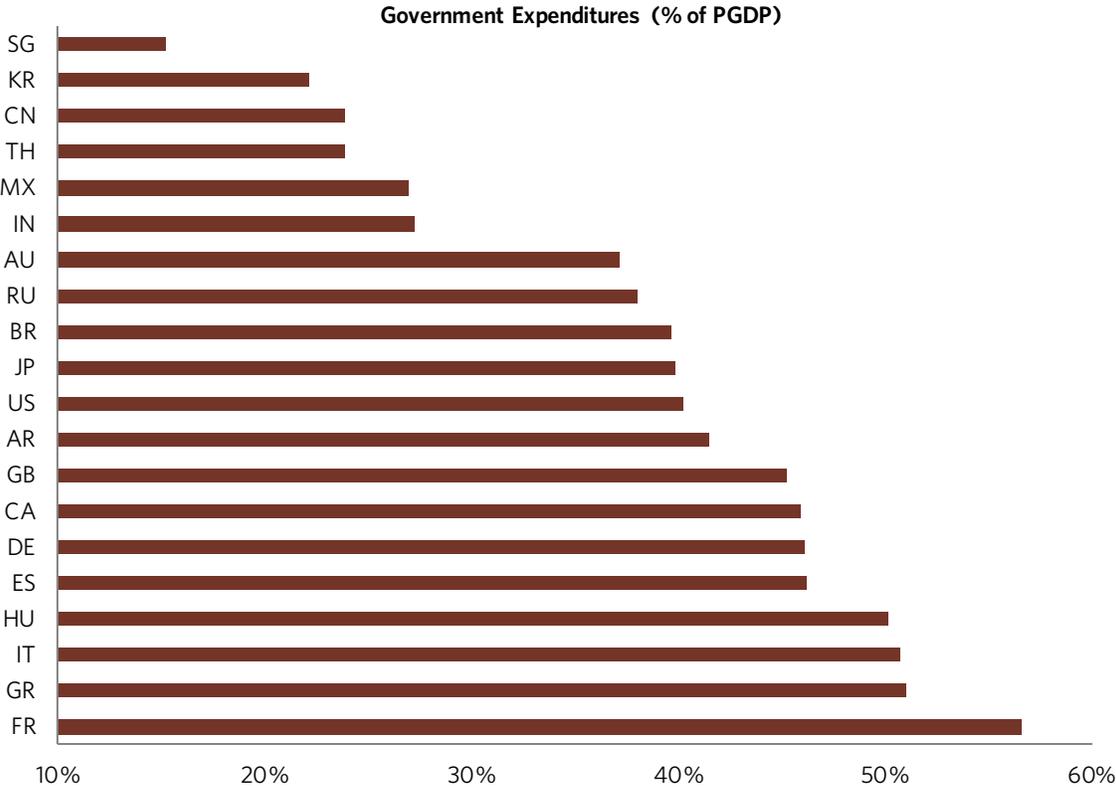


In the table below, we show how each country ranks along the sub-pieces of our government supports measure.

Government Support Measures																				
Country	SG	CN	IN	KR	MX	TH	RU	BR	AU	CA	AR	US	JP	GB	ES	HU	GR	DE	IT	FR
Transfer Payments to HH, % PGDP	---	6%	5%	9%	7%	---	12%	16%	20%	18%	---	20%	22%	24%	27%	22%	22%	26%	28%	33%
Gov Outlays, % PGDP	15%	24%	27%	22%	27%	24%	38%	40%	37%	46%	41%	40%	40%	45%	46%	50%	51%	46%	51%	57%

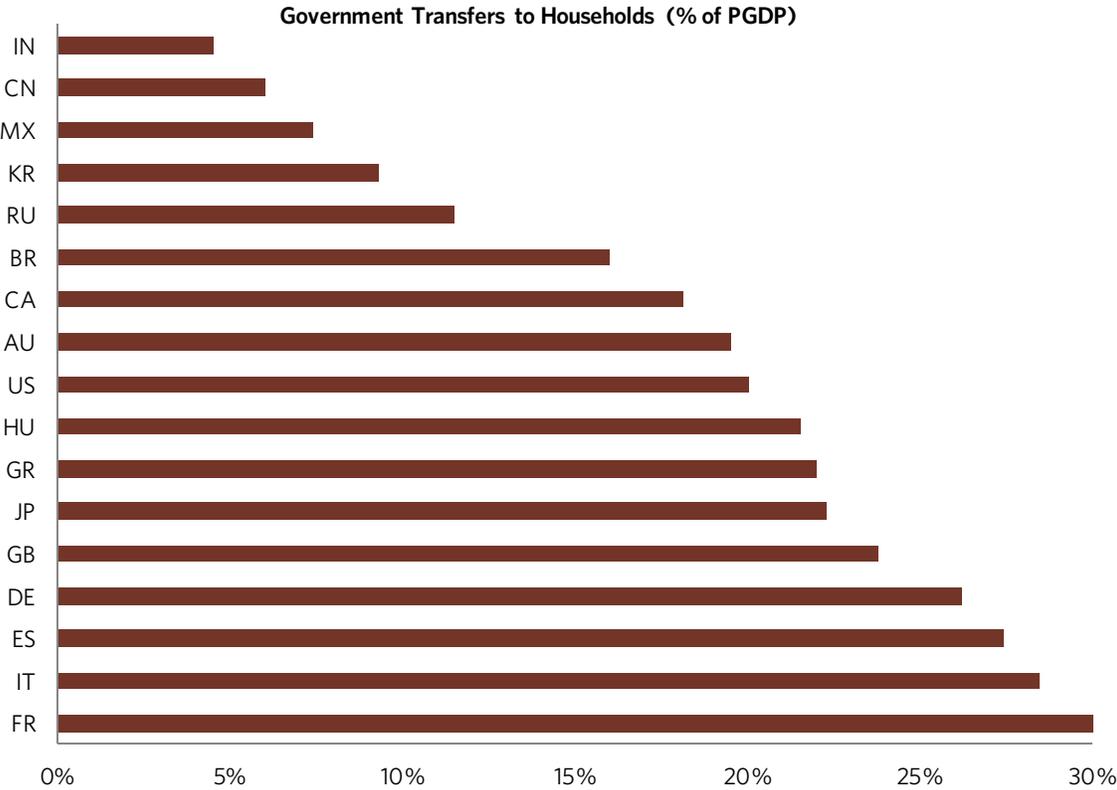
Self-Sufficiency Subcomponent: Government Supports - Government Expenditures

Government outlays are a broad indication of the support a government provides to those in society. While not direct (as, say, pure household income transfers), many of these outlays are redistributive, providing, for example, higher-value services than what a number of recipients contributed in the form of taxes. These measures can both reflect societal attitudes around self-reliance and impact these values. On this measure, we see that many of the emerging Asian countries have very small governments relative to the size of their economies. Singapore's government spends a bit over 15% of GDP, and China's government doesn't spend that much more, about 20%. India is a bit lower down but still in the top quartile, with government spending around 25% of GDP. There is some variation among Latin American countries, with Mexico's government outlays at less than 25% of GDP, and Argentina's and Brazil's governments closer to 35%-40%, around the middle of the pack. Japan and the US are also in the middle. France and Italy are on the other end of the spectrum. Their governments spend between 50% and 55% of GDP.



Self-Sufficiency Subcomponent: Government Supports - Transfers to Households

Household transfers are a direct subsidy and have an especially high risk of undermining self-reliance. The policy highlights the tradeoff of enforcing a market-based system to maximize growth versus risking slower growth to achieve a different goal, like ensuring a social safety net for ethical reasons or for social stability. On this measure, we see that India's and China's governments are the least redistributive, by our measures. In both countries transfers to households are around 5% of GDP. Transfers in the US and Japan are about four times larger, around 20% of GDP, but still much lower relative to the rest of the developed world. In Western Europe, transfers range from a bit under 25% to nearly 30% in France.

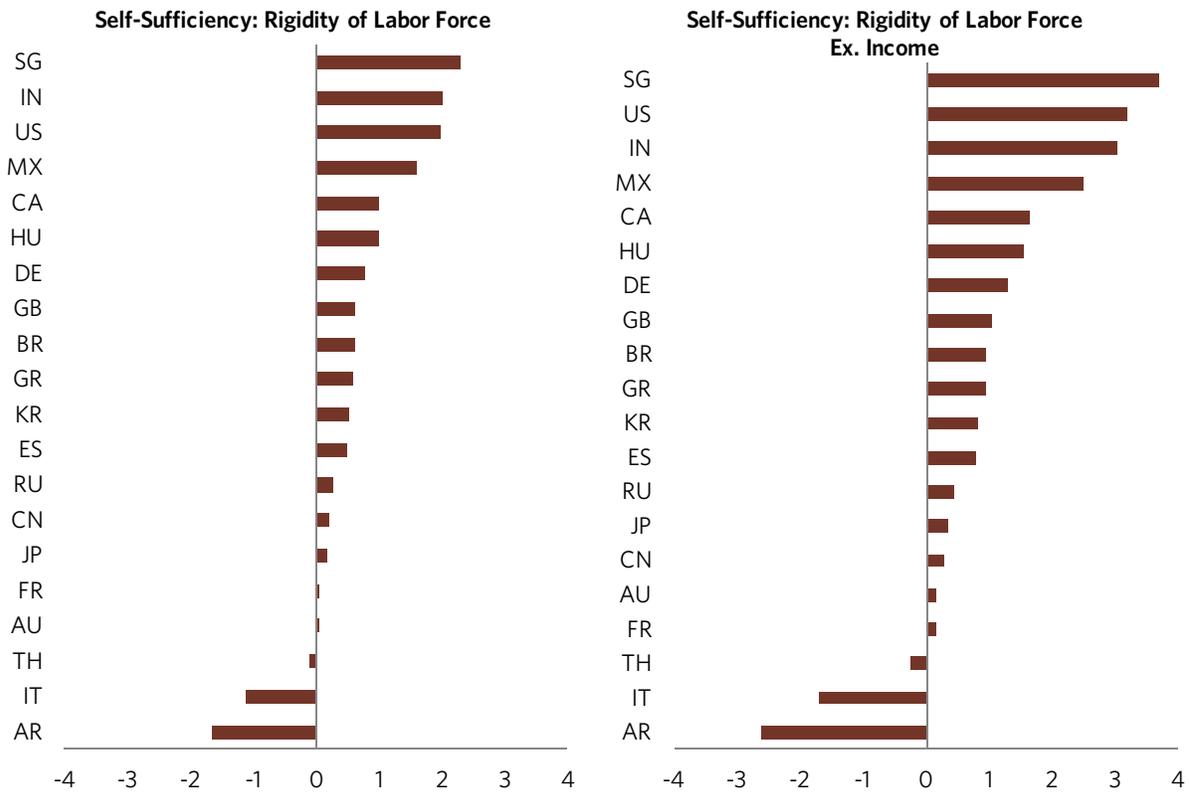


Self-Sufficiency Subcomponent: Labor Market Rigidity

Support from the state to an individual can happen through either direct transfer payments and the provision of government services (as we examined above), or by regulating companies to provide workers with supports, e.g., enforcing a minimum wage or making it difficult to fire individuals. Unions can also work to protect certain workers. To the extent that these structural labor market supports limit companies from engaging with employees in a free manner (making hiring and firing decisions), it limits the need for individual self-reliance. And this approach limits the dynamism of corporations and individuals to respond to conditions—which over time should make countries with high rates of labor market rigidity grow more slowly.

We measure labor market rigidity by looking at unionization rates across countries, minimum wages, and limits to hiring and firing at will in a given economy. Unlike hard work or government supports, these measures tend to be fairly unrelated to a country's wealth and stage of development (which we proxy with income levels).

On our aggregate measure of labor force rigidity, Singapore, India and the US rank as having the least rigid labor forces, followed by Mexico. Argentina and Italy score especially poorly along this measure. Within the developed world, Japan and peripheral Europe appear to have some of the more rigid labor markets. It's also interesting to note that China appears to have a fairly rigid labor market, which is generally the exception (most other measures indicate that China has a high degree of self-sufficiency). Since labor force rigidity isn't particularly related to a county's stage of development, excluding income's effect has little impact on the rankings.

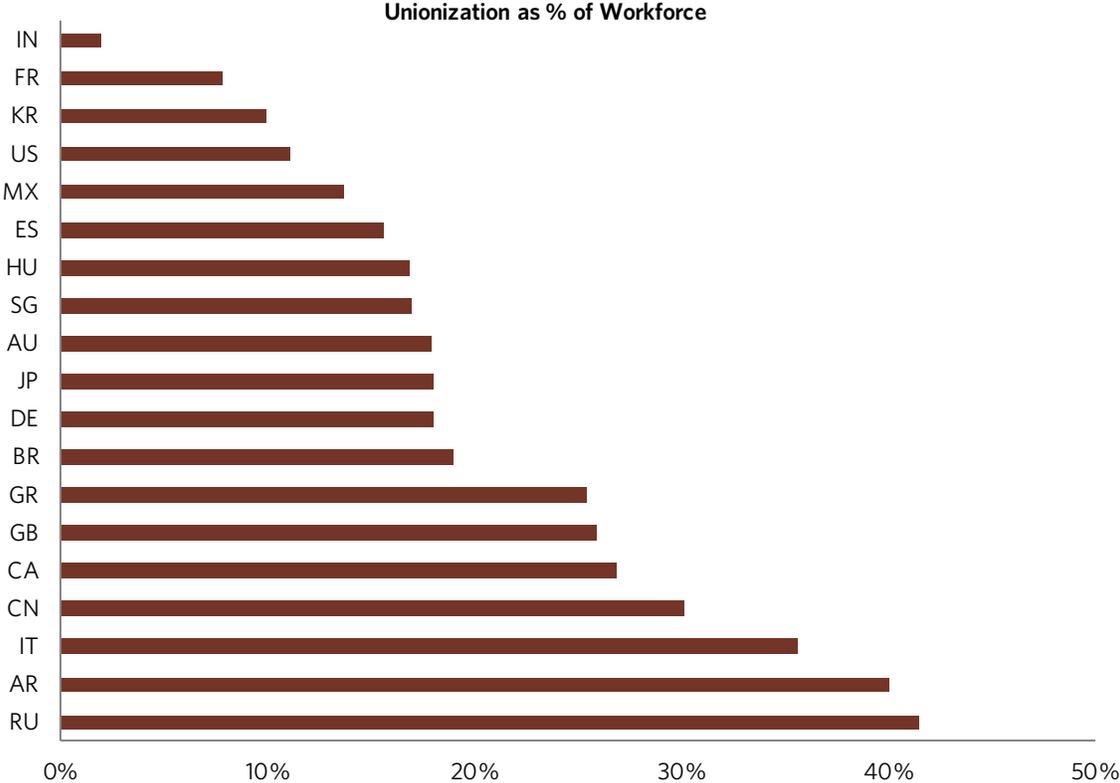


Below we show the values for each country for the three sub-pieces of labor market rigidity.

Rigidity of Labor Market Measures																				
Country	SG	IN	US	MX	CA	HU	DE	GB	BR	GR	KR	ES	RU	CN	JP	FR	AU	TH	IT	AR
Unionization as % of Workforce	17%	2%	11%	14%	27%	17%	18%	26%	19%	25%	10%	16%	41%	30%	18%	8%	18%	---	36%	40%
Ease of Hiring/Firing (Z)	3.3	0.9	2.2	-0.4	1.8	0.9	-0.5	1.5	-0.6	-0.1	-0.2	-0.6	0.5	1.3	-1.1	-1.7	-1.1	1.2	-1.6	-1.4
Minimum Wage as % of Average Income	---	15%	19%	8%	27%	27%	20%	32%	23%	23%	33%	28%	24%	37%	29%	33%	31%	41%	41%	51%

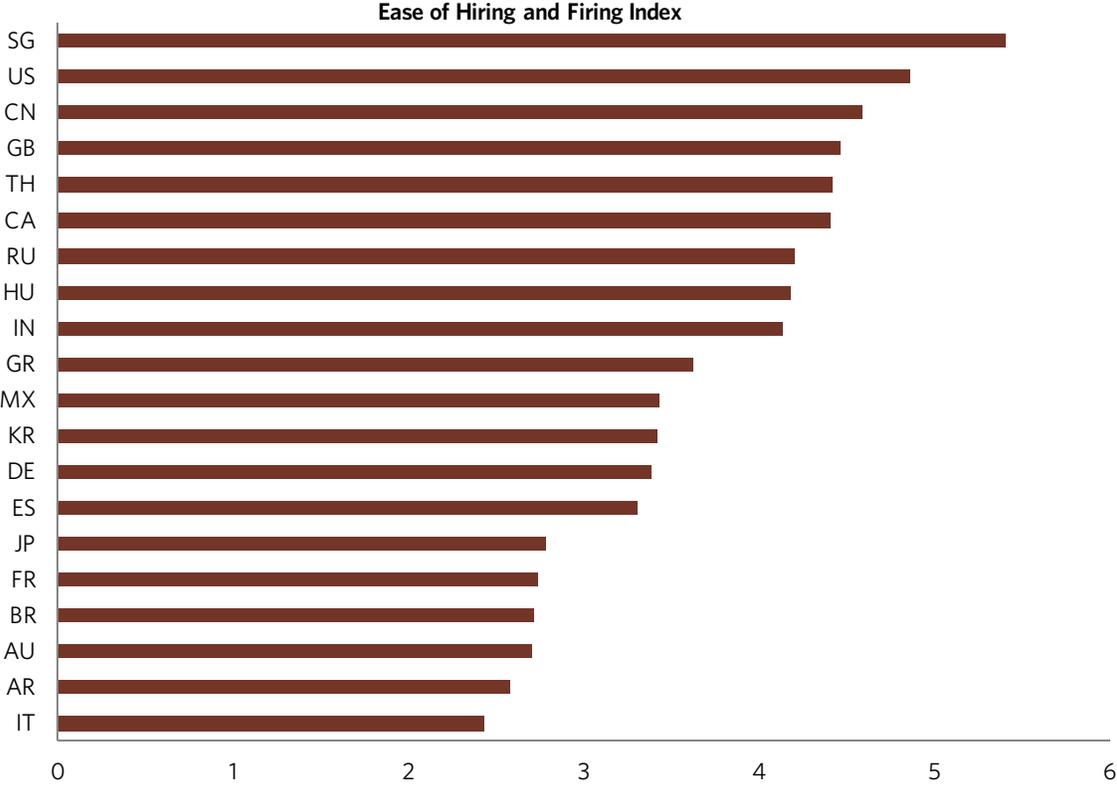
Self-Sufficiency Subcomponent: Labor Market Rigidity - Unionization

While unions can help give workers a voice in negotiations with their employers, they also work to protect members from the pressures of others in the workforce and restrict overall labor force participation—all of which undermines self-reliance. As with other measures of labor market rigidity, unionization rates have little relationship with the income of a country. The measure shows different choices within countries of similar income. Unionization rates are low in the US and Mexico (close to 15% and below), though it's worth noting that our measures don't account for the strength of unions (which we understand to be strong in France, for example). Unionization rates are very high in Italy, Russia and Argentina (35% and higher). This is one of the few measures on which China ranks lower, with a unionization rate near 30%.



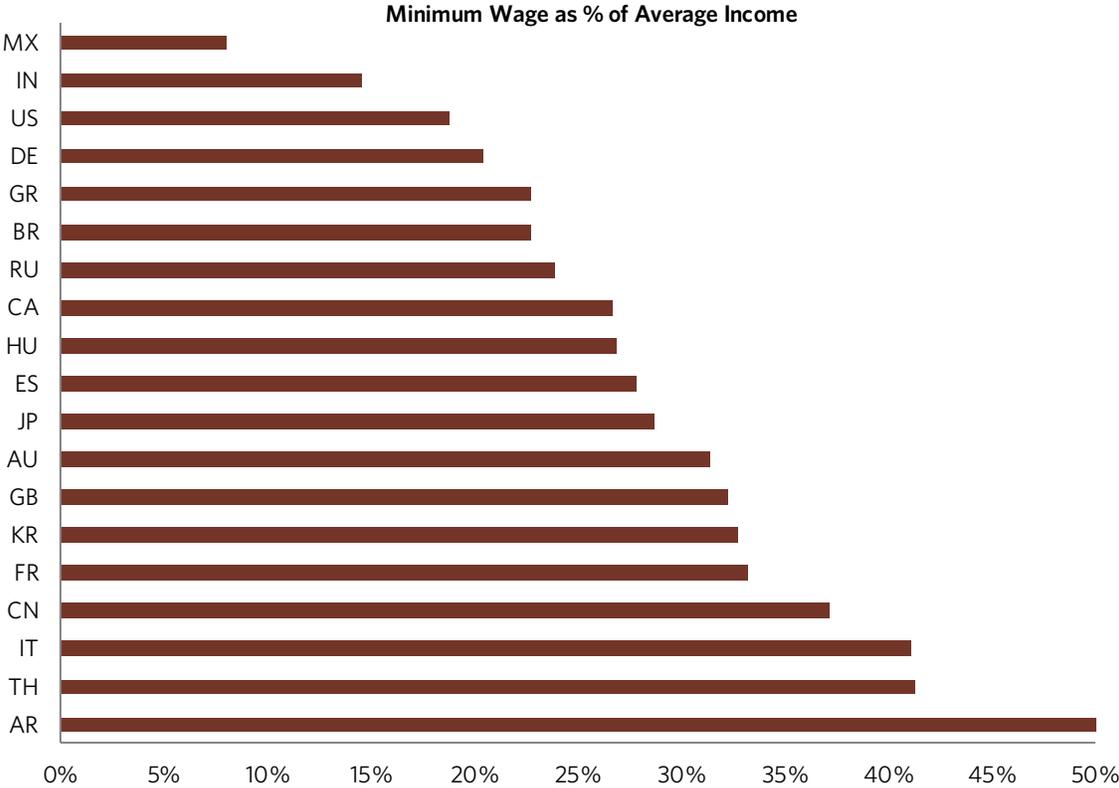
Self-Sufficiency Subcomponent: Labor Market Rigidity – Ease of Hiring and Firing

Government protections that make it harder to hire or fire someone both increase the rigidity in the labor market and reduce the self-sufficiency of its workers. Looking at ease of hiring/firing, the US and Singapore rate as some of the most self-sufficient developed countries, and among the most self-sufficient of any country on this measure. China is not far behind, still in the top quartile. Protections against firing appear to be high in Europe, though Spain has made great strides in improving labor market flexibility through reforms over the last couple years. Protections against firing also appear high in Latin America—Argentina, Brazil and Mexico are all in the lower half.



Self-Sufficiency Subcomponent: Labor Market Rigidity - Minimum Wage as Percentage of Average Income

The minimum wage of a country is another indication of its labor market rigidity and emphasis on supports versus market-based incentives and self-reliance. As with unionization rates, we again see quite a bit of difference across countries even within the same income group. Mexico tops the list, with the US and Germany not far behind. On the other end we see both developed countries, like Italy, and lower-income ones, like China and Argentina, that have much higher minimum wages as a percentage of incomes.



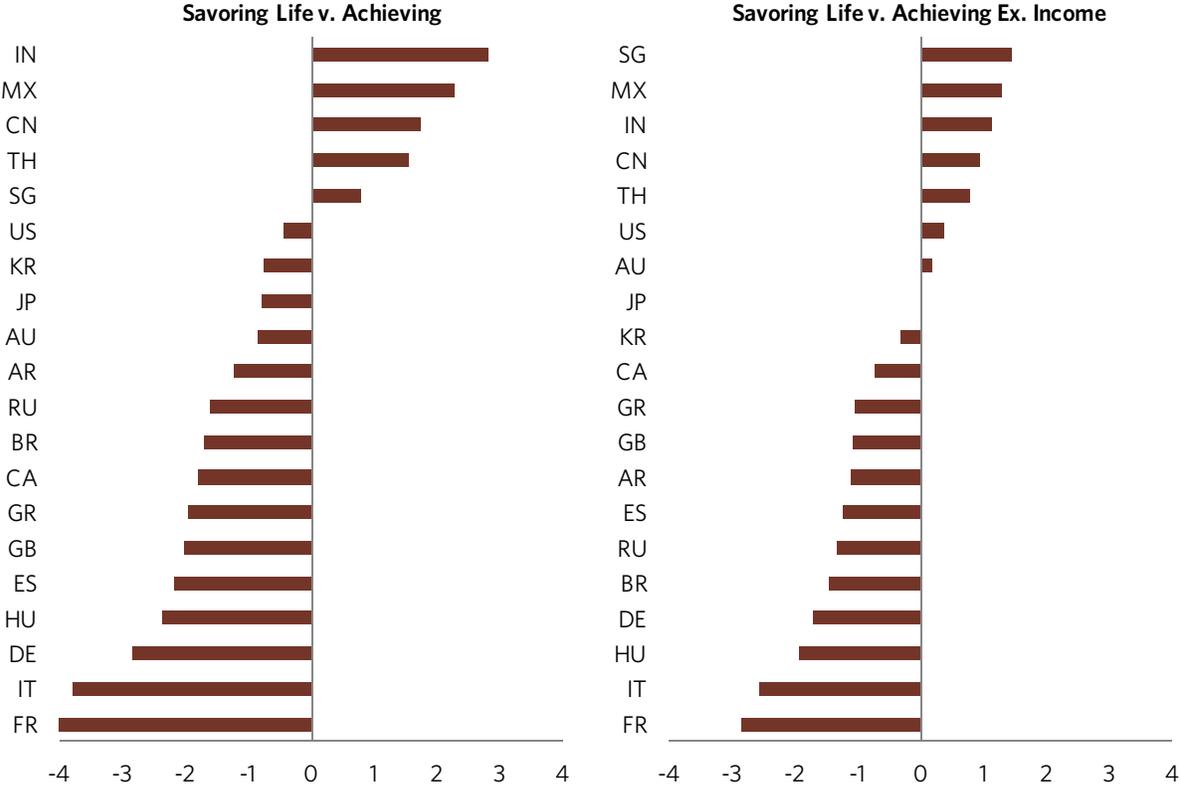
Savoring Life Versus Achieving

It makes intuitive sense to us that those who value achievement over savoring the fruits of life will be more successful in finding ways to work harder and smarter to become more prosperous. Of course achievement means different things to different people. When I talk about a society that values achievement I imagine one where its people prioritize professional success, creating thriving businesses and building economic security versus other goals like protecting the environment or enjoying leisure. What's more, these societies tend to be ones where there is a faith that competition is fair and hard work will be rewarded (otherwise it's less likely for the people to be motivated).

To calculate our "savoring life versus achieving" gauge we put 50% weight on the measures of whether the culture values working hard and 50% on the values expressed in an international values survey. For the first component (the evidence we see of work ethic in things like hours worked or vacation days), we draw on the broad measure of working hard that we discussed as part of self-sufficiency. For the latter component, the expressed values of society, survey data is difficult to compare across countries, so we triangulated with several different questions that were consistent with our goal of capturing the desire of people to savor what they have or focus on achieving more. For example, we used answers to questions like, "what should the first priority be for the future of the country," or "economic growth is more important than the environment," to get at how people value further success or economic growth in relation to other values (like the environment, people having more say in their communities, etc.). We also look at questions about whether having a good time is important relative to accomplishing and whether the respondent thinks it's important to be successful, which are somewhat more direct. Lastly, questions like "competition is harmful" help us get a sense of people's attitudes toward the type of environment that encourages people to push to achieve. These were combined into our overall indicator of the relative preference for savoring life versus achieving in a way that is indicated by the weights shown below. As with self-sufficiency, there is a natural tendency for people in less developed countries to value becoming more prosperous through hard work and achievement, compared to developed countries which are more inclined towards leisure. Once we take into account the level of a country's income, our indicator of savoring life versus achieving is about 40% correlated to growth.

Savoring Life vs. Achieving	Correlation to Growth	Weight
Aggregate Ex. Income Effect	40%	100%
Aggregate Observed Outcomes	60%	---
Observed Outcomes	49%	50%
Hard Working	49%	50%
Expressed Values	59%	50%
Priority for future of country: economic growth v. having more say, defense, or making cities and countryside more beautiful	58%	7.1%
Hard work leads to success	26%	7.1%
Competition is harmful	23%	7.1%
It is important to this person to have a good time	25%	7.1%
It is important to this person to be very successful	42%	7.1%
Important Child Qualities: Feeling of Responsibility	42%	7.1%
Economic growth is more important than the environment	8%	7.1%

When we look at the picture of which countries prioritize achievement over savoring, we see the familiar countries at the top and bottom—East Asia and the European periphery, respectively. India and Mexico score as being most focused on achieving. The most achievement-oriented countries in the developed world are the US and Japan by these measures. European countries focus more on savoring life than most countries in the world, with France and Italy at the bottom. The positions change some once we take into account the effect of income, though not all that much (the differences between the extremes are also smaller). Singapore moves up to the top spot—when you take into account how wealthy the country is, it's remarkable how hard-working and achievement-oriented its people appear by our measures. India still ranks toward the top after taking into account its income level, but its relative achievement orientation stands out as less exceptional.

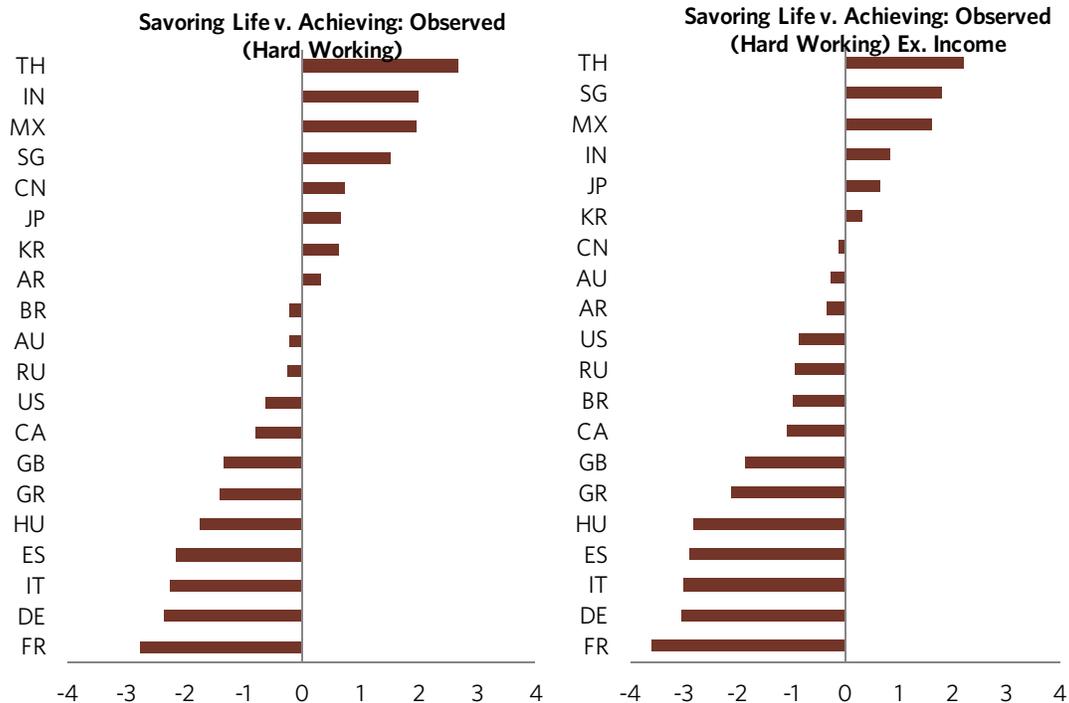


Savoring Life Versus Achieving Subcomponents: Observed Outcomes

One straightforward way to see whether a society values achieving over leisure is to observe the outcomes of their choices: literally how much effort they put into work. A society whose people strive hard to achieve in a market-based system will likely have a more vibrant, competitive business environment. These traits will make it more likely to improve its potential than an economy which chooses to value the fruits of life instead. Often we will see countries that have acquired great wealth and become rich begin to make this choice.

For the observed piece of the concept of savoring life versus achieving, we use our broad measure of how hard-working a country is. (As discussed, this is the same broad measure we use as part of self-sufficiency, so if it is fresh in your mind you can skip down to the expressed values of this indicator.) As a reminder, this measure includes a broad set of indications of a country's work ethic, including not just the average hours worked, but also measures like the typical retirement age, how many vacation days people in each country typically take, and male labor force participation on its own. Again, regrettably we must look at our hours worked and labor force measures for just men because different social norms across countries around women in the workforce distort the numbers. Since we expect richer countries to take more leisure than poorer ones, this is one of the measures we expect to have a fairly strong relationship with a country's income level.

When we scan across countries, we see emerging countries at the top of the list, including India and Mexico. Overall, emerging Asia comes through as working the hardest, followed by Latin America. Among rich countries, Singapore and then Japan have the hardest workers. The US is fairly hard-working among developed countries, whereas workers in Europe appear to opt for leisure more than anyone else based on these measures. Once we take into account the tendency for wealthier countries to take more leisure time, Japan really stands out as exceptionally hard-working (as do Korea and Singapore). Argentina and Brazil move down a bit. Still, the relative ordering of most countries is fairly stable, since the differences in how hard each country works are fairly extreme. Any way you cut it, Mexico and India remain among the hardest-working countries and workers in Europe some of the most leisure-taking.



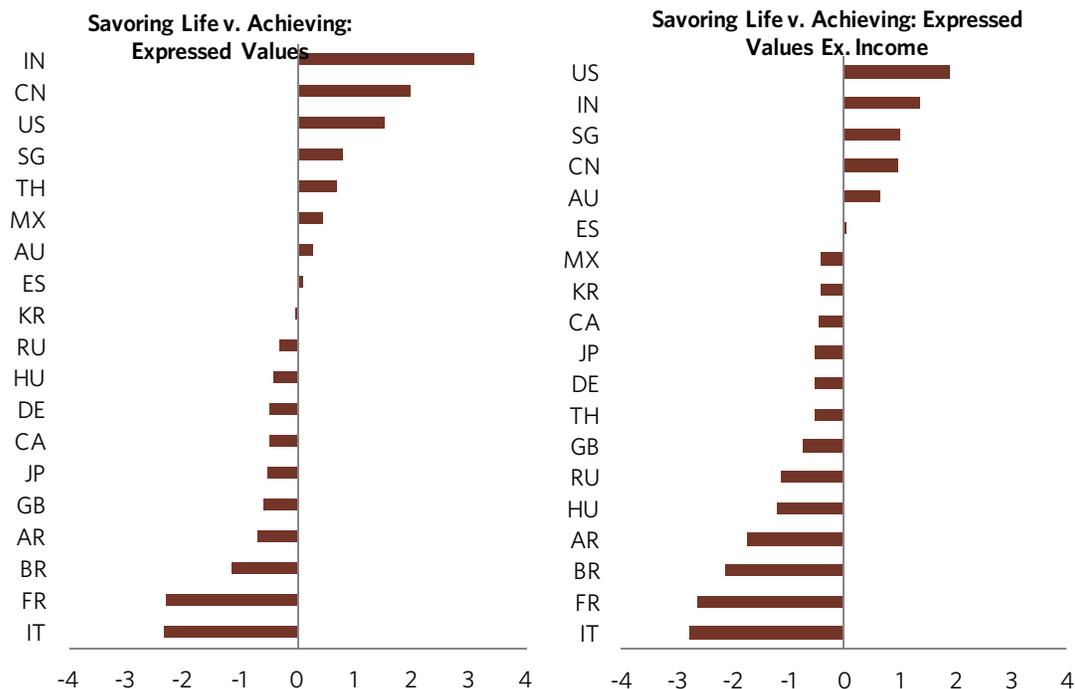
Below we show the individual pieces of our hard-working gauge. Please see the discussion of the hard-working gauge within the self-sufficiency section for a more detailed look at each individual piece.

Hard Working Measures																				
Country	TH	IN	MX	SG	CN	JP	KR	AR	BR	AU	US	CA	GB	GR	HU	ES	IT	DE	FR	
Avg. Actual Hours Worked (Hrs/wk)	40	37	35	35	35	31	29	29	28	27	25	24	24	23	25	21	20	20	18	17
Male Reported Avg. Hours Worked (ex Vacation)	51	47	46	46	47	45	41	44	38	39	38	37	36	37	43	37	34	36	30	31
Labor Force Participation (% Working Age Population)	81%	81%	80%	78%	78%	70%	72%	75%	81%	72%	71%	70%	71%	69%	63%	60%	67%	59%	66%	62%
Effective Retirement Age (% of Life Expectancy)	--	92%	98%	--	72%	88%	94%	91%	78%	82%	93%	87%	81%	82%	80%	87%	79%	79%	81%	77%
Actual Vacation+Holidays Per Year (Weeks)	---	2.3	1.9	2.0	2.6	1.0	1.6	---	4.3	2.3	3.8	3.3	3.6	6.5	5.9	5.5	6.8	5.9	7.0	7.0

Savoring Life Versus Achieving Subcomponent: Expressed Values

Observing the outcomes of people's choices is one way to see whether they value achievement over savoring; another, of course, is to ask them. You can imagine the questions you would ask. Some of the ones that are intuitive to us are whether a society puts growth as a top priority for the country, whether it believes competition is healthy and at a personal level whether each individual feels being very successful is important and that hard work will lead to success. Fortunately, there is a World Values Survey that asks a ton of questions and includes ones like this. Naturally there are challenges comparing survey data across countries, but we believe by triangulation across a set of intuitive questions we can come up with a pretty good indication of a country's expressed values, which we can then weigh against the outcomes we observe (which form the other half of our savoring life versus achieving gauge, as discussed above).

In fact, the rankings for the expressed component show a similar picture as those we observe in measures of work effort. India and China top this gauge for the emerging world, and Latin America is further down the list. Of the developed world, the US values achieving most, while France and the European periphery place the most emphasis on savoring life. This gauge is less correlated with incomes than observed measures of work effort, which makes some sense as observed measures are a more direct way of seeing a country's values (e.g., you can value savoring the fruits of life but work out of necessity). When you exclude the effect of income, the US moves to the top of achievement-oriented countries, with India just behind.



The table below shows more specific information which we triangulated to get a sense of the expressed values toward achievement versus savoring in a given society. It's interesting how the reasons for these cultural attitudes differ across countries. For example, in Russia people express a lack of faith that hard work leads to success, even though they express a desire for the country to grow, while in Canada people express a high value on political input or environmental protection over economic growth. That said, we don't want to make too much of any one of these indications, since what we are trying to capture is the overall essence of whether a country is achievement-oriented.

Country	IN	CN	US	SG	TH	MX	AU	ES	KR	RU	HU	DE	CA	JP	GB	AR	BR	FR	IT
For future of country, value of having more say v. economic growth, defense, and making cities and countryside more beautiful	0.7	1.0	0.3	0.2	0.9	-0.7	-1.0	-0.7	-0.5	0.5	0.2	-1.2	-1.5	-0.3	-1.7	-0.4	-0.4	-1.6	-1.0
Hard work leads to success	1.0	0.7	0.5	-0.2	-1.0	1.1	0.2	0.0	0.1	-1.3	-0.9	-0.5	0.3	-0.7	-0.3	-0.7	-0.5	-1.3	-1.2
Competition is harmful	1.7	0.4	0.5	-1.0	-1.5	0.6	0.4	-0.4	-0.2	-0.7	-0.8	-0.3	0.0	-0.7	-0.6	-1.4	-0.6	-2.0	-1.0
It is important to this person to have a good time	0.4	1.0	1.0	0.0	0.2	-1.0	1.0	-0.4	-0.1	-0.3	-0.8	-0.5	0.3	1.3	0.4	1.0	-0.9	-1.0	---
It is important to this person to be very successful	1.6	0.0	-1.0	-0.1	-0.2	0.2	-1.3	-0.5	-0.2	0.1	-0.3	-0.1	-0.6	-1.5	-1.2	-0.9	-0.7	-0.7	---
Economic growth is more important than the environment	-0.4	-1.0	0.2	1.0	0.6	-0.7	-0.6	0.1	0.2	-0.2	0.2	0.5	-1.5	0.0	-0.7	-1.2	-1.0	-0.2	-0.9

Innovation and Commercialism

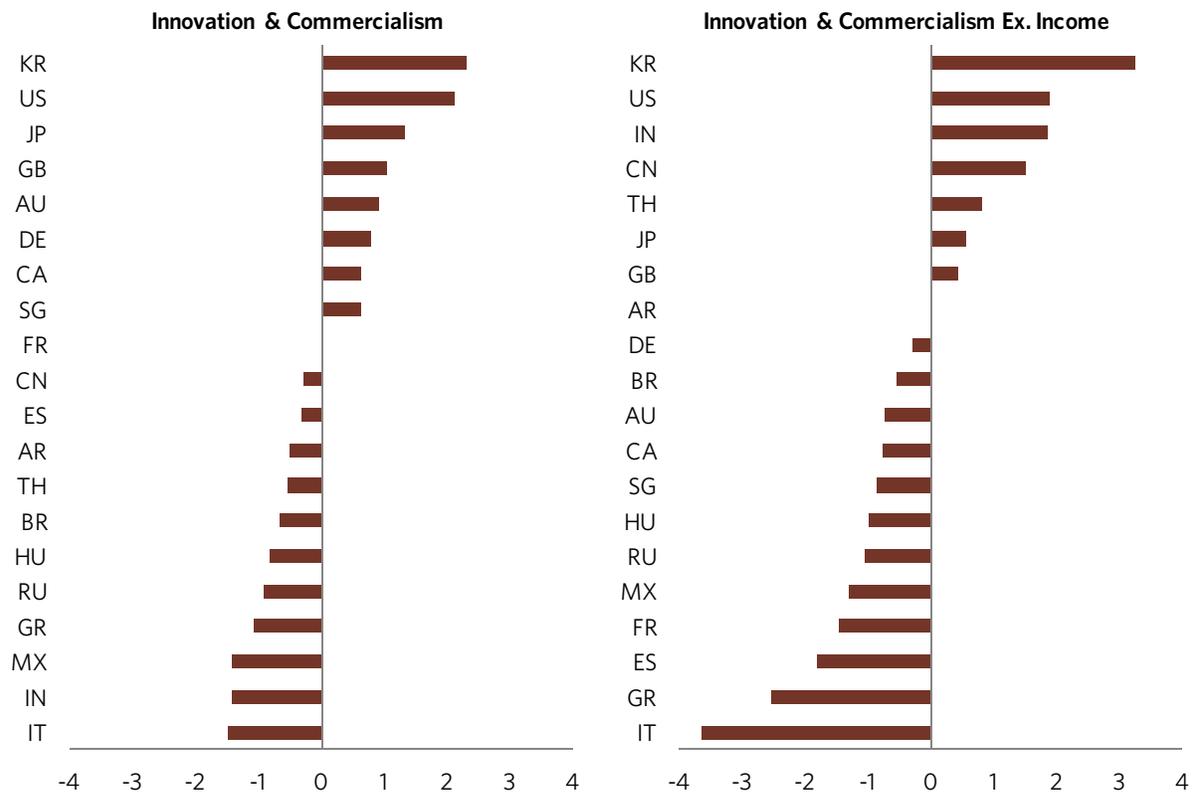
An innovative and commercial spirit is the lifeblood of a thriving economy. The drive to tinker and invent, to discover, to improve from prior failures—this is how people learn and find new and better ways of creating things of value. In a market-based system, the most powerful way to drive innovation is to bring new ideas to market, to commercialize and profit from them. The marketplace is generally efficient in weeding out the good ideas from the bad and pricing what innovations are most valued by society. In this way the concepts of innovation and commercialism go hand in hand. They capture whether people in a society value finding new knowledge or creating new things, and whether their incentives are aligned to encourage them to seek a profit by commercializing these ideas. The following statistics measure the level of innovation and commercialism in different countries and their correlations with future growth.

We looked at a variety of measures to triangulate these concepts. For both scientific and commercial innovation, we wanted to have a balance between indicators that captured *outputs* (new inventions or businesses), and indicators that measured *inputs* (values, investment, and people) that we thought would logically lead to innovation. We weigh the inputs and outputs equally. The pieces of our innovation and commercialism indicator are shown in the following table. Overall, the raw indications of innovation and commercialism are stronger in higher-income countries, especially measures of investment (like R&D expenditure) that require a certain level of resources, or measures of knowledge creation (like patent creation) that require a level of acquired knowledge. What we are focused on with our culture measures, however, are the underlying values of a society independent of its wealth and development stage (which we proxy in a simple way with income levels). Once we exclude the effect of income, our gauge of innovation and commercialism is 49% correlated to historical future growth in income per capita. It's notable that before this adjustment there is no relationship between a country's future growth and the level of observed innovation and commercialism.

Innovation & Commercialism	Correlation to Growth	Weight
Aggregate Ex. Income Effect	49%	100%
Aggregate	5%	---
Outputs	-11%	50%
# New Patents	18%	12.5%
Royalty and license fees, payments	-17%	12.5%
# New Businesses	-9%	6.3%
% of People Creating New Businesses	29%	6.3%
# New Major Websites	-35%	6.3%
New Trademark Creation	-30%	6.3%
Inputs	21%	50%
Gross expenditure on R&D	3%	12.5%
Researchers	-14%	12.5%
Fear of Business Failure	11%	12.5%
Entrepreneurship Prevalance	30%	12.5%

On the next page we show our current measures for the aggregate indicator with and without the effect of income, as well as for the components of our indicator. Where applicable we look at each measure that goes into these gauges relative to the number of people in the society or the size of the economy.

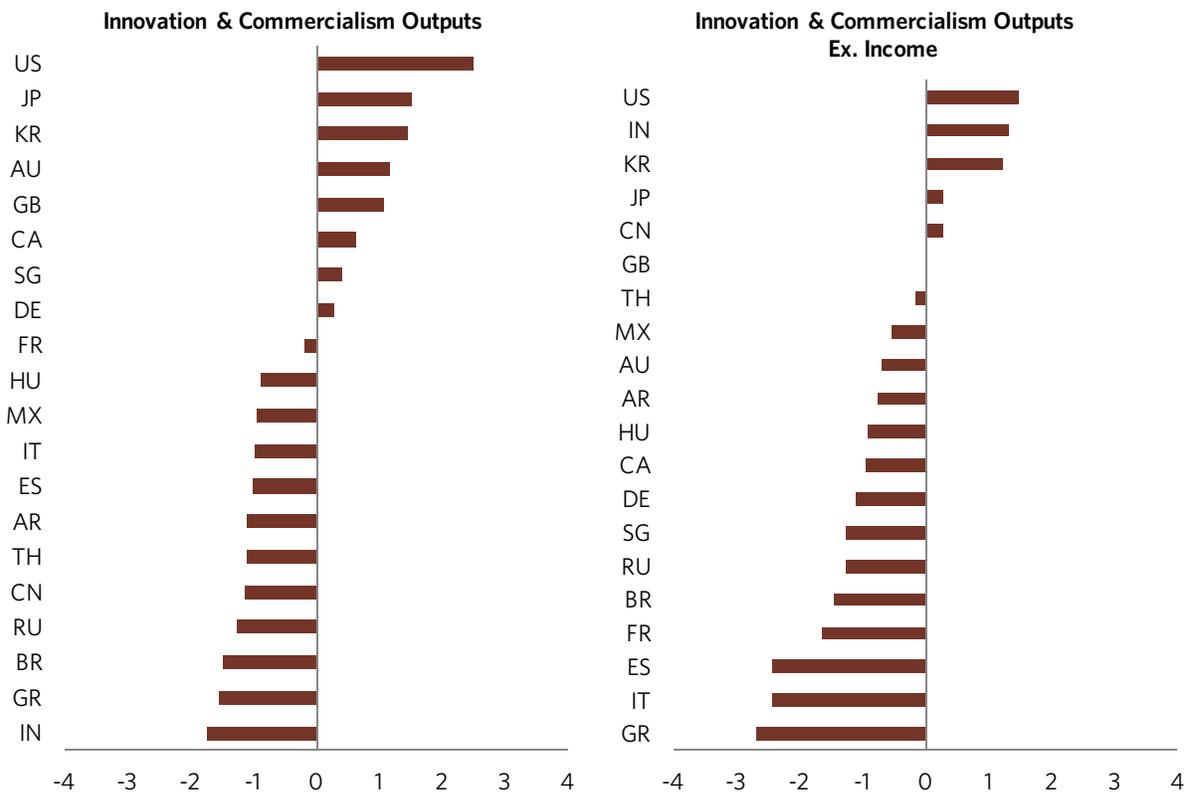
In terms of our ratings of countries on this gauge, Korea and the US rank as being the most innovative and commercial-minded both on an absolute basis and after we take out the effect of income. Korea invests a lot of capital and people toward research and has reaped the rewards in the form of a high number of new patents and royalties. Along with relatively high investment in research, Americans stand out as highly entrepreneurial. Germany and Japan aren't far behind, each investing high amounts of R&D and researchers into the innovation process and seeing the benefits from things like new patents, businesses, and websites. China is roughly neutral on our measures on an absolute basis, but it jumps to the top third once you take into account the fact that its proportion of people creating new businesses and gross expenditure in R&D are fairly high given how poor it still is. India is less innovative but it's much poorer, so it moves ahead of China once you adjust for the effect of income. Latin America and emerging Europe score in the middle to bottom end of the range whether you adjust for the effect of income or not, especially Russia and Mexico. Once you adjust for income, Europe's periphery fares poorly, particularly Italy, which is at the bottom of the list. Mostly, their innovation and commercial *inputs* like researchers or entrepreneurship prevalence are moderate, but those aren't leading to the scientific or business *outputs* you'd expect for countries at their income level.



Innovation and Commercialism Subcomponent: Outputs

We would expect a country that has more innovative and commercially minded people to create more patents and trademarks, more businesses—in other words, that it is actively creating new ideas, protecting its intellectual property and capturing the rewards of this innovation. So we look at these outcomes as one way to get a sense of the society's innovative and commercial spirit. Some outcomes are more directly indicative of innovation (like patent creation), others more direct signs of commercialism (like new businesses created or the prevalence of entrepreneurs), and some show the signs of combining the two (like royalty fees).

When we look at these measures on their own, they are fairly related to a country's income, which is intuitive since rich countries tend to have more resources to invest and have higher levels of education and accumulated knowledge, so are more likely to lead in creating innovations valued in the market. On the raw measures, you see many poor countries at the bottom, like India or China (that might have a strong innovative spirit but you wouldn't expect to be leading innovators right now) behind rich countries, like France or Italy, that may actually have less drive to find new ideas and build businesses. But when we adjust for income, both India and China move up a lot, especially India, which appears just as innovative and commercial as the US when you account for its stage of development. Either way you look at it, the US tops our scores for the outputs of innovation and commercialism. After taking out the effect of income, rich countries like the US and Japan still stand out as highly innovative. The European periphery countries (Greece, Spain and Italy) have the worst scores once you adjust for how few new commercial innovations they're producing in light of how rich they are. France, Brazil, and Russia are just behind.



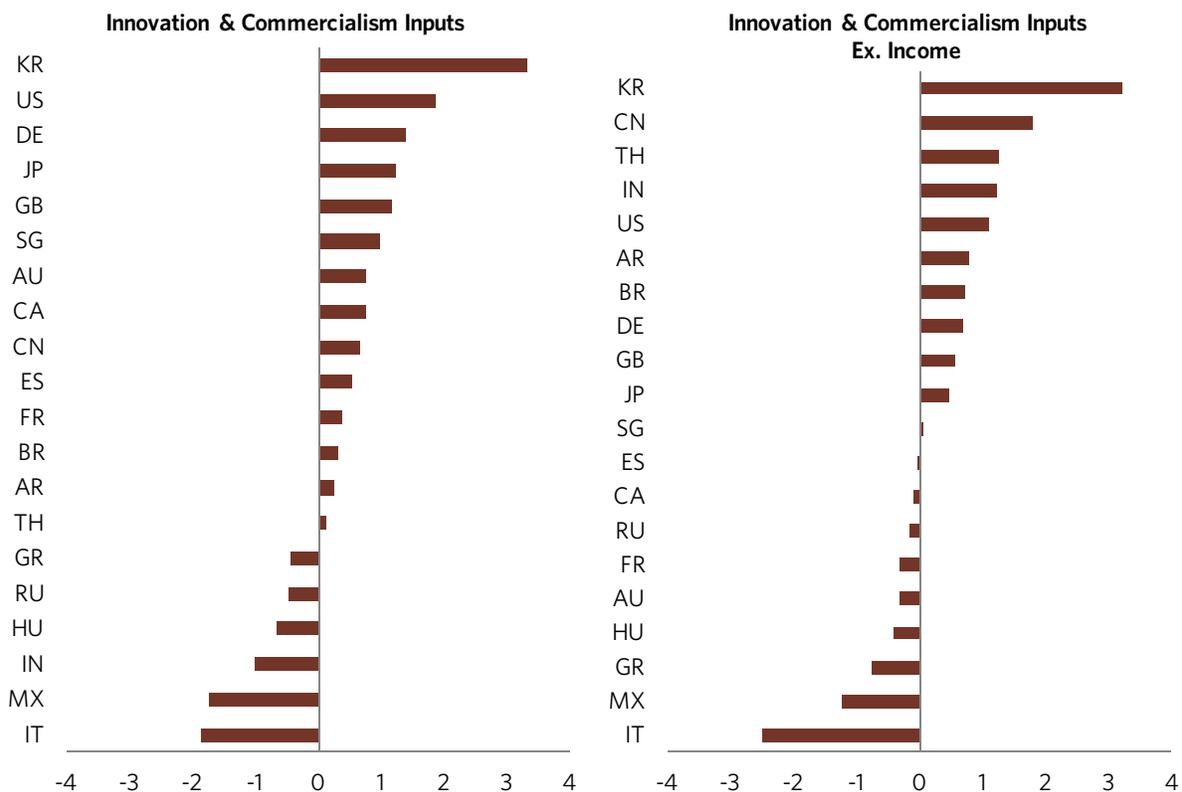
Below you can see a more granular view of how each country scored for each measure.

Innovation & Commercialism Outputs																				
Country	US	JP	KR	AU	GB	CA	SG	DE	FR	HU	MX	IT	ES	AR	TH	CN	RU	BR	GR	IN
# New Patents (per mln persons)	844	2,246	3,022	113	243	135	205	562	228	70	10	140	71	18	15	389	200	25	56	8
# New Businesses (per thous. Person)	---	1	2	12	11	1	8	1	3	5	1	2	3	1	1	---	4	2	1	0
# New Major Websites (per thous. Persons), Index	100	20	10	84	76	93	33	66	49	13	3	25	31	4	7	2	4	2	14	1
% of People Creating New Businesses	9	2	3	6	4	8	6	3	3	6	12	2	3	11	8	5	3	5	3	5
New Trademark Creation (Z - Score)	1.8	0.0	0.1	1.3	1.1	1.8	---	1.2	0.9	-0.9	-0.8	0.4	-0.3	-0.8	---	-1.0	-1.1	-1.0	-0.9	-1.0
Royalty and license fees, payments Ann. (\$)/Person	102	35	10	7	69	15	69	24	56	21	0	10	9	1	1	0	0	0	3	0

Innovation and Commercialism Subcomponent: Inputs

Ultimately what matters for commercial innovation is whether there is a strong spirit of finding new things and building new businesses in the society. Whether a country is investing its resources in new innovations and whether it has a culture of risk-taking are good signs this spirit is strong. So to measure the inputs to innovation we look at human and capital investment through R&D expenditure as a percentage of GDP and the proportion of researchers in the population. We look at entrepreneurial spirit by examining whether people express a fear of failing in a new business endeavor in surveys and whether there is a prevalence of entrepreneurs in the population.

As with the outputs of innovation, the innovation inputs we measure are highly correlated to income, again to be expected since richer countries have more resources and higher levels of education to devote to finding new ideas. To account for this and get at the underlying spirit of innovation and commercialism we simply take out the effect of income. Here again we see India and China behind many rich countries on our raw indicators, and then at the top of the list after taking into account their level of income; on the other hand, certain rich countries are at the bottom of the list after excluding the effect of income—for example, Italy and France. As observed when we looked at its score on our outcomes measure, Korea has the highest score for inputs to innovation and commercialism. That's because it devotes a high amount of spending and people to research while also having a healthy amount of entrepreneurship (despite some apparent fear of business failure). Within the developed world, the US, Germany and Japan stand out as the countries most oriented toward innovation and commercialism, near the top of all countries. Japan stands out because of the resources it devotes—its level of researchers relative to its population and R&D expenditure—which outweigh an apparent fear of business failure. The US, on other hand, is strong on all measures, with a healthy willingness to take risk.



Below you can see a more granular view of how each country scored for each measure.

Innovation & Commercialism Inputs																				
Country	KR	US	DE	JP	GB	SG	AU	CA	CN	ES	FR	BR	AR	TH	GR	RU	HU	IN	MX	IT
Gross expenditure on R&D (%GDP)	4.4	2.8	2.9	3.3	1.7	2.2	2.4	1.7	2.0	1.3	2.3	1.2	0.6	0.3	0.7	1.1	1.3	0.8	0.4	1.3
Researchers (per mln persons)	7,699	4,663	6,280	7,011	6,872	7,321	4,224	4,260	1,393	4,735	5,328	1,203	1,942	581	4,069	2,603	3,696	137	386	2,496
Fear of Business Failure (Z - Score)	-1.1	0.6	-0.6	-2.2	-0.2	-0.8	-1.3	0.0	0.2	-0.2	-1.0	-0.6	1.6	-2.2	-2.2	1.0	-1.6	-0.6	0.5	-2.2
Entrepreneurship Prevalance (% population)	9%	8%	5%	6%	7%	4%	9%	8%	11%	8%	4%	15%	10%	28%	13%	3%	7%	11%	4%	4%

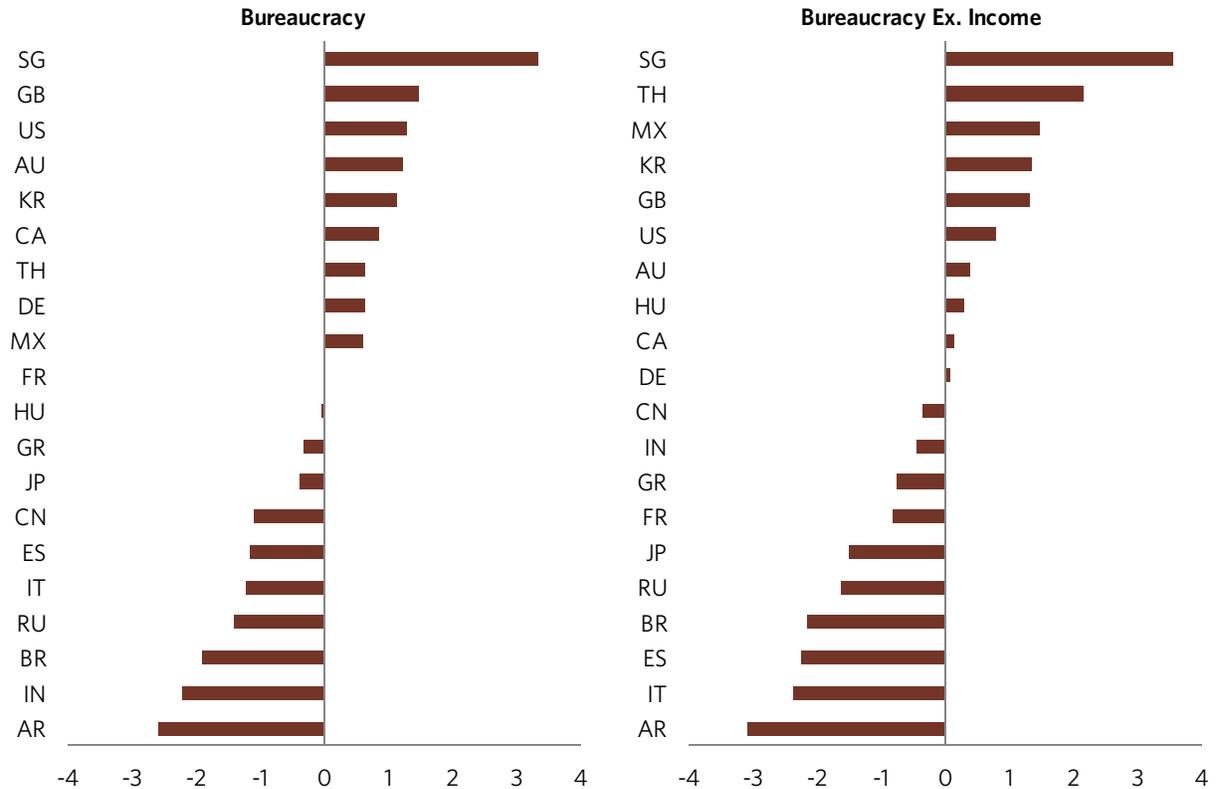
Bureaucracy

Lots of red tape and government regulation stymie business activity. They impact the core elements of a thriving economy by hindering people from innovating or creating new businesses, and they make running a business burdensome, requiring people to spend time complying with unnecessary or heavy administrative controls instead of focusing on business improvements. That's not to say that regulation is not important—of course good governance and the rule of law are critical to a healthy market-based economy, as we will examine next. But excessive, time-consuming and rigid controls gum up the wheels of the economy.

To measure bureaucracy we look at measures related to the ease of starting a business (from the World Bank/IFC), the efficiency and cost of dealing with construction permits (also World Bank/IFC) and the burden of government regulation (from the World Economic Forum). The pieces of our bureaucracy indicator are shown in the table below. Bureaucracy tends to be more prevalent in less developed countries and so is fairly related to income levels. This is fairly natural for a number of reasons, because the processes are simply less efficient and require more steps, because the market systems are less advanced or established and have more controls, or because of inter-related factors, like weaker rule of law and a higher degree of corruption leading to more controls that allow for rent seeking. From a growth perspective, businessmen and investors will likely accept that a certain degree of bureaucracy is to be expected to do business in an emerging country that is otherwise competitive. But if the bureaucracy is exceptional even relative to countries of similar income, it is no doubt going to weigh on the decision to do business in that country. Once excluding the effect of income, our gauge of bureaucracy is 32% correlated to historical future growth in income per capita. Notably, it is negatively correlated to future growth when we don't make this adjustment. Along with our measures of the rule of law and corruption, this gauge helps us triangulate the picture of how hard it is to do business in a country.

Bureaucracy	Correlation to Growth	Weight
Aggregate Ex. Income Effect	32%	---
Aggregate	-14%	100%
Starting a Business	-28%	33%
Dealing with Construction Permits	-24%	33%
Burden of government regulation	44%	33%

Before taking into account income levels, Singapore ranks best on our gauge of bureaucracy, followed by the English-speaking developed world. Nowhere is it easier to start a business or run one without burden from government regulation than in Singapore according to our measures. Bureaucracy is worst in Argentina and India and high in Russia, Brazil and China as well. Once you exclude the relationship between income and bureaucracy, India and China don't look quite as bad, though still below par. Europe's periphery (Spain, Greece, and Italy) all look highly bureaucratic given their stage of development. Italy ranks near the bottom due in particular to the burden government regulations place on doing business. Russia scores poorly considering its income, just a touch above Argentina.



Below you can see a more granular view of how each country scored for each measure.

Bureaucracy																				
Country	SG	GB	US	AU	KR	CA	TH	DE	MX	FR	HU	GR	JP	CN	ES	IT	RU	BR	IN	AR
Starting a Business	2.4	1.7	1.9	2.4	1.5	2.5	-0.4	-1.1	1.0	1.3	0.6	0.7	-1.4	-2.7	-2.1	-0.4	-0.4	-1.5	-3.4	-2.8
Dealing with Construction Permits	2.0	1.3	1.1	1.8	1.6	-1.3	1.7	1.8	0.9	-0.5	0.7	0.2	-0.5	-3.4	-0.8	-1.2	-3.2	-1.8	-3.3	-3.3
Burden of government regulation	4.0	1.5	0.8	-0.5	0.3	1.3	0.7	1.3	-0.1	-0.8	-1.5	-1.9	0.7	2.8	-0.6	-2.1	-0.6	-2.5	0.0	-1.7

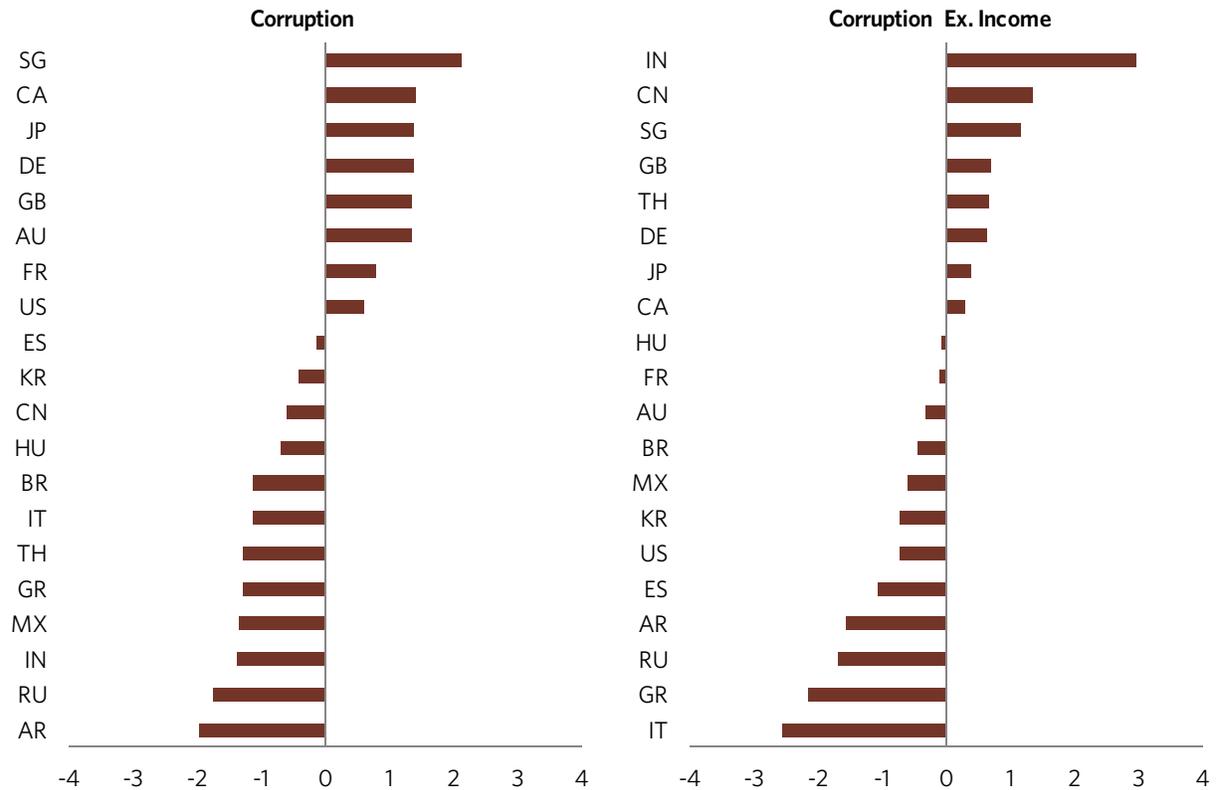
Corruption

Corruption undermines the effectiveness of a market-based system in a variety of ways, diverting resources, distorting incentives, raising the costs of doing business, undermining business competition and efficiency, and creating uncertainty for investment. Corruption also both discourages profit-seeking and often impedes it. Small types of corruption (like the bribes one may have to pay at the airport or to an administrative official) create inefficiencies that slow down the agility of businesses, raise costs and make it more difficult to cultivate a new business. Big forms of corruption (for example, business appropriation) create limits to financial success and others (like large bribes to enter an industry or win a license) create entry barriers and lower prospective returns. All forms can make a country's system dysfunctional and create uncertainty around doing business in a given country. In all these ways corruption undermines productivity and the capacity of a society to realize its potential.

To measure corruption, we combine Transparency International's measures of corruption across countries with three sub-indices from the World Economic Forum's competitiveness index: "diversion of public funds," "irregular payments and bribes," and "favoritism in decisions of government officials." These measures help us capture the different types of corruption (big and small). The pieces of our corruption indicator are shown in the table below. When we look at these measures we see that poorer countries tend to have higher degrees of corruption. That's for a number of reasons we won't explore in depth here, including fewer opportunities for wealth creation, entrenched ways of operating that may have once been part of a different, non-market based system, or weaker rule of law. Businessmen and investors will likely put up with a certain degree of corruption to operate in an emerging country that is otherwise competitive. But if that country has an exceptionally high degree of corruption relative to countries of similar income, it is no doubt going to weigh on the decision to do business in that country. Once excluding the effect of income, our gauge of corruption is 58% correlated to historical future growth in income per capita. Notably, the relationship is slightly negative without this adjustment. Along with our measures of bureaucracy and the rule of law, this gauge helps us triangulate the picture of how hard it is to do business in a country.

Corruption	Correlation to Growth	Weight
Aggregate Ex. Income Effect	58%	---
Aggregate	-7%	100%
Transparency Int'l Corruption Index	-28%	25%
Diversion of Public Funds	-4%	25%
Irregular Payments and bribes	-17%	25%
Favoritism in decisions of government officials	10%	25%

Before taking into account the income level of countries, Singapore again looks best, with Japan, the English-speaking developed world, and Germany also near the top. Most emerging countries are toward the bottom of our rankings, which is to be expected given the relationship between corruption and income levels we have discussed. When we exclude how income levels are related to corruption, Latin American countries and the European periphery are at the bottom of our ratings. Italy and Greece stand out as having the highest degree of corruption of any of the countries we look at, followed by Russia and Argentina just behind. Italy is weak across all measures, especially given how wealthy it is, and particularly with regard to favoritism by government officials. India and China both face significant impediments from their levels of corruption. But when we consider their levels of corruption relative to their levels of income, their corruption is not exceptional; in fact, it's lower than we would expect. Even after considering income levels, many developed countries still rate high, Singapore in particular, but also commonwealth countries, Japan, and Germany. The US rates in the bottom third after considering its income.



Below you can see a more granular view of how each country scored for each measure.

Corruption																				
Country	SG	CA	JP	DE	GB	AU	FR	US	ES	KR	CN	HU	BR	IT	TH	GR	MX	IN	RU	AR
Transparency Int'l Corruption Index	1.9	1.6	1.1	1.4	1.2	1.6	0.9	1.1	0.2	-0.1	-1.0	-0.1	-0.9	-0.8	-1.3	-1.1	-1.4	-1.3	-1.8	-1.4
Diversion of Public Funds	2.1	1.3	1.3	1.4	1.7	1.2	0.7	0.5	-0.9	-0.8	-0.2	-1.6	-2.0	-1.4	-1.4	-1.5	-1.5	-1.4	-1.7	-2.5
Irregular payments and bribes	2.2	1.3	1.7	1.2	1.5	1.2	0.8	0.1	-0.1	-0.6	-1.1	-0.6	-1.2	-1.2	-1.4	-1.6	-1.5	-2.0	-2.1	-2.5
Favoritism in decisions of government officials	2.9	1.1	1.9	1.6	1.2	0.8	0.5	-0.3	-0.5	-0.9	0.7	-1.5	-0.9	-1.7	-1.0	-1.5	-0.9	-1.1	-1.5	-2.7

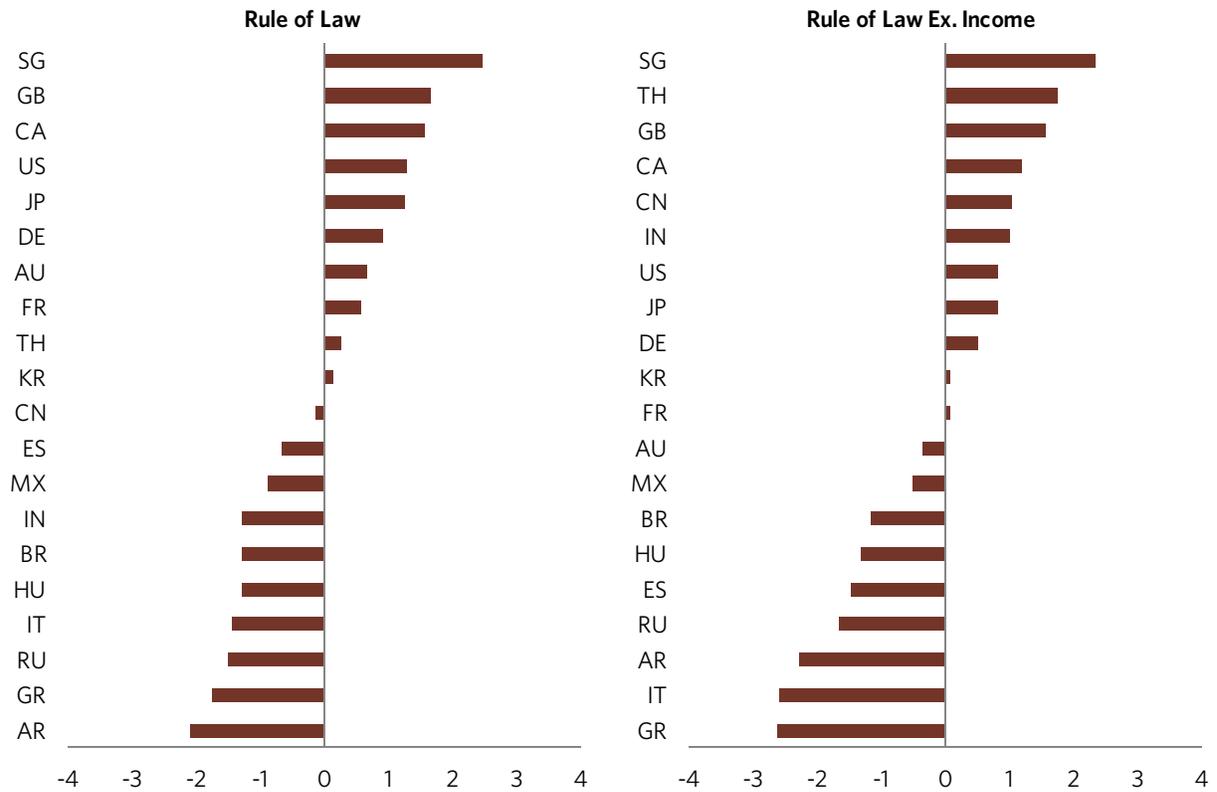
Rule of Law

A strong rule of law helps ensure fair competition in a market-based system and it protects the incentives and efficiency of this system. When a country's legal system can reliably and efficiently enforce agreements that businesses make and protect people's property and investments, the economy can function. If there are strong disagreements, a contract broken, or a bankruptcy, a well-developed legal system makes working these things out fair and orderly. When the government fails to do these things, investing and doing business in a country is a lot riskier and inefficient. A strong rule of law also helps stamp out corruption and other activities that discourage profit seeking and prevent the most highly valued products and businesses from thriving.

We measure rule of law by combining measures related to the efficiency of the legal framework in settling disputes (WEF), property rights (WEF), protecting investors (World Bank/IFC), and enforcing contracts (World Bank/IFC). The pieces of our rule of law indicator are shown in the table below. As with our measures of corruption and bureaucracy, the rule of law tends to be strongly related to a country's income. Again, we won't delve into all the reasons here, but it's intuitive that countries that have less resources and less educated populations have more immature legal systems, and the rule of law is likely compounded by interrelated factors, like higher corruption. Here we want to look at the rule of law of a country taking into account its development stage. That gives us a better sense of the underlying cultural elements that will determine its lawfulness as it develops. It's also a more helpful perspective in looking at future growth. As with our measures of bureaucracy and corruption, we would expect that businessmen and investors will likely expect there to be lower rule of law in poorer countries, and so it may not impact their decision to do business or invest in an emerging country that is otherwise competitive. But if the rule of law is particularly weak in that country relative to others of similar income, that is likely a drag. Indeed, we see no relationship between the rule of law on its own and future growth. But once we exclude the effect of income, our gauge of the rule of law is 57% correlated to historical future growth in income per capita. In other words, when countries still fail to uphold the rule of law once they are rich, their cultures often appear to be holding back their growth. Along with our measures of bureaucracy and corruption, this gauge helps us triangulate the picture of how hard it is to do business in a country.

Rule of Law	Correlation to Growth	Weight
Aggregate Ex. Income Effect	57%	---
Aggregate	5%	100%
Efficiency of legal framework in settling disputes	10%	25%
Property rights	-8%	25%
Protecting Investors	0%	25%
Enforcing Contracts	13%	25%

Before taking into account income levels, Singapore, Japan, and the English-speaking developed world are at the top of our ranking. Despite its wealth and development stage, Italy ranks near the bottom of the list, just ahead of Argentina, Greece, and Russia. Emerging countries also tend to perform poorly on this measure. Once we exclude the effect of income, Italy and Greece stand out as having an especially weak rule of law. In general, the European periphery and Latin American countries rate toward the bottom, with the rest of the developed world and emerging Asian countries toward the top. Singapore stays at the top even after taking out income, along with other rich nations. The US and Japan rate as having a rule of law that is just modestly strong given their levels of income.



Below you can see a more granular view of how each country scored for each measure.

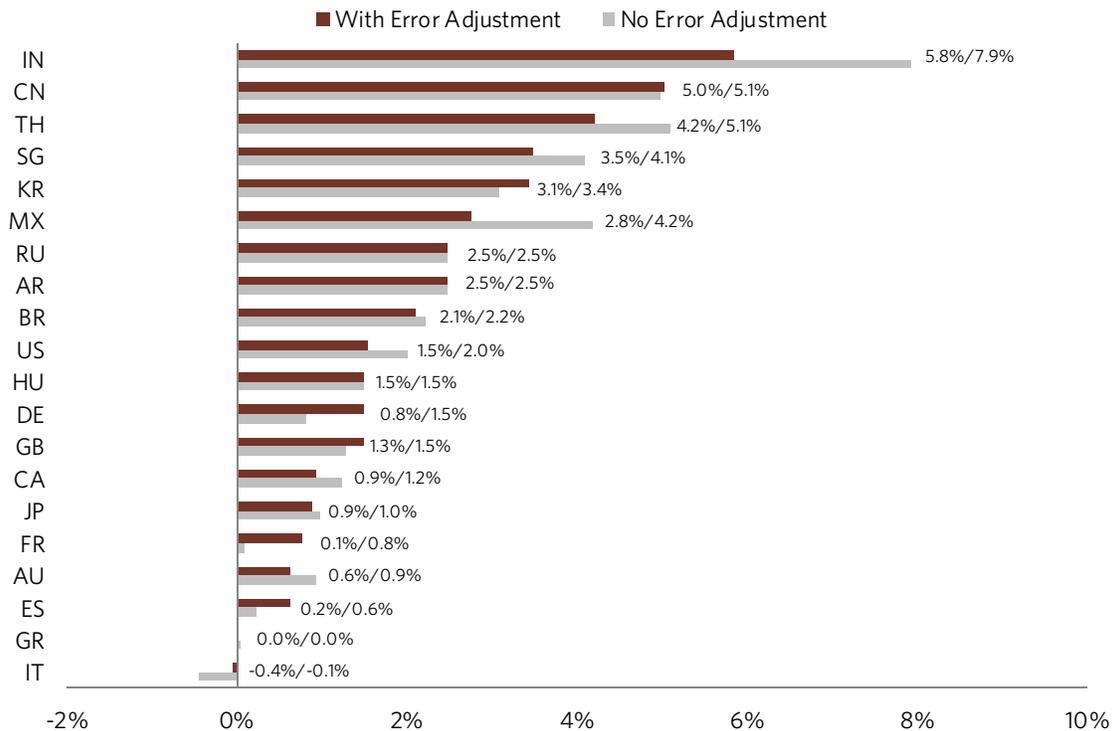
Rule of Law																				
Country	SG	GB	CA	US	JP	DE	AU	FR	TH	KR	CN	ES	MX	IN	BR	HU	IT	RU	GR	AR
Efficiency of legal framework in settling disputes	3.4	2.3	2.1	0.9	0.9	1.8	0.9	0.0	-0.5	-1.0	0.1	-0.7	-1.4	-0.5	-1.4	-1.8	-3.0	-2.0	-2.7	-2.6
Property rights	2.7	2.3	2.1	0.5	1.7	1.8	0.8	1.5	-1.5	-0.5	-0.3	-0.2	-1.2	-0.8	-0.4	-2.0	-1.0	-3.3	-1.6	-4.2
Protecting Investors	2.5	2.2	2.4	2.3	1.9	-1.4	-0.2	-0.7	2.1	0.5	-1.4	-1.4	-0.2	1.2	-0.7	-2.7	0.5	-2.1	-0.9	-1.4
Enforcing Contracts	1.3	-0.3	-0.3	1.4	0.5	1.6	1.2	1.5	1.0	1.7	1.1	-0.4	-0.8	-5.0	-2.6	1.2	-2.2	1.4	-1.7	-0.3

Summary Observations

On the basis of productivity and indebtedness alone, the countries which have the elements to grow incomes per worker fastest today are India, China, Thailand, Singapore and Korea. Based on these elements, European countries and Japan are expected to grow slowest. While, the different pieces that go into this view are described above, we'll also describe them briefly here. We expect India to grow strongly (6% or so), primarily because of India's low indebtedness and significant cost advantage relative to the rest of the world even accounting for its poor education (its income per capita is just \$1,000, 4x less than China's). While incomes have grown very fast in China and there has been a material leveraging, we still expect fairly strong growth of 5% due to China's strong competitive position. The Chinese labor force remains highly attractive as a result of their work ethic and how educated they are relative to the cost, and they continue to save at a high rate, providing capital that is invested in projects that will improve productivity in the future. China's culture of self-sufficiency and achievement also provide a material support. Of course the policies of these countries can shift these growth rates. Most importantly in China the implementation of reforms and the management of the debt will be important and in India the reforms will be important. In both cases shifts in policies should be reflected in our indices.

This formula projects productivity growth in the US to be around 1.5%-2%, in the middle of the pack globally but ahead of most other rich nations. The US is now one of the more competitive developed world economies, with a well-educated but expensive workforce, despite an increasing preference for leisure and very low savings rates. While it is managing its deleveraging beautifully, it remains relatively highly indebted. We expect growth in Germany to be a bit lower than in the US. Germany is expensive relative to the US and central bank (ECB) stimulation has been less aggressive. At the same time, healthy household savings rates, a culture of innovation and commercialism, and good governance are positive supports for Germany's productivity growth. And Germany has not been reliant on credit expansion for its growth, and monetary policy is relatively simulative relative to German conditions. On the lowest end we see Japan and the southern European countries, all of which are globally uncompetitive and highly indebted, and have a history of experiencing monetary policy that is tight relative to conditions. The growth prospects of Italy and Spain, along with France and a number of Latin American countries are also hindered by a culture that values savoring life versus achievement or self sufficiency.

Aggregate Estimate of Future Growth per Worker



Part 2: Economic Health Indices by Country, and the Prognoses That They Imply

While in Part 1 I showed economic health measures indicator by indicator, in this part I show them country by country. By turning to the countries that you are interested in, you will be able to see all of the influences and what they imply for economic growth over the next 10 years for each of those countries in one simple table. They are shown in the order of projected economic growth rates and can be found by looking at the table of contents on the next page.

The projected economic growth rates for each country are shown and attributed to a) the average annual growth rate of the working population and b) the projected average annual change in the output per worker. The projected change in the average annual output per worker is determined two thirds by that country's projected productivity growth and one third by the size of its debt burdens. The determinants of each country's productivity growth are shown in several gauges that reflect each of the drivers (e.g. cost competitiveness, work attitudes, etc.). These are conveyed in tables that show - 1) the deviation of that country's determinant from the world average (shown in standard deviation terms), and 2) the ranking of that country (among the 20 countries shown) for that indicator. In other words, this one simple table will provide you virtually all that you need to know to gauge each country's economic health and its prospects for the next 10 years. By scanning the table and reading the accompanying text, you will be able to see a country's biggest strengths, and biggest weaknesses. The projections do not take into consideration exogenous factors such as the discoveries of natural resources and wars which will influence growth rates and are beyond my ability to forecast.

The table will not provide the thinking or the individual statistics that are behind each of these gauges. Should you wish to see the individual statistics behind these gauges, you can get them in the appendix to this section. Unfortunately, we are not able to share the statistics underlying our indebtedness measures, which are proprietary.

To be clear, these health indicators show where the current conditions will lead, not what is inevitable. If countries change the influences on their health, like individuals who stop smoking and start exercising, they can improve their prognoses. In fact, while we expect the countries that are more efficient (as measured by our gauges) to do better than those that are less efficient, we expect those that remove their impediments to have the biggest improvements to growth - just as China's strong growth over the last couple decades resulted from it ending its closed-door policy.

It should be noted that there was no subjective judgment used in coming up with these numbers, or even in coming up with the text that explains these indicators. Both the numbers and the text were computer generated. As explained in Part 1 my process of converting indicators into health gauge measures and in turn into projections for growth is very straightforward. To help it to be better understood and to provide each person with their own abilities to vary the processes in the ways they prefer, I am willing to make these statistics and processes open to those who are interested so that they can assess the relationships and change the weights in the ways they think are best.

Table of Contents

Country	Projected Real Growth Rate	Rank	Page
India	7.1% to 9.2%	1	XX
China	5.0%	2	XX
Singapore	4.2% to 4.8%	3	XX
Mexico	4.1% to 5.5%	4	XX
Thailand	4.0% to 4.9%	5	XX
Argentina	3.3%	6	XX
Korea	2.7% to 3.1%	7	XX
Brazil	2.9% to 3.0%	8	XX
USA	1.8% to 2.2%	9	XX
United Kingdom	1.5% to 1.7%	10	XX
Russia	1.5%	11	XX
Australia	1.3% to 1.7%	12	XX
Canada	1.1% to 1.4%	13	XX
Germany	0.1% to 0.8%	14	XX
France	0.1% to 0.8%	15	XX
Hungary	0.7% to 0.8%	16	XX
Spain	0.1% to 0.5%	17	XX
Japan	0.1% to 0.2%	18	XX
Italy	-0.7% to -0.4%	19	XX
Greece	-0.4%	20	XX

India's Future Growth

Based on our economic health index, we project that India's real growth rate over the next 10 years will be in the vicinity of 7.1% to 9.2%. This growth rate is well above the global average, ranked 1 out of 20 major economies, and 1 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In India's case, our growth estimate comes from combining our expectation of a 5.8% growth rate per worker, which is well above the global average, and a labor force growth rate of 1.3%, which is well above other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect India's productivity to be much better than most major countries (implying a growth rate of 9.4% on its own), and indebtedness conditions to be better than other countries (implying a growth rate of 5.2% on its own). As shown below, India's biggest relative strengths are the value its workers provide relative to education levels and its levels of investment, and its biggest relative problems are its level of bureaucracy and its reliance on credit flows for growth (though compared to other countries it doesn't rate especially poorly on these measures). The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: India

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	7.1% to 9.2%				1
Growth in Working Age Population :	1.3%				2
Projected Real Growth per Worker :	5.8%				1
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>				
Productivity	65%				1
I. Value: What You Pay vs. What You Get	70%				1
i. Education	25%				1
ii. Labor Productivity	25%				1
iii. Working Hard	25%				1
a. Avg Hours Worked	67%				1
b. Demographics	33%				1
iv. Investing	25%				1
a. Investment ex Housing	50%				1
b. Household Savings	50%				1
II. Culture	30%				2
i. Self-Sufficiency	17%				3
a. Work Ethic	50%				4
b. Government Support	25%				6
c. Rigidity of Labor Market	25%				3
ii. Savoring Life vs. Achieving	17%				2
a. Observed Outcomes (Work Ethic)	50%				4
b. Expressed Values	50%				2
iii. Innovation & Commercialism	17%				3
a. Outputs (e.g. patents, trademarks)	50%				2
b. Inputs (e.g. R&D, # of researchers)	50%				4
iv. Bureaucracy	17%				12
v. Corruption	17%				1
vi. Rule of Law	17%				6
Indebtedness	35%				1
I. Debt and Debt Service Levels	35%				5
II. Debt Flow	15%				12
III. Monetary Policy	50%				4

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

India offers much better than average value, ranked 1 among the countries we measure. Its workers are very inexpensive, even taking into consideration India's low levels of education and very poor quality of education. Further, people in India work very hard relative to the cost of their labor - the average male of working age works 37 hours per week (2 out of 20 countries), and the demographics of the workforce are very favorable. Levels of saving and investing are high given India's very low per capita income levels, with investment at about 14% of GDP (15 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

India's culture looks to be a support to growth in coming years because it is ranked 2 out of 20 countries in this culture gauge. Note that our culture measures compare India to countries of similar levels of economic development. Starting with self-sufficiency, India is rated pretty well on this measure, weighing that its workers have a somewhat strong work ethic, its level of government support is neutral (with government outlays at 27% of GDP), and its labor markets are very flexible. India also seems to value achieving a bit more than savoring - again, its work ethic is somewhat strong, and surveys suggest that its people value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat strong in India relative to income. We see the country investing heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are high. Finally, according to the international measures we are using, India has average levels of bureaucracy and red tape, very low corruption, and somewhat strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. India's indebtedness position is better than other countries, ranked 1 out of the 20 countries we look at. The country has a moderate amount of room to lever up in the future, with a total debt burden of around 135% of GDP, compared to the global average of 200-250%. In the past few years, its growth was neither supported nor depressed by credit creation, which is neutral for growth going forward. Lastly, the stance of monetary policy is generally a bit stimulative.

China's Future Growth

Based on our economic health index, we project that China's real growth rate over the next 10 years will be in the vicinity of 5.0%. This growth rate is well above the global average, ranked 2 out of 20 major economies, and 2 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In China's case, our growth estimate comes from combining our expectation of a 5.0% growth rate per worker, which is well above the global average, and a labor force growth rate of -0.1%, which is roughly in line with other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect China's productivity to be much better than most major countries (implying a growth rate of 6.3% on its own), and indebtedness conditions to be about average compared to other countries (implying a growth rate of 2.5% on its own). As shown below, China's biggest relative strengths are its levels of investment and the value its workers provide relative to education levels, and its biggest relative problems are its debt and debt service levels and its reliance on credit flows for growth. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: China

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	5.0%				2
Growth in Working Age Population :	-0.1%				12
Projected Real Growth per Worker :	5.0%				2
Component of Growth per Worker Estimate	Weight				
Productivity	65%				3
I. Value: What You Pay vs. What You Get	70%				2
i. Education	25%				2
ii. Labor Productivity	25%				2
iii. Working Hard	25%				4
a. Avg Hours Worked	67%				3
b. Demographics	33%				6
iv. Investing	25%				2
a. Investment ex Housing	50%				1
b. Household Savings	50%				1
II. Culture	30%				4
i. Self-Sufficiency	17%				6
a. Work Ethic	50%				7
b. Government Support	25%				3
c. Rigidity of Labor Market	25%				15
ii. Savoring Life vs. Achieving	17%				3
a. Observed Outcomes (Work Ethic)	50%				7
b. Expressed Values	50%				4
iii. Innovation & Commercialism	17%				4
a. Outputs (e.g. patents, trademarks)	50%				5
b. Inputs (e.g. R&D, # of researchers)	50%				2
iv. Bureaucracy	17%				11
v. Corruption	17%				2
vi. Rule of Law	17%				5
Indebtedness	35%				11
I. Debt and Debt Service Levels	35%				11
II. Debt Flow	15%				19
III. Monetary Policy	50%				5

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

China offers much better than average value, ranked 2 among the countries we measure. Its workers are somewhat inexpensive, even taking into consideration China's low levels of education and about average quality of education. Further, people in China work hard relative to the cost of their labor - the average male of working age works 35 hours per week (3 out of 20 countries), and the demographics of the workforce are about average. Levels of saving and investing are high given China's low per capita income levels, with investment at about 30% of GDP (1 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

China's culture looks to be a support to growth in coming years because it is ranked 4 out of 20 countries in this culture gauge. Note that our culture measures compare China to countries of similar levels of economic development. Starting with self-sufficiency, China is rated about average on this measure, weighing that its workers have a roughly average work ethic, its level of government support is low (with government outlays at 24% of GDP), and its labor markets are neither rigid nor flexible. China also seems to value achieving a bit more than savoring - again, its work ethic is roughly average, and surveys suggest that its people value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat strong in China relative to income. We see the country investing very heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are about average. Finally, according to the international measures we are using, China has average levels of bureaucracy and red tape, somewhat low corruption, and somewhat strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. China's indebtedness position is about average compared to other countries, ranked 11 out of the 20 countries we look at. The country has little room to lever up in the future, with a total debt burden of around 216% of GDP, compared to the global average of 200-250%. In the past few years, its growth was supported by high credit creation, which is restrictive for growth going forward. Lastly, the stance of monetary policy is generally a bit stimulative.

Singapore's Future Growth

Based on our economic health index, we project that Singapore's real growth rate over the next 10 years will be in the vicinity of 4.2% to 4.8%. This growth rate is somewhat above the global average, ranked 3 out of 20 major economies, and 1 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Singapore's case, our growth estimate comes from combining our expectation of a 3.5% growth rate per worker, which is well above the global average, and a labor force growth rate of 0.7%, which is somewhat above other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Singapore's productivity to be somewhat better than most major countries (implying a growth rate of 3.7% on its own), and indebtedness conditions to be better than other countries (implying a growth rate of 4.9% on its own). As shown below, Singapore's biggest relative strengths are its debt and debt service levels and its level of bureaucracy, and its biggest relative problems are how hard its people work and its reliance on credit flows for growth. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Singapore

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	4.2% to 4.8%				3
Growth in Working Age Population :	0.7%				6
Projected Real Growth per Worker :	3.5%				3
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>				
Productivity	65%				5
I. Value: What You Pay vs. What You Get	70%				10
i. Education	25%				10
ii. Labor Productivity	25%				12
iii. Working Hard	25%				7
a. Avg Hours Worked	67%				6
b. Demographics	33%				19
iv. Investing	25%				7
a. Investment ex Housing	50%				5
b. Household Savings	50%				-
II. Culture	30%				1
i. Self-Sufficiency	17%				1
a. Work Ethic	50%				2
b. Government Support	25%				1
c. Rigidity of Labor Market	25%				1
ii. Savoring Life vs. Achieving	17%				1
a. Observed Outcomes (Work Ethic)	50%				2
b. Expressed Values	50%				3
iii. Innovation & Commercialism	17%				13
a. Outputs (e.g. patents, trademarks)	50%				14
b. Inputs (e.g. R&D, # of researchers)	50%				11
iv. Bureaucracy	17%				1
v. Corruption	17%				3
vi. Rule of Law	17%				1
Indebtedness	35%				2
I. Debt and Debt Service Levels	35%				3
II. Debt Flow	15%				18
III. Monetary Policy	50%				10

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Singapore offers around average value, ranked 10 among the countries we measure. Its workers are neither expensive nor inexpensive, taking into consideration Singapore's high levels of education and very good quality of education. Further, people in Singapore don't work especially hard relative to the cost of their labor - the average male of working age works 35 hours per week (5 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are roughly average given Singapore's high per capita income levels, with investment at about 25% of GDP (4 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Singapore's culture looks to be a significant support to growth in coming years because it is ranked 1 out of 20 countries in this culture gauge. Note that our culture measures compare Singapore to countries of similar levels of economic development. Starting with self-sufficiency, Singapore is rated very well on this measure, weighing that its workers have a strong work ethic, its level of government support is very low (with government outlays at 15% of GDP), and its labor markets are very flexible. Singapore also seems to value achieving a bit more than savoring - again, its work ethic is strong, and surveys suggest that its people value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat weak in Singapore relative to income. We see the country investing neither lightly nor heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Singapore has very low bureaucracy and red tape, somewhat low corruption, and very strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Singapore's indebtedness position is better than other countries, ranked 2 out of the 20 countries we look at. The country has a moderate amount of room to lever up in the future, with a total debt burden of around 217% of GDP, compared to the global average of 200-250%. In the past few years, its growth was supported by high credit creation, which is restrictive for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Mexico's Future Growth

Based on our economic health index, we project that Mexico's real growth rate over the next 10 years will be in the vicinity of 4.1% to 5.5%. This growth rate is somewhat above the global average, ranked 4 out of 20 major economies, and 3 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Mexico's case, our growth estimate comes from combining our expectation of a 2.8% growth rate per worker, which is well above the global average, and a labor force growth rate of 1.3%, which is well above other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Mexico's productivity to be somewhat better than most major countries (implying a growth rate of 3.9% on its own), and indebtedness conditions to be better than other countries (implying a growth rate of 4.7% on its own). As shown below, Mexico's biggest relative strengths are its debt and debt service levels and the value its workers provide relative to education levels, and its biggest relative problems are its reliance on credit flows for growth and its level of innovation/commercialism. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Mexico

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	4.1% to 5.5%				4
Growth in Working Age Population :	1.3%				1
Projected Real Growth per Worker :	2.8%				4
Component of Growth per Worker Estimate	Weight				
Productivity	65%				4
I. Value: What You Pay vs. What You Get	70%				4
i. Education	25%				5
ii. Labor Productivity	25%				5
iii. Working Hard	25%				3
a. Avg Hours Worked	67%				4
b. Demographics	33%				2
iv. Investing	25%				4
a. Investment ex Housing	50%				9
b. Household Savings	50%				5
II. Culture	30%				8
i. Self-Sufficiency	17%				2
a. Work Ethic	50%				3
b. Government Support	25%				4
c. Rigidity of Labor Market	25%				4
ii. Savoring Life vs. Achieving	17%				5
a. Observed Outcomes (Work Ethic)	50%				3
b. Expressed Values	50%				7
iii. Innovation & Commercialism	17%				16
a. Outputs (e.g. patents, trademarks)	50%				8
b. Inputs (e.g. R&D, # of researchers)	50%				19
iv. Bureaucracy	17%				3
v. Corruption	17%				13
vi. Rule of Law	17%				13
Indebtedness	35%				3
I. Debt and Debt Service Levels	35%				2
II. Debt Flow	15%				17
III. Monetary Policy	50%				9

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Mexico offers somewhat better than average value, ranked 4 among the countries we measure. Its workers are somewhat inexpensive, even taking into consideration Mexico's somewhat low levels of education and very poor quality of education. Further, people in Mexico work hard relative to the cost of their labor - the average male of working age works 35 hours per week (4 out of 20 countries), and the demographics of the workforce are about average. Levels of saving and investing are roughly average given Mexico's low per capita income levels, with investment at about 14% of GDP (16 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Mexico's culture looks to be neutral for growth in coming years because it is ranked 8 out of 20 countries in this culture gauge. Note that our culture measures compare Mexico to countries of similar levels of economic development. Starting with self-sufficiency, Mexico is rated very well on this measure, weighing that its workers have a strong work ethic, its level of government support is low (with government outlays at 27% of GDP), and its labor markets are very flexible. Mexico also seems to value achieving a bit more than savoring - again, its work ethic is strong, and surveys suggest that its people moderately value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat weak in Mexico relative to income. We see the country investing lightly in research and innovation, and its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Mexico has somewhat low bureaucracy and red tape, somewhat high corruption, and somewhat weak rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Mexico's indebtedness position is better than other countries, ranked 3 out of the 20 countries we look at. The country has plenty of room to lever up in the future, with a total debt burden of around 84% of GDP, compared to the global average of 200-250%. In the past few years, its growth was supported by high credit creation, which is restrictive for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Thailand's Future Growth

Based on our economic health index, we project that Thailand's real growth rate over the next 10 years will be in the vicinity of 4.0% to 4.9%. This growth rate is somewhat above the global average, ranked 5 out of 20 major economies, and 4 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Thailand's case, our growth estimate comes from combining our expectation of a 4.2% growth rate per worker, which is somewhat above the global average, and a labor force growth rate of -0.2%, which is somewhat below other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Thailand's productivity to be much better than most major countries (implying a growth rate of 6.4% on its own), and indebtedness conditions to be slightly better than other countries (implying a growth rate of 2.7% on its own). As shown below, Thailand's biggest relative strengths are its levels of investment and how hard its people work, and its biggest relative problems are its reliance on credit flows for growth and its debt and debt service levels (though compared to other countries it doesn't rate especially poorly on these measures). The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Thailand

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	4.0% to 4.9%				5
Growth in Working Age Population :	-0.2%				13
Projected Real Growth per Worker :	4.2%				5
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>				
Productivity	65%				2
I. Value: What You Pay vs. What You Get	70%				3
i. Education	25%				3
ii. Labor Productivity	25%				3
iii. Working Hard	25%				2
a. Avg Hours Worked	67%				2
b. Demographics	33%				5
iv. Investing	25%				3
a. Investment ex Housing	50%				4
b. Household Savings	50%				4
II. Culture	30%				3
i. Self-Sufficiency	17%				4
a. Work Ethic	50%				1
b. Government Support	25%				8
c. Rigidity of Labor Market	25%				18
ii. Savoring Life vs. Achieving	17%				4
a. Observed Outcomes (Work Ethic)	50%				1
b. Expressed Values	50%				12
iii. Innovation & Commercialism	17%				5
a. Outputs (e.g. patents, trademarks)	50%				7
b. Inputs (e.g. R&D, # of researchers)	50%				3
iv. Bureaucracy	17%				2
v. Corruption	17%				5
vi. Rule of Law	17%				2
Indebtedness	35%				7
I. Debt and Debt Service Levels	35%				7
II. Debt Flow	15%				16
III. Monetary Policy	50%				12

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Thailand offers much better than average value, ranked 3 among the countries we measure. Its workers are somewhat inexpensive, even taking into consideration Thailand's somewhat low levels of education and poor quality of education. Further, people in Thailand work hard relative to the cost of their labor - the average male of working age works 40 hours per week (1 out of 20 countries), and the demographics of the workforce are about average. Levels of saving and investing are somewhat high given Thailand's very low per capita income levels, with investment at about 19% of GDP (6 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Thailand's culture looks to be a support to growth in coming years because it is ranked 3 out of 20 countries in this culture gauge. Note that our culture measures compare Thailand to countries of similar levels of economic development. Starting with self-sufficiency, Thailand is rated pretty well on this measure, weighing that its workers have a strong work ethic, its level of government support is neutral (with government outlays at 24% of GDP), and its labor markets are neither rigid nor flexible. Thailand also seems to value achieving a bit more than savoring - again, its work ethic is strong, though surveys suggest that its people don't especially value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat strong in Thailand relative to income. We see the country investing heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are about average. Finally, according to the international measures we are using, Thailand has very low bureaucracy and red tape, somewhat low corruption, and very strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Thailand's indebtedness position is slightly better than other countries, ranked 7 out of the 20 countries we look at. The country has a bit of room to lever up in the future, with a total debt burden of around 156% of GDP, compared to the global average of 200-250%. In the past few years, its growth was supported by high credit creation, which is restrictive for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Argentina's Future Growth

Based on our economic health index, we project that Argentina's real growth rate over the next 10 years will be in the vicinity of 3.3%. This growth rate is somewhat above the global average, ranked 6 out of 20 major economies, and 5 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Argentina's case, our growth estimate comes from combining our expectation of a 2.5% growth rate per worker, which is somewhat above the global average, and a labor force growth rate of 0.8%, which is well above other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Argentina's productivity to be about average compared to most major countries (implying a growth rate of 1.8% on its own), and indebtedness conditions to be better than other countries (implying a growth rate of 3.8% on its own). As shown below, Argentina's biggest relative strengths are its debt and debt service levels and the value its workers provide relative to education levels, and its biggest relative problems are its level of bureaucracy and its rule of law. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Argentina

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	3.3%		6
Growth in Working Age Population :	0.8%		4
Projected Real Growth per Worker :	2.5%		6
Component of Growth per Worker Estimate	Weight		
Productivity	65%		9
I. Value: What You Pay vs. What You Get	70%		6
i. Education	25%		9
ii. Labor Productivity	25%		8
iii. Working Hard	25%		5
a. Avg Hours Worked	67%		5
b. Demographics	33%		4
iv. Investing	25%		6
a. Investment ex Housing	50%		6
b. Household Savings	50%		-
II. Culture	30%		17
i. Self-Sufficiency	17%		14
a. Work Ethic	50%		9
b. Government Support	25%		14
c. Rigidity of Labor Market	25%		20
ii. Savoring Life vs. Achieving	17%		13
a. Observed Outcomes (Work Ethic)	50%		9
b. Expressed Values	50%		16
iii. Innovation & Commercialism	17%		8
a. Outputs (e.g. patents, trademarks)	50%		10
b. Inputs (e.g. R&D, # of researchers)	50%		6
iv. Bureaucracy	17%		20
v. Corruption	17%		17
vi. Rule of Law	17%		18
Indebtedness	35%		4
I. Debt and Debt Service Levels	35%		1
II. Debt Flow	15%		1
III. Monetary Policy	50%		20

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Argentina offers somewhat better than average value, ranked 6 among the countries we measure. Its workers are somewhat inexpensive, even taking into consideration Argentina's low levels of education and very poor quality of education. Further, people in Argentina work an average amount relative to the cost of their labor - the average male of working age works 29 hours per week (7 out of 20 countries), and the demographics of the workforce are about average. Levels of saving and investing are roughly average given Argentina's low per capita income levels, with investment at about 17% of GDP (9 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Argentina's culture looks to be a significant headwind to growth in coming years because it is ranked 17 out of 20 countries in this culture gauge. Note that our culture measures compare Argentina to countries of similar levels of economic development. Starting with self-sufficiency, Argentina is rated pretty poorly on this measure, weighing that its workers have a somewhat weak work ethic, its level of government support is high (with government outlays at 41% of GDP), and its labor markets are very rigid. Argentina also seems to value savoring a bit more than achieving - again, its work ethic is somewhat weak, and surveys suggest that its people don't value accomplishment and achievement. Furthermore, innovation and commercialism are about average in Argentina relative to income. We see the country investing heavily in research and innovation, though its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Argentina has very high bureaucracy and red tape, very high corruption, and very weak rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Argentina's indebtedness position is better than other countries, ranked 4 out of the 20 countries we look at. The country has plenty of room to lever up in the future, with a total debt burden of around 37% of GDP, compared to the global average of 200-250%. In the past few years, its growth was very depressed by low credit creation, which is very supportive for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Korea's Future Growth

Based on our economic health index, we project that Korea's real growth rate over the next 10 years will be in the vicinity of 2.7% to 3.1%. This growth rate is somewhat above the global average, ranked 7 out of 20 major economies, and 6 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Korea's case, our growth estimate comes from combining our expectation of a 3.4% growth rate per worker, which is somewhat above the global average, and a labor force growth rate of -0.3%, which is somewhat below other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Korea's productivity to be somewhat better than most major countries (implying a growth rate of 3.5% on its own), and indebtedness conditions to be slightly better than other countries (implying a growth rate of 2.3% on its own). As shown below, Korea's biggest relative strengths are the value its workers provide relative to education levels and its level of innovation/commercialism, and its biggest relative problems are how hard its people work and its monetary policy. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Korea

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	2.7% to 3.1%				7
Growth in Working Age Population :	-0.3%				15
Projected Real Growth per Worker :	3.4%				7
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>				
Productivity	65%				6
I. Value: What You Pay vs. What You Get	70%				7
i. Education	25%				6
ii. Labor Productivity	25%				7
iii. Working Hard	25%				8
a. Avg Hours Worked	67%				8
b. Demographics	33%				15
iv. Investing	25%				5
a. Investment ex Housing	50%				3
b. Household Savings	50%				11
II. Culture	30%				5
i. Self-Sufficiency	17%				5
a. Work Ethic	50%				6
b. Government Support	25%				2
c. Rigidity of Labor Market	25%				11
ii. Savoring Life vs. Achieving	17%				9
a. Observed Outcomes (Work Ethic)	50%				6
b. Expressed Values	50%				8
iii. Innovation & Commercialism	17%				1
a. Outputs (e.g. patents, trademarks)	50%				3
b. Inputs (e.g. R&D, # of researchers)	50%				1
iv. Bureaucracy	17%				4
v. Corruption	17%				14
vi. Rule of Law	17%				10
Indebtedness	35%				8
I. Debt and Debt Service Levels	35%				8
II. Debt Flow	15%				9
III. Monetary Policy	50%				17

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Korea offers somewhat better than average value, ranked 7 among the countries we measure. Its workers are somewhat inexpensive, taking into consideration Korea's high levels of education and very good quality of education. Further, people in Korea don't work especially hard relative to the cost of their labor - the average male of working age works 29 hours per week (8 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are roughly average given Korea's about average per capita income levels, with investment at about 27% of GDP (2 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Korea's culture looks to be a support to growth in coming years because it is ranked 5 out of 20 countries in this culture gauge. Note that our culture measures compare Korea to countries of similar levels of economic development. Starting with self-sufficiency, Korea is rated pretty well on this measure, weighing that its workers have a roughly average work ethic, its level of government support is low (with government outlays at 22% of GDP), and its labor markets are moderately flexible. Korea also seems to value savoring about the same as it values achieving - again, its work ethic is roughly average, and surveys suggest that its people moderately value accomplishment and achievement. Furthermore, innovation and commercialism are very strong in Korea relative to income. We see the country investing very heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are high. Finally, according to the international measures we are using, Korea has somewhat low bureaucracy and red tape, somewhat high corruption, and average rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Korea's indebtedness position is slightly better than other countries, ranked 8 out of the 20 countries we look at. The country has a bit of room to lever up in the future, with a total debt burden of around 277% of GDP, compared to the global average of 200-250%. In the past few years, its growth was neither supported nor depressed by credit creation, which is neutral for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Brazil's Future Growth

Based on our economic health index, we project that Brazil's real growth rate over the next 10 years will be in the vicinity of 2.9% to 3.0%. This growth rate is somewhat above the global average, ranked 8 out of 20 major economies, and 7 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Brazil's case, our growth estimate comes from combining our expectation of a 2.1% growth rate per worker, which is somewhat above the global average, and a labor force growth rate of 0.8%, which is well above other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Brazil's productivity to be about average compared to most major countries (implying a growth rate of 2.2% on its own), and indebtedness conditions to be about average compared to other countries (implying a growth rate of 2.2% on its own). As shown below, Brazil's biggest relative strengths are the value its workers provide relative to education levels and its debt and debt service levels, and its biggest relative problems are its level of bureaucracy and how its people value savoring life versus achieving. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Brazil

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	2.9% to 3.0%				8
Growth in Working Age Population :	0.8%				3
Projected Real Growth per Worker :	2.1%				8
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>				
Productivity	65%				7
I. Value: What You Pay vs. What You Get	70%				5
i. Education	25%				7
ii. Labor Productivity	25%				9
iii. Working Hard	25%				6
a. Avg Hours Worked	67%				7
b. Demographics	33%				3
iv. Investing	25%				8
a. Investment ex Housing	50%				8
b. Household Savings	50%				-
II. Culture	30%				14
i. Self-Sufficiency	17%				12
a. Work Ethic	50%				12
b. Government Support	25%				12
c. Rigidity of Labor Market	25%				9
ii. Savoring Life vs. Achieving	17%				16
a. Observed Outcomes (Work Ethic)	50%				12
b. Expressed Values	50%				17
iii. Innovation & Commercialism	17%				10
a. Outputs (e.g. patents, trademarks)	50%				16
b. Inputs (e.g. R&D, # of researchers)	50%				7
iv. Bureaucracy	17%				17
v. Corruption	17%				12
vi. Rule of Law	17%				14
Indebtedness	35%				10
I. Debt and Debt Service Levels	35%				6
II. Debt Flow	15%				15
III. Monetary Policy	50%				14

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Brazil offers somewhat better than average value, ranked 5 among the countries we measure. Its workers are somewhat inexpensive, even taking into consideration Brazil's low levels of education and very poor quality of education. Further, people in Brazil work an average amount relative to the cost of their labor - the average male of working age works 28 hours per week (9 out of 20 countries), and the demographics of the workforce are about average. Levels of saving and investing are roughly average given Brazil's low per capita income levels, with investment at about 15% of GDP (12 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Brazil's culture looks to be a headwind to growth in coming years because it is ranked 14 out of 20 countries in this culture gauge. Note that our culture measures compare Brazil to countries of similar levels of economic development. Starting with self-sufficiency, Brazil is rated about average on this measure, weighing that its workers have a somewhat weak work ethic, its level of government support is high (with government outlays at 40% of GDP), and its labor markets are moderately flexible. Brazil also seems to value savoring much more than achieving - again, its work ethic is somewhat weak, and surveys suggest that its people don't value accomplishment and achievement. Furthermore, innovation and commercialism are about average in Brazil relative to income. We see the country investing heavily in research and innovation, though its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Brazil has very high bureaucracy and red tape, average levels of corruption, and somewhat weak rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Brazil's indebtedness position is about average compared to other countries, ranked 10 out of the 20 countries we look at. The country has a bit of room to lever up in the future, with a total debt burden of around 121% of GDP, compared to the global average of 200-250%. In the past few years, its growth was supported by high credit creation, which is restrictive for growth going forward. Lastly, the stance of monetary policy is generally neutral.

USA's Future Growth

Based on our economic health index, we project that USA's real growth rate over the next 10 years will be in the vicinity of 1.8% to 2.2%. This growth rate is roughly at the global average, ranked 9 out of 20 major economies, and 2 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In USA's case, our growth estimate comes from combining our expectation of a 1.5% growth rate per worker, which is roughly in line with the global average, and a labor force growth rate of 0.2%, which is somewhat above other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect USA's productivity to be about average compared to most major countries (implying a growth rate of 1.5% on its own), and indebtedness conditions to be slightly better than other countries (implying a growth rate of 3.0% on its own). As shown below, USA's biggest relative strengths are its monetary policy and its level of innovation/commercialism, and its biggest relative problems are its debt and debt service levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: United States

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	1.8% to 2.2%		9
Growth in Working Age Population :	0.2%		7
Projected Real Growth per Worker :	1.5%		9
Component of Growth per Worker Estimate	Weight		
Productivity	65%		11
I. Value: What You Pay vs. What You Get	70%		12
i. Education	25%		12
ii. Labor Productivity	25%		11
iii. Working Hard	25%		15
a. Avg Hours Worked	67%		15
b. Demographics	33%		16
iv. Investing	25%		18
a. Investment ex Housing	50%		19
b. Household Savings	50%		13
II. Culture	30%		6
i. Self-Sufficiency	17%		8
a. Work Ethic	50%		10
b. Government Support	25%		9
c. Rigidity of Labor Market	25%		2
ii. Savoring Life vs. Achieving	17%		6
a. Observed Outcomes (Work Ethic)	50%		10
b. Expressed Values	50%		1
iii. Innovation & Commercialism	17%		2
a. Outputs (e.g. patents, trademarks)	50%		1
b. Inputs (e.g. R&D, # of researchers)	50%		5
iv. Bureaucracy	17%		6
v. Corruption	17%		15
vi. Rule of Law	17%		7
Indebtedness	35%		6
I. Debt and Debt Service Levels	35%		12
II. Debt Flow	15%		6
III. Monetary Policy	50%		1

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

USA offers somewhat worse than average value, ranked 12 among the countries we measure. Its workers are neither expensive nor inexpensive, taking into consideration USA's high levels of education and about average quality of education. Further, people in USA don't work hard relative to the cost of their labor - the average male of working age works 24 hours per week (14 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are somewhat low given USA's high per capita income levels, with investment at about 14% of GDP (14 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

USA's culture looks to be a support to growth in coming years because it is ranked 6 out of 20 countries in this culture gauge. Note that our culture measures compare USA to countries of similar levels of economic development. Starting with self-sufficiency, USA is rated pretty well on this measure, weighing that its workers have a somewhat weak work ethic, its level of government support is neutral (with government outlays at 40% of GDP), and its labor markets are very flexible. USA also seems to value achieving a bit more than savoring - again, its work ethic is somewhat weak, though surveys suggest that its people highly value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat strong in USA relative to income. We see the country investing heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are high. Finally, according to the international measures we are using, USA has somewhat low bureaucracy and red tape, somewhat high corruption, and somewhat strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. USA's indebtedness position is slightly better than other countries, ranked 6 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 312% of GDP, compared to the global average of 200-250%. In the past few years, its growth was depressed by low credit creation, which is supportive for growth going forward. Lastly, the stance of monetary policy is generally a bit stimulative.

United Kingdom's Future Growth

Based on our economic health index, we project that UK's real growth rate over the next 10 years will be in the vicinity of 1.5% to 1.7%. This growth rate is roughly at the global average, ranked 10 out of 20 major economies, and 3 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In UK's case, our growth estimate comes from combining our expectation of a 1.5% growth rate per worker, which is roughly in line with the global average, and a labor force growth rate of 0.2%, which is somewhat above other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect UK's productivity to be somewhat worse than most major countries (implying a growth rate of 1.0% on its own), and indebtedness conditions to be slightly worse than other countries (implying a growth rate of 1.9% on its own). As shown below, UK's biggest relative strengths are its monetary policy and its low reliance on credit flows for growth, and its biggest relative problems are its debt and debt service levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: United Kingdom

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	1.5% to 1.7%		10
Growth in Working Age Population :	0.2%		8
Projected Real Growth per Worker :	1.5%		10
Component of Growth per Worker Estimate	Weight		
Productivity	65%		13
I. Value: What You Pay vs. What You Get	70%		15
i. Education	25%		14
ii. Labor Productivity	25%		13
iii. Working Hard	25%		14
a. Avg Hours Worked	67%		16
b. Demographics	33%		11
iv. Investing	25%		20
a. Investment ex Housing	50%		18
b. Household Savings	50%		15
II. Culture	30%		7
i. Self-Sufficiency	17%		13
a. Work Ethic	50%		14
b. Government Support	25%		13
c. Rigidity of Labor Market	25%		8
ii. Savoring Life vs. Achieving	17%		12
a. Observed Outcomes (Work Ethic)	50%		14
b. Expressed Values	50%		13
iii. Innovation & Commercialism	17%		7
a. Outputs (e.g. patents, trademarks)	50%		6
b. Inputs (e.g. R&D, # of researchers)	50%		9
iv. Bureaucracy	17%		5
v. Corruption	17%		4
vi. Rule of Law	17%		3
Indebtedness	35%		13
I. Debt and Debt Service Levels	35%		19
II. Debt Flow	15%		2
III. Monetary Policy	50%		2

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

UK offers somewhat worse than average value, ranked 15 among the countries we measure. Its workers are neither expensive nor inexpensive, taking into consideration UK's about average levels of education and good quality of education. Further, people in UK don't work especially hard relative to the cost of their labor - the average male of working age works 23 hours per week (15 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are somewhat low given UK's high per capita income levels, with investment at about 13% of GDP (17 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

UK's culture looks to be neutral for growth in coming years because it is ranked 7 out of 20 countries in this culture gauge. Note that our culture measures compare UK to countries of similar levels of economic development. Starting with self-sufficiency, UK is rated pretty poorly on this measure, weighing that its workers have a weak work ethic, its level of government support is high (with government outlays at 45% of GDP), and its labor markets are moderately flexible. UK also seems to value savoring a bit more than achieving - again, its work ethic is weak, and surveys suggest that its people don't especially value accomplishment and achievement. Furthermore, innovation and commercialism are about average in UK relative to income. We see the country investing heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are about average. Finally, according to the international measures we are using, UK has somewhat low bureaucracy and red tape, somewhat low corruption, and very strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. UK's indebtedness position is slightly worse than other countries, ranked 13 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 465% of GDP, compared to the global average of 200-250%. In the past few years, its growth was depressed by low credit creation, which is supportive for growth going forward. Lastly, the stance of monetary policy is generally a bit stimulative.

Russia's Future Growth

Based on our economic health index, we project that Russia's real growth rate over the next 10 years will be in the vicinity of 1.5%. This growth rate is roughly at the global average, ranked 11 out of 20 major economies, and 8 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Russia's case, our growth estimate comes from combining our expectation of a 2.5% growth rate per worker, which is roughly in line with the global average, and a labor force growth rate of -1.0%, which is well below other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Russia's productivity to be about average compared to most major countries (implying a growth rate of 1.8% on its own), and indebtedness conditions to be slightly better than other countries (implying a growth rate of 3.7% on its own). As shown below, Russia's biggest relative strengths are its debt and debt service levels and the value its workers provide relative to education levels, and its biggest relative problems are how hard its people work and its level of corruption relative to income. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Russia

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	1.5%		11
Growth in Working Age Population :	-1.0%		20
Projected Real Growth per Worker :	2.5%		11
Component of Growth per Worker Estimate	Weight		
Productivity	65%		8
I. Value: What You Pay vs. What You Get	70%		8
i. Education	25%		4
ii. Labor Productivity	25%		4
iii. Working Hard	25%		10
a. Avg Hours Worked	67%		10
b. Demographics	33%		12
iv. Investing	25%		10
a. Investment ex Housing	50%		17
b. Household Savings	50%		3
II. Culture	30%		15
i. Self-Sufficiency	17%		10
a. Work Ethic	50%		11
b. Government Support	25%		7
c. Rigidity of Labor Market	25%		13
ii. Savoring Life vs. Achieving	17%		15
a. Observed Outcomes (Work Ethic)	50%		11
b. Expressed Values	50%		14
iii. Innovation & Commercialism	17%		15
a. Outputs (e.g. patents, trademarks)	50%		15
b. Inputs (e.g. R&D, # of researchers)	50%		14
iv. Bureaucracy	17%		16
v. Corruption	17%		18
vi. Rule of Law	17%		17
Indebtedness	35%		5
I. Debt and Debt Service Levels	35%		4
II. Debt Flow	15%		13
III. Monetary Policy	50%		13

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Russia offers somewhat better than average value, ranked 8 among the countries we measure. Its workers are somewhat inexpensive, taking into consideration Russia's high levels of education and poor quality of education. Further, people in Russia don't work especially hard relative to the cost of their labor - the average male of working age works 25 hours per week (11 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are roughly average given Russia's about average per capita income levels, with investment at about 13% of GDP (19 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Russia's culture looks to be a headwind to growth in coming years because it is ranked 15 out of 20 countries in this culture gauge. Note that our culture measures compare Russia to countries of similar levels of economic development. Starting with self-sufficiency, Russia is rated about average on this measure, weighing that its workers have a somewhat weak work ethic, its level of government support is neutral (with government outlays at 38% of GDP), and its labor markets are neither rigid nor flexible. Russia also seems to value savoring a bit more than achieving - again, its work ethic is somewhat weak, and surveys suggest that its people don't especially value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat weak in Russia relative to income. We see the country investing neither lightly nor heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Russia has very high bureaucracy and red tape, very high corruption, and very weak rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Russia's indebtedness position is slightly better than other countries, ranked 5 out of the 20 countries we look at. The country has a moderate amount of room to lever up in the future, with a total debt burden of around 84% of GDP, compared to the global average of 200-250%. In the past few years, its growth was neither supported nor depressed by credit creation, which is neutral for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Australia's Future Growth

Based on our economic health index, we project that Australia's real growth rate over the next 10 years will be in the vicinity of 1.3% to 1.7%. This growth rate is roughly at the global average, ranked 12 out of 20 major economies, and 4 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Australia's case, our growth estimate comes from combining our expectation of a 0.6% growth rate per worker, which is roughly in line with the global average, and a labor force growth rate of 0.7%, which is somewhat above other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Australia's productivity to be somewhat worse than most major countries (implying a growth rate of 0.5% on its own), and indebtedness conditions to be slightly worse than other countries (implying a growth rate of 1.8% on its own). As shown below, Australia's biggest relative strengths are its low reliance on credit flows for growth and its level of bureaucracy (though compared to other countries it doesn't rate especially well on these measures), and its biggest relative problems are the value its workers provide relative to education levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Australia

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	1.3% to 1.7%				12
Growth in Working Age Population :	0.7%				5
Projected Real Growth per Worker :	0.6%				12
Component of Growth per Worker Estimate	Weight				
Productivity	65%				15
I. Value: What You Pay vs. What You Get	70%				17
i. Education	25%				18
ii. Labor Productivity	25%				20
iii. Working Hard	25%				13
a. Avg Hours Worked	67%				12
b. Demographics	33%				17
iv. Investing	25%				13
a. Investment ex Housing	50%				7
b. Household Savings	50%				12
II. Culture	30%				11
i. Self-Sufficiency	17%				9
a. Work Ethic	50%				8
b. Government Support	25%				5
c. Rigidity of Labor Market	25%				16
ii. Savoring Life vs. Achieving	17%				7
a. Observed Outcomes (Work Ethic)	50%				8
b. Expressed Values	50%				5
iii. Innovation & Commercialism	17%				11
a. Outputs (e.g. patents, trademarks)	50%				9
b. Inputs (e.g. R&D, # of researchers)	50%				16
iv. Bureaucracy	17%				7
v. Corruption	17%				11
vi. Rule of Law	17%				12
Indebtedness	35%				16
I. Debt and Debt Service Levels	35%				10
II. Debt Flow	15%				8
III. Monetary Policy	50%				19

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Australia offers somewhat worse than average value, ranked 17 among the countries we measure. Its workers are very expensive, even taking into consideration Australia's somewhat high levels of education and good quality of education. Further, people in Australia don't work especially hard relative to the cost of their labor - the average male of working age works 27 hours per week (10 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are roughly average given Australia's very high per capita income levels, with investment at about 26% of GDP (3 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Australia's culture looks to be neutral for growth in coming years because it is ranked 11 out of 20 countries in this culture gauge. Note that our culture measures compare Australia to countries of similar levels of economic development. Starting with self-sufficiency, Australia is rated about average on this measure, weighing that its workers have a roughly average work ethic, its level of government support is neutral (with government outlays at 37% of GDP), and its labor markets are neither rigid nor flexible. Australia also seems to value savoring about the same as it values achieving - again, its work ethic is roughly average, and surveys suggest that its people value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat weak in Australia relative to income. We see the country investing neither lightly nor heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Australia has average levels of bureaucracy and red tape, average levels of corruption, and average rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Australia's indebtedness position is slightly worse than other countries, ranked 16 out of the 20 countries we look at. The country has little room to lever up in the future, with a total debt burden of around 300% of GDP, compared to the global average of 200-250%. In the past few years, its growth was neither supported nor depressed by credit creation, which is neutral for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Canada's Future Growth

Based on our economic health index, we project that Canada's real growth rate over the next 10 years will be in the vicinity of 1.1% to 1.4%. This growth rate is somewhat below the global average, ranked 13 out of 20 major economies, and 5 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Canada's case, our growth estimate comes from combining our expectation of a 0.9% growth rate per worker, which is somewhat below the global average, and a labor force growth rate of 0.2%, which is roughly in line with other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Canada's productivity to be somewhat worse than most major countries (implying a growth rate of 0.6% on its own), and indebtedness conditions to be about average compared to other countries (implying a growth rate of 2.4% on its own). As shown below, Canada's biggest relative strengths are its rule of law and its level of corruption relative to income, and its biggest relative problems are how hard its people work and the value its workers provide relative to education levels. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Canada

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	1.1% to 1.4%				13
Growth in Working Age Population :	0.2%				9
Projected Real Growth per Worker :	0.9%				13
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>				
Productivity	65%				14
I. Value: What You Pay vs. What You Get	70%				16
i. Education	25%				15
ii. Labor Productivity	25%				15
iii. Working Hard	25%				17
a. Avg Hours Worked	67%				14
b. Demographics	33%				20
iv. Investing	25%				16
a. Investment ex Housing	50%				15
b. Household Savings	50%				14
II. Culture	30%				10
i. Self-Sufficiency	17%				11
a. Work Ethic	50%				13
b. Government Support	25%				10
c. Rigidity of Labor Market	25%				5
ii. Savoring Life vs. Achieving	17%				10
a. Observed Outcomes (Work Ethic)	50%				13
b. Expressed Values	50%				9
iii. Innovation & Commercialism	17%				12
a. Outputs (e.g. patents, trademarks)	50%				12
b. Inputs (e.g. R&D, # of researchers)	50%				13
iv. Bureaucracy	17%				9
v. Corruption	17%				8
vi. Rule of Law	17%				4
Indebtedness	35%				9
I. Debt and Debt Service Levels	35%				9
II. Debt Flow	15%				14
III. Monetary Policy	50%				16

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Canada offers somewhat worse than average value, ranked 16 among the countries we measure. Its workers are somewhat expensive, even taking into consideration Canada's somewhat high levels of education and very good quality of education. Further, people in Canada don't work hard relative to the cost of their labor - the average male of working age works 24 hours per week (13 out of 20 countries), and the demographics of the workforce are very unfavorable. Levels of saving and investing are somewhat low given Canada's high per capita income levels, with investment at about 18% of GDP (7 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Canada's culture looks to be neutral for growth in coming years because it is ranked 10 out of 20 countries in this culture gauge. Note that our culture measures compare Canada to countries of similar levels of economic development. Starting with self-sufficiency, Canada is rated about average on this measure, weighing that its workers have a somewhat weak work ethic, its level of government support is neutral (with government outlays at 46% of GDP), and its labor markets are very flexible. Canada also seems to value savoring a bit more than achieving - again, its work ethic is somewhat weak, and surveys suggest that its people moderately value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat weak in Canada relative to income. We see the country investing neither lightly nor heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Canada has average levels of bureaucracy and red tape, average levels of corruption, and somewhat strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Canada's indebtedness position is about average compared to other countries, ranked 9 out of the 20 countries we look at. The country has a bit of room to lever up in the future, with a total debt burden of around 274% of GDP, compared to the global average of 200-250%. In the past few years, its growth was neither supported nor depressed by credit creation, which is neutral for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Germany's Future Growth

Based on our economic health index, we project that Germany's real growth rate over the next 10 years will be in the vicinity of 0.1% to 0.8%. This growth rate is somewhat below the global average, ranked 14 out of 20 major economies, and 6 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Germany's case, our growth estimate comes from combining our expectation of a 1.5% growth rate per worker, which is somewhat below the global average, and a labor force growth rate of -0.7%, which is well below other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Germany's productivity to be somewhat worse than most major countries (implying a growth rate of 0.1% on its own), and indebtedness conditions to be about average compared to other countries (implying a growth rate of 2.1% on its own). As shown below, Germany's biggest relative strengths are its monetary policy and its low reliance on credit flows for growth, and its biggest relative problems are its debt and debt service levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Germany

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	0.1% to 0.8%		14
Growth in Working Age Population :	-0.7%		17
Projected Real Growth per Worker :	1.5%		14
Component of Growth per Worker Estimate	Weight		
Productivity	65%		16
I. Value: What You Pay vs. What You Get	70%		19
i. Education	25%		17
ii. Labor Productivity	25%		16
iii. Working Hard	25%		19
a. Avg Hours Worked	67%		19
b. Demographics	33%		14
iv. Investing	25%		15
a. Investment ex Housing	50%		20
b. Household Savings	50%		8
II. Culture	30%		12
i. Self-Sufficiency	17%		17
a. Work Ethic	50%		19
b. Government Support	25%		15
c. Rigidity of Labor Market	25%		7
ii. Savoring Life vs. Achieving	17%		17
a. Observed Outcomes (Work Ethic)	50%		19
b. Expressed Values	50%		11
iii. Innovation & Commercialism	17%		9
a. Outputs (e.g. patents, trademarks)	50%		13
b. Inputs (e.g. R&D, # of researchers)	50%		8
iv. Bureaucracy	17%		10
v. Corruption	17%		6
vi. Rule of Law	17%		9
Indebtedness	35%		12
I. Debt and Debt Service Levels	35%		15
II. Debt Flow	15%		7
III. Monetary Policy	50%		3

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

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Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Germany offers somewhat worse than average value, ranked 19 among the countries we measure. Its workers are somewhat expensive, taking into consideration Germany's about average levels of education and good quality of education. Further, people in Germany don't work hard relative to the cost of their labor - the average male of working age works 18 hours per week (19 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are somewhat low given Germany's high per capita income levels, with investment at about 13% of GDP (18 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Germany's culture looks to be neutral for growth in coming years because it is ranked 12 out of 20 countries in this culture gauge. Note that our culture measures compare Germany to countries of similar levels of economic development. Starting with self-sufficiency, Germany is rated pretty poorly on this measure, weighing that its workers have a weak work ethic, its level of government support is high (with government outlays at 46% of GDP), and its labor markets are moderately flexible. Germany also seems to value savoring much more than achieving - again, its work ethic is weak, and surveys suggest that its people don't especially value accomplishment and achievement. Furthermore, innovation and commercialism are about average in Germany relative to income. We see the country investing heavily in research and innovation, though its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Germany has average levels of bureaucracy and red tape, somewhat low corruption, and somewhat strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Germany's indebtedness position is about average compared to other countries, ranked 12 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 262% of GDP, compared to the global average of 200-250%. In the past few years, its growth was depressed by low credit creation, which is supportive for growth going forward. Lastly, the stance of monetary policy is generally a bit stimulative.

France's Future Growth

Based on our economic health index, we project that France's real growth rate over the next 10 years will be in the vicinity of 0.1% to 0.8%. This growth rate is somewhat below the global average, ranked 15 out of 20 major economies, and 7 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In France's case, our growth estimate comes from combining our expectation of a 0.8% growth rate per worker, which is somewhat below the global average, and a labor force growth rate of 0.0%, which is roughly in line with other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect France's productivity to be much worse than most major countries (implying a growth rate of -0.8% on its own), and indebtedness conditions to be slightly worse than other countries (implying a growth rate of 1.8% on its own). As shown below, France's biggest relative strengths are its monetary policy and its low reliance on credit flows for growth, and its biggest relative problems are its debt and debt service levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: France

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	0.1% to 0.8%		15
Growth in Working Age Population :	0.0%		10
Projected Real Growth per Worker :	0.8%		15
Component of Growth per Worker Estimate	Weight		
Productivity	65%		19
I. Value: What You Pay vs. What You Get	70%		20
i. Education	25%		20
ii. Labor Productivity	25%		19
iii. Working Hard	25%		20
a. Avg Hours Worked	67%		20
b. Demographics	33%		13
iv. Investing	25%		12
a. Investment ex Housing	50%		14
b. Household Savings	50%		6
II. Culture	30%		16
i. Self-Sufficiency	17%		20
a. Work Ethic	50%		20
b. Government Support	25%		20
c. Rigidity of Labor Market	25%		17
ii. Savoring Life vs. Achieving	17%		20
a. Observed Outcomes (Work Ethic)	50%		20
b. Expressed Values	50%		18
iii. Innovation & Commercialism	17%		17
a. Outputs (e.g. patents, trademarks)	50%		17
b. Inputs (e.g. R&D, # of researchers)	50%		15
iv. Bureaucracy	17%		14
v. Corruption	17%		10
vi. Rule of Law	17%		11
Indebtedness	35%		14
I. Debt and Debt Service Levels	35%		18
II. Debt Flow	15%		4
III. Monetary Policy	50%		6

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

France offers somewhat worse than average value, ranked 20 among the countries we measure. Its workers are very expensive, taking into consideration France's somewhat low levels of education and good quality of education. Further, people in France don't work hard relative to the cost of their labor - the average male of working age works 17 hours per week (20 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are roughly average given France's high per capita income levels, with investment at about 17% of GDP (8 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

France's culture looks to be a headwind to growth in coming years because it is ranked 16 out of 20 countries in this culture gauge. Note that our culture measures compare France to countries of similar levels of economic development. Starting with self-sufficiency, France is rated very poorly on this measure, weighing that its workers have a weak work ethic, its level of government support is very high (with government outlays at 57% of GDP), and its labor markets are neither rigid nor flexible. France also seems to value savoring much more than achieving - again, its work ethic is weak, and surveys suggest that its people don't value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat weak in France relative to income. We see the country investing neither lightly nor heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are very low. Finally, according to the international measures we are using, France has somewhat high bureaucracy and red tape, average levels of corruption, and average rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. France's indebtedness position is slightly worse than other countries, ranked 14 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 320% of GDP, compared to the global average of 200-250%. In the past few years, its growth was depressed by low credit creation, which is supportive for growth going forward. Lastly, the stance of monetary policy is generally a bit stimulative.

Hungary's Future Growth

Based on our economic health index, we project that Hungary's real growth rate over the next 10 years will be in the vicinity of 0.7% to 0.8%. This growth rate is somewhat below the global average, ranked 16 out of 20 major economies, and 9 out of 9 emerging countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Hungary's case, our growth estimate comes from combining our expectation of a 1.5% growth rate per worker, which is somewhat below the global average, and a labor force growth rate of -0.7%, which is well below other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Hungary's productivity to be about average compared to most major countries (implying a growth rate of 1.7% on its own), and indebtedness conditions to be worse than other countries (implying a growth rate of 1.1% on its own). As shown below, Hungary's biggest relative strengths are the value its workers provide relative to education levels and its low reliance on credit flows for growth, and its biggest relative problems are its debt and debt service levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Hungary

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	0.7% to 0.8%		16
Growth in Working Age Population :	-0.7%		18
Projected Real Growth per Worker :	1.5%		16
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>		
Productivity	65%		10
I. Value: What You Pay vs. What You Get	70%		9
i. Education	25%		8
ii. Labor Productivity	25%		6
iii. Working Hard	25%		12
a. Avg Hours Worked	67%		13
b. Demographics	33%		7
iv. Investing	25%		9
a. Investment ex Housing	50%		11
b. Household Savings	50%		7
II. Culture	30%		13
i. Self-Sufficiency	17%		16
a. Work Ethic	50%		16
b. Government Support	25%		18
c. Rigidity of Labor Market	25%		6
ii. Savoring Life vs. Achieving	17%		18
a. Observed Outcomes (Work Ethic)	50%		16
b. Expressed Values	50%		15
iii. Innovation & Commercialism	17%		14
a. Outputs (e.g. patents, trademarks)	50%		11
b. Inputs (e.g. R&D, # of researchers)	50%		17
iv. Bureaucracy	17%		8
v. Corruption	17%		9
vi. Rule of Law	17%		15
Indebtedness	35%		18
I. Debt and Debt Service Levels	35%		14
II. Debt Flow	15%		3
III. Monetary Policy	50%		15

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Hungary offers around average value, ranked 9 among the countries we measure. Its workers are somewhat inexpensive, taking into consideration Hungary's about average levels of education and poor quality of education. Further, people in Hungary don't work especially hard relative to the cost of their labor - the average male of working age works 21 hours per week (16 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are roughly average given Hungary's about average per capita income levels, with investment at about 15% of GDP (11 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Hungary's culture looks to be a headwind to growth in coming years because it is ranked 13 out of 20 countries in this culture gauge. Note that our culture measures compare Hungary to countries of similar levels of economic development. Starting with self-sufficiency, Hungary is rated pretty poorly on this measure, weighing that its workers have a weak work ethic, its level of government support is very high (with government outlays at 50% of GDP), and its labor markets are very flexible. Hungary also seems to value savoring much more than achieving - again, its work ethic is weak, and surveys suggest that its people don't especially value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat weak in Hungary relative to income. We see the country investing neither lightly nor heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are low. Finally, according to the international measures we are using, Hungary has average levels of bureaucracy and red tape, average levels of corruption, and somewhat weak rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Hungary's indebtedness position is worse than other countries, ranked 18 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 193% of GDP, compared to the global average of 200-250%. In the past few years, its growth was depressed by low credit creation, which is supportive for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Spain's Future Growth

Based on our economic health index, we project that Spain's real growth rate over the next 10 years will be in the vicinity of 0.1% to 0.5%. This growth rate is somewhat below the global average, ranked 17 out of 20 major economies, and 8 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Spain's case, our growth estimate comes from combining our expectation of a 0.6% growth rate per worker, which is well below the global average, and a labor force growth rate of -0.1%, which is roughly in line with other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Spain's productivity to be much worse than most major countries (implying a growth rate of -0.4% on its own), and indebtedness conditions to be worse than other countries (implying a growth rate of 1.4% on its own). As shown below, Spain's biggest relative strengths are its monetary policy and its low reliance on credit flows for growth, and its biggest relative problems are its debt and debt service levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Spain

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	0.1% to 0.5%				17
Growth in Working Age Population :	-0.1%				11
Projected Real Growth per Worker :	0.6%				17
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>				
Productivity	65%				18
I. Value: What You Pay vs. What You Get	70%				14
i. Education	25%				16
ii. Labor Productivity	25%				14
iii. Working Hard	25%				16
a. Avg Hours Worked	67%				18
b. Demographics	33%				9
iv. Investing	25%				11
a. Investment ex Housing	50%				10
b. Household Savings	50%				10
II. Culture	30%				18
i. Self-Sufficiency	17%				18
a. Work Ethic	50%				17
b. Government Support	25%				17
c. Rigidity of Labor Market	25%				12
ii. Savoring Life vs. Achieving	17%				14
a. Observed Outcomes (Work Ethic)	50%				17
b. Expressed Values	50%				6
iii. Innovation & Commercialism	17%				18
a. Outputs (e.g. patents, trademarks)	50%				18
b. Inputs (e.g. R&D, # of researchers)	50%				12
iv. Bureaucracy	17%				18
v. Corruption	17%				16
vi. Rule of Law	17%				16
Indebtedness	35%				17
I. Debt and Debt Service Levels	35%				17
II. Debt Flow	15%				5
III. Monetary Policy	50%				11

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Spain offers somewhat worse than average value, ranked 14 among the countries we measure. Its workers are somewhat expensive, taking into consideration Spain's about average levels of education and about average quality of education. Further, people in Spain don't work hard relative to the cost of their labor - the average male of working age works 20 hours per week (18 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are roughly average given Spain's high per capita income levels, with investment at about 16% of GDP (10 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Spain's culture looks to be a significant headwind to growth in coming years because it is ranked 18 out of 20 countries in this culture gauge. Note that our culture measures compare Spain to countries of similar levels of economic development. Starting with self-sufficiency, Spain is rated pretty poorly on this measure, weighing that its workers have a weak work ethic, its level of government support is very high (with government outlays at 46% of GDP), and its labor markets are moderately flexible. Spain also seems to value savoring a bit more than achieving - again, its work ethic is weak, and surveys suggest that its people moderately value accomplishment and achievement. Furthermore, innovation and commercialism are somewhat weak in Spain relative to income. We see the country investing neither lightly nor heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are very low. Finally, according to the international measures we are using, Spain has very high bureaucracy and red tape, somewhat high corruption, and somewhat weak rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Spain's indebtedness position is worse than other countries, ranked 17 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 378% of GDP, compared to the global average of 200-250%. In the past few years, its growth was depressed by low credit creation, which is supportive for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Japan's Future Growth

Based on our economic health index, we project that Japan's real growth rate over the next 10 years will be in the vicinity of 0.1% to 0.2%. This growth rate is somewhat below the global average, ranked 18 out of 20 major economies, and 9 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Japan's case, our growth estimate comes from combining our expectation of a 0.9% growth rate per worker, which is well below the global average, and a labor force growth rate of -0.8%, which is well below other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Japan's productivity to be somewhat worse than most major countries (implying a growth rate of 1.1% on its own), and indebtedness conditions to be worse than other countries (implying a growth rate of 0.7% on its own). As shown below, Japan's biggest relative strengths are its monetary policy and its rule of law, and its biggest relative problems are its debt and debt service levels and its aging workforce. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Japan

		-4 ←	Score (Standard Deviation)	→ +4	Rank
Projected 10 Year Real Growth Rate :	0.1% to 0.2%				18
Growth in Working Age Population :	-0.8%				19
Projected Real Growth per Worker :	0.9%				18
Component of Growth per Worker Estimate	Weight				
Productivity	65%				12
I. Value: What You Pay vs. What You Get	70%				13
i. Education	25%				13
ii. Labor Productivity	25%				17
iii. Working Hard	25%				9
a. Avg Hours Worked	67%				9
b. Demographics	33%				18
iv. Investing	25%				17
a. Investment ex Housing	50%				12
b. Household Savings	50%				16
II. Culture	30%				9
i. Self-Sufficiency	17%				7
a. Work Ethic	50%				5
b. Government Support	25%				11
c. Rigidity of Labor Market	25%				14
ii. Savoring Life vs. Achieving	17%				8
a. Observed Outcomes (Work Ethic)	50%				5
b. Expressed Values	50%				10
iii. Innovation & Commercialism	17%				6
a. Outputs (e.g. patents, trademarks)	50%				4
b. Inputs (e.g. R&D, # of researchers)	50%				10
iv. Bureaucracy	17%				15
v. Corruption	17%				7
vi. Rule of Law	17%				8
Indebtedness	35%				19
I. Debt and Debt Service Levels	35%				13
II. Debt Flow	15%				20
III. Monetary Policy	50%				7

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Japan offers somewhat worse than average value, ranked 13 among the countries we measure. Its workers are somewhat expensive, even taking into consideration Japan's somewhat high levels of education and very good quality of education. Further, people in Japan don't work especially hard relative to the cost of their labor - the average male of working age works 31 hours per week (6 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are somewhat low given Japan's high per capita income levels, with investment at about 19% of GDP (5 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Japan's culture looks to be neutral for growth in coming years because it is ranked 9 out of 20 countries in this culture gauge. Note that our culture measures compare Japan to countries of similar levels of economic development. Starting with self-sufficiency, Japan is rated about average on this measure, weighing that its workers have a somewhat strong work ethic, its level of government support is high (with government outlays at 40% of GDP), and its labor markets are neither rigid nor flexible. Japan also seems to value savoring about the same as it values achieving - again, its work ethic is somewhat strong, though surveys suggest that its people don't especially value accomplishment and achievement. Furthermore, innovation and commercialism are about average in Japan relative to income. We see the country investing neither lightly nor heavily in research and innovation, and its outputs from innovation, including inventions and earnings, are about average. Finally, according to the international measures we are using, Japan has very high bureaucracy and red tape, average levels of corruption, and somewhat strong rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Japan's indebtedness position is worse than other countries, ranked 19 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 449% of GDP, compared to the global average of 200-250%. In the past few years, its growth was supported by high credit creation, which is restrictive for growth going forward. Lastly, the stance of monetary policy is generally stimulative.

Italy's Future Growth

Based on our economic health index, we project that Italy's real growth rate over the next 10 years will be in the vicinity of -0.7% to -0.4%. This growth rate is well below the global average, ranked 19 out of 20 major economies, and 10 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Italy's case, our growth estimate comes from combining our expectation of a -0.1% growth rate per worker, which is well below the global average, and a labor force growth rate of -0.3%, which is somewhat below other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Italy's productivity to be much worse than most major countries (implying a growth rate of -1.6% on its own), and indebtedness conditions to be slightly worse than other countries (implying a growth rate of 1.7% on its own). As shown below, Italy's biggest relative strengths are its monetary policy and its low reliance on credit flows for growth (though compared to other countries it doesn't rate especially well on these measures), and its biggest relative problems are its debt and debt service levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Italy

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	-0.7% to -0.4%		19
Growth in Working Age Population :	-0.3%		14
Projected Real Growth per Worker :	-0.1%		19
<i>Component of Growth per Worker Estimate</i>	<i>Weight</i>		
Productivity	65%		20
I. Value: What You Pay vs. What You Get	70%		18
i. Education	25%		19
ii. Labor Productivity	25%		18
iii. Working Hard	25%		18
a. Avg Hours Worked	67%		17
b. Demographics	33%		10
iv. Investing	25%		14
a. Investment ex Housing	50%		13
b. Household Savings	50%		9
II. Culture	30%		20
i. Self-Sufficiency	17%		19
a. Work Ethic	50%		18
b. Government Support	25%		19
c. Rigidity of Labor Market	25%		19
ii. Savoring Life vs. Achieving	17%		19
a. Observed Outcomes (Work Ethic)	50%		18
b. Expressed Values	50%		19
iii. Innovation & Commercialism	17%		20
a. Outputs (e.g. patents, trademarks)	50%		19
b. Inputs (e.g. R&D, # of researchers)	50%		20
iv. Bureaucracy	17%		19
v. Corruption	17%		20
vi. Rule of Law	17%		19
Indebtedness	35%		15
I. Debt and Debt Service Levels	35%		16
II. Debt Flow	15%		10
III. Monetary Policy	50%		8

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Italy offers somewhat worse than average value, ranked 18 among the countries we measure. Its workers are somewhat expensive, taking into consideration Italy's somewhat low levels of education and about average quality of education. Further, people in Italy don't work hard relative to the cost of their labor - the average male of working age works 20 hours per week (17 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are roughly average given Italy's high per capita income levels, with investment at about 15% of GDP (13 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Italy's culture looks to be a significant headwind to growth in coming years because it is ranked 20 out of 20 countries in this culture gauge. Note that our culture measures compare Italy to countries of similar levels of economic development. Starting with self-sufficiency, Italy is rated very poorly on this measure, weighing that its workers have a weak work ethic, its level of government support is very high (with government outlays at 51% of GDP), and its labor markets are very rigid. Italy also seems to value savoring much more than achieving - again, its work ethic is weak, and surveys suggest that its people don't value accomplishment and achievement. Furthermore, innovation and commercialism are very weak in Italy relative to income. We see the country investing very lightly in research and innovation, and its outputs from innovation, including inventions and earnings, are very low. Finally, according to the international measures we are using, Italy has very high bureaucracy and red tape, very high corruption, and very weak rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle - there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Italy's indebtedness position is slightly worse than other countries, ranked 15 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 341% of GDP, compared to the global average of 200-250%. In the past few years, its growth was neither supported nor depressed by credit creation, which is neutral for growth going forward. Lastly, the stance of monetary policy is generally a bit stimulative.

Greece's Future Growth

Based on our economic health index, we project that Greece's real growth rate over the next 10 years will be in the vicinity of -0.4%. This growth rate is well below the global average, ranked 20 out of 20 major economies, and 11 out of 11 developed countries. As a reminder, this estimate (and this writing) is based on our computer-generated analysis of the statistics detailed in Part 1, and doesn't account for exogenous shocks (like commodity or political shocks, or wars). In Greece's case, our growth estimate comes from combining our expectation of a 0.0% growth rate per worker, which is well below the global average, and a labor force growth rate of -0.4%, which is somewhat below other major economies. The growth in output per worker is driven significantly by productivity and indebtedness. Over the long-term productivity matters most, while swings in indebtedness tend to be an important driver in the short-term. Given we are looking at a 10 year time frame, we weigh our productivity measures about two thirds and our indebtedness measure about one third (though there is no precision here). Over the next 10 years, we expect Greece's productivity to be somewhat worse than most major countries (implying a growth rate of 0.1% on its own), and indebtedness conditions to be worse than other countries (implying a growth rate of 0.0% on its own). As shown below, Greece's biggest relative strengths are the value its workers provide relative to education levels and its low reliance on credit flows for growth (though compared to other countries it doesn't rate especially well on these measures), and its biggest relative problems are its debt and debt service levels and how hard its people work. The various gauges and weights are shown below. The individual indicators that are behind them are explained in Part 1 of this study, and listed in the appendix of this section. Please review this table to understand our comments.

Economic Health Index: Greece

		-4 ← Score (Standard Deviation) → +4	Rank
Projected 10 Year Real Growth Rate :	-0.4%		20
Growth in Working Age Population :	-0.4%		16
Projected Real Growth per Worker :	0.0%		20
Component of Growth per Worker Estimate		Weight	
Productivity		65%	17
I. Value: What You Pay vs. What You Get		70%	11
i. Education		25%	11
ii. Labor Productivity		25%	10
iii. Working Hard		25%	11
a. Avg Hours Worked		67%	11
b. Demographics		33%	8
iv. Investing		25%	19
a. Investment ex Housing		50%	16
b. Household Savings		50%	17
II. Culture		30%	19
i. Self-Sufficiency		17%	15
a. Work Ethic		50%	15
b. Government Support		25%	16
c. Rigidity of Labor Market		25%	10
ii. Savoring Life vs. Achieving		17%	11
a. Observed Outcomes (Work Ethic)		50%	15
b. Expressed Values		50%	-
iii. Innovation & Commercialism		17%	19
a. Outputs (e.g. patents, trademarks)		50%	20
b. Inputs (e.g. R&D, # of researchers)		50%	18
iv. Bureaucracy		17%	13
v. Corruption		17%	19
vi. Rule of Law		17%	20
Indebtedness		35%	20
I. Debt and Debt Service Levels		35%	19
II. Debt Flow		15%	11
III. Monetary Policy		50%	18

Scores shown as number of standard deviations away from the average observation across countries and time.

More Detail

As mentioned, the descriptions below are based on influences which are conveyed in gauges that are made up of a composite of indicators, shown both in Part 1 and in the appendix. So, if you want to see why we are saying what we are saying, you can trace them through by looking at those statistics.

Productivity

I. Value: What You Pay Versus What You Get

A country's productivity and competitiveness is mostly a function of the relative value it offers, especially for its labor. As shorthand for this, we refer to our gauge of this relative value as "what you pay versus what you get"; it reflects a) the cost and value of employees and b) the levels of investment. Countries that have well-educated workers that are relatively inexpensive and that have higher investment rates grow faster than those that don't.

Greece offers around average value, ranked 11 among the countries we measure. Its workers are neither expensive nor inexpensive, taking into consideration Greece's somewhat high levels of education and poor quality of education. Further, people in Greece don't work especially hard relative to the cost of their labor - the average male of working age works 25 hours per week (12 out of 20 countries), and the demographics of the workforce are unfavorable. Levels of saving and investing are somewhat low given Greece's about average per capita income levels, with investment at about 9% of GDP (20 out of 20 countries).

II. Culture

Just looking solely at the relative value of a country's workers misses the role that the culture plays in determining how much a country will grow. As I've discussed, culture influences the decisions people make about factors like savings rates or how many hours they work each week, which we measure in the previously shown indicators, but culture can also influence work attitudes, levels of efficiency, reliability and other such influences on whether countries underperform or outperform.

Greece's culture looks to be a significant headwind to growth in coming years because it is ranked 19 out of 20 countries in this culture gauge. Note that our culture measures compare Greece to countries of similar levels of economic development. Starting with self-sufficiency, Greece is rated pretty poorly on this measure, weighing that its workers have a weak work ethic, its level of government support is high (with government outlays at 51% of GDP), and its labor markets are moderately flexible. Greece also seems to value savoring a bit more than achieving - again, its work ethic is weak, and surveys suggest that its people moderately value accomplishment and achievement. Furthermore, innovation and commercialism are very weak in Greece relative to income. We see the country investing lightly in research and innovation, and its outputs from innovation, including inventions and earnings, are very low. Finally, according to the international measures we are using, Greece has somewhat high bureaucracy and red tape, very high corruption, and very weak rule of law relative to its income.

Indebtedness

Think of debt growth that is faster than income growth as being like air in a scuba bottle-there is a limited amount of it that you can use to get an extra boost, but you can't live on it forever. When you are taking it out, you can spend more than is sustainable, but when debts can no longer be raised relative to incomes and the time for paying back comes, the process works in reverse. You can get a picture of where countries stand in the long-term debt cycle and the likelihood of debt being a support or detriment to future growth by assessing the past reliance on debt to support incomes and the attractiveness of taking on new debt.

The other major piece of our economic health index looks at the likelihood of debt being a support or detriment to future growth. Greece's indebtedness position is worse than other countries, ranked 20 out of the 20 countries we look at. The country has very little room to lever up in the future, with a total debt burden of around 320% of GDP, compared to the global average of 200-250%. In the past few years, its growth was neither supported nor depressed by credit creation, which is neutral for growth going forward. Lastly, the stance of monetary policy is generally neutral.

Appendix: List of Statistics that Make Up Our Gauges

Below, we share all of the individual indicators that make up our productivity gauges, showing the most recent reading for each country. Countries that score best on the measure appear on the left, and countries that score worst are on the right. For further discussion of these concepts and gauges, see Part 1. Regrettably, we can't share the statistics underlying our proprietary indebtedness gauges.

Productivity - Value

Best ← → Worst

i. Education

Cost of a Quality Adjusted Educated Worker

Country	IN	CN	TH	RU	MX	KR	BR	HU	AR	SG	GR	US	JP	GB	CA	ES	DE	AU	IT	FR
Cost of a Quality Adjusted Educated Worker rel. to the US	-93%	-86%	-82%	-70%	-64%	-57%	-54%	-53%	-45%	-26%	-18%	0%	10%	13%	24%	51%	64%	70%	83%	112%
Education Quality Relative to the US	-44%	2%	-21%	-1%	-22%	13%	-27%	-2%	-27%	19%	-7%	0%	15%	3%	10%	0%	7%	3%	0%	3%
% of Working Age Pop - Attained at least Primary School	65%	86%	75%	97%	80%	96%	80%	100%	92%	82%	94%	99%	97%	97%	97%	89%	97%	97%	93%	97%
% of Working Age Pop - Attained at Least Secondary School	34%	55%	32%	83%	36%	77%	36%	70%	42%	68%	54%	90%	72%	73%	76%	44%	76%	69%	46%	61%
% of Working Age Pop - Attained at Least Tertiary School	5%	3%	10%	25%	10%	30%	6%	15%	3%	30%	23%	27%	19%	15%	23%	15%	13%	19%	7%	11%
NGDP Per Capita rel. to US	3%	13%	11%	29%	21%	49%	22%	26%	23%	108%	43%	100%	90%	79%	106%	58%	86%	135%	66%	84%

Cohort Level Costs

Country	IN	CN	TH	RU	MX	KR	BR	HU	AR	SG	GR	US	JP	GB	CA	ES	DE	AU	IT	FR
Cost of Tertiary Educated Worker rel. to the US, Adj. for Ed. Quality	-96%	-89%	-90%	-72%	-70%	-71%	-50%	-71%	-62%	-43%	-56%	0%	-43%	-10%	-13%	-28%	-5%	17%	-8%	20%
Cost of Secondary Educated Worker rel. to the US, Adj. for Ed. Quality	-94%	-87%	-84%	-72%	-66%	-59%	-49%	-59%	-44%	-37%	-31%	0%	-9%	7%	18%	17%	52%	67%	50%	87%
Cost of Primary Educated Worker rel. to the US, Adj. for Ed. Quality	-88%	-82%	-75%	-60%	-53%	-33%	-40%	-34%	-36%	10%	16%	0%	77%	44%	75%	105%	134%	115%	131%	176%
Cost of Literate, Uneducated Worker rel. to the US	-93%	-88%	-86%	-61%	-76%	-35%	-78%	-45%	-80%	10%	-31%	0%	109%	8%	60%	29%	122%	36%	27%	84%
Cost of Illiterate, Uneducated Worker rel. to the US	-94%	-91%	-89%	-59%	-83%	-36%	-89%	-40%	-84%	-23%	-35%	0%	123%	3%	56%	11%	131%	24%	8%	88%

ii. Labor Productivity

Cost of a Productivity Adjusted Educated Worker

Country	IN	CN	TH	RU	MX	HU	KR	BR	AR	GR	US	SG	GB	ES	CA	JP	DE	IT	FR	AU
Cost of a Productivity Adjusted Educated Worker rel. to the US	-96%	-83%	-83%	-72%	-68%	-67%	-50%	-46%	-44%	-14%	0%	3%	45%	56%	75%	77%	77%	98%	126%	156%
Observed Productivity rel. to the US	43%	-22%	22%	16%	-5%	38%	-15%	-20%	3%	-1%	0%	14%	-23%	7%	-24%	-23%	4%	-1%	2%	-43%
Cost of Tertiary Educated Worker rel. to the US	-98%	-89%	-92%	-73%	-77%	-71%	-67%	-63%	-72%	-59%	0%	-33%	-8%	-28%	-4%	-34%	2%	-8%	24%	20%
Cost of Secondary Educated Worker rel. to the US	-97%	-86%	-88%	-72%	-73%	-60%	-54%	-63%	-59%	-36%	0%	-25%	10%	17%	30%	5%	63%	50%	92%	72%
Cost of Primary Educated Worker rel. to the US	-93%	-82%	-80%	-61%	-63%	-36%	-25%	-56%	-53%	8%	0%	31%	47%	105%	93%	104%	151%	129%	184%	122%
Cost of Literate, Uneducated Worker rel. to the US	-93%	-88%	-86%	-61%	-76%	-45%	-35%	-78%	-80%	-31%	0%	10%	8%	29%	60%	109%	122%	27%	84%	36%
Cost of Illiterate, Uneducated Worker rel. to the US	-94%	-91%	-89%	-59%	-83%	-40%	-36%	-89%	-84%	-35%	0%	-23%	3%	11%	56%	123%	131%	8%	88%	24%

iii. Working Hard

Avg. Hours Worked

Country	TH	IN	CN	MX	SG	JP	AR	KR	BR	AU	RU	GR	CA	US	GB	HU	IT	ES	DE	FR
Avg. Actual Hours Worked per Working Aged Male	40	37	35	35	35	31	29	29	28	27	25	25	24	24	23	21	20	20	18	17
Male Reported Avg. Hours Worked (ex Vacation)	51	47	47	46	46	45	44	41	38	39	38	43	36	37	37	37	36	34	30	31
Male Labor Force Participation	81%	81%	78%	80%	78%	70%	75%	72%	81%	72%	71%	63%	71%	70%	69%	60%	59%	67%	66%	62%
Unemployment Rate (10yr Avg.)	1%	4%	4%	4%	2%	4%	9%	3%	8%	5%	7%	10%	7%	7%	7%	9%	8%	16%	9%	9%

Demographics

Country	MX	IN	BR	AR	TH	ES	GB	IT	GR	CN	FR	AU	HU	DE	US	JP	SG	RU	KR	CA
Projected Annual Change in Dependency Ratio	-0.4%	-0.4%	-0.1%	0.0%	0.4%	0.5%	0.5%	0.5%	0.6%	0.7%	0.7%	0.7%	0.8%	0.8%	0.8%	0.9%	0.9%	0.9%	1.0%	1.1%

Best ←————→ Worst

iv. Investing

Investing

Country	CN	SG	IN	AU	KR	FR	ES	TH	IT	CA	DE	US	JP	MX	AR	HU	BR	RU	GB	GR
Investment ex Housing %GDP	30%	25%	14%	26%	27%	17%	16%	19%	15%	18%	13%	14%	19%	14%	17%	15%	15%	13%	13%	9%
Household Savings Rate	33%	---	24%	9%	5%	12%	3%	5%	5%	5%	9%	5%	-1%	9%	---	5%	---	13%	1%	-15%

Productivity- Culture

i. Self-Sufficiency

Hard Working Measures

Country	TH	IN	MX	SG	CN	JP	KR	AR	BR	AU	RU	US	CA	GB	GR	HU	ES	IT	DE	FR
Avg. Actual Hours Worked (Hrs/wk)	40	37	35	35	35	31	29	29	28	27	25	24	24	23	25	21	20	20	18	17
Male Reported Avg. Hours Worked (ex Vacation)	51	47	46	46	47	45	41	44	38	39	38	37	36	37	43	37	34	36	30	31
Labor Force Participation (% Working Age Population)	81%	81%	80%	78%	78%	70%	72%	75%	81%	72%	71%	70%	71%	69%	63%	60%	67%	59%	66%	62%
Effective Retirement Age (% of Life Expectancy)	---	92%	98%	---	72%	88%	94%	91%	78%	82%	93%	87%	81%	82%	80%	87%	79%	79%	81%	77%
Actual Vacation+Holidays Per Year (Weeks)	---	2.3	1.9	2.0	2.6	1.0	1.6	---	4.3	2.3	3.8	3.3	3.6	6.5	5.9	5.5	6.8	5.9	7.0	7.0

Government Support Measures

Country	SG	CN	IN	KR	MX	TH	RU	BR	AU	CA	AR	US	JP	GB	ES	HU	GR	DE	IT	FR
Transfer Payments to HH, % PGDP	---	6%	5%	9%	7%	---	12%	16%	20%	18%	---	20%	22%	24%	27%	22%	22%	26%	28%	33%
Gov Outlays, % PGDP	15%	24%	27%	22%	27%	24%	38%	40%	37%	46%	41%	40%	40%	45%	46%	50%	51%	46%	51%	57%

Rigidity of Labor Market Measures

Country	SG	IN	US	MX	CA	HU	DE	GB	BR	GR	KR	ES	RU	CN	JP	FR	AU	TH	IT	AR
Unionization as % of Workforce	17%	2%	11%	14%	27%	17%	18%	26%	19%	25%	10%	16%	41%	30%	18%	8%	18%	---	36%	40%
Ease of Hiring/Firing (Z)	3.3	0.9	2.2	-0.4	1.8	0.9	-0.5	1.5	-0.6	-0.1	-0.2	-0.6	0.5	1.3	-1.1	-1.7	-1.1	1.2	-1.6	-1.4
Minimum Wage as % of Average Income	---	15%	19%	8%	27%	27%	20%	32%	23%	23%	33%	28%	24%	37%	29%	33%	31%	41%	41%	51%

Best ←————→ Worst

ii. Savoring Life vs. Achieving

Work Ethic Measures

Country	TH	IN	MX	SG	CN	JP	KR	AR	BR	AU	RU	US	CA	GB	GR	HU	ES	IT	DE	FR
Avg. Actual Hours Worked (Hrs/wk)	40	37	35	35	35	31	29	29	28	27	25	24	24	23	25	21	20	20	18	17
Male Reported Avg. Hours Worked (ex Vacation)	51	47	46	46	47	45	41	44	38	39	38	37	36	37	43	37	34	36	30	31
Labor Force Participation (% Working Age Population)	81%	81%	80%	78%	78%	70%	72%	75%	81%	72%	71%	70%	71%	69%	63%	60%	67%	59%	66%	62%
Effective Retirement Age (% of Life Expectancy)	---	92%	98%	---	72%	88%	94%	91%	78%	82%	93%	87%	81%	82%	80%	87%	79%	79%	81%	77%
Actual Vacation+Holidays Per Year (Weeks)	---	2.3	1.9	2.0	2.6	1.0	1.6	---	4.3	2.3	3.8	3.3	3.6	6.5	5.9	5.5	6.8	5.9	7.0	7.0

Savoring Life vs. Achieving -- Expressed Values

Country	IN	CN	US	SG	TH	MX	AU	ES	KR	RU	HU	DE	CA	JP	GB	AR	BR	FR	IT
For future of country, value of having more say v. economic growth, defense, and making cities and countryside more beautiful	0.7	1.0	0.3	0.2	0.9	-0.7	-1.0	-0.7	-0.5	0.5	0.2	-1.2	-1.5	-0.3	-1.7	-0.4	-0.4	-1.6	-1.0
Hard work leads to success	1.0	0.7	0.5	-0.2	-1.0	1.1	0.2	0.0	0.1	-1.3	-0.9	-0.5	0.3	-0.7	-0.3	-0.7	-0.5	-1.3	-1.2
Competition is harmful	1.7	0.4	0.5	-1.0	-1.5	0.6	0.4	-0.4	-0.2	-0.7	-0.8	-0.3	0.0	-0.7	-0.6	-1.4	-0.6	-2.0	-1.0
It is important to this person to have a good time	0.4	1.0	1.0	0.0	0.2	-1.0	1.0	-0.4	-0.1	-0.3	-0.8	-0.5	0.3	1.3	0.4	1.0	-0.9	-1.0	---
It is important to this person to be very successful	1.6	0.0	-1.0	-0.1	-0.2	0.2	-1.3	-0.5	-0.2	0.1	-0.3	-0.1	-0.6	-1.5	-1.2	-0.9	-0.7	-0.7	---
Economic growth is more important than the environment	-0.4	-1.0	0.2	1.0	0.6	-0.7	-0.6	0.1	0.2	-0.2	0.2	0.5	-1.5	0.0	-0.7	-1.2	-1.0	-0.2	-0.9

iii. Innovation and Commercialism

Innovation & Commercialism Outputs

Country	US	JP	KR	AU	GB	CA	SG	DE	FR	HU	MX	IT	ES	AR	TH	CN	RU	BR	GR	IN
# New Patents (per mln persons)	844	2,246	3,022	113	243	135	205	562	228	70	10	140	71	18	15	389	200	25	56	8
# New Businesses (per thous. Person)	---	1	2	12	11	1	8	1	3	5	1	2	3	1	1	---	4	2	1	0
# New Major Websites (per thous. Persons), Index	100	20	10	84	76	93	33	66	49	13	3	25	31	4	7	2	4	2	14	1
% of People Creating New Businesses	9	2	3	6	4	8	6	3	3	6	12	2	3	11	8	5	3	5	3	5
New Trademark Creation (Z - Score)	1.8	0.0	0.1	1.3	1.1	1.8	---	1.2	0.9	-0.9	-0.8	0.4	-0.3	-0.8	---	-1.0	-1.1	-1.0	-0.9	-1.0
Royalty and license fees, payments Ann. (\$)/Person	102	35	10	7	69	15	69	24	56	21	0	10	9	1	1	0	0	0	3	0

Innovation & Commercialism Inputs

Country	KR	US	DE	JP	GB	SG	AU	CA	CN	ES	FR	BR	AR	TH	GR	RU	HU	IN	MX	IT
Gross expenditure on R&D (%GDP)	4.4	2.8	2.9	3.3	1.7	2.2	2.4	1.7	2.0	1.3	2.3	1.2	0.6	0.3	0.7	1.1	1.3	0.8	0.4	1.3
Researchers (per mln persons)	7,699	4,663	6,280	7,011	6,872	7,321	4,224	4,260	1,393	4,735	5,328	1,203	1,942	581	4,069	2,603	3,696	137	386	2,496
Fear of Business Failure (Z - Score)	-1.1	0.6	-0.6	-2.2	-0.2	-0.8	-1.3	0.0	0.2	-0.2	-1.0	-0.6	1.6	-2.2	-2.2	1.0	-1.6	-0.6	0.5	-2.2
Entrepreneurship Prevalance (% population)	9%	8%	5%	6%	7%	4%	9%	8%	11%	8%	4%	15%	10%	28%	13%	3%	7%	11%	4%	4%

iv. Bureaucracy

Best ← → Worst

Bureaucracy

Country	SG	GB	US	AU	KR	CA	TH	DE	MX	FR	HU	GR	JP	CN	ES	IT	RU	BR	IN	AR
Starting a Business	2.4	1.7	1.9	2.4	1.5	2.5	-0.4	-1.1	1.0	1.3	0.6	0.7	-1.4	-2.7	-2.1	-0.4	-0.4	-1.5	-3.4	-2.8
Dealing with Construction Permits	2.0	1.3	1.1	1.8	1.6	-1.3	1.7	1.8	0.9	-0.5	0.7	0.2	-0.5	-3.4	-0.8	-1.2	-3.2	-1.8	-3.3	-3.3
Burden of government regulation	4.0	1.5	0.8	-0.5	0.3	1.3	0.7	1.3	-0.1	-0.8	-1.5	-1.9	0.7	2.8	-0.6	-2.1	-0.6	-2.5	0.0	-1.7

v. Corruption

Corruption

Country	SG	CA	JP	DE	GB	AU	FR	US	ES	KR	CN	HU	BR	IT	TH	GR	MX	IN	RU	AR
Transparency Int'l Corruption Index	1.9	1.6	1.1	1.4	1.2	1.6	0.9	1.1	0.2	-0.1	-1.0	-0.1	-0.9	-0.8	-1.3	-1.1	-1.4	-1.3	-1.8	-1.4
Diversion of Public Funds	2.1	1.3	1.3	1.4	1.7	1.2	0.7	0.5	-0.9	-0.8	-0.2	-1.6	-2.0	-1.4	-1.4	-1.5	-1.5	-1.4	-1.7	-2.5
Irregular payments and bribes	2.2	1.3	1.7	1.2	1.5	1.2	0.8	0.1	-0.1	-0.6	-1.1	-0.6	-1.2	-1.2	-1.4	-1.6	-1.5	-2.0	-2.1	-2.5
Favoritism in decisions of government officials	2.9	1.1	1.9	1.6	1.2	0.8	0.5	-0.3	-0.5	-0.9	0.7	-1.5	-0.9	-1.7	-1.0	-1.5	-0.9	-1.1	-1.5	-2.7

vi. Rule of Law

Rule of Law

Country	SG	GB	CA	US	JP	DE	AU	FR	TH	KR	CN	ES	MX	IN	BR	HU	IT	RU	GR	AR
Efficiency of legal framework in settling disputes	3.4	2.3	2.1	0.9	0.9	1.8	0.9	0.0	-0.5	-1.0	0.1	-0.7	-1.4	-0.5	-1.4	-1.8	-3.0	-2.0	-2.7	-2.6
Property rights	2.7	2.3	2.1	0.5	1.7	1.8	0.8	1.5	-1.5	-0.5	-0.3	-0.2	-1.2	-0.8	-0.4	-2.0	-1.0	-3.3	-1.6	-4.2
Protecting Investors	2.5	2.2	2.4	2.3	1.9	-1.4	-0.2	-0.7	2.1	0.5	-1.4	-1.4	-0.2	1.2	-0.7	-2.7	0.5	-2.1	-0.9	-1.4
Enforcing Contracts	1.3	-0.3	-0.3	1.4	0.5	1.6	1.2	1.5	1.0	1.7	1.1	-0.4	-0.8	-5.0	-2.6	1.2	-2.2	1.4	-1.7	-0.3

Part 3: The Rises and Declines of Economies Over the Last 500 Years

As mentioned at the outset, productivity, indebtedness and luck (e.g., whether one has wars or natural resources) explain differences in countries' relative performance. This study looks at how different countries' shares of the world economy have changed and why the drivers discussed above caused these changes to occur, with a particular emphasis on the period since 1820. As I explain, the rises and declines in countries' shares of the world economy occur as a result of very long-term cycles that are not apparent to observers who look at economic conditions from a close-up perspective.

The Past 500 Years

To begin, let's look at how the world economic pie has been divided up over time and why it has changed. The table below shows the shares of world GDP by major countries and/or regions at various points in time going back to 1500. Scan that table to see how these shares have evolved over time. Note how China and India were the largest economies from 1500 through 1820, how the United States was nothing and how what people now call the emerging world was much bigger than what they now call the developed world.

Share of World GDP. Real, PPP Adjusted.

Year	1500	1600	1700	1820	1870	1913	1950	1973	1998	2006	2010	Today
Current Developed World	21	23	27	29	46	58	72	70	65	60	54	51
US	0	0	0	2	9	19	30	26	26	26	23	22
United Kingdom	1	2	3	5	9	8	8	5	4	4	3	3
Other Western Europe	17	18	20	18	25	25	26	26	22	20	18	16
Japan	3	3	4	3	2	3	3	9	9	7	7	6
Canada/Australia	0	0	0	0	1	3	5	4	4	4	3	3
Current Emerging World	78	77	73	71	54	42	28	30	35	40	46	49
China	25	29	22	33	17	9	2	2	7	11	15	18
India	25	23	24	16	12	8	4	3	4	5	6	7
Other Asia	13	11	11	7	7	5	3	4	7	7	8	8
Latin America	3	1	2	2	3	5	7	9	10	9	9	9
Former USSR	3	4	4	5	8	9	7	7	3	3	3	3
Africa	7	7	7	5	4	3	1	1	1	1	1	1
Eastern Europe	3	3	3	3	4	5	4	4	3	3	3	3

Though the table goes back to 1500—i.e., to eight years after Columbus “discovered America”—we won't track the changes since then, but we will track them back to 1820. As shown:

- **In 1820 China and India were the biggest economic powers.** *Their shares declined as they became decadent⁸ and overly indebted. As a result they were overtaken, both economically and militarily, by the emerging British Empire in the late 19th and early 20th century.*
- **From the second half of the 19th century until the early 20th century, England and other Western European countries emerged to become the world's dominant powers and the United States**

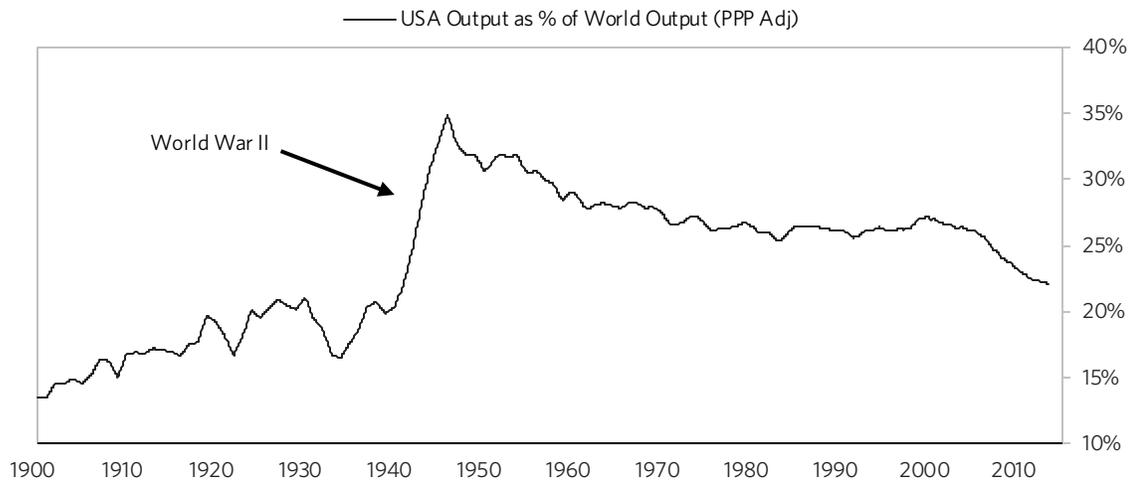
⁸ By “decadent” I mean a less strong state arising from a shifting of priorities from working, fighting and competing to avoiding these and to savoring the fruits of life.

moved from being an undeveloped country to an emerging country. *The emergence of the British Empire and other European powers to dominance was fueled by two big waves of productivity growth called the Industrial Revolution.*

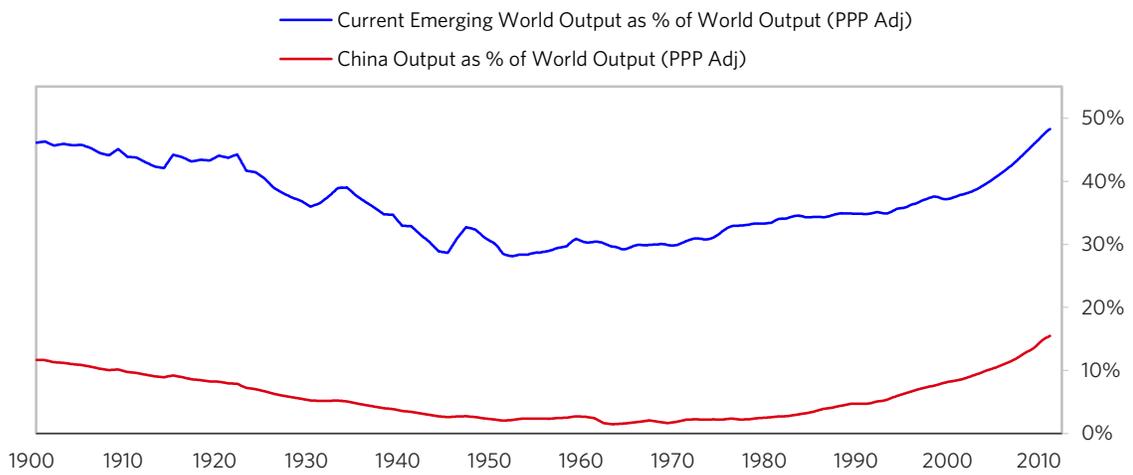
- **During the years from 1914-45 the British Empire gained relative to other Western European countries and lost relative to the emerging American Empire.** *This was largely the result of 1) European countries' rivalries leading them to two costly wars that left them indebted and crippled, and 2) the increasing "decadence" of the wealthy European powers. Because the British won these wars they benefited in relation to their European rivals (especially Germany); however, they became overly indebted and suffered economically relative to the United States because of them. At the same time the United States was an emerging power largely as the result of its great productivity gains.*
- **In the mid-20th century the United States emerged to become the world's dominant economic power and the British Empire crumbled.** *That was primarily the result of World War II because the economic and other setbacks of the war were greatest in England, Western Europe, Japan, China, India, and other emerging countries.*
- **From the mid-20th century (i.e., the immediate post-World War II period of 1945-55) until the beginning of the new millennium (2000-2010) the United States remained the dominant power, though its share declined steadily as other countries reemerged.** *From 1950 to 1970 the reemergence of Japan and Germany occurred as they recovered from the war setbacks. In the 1970-80 period, relative growth became strongest in what then became known as "emerging countries"— Latin America (due to the 1970s commodity boom) and the "Asian 4 Tigers" (as they entered the world markets as competitive producers and exporters). Then in the 1980-present period, great productivity gains in China (as a result of its "open-door" and "market-oriented" policies) and India (as a result of reductions in its bureaucracy and its opening up) allowed them to reemerge. At the same time the United States became overly indebted as a result of its "decadence" and its declining competitiveness.*
- **Now about half of world GDP is produced in what people now call the "developed world" (US, Europe, Japan, UK, Canada and Australia) with about equal amounts being produced in the US and Europe, and about half of world GDP is produced in what people now call "emerging countries" with about half of that being produced in China and India.**
- **For reasons explained previously, I believe that in another 15-20 years emerging countries will produce about 70% of global GDP, China will produce about 25%, and India will produce about 12%, as they did in the mid-19th century.**

Since 1900

While in the past civilizations rose and declined over several hundred years, more recently (over the last couple of hundred years), these cycles have taken 100-150 years. That means to observe a few cycles you'd have to go back a few hundred years. However, that's beyond the scope of this exercise, so I will start in 1900. The chart below shows the US share of world GDP going back to 1900. It shows how World War II catapulted the US relative share to an abnormally high level as the result of a number of the other major countries (e.g., Europe, Japan, China and Russia) being set back by the war and the gradual adjustment back to more normal levels. In addition to the war effects benefiting the relative position of the US, inefficient economic systems and/or political bureaucracies in some countries (China, Russia and India) caused these countries' recoveries to be slower than normal until recent years.



The next chart shows the “emerging countries” share of world GDP going back to 1900 along with China’s piece of it. As shown below, while emerging countries as a whole increased their share of the world economy starting in 1950, it was not until 1980 that China’s share started to increase.



Sources: Global Financial Data & BW Estimates for charts above

What Caused These Changes?

As mentioned, over the last couple of hundred years these changes have been due to a) productivity growth, b) debt cycles, and c) other shocks and distortions (e.g., wars, the good or bad luck of having natural resources, political shifts, etc.).

Over the very long run one gets to spend what one earns, which is a function of one’s productivity. For a country as a whole, the earnings will equal a) the number of workers, times b) the number of hours worked, times c) the output per hour worked. In order to be more productive, you have to work either harder or smarter. Over the shorter run, one can spend an amount that is different than the amount one earns because of borrowing and lending. Human nature (i.e., culture) plays a big role determining people’s productivity and indebtedness. Over long time frames the drive for higher living standards motivates people to implement changes to get around their impediments, which goes on until people’s earnings gravitate toward their potential/equilibrium levels and levels of productivity and indebtedness change in ways that shift income growth. I examined the cause-effect linkages

of productivity and indebtedness previously, but here I will lay out the concepts and walk you through the logic of how shifts in productivity and indebtedness lead to big cycles in which countries prosper and which ones don't.

All else being equal, per capita incomes of countries will tend to converge because, in a competitive world, buyers of goods, services and labor shift their demands away from those who are expensive to those who offer better value, which creates a *labor rate arbitrage*. But all things are not equal. Differences and barriers often exist that justify income differences. Based on our research, the most important of these differences that account for most income gaps are in culture, education, economic and political systems, savings and investment rates, indebtedness, and remoteness of location.⁹ Also, trade and capital control barriers can stand in the way of economic competition that brings about income conversion. If these economic barriers are temporary in nature (e.g., war damage) the forces behind this labor rate arbitrage will get rid of them (e.g., there will be rebuilding). If the impediments are more permanent in nature (e.g., culture, remoteness of location, etc.), the forces behind the arbitrage won't be able to overcome them, even over very long periods. Additionally, long-term debt cycles play a big role in driving these cycles. When debt levels are low relative to income levels and are rising, the upward cycle is self-reinforcing until debt levels become too high for this to continue, when the reverse occurs.

For these reasons, when I see big differences in income and indebtedness, I ask myself whether the impediments are temporary or more permanent in nature—e.g., are there good reasons that an average Chinese earns 1/10th as much as an average American?—and I imagine the changes that will have to occur to bring this labor rate convergence about (e.g., building infrastructure, changing laws, bringing in capital, etc.), and I try to visualize the ripple effects of these changes (e.g., buying more commodities, creating more pollution) and the likelihood of these things happening. I believe that's where the big investment opportunities of the century lie.

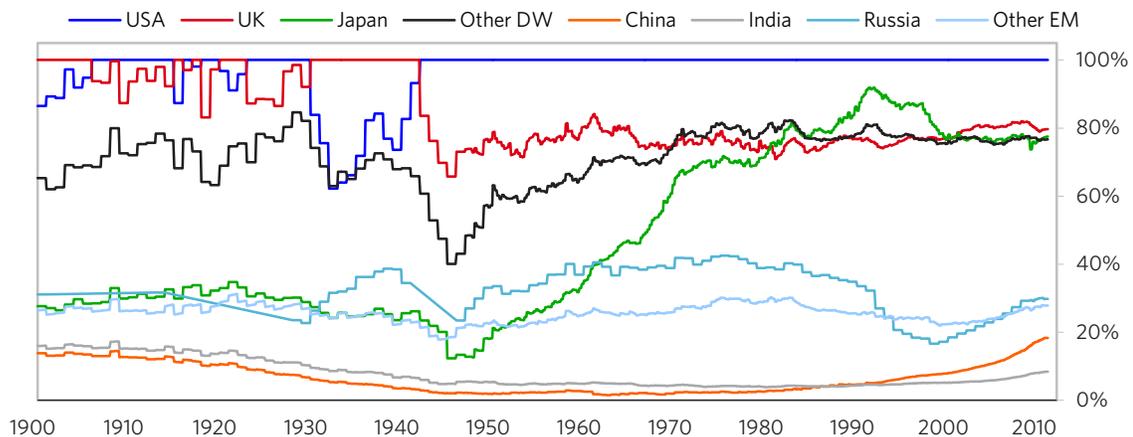
Not all important changes are due to economic influences because not all competition is economic. For example, throughout history war has frequently been an important means of competing and, when wars happen, they typically impede the labor rate arbitrage.

⁹ By remoteness of location, I am referring to when some people are in locations that are too removed from their competitors, either geographically or technologically, to allow them to compete. For example, populations that are located down a river, up a mountain or beyond distances that can be cost-effectively bridged to allow these people to compete are too remote. Similarly, people who do not have access to proper resources to compete (e.g., education) are too remote to allow the force of the labor arbitrage to work. In places like China, India, and Africa, large percentages of the population are too remote to compete, while other portions of their populations are well positioned to compete, so that the average incomes will be affected by both..

Since the previously shown table and charts are based on both the number of people in the country and their average incomes, and average incomes are more relevant in seeing how countries compete, let's look at their relative incomes. The chart below shows per capita GDPs as a percent of the highest per capita GDP since 1900. As shown:

- **Until the end of World War II, the UK** had the highest per capita income. It was then replaced by the US. This shift represented the end of the British Empire and the emergence of the American Empire. I will examine this later.
- **Prior to World War II, developed countries other than Japan** typically had incomes that were about 70% of the top income country. For reasons explained later, the country with the greatest total income has also typically been the reserve currency country and has derived income benefit from being in this position; this accounts for a significant part of the gap between the top income earning country (the UK prior to the mid-20th century and the US after then) and the other developed countries. Note how the shock of World War II sent other developed countries' incomes down to only 40% of the top earner (the US) and how, in the 25 years that followed World War II, average incomes in these countries normalized to 70%-80% of the top earning country.
- **Prior to World War II**, the average income in **Japan** ranged around 25%-35% of the top earner. Then the shock of World War II brought it down to around 15%. After the war it recovered to about 90% of the top (US) in 1990 (at its bubble's peak). Since then, it has slipped back to about 75% of the top, which is also where the UK and other European countries' average incomes are. The long-term shift from an average income of 25%-35% of the top earner to about 75% now has largely been due to Japan opening up to the world economy so that it could compete in it.
- Other **emerging countries** have had their average incomes vary between about 25% and 35% of the top since 1900. I believe that this is because of some fairly long-lasting structural impediments that vary by country and that would require too great of a digression to explain here.
- Per capita incomes in **China** have ranged from 2% to 18% of the top earner over the last 110 years and are now growing at a pace that is comparable with Japan's pace in 1950-70 for essentially the same reasons. Because of the remoteness of a large segment of the population, I don't expect per capita incomes in China to reach developed country levels for the foreseeable future; however, I expect income growth rates to remain strong and reach developed country levels for hundreds of millions of Chinese in another 25 years. Per capita incomes in **Russia** have ranged from 16% to 42% of the top earner over the last 110 years and have increased from 17% to 30% over the last 10 years.

Real GDP per Capita (as % of Highest)



Sources: Global Financial Data & BW Estimates

The Importance of Human Nature in Making Choices

While productivity and indebtedness can be said to be the drivers, it is primarily people's choices that determine their levels of productivity and indebtedness, so psychology is of prominent importance. It is psychology that drives people's desires to work, borrow, consume, and go to war. Since different experiences lead to different psychological biases that lead to different experiences, etc., certain common cause-effect linkages drive the typical cycle. While I will describe what I believe is the typical cycle, of course no cycle is exactly typical.

The Life Cycle of a Typical Empire

As explained, economic conditions affect human nature and human nature affects economic conditions. This typically happens dynamically in a sequence that leads countries to rise and fall for largely the same reasons that families rise and fall over 3 to 5 generations. I believe that countries typically evolve through five stages of the cycle:

- 1) In the first stage **countries are poor and think that they are poor.**

In this stage they have very low incomes and most people have subsistence lifestyles, they don't waste money because they value it a lot, and they don't have any debt to speak of because savings are short and nobody wants to lend to them. They are undeveloped.

Some emerge from this stage and others don't, with culture and location being the biggest determinants of which emerge and which don't, as these influence people's desires and abilities to compete. For example, in China large percentages of the population are too removed to compete and are likely to remain so for the foreseeable future, so while it is reasonable to expect Chinese incomes in the major cities to approach those in other major cities elsewhere in the world, it is unreasonable to expect the average income of a Chinese person to equal that of an American, or for that matter someone in Beijing, in the foreseeable future.

Those that transition from this stage to the next stage typically gradually accumulate more money than they need to survive, and they save it because they are worried about not having enough in the future. Because they have very low incomes, their labor costs are typically low, so when they begin to emerge, their economic growth is led by them producing low-value-added goods cheaply and selling to rich countries. Because they are low-cost producers, they also typically attract foreign direct investment from companies that want to manufacture in low-cost countries to export to the rich countries (if they are politically stable). These low-cost countries have to provide high returns to attract these investors because of the perceived risks, but they are capable of providing these high returns because they are very cost-effective producers.

At this stage in their development, their currencies and capital markets are undeveloped. As a result, their governments peg their exchange rates to gold or whatever the obvious relevant reserve currency is (typically of the currency bloc that they want to sell their goods to), and their citizens, who gradually accumulate income in excess of spending, typically save/invest in their businesses and by buying hard assets like apartments as savings. Those in these countries who have more money and a more global perspective typically want to invest some money outside the country just to be safe, so they invest in whatever they perceive to be the world's safest investments, most typically government debt in the world's reserve currencies. Because people in this stage value earning money and building savings more than spending money, their governments generally prefer their currencies to be undervalued rather than to be overvalued, and they like to build up their savings/reserves. How fast countries evolve through this stage primarily depends on their cultures and their abilities. I call these countries early-stage emerging countries.

2) In the second stage **countries are rich but still think they are poor.**

At this stage they behave pretty much the same as they did when they were in the prior stage but, because they have more money and still want to save, the amount of this saving and investment rises rapidly. Because they are typically the same people who experienced the more deprived conditions in the first stage, and because people who grew up with financial insecurity typically don't lose their financial cautiousness, they still a) work hard, b) have export-led economies, c) have pegged exchange rates, d) save a lot, and e) invest efficiently in their means of production, in real assets like gold and apartments, and in bonds of the reserve countries.

Because their exchange rates remain undervalued, their labor rates and their domestic costs are cheap so they remain competitive. Their competitiveness is reflected in their strong balance of payments, and incomes and net worths rising as fast as or faster than their debts.

Countries in this stage experience rapidly rising income growth and rapidly rising productivity growth at the same time. In the early stages rapid income growth is matched by rapid productivity growth so inflation is not a problem despite the fast increases in incomes and money in the economy. Because of rapidly rising productivity, these countries can also become more competitive in relation to others.

During this stage, these countries' debts typically do not rise significantly relative to their incomes and sometimes they decline. It is a very healthy period.

However, they eventually transition to a stage in which debts rise faster than incomes and incomes rise faster than productivity. Inflation rates rise because rapidly rising income growth leads to rapidly increasing spending on many items that cannot be correspondingly increased in supply via productivity gains. Additionally, by having their currencies linked to reserve currencies, they also link their interest rates to those of the reserve currency countries, who have slower income growth and lower inflation rates. While these interest rates are appropriate for the sluggish growth, low inflation countries, they are too low for the faster growth, higher inflation countries. As a result, these emerging countries have interest rates that are low in relation to their inflation and nominal growth rates. This fuels money and credit growth and inflation. Typically countries in this stage maintain their pegged exchange rates and linked monetary policies via changes in reserves until the upward inflationary/bubble pressures and trade protectionist pressures become too great.

The transition from this stage to the next stage is typically signaled by a) debt growth significantly outpacing income growth, b) accelerating inflation arising from productivity growth not increasing fast enough to offset the increased spending and income growth, c) overinvestment, and d) balance of payments surpluses. This mix of conditions eventually leads to movement to independent currency/monetary policies.¹⁰ This transition to an independent currency policy typically occurs as both a practical necessity and an earned right. As previously mentioned, countries in this second stage run basic balance of payments surpluses that either drive up their exchange rates and/or lead their central banks to lower their real interest rates (which fuels bubbles and inflations) and/or drive up their foreign savings/reserves. So, practical necessity motivates these governments to abandon their pegs and appreciate when they want to curtail inflation and/or bubbles; at the same time, international tensions arising from trade imbalances leading to the loss of jobs in the developed country and capital outflows from that country (e.g., as existed in the US in 1970) also motivate the move. Having an independent currency/monetary policy is an earned right because their performance in the previous stages that led up to this point gave them the credibility to be able to float the currency and have it appreciate. Every country wants to have an independent monetary policy because that is the most powerful tool available for managing the economy; it gives governments the freedom to decide how they will balance inflation

¹⁰ For example, Japan and Germany in 1971.

and growth in light of their own conditions.¹¹ For these good reasons no major developed economy has an exchange rate that is pegged to another country's exchange rate. Only relatively small and/or emerging economies forgo their independence because of the practical necessities of being unable to engender enough confidence that their currencies will maintain their value or being unable to manage monetary policy in a viable way.

In the transition to the next stage, their domestic capital markets begin to become more widely accepted, private sector lending begins, and capital formation occurs with both foreign and domestic investors participating in this investment boom.

You can tell countries in this stage from those in the first stage because they are the ones with gleaming new cities and infrastructures next to old ones, they have high savings rates, they enjoy rapidly rising incomes, and they typically have rising foreign exchange reserves. While countries of all sizes can go through this stage, when big countries go through it they are typically emerging into great world powers.

I call these countries late-stage emerging countries.

3) In the third stage **countries are rich and think of themselves as rich**.

At this stage, their per capita incomes approach the highest in the world as their prior investments in infrastructure, capital goods and R&D are paying off by producing productivity gains. At the same time, the prevailing psychology changes from a) putting emphasis on working and saving to protect oneself from the bad times to b) easing up in order to savor the fruits of life. This change in the prevailing psychology occurs primarily because a new generation of people who did not experience the bad times replaces those who lived through them. Signs of this change in mindset are reflected in statistics that show reduced work hours (e.g., typically there is a reduction in the average work week from six days to five) and big increases in expenditures on leisure and luxury goods relative to necessities.

Countries at this stage and in transition to the next typically become the great importers¹² and have symbiotic relationships with the emerging countries that are the great exporters, especially of low-value-added goods. At the same time, the businesses and investors of countries in this stage increasingly look for higher returns by investing in emerging countries where labor costs are cheaper, which further supports the symbiotic relationship, and their capital markets and currencies develop blue-chip status and are actively invested in by both domestic and foreign investors. They also attract the money of investors who seek safety rather than high returns because they are perceived as safe, blue-chip countries. In this stage, capital raising and financial market speculation picks up, largely motivated by both the development of these markets and the good returns that they have provided up to this point. With this development of their capital markets, increasingly spending and investing are financed by borrowing as the prior prosperity and investment gains are extrapolated.

Countries that are large and in this stage almost always become world economic and military powers.¹³ They typically develop their militaries in order to project and protect their global interests. Prior to the mid-20th century, large countries at this stage literally controlled foreign governments and created empires of them to provide the cheap labor and cheap natural resources to remain competitive. Since the mid-20th century, when the American Empire ruled by "speaking softly and carrying a big stick," American "influence" and international agreements provided access for developed countries to the

¹¹ As recently reflected in the differences in the conditions of sovereigns that have the right to print their own currencies (e.g., the US, the UK, etc.) and those who don't have that right (Greece, California, etc.), this independence can make a world of difference in being able to maintain control over one's growth/inflation trade-offs.

¹² Japan in 1971-1990 was an exception.

¹³ Again, Japan in 1971-1990 was an exception.

emerging countries' cheap labor and investment opportunities without requiring direct control of their governments.

In this stage they are on top of the world and they are enjoying it. I call these countries early stage developed countries.

- 4) In the fourth stage countries **become poorer and still think of themselves as rich**.

This is the leveraging up phase—i.e., debts rise relative to incomes until they can't any more. The psychological shift behind this leveraging up occurs because the people who lived through the first two stages have died off or become irrelevant and those whose behavior matters most are used to living well and not worrying about the pain of not having enough money. Because the people in these countries earn and spend a lot, they become expensive, and because they are expensive they experience slower real income growth rates. Since they are reluctant to constrain their spending in line with their reduced income growth rates, they lower their savings rates, increase their debts and cut corners. Because their spending continues to be strong, they continue to appear rich, even though their balance sheets deteriorate. The reduced level of efficient investments in infrastructure, capital goods and R&D slow their productivity gains. Their cities and infrastructures become older and less efficient than those in the two earlier stages. Their balance of payments positions deteriorate, reflecting their reduced competitiveness. They increasingly rely on their reputations rather than on their competitiveness to fund their deficits. They typically spend a lot of money on the military at this stage, sometimes very large amounts because of wars, in order to protect their global interests. Often, though not always, at the advanced stages of this phase, countries run "twin deficits"—i.e., both balance of payments and government deficits.

In the last few years of this stage, bubbles frequently occur. By bubbles I mean rapidly increasing debt-financed purchases of goods, services and investment assets. These bubbles emerge because investors, businessmen, financial intermediaries, individuals and policy makers tend to assume that the future will be like the past so they bet heavily on the trends continuing. They mistakenly believe that investments that have gone up a lot are good rather than expensive so they borrow money to buy them, which drives up their prices more and reinforces this bubble process. As their assets go up in value their net worths and spending/income levels rise, which increases their borrowing capacities, which supports the leveraging-up process, and so the spiral goes until the bubbles burst.¹⁴ Bubbles burst when the income growth and investment returns inevitably fall short of the levels required to service these debts. More often than not they are triggered by central bankers who were previously too easy (i.e., that allowed the bubble to develop by allowing debt growth to increase much faster than income growth) tightening monetary policies in an attempt to rein them in. The financial losses that result from the bubble bursting contribute to the country's economic decline.

Whether due to wars¹⁵ or bubbles or both, what typifies this stage is an accumulation of debt that can't be paid back in non-depreciated money, which leads to the next stage.

I call these countries late stage developed countries. While countries of all sizes can go through this stage, when big countries go through it they are typically approaching their decline as great empires.

- 5) In the last stage of the cycle they typically go through **deleveraging and relative decline, which they are slow to accept**.

¹⁴ Japan in 1988/90, the US in 1929, the US in 2006/07, Brazil and most other Latin American commodity producers in 1977-79 were classic examples.

¹⁵ Germany in World War I and the UK in World War II were classic examples.

After bubbles burst and when deleveragings occur, private debt growth, private sector spending, asset values and net worths decline in a self-reinforcing negative cycle. To compensate, government debt growth, government deficits and central bank “printing” of money typically increase. In this way, their central banks and central governments cut real interest rates and increase nominal GDP growth so that it is comfortably above nominal interest rates in order to ease debt burdens. As a result of these low real interest rates, weak currencies and poor economic conditions, their debt and equity assets are poor performing and increasingly these countries have to compete with less expensive countries that are in the earlier stages of development. Their currencies depreciate and they like it. As an extension of these economic and financial trends, countries in this stage see their power in the world decline.

These cycles have occurred for as long as history has been written. While no two cycles are identical—they vary according to the countries’ sizes, cultures and a whole host of other influences—the fundamentals of the long-term economic cycle have remained essentially the same over the ages for essentially the same reasons that the fundamentals of life cycles have remained the same over the ages—i.e., because of how man was built. While no two life cycles are the same, and today’s typical life cycle is in some ways different from that of thousands of years ago, the fundamentals remain the same. For example, while families lived in houses that were different ages ago, the cycle of children being raised by parents until they are independent, at which point they work and have their own children which they do until they get old, stop working and die, was essentially the same thousands of years ago. Similarly, while monetary systems were different ages ago (e.g., gold coins were once money), the cycle of building up too much debt until it can’t be serviced with hard money prompting those who manufacture money to make more of it (e.g., reducing the gold content in the coins) is fundamentally the same.

Because these cycles evolve slowly over long time frames—over at least 100+ years—they are imperceptible to most people. They are also essentially irrelevant to rulers who typically have time horizons of a couple of years. As a result, they are not controlled, which is the main reason that they are destined to occur. If human nature were different so that debt growth didn’t outpace income growth and income growth didn’t outpace productivity growth, these cycles would be pretty much eliminated.

Example: The Ascent and Decline of the British Empire

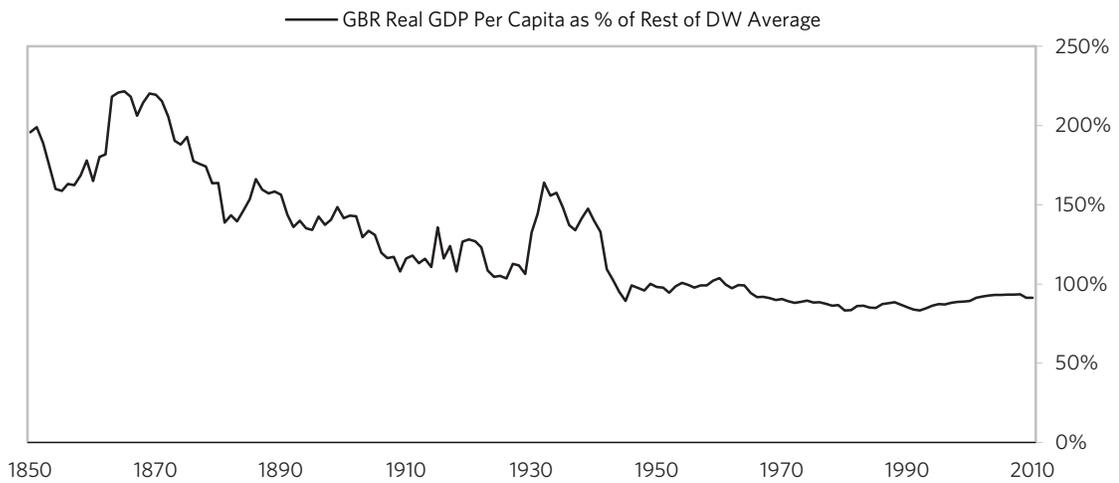
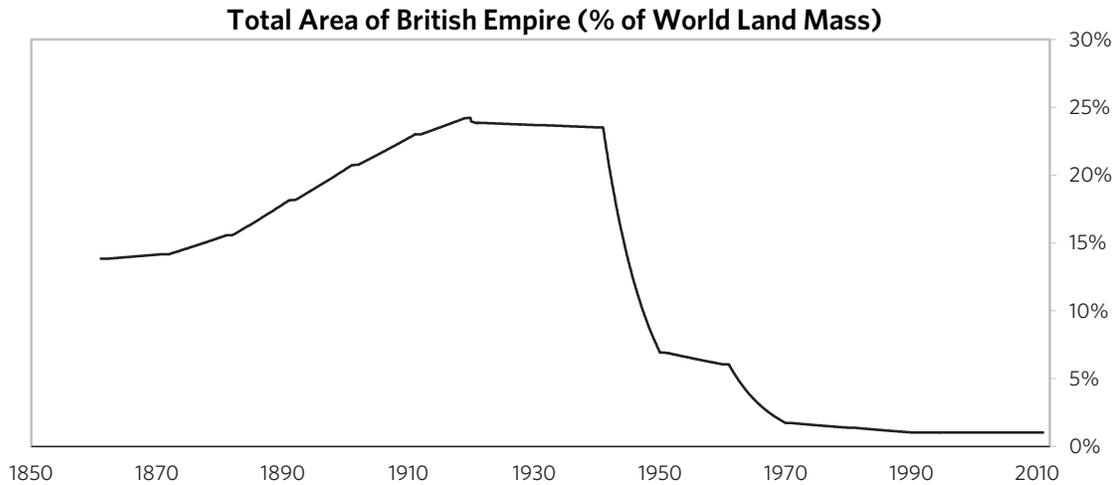
I will explain my view of the ascent and decline of the British Empire both because it is a good example of the previously described process and because it sets the stage for the rise and early decline of the US Empire and what I believe will be the rise and decline of the Chinese Empire.

As with all history, different people will attribute the ascent and decline of the British Empire to different causes, so keep this in mind when reading my theory.

It is pretty well agreed that the ascent of the British Empire began in the late 18th century when the Industrial Revolution began and the decline occurred in the middle of the 20th century when World War II ended, so its cycle took place over 150 years. It is also agreed that the British Empire’s decline in the mid-20th century was accompanied by the emergence of the American Empire which has been dominant for the last 60 years. But there are disagreements about why these things occurred.

While I won’t take you back to when the first wave of the Industrial Revolution began in the late 18th century, I will take you back to around 1850. In my opinion, from before then until 1914 Great Britain was in stage 3 of the previously described cycle, from 1914 to 1950 it was in stage 4, and from 1950 until around 1980 it was in stage 5 of the cycle. I will show why I believe this in the charts that follow.

To begin, the chart below shows the geographic size of the British Empire going back to 1860. Note how it rose from 1860 until 1920, flattened out until 1950 and then collapsed. By comparing this chart with the one that follows showing relative incomes, you will note that the size of the British Empire correlated with the level of its relative income. In the charts that follow, you will also see that it correlates with sterling's stature as a reserve currency and that this changed due to the reasons explained in my description of the long-term economic cycle.

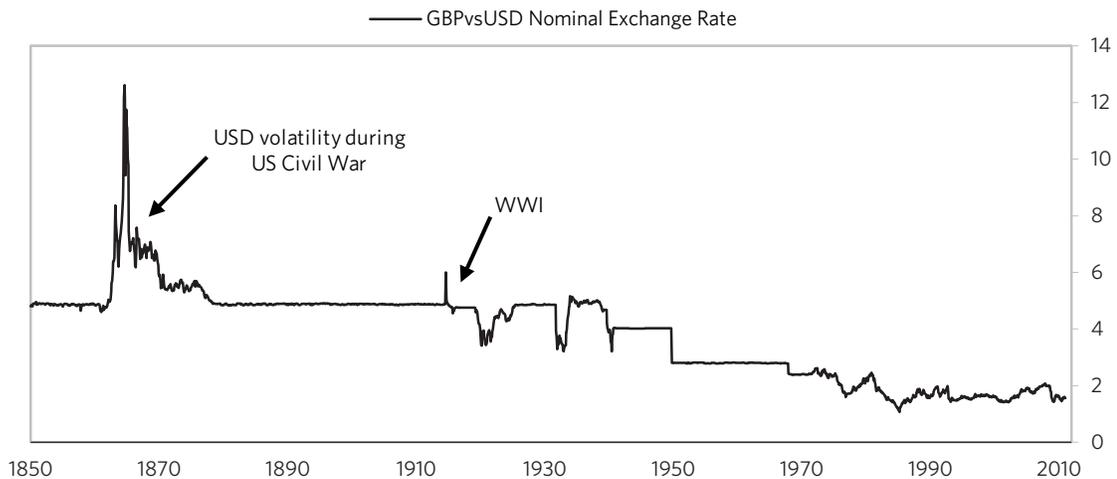


Sources: Global Financial Data & BW Estimates

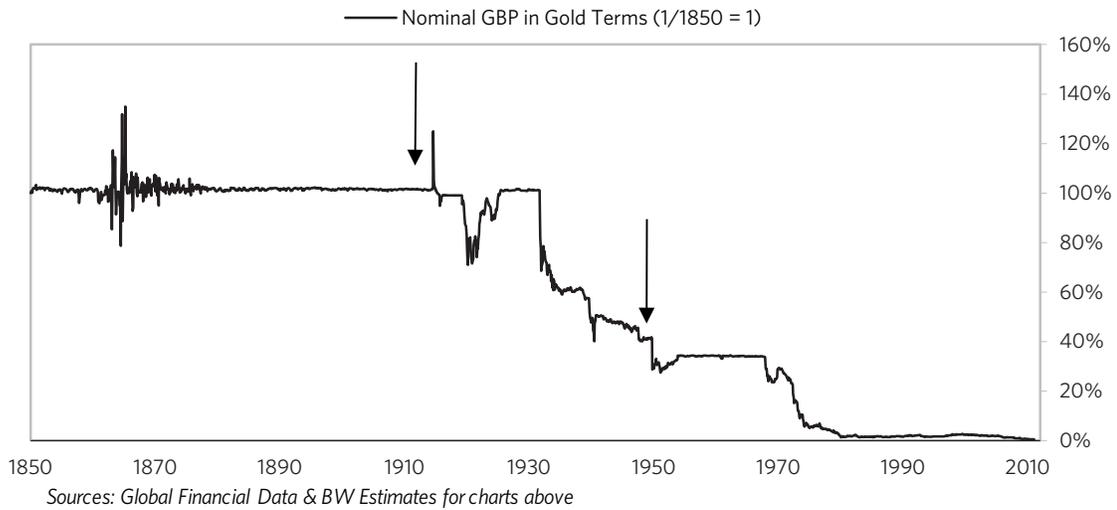
The chart below shows sterling's share of world currency reserves back to 1900 (when its share was over 60%). Note that sterling's share of world reserves accounted for more than 50% until 1950 and declined to about 5% over the next fifty years.¹⁶ As previously mentioned, when empires are at their peaks, their currencies attain reserve currency status which allows them to over-borrow, which leads to their declines.



As previously explained, in the third stage of the cycle, when growth and competitiveness are strong and indebtedness is low, the currency is strong and the country's reserve currency status is enhanced; however, in the fourth stage the reverse is true. In other words, in the fourth stage the currency suffers due to over-indebtedness, increased money creation and uncompetitiveness, and this leads to the reduced desire to hold the currency. The next charts show the value of sterling both against the US dollar and against gold. Note that sterling was rock-solid until World War I and then it was devalued quickly against both the dollar and against gold.



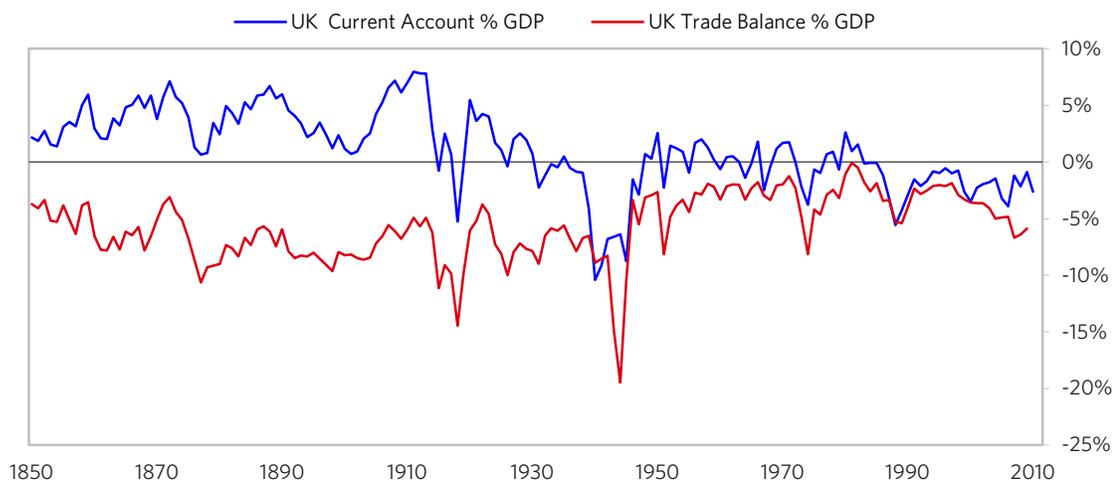
¹⁶ To be clear, we are referring to the currency portion of foreign exchange reserves, as the largest component of total reserves through most of this period was gold.



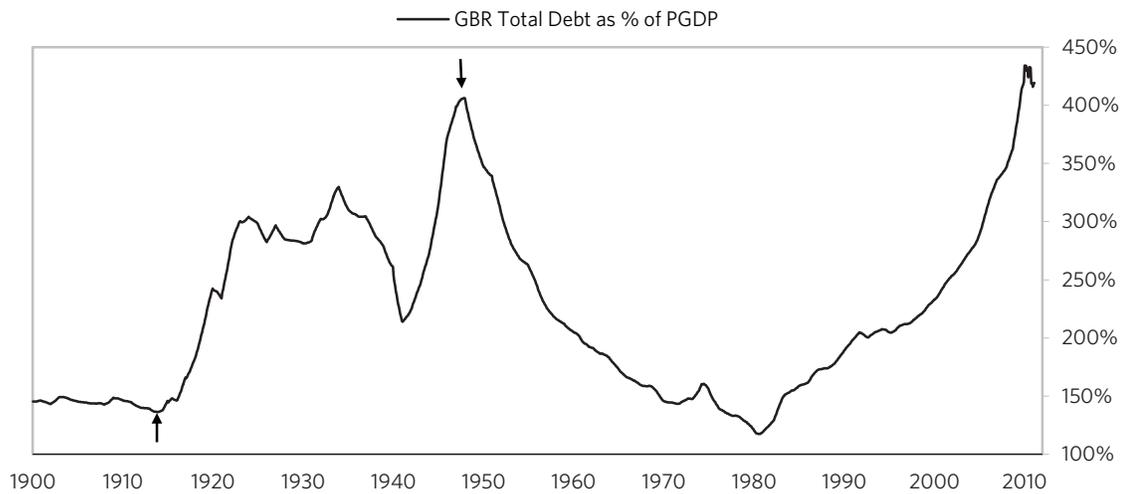
The decline of the British Empire can be seen via the worsening of its twin deficits.

The next chart shows the UK current account and trade balance going back to 1850. Note that:

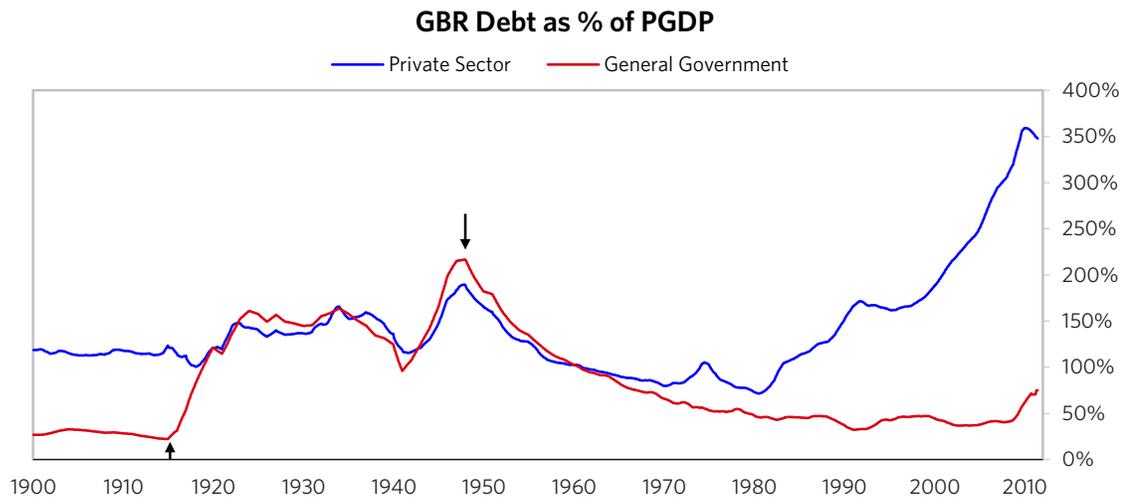
- The UK ran a strong current account surplus of about 8% of GDP until 1913, which was just prior to World War I, and then suffered steady declines worsened by both wars that led it to run large deficits (hitting 10% of GDP) at the end of World War II.
- Through most of this time (which starts in 1850, which was well into its ascent), it ran trade deficits while running current account surpluses because of the significant income earned from global asset holdings (both from colonies, and increasingly in the late 19th century from assets in the US) and the profits made from global shipping and financial businesses.
- After the First and Second World Wars, it was left with large debts owed to foreigners and without its colonies, which weakened the current account surplus significantly.



The next chart shows total debt as a percentage of GDP. Notice that it rose in two big waves, starting in 1914 and peaking in 1947—which marked the period of the decline of the British Empire. As an aside, note how it is now similar.

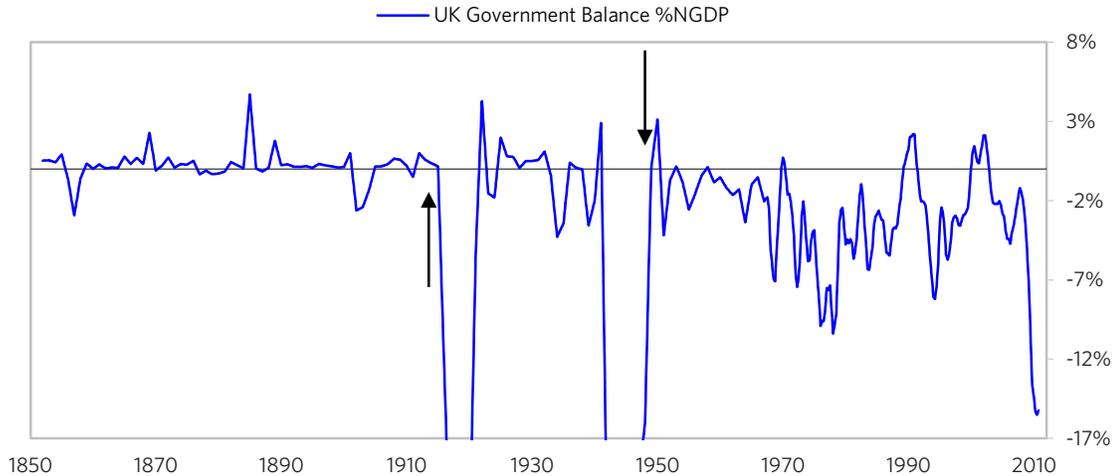


The chart below shows private and public debt burdens separately. As shown, both rose from the First World War through 1947. The increase in government debt was much more substantial and necessary to fund the two world wars.

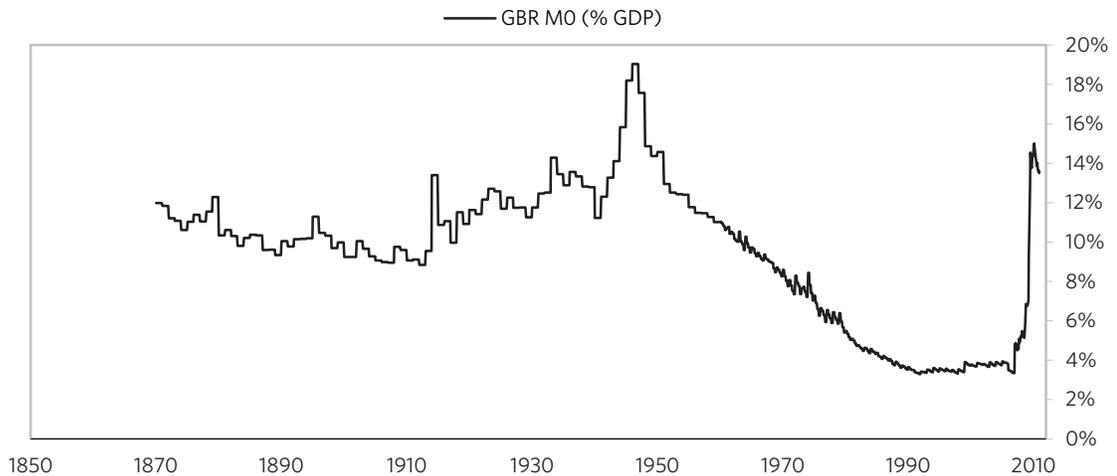


Sources: *Global Financial Data & BW Estimates for charts above*

The next chart shows the government's budget deficits as a percent of GDP since 1850. Government budget deficits typically shoot up for two reasons: 1) in deleveragings, when increased government spending needs to make up for decreased private sector spending, and 2) in wars. Note the effects of the two wars. Also note that the budget deficit as a percent of GDP is now the highest since World War II (because of the deleveraging).



In the charts below you will note the printing of money to help monetize these deficits and debts. Note how it recently has been similar.



Sources: Global Financial Data & BW Estimates for charts above

In a nutshell, at the end of World War II Great Britain was bankrupt and the US was in a strong financial condition. As a result, the US provided the Marshall Plan, the British Empire collapsed and the UK began a long deleveraging.

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