

Emerging Markets Insights

Summer 2022

INNOVATION AND COMPETITIVENESS ESCALATE BEYOND THE U.S.

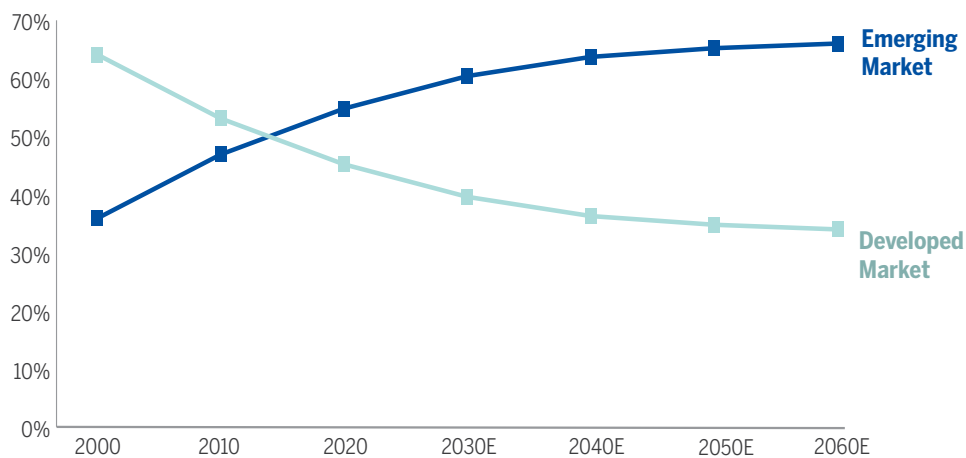
The economic pyramid that has been dominated by developed countries throughout history has inverted. Today, emerging markets are the largest contributors to global gross domestic production (GDP), according to data and forecasts from multi-national institutions such as the Organization for Economic Co-operation and Development (OECD).

This shift has been discussed frequently among investors and economists, but a less commonly understood aspect of this change—and one of considerable significance to investors—is the rise of innovation across the globe and how it contributes to individual countries' economic competitiveness. In this paper, we explore that theme and how innovation is creating potentially attractive investment opportunities.

The Evolving Makeup of Global GDP

As shown in Figure 1, developed countries as defined by MSCI Developed country membership have traditionally represented the lion's share of global GDP while emerging markets as defined by MSCI have representing a smaller portion. More recently emerging markets have overtaken developed markets in this regard.

Figure 1: A Shift in World GDP Composition (USD, 2015 PPP)



Source: OECD. *World GDP estimated utilizing OECD and Key Partner data, in USD, 2015 PPP (purchasing power parity, which seeks to equalize currency conversion rates). Developed Market classification reflects MSCI index classification, with all non-developed countries grouped into Emerging Markets.

PPP is purchasing power parity, which seeks to equalize currency conversion rates.



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In our view, much of this shift is being driven by the rise of China and India (see Figure 2).

Economic size and GDP growth are important but there are other factors that influence industry development, corporate profitability and equity valuations among countries. With that in mind, The World Bank and The World Economic Forum measure innovation and competitiveness across the globe.

The Role of Innovation in Economic Development

We believe innovation can increase an economy's production capacity, make countries more competitive and improve the quality of the workforce.

- Innovation can help countries compete in global markets, moving up the value-added production chain and developing new products and services which are first-to-market or more suitable for segments of the global economy based on price and functionality.
- Automation can lower wage costs, which reduces unit production costs and makes countries more competitive as exporters. The potential for reducing labor costs can also help countries with high levels of automation weather periods of wage inflation. In a similar manner, innovation can enable companies to create disruptive products, such as online commerce, that can capture market share and make legacy products obsolete.
- Automation of financial services can deepen the benefits of development to lower income and rural segments

of the population, in large part by extending financial services to unbanked individuals. In remote regions, individuals can potentially obtain online banking when brick and mortar branch offices aren't convenient. Individuals can then efficiently transfer funds and obtain loans for small businesses.

The World Bank's Innovation Rankings

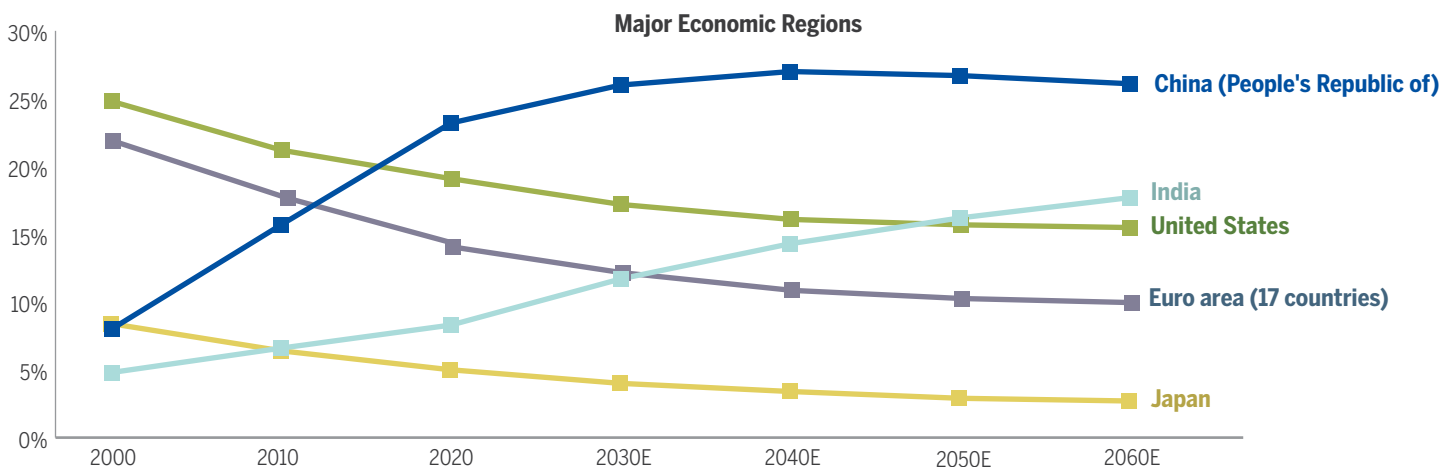
The World Bank's Innovation Tracker assesses innovation for measuring the following items among individual countries:

- Science and innovation investments (R&D spending; patent filings; scientific papers; venture capital spending)
- Technological progress (digital penetration; energy transition developments; medical advances)
- Socioeconomic changes (labor productivity; life expectancy)

The organization's Global Innovation Index (GII), which was created in 2007 and covers 132 countries, ranks countries based on the following categories:

- Institutions
- Human capital and research
- Infrastructure
- Market sophistication
- Knowledge and technology outputs
- Creative outputs

Figure 2: World GDP Shifts Due to China and India



Source: OECD, in USD, 2015 PPP.

Investing in innovation is not without risk and there is no guarantee that investments in research and development will result in a company gaining market share or achieving enhanced revenue.

In addition to an absolute rank, the World Bank GII report focuses on outperformers, or those countries showing the largest improvement, and over-achievers, recognizing that innovation correlates with development (size of the economy and per capita income). In terms of overall ranking, the leaders have remained relatively static. They include Switzerland; Sweden; United States; United Kingdom; and South Korea, with South Korea moving into the fifth slot for the first time in 2021 (see Figure 3 for a more comprehensive list).

Insights from the World Economic Forum

The World Economic Forum produces a Global Competitiveness Report. Similar to the GII report, the competitiveness rankings lean heavily on infrastructure and digital adoption. For Information and Communication Technologies Adoption (ICT), the top rankings go to South Korea, United Arab Emirates and Hong Kong, and three other emerging market/frontier market countries are in the top 10. Under Human Capital, the survey recognizes Switzerland, Singapore, Finland and Chile as best placed to produce high skill level graduates and highlights Saudi Arabia, China and South Korea as the top three countries with the greatest improvements in the skill sets of graduates over the five years ending in 2020.

Among developed countries, only Australia, Japan and France showed a positive improvement, albeit modest, over this same time frame. In terms of factors which contribute to a positive entrepreneurial culture and new

Figure 3:

World Bank Global Innovation Index Outperformers and Overachievers

Outperformers	Overall Ranking	Overachievers	Overall Ranking
South Korea	5	South Korea	5
China	12	China	12
Turkey	41	Bulgaria	35
India	46	Thailand	43
Mexico	55	Vietnam	44
Peru	70	India	46
Indonesia	87	Brazil	57

Outperformers have been selected based on them having the largest increase in their GII rankings over the past 10 years and Overachievers are countries with highest GII rankings relative to per capita GDP over the past 1 year.

Source: World Bank Global Innovation Index Database, 2021.

For several years, China has led the world in the number of patent applications and number of patents received. In 2020, the World Intellectual Property Organization (WIPO) reported that China was granted 530,000 new patents on nearly 1.5 million patent applications, which was well-ahead of patents granted to U.S. entities (roughly 352,000).

business creation, the U.S. continues to sit on top, as has been the case since the beginning of the survey in 2008. China had been number two until 2017, when they were overtaken by surging scores given to Germany and India. However, in 2020, the scores of those two countries eased back down and China experienced a major increase in its overall score, closing the gap with the U.S. (69 to 76).

How China Improved Its Competitiveness

We believe China's ascendancy is built on a foundation of strong higher education institutions, supportive public policy and healthy research and development spending by the private sector. One of the indicators to measure competitiveness and innovation is patent activity. For several years, China has led the world in the number of patent applications and number of patents received. In 2020, the World Intellectual Property Organization (WIPO) reported that China was granted 530,000 new patents on nearly 1.5 million patent applications, which was well-ahead of patents granted to U.S. entities (roughly 352,000). Japan and South Korea came in third and fourth with 179,000 and 134,000 patents granted, respectively.

South Korea and India Benefit from Innovation

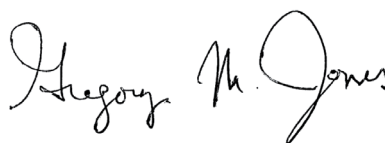
From biotech to information technology, South Korea is becoming a global leader in many innovation categories. Batteries and battery materials for electric vehicles (EV), in particular, is one area where South Korean companies are pushing the boundaries in terms of performance, price and safety. Among these is specialty chemicals company Chunbo, which has carved out a unique position in the battery materials category, developing unique additives to improve battery cycle performance, increase conductivity, shorten recharging and improve safety (heat dissipation) at industry leading cost or price points.

Similarly, India, which is recognized for outperformance in terms of innovation by the World Bank relative to the country's stage of development as measured by GDP per capita, scores highly in life sciences and IT services, including software development. One of the rapidly developing new technology categories is Communication Platform As-A-Service (CPaaS) and India's Route Mobile is establishing itself as an important player in this new market. With a global footprint, Route Mobile now offers a broad package of services including messaging, alerts, notification, marketing, advanced customer and marketing support, and identification and verification.

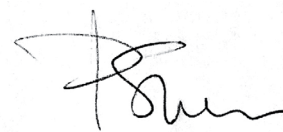
Searching for Attractive Investment Opportunities

With positive trends in innovation around the world and improved levels of competitiveness on the part of developing

countries, the opportunities for active equity management of emerging markets and other non-US equities, we believe, has never been more exciting. Additionally, the pace of adoption of innovation is accelerating, which can potentially create investment opportunities for active managers whose fundamental research can potentially discover firms that are well positioned to disrupt their industries with innovative products.



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