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POLICY OUTLOOK

The Transformation of World Trade

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Summary

- Developing countries are growing rapidly, and long-term projections suggest that their rising economic weight will transform world trade. This phenomenon is characterized by three trends in developing countries: the diversification of exports into a wide range of manufactures, the emergence of a large Global Middle and Rich (GMR) class, and increased financial integration.

- As wages, education levels, and ratios of capital to labor in the most successful developing countries rise closer to those of advanced economies and faster than those in the less successful ones, existing patterns of comparative advantage will be redrawn.

- The transformation of world trade will present new challenges and opportunities. In order to reap the new opportunities, the poorest and most commodity-dependent countries will need to make sustained efforts to improve their business climates. Advanced countries will also have to retain their edge in innovation and product differentiation.

- While domestic reforms are key, international rules will have to be strengthened to make trade more open and predictable.

The rising economic weight of developing countries is transforming world trade, and long term projections suggest that it will continue to do so very rapidly. Three trends help characterize this phenomenon, namely: the diversification of developing country exports into a wide range of manufactures that greatly increases the potential size of their markets, the emergence of a large middle and rich class in developing countries that makes them increasingly important customers, and increased financial integration that facilitates and stimulates trade.[1]

Taken together with increased openness to trade and falling communications and transport costs, the implications of these trends are profound: advanced countries are discovering large new markets; developing countries are increasingly trading with each other and their historical reliance on markets in industrial countries is declining; China has already eclipsed Japan as the center of bilateral trade relations in Asia, and will eclipse the United States and Germany on the global stage in the coming years; and countries are all facing new sources of competition.

In short, the transformation of world trade over the next 40 years will present new challenges and opportunities for countries at every level of development. As wages, capital/labor ratios, and education levels in the most successful developing countries get closer to those in the advanced countries and rise faster than those in the less successful ones, existing patterns of comparative advantage will be redrawn. Developing Asia's comparative advantage in labor-intensive manufactures will weaken as wages there rise, potentially opening the door for lower-wage countries in Africa and commodity exporters in Latin America to advance exports of such goods. This process will not be automatic, however; it will depend on sustained efforts to improve the business climate in the poorest and most commodity-dependent countries.

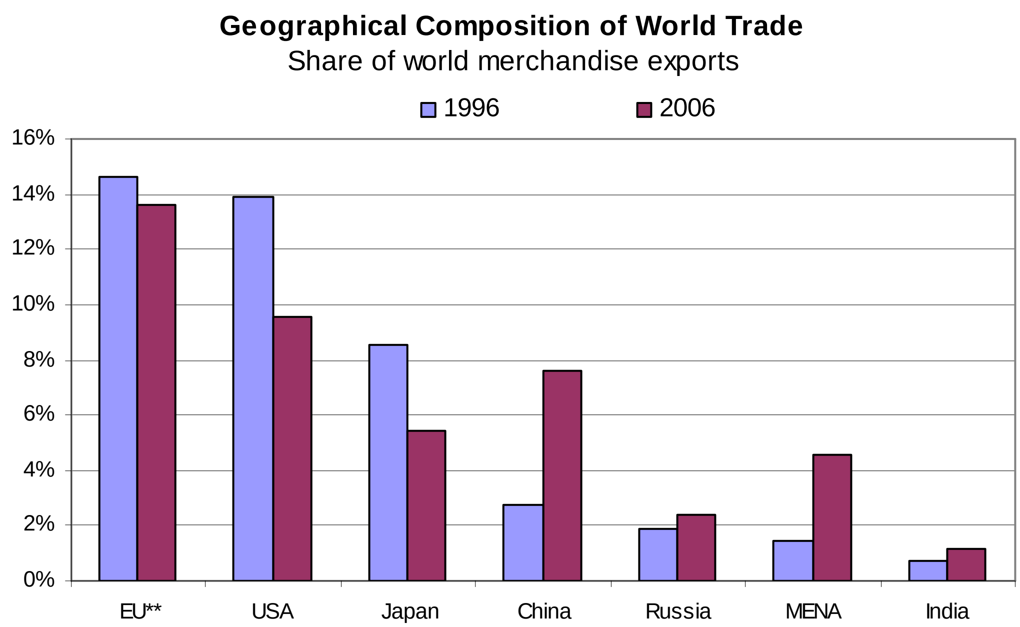
At the same time, today's advanced countries will at once be exposed to increased competition in their traditional preserve and able to exploit vast new markets for sophisticated consumer products and industrial machinery. Again, while the competitive threats are inevitable, reaping the new opportunities will not be automatic. Advanced countries will have to retain the edge in innovation and product differentiation, and in the predictability and efficiency of their business environments, if they hope to benefit from the new markets.

Countries that fail to adapt to the transformation of world trade will not only miss opportunities, but will also find firms in their tradable sectors under attack from both low-end, cost-based competitors and rapid innovators. Relative to successful adapters, they could see their terms of trade deteriorate, real exchange rates devalue, output and employment growth slow, and real incomes ultimately advance less. Domestic reform measures designed to make the business environment more attractive will be essential to, but not sufficient for deriving the benefits of the transformation. A more effective set of international trade rules must also be designed to make trade more open and predictable.

Developing Countries Driving World Trade

Developing countries[2] already play a large role in world trade, and their significance is only expected to rise. Their relative weight has grown enormously over the last ten years,[3] but only due to China's meteoric rise as an exporter. This rising weight also reflects surging oil prices, as well as increasing exports from the Middle East and North Africa (MENA), Eastern Europe, and Central Asia.

In 2006, developing countries accounted for 30 percent of world merchandise exports, up from 19.5 percent in 1996, marking a 50 percent increase in market share in just ten years. The share of exports held by the "Big Five" developing economies (i.e., China, India, Brazil, Russia, and Indonesia) nearly doubled, rising from 7.6 percent to 13.4 percent. China accounted for a significant portion of this rise—its share of world exports nearly tripled from 2.7 percent to 7.6 percent. On the other hand, India, which, as another large and rapidly growing economy, is often compared to China, advanced at a much slower pace. Its share of goods exports remained very low (little more than 1 percent) in 2006, though its share in commercial services exports advanced from 0.6 percent to 2.5 percent over the same period.



**EU extra-trade

Source: UN Comtrade.

As oil prices rose, oil exporters also experienced large increases in their shares of world exports. MENA's share increased from 1.4 percent to 4.5

percent, while Sub-Saharan Africa (SSA)'s share rose from 0.7 percent to 1.6 percent. Having transitioned into market economies, the Eastern European and Central Asian countries also saw large increases in export shares, matched by even larger increases in imports and rising current account deficits.

In contrast, the export share of most industrialized countries fell, with the United States' share decreasing from 13.9 percent to 9.5 percent. Japan's decline was particularly stark; its share fell from 8.6 percent—significantly more than the total share of the Big Five—in 1996 to 5.4 percent, less than China's share alone, in 2006. Developing countries' merchandise exports expanded two times faster than the average for high income countries in 2007 and 2008, and fell by less in 2009.

The importance of developing countries as an export market has grown as well, reflecting increased foreign exchange availability, a rapidly growing middle class, and a great appetite for the quality and diversity provided by imported goods. The EU's exports to China more than quadrupled from 1996 to 2006, while its exports to Russia, SSA, Eastern Europe, and Central Asia more than tripled. The United States also increased its exports to developing countries, from 31 percent of its total exports in 1996 to 38 percent in 2006. On the other hand, over the decade, exports from the EU to Japan were unchanged at about 2 percent of total exports, while exports to other industrialized countries fell from 9 percent to 7 percent. Furthering this trend, developing countries' merchandise imports in 2007 and 2008 rose four times faster than those of high income countries, and the 2009 collapse was again smaller in the former.

Associated Trends

Manufactured Goods Exports

Historically, countries that have moved up the ladder of development have diversified from primary commodities to manufactured goods, which offer better prospects for export earnings growth and provide greater price stability, allowing countries to avoid the volatile terms-of-trade that commodity-dependent economies experience. Sometimes this transition happened autonomously, but, often, countries actively pursued it through export-led economic growth policies.

Following the historical pattern, today's developing countries have increased their presence in manufactured goods[4] exports. China's manufactured goods exports surpassed those of both the United States and Japan in 2006, as its share of global manufactured goods exports increased from 3.2 percent in 1996 to 9.8 percent in 2006. Other developing countries have also increased their manufactured goods exports, with the share of manufactured goods in Sub-Saharan Africa's total exports rising from 7.1 percent to 18.7 percent. In addition, manufactured goods have played an increasing role in South-South trade, accounting for 37 percent of total South-South trade in 2005, up from 31 percent in 1995.

Exports of manufactured goods may have increased even more and export diversification progressed even further had exports of minerals not surged as substantially as they did, driving up the exchange rate and diverting investment. Largely due to higher prices, but also because of new natural resource discoveries and increased efficiency in production, developing countries significantly increased exports of mineral fuels and chemicals, the two product groups that exhibited the highest growth rates from 1996 to 2006. SSA's mineral fuels exports rose from $14.5 billion to $80.9 billion over that period. In 2006, MENA's mineral fuels exports reached $360 billion, nearly ten times their $36.9 billion level in 1996.

Financial Integration

Much like the advance of trade, the financial integration of developing countries progressed impressively over the decade preceding the crisis, and the two processes reinforced one another.

Amid robust global growth and a favorable financing environment, private capital inflows to developing countries surged. Net international private capital inflows[5] to developing countries averaged $489 billion in 2005–2007, up from $151 billion in 1995–1997. As a share of developing country GDP, they increased from 2.8 percent to 4.1 percent. The crisis appears to have represented only a brief interruption in capital flows to developing countries. The IIF predicts net private capital flows to emerging markets[6] will almost double in 2010 from $349 billion in 2009.

Improved macroeconomic policies that made investments in developing countries more sustainable—such as stronger government fiscal positions, reduced debt/GDP ratios, and increased exchange rate flexibility—have helped reassure foreign investors. During the euphoria that preceded the crisis, average spreads on emerging market sovereign bonds had narrowed to record lows. In 2002, only one in five countries in the EMBI Global Index had bond spreads below 200 basis points; by April 2007 the proportion had risen to three in four. Bond spreads surged during the crisis, but remained well below the levels reached during previous crises. Having narrowed to 320 basis points from 700 basis points in early March, they are now only modestly above pre-crisis levels.

Countries with more open trade also attract higher levels of foreign direct investment (FDI) as a percentage of their GDP. Trade openness encourages capital inflows because it allows investors to take advantage of outsourcing opportunities by making importing inputs easier and because it is associated with improved efficiency.

As incomes in developing countries rise, they tend to become more attractive destinations for capital for many reasons, including increased market size, stability, and credit-worthiness. The growing attractiveness of developing countries may also be attributed in part to higher prices of energy and other natural resources.

Over time, however, the per capita income level threshold associated with the ability to attract FDI has fallen. The per capita income associated with FDI flows of at least 1 percent of GDP in 2005–2007 (1.7 percent of U.S. GDP per capita) is less than that in 1995–1997 (3.1 percent of U.S. GDP per capita). In 2005–2007, GDP per capita was below the level needed to achieve FDI inflows of 1 percent of GDP in approximately 36 developing countries. Based on pre-crisis trend growth rates, 23 of these countries will cross the threshold by 2020 and an additional 7 will do so by 2030.

Increased trade and financial integration has been associated with larger current account surpluses and deficits, indicating an increased ability to borrow abroad, in the former case, or invest abroad, in the latter. In surplus developing countries, current account balances as a share of GDP rose from an average of 4.5 percent in 1995–1997 to 10.6 percent in 2005–2007; they widened a more modest 0.8 percentage points in deficit developing countries, reaching 8.1 percent in 2005–2007. In addition, more countries have been able to run sustained current account deficits—that is, to borrow abroad over long periods.

Developing countries have also become a significant source of foreign capital for other developing countries. South-South FDI has increased sharply over the past two decades, from $3.7 billion in 1990 to over $73.8 billion in 2007. Reflecting regional integration, intra-regional South-South investment in

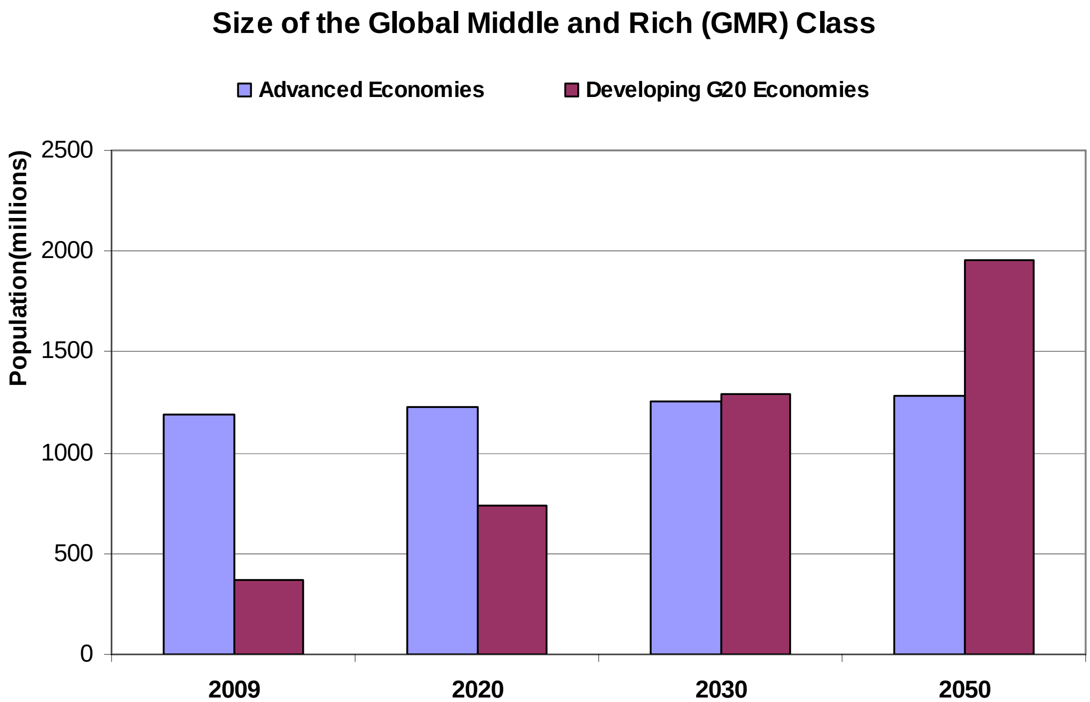
Latin America and Southeast Asia accounted for 93.7 percent and 77 percent of total South-South FDI in each region in 2007.

Given fundamental macroeconomic improvements and the GDP and trade projections, which show high annual growth in developing countries, private capital flows to developing countries are also likely to continue rising. Even assuming that FDI grows at the same rate as GDP, and not faster, as it has in recent history, developing countries' share of net FDI inflows will almost triple from 25 percent in 2005–2007 to 66 percent in 2050.

The Emerging Global Middle and Rich (GMR) Class

As noted by the World Bank and others, the rapid economic growth of developing countries will lead to the emergence of a new Global Middle and Rich (GMR) class, defined as those with annual incomes of at least $4,000 in 2005 PPP.[7] This class will be able to demand more overall and increase the demand for advanced goods and services in particular, rapidly expanding the markets for internationally-traded products, such as automobiles and consumer durables. The people in this class are also likely to demand more and better education, health, and international tourism services.

Our estimates show that the GMR population in the developing G20 economies—China, India, Russia, Brazil, Mexico, Argentina, Indonesia, Turkey, and South Africa—is likely to grow from 739 million in 2009 to 1.3 billion in 2030, reaching 1.9 billion in 2050. At present, 24 percent of the global GMR population already resides in developing countries; by 2030, the GMR population in developing countries will have overtaken that in advanced countries, and about 60 percent of the total GMR population will reside in developing countries[8] in 2050. However, the purchasing power of the GMR class in advanced countries will be about 60 percent bigger than the average income of the GMR class in developing G20 countries in 2050.



Source: Authors' Projections.

In China the GMR class will grow from about 120 million in 2009 to 780 million in 2030 and 1.1 billion in 2050, and a significant portion of the Chinese population will have transitioned to the "rich" class (i.e., earning above $17,000) by 2050.

Other developing countries will contribute to the increase in the GMR class. China and India, which together accounted for approximately 42 percent of the developing G20 countries' GMR class in 2009, will account for about 70 percent by 2050. In Indonesia, approximately 70 million additional people will enter the GMR class by 2050, and an additional 40 million will do so in Russia.

As a result, the class will account for an increasing share of the total population of the G20 developing countries, reaching 48 percent by 2050, up from 11 percent in 2009 and 33 percent in 2030. Even in Brazil, where income inequality is particularly high, the share of the GMR class in the country's total population will reach 65 percent in 2050, up from 33 percent in 2009. In some African countries, such as Ghana, Nigeria, and Ethiopia, where the middle class accounted for less than 5 percent of the population in 2009,[9] a significant portion of the population will be in the GMR class by 2050.

Size of the Global Middle and Rich (GMR) Class Population (millions)

	2009	2020	2030	2050
Advanced Economies	1193	1225	1254	1284
Developing G20 Economies	368	740	1295	1958
China	118	375	779	1092
Brazil	66	80	110	170
Russia	57	82	93	98
India	37	69	121	273
Mexico	37	51	72	111
Turkey	17	29	46	70
Indonesia	11	20	33	81
Argentina	17	21	28	40
South Africa	9	13	14	23
Large African Economies				
Nigeria	4	6	10	22
Kenya	4	7	10	26
Ethiopia	3	6	11	34
Ghana	1	3	5	18

Source: Authors' projections.

World Trade in 2050

Will these trends in the rising importance of developing countries as both exporters and export markets continue? Barring geopolitical or climate-induced catastrophes and assuming that the world does not retreat into protectionism, the share of world trade held by developing countries will more than double over the next 40 years, reaching nearly 70 percent by 2050. In addition, developing countries' dependence on developed country markets will weaken. Reflecting high growth rates and the rise of the middle class, emerging economies will come to dominate international trade.

According to GDP projections made in Carnegie's "The World Order in 2050" brief, the weight of global economic activity is shifting substantially from advanced countries toward emerging economies. The economy of the G20 is expected to grow at an average annual rate of 3.5 percent, rising from $38.3 trillion in 2009 to $160.0 trillion in 2050 in real dollar terms. Over 60 percent of this $121 trillion dollar expansion will come from six developing economies: Brazil, Russia, India, China, Indonesia (the traditional "Big Five" economies), and Mexico. U.S. dollar GDP in these six economies will grow at an average rate of 6 percent per year, while GDP in the G7 will grow by less than 2.1 percent annually. China and India will grow more slowly than in recent years by a still impressive 5.6 percent and 5.9 percent annually over the 2009–2050 (complete GDP projections are located in the Annex; see "The World Order in 2050" for details).

Based on these GDP projections , and consistent with the current trend, developing countries' share of world exports will increase from 30 percent in 2006 to 69 percent in 2050.[10] China's share will increase from 7.6 percent to 24 percent, while India's will reach 6.2 percent, up from just 1.2 percent. Conversely, the industrialized countries' share will decline, with that of the United States decreasing from 9.5 percent to 7 percent and that of Japan falling dramatically from 5.4 percent to just 2.4 percent.

Developing countries' role as an export market will significantly increase as well. Based on a conservative GDP elasticity of trade[11] of 1.3, China's imports from the United States and the EU will account for 3.1 percent of world trade in 2050, representing more than a twofold increase in its importance since 2006. In terms of U.S. and EU exports, which are projected to grow more slowly than world trade, China's importance will increase more than fourfold. In addition, while a large share (49 percent) of the EU's exports will be intra-regional, China will emerge as its second largest export destination. Latin America will be the United States' largest export market, followed by China, accounting for 27 percent of the country's total exports. Because U.S. and EU exports appeal to the middle class, even these numbers likely underestimate the rise in exports from advanced countries to China and other developing giants.

Developing countries will also become an increasingly important export market for one another. This will be the case for lower-income countries in Africa in particular, and as a result their dependence on the developed country market will weaken. A booming China and India indicate strong demand not only for primary products, but also for niche manufactures and services, as well as industrial inputs and equipment from other developing countries. With countries in the South at different stages of diversification and specialization, and growing rapidly, their production and consumption patterns are becoming increasingly diverse, promoting proportionally more trade among the South.

In 2006, the United States and the EU were the two largest markets for China's exports. The EU was also a leading export market for India and SSA, accounting for 22.3 percent and 30.7 percent of their total exports, respectively. By contrast, in 2050, China will be the largest export destination for India, accounting for 26.4 percent of its total imports, up from 6.9 percent in 2006, and the second largest export market for SSA, importing 24.7 percent of the region's total exports, up from 4.8 percent in 2006. MENA and Asia Pacific will also be major trading partners for India, accounting for 19 percent and 15.7 percent of its total exports, respectively. Africa's export dependence on developed economies will fall, with only 27 percent going to the United States and the EU in 2050, down from 54 percent in 2006. Instead, intra-African trade will account for 25 percent of the region's total exports; this could increase further if infrastructure and trade logistics constraints are addressed.

Top 5 Export Destinations for China, the United States, EU, India, and Sub-Saharan Africa, 2006–2050

2006		2050	
Partner Country	**% of Total Exports**	**Partner Country**	**% of Total Exports**
China			
United States	25.9%	United States	17.4%
EU	23.1%	Asia Pacific**	16.4%
Other Industrialized*	13.4%	EU	16.3%
Japan	11.6%	Other Industrialized	10.1%
Asia Pacific	7.2%	India	7.9%
USA			
Other Industrialized	34.1%	Latin America	26.6%
EU	21.7%	China	23.7%
Latin America***	19.8%	Other Industrialized	18.5%
Japan	6.0%	EU	11.0%
China	5.6%	Asia Pacific	5.9%
European Union			
EU	67.5%	EU	49.2%
USA	7.8%	China	11.2%
Other Industrialized	6.8%	E. Europe and C. Asia	7.3%
E. Europe and C. Asia	4.4%	MENA	5.8%
MENA	3.4%	United States	5.5%
India			
EU	22.3%	China	26.4%
MENA	17.9%	MENA	18.9%
United States	15.8%	Asia Pacific	15.7%
Other Industrialized	11.0%	EU	10.1%
Asia Pacific	10.6%	SSA	9.5%
SSA			
EU	30.7%	SSA	24.7%
United States	23.3%	China	20.5%
SSA	16.2%	EU	15.6%
Other Industrialized	8.7%	India	13.0%
Japan	4.8%	United States	11.3%

* Other Industrialized refers to Canada, Australia, South Korea, Singapore, Switzerland, Israel, Norway, New Zealand, and Iceland.
** Asia Pacific Developing.
*** Latin America excludes Brazil.
Source: UN Comtrade, authors' projections.

For both advanced and developing countries, trade with developing countries will overwhelmingly dominate bilateral trade. In 2006, bilateral trade among advanced countries was most significant, with bilateral trade between the United States and other industrialized countries accounting for 10.4 percent of world trade. Reflecting the trade integration in Asia, China will be the world's leading trade partner in 2050, and total trade between it and the Asia Pacific developing countries will account for 9 percent of world trade, up from less than 2 percent in 2006. Trade between China and India will reach $2 trillion, or 3.7 percent of world trade in 2050, from just 0.3 percent in 2006. The bilateral trade of the United States, the EU, and other industrialized countries with China will account for a larger percent of world trade than their bilateral trade with any other country or region.

Top Trading Pairs[a] in World Trade

2006		2050	
Trading Pairs	**% of World Trade**	**Trading Pairs**	**% of World Trade**
United States-Other industralized	10.4%	China-Asia Pacific Developing	9.0%
EU-Other industralized[b]	8.4%	China-Other Industralized	6.3%
EU-United States	7.4%	China-United States	6.2%
United States-Latin America[c]	6.6%	China-EU	5.6%
EU-Eastern Europe	4.4%	United States-Latin America	4.3%
EU-China	3.5%	China-India	3.7%
Memo:			
Intra- EU[d]	28.2%		6.3%

a Intra-EU trade is excluded.
b Other Industrialized refers to Canada, Australia, South Korea, Singapore, Switzerland, Israel, Norway, New Zealand, and Iceland.
c Latin America excludes Brazil.
d World Trade includes Intra- EU trade.
Source: UN Comtrade.

A Lower-Growth Scenario

Even in an environment of slower growth, the message that the weight of developing countries in world trade will rise sharply remains. Lower growth may result from the materialization of various risks, including increased protectionism, geopolitical strife, recurrence of financial crises, and the effects of climate change. Under a lower-growth scenario, average annual growth rates—relative to the baseline case—are expected to be 0.5 to 0.9 percent lower in advanced economies, 1.5 to 1.6 percent lower in China and India, 1.1 to 1.5 percent lower in other emerging economies, and 1.1 to 1.7 percent lower in non-G20 economies in sub-Saharan Africa. Under this scenario, the share of developing countries in world exports will be nearly 60 percent, 9 percent smaller than their share under baseline projections. Export shares of advanced countries will be slightly higher under this low-growth scenario, but not large enough to displace China as the world's leading exporter. China's exports will account for about 22 percent of world exports in 2050, followed by the EU's 18 percent.

Slower growth could have a significant impact on the growth of the Middle and Rich Class (GMR) in developing countries. In the lower-growth scenario, the size of the GMR class in developing G20 countries will be lower by about 34 percent in 2030 and 27 percent in 2050 than under the baseline projections. The size of the GMR in China and India could be 28 percent and 42 percent lower, respectively, in 2050.

Policy Observations

While these projections point to significant opportunities—from shifts in comparative advantage to a large expansion of world trade to deepening financial integration—policy must be reformed on both the national and international levels if the full potential on any of these fronts is to be realized.

The extent to which comparative advantage will shift in manufactured goods and developing countries will serve as markets for one another will depend largely on reforms in developing countries. These reforms are particularly important in lower-wage African countries and their competitors in other regions. To bolster exports, the quality and predictability of their business climate must be improved. While such improvements are important for all sectors, they are absolutely essential for stimulating investment in manufacturing, where deficiencies cannot be offset by abundant or unique resource endowments. If done gradually and with supportive measures, reducing the high import protection that is still prevalent in many sectors would also foster efficiency, exposing firms to international competition and easing their access to imported inputs. By making trade less expensive, reducing customs and logistical impediments would have similar effects. Forging new South-South links in trade and finance through regional agreements and institutions—which can share information, promote common regulations, and support cross-border projects—would also help harness the expanding complementarities in South-South trade.

At the same time, the success of developing countries in manufactures will force rich countries to accelerate the pace at which they innovate and differentiate, as well as require them to make their business environment more flexible and predictable. Private investments in specialized skills and R&D are likely to increase in importance, and governments can support the trend in various ways.[12]

While the projections suggest that a large expansion in world trade, as well as marked increases in efficiency, innovation, and, ultimately, human welfare, are likely in the coming 40 years, an open, rules-based system appropriate for this new world economy is still a work-in-progress, as shown by the floundering Doha process. In particular, incorporating the diverse interests of developing countries in trade rules and liberalization agreements is crucial—but the need to achieve consensus among the WTO's large membership cannot be allowed to dilute agreements to the lowest common denominator. Far-reaching reforms of the WTO are needed to make the process of multilateral negotiations more flexible and responsive to individual countries and regional groups or "clubs" interested in making progress in specific areas. Disciplines must be strengthened to ensure that the progress of world trade is not hampered, or worse reversed, in the midst of another crisis.

As with trade, increased financial integration of developing countries will also present new opportunities. In Africa, for example, where the crisis made prospects for aid flows even more uncertain, the potential for private capital inflows remains relatively untapped. However, increased financial integration will also present new challenges for macroeconomic and regulatory policy. On the one hand, it needs to ensure that capital is used effectively and is less sensitive to artificial distortions or market euphoria; on the other, it must establish safeguards against sudden stops or reversals of capital flows.

Prudent levels of internal and external debt, sound banking regulations, exchange rate flexibility, and monetary policy geared at keeping inflation moderate will all help in this regard. Furthermore, capital account regulations that guard against over-reliance on short term capital inflows, and instead highlight FDI and other long term, resilient sources of capital can play an important role.

Notes

The authors are grateful to Vera Eidelman for her very helpful comments and editorial support.

[1] This paper draws heavily on the GDP projections made in "The World Order in 2050." Estimates of financial integration and the Global Middle and Rich(GMR) class come from those projections, while the trade projections published here are calculated based on them as well, using a method discussed below.
[2] Includes BRIC (Brazil, Russia, India, and China) and other developing countries in MENA (Middle East and North Africa), SSA (Sub-Saharan Africa), Latin America, Asia Pacific, Eastern Europe, and Central Asia.
[3] This discussion of past trends compares 1996 levels with 2006 ones, unless otherwise noted. Projections, which are explored later in the paper, compare 2006 levels with those expected in 2050.
[4] Unless otherwise specified, the figures for manufactured goods are based on the UN Comtrade's classification, which excludes machinery and transport equipment.
[5] The sum of net foreign direct investment (FDI) inflows and net portfolio equity inflows.
[6] Emerging markets refers to the 30 major emerging countries covered in the IIF's "Capital Flows to Emerging Market Economies report. This private capital flows number also includes debt flows.
[7] Following a definition adopted by the World Bank, those with per-capita incomes between $4000 and $17,000 constitute the middle class. Those with incomes above $17 000 per person are considered members of the rich class.
[8] The ratio of the GMR population in developing G20 countries to the total that includes the GMR in all advanced countries. It is assumed that more than 95 percent of the population in advanced countries is GMR class.
[9] The average income of the highest decile (assumed to be the 95th percentile) was less than the $4000 cut-off for the GMR class.
[10] To project trade flows, we assumed that imports into a given country will grow at the rate of GDP times an elasticity of 1.3 (the rationale behind this number is discussed in the text) and exports will grow proportionally to the GDP of the exporting country. For simplicity, trade deficits and surpluses as a share of GDP are assumed to stay constant, at the rate of the base period.
[11] The elasticity of world trade to world GDP from 1960 to 2008 was 1.7.
[12] Refer to "Global Economic Prospects 2008: Technology Diffusion in the Developing World," World Bank, http://siteresources.worldbank.org/INTGEP2008/Resources/complete-report.pdf.

Annex

	Average Annual Growth	Real GDP 2005 US$(Billions)		
	2009–2050, %(Y/Y)	2009	2030	2050
G20 Advanced Economies				
United States	2.7	12949	22258	38646
Japan	1.1	4467	5786	6216
Germany	1.4	2833	3593	4535
United Kingdom	2.1	2320	3597	4997
France	2.1	2203	3323	4528
Italy	1.3	1732	2197	2580
Canada	2.6	1171	2083	3154
Korea	2.5	945	2122	2812
Australia	2.9	787	1501	2257
Developing G20 Economies				
China	5.6	3335	21479	46265
Brazil	4.1	1011	2440	6020
India	5.9	1065	5328	15384
Russia	3.3	869	2487	4297
Mexico	4.3	866	2397	5709
Turkey	4.4	509	1437	3536
Indonesia	4.8	354	1073	2975
South Africa	4.3	271	791	1919
Argentina	4.1	223	527	1267

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