

The BRICS: some historical experiences, growth challenges and opportunities

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Abstract and Executive Summary

The acronym BRICS was a fad among the media and global investors. Now, the acronym sounds passé. However, the group of countries remains important, from both political and economic reasons. They have a large aggregate size, 28% of the global GDP and 42% of the world's population, high growth potential due to the current significant misallocation of resources and relatively low stock of human capital, structural transformation is in progress and one of them, China, is taking steps to become a global power and a challenger to the US dominance.

This paper provides a brief overview of the five economies, Brazil, Russia, India, China and South Africa. We focus on some aspects of their history, the Chinese initiatives in international finance and geopolitical strategic moves, their growth experience and structural transformation over the last 35 years, trade and investment integration into the global economy and among themselves, the growth challenges faced by their economies and the potential gains to the Brazilian economy from a stronger integration with the other BRICS.

In association with its efforts to be a global power, China aims to become a major player in global finance and to achieve the status of global currency for the renminbi, which would be the first currency of an emerging economy to attain such position.

Despite the similarities, the BRICS encompass very diverse economies. In the recent decades, China and India showed stellar growth rates. On the other hand, Brazil, Russia and South Africa have expanded just in line with global output growth with the Russian economy exhibiting high volatility. China is by far the largest economy, and South Africa the smallest, the only BRICS economy with a GDP lower than US\$ 1 trillion.

Russia abandoned communism almost 25 years ago, but reversed many of the privatizations of 90's. China is still ruled by communism, but has a vibrant private sector and recently has officially declared market forces to play a dominant role in its economy.

Brazil, Russia and South Africa are global natural resources powerhouses and commodity exporters while China and India are large commodity importers. Brazil is relatively closed to international trade of goods and services, in marked contrast to the

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other four economies. Brazil, India and South Africa are dependent on external capital flows whereas China and Russia are capital exporters.

India and South Africa have younger populations and a large portion living below the poverty line. Despite its extraordinary growth experience that lifted many millions from poverty, China still has 28% of its population classified as poor. Russia and China have much older populations and one of their challenges is to deal with the effects of a declining labor force in the near future.

India, China and South Africa face a long way to urbanization, while Brazil and Russia are already urbanized countries.

China is an industrial economy but its primary sector still absorbs a large pool of workers. India is not, but the primary sector employs also a large share of the labor force. China's aggregate demand structure is biased towards investment that has been driving its expansion. Brazil and South Africa have an aggregate demand structure similar to the developed economies, with private consumption accounting for approximately 70%. The same similarity applies to the supply side, as in both economies the share of services nears 70%.

The development problem is a productivity problem, so microeconomic reforms are badly needed to foster long-term growth of the BRICS economies since they have lost steam due a variety of factors, but fundamentally due to slower total factor productivity growth. China and India are implementing ambitious reform programs, while Brazil is dealing with macroeconomic disequilibria. Russia and South Africa remain mute about structural reforms.

There are some potential benefits to Brazil to be extracted from a greater economic integration with the BRICS, particularly in natural resources intensive industries and services. Necessary conditions to the materialization of those gains are the removal of the several sources of resource misallocation and strong investment in human capital.

1. Introduction

In 2001, when the global economy was under a mild recession, the acronym BRIC was coined from the initials of the four largest emerging markets economies – Brazil, Russia, India and China. They have a large population – 42% of the world’s population – and were supposed to be able to propel global economic growth over the long term.

As a matter of fact, over the following ten years, the acronym became very popular among the media and financial investors. The four country-group contributed in a large extent to the global real output expansion, quadrupling its aggregate size in terms of GDP measured at purchasing power parity (PPP) exchange rates. China is now the second largest economy in the world, while Brazil, India and Russia are among the ten largest economies.

More recently, South Africa was added to the original group, and the acronym gained life as a bloc of nations with common interests.

Stellar growth rates of the last decades belong to the past, and as a consequence the acronym has lost its shine. However, we do believe that the BRICs have not lost relevance.

The large size of the four original BRICS economies, particularly China, mean that they still have a significant influence on global economic growth. As developing economies, some important structural transformations are still to come which are very likely to generate external spillovers. Although with different degrees of severity, the five economies are facing challenges. Two of them, China and India, are intensifying efforts to implement structural reforms in an attempt to sustain a rapid long-term growth path.

The substantial misallocation of resources and the large scope to improve human capital give the BRICS countries a great potential to lead global economic growth and to narrow their income differences to the rich nations.²

Last but not least, the move to create an institutional bloc raises the need to analyze the expected net economic benefits to be derived from a closer integration of the five economies, particularly from the Brazilian viewpoint.

There is significant heterogeneity among the BRICS, in terms of experience with market oriented economies, size, economic structure, growth speed and prospects.

² The ease of doing business is a good indicator of the degree of the incidence of factors that cause resource misallocation. According to Doing Business 2015, prepared by the World Bank, South Africa ranks 43rd., Russia 62nd., China 90th., Brazil 120th and India 142nd., among 189 countries. Korea, a successful emerging economy, ranks fifth.

Economic integration within the bloc is primarily through the trade channel, taking advantage of the dichotomy between commodity exporters – Brazil, Russia and South Africa – and commodity importers – China and India. Financial integration within the group is not relevant although it has been increasing more recently.

The paper is organized as follows. The next section describes some aspects of the historical experience of these countries and their potential implications for economic development. Section 3 puts in a broader context the formalization of the BRICS as an economic bloc, suggesting the strong influence of the Chinese hegemony that is attempting to become a major global player in finance and the geopolitical arena. Section 4 addresses the evolution of the BRICS economic growth during 1990/2013.

Section 5 focus on the dynamics of structural transformation of each of the BRICS while section 6 addresses their integration to the global economy and within the group.

The final section analyzes the challenges faced by the BRICS to support fast pace long-term economic growth and tries to identify potential real income gains from the integration of the Brazilian economy to the other economies in the group.

On this respect, our conclusion is that the materialization of benefits to Brazil largely depends on economic reforms that will remove important sources of resource misallocation in its economy. Such initiatives will allow Brazil to successfully exploit the opportunities stemming from the dynamics of structural transformation of some our partners in the group, chiefly China and India.

2. The historical experiences

The BRICS is a group of countries with a diversity of historical and economic experiences.

The Chinese and Indian societies are among the oldest in the world, dating back to centuries BC. Russia was born as a nation in the second half of first millennium AD.

India was a British colony since the 17th century, becoming an independent country in 1947. China lived with domestic wars and foreign occupation over almost 200 years until mid-20th century.

While China has a more homogeneous population and has a ruling elite that directs the nation's economic and political development, India encompasses a very diverse society. The country contains at least fifteen major languages, hundreds of dialects, several major religions and multiple tribes, castes, and sub castes³.

³ Lee Kuan Yew, the founder of Singapore, commented that “India is not a real country. Instead it is a thirty-two separate nations that happen to be arrayed along the British rail line”.

However, after two decades of strong economic growth, India has been moving toward a different model of nationhood. The power of regions and regional parties is now undisputed, there is competition among states to promote economic growth, economic liberalization has created a national economy and information technology is forging a national culture.

Both Brazil and South Africa have their origins as nations associated to the discoveries made by the Portuguese circa 1500. Brazil gained its independence from Portugal in 1822 and South Africa from the UK in 1931.

South Africa is very likely to be the only African country where a coup d'état has never taken place. It has inherited some efficient institutions from the British colonization, despite the apartheid regime, which lasted from 1948 to 1990, and was more closely associated to the Afrikaners, of Dutch origin. The Reserve Bank of South Africa is the only independent central bank among the BRICS, a good example of soundness of the institutional framework.

South Africa is a multiethnic society, with 11 official languages, but English is the official business language.

China and Russia have spent a large part of the 20th century under communist rule, and isolated from the global economy. For example, while Brazil, India and South Africa were among the first to join the General Agreement for Tariffs and Trade (GATT) in 1947, China made its accession to the institution that replaced the GATT - World Trade Organization (WTO) - in 2001 and Russia only in 2012.

Communism was abandoned by Russia 25 years ago, but the country still has not been able to build robust institutions to allow for the flourishing of democracy and a market economy free from heavy state intervention.

Russia moved abruptly from feudalism to communism while capitalism prevailed in China until the victory of the communist revolution in 1949. The Shanghai Stock Exchange was the largest Asian stock exchange in the 40's. The Chinese diaspora gave an important contribution to develop market oriented economies in the Pacific Basin (Taiwan, Hong Kong, Singapore, Thailand and Malaysia), and pioneered foreign direct investment into China following the economic reforms led by Deng Xiao Ping.⁴

Even under communist rule, China suffered a deep change, shifting away from a centrally planned economy to the opening to market forces. It has a vibrant private sector, which is responsible for most of the total factor productivity gains (TFP) and for the employment of 2/3 of the urban labor force.⁵ Market forces freely determine almost all prices.

⁴ See, for instance, Seagrave (1995).

⁵ Total factor productivity (TFP) measures the efficiency of the combination of production factors, physical and human capital, to deliver output. The main determinants of TFP are technological innovations, the reallocation of factors of production, exposure to competition, the quality of business environment and business management and physical infrastructure. TFP

Brazil, India and South Africa lived with capitalist regimes, but with varying degrees of state interventionism.

The Indian economy was definitely freed from a Soviet style state planning implemented in the 50's only after the reforms made in the early nineties. The execution of those reforms faced much more reluctance from the beneficiaries of the old regime than in China, given the checks and balances imposed by democracy.

As a consequence, the expansion of the Indian economy acquired momentum only in the second half of the 90's, fifteen years after the start of the Chinese economic miracle. As the reforms were not so widespread as in its Asian neighbor, the level of efficiency is lower and China has done better in per capita GDP growth.⁶ India has been more dependent on domestic demand and more successful in services exports while China has been more dependent on the exports of manufactures. FDI has played an important role in the growth of Chinese manufacturing industry and no particular role in India.

The external sanctions to the racist regime forced the closure of the South African economy to international trade and capital flows, implying greater state intervention in economic affairs and slow economic growth. After the elimination of the apartheid regime, the ensuing lifting of the international restrictions and the implementation of some structural reforms had boosted economic growth.

Between 1996 and 2013, the South African economy expanded at 3.4 percent per year against 1.6 percent in 1975/1993, a period covering the final years of the apartheid.

Brazil was the most liberal economy among the BRICS over the last fifty years. However, it has oscillated between periods of smaller (1964-1973, 1991-2008) and bigger (1974-1990, 2009-2014) state interventionism. Such variations had affected potential output growth, as once introduced some distortions were never removed or only partially removed, or ended up being reintroduced.

As a matter of fact, the diversity of experiences is one of the factors that help to understand the different patterns of productivity and real output growth among the BRICS.

growth affects investment in education through the increase in marginal labor productivity and on the other hand education has a positive impact on TFP.

⁶ India was in the 51th percentile of the Global Competitiveness Index in 2014, while China was in the 81th. See X. Sala-i-Martin and K. Schawb (2014).

3. The institutionalization of the BRICS against a Chinese strategic background

Since 2009 the acronym BRIC has been taking shape as a real group, with regular annual meetings of its four-country leaders. The acronym was expanded to BRICS in 2010, with the formal inclusion of South Africa as a representative of the African continent, nevertheless its relatively small population – 52 million people – and the fact that it is the only economy in the group with a below US\$ 1 trillion GDP.⁷

The BRICS began to act as a bloc, sharing some joint political positions involving selected issues. The main decision of the Fortaleza summit in July 2014 was the creation of two financial instruments to institutionalize and strengthen the financial relationship within the bloc.

The Contingent Reserve Agreement (CRA) is dedicated to deal with short-term balance of payments disequilibria through currency swap lines amounting to US\$ 100 billion supplied by the BRICS central banks.

The People's Bank of China has committed to a line up to US\$ 41 billion, the Central Bank of Brazil, the Reserve Bank of India and the Central Bank of Russia, US\$ 18 billion each, and the Reserve Bank of South Africa, US\$ 5 billion.

Bilateral currency swap agreements with several countries, such as Argentina, Australia, Brazil, Iceland, Indonesia, Malaysia, New Zealand, Singapore, South Korea and the UK, have been an important component of the Chinese effort to gain the status of global currency for the renminbi (RMB).⁸ These agreements are estimated by Aizenman (2015) to involve RMB 2.58 trillion, equivalent to almost US\$ 410 billion at current RMB/USD exchange rate.

In addition, China has pursued other initiatives to reach the goal of internationalization of its currency. These include the gradual and selective removal of barriers to international capital flows and the development of Hong Kong as a major offshore RMB market, including the creation of a RMB-denominated debt market – the so-called “dim sum bonds”.⁹

The New Development Bank (NDB), created at the Fortaleza summit, has an initial capital of US\$ 50 billion, to be subscribed equally by the five BRICS, and an authorized capital of US\$ 100 billion. The NDB will be headquartered in Shanghai, with a regional office in Johannesburg. Its purpose is to finance infrastructure and sustainable development in the BRICS and other emerging economies.

⁷ South Africa's per capita GDP is higher than China and India.

⁸ China is the only economy among the six largest in the world which currency does not have the status of a global currency enjoyed by the currencies of the other five nations, the US dollar, the yen, the euro and the pound sterling.

⁹ According to Goldman Sachs, Hong Kong accounts for 73% of the liquidation of financial transactions in RMB.

The CRA and the NDB have been seen as a way to challenge the dominance of the IMF and the World Bank, in light of the frustration with the structure of voting power in these institutions, which still reflects the composition of the global economy after the II World War, significantly different from today.

At the same time, it seems likely that the NDB will deviate from the policies adopted by the World Bank and the regional development banks, such as the ADB and IDB, which seek to prioritize the strengthening of market mechanisms. This will be rather contradictory, as the economic growth of China and the other BRICS has been mostly driven by the liberalization of their economies.

It is worth to notice that over the last few years China has scaled up the flow of loans to economies seen as high-risk jurisdictions by the global financial markets without the usual policy conditions imposed by the IMF, but demanding long-term contracts for the supply of commodities, particularly oil, and the award of contracts to Chinese construction companies. According to the China Global Investment Tracker, Chinese engineering and construction firms were awarded contracts totaling US\$ 432.5 billion from 2005 to 2014, highly dispersed among many emerging economies, and mostly involving the energy (46.5%) and transport (28.9%) industries.

The creation of the CRA and the NDB was simultaneous to other movements made by China in the field of international finance.

The Chinese has committed to supply US\$ 50 billion to subscribe the initial capital of the Asian Infrastructure Investment Bank (AIIB), with the goal of financing infrastructure projects. As of April 2015, the AIIB received the formal adhesion of 57 countries, emerging and developed economies, including Brazil, India, Russia, Indonesia, Malaysia, Singapore, South Korea, Thailand, Israel, Kuwait, Oman, Qatar, United Arab Emirates, Saudi Arabia, Australia, France, Germany, Italy, Netherlands, Norway, Sweden and the UK.

Other Chinese project is the Silk Road Infrastructure Fund, dedicated to finance the construction of railroads and highways linking East Asia to Europe through Central Asia, a landlocked region that in the past was part of the Soviet Union. Since 2012 a new railway linking China to Germany is operating, built with the financial support from the ADB and the China Eximbank. Even with the China-Germany railway travel taking about 15 days, it was shortened by 30 days when compared to the maritime alternative. It is very likely an investment with high potential to deliver significant productivity gains¹⁰.

Energy supply is another key element of the Silk Road project, with the construction of pipelines to transport oil and gas produced in Kazakhstan and Turkmenistan to China.

¹⁰ Companies like HP, Acer and Foxconn are using this railroad to export computers from China to Europe, and German car manufacturers, such as Audi, BMW and Volkswagen, are exporting auto parts to their Chinese plants.

The Shanghai-Hong Kong (SH-HK) Connect is another project that recently started to operate. Its goal is to integrate the equity trading of the Shanghai and Hong Kong stock exchanges, in a way to work almost if they were a single large stock market.

Hong Kong has already a sizeable financial market, with proper regulation, best practice governance, and open to international capital flows. Thus, the SH-HK connect is likely to be an important step to liberalize capital movement between China and the rest of the world as it creates *de facto* the world's second largest stock exchange by market capitalization and the third by liquidity, which will be able to attract large global investors.¹¹

The license to Chinese investors to invest in hundreds of companies listed in Hong Kong creates a new option to the allocation of their asset portfolio. As it has been strongly concentrated in real estate assets, the project may contribute to mitigate the risks of a real estate bubble, a highly damaging event to any economy.¹²

The incorporation of the CRA and the NDB is not an isolated fact and/or restricted to the BRICS.

We believe that it is linked to a much broader context, encompassing a component of a geopolitical strategy – China is willing to project itself as the leader of both Asia and the developing world to challenge the role of the US as a global power– as well as an economic strategy aimed to achieve various goals.

As we see, these goals comprise:

- (a) A closer integration of the Chinese economy to global financial markets via Hong Kong, thus facilitating the reform of its dysfunctional financial market;
- (b) To attain a status of global currency for the RMB and the associated benefits, such as the extraction of seigniorage and the issue of low-cost external debt denominated in the domestic currency, in addition to prestige;
- (c) The diversification of the foreign asset portfolio financed by its huge stock of international reserves, estimated to reach about US\$ 4 trillion, still too concentrated in US and European sovereign debt bonds;
- (d) The exploitation of the comparative advantages in infrastructure building of Chinese contractors acquired by the learning-by-doing arising from the execution of hundreds of large-scale projects over the last decades;

¹¹ The joint market capitalization of the Shanghai and Hong Kong stock exchanges reached about US\$ 7 trillion in November 2014, against US\$ 19 trillion of the New York Stock Exchange, the largest in the world.

¹² Goldman Sachs estimates that 72% of the portfolio of Chinese households is invested in real estate assets, which is quite similar to the Japanese situation in 1990 when a real estate bubble burst, and much higher than in other Asian countries (40-45%) and developed economies (20-30%).

(e) The exploitation of opportunities to foster trade with the rest of the world, an important source of productivity growth.

The implementation of an economic and power-oriented global strategy and the magnitude of its economy place China in a special position when one seeks to analyze the BRICS. In this context, the institutionalization of the BRICS as a bloc is more likely to serve the global interests of China than to its other members, although they can benefit from a future closer trade and financial integration.

4. The growth dynamics of the BRICS

During 1990-2013¹³, the BRICS share in global GDP climbed to 28% from 18%. This is explained by the high growth performance of China and India, 10.3% and 6.7% per year, respectively.

Brazil and South Africa had a slower pace of growth, averaging approximately 3% per year. Russia's rate of economic growth was about the same. However, its economy is too volatile, even by the standards of emerging market economies.

India, South Africa and China still have a sizable portion of their population living below the poverty line as defined by the World Bank, 68.7%, 31.3% and 28.2%, respectively¹⁴, albeit growth over the last decades has lifted some hundreds of millions of people out of poverty.

The high degree of poverty prevailing in India is likely to be associated to the fact that it is still a rural country, with 69% of its people living outside the cities, and to the lack of capacity to supply basic services – education, health, energy, potable water and sewage – to meet the demand from the poor.

Until the beginning of the sixteenth century, China had the highest per capita income in the world¹⁵. According to Maddison, China's GDP accounted for 33% of the global GDP in 1820, and only 5% in 1950. From the 19th century to 1978, Chinese economic performance met the standards for a classical case of growth disaster. In the 70's, the World Bank classified China as a low-income economy. More recently, it was upgraded to an upper middle-income economy¹⁶.

The combination of reforms to allow for a more efficient allocation of resources, the access to modern technology via international trade and inflows of foreign direct investment, investment in human capital and efficiency-boosting

¹³ There is no data for Russia before 1990, as it was part of the Soviet Union. Thus, for analyzing the BRICS we are restricted to the 1990-2013 period.

¹⁴ The poverty line is defined as a monetary income below US\$ 2 per day.

¹⁵ According to Maddison (2007).

¹⁶ According to standards set by the World Bank in 2013, low-income countries are those with a per capita gross national income of US\$ 1,035 or less, low-middle income, between US\$ 1,036 and US\$ 4,085, upper middle-income, between US\$ 4,086 and US\$ 12,615, and high income with US\$ 12,616 and above.

investments in infrastructure had contributed to the fast growth of TFP¹⁷. At the same time, the high rate of domestic savings was able to finance the execution of large investments in physical capital required by urbanization and industrialization.

The investment to GDP ratio in China has been hovering around 45%, a very high figure even by the standards of other high-growth Asian economies, which used to invest 30-35% of real output during the phase of growth acceleration.

About 30% of the Chinese investment in physical capital has been allocated to residential and infrastructure construction. As we have mentioned before, infrastructure building is a source of positive externalities to the rest of the economy.

Alongside the focus on education, Chinese large investment in housing and infrastructure contrasts with the Brazilian experience. Investment in those areas was neglected when Brazil was becoming an urban country, with negative implications to economic growth and income distribution.

Between 1990 and 2013, China and India were the two economies to show some convergence to the US income level, even though Indian per capita GDP is still only 9% of the American. Relative GDP per capita of Brazil, Russia and South Africa have remained stable at approximately 20%.

Despite its extraordinary growth experience over the last 35 years, China's per capita GDP is still below 20% of the US. When compared to other Asian economies that experienced rapid expansion in the second half of last century, China lags well behind in terms of convergence to the income level of developed countries, as it started from a very low basis, US\$ 150 in 1978, only 2% of the US. After a 30-year period of fast growth, Japan's per capita GDP was 75% of the US in 1980, and South Korea reached 46% in 1994.

Emerging economies tend to be more volatile than the developed, and in particular they use to suffer larger real output and investment losses during recessions.¹⁸

The Russian economy is the most volatile of the BRICS economies, being three times more volatile than the others. This phenomenon may be explained by the large exposure to commodities, primarily oil and gas, and its tendency to be involved in geopolitical disputes.¹⁹

Brazil managed to expand at fast pace between 1950 and 1980, when real GDP grew at an average rate of 7.8%, mostly influenced by structural transformation, the reallocation of resources from the low-productivity agricultural sector to

¹⁷ China's TFP is estimated to have grown at 3.7% per year during 1990-2000 and at 5.4% in 2000-2009, according to Veloso, Ferreira and Pessoa (2013).

¹⁸ For empirical evidence, see M. Khose and E. Prasad (2010).

¹⁹ Energy represents 25% of Russia's GDP and contributes to 70% of the exports and to 50% of federal revenues.

higher productivity industrial and services sectors. The pace of Brazil's expansion was similar to what had been experienced by Japan in the same period and China between 1978 and 2008. Since then, TFP has fallen continuously during the 80's and 90's, in synch with the so-called Latin American productivity disaster and as consequence the rate of output expansion took a nosedive.²⁰ There was some recovery in the last decade, but it was interrupted in the recent years.

Investment in physical capital as a proportion of the GDP was down and remains below 20%. Even with a low investment to GDP ratio, domestic savings are not sufficient to finance it, which makes Brazil dependent on external savings and more exposed to financial shocks.

Empirical evidence for emerging economies exhibits negative correlation between current account balances (deficits) and rates of economic growth. Despite the benefits of foreign investment, countries more dependent on these flows have a tendency to slower growth, suggesting that it is due to underdeveloped financial markets and/or because they are prone to overvaluation caused by rapid capital inflows²¹

In 2010, the population above 25 years of the main emerging economies had an average of 8.8 years of schooling, being 11.7 years for Russia, 9.4 for South Africa, 7.7 for Brazil, 7.1 for China and 5.4 for India. Compared to 30 years ago, Russia, Brazil and South Africa showed the largest improvement, with gains of, respectively, 4.9, 4.8 and 4.6 years of education.²²

Despite the convergence, the number of schooling years of the Brazilian population did not reach yet the level of the US or Australia - another commodity exporter - fifty years ago and still lags behind other major emerging economies, quantitatively as well qualitatively.

Results of the 2012 PISA, that involves students from 65 countries, showed that Brazilians ranked 58th, below Russia, 34th, and China-Shanghai, 1st.²³ The percentage of low-achievers in the math test among Brazilian students was very high, 67.1%, against 9.1% for Korea.

Another dimension of the contribution of education to income growth is the investment in preschool, which is important to influence cognitive and non-cognitive skills. According to PNAD/IBGE, preschool enrollment in Brazil of 0 to 3-year old children was 27.9% in 2013, almost doubling when compared to 2003, 15.5%, but still below the target of 50% set by the National Education Plan.

²⁰ See Veloso, Ferreira and Pessoa (2013).

²¹ See Prasad, Rajan and Subramanian (2007).

²² See the Barro-Lee Dataset.

²³ PISA – Programme for International Student Assessment is a triennial international survey, which aims to evaluate education systems worldwide by testing the skills of knowledge of 15-year old students. About 510,000 students in 65 economies took part in 2012 PISA assessment of reading, mathematics and science. Students from India and South Africa have not participated.

The structural weaknesses of the Brazilian economy, mainly associated to the relatively low stock of human capital and level of efficiency, contribute to constrain long-term growth. Given the performance of the last 35 years, it may have converged to a steady state characterized by a per capita GDP growth close to 1.0% per year, which is approximately equal to the pace of expansion for the US economy for the next 25 years estimated by Gordon (2014). If it is true, Brazil is not expected to follow a convergence path to the level of income of the developed countries.

5. The structural transformation of the BRICS

The bloc is composed by economies with different sizes and economic structures and upcoming structural change derived from economic development.

Given the dimensions of its economy, one could say that China is the BRICS. It is the second largest economy in the world, the largest consumer of energy and minerals, the world's largest exporter of goods and services and the second largest importer, the second largest recipient of FDI flows, and the country with the largest stock of international reserves.

Chinese GDP of US\$ 16.1 trillion in 2013, accounted for 54% of the BRICS aggregate GDP at PPP of US\$ 30 trillion. The size of its economy is more than twice India's GDP and almost five times Brazil and Russia as well. The South African economy, the smallest partner, had a GDP of US\$ 662 billion, only 2% of the group.

China contributes with some 70% of the BRICS investment and exports.

Reflecting the Chinese economic structure, the BRICS share in global investment is 40%, much higher than in global output. On the other hand, its share in global consumption is only 20%, given the low share of consumption in China's GDP.

Brazil, Russia and South Africa are natural resources powerhouses and as a consequence commodity exporters (food, industrial and precious metals, and energy). China and India are not endowed with a stock of natural resources sufficient to support rapid economic growth, and are dependent on commodity imports.

The one-child policy in China has meant a much sharper deceleration of the working-age population growth over the last ten years. China faces now a rising dependency ratio whereas in most of the other emerging economies it will still be falling for decades to come.

Together with South Africa, India has a population much younger than the other members of the bloc, which will allow them to enjoy the benefits of a

demographic dividend in the future, provided that substantial investment in human capital of the youth is made.²⁴.

One of the challenges of the Russian economy is its declining population and as a consequence an increasing dependency ratio.

Compared to other BRICS, Brazil is middle of the road, with a population older than India and South Africa, but younger than Russia and China. The dependency ratio is still decreasing but it is estimated to rise from 2030 onwards.

The share of agriculture in both Chinese and Indian economies is relatively high, 10% and 15%, respectively. In both countries, there is still a large scope to free labor from the primary sector - responsible for the employment of 38% and 53% of the workforce - to manufacturing and services.

This contrasts with the other three countries, where agriculture represents 5% of value added as an average.

This structural characteristic is mirrored in the different stages of urbanization. India, with 31%, and China, with 53%, still has a significant transition to the urban sector to be made. There is a sharp contrast to Brazil and Russia, which are very urbanized, with 85% and 80%, respectively, of their population living in the cities. In terms of urbanization, South Africa is similar to India, but its supply structure is different, with mining, manufacturing and services having a larger share in output and employment.

Despite its low rate of urbanization, India has three of the ten more populous cities in the world. In addition, its eight largest cities show a population density well above some developed metropolis, like New York, London, Hong Kong and Tokyo. This phenomenon poses a major challenge to India in dealing with urbanization, as it raises the need to create new cities, and to invest heavily in housing and urban infrastructure.

The rural-urban migration in China has been constrained by the permit system to live in the cities (*hukou*), adopted in 1955 and still effective. Although 53% of the population lives in the cities, only 35% has the license to migrate, which makes people eligible for social security programs and public school enrollment²⁵. The higher cost of labor mobility across sectors implied by the *hukou* makes aggregate productivity lower than it would be in the absence of this barrier.

One of the main strategic guidelines approved by the III Plenum of the Communist Party in November 2013 was to give more flexibility to the *hukou* system to make feasible the effective inclusion of migrant workers in the cities,

²⁴ In both countries, the population with less than 15-year old represents 30% of the total population.

²⁵ See Lardy (2014) for a description of the licensing system for urban residence.

in order to facilitate labor reallocation and to increase the demand for consumer goods and services.

Although with a large rural population, China is fundamentally an industrial economy, as manufacturing accounts for 45% of the GDP. As a consequence of rising real wages, it is losing comparative advantages on the production of light manufactures – such as textiles, garment, shoes and toys – that have been gradually migrating to lower income Asian countries, Indonesia, Vietnam and Laos.

Simultaneously, China is moving up the value chain to produce goods more intensive in human capital and technological sophistication. It has raised investment in R&D and human capital and strengthened the links between universities and companies, following the steps of South Korea, seen as a benchmark for successful emerging economies. China became the world's largest producer of science and engineering graduates (masters and PhDs), the second largest spender on R&D and the second largest producer of scientific papers.²⁶

A positive development over the last few years has been the rise in the share of services in GDP to 48% in 2014 from 41% in 2005 at the expense of the fall of the industrial sector. This change is in line with the government goal to have a more balanced economic structure.

India, where the share of services is 56% of the GDP, did not follow the growth model adopted by the other fast growing Asian economies, based on export-oriented production of light manufactures intensive in cheap low-skilled labor. The Indian economy has concentrated on industries that use more advanced technology and human capital – such as information technology, medical services and equipment, autos, pharmaceutical and chemical manufacturing, photovoltaic panels – following the so-called precocious development model²⁷.

The share of industry in the Russian and South African GDP is, respectively, 37% and 28%. This masks an important structural characteristic of the two economies, given that extractive industry, comprising mining, oil and gas, is responsible for more than 40% of the value added by the whole industry.

In Brazil, another resource-rich country, extractive industry accounts for 16% of the output of the total industrial sector. Jointly with agriculture, they account for only 9.8% of the GDP, a much smaller portion than in the two other commodity exporters.

Services represent 69% of GDP both in Brazil and South Africa, resembling the structure of aggregate supply in developed economies.

The large share of services is likely to be an important variable to explain low aggregate productivity levels in Brazil and South Africa, as the productivity

²⁶ See Freeman and Huang (2015).

²⁷ See A. Subramanian (2014)

catch-up tends to be smaller than in agriculture and manufacturing, where productivity increases faster.²⁸ In addition, aggregate productivity tends to fall as a consequence to the rise of the share of services in GDP, the composition effect. According to the estimates of Veloso, Ferreira and Pessoa (2013), the productivity gap in services in Brazil relative to the US widened between 1960 and 2005.

For example, less developed financial markets hamper resource reallocation, to the extent that they restrict the development of innovative firms and the downsizing and exit of the inefficient. The main macroeconomic implication of these financial frictions is to slow the speed of transition to a new steady state in economies undergoing structural reforms, the case of the BRICS.

Large state-owned banks that are not able to channel the funds of savers in an efficient way dominate the banking industry in China, India and Russia.

Financial markets in South African are large, with total financial assets totaling almost 300% of the GDP. The banking industry is concentrated, with the five largest banks, all of them private sector companies, having 90% of the assets. This makes South Africa the only economy of the BRICS with a dominant private sector banking industry.

Brazilian financial markets are developed and some microeconomic reforms in the last decade, which included the development of new products and the approval of a new bankruptcy law, implied sizable productivity gains.

However, state-owned banks currently account for 54.1% of the total stock of credit. Subsidized loans extended by state-owned banks and the imposition of mandatory earmarked credit lines to certain activities create a dual credit market²⁹. In addition, Brazil lacks a liquid corporate debt market to meet the demand for long-term funds.

The poor infrastructure of transportation services in Brazil is a major source of inefficiency as it poses barriers to international trade as well as to trade within the domestic market of a country with a large territory. Companies are not incentivized to invest in improving efficiency and inefficient producers are protected from competition while efficient firms face barriers to expansion.

According to the World Competitiveness Report, Brazil ranks 120th among 144 countries in infrastructure quality, against Korea 23rd, South Africa 59th, China 64th, Russia 74th, and India 90th.

²⁸ See Duarte and Restuccia (2010) and Ferreira and Silva (2014) about structural transformation and TFP in services.

²⁹ Earmarked credit represented 47.7% of total credit as of December 2014, according to Central Bank of Brazil data.

One of the sources of low productivity in Brazil's service sector is the high number of informal firms with low-skilled owners, which have low levels of productivity³⁰.

Alongside investment in human capital, reforms to eliminate barriers to entry and to remove resource misallocation possess high potential to increase aggregate productivity, given the large share of services in value added and the positive spillovers on its consumers – agriculture, mining, energy and manufacturing. Moreover, higher productivity in education and health services tends to generate a positive impact on human capital.

While investment has been the main driver of aggregate demand growth in China, consumption's share is only 35% of the GDP, below the average for emerging economies.

India's investment averages 35% of GDP, a higher percentage than Brazil, Russia and South Africa, with approximately 20% each. The composition of aggregate demand of the last three countries is similar to developed economies, where the share of consumption is almost 70% of GDP.

In sum, Brazil, Russia and South Africa have economic structures more similar to advanced economies with large shares of consumption in aggregate demand and of services in aggregate supply.

There is room for gains arising from urbanization in China, India and South Africa. Further structural transformation will take place in China – from manufacturing to services and investment to consumption - and India – from agriculture to manufacturing/services.

There are two additional sources of labor reallocation in China. First, there is still a labor pool that can be tapped from the rural sector, a process that can be facilitated by a more flexible *hukou* system. The other is the continuation of the gradual transfer of labor from low-productivity state-owned enterprises (SOEs) to high-productivity private sector firms.

6. Global connections

Despite globalization, simple correlations suggest that the co-movement between the business cycles of the BRICS with the global economy is limited, being much higher within the group.

The BRICS are open to international trade of goods and services. Excluding Brazil, the trade flows to GDP ratio is 54%, approximately the same for the five largest developed economies (US, Japan, Germany, UK and France).

³⁰ 32.6% of the owners of formal service companies have more than 14 years of education against 13.6% in the case of informal firms. See Veloso (2015).

Apparently as an inheritance of the import substitution policies of the 50's, Brazil is an exception among the BRICS, as it is one of the most closed economies in the world. Trade flows of goods and services reach only 28% of Brazil's GDP, the lowest in Latin America.

The lack of significant participation of Brazilian companies in the global value chain reflects this distortion. The Brazilian manufacturing industry is vertically integrated, adding domestically more than 80% of the value in export of manufactured goods, a much bigger contribution than in other emerging economies, like China, India, South Korea, South Africa, Chile and Mexico.³¹

China is the opposite, with approximately 50% of its exports being originated from the reprocessing of imports, thus showing an active role of its manufacturing industry in the global supply chain, a source of productivity growth.

Intragroup trading has been increasing. Trade is nevertheless unidirectional, flowing mostly between each of the other BRICS to China, and being not large among the non-China BRICS. Within the BRICS, the Chinese market is the main destination of the Brazilian, Indian, Russian and South African exports. If we consider trade on a global basis, China is the main market for Brazilian, Russian and South African exports, and the third largest for Indian exports.

Brazil has taken advantage from the complementarity with the Chinese economy, replacing the US as its main trade partner³².

Commodities account for more than 90% of Brazilian exports to China. Soybeans, iron ore, oil and pulp account for 80% of total exports. Brazil imports manufactured products from China, including capital goods (50%), chemical products, plastics, consumer durables and others.

Brazil, India and South Africa are structurally net importers of capital, whereas China and Russia are net exporters.

The BRICS are connected to the global financial markets via portfolio as well as foreign direct investment (FDI) flows.

The FDI inflows into the BRICS more than tripled from 2000 to 2012, when they reached US\$ 263 billion. As a consequence, the share of BRICS in global FDI climbed to 20% in 2012 from 6% in 2000.

At the same time, the BRICS became large global investors. Their FDI outflows to the rest of the world increased to US\$ 126 billion – 9% of total FDI – from US\$ 7 billion in 2000, or 1%.

³¹ See World Bank (2014).

³² Despite that, Brazil is the source for only 2.5% of China's imports.

As expected, China and Russia are responsible for the bulk of the BRICS FDI outflows, with, respectively, 54% and 40%. China is becoming to recycle its sizeable current account surpluses through outbound private sector investment, rather than official reserve accumulation.

According to China's Ministry of Commerce, Chinese FDI outflows totaled US\$ 581.3 billion from 2005 to 2014. The data shows accelerated growth, with annual flows jumping to US\$ 98.0 billion in 2014 from US\$ 12.3 billion in 2005.

Despite being blocked by the US government from making some acquisitions, the US economy is the main destination of Chinese FDI. However, its share is only 13.9% of the total China's FDI.

Seven of the ten largest recipients of China's foreign investments are natural resource rich countries: Australia, Canada, Brazil, Russia, Kazakhstan, Peru and Indonesia. More recently, Chinese investments are showing some diversification towards finance, real estate, manufacturing and telecom, while private sector companies are gaining weight as global investors.

Given the lack of a large natural resources endowment, the mining and metals industry is one of the preferred targets for Chinese investment abroad. It is estimated that the accumulated flows from 2005 to 2014 amounted to US\$ 103.0 billion³³. Out of this total, 25% was destined to Australia, 25% to high-risk economies and less than 10% to Brazil, Russia and South Africa³⁴.

The allocation of ¼ of its external investments to mining and metals in high-risk countries is consistent with the allocation of Chinese international loans. Apparently, the strategy is to fill the gap in economies with no access to global financial markets in exchange for guaranteeing the supply of industrial raw materials, and construction contracts.

The stock of FDI outflows of Brazilian companies is estimated by the Central Bank of Brazil to be US\$ 295.4 billion in 2013, showing an annual average growth of 16.1% since 2000. Although being also a net recipient of FDI, India's largest 50 companies source 30% of their revenues from international operations.

The magnitude of FDI flows among the BRICS is limited. They are not large investors into each other.

Unctad estimates that the stock of FDI outflows of BRICS into other BRICS is only 2.5% of their total stock of FDI, even though their total stock of FDI represents 10.5% of the global stock of foreign capital. Indian FDI outflows into the other BRICS is about 3.2% of India's total FDI, 2.2% for China and only 0.3% for Brazil and Russia.

³³ According to I. Koch-Weser, Inter-American Dialogue, 2014.

³⁴ The following economies are being considered as high-risk economies: Afghanistan, Kazakhstan, Cuba, Guinea, Mongolia, Democratic Republic of Congo, Sierra Leone, Ukraine, Uzbekistan, Venezuela and Zimbabwe.

Estimates from the Conselho Empresarial Brasil China indicate that the stock of Chinese capital invested in Brazil is approximately US\$ 20 billion, a relatively small number given the dimensions of the Brazilian economy and the stock of foreign direct investment in the country, of US\$ 705.9 billion in 2013, according to the Central Bank of Brazil³⁵.

The evolution of inflows of China's investment in Brazil tends to reflect the structural transformation caused by economic development. In the past it was concentrated on agriculture, mining and oil, and more recently the automotive industry, telecom and financial services are gradually becoming more attractive for Chinese investors.

7. Challenges and opportunities

The end of the commodity super cycle, the negative spillovers from financial crises in developed economies and the macroeconomic policy response to these events have contributed to moderate the pace of expansion of the BRICS economies.

Growth models implemented in the past, such as the credit-fueled investment in China, are showing signals of exhaustion.

The total credit to GDP ratio in China jumped to 282% in 2014 from 158% in 2007 and the productivity of state-owned companies, which are the largest borrowers jointly with local governments, has been declining.

Non-financial corporations, that include SOEs and local government financing vehicles, are highly leveraged being responsible for 44.3% of the total debt. A large part of the substantial credit expansion in China is related to the financing of a construction boom since 2008. Nearly half of China's debt is related to real estate.

Part of the construction boom was a result of the search for higher returns given that bank deposit interest rates were kept negative in real terms, one of the features of inefficient financial markets.

The credit-fueled consumption growth model adopted by Brazil is also exhausted and macroeconomic fundamentals have seriously deteriorated. Uncertainty has elevated, contributing to the postponement of investments and the execution of productivity enhancing moves. Twin deficits re-emerged, reaching 10.9% of GDP in 2014, inflation has been systematically above the target, productivity fell and the growth rate has plunged to 1.5% per year in 2011-2014 from 4.5% in 2004-2010.

Repression of electricity, diesel and gas prices, highway tolls and bus fares was abandoned and a fiscal adjustment program targets to promote a swing from a

³⁵ Intercompany loans of US\$ 132.1 billion are included in the Central Bank estimate.

primary budget deficit of 0.6% of the GDP in 2014 – the largest since 1998 - to a surplus of 1.2% in 2015. The increase in transparency on budget accounting - aiming to regain credibility and to minimize uncertainty - is a key ingredient of the program. Policy makers are also focusing on the restriction to the expansion of subsidized credit by public banks, a source of fiscal disequilibrium and misallocation of resources.

Economic activity in Russia is too much concentrated on energy, a potential source of macroeconomic volatility. Large state-owned companies play a key role on the economy as a result of the partial reversal of the privatization of the 90's and rent-seeking practices are deeply rooted.

Rent-seeking activities involve in a large extent the transfer of funds from private sector and state-owned companies to politicians and public employees. Their negative contribution to economic growth takes place through resource misallocation, barriers to entry to new competitors, and disincentives to innovation.

In addition, the involvement in geopolitical disputes and the resulting economic sanctions from developed economies is another element to lower Russian growth potential.

South Africa is trying to diminish the weaknesses of its physical infrastructure through a substantial investment program on energy generation and transportation.

Complex labor relations are one of the obstacles to growth in South Africa. Protracted strikes and real wages disconnected from labor productivity produce negative effects on the economy, including the persistence of high unemployment rates, particularly among young workers.³⁶

China and India are responding to the new scenario through economic reforms to improve resource allocation.

In the short term, China faces the risks of transitioning from a leveraged investment-manufacturing growth model to a less leveraged consumption-services led model.

The Chinese government is committed to a reform agenda set by the twelfth five-year plan that includes: (i) the reform of the *hukou* system; (b) to give a dominant role to market forces, including the unblocking of several services activities to private sector investment; (c) the restructuring the SOEs; (d) the modernization of financial markets; (e) the reform of the fiscal regime of the provinces In addition, it has launched a strong anti-corruption campaign, an important move given the misallocation of resources provoked by corruption.

³⁶ The unemployment rate in South Africa hovers around 25%, being the double for young workers.

So far, the reform agenda has seen progress, which adds credibility. The development of a fiscal reform package to restructure local government debt and the creation of new sources of revenue in order to lessen the reliance on land sales, the liberalization of bank lending rates and the relaxation of the cap on deposit rates, the development of a deposit insurance system to be put into effect this year, the implementation of the SH-HK Connect, the release of rules for deregulation of pharmaceutical prices and the abolition of pre-registration requirements for new businesses- that allowed for a 45% increase in company formation in 2014 – are good examples.

Financial market reform is one of the priorities of the new Indian government. This comprises more competition in financial markets through the creation of new private sector institutions and exposure to external competition, simultaneously to the inclusion of hundreds of millions of people in the banking system. The elimination of subsidies and the development of the energy industry, particularly through the removal of barriers to entry in thermal coal mining, are also key points in the reform agenda.³⁷

An ambitious program, “Make in India”, was recently approved by the government. Its main instruments are the acceleration of infrastructure investment, deregulation, the strengthening of intellectual property protection and the removal of barriers to FDI. They are aimed to facilitate investment, to stimulate innovation and to build a world-class manufacturing infrastructure³⁸.

An interesting project, the Aadhaar, that uses biometric technology to solve India’s identity crisis, is expected to be a powerful tool to fight poverty. Fingerprint and iris-recognition technologies will allow millions of people to gain access to health care, education, and basic government services, contributing to alleviate poverty, that as we have seen afflicts a large part of the Indian society. It is already beginning to show results, with enrollees opening their first bank accounts, acquiring mobile phones and obtaining more services from public agencies. Until 2014, approximately 600 million people were enrolled, half of India’s population.

Given the initiatives to remove various sources of resource misallocation, it is reasonable to expect that growth in China and India will continue to run above the remainder of the BRICS bloc, although at a slower pace than in the last decade. The substantial misallocation of resources and the large scope to improve human capital give the BRICS countries a great potential to remain leading global economic growth and to reduce their income differences to the rich nations.

³⁷ Coal is India’s primary source of energy. Coal industry is one of the most inefficient sectors in India, with one state-owned company having a near monopoly on production and distribution. Despite the country’s large reserves, coal shortages have been a major contributor to shortfalls in energy generation and blackouts.

³⁸ India has already increased investment in infrastructure to 7.5% of GDP, in which private sector companies play an important role.

Structural changes driven by economic development will create further opportunities to be exploited by Brazil. A clear case is the potential to develop closer linkages with China to exploit the complementary structure of resource endowments as well as the different structure of demand and supply.

However, the Brazilian economy badly needs microeconomic reforms in order to make feasible the materialization of the potential gains stemming from these opportunities.

For example, even though possessing the largest and the best iron ore reserves in the world, Brazil, the number one exporter until 2007, was largely surpassed by Australia since then. In 2013, Australia sold to the rest of world almost twice the volume of iron ore exported by Brazil.³⁹

A great deal of the explanation for the failure of Brazilian iron ore exports to keep growing lies on the complexity of the environmental permitting system. This has produced long delays in the development of iron ore projects, preventing Brazil to have benefitted in a larger scale from the commodity super cycle.

Similar delays have been experienced by power generation and oil exploration projects, thus contributing to reduce their private and social rates of return and to aggravate the disequilibrium between demand and supply of energy, which has been met by high-cost diesel fired power plants and oil imports.

The urbanization process in China will continue to require large volumes of iron ore over the next ten years, a growth opportunity to Brazilian miners.

Per capita income growth in China and India tends to provoke dietary changes towards an increasing consumption of protein, leading to the expansion of demand for grains and meat, products that Brazil is one of the leading global exporters.

Investment in infrastructure is key to take advantage of these opportunities. This means the allocation of funds by public and private sources to finance infrastructure building and higher efficiency in project execution as well as in managing operations.

Some issues are very important for infrastructure investment in Brazil: the opening of the market for contractors to international competition, greater focus on maintenance, better structuring of auctions for concessions, efficient pricing systems for infrastructure services, availability of detailed engineering projects before starting construction and the simplification of the environmental regulation.

³⁹ Data from the World Steel Association for 2013 indicate that Australia exported 613 million metric tons against 330 million of Brazil.

The growth of services activities in China as well as the shift of India towards a more open economy to FDI flows offer another set of opportunities to be exploited by Brazilian companies.

Unless it is able to engineer major productivity gains in manufacturing, Brazil will continue to lose markets to Chinese products. The dislocation of Brazilian manufactured goods takes place not only in its domestic market but also in the US, Europe, and even in the Mercosur.

The imposition of barriers to trade is of course not a solution. As it is well known, such practices lessen competition in the domestic market, which contributes to diminish the efficiency of producers and to raise costs for consumers, a perverse combination detrimental to growth.

Although the adoption of an export-led growth model is not an option to Brazil anymore, its economy needs to be much more exposed to international competition, an important channel for the transmission of new ideas and the realization of productivity gains.

Brazil does need to improve the quality of education, to increase investment in research and development, to leverage its comparative advantages and above all to learn from the successful experiences of other emerging economies.

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