

BNDES Brazil-World Scenarios¹

Since its foundation in 1952, the role of the Brazilian Development Bank (BNDES) has always been to promote development and elaborate, together with the Government, visions of the future. In the 1980s, strategic planning methodologies started to be implemented at the bank, frequently employing prospective scenarios. The current Scenarios Project represents the latest iteration of a strategic planning process that the BNDES has been doing for three decades. In 2014, BNDES completed a comprehensive revision of long-term scenarios used in a reassessment of objectives and leading indicators on strategy maps and their derived balanced scorecards (BSC). This paper summarizes the final text prepared for the BNDES 2014 Corporate Planning – BNDES Brazil-World Scenarios.

Introduction

Scenarios are not “predictions” or “models”; they are rather ways of systematically setting out a manageable set of plausible possibilities – “what could happen”— so as to open up the ways in which planners and policy makers think about what may lie ahead and how they might respond. They offer a way of pushing policy makers who can all too easily become mired in the pressures to come up with responses to immediate exigencies or to rely on simple extrapolations of current trends. The ultimate goal in this case is to open the range of strategic alternatives that are taken into account in the BNDES discussions of future policy possibilities. The current iteration uses a scenario methodology inspired by the pioneering work of Pierre Wack, in the 1980s.²

The primordial purpose of employing scenarios is to increase the range of possibilities under appraisal, reducing the tendency to think only about what is probable and helping managers plunge into the unfamiliar and rapidly changing world of the present and the future (Kahn and Wiener, 1967).³

We live in “interesting times”, as Hobsbawm evoked in famous reference: the second stage of China's ascension to a world power; the slow, uncertain digestion of the subprime crisis and its evolution into manifold fiscal, productive, social and political crises in the developed economies; the escalation of extreme weather events and hydric crises with prolonged drought; and the emergence of disruptive technologies, which begin to revolutionize the production and distribution of goods and services. While each of these phenomena carries far-reaching implications, in conjunction, they evoke possibilities of deep rupture with the world of today and profound transformation in the economic, technological, social, and political spheres.

In face of such an undetermined picture, attempting to predict the future is particularly challenging. Above and beyond projecting current trends, taking into account non-obvious

¹ This paper is a short version of BNDES Scenarios elaborated in 2014 . Synthesis written by Castro, Lavinia B. and Souza, Francisco Eduardo P., last data revision July 10, 2015.

² See Wack, Pierre. 1985a "Scenarios: Uncharted Waters Ahead", *Harvard Business Review*. 63(5):73-89. and 1985b "Scenarios: Shooting the Rapids", *Harvard Business Review*, November–December, p. 139-150.

³ Cited in Buarque, S., *Methodology and construction techniques for global and regional scenarios*, Discussion Paper, n. 939, IPEA, Feb. 2003, pp. 5 - 9.

possibilities and pinpointing critical uncertainties (route bifurcations) is required. It is also necessary to take into account the consistency between national and international scenarios. In this context, employing scenarios to develop prospective analyses is considered a preferred method, in contrast with forecasts based on econometric time series models.

This work is based on two essential concepts: (i) the need to build dichotomous scenarios to aid BNDES in preparing for diversified, distinctive situations; (ii) the adoption of multiple dimensions and variables (economic, political and social), to construct comprehensive scenarios.

The first section of this paper provides a brief methodological explanation; the second introduces the predetermined and uncertain elements. The idea is to brainstorm factors in the contextual environment that may influence the future transactional environment, highlighting critical uncertainties and the driving forces identified during the scenario-building process. Finally, the third section details qualitatively the four World / Brazil Scenarios, followed by an Annex listing comparative tables for the four scenarios, elaborated from macroeconomic consistency models.

It must be made clear that the scenarios described herein ultimately purport to merely build backdrops or backgrounds roughly portraying prevailing conditions in the world and in Brazil, discussing how variables may behave in 15 years, bearing in mind that any exercise in projection, and any quantification thereof, will suffer from significant inherent uncertainty.

The objective of this exercise, undoubtedly, is not to predict the future. The validity of extrapolation consists in envisaging limit situations, extremes in between which reality will almost certainly lie. A second objective consists in, based on the aggregation of themes and trends under debate, verifying the consistency of propositions. Finally, reflection is intended upon situations which, even if relatively improbable, are nevertheless plausible. Of particular interest are uncertainties which have a marked potential of altering the context within which the organization operates and, therefore, are generally lacking in strategic review. Finally, there is the intention to enable BNDES to be ready for several alternative futures - but also, to some extent, to contribute to the very creation of desirable futures for the country.

“...modern planning does not intend to guess or predict the future, which is and will always be unknown to us; rather, planning aims to preparation, so that we can try to create the future, with imagination, from the possibilities we are able to imagine and discover.

... As we act with conviction and effectiveness, we create something of the future and, besides, we become able to make better predictions about its possibilities. If we all act as if something was going to happen, this something does happen, as in the case of the self-fulfilling prophecy. This happens because a good plan is a strategic bet, not a bet about destiny. [Huertas, F., 1996, our translation]⁴

1 - Methodological Considerations⁵

There are several techniques available for scenario-building. The one employed at BNDES starts by identifying the “predetermined and uncertain elements”. As Wack (1985b, p.3) defines it: “Scenarios structure the future into predetermined and uncertain elements. The

⁴Huertas, F: *Interview with Carlos Matus: the public strategic planning method*. São Paulo: Fundap, 1996, p.15.

⁵This section is based on a collection of reference works on Scenario Methodology which include: Huertas, Francisco. *Interview with Carlos Matus: the public strategic planning method*. São Paulo: Fundap, 1996; Wack, Pierre. *Uncharted Waters Ahead*. Harvard Business Review, n. 85516, Sept - Oct. 1985; Wack, Pierre. *Scenarios: Shooting the Rapids*. Harvard Business Review, n. 85617, Nov. - Dec. 1985b. It was also based on the Scenario Workgroup participants' experience, notably Mr. Francisco Teixeira, to whom we extend our special thanks.

foundation of decision scenarios lies in exploration and expansion of the predetermined elements: events already in the pipeline whose consequences have yet to unfold". The second step is to rank those elements in a hierarchy of importance. Predetermined and uncertain elements are understood as remarkable facts or ongoing trends which have the potential of molding horizons (over the following years or even after decades). These include invariant tendencies, that is, those whose consequences in the future may be considered for analytical purposes as inexorable, and which will surely be present in any scenario; and uncertain facts, those with more than one possible trajectory, with different meanings and implications.

Even though both kinds of facts and tendencies are important for the design of future scenarios, the latter - the uncertainties - are decisive for scenarios building. The "critical uncertainties" define two (or more) possible paths for economic, political or social variables.

The next step in the scenario-building process consists in selecting two uncertainties (one for the World scenario, another for the Brazilian scenario) which are hierarchically foremost and dominant over others. This primacy is determined by two criteria: their degree of importance for the determination of the future scenario (greater power of influence); and their degree of independence in relation to other uncertainties.

Based on these criteria, one decides critical uncertainties which outweigh others as determinant of alternative scenarios. Each critical uncertainty leads to two possible outcomes, which constitute the driving forces for each scenario (World and Brazil): "... factors and forces such as these are the elements that move the plot of a scenario, that determine the story's outcome" (Schwartz, P, 1996).⁶

The third step of scenario and narrative design is to then combine the two alternative World scenarios with the two Brazil scenarios, reaching a four-scenario matrix. Finally, the fourth step consists in quantifying these scenarios – in the present case, only regarding their economic variants – through a macroeconomic consistency model, into which exogenous variables are inputted (after being determined as described above) in order to obtain a comprehensive set of endogenous variables which will assist in providing a detailed picture of each scenario.

Starting with a table that summarizes the qualitative description, and the numbers generated by the macroeconomic consistency model, we start the construction of a narrative, by chapters, observing the same text structure for each scenario. To enrich the analysis, in-house experts in educational, environmental, and technological trends were consulted, among others.⁷

2.1 – Predetermined and uncertain elements – World

The BNDES Scenario work departed from the identification of major trends with the potential to generate a future substantially different from the past. These comprise:

1. The second stage of China's rise to the status of economic world power – which produces displacement (of competitors) and attraction (of additional partners) across world markets. Aside from these effects of expulsion and attraction, the rise of

⁶ Schwartz, Peter: *The Art of the Long View*, New York: Doubleday, 1996.

⁷ In this sense, BNDES 2030 Scenarios combined "deductive" techniques (where the scenarios are constructed from two driving forces, for the World and for Brazil, following the steps described above), and "inductive" techniques, where a group of experts was asked to present alternative future "narratives" for a group of themes. These narratives were added to different scenarios to create coherent and plausible stories.

partnering economies has had powerful effects, both quantitative and qualitative, on global trade and capital and investments flows.

2. The slow and uncertain recovery from, and digestion of, the subprime crisis and its metamorphosis into manifold fiscal, productive, social and political crises in the developed nations. At first appearing to be a merely financial crisis, it proved deeper than those of previous decades, and turned out to be a multidimensional crisis questioning the capitalist model prevailing over the last 40 years, and the set of rules governing economic relations and international policies.
3. The escalation of extreme weather events and hydric crises and prolonged drought. Several countries have placed the issue of sustainability at the center of their economic and political agenda, with potential implications for the global growth model.
4. Changes in the technological milieu have begun to revolutionize the systems of production and distribution, with far-reaching implications for the future of the geographic distribution of manufacture and world geopolitics. In other words, an ongoing process of profound change in the geography of production and innovation.

Besides the economic and technological reality, other major trends and early warning signs were also identified, with the potential to forge a new world:

First, the intensification of separatist movements (in Scotland, Cataluña, Turkey, Kurdistan, etc.) and the emergence of situations of (re)division of territories (among which Ukraine comes first to mind) bringing tension to international geopolitics. Second, the growth of both extreme-right and extreme-left movements fueled by economic crises. In Europe, the former grew by compounding nationalist and separatist issues.

Third, the replication and echoing of political unrest and social movements around the world has been more widely disseminated by the ubiquitous use of new information technologies, including the *Indignados* anti-austerity movement in Spain, the several *Occupy* movements, the Brazilian anticorruption and public infrastructure marches, and green and conservationist movements. Among other traits, they share: a denouncement of corruption; effervescent social demands, particularly of improvement in urban mobility, health and education; a growing concern for environmental issues; among others. These issues in the past were channeled through political parties, trade unions, and other political institutions. Nowadays, there is a crisis of representation expressed in the low credibility of parties and politicians, around the world.

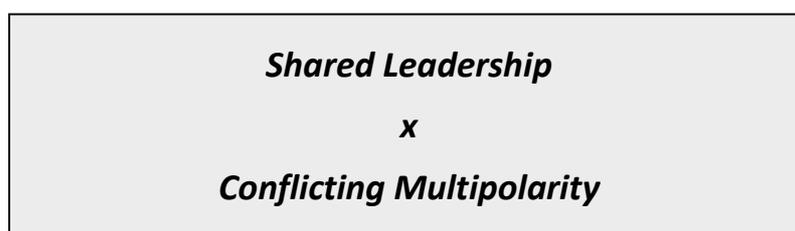
Fourth, after the Arab Spring, there was a political weakening of Middle Eastern traditional authorities, both monarchies and secular regimes, and at the same time a strengthening of tribal and sectarian loyalties. There was an increase in the political importance of ethnic and religious identity groups in the region and the further escalation of fundamentalism, as seen in the rise of the Islamic State. In March 2015, radicals of the Islamic State (IS) accepted the allegiance of the Nigerian *Boko Haram* jihadists, spreading concern about an IS advance to North Africa.

Fifth, there has been increased awareness in developed countries that: a) there has been a growth in inequality, often combining chronic high unemployment with exorbitant gains and privileges among financial market operators; b) young people have been the hardest hit by the crisis; c) for the first time in a long time, a generation is likely to have a standard of living lower than their parents' generation. In developing countries, the emergence of a new middle class creates demands of both infrastructure and greater inclusion, which have not yet been satisfactorily addressed. These perceptions feed the aforementioned political and social movements.

Any of the previous facts would alone be capable of molding a future world substantially different from the past. Occurring together, they place us on the threshold of creating a new world order - economic, geopolitical, political and social. The signs indicating decay of the old order and its latent replacement or transformation into new patterns allow us to glimpse the possible contours of the future world. On the other hand, the associated critical uncertainties evoke alternative scenarios departing from the posed disjunctive (see Box 1 below, summarizing the key predetermined and uncertain elements identified during the BNDES Scenario-building).

2.2 - Driving forces in World scenarios

From the point of view of BNDES Scenario-building, the driving force of the world scenarios relies on geopolitics. By containing the rule of international law (or lack thereof) and its power to replace the so-called *Pax Americana*, this variable will ultimately define the evolution of critical uncertainties across most other plans and processes. Uncertainty regarding the relations of power in the world geopolitical sphere defines two dichotomous scenarios:



Shared Leadership

The *Shared Leadership* scenario portrays a world where the two key world powers in 2028 – United States and China – succeed in reconciling their interests, exercise world leadership in relative harmony, and are able to establish and implement the “rules of the game” in the commercial, financial, monetary, environmental, political-military, and other spheres. A majority of nations would then be willing to abide by these rules, creating the basis for a “*Pax Americana-Sinica*”, and in terms of international economic relations, a sort of new Bretton Woods, based on three pillars: a) a review of the IMF and the World Bank structures that would allow the greater participation of emerging countries; b) an acceptance of taxation of transnational financial movement (standardized among countries) to reduce speculative capital flows; c) a reduction of barriers to world trade, and strengthening of multilateralism.

Typically the following features of the Shared Leadership scenario may be highlighted:

- Negotiation of a new world order with shared leadership among China, the United States and the Eurozone, with the influence of European countries clearly weaker than of the former two.⁸
- In this context, the dollar, the renminbi, and the euro share the role of international reserve currencies, and its associated “exorbitant privilege”.
- The US economy, even though losing some ground on the global market, is strengthened and remains dominant in several segments, including the industrial.

⁸ If, even with a hypothetical end of the euro, the world moved towards a "shared leadership" scenario, probably in this case Germany would still participate in the hegemonic bloc along with China and the United States.

China, on the other hand, having already become the world's largest economy, exerts escalating influence. Europe, after a lost decade, recovers as a strong economic and political bloc.

- Emerging countries enjoy growing participation in international organizations and decisions, subject to the gravitational forces of the United States and China.
- The globalization process continues to advance in the various spheres (commercial, financial, cultural, integration of manufacture and production, etc.).
- Sustained global economic growth is restored, driven by economic integration and gains in productivity enabled by technological breakthroughs.
- Demand-side pressure in the commodities market is present, but raw material price escalation is mitigated by advances in technology and the discovery of new sources and materials.
- The new international division of labor creates two possibilities of insertion for emerging economies: a higher specialization in commodities, or diversification based on the diffusion of new production technologies integrating into global production chains.
- Convergence between technological advances and new international agreements conciliate environmental protection with social progress.
- Technological breakthroughs allow significant advances in medicine, gains in manufacturing productivity, creation of new materials, improvements in agriculture and the rationalization of water use, reducing environmental risk.
- New balance between renewable and non-renewable energies allows a more sustainable world.
- Technological evolution fosters a new world economic geography, with changes in global production chains, reindustrializing some developed nations, but also creating new opportunities for emerging economies in several niches.
- Last but not least, access to information and ease of communication strengthen democratic institutions, civil rights, and citizen political participation.

Conflicting Multipolarity

As suggested by its title, this scenario corresponds to a world where no country or group of countries is sufficiently powerful and influential to play a hegemonic role. Given the collective inability to establish ground rules for the global economic and political game, incoherent nationalist policies then tend to prevail among nations, which use non-market instruments to try to defend national interests, which often collide with each other.

Typically, the following features of the 'Conflicting Multipolarity' scenario may be highlighted:

- Instability of the world order prevails, with setbacks to globalization and the rise of a plurilateral and often confrontational order.
- Economic, political and territorial disputes escalate between China and the US; between Russia and Eastern European countries; among Asian countries; and elsewhere, resulting in an arms race. This weakens multilateral international institutions, which become unable to mediate conflicts and manage the diversity of interests among regions and countries.

- Competitive devaluations and currency wars prevail in search for greater competitiveness, especially among Asian and European countries.
- Short cycles alternate between widespread international liquidity and periods of crises and contagion. Twin (exchange rate and financial) and even exchange rate, financial, and fiscal crises occur over short intervals. This results in low and volatile world economic growth.
- After successive unsuccessful attempts to establish international frameworks, financial regulation is discredited. National rules and frameworks, divergent from one another, prevail. These stimulate capital flows seeking regulatory arbitrage gains, increasing systemic instability.
- The world economy is faced by a period of great instability, due to the inability to cope with problems generated by escalating North American and European debt.
- The race to secure sources of raw materials includes the use of political pressure, and eventually military force, by the major powers.
- Climate change causes significant socio-economic impact.
- Retrocession in international trade and financial integration, including restrictions on the dissemination of new technologies.
- Global instability reduces public investment in network infrastructures and public support of technological development across several fields, particularly in emerging countries.
- Inequality between the digitally included and excluded increases, across international borders and within each country. Additionally, the higher-income population has far wider access to advanced health therapies vis-à-vis less affluent populations to an escalating degree,
- Occasional episodes involving threat of biological warfare proliferate.
- Protest demonstration marches, demanding social rights and improvement in public infrastructure, escalate to frequent rioting, with denunciation of environmental issues and corruption, demonstrations against gene therapies and misuse of Big Data, among others.
- Internet censorship proliferates, as do restrictions on e-commerce, e-banking, and the international provision of services.
- Finally, political instability in various countries and regions threatens democratic values and limits citizen participation.

2.3 – Predetermined and uncertain elements - Brazil

The strongest early warning signs in Brazil lie in the political field, revealed through marches and demonstrations, in themselves healthy exercises of democracy, albeit with some degree of radicalization on the part of some sectors of society. Nowadays, one can observe: a) new demands for good governance and accountability to society; b) increased relevance of regulatory and inspection agencies (and other State institutions); and c) a maturing and growing judicialization of productive and social relations. These are current phenomena, and it is unclear whether they will dwindle or become the “new normal” and the standard with which the country must learn to coexist.

From the perspective of the scenarios, the most relevant question is whether there will be a political force or coalition of forces, able to implement a project for the country that meets the demands of society and boosts economic growth, assuring social achievements obtained in recent years; or if the demands will be met at an ad hoc basis, with actions that may be incoherent among each other. It is from a high governability environment, democratically recognized, that the Brazilian society can overcome the elements of the developmental delay.

In the economic sphere, determining the capability to overcome both the obstacles encumbering the Brazilian economy (in particular a deficiency in infrastructure and low productivity) and the risks of commodification, there are several critical uncertainties in relation to the country's future, plotting very different trajectories.

Throughout the second half of the past decade, the Brazilian economy suffered the effects from a worsening of manufacturing and industrial competitiveness, resulting in a smaller market share for the Brazilian manufactured goods among the world manufactured exports. This process, even though having several determinants, was strongly influenced by a large appreciation of the exchange rate, which in turn largely resulted from a successful expansion of the agro-mineral sector and expectations engendered by large discoveries of offshore oil and gas in the pre-salt (sub-salt) layer in the context of a world economy hungry for natural resources.

The drop in the oil prices (from \$100 a barrel to near \$50), if enduring, could jeopardize, if not production, at least expected returns from the development of the offshore 'pre-salt' fields. However, it is still unclear whether these lower oil price levels reflect a structural shift in the global supply curve (due to the discovery of shale oil and gas) or a passing phenomenon. In the first case, historically lower prices may be consolidated as a long-term trend. Alternatively, a price recovery may occur (at an indeterminate speed) driven by both shriveling reserves and supplies (expiration of old, less productive wells; or serious environmental questions regarding shale production), and demand-side movements (world growth recovery). Regarding demand, however, one must also highlight the uncertainties, given there is ample evidence that the Chinese growth will henceforth proceed at a slower pace, compared to the levels that prevailed until recently.

Anyhow, Brazil's loss of industrial dynamism, and the process (partial, but pervasive and consistent) of a change in the export basket raises doubts regarding the risk of a primary-export trend. This would render the economy ever more volatile and dependent on fluctuations in international commodity demand - leaving open the question of how will Brazil be inserted in the new international division of labor (greater specialization in commodities, or diversification with integration into global value chains).

It is not yet clear whether, in the long run, a trend towards an economy based on natural resources may be avoided. The fierce federative battle for oil royalties provided a good measure of the capacity for sparking political passions in a struggle for a piece of the "winning ticket", in contrast with the difficulty of establishing a national unity around a development project based on increased productivity and the removal of obstacles to economic competitiveness.

In addition to strictly domestic factors, the trend towards the commodification of the economy also depends heavily on the evolution of international demand for commodities, and therefore the pace of global growth, particularly the evolution of oil prices. A more detailed analysis will discern between food and mineral commodities, given that the demand for the former should continue to grow steadily even within a very plausible situation of weak global growth in the upcoming years, due to a better relative performance of emerging markets with consequent improvement in income of millions of consumers, timidly emerging from poverty or abject misery.

Therefore, divergent signals implying in critical uncertainties regard the evolution of Brazil's productive structure and foreign trade basket, with equally important implications for economic performance. Box 2, below, summarizes the main early warning signs and associated critical uncertainties facing Brazil.

3.4 - Driving forces in Brazil scenarios

The driving forces at the national level are in the political sphere, involving negotiation capability, the interaction of relevant political actors, and an increased legitimacy to promote sustainable, inclusive economic development, consistent across several dimensions. The critical uncertainties associated with power relations on the political level, then, define two dichotomous scenarios for the country:



Consensus for Development

In this scenario, a clear development project prevails, simultaneously allowing value-added insertion in the international division of labor, a strengthening of innovative capacity, and strong environmental stewardship. Political pacts, strong institutions, and clear governance enable the implementation of this project.

The following features of this scenario may be highlighted:

- Use of natural resources as an opportunity for a new phase of sustainable and inclusive development;
- Institutional improvement and maturing, ensuring better governance and State performance;
- Growth of investment rates and of productivity, reverting deindustrialization and the negative effects of demographic change (aging) ;
- Fiscal, monetary and exchange-rate policies articulate with a national strategy to enable sustainable growth;
- Changes in the national innovation system and new educational and training policies provide qualified insertion in the new international division of labor; and
- Brazil is acclaimed for the effectiveness of actions and programs for social and environmental responsibility, food security, and energy security.

International Dependency and Domestic Political Fragmentation

Government action is merely reactive to domestic political demands and to the international context. The result is passive insertion in the international economy, and sequences of *ad hoc* policies, often overlapping and eventually contradictory among themselves. Political instability and economic volatility prevail.

The following features of this scenario may be highlighted:

- Intensification of distributive conflicts of public revenue among State stakeholders;
- Populism, clientelism, concentration of political forces in the capitals;
- Productive specialization around natural resources with deindustrialization;
- Deterioration of inflation and public accounts, high interest rates, appreciated exchange rate - in the favorable international scenario (Shared Leadership), or volatile and no clear trend - in the unfavorable international scenario (Conflicting Multipolarity);
- Increase in the gap in productivity and in workforce qualification compared to developed nations;
- Escalating environmental degradation; and
- Inability to address the bottlenecks in education and the national innovation system, bringing losses of opportunities engendered by changes in the international division of work.

Which factors will bear the strongest influence in determining whether the driving forces on the national scene will result in a consensual developmental project, or a situation of clientelistic passivity? The world economy will most likely strive to attract us to the second alternative, with support from internal political forces (e.g. being interested in maximizing and accelerating the exploitation of low-value natural resources for rapid appropriation, even in detriment of the participation of domestic suppliers, with appreciation of the exchange rate, harming the manufacturing industry) and the financial sector (also profiting from the intermediation of external resources). But there will also be economic, social and political forces exerting pressure in the opposite direction.

Figure 1 illustrates the four scenarios as a result of the combination of the World and Brazil driving forces, dubbing them with titles of classic hits from popular Brazilian songbook.

Figure 1 - summary table: Brazil-World Scenarios 2028

Brazil			
World		Internal Development Consensus	Dependency and Political Fragmentation
	Shared Leadership	" <i>Sonho Meu</i> " (My Dream)	" <i>Deixa a Vida me Levar</i> " (Going with the Flow)



Source: BNDES Corporate Planning presentation, December 2013

Scenarios function as goalposts marking the limits of a field of possibilities. In the case at hand, at one extreme we have the scenario called "[My Dream](#)" (*Sonho Meu*), a best-case scenario combining a fairly organized and prosperous world with consistent, sustainable Brazilian development within the framework of a consensual project, agreed upon by a broad spectrum of domestic political forces. At the other extreme, Conflicting Multipolarity creates an extremely adverse global situation, aggravated by the failure of domestic political forces in building a consensual national project and implementing consistent economic policy, generating a scenario marked by crises and poor performance, a worst-case scenario called "[The World's a Grindstone](#)" (*O Mundo é um Moinho*).

The intermediate scenarios, although closer in terms of a few quantitative economic variables, are located in between these extremes, but very different from each other. The first quadrant, "[Going with the Flow](#)" (*Deixa a Vida me Levar*), corresponds to a situation of domestic passivity in face of a prosperous world scenario, in which despite low efficiency and lax domestic coordination, the country enjoys a phase of wage and income growth, social welfare, etc., associated with a favorable global economic cycle, even midst widespread domestic deindustrialization. The scenario "[In Spite of You](#)" (*Apesar de Você*), on the other hand, corresponds to a situation (not entirely unprecedented in national history) where the challenge of external adversity galvanizes domestic political forces, generating a constructive response with a high capacity to promote long-term national development. Therefore, while the "Going with the Flow" scenario allows the country to benefit from moments of euphoria and welfare enabled by a favorable external moment, a solid and independent future is not being built, whereas in the "In Spite of You" scenario a long period of adversity gradually builds the foundations for a prosperous future.

The horizon of the long-term scenarios is of 15 years. The narrative time is a 'present' in 2030. In addition to the description of the 'current' situation in 2030, attention is drawn to the factors in the past (which 'occurred' from 2016 to 2030) that led to the 'current' situation in 2030. As every world scenario is associated to two national scenarios, in order to avoid repetition the world scenario is described previously and followed by the two related national scenarios.

3 - The four World-Brazil scenarios

"My Dream" - Consensus for Development in Brazil with Shared Leadership in the World

Politics: We are in 2030 and Brazil has unequivocally consolidated the democratic process, allowing the gathering of political forces to converge around the construction of a national development project. The judicialization of politics was gradually outgrown, with the permanent transformation of the National Congress in the locus of legislative construction. There was a rebirth of and renewed appreciation for political parties, which have achieved recognition as a key instrument for public governance, channeling society's demands and efficiently translating the complexity of the political process to voters. There is a balance in the number of political parties, so as to express the diversity within society, yet at the same time ensuring good governance.

Macroeconomic Policy: National macroeconomic policies were crucial to enable an average GNP on-year growth of 4,1% with inflation under control. Monetary policy was implemented using traditional instruments, and also through macroprudential regulation. The reduction in interest rates and extension of deadlines to levels consistent with international standards, the expansion of credit, tax relief, the funding of programs, and the constitution of credible guarantees, have all stimulated investment growth. The Brazilian Sovereign Fund allowed the country to benefit from competitive advantages in minerals, agricultural commodities, and oil, channeling resources to assist projects of national interest, and was decisive to avoid the so-called “Dutch disease”.

Productive Sector Policies: The first step in the recovery of industrial growth was an enhancement in infrastructure. The second was the maintenance of policies that allowed the social conquest. The reduction of income inequality not only extended the internal market but also changed the pattern of consumption. The enterprises reacted to this new demands investing and diversifying production. The third step was the systematic increase in resources for innovation. Special schemes were created to add value and use of technology in production chains. Production and innovation were stimulated by government procurement policies. The key to the process was the selectivity and effectiveness of actions, driving the growth of both investment rates and productivity. Using the purchasing power of the public sector was fundamental to enable creating scale for knowledge-intensive businesses. Another important element was the attraction of research centers and the development of foreign companies in the country. Brazil began to adopt, particularly in the manufacturing industry, foresight strategies, that is, following the technological frontier in several industries to build an industrial strategy policy.

Priorities: The energy supply chains received special attention, making the most of environmental and business opportunities. The priorities comprised identified opportunities in oil and gas, and renewable energies such as ethanol, wind, solar, charcoal, and biofuels. Brazil currently defines the technological frontier in low-carbon tropical agriculture. The country has also become a major player in sustainable manufacture, including modular construction, which reduces waste in construction, ecodesign, and recycling chains (through a Solid Waste Policy). For several years the development and adoption of renewable energies have been encouraged by the manufacturing industry, with great success. In addition to the infrastructure necessary to meet the demands arising from the higher production and satisfy the mass consumer market, large investments in social-urban infrastructure were needed. There was a continuous improvement exercise in urban planning with investments in affordable housing, sanitation, drainage and integrated multimodal logistics systems in cities.

Financial Industry: Four major trends have guided the development of the financial industry in the recent years: (i) proliferation of funding through Project Finance instruments, particularly in infrastructure segments, in which the risks are shared by the public and private sector; (ii) growing importance of pension funds, which invest in long-term assets; (iii) enhancement of the corporate bond market and (iv) growth in the supply of insurance and guarantees.

Knowledge Economy: Brazil knew how to take advantage of revenues generated by our biodiversity to create a clear-cut development project, in which the use of natural resources fostered sustainable, inclusive development. A significant increase in worker qualification has reduced the competitiveness gap in higher-technical-content segments, in relation to competitors. There were investments in high performance resources, in terms of scientists and engineers, with an increase in the amount of undergraduate, graduate and postgraduate (PhD) degrees. Innovation policy included actions to disseminate knowledge and facilitate the flow of information among universities, research institutes, and government agencies.

Education: New teacher remuneration policies have attracted qualified professionals without jeopardizing state and municipality budgets. There was a review of assessment systems, to stimulate learning and monitor results; an increase in the supply of quality pre-school and elementary education; and integration between vocational and undergraduate education.

Social and Environmental Development: Brazil has managed to substantially reduce greenhouse gas (GHG) emissions, particularly from deforestation in the Amazon and Cerrado. The country began an extensive investment plan in logistical infrastructure, particularly in railways and urban mobility. In addition, clean technology expertise was developed, based on an energy policy designed in tandem with the industrial policy, to develop a chain of production of renewable energies. Furthermore, the country managed to overcome institutional deadlocks, enabling widespread access to basic sanitation, especially in large urban centers.

Regulatory Framework and Public Administration: The regulatory framework in the country is today relatively simple, consistent, predictable, and convergent with national strategy. The tax system has become simpler and more progressive. Even with lower tax rates, it was possible to preserve collection. At the same time, a comprehensive public management program was implemented leading to productivity and efficiency gains, contributing to the improvement of public services and effective fiscal policy. The level of public accountability before society is today deemed appropriate according to public satisfaction surveys.

Labor market: Labor laws were made more flexible and the entry of immigrant labor encouraged, especially of skilled workers, reflecting on a growth in the Economically Active Population (EAP). These factors enabled providing adequate funding for social security. Welfare issues, formerly worrying in face of an ageing population, have been adequately addressed. Welfare access was democratized through the multiplication of social security agencies.

“Going with the Flow” - Dependency and Political Fragmentation in Brazil with Shared Leadership in the World

Politics: We are in 2030 and there is widespread distrust towards politics among the population. Support for ending mandatory voting is becoming ever stronger. Institutions are questioned by the different political actors. The overall picture is of a government under pressure from lobbies and coalitions in the Legislative, the strongest being commodity producers. The distributive conflict between different levels of government for the tax revenues persist, including attempts to rewrite the rules defining the distribution of oil royalties and special participation fees. The Executive manages to approve limited legislation, benefited by the context of economic growth and doling out resources generated by royalties and tax revenues. The judiciary continues to expand interference in social life, judicializing politics. The legislative power is fragmented into sectorial and religious caucuses and lobbies. The Executive Power often seeks to relate to society without intermediation from political parties and organized social movements.

Economy: The exchange rate became over-appreciated due to abundant inflow of dollars because of sales of pre-salt oil and other commodities. The exchange rate appreciation has increased real wages, but hampered the international competitiveness of manufactured goods, especially in the transformation industry, in contrast to commodity-producing sectors where labor costs are relatively lower. The higher wages benefit workers but threaten jobs, especially in manufacture. Food and commodity prices continue to spur inflation.

Productive Sector Policies: In face of overwhelming political fragmentation, industrial policies are weakened and unarticulated and do not manage to sustain investment and productivity rate growth. The escalation of a federative fiscal war over oil revenues has created a climate of hostility and conflict among the various governors. They insist that the Union relinquish resources in benefit of states and municipalities which do not produce, without reaching a consensus.

Priorities: Actions for technological development and innovation have little effect, as do policies designed to increase competitiveness, support micro- and small business, vocational training, regional development, sustainability, local productive clusters, and others. At the same time, infrastructure and logistical issues overwhelm the economy. There is a selective supply-side growth, with priority to commodities for export. Agribusiness and mining are treated as priorities by the government, while manufacturing competitiveness continues to wane.

Financial Industry: High international liquidity ensures abundant foreign inflow for the financing of commodity exports. A few long-term export projects are funded by public banks. The domestic capital market has evolved but little. The issuance of corporate bonds is successful for agribusiness and specific very low risk segments. For the industry in general, there is little credit available in spite of governmental stimuli. Financing for micro, small and medium enterprises (MSME) is scarce and continues to be hindered by a lack of information for risk analysis and the fragility of guarantees. In addition, the mortality rate of small businesses has increased.

The (lack of a) Knowledge Economy: Brazil has advanced little in technological development. Public and private investments in science, technology and innovation are modest by the standards even of emerging markets. Innovation indicators have advanced slowly, jeopardizing industrial competitiveness. Brazil allotted significant public resources for science, technology and innovation. However, despite the fact that scientific production has grown, the results of the innovation incentive policies are modest.

Education: Internal political problems pertaining resource allocation and poor governance have stymied an increase in the quality of education, in spite of the increase in resources for education enabled by pre-salt oil exports. Augmented public investment has produced little result once the structural problems of the Brazilian educational system have not been addressed, including the fact that vocational education continues marginal in the educational matrix. The country has remained far behind competitors in international comparison tests. In the context of an increasingly competitive world economy, these results reinforce the placement of Brazil in the low value-added, low-innovation chains.

Social and Environmental Development: The political difficulties have also rendered impracticable investment aiming at overcoming infrastructure bottlenecks, especially those with higher environmental impact: sanitation and urban mobility. The country has regressed in the use of clean technologies, losing ground even where leadership was formerly present, such as in biofuels. Political strife impeded the arriving at a consensual solution for the use of land. Thus, deforestation rates in the Amazon and Cerrado, which had been dropping, have upsurged. The increase in extreme weather events has increased vulnerability across many agricultural areas and inhabited slope areas, with serious implications for the poorest.

Regulatory Framework and Public Administration: The public sector faces serious governance issues, affecting the quality of public services and limiting the range of fiscal policies. Excessive

redundant overlapping and disputes for power and income among Union, state and municipal bodies have all but hindered governance. The failure of infrastructure concessions is the most striking example. Deficiencies in the regulatory framework, with often inconsistent regulation, have become the rule. This contributes to the fact that only the most profitable investments, especially in commodities, are outlaid.

Labor Market: In spite of some advances, labor productivity has grown but slightly, putting Brazil in a highly disadvantageous position. Because of an aging population, of political instability, competition for fiscal revenue, and low growth, deficit in the National Social Security Institute (INSS) has escalated. New retirement rules for civil servants have led to the intensification of clashes between workers and government. In the face of uncertainty, the demand for additional private pension funds has increased.

In Spite of You - Consensus for Development in Brazil with Conflicting Multipolarity in the World

Politics: We are in 2030, and Brazil is now much less politically fragmented than 15 years ago, allowing the gathering and galvanizing of forces around the construction of a national development project with emphasis on the knowledge economy. Brazilian citizens participate intensely in the election and supervision of their representatives. Freedom of expression and of the press is ample, diversity of opinion a guaranteed right. At the same time, Brazil's representation before the world is consolidated. The country participates today more fully, and with greater strength, in the organisms that define global governance; but these have been emptied of importance and shrunken.

Economy: Difficulties in financing the balance of payments, due to a retraction in foreign investment, have brought the exchange rate to a depreciated level, improving the competitiveness of domestic products vis-à-vis imported alternatives, even though during external shocks this jeopardized the meeting of inflation targets. The adoption of fiscal and credit policies to stimulate domestic demand was essential to avoid further economic downturns in face of external crises. Eventual measures to control capital flows, such as the inclusion or exclusion of the Tax on Financial Obligations (IOF) have also been important, reducing the volatility of the inflow and outflow of revenue. The world in conflict has reduced the ability of some developed countries to market their products – allowing Brazil to expand exports and occupy markets to which there was no access before – and to increase sales in already conquered markets.

Productive Sector Policies: First, the development of infrastructure was ensured, meeting the needs arising from the growth of the economy and of foreign trade, by attracting private investment. Second, a productive catch-up strategy was pursued. Third, investment in innovation by Brazilian companies has increased. Faced by a world in conflict, Brazil saw the opportunity to take greater risks and, with the support of public policies, invest in more disruptive technological innovations. In some sectors, technological boundaries could be overcome (leapfrogged), asserting ourselves before the international market. Finally, there was a concern to reduce costs and increase competitiveness, through both depreciated exchange rates, and a tax system reform, combining an expansion of the taxation base, simplification, and an increase in progressivity. In addition, the government has improved public policy coordination mechanisms, increasing their effectiveness, efficacy and efficiency.

Priorities: Public support for innovation has grown considerably over recent years, showing a perspective of autonomous development for Brazilian companies, and for the policy of overcoming successive economic crises through investment in sustained increases in competitiveness. Additionally, public banks support social inclusion projects (health, environmental sanitation, urban development and education) and environmental sustainability in the broader concept of a green economy, focusing on renewable energies, small hydropower, and energy efficiency. Investment funds have stood out as a key instrument for the direct support of micro and small businesses based on technology and innovation, with high leverage capacity. Equity funds have thrived focusing on companies specialized in energy efficiency, smart electricity distribution networks and smart grids, wastewater treatment and solid waste management, with the support from private sources. The biotechnology and environmental service industries stand out in terms of investment projects.

Financial Industry: Commodity export activities, as well as three-year term credit demands, are able to raise funds in the private domestic market. Private bank credit for manufacturing industries has seen expansion and contraction cycles, due to the successive external crises. The reduced external liquidity has limited the expansion of the Brazilian capital market. Public incentives have been able to mitigate part of the aversion to risk through risk-sharing schemes. Public and development banks are relevant development institutions in Brazil, as in several countries. In addition, the government's commitment to the construction of risk-sharing structures joining the private and public sectors has stimulated the creation of new forms of guarantee and of insurance, allowing increased recovery in the event of default. In infrastructure, public-private partnerships (PPPs) have been successful. Private institutions, banks and institutional investors take advantage of government guarantees, allocating resources in increasing volumes and expanding engagement in long-term operations.

Knowledge Economy: Joint programs uniting public development banks and FINEP Innovation and Research have been successful in supporting innovation in sugarcane biofuel and sugarcane chemical sectors. Initiatives with technical support from Petrobras have enabled the funding of projects that include technology absorption, innovation and enhanced engineering capability by Brazilian suppliers of the oil and natural gas chain. Other priorities include research and development (R&D) in smart power generation networks, solar and wind energy, hybrid vehicles, and vehicle energy efficiency, fostering innovation in raw materials for agriculture, including agrochemicals and active ingredients, genetic improvement, food industry products and processes, and machinery and equipment for agriculture and agricultural processing (including traceability, new technologies in agricultural implements, and storage and logistics of agricultural products); and support for R&D and innovation by Brazilian aerospace, defense and security companies. Finally, the development and mastery of priority health technologies and the domestic production of medical equipment and devices, bearing in mind the increase in competitiveness of Brazilian companies and expansion of the population's access to health goods and services, have gained strong relevance. The defense industry, especially in the aircrafts segment, also gained momentum.

Education: Large investments and the reform of the Brazilian educational system have ensured a higher quality and equity in education. The school dropout rate has been reduced and there was an improvement in the quality in high schools, universities, and vocational education centers. Upon achieving formal goals for the Basic Educational Development Index (IDEB) and in literacy, the country has managed to diminish the distance from domestic educational levels and those of countries with high educational performance.

Social and Environmental Development: In order to address climate change, Brazil has adopted measures to increase livestock productivity through intensive ranching and agriculture-integrated methods. The country began an extensive logistics investment plan focusing on railways and urban mobility. Thus, greenhouse gas (GHG) emissions have shown a downward trend for the coming years. At the same time, the country developed expertise in clean technologies, based on an energy policy designed in tandem with the industrial policy in order to develop the domestic productive chain of renewable energy. In addition, the country managed to solve institutional deadlocks, allowing to expand access to basic sanitation, mainly in large urban centers.

Regulatory Framework and Public Administration: The national regulatory framework was adapted to a world in recurrent crisis, pursuing active, often discretionary, industrial policies. This required greater flexibility on the part of the organs of control and supervision, given the periodic need of reviewing the frameworks. Public management has gained more efficiency and there was improvement in public services. There was also a visible improvement in accountability to society.

Labor Market: The demographic dynamic, associated with continued growth, has allowed Brazil to maintain low unemployment levels in spite of the international crises. The open unemployment rate is expected to close 2030 at 4.1%.

The World's a Grindstone - Dependency and Political Fragmentation in Brazil with Conflicting Multipolarity in the World

Politics: We are in 2030 and popular support for democracy is precarious, at best. With the end of compulsory voting, the presence of voters in elections has become low, and does not ensure legitimacy to the process. Institutions are questioned by different political actors. In addition to an explosion in the number of political parties, increasing considerably the political transaction costs and constraining governability, the latter are unable to respond to society's wishes and have become a hindrance to the implementation of public policies. Due to the erratic institutions, the degree of political and legal predictability is low, limiting economic planning and the effectiveness of public policies.

Economy: The Brazil could not keep apart from international crises. Without any solid alternative project and weak governability, the country has not been able to maintain a solid growth trend. We live stop-and-go cycles in the economy. In response to crises, macroeconomic disjointed policies, implemented on an ad hoc basis, followed up. As imports are largely constrained due to a strong exchange rate devaluation and low growth, the trade balance, in spite of the low dynamism of exports, reveal modest surpluses in recent years.

Productive Sector Policies: Erratic initiatives derived from sectorial demands have not been able to sustain the growth of investment or of productivity. Political problems, with tensions among the government-allied political parties, and economic problems, with intensification of inflation and the international crisis, has wiped the industrial policy from the government's priority agenda. The legal uncertainties and constant reviews of the regulatory framework have hindered investments in infrastructure, jeopardizing industrial competitiveness.

(Lack of) Priorities: Successive industrial and foreign trade plans were edited over the recent years, in an attempt to boost the competitiveness of the Brazilian economy, but suffered heavy criticism for benefiting only a select group of sectors. Another criticism relates to the Fordist development pattern, aggravating the environmental crisis.

Financial Industry: The exports segment is among the few economic sectors in which private credit is significant, even though strongly focused on financing commodities and agricultural quasi-commodities. Even metal commodities suffer from constraints in resource, due to the high volatility of their prices. Private bank credit for manufacturing industries undergoes cycles of expansion and contraction, due to the external crises. Reduced liquidity limits the expansion of the corporate bond and stock markets. Public and development banks seek to compensate for the credit retraction, but have limited resources given a low capacity of capturing public or private resources, both in the domestic and international markets.

The (lack of a) Knowledge Economy: The country has experienced a significant worsening of Science and Technology and Innovation indicators. The prospects for growth in scientific production in the country, as measured by the number of publications and citations in scientific journals abroad, have floundered. The country's position in international S&T rankings has dropped. The gap with cutting-edge technology leaders has widened. The already precarious patent indicators suffered a significant deterioration. There are practically no patent applications by Brazilian companies, except for Petrobras.

Education: In spite of an increasing coverage of preschool education, day care centers and preschools, public educational policies have been unable to promote a greater cognitive development of children, and basic literacy has worsened, in some cases. Elementary school often have underpaid and unprepared professionals. The country continued with scant integration among vocational teaching, high schools, universities, the private sector, and research centers.

Social and Environmental Development: In Brazil, the difficulties with political coordination have proven harmful for social and environmental development. No consensual solution was reached for the use of land. Political difficulties have rendered unviable some investments in social infrastructure with environmental impact, such as basic sanitation and urban mobility. The country is late in developing clean technologies and has lost ground even where there already was some accumulated knowledge, as in biofuels.

Regulatory Framework and Public Administration: Changes in the regulatory framework have not succeeded in solving the problems that hinder decisions to invest in infrastructure, contributing to the creation of a high-risk environment, with the possibility of rule changes and strong uncertainty regarding the profitability of projects. A multiplicity of administrative acts (decrees and resolutions) makes regulation complex and subject to different interpretations. There is a lack of clarity as to responsibilities, and little coordination among government agencies. Planning is poor, as well as the inspection of activities. As a result, there is little interest among investors (domestic and international) in infrastructure projects in Brazil.

Labor Market: The high cost of labor has contributed to strong concentration of investments in primary sectors and non-tradable services, still another element to discourage investment in industry and tradable services. Over the last decade, labor-intensive industries have almost disappeared. Basically, only those related to natural resources and a few industries that have made technological advances remain.

Box 1: Early warning signs and critical uncertainties in the World

Subjects	Predetermined elements	Critical uncertainties
GEOPOLITICAL	<ul style="list-style-type: none"> - Rise of emerging countries and economic / financial subprime crisis changing the correlation of forces in international organizations and in global governance; - Growing economic and political protagonism of Asia, China's rise as an economic, political and military power; - Political and economic weakening of Europe, with implications for the global governance; - Weakening of the South American integration project and strengthening of the Chinese influence in the region; - Launching of "abonomics" (reforms suggested by the Japanese Prime Minister, Shinzo Abe, in power since December 2012), based on "three arrows" (ultra-expansionist monetary policy, flexible fiscal policy, medium- and long-term structural reforms of); - Intensification of separatist movements and re (division) of territories bringing tension to international geopolitics. - The episode of Crimea, its consequences and the agreement of Oil signed between Russia and China revealed that Russia still plays an important role in geopolitics. 	<ul style="list-style-type: none"> - Will multipolarity be translated into shared governance or power sharing? Will political and economic coordination be viable? - Will the growing demand for raw materials be resolved through the market (high prices and incentives to technologies that save natural resources) or through political pressure and military force? - Will the historical conflicts and territorial disputes involving Asia be forgotten - or intensified? - Will China's economic and political relations with African countries contribute to sustained growth and poverty reduction? - Will Mercosur and other regional projects be revitalized? - Will separatist movements and (re)divisions of countries lose strength, or will a possible favorable outcome gain echo and reverberate in other regions of the world? - Will "abonomic" reform achieve success, or have only short-term effects? - Will Russia align with the US and China, or attract other countries to a new relevant block in the international game?
GLOBAL ECONOMIC ORDER	<ul style="list-style-type: none"> - Euro crisis threatening the integration project in the region. - Financial (subprime) crisis and global growth, causing profound changes in patterns of international competition and political relations among nations. - The rise of China and financial crisis among developing countries evokes debate over the State's role in the economy (varieties of capitalism) and credit-driven capitalism. The growing use of monetary, exchange, fiscal, industrial, credit, regulatory and trade policies to defend national interests. - Increase in negotiations to carry out large-scale trade agreements. On the one hand, TTP and TTIP, and on the other, "Chinese Bretton Woods". - Exhaustion of unregulated and highly leveraged financial expansion model, causing contractions in credit and in world growth. - New framework of financial regulation, Basel III. 	<ul style="list-style-type: none"> - Will the euro disappear and European integration shatter, or will it advance to a deeper integration (fiscal and political), even with the loss of one or more smaller members? - Will there be major setbacks to globalization, or will it be possible maintain the current level of global economic integration? - Will the "state capitalisms" strengthen or walk toward liberalizing reforms? Will the growth model based on debt of households, firms and governments, which supported the expansion of the advanced economies until the subprime crisis, resume after a period of deleveraging, or will a new model rise? - Will the new agreements strengthen multilateralism within the World Trade Organization (WTO), increasing the bargaining power of the United States and the European Union to negotiate with China, or will we witness the replacement of a multilateral solution for plurilateral solutions? Will China increase its bargaining power within international bodies, accepting multilateralism, or will it create an alternative system in which it is hegemonic? - Will monetary policy be able to reduce conflicts and costs of international transactions, or will regimes inconsistent among themselves, and currency wars, prevail? - Will the new rules of regulation be able to build a world less vulnerable to systemic crises, or will they increase the risk of regulatory arbitrage and adverse effects on the economic growth? Will there be a single international rule or will different national landmarks prevail?

Subjects	Predetermined elements	Critical uncertainties
ECONOMIC PERFORMANCE	<ul style="list-style-type: none"> - Stagnation of European and Japanese growth, with implications for the entire world economy. - American Growth recovery signs (albeit slow), without resolution of structural problems (public deficit, public debt and high leverage of households). - Emergence of limitations signs of China's economic and political model and depletion of the world's deflationary force from the cheapness of Chinese manufacturing, although, for some period, a trend toward low inflation continues because of the low growth. 	<ul style="list-style-type: none"> - Will Europe be able to design and carry out a community project of sustainable growth with reduction of regional inequalities? Will "abonomics" achieve its desired results? Will the Fed (Federal Reserve) and ECB (European Central Bank) monetary expansion translate into higher growth, or higher inflation and speculative valuation of assets? Will the US' fiscal position be sustainable? - Will China be able to maintain political and economic stability in the medium term or will it face crises, leading to a kind of "Nipponisation"?
TECHNOLOGIC AND PRODUCTIVE	<ul style="list-style-type: none"> - Cheapening and diffusion of flexible automation (robotics, 3D printers etc.) are redefining the geography of production by reducing the importance of economies of scale and advantages based on cheap labor. - New technologies for oil and gas production, leading to the expansion of potential supply and a huge cheapening of gas, particularly in the United States. - Co-development of areas of knowledge (biotechnology, nanotechnology, neuroscience), opening up new technological frontiers and opportunities for innovation. - Increased strategic importance of intellectual property issues. 	<ul style="list-style-type: none"> - Will Asia retain industrial supremacy, or will we see a change in the international location of manufacturing, made possible by new automation technologies that redefine the sources of competitive advantage? - Will new technologies produce substantial changes in the energy market with geopolitical implications? - What is the new international division of labor resulting from the emergence and diffusion of innovations associated to the new technologies? - Will developing countries be able to enjoy actively the opportunities associated to new areas of knowledge and new technologies? - What will be the international distribution of value along the supply chains, against the advance of new technologies?
POLITIC	<ul style="list-style-type: none"> - Strong increase of access to information, combined with the widespread use of social platforms, in the context of crisis and resentment, has been accelerating socio-political processes of change and unpredictability in political systems. - Retreat of the Welfare State, increasing inequality in income distribution and wealth, generating increasing frustration and resentment with globalization. - Crisis of representation, expressed in the low credibility of parties and politicians around the world. - Increased influence of religion in politics. 	<ul style="list-style-type: none"> - Will the democratization of access to information and the increasing ease of communication among people help to pave a path for the defense of democratic institutions, civil rights and greater political participation, or foster the weakening of established institutions, such as political parties, with consequences for institutional stability? - Will the populism and conservatism gain greater prominence in politics in the US and Europe? - Will new forms of political representation be arranged, or will the credibility of the old institutions be recovered? - Will the increased influence of religion in politics foster the polarization of the political debate at national and international levels?
SOCIAL-ENVIRONMENTAL	<ul style="list-style-type: none"> - Climate change causing real problems, but with few advances on the international agenda. - Social and environmental conditionalities impose costs and constraints for growth. - Shale gas expanding in the United States, generating a great controversy about its environmental consequences. 	<ul style="list-style-type: none"> - Will the international community be able to take firm and cooperative decisions relative to the environmental agenda? Will environmental preservation mean the "end of growth"? - How will the social question be vis-à-vis the environmental issue? Will there be convergence of technologies and institutions that protect at the same time environmental and social interests on a relevant scale? - Will the use of shale gas spread in the world with consequences for the environment or will its use be contained by environmental movements? May new technologies emerge to reduce the risk of contamination of groundwater?

Box 1: Early warning signs and critical uncertainties in Brazil

Subjects	Predetermined elements	Critical uncertainties
SOCIAL AND POLITICAL	<ul style="list-style-type: none"> - Reduction of income disparities and poverty diminishment. - Hard governability resulting from coalition / cooptation presidentialism. Overlap and complexity of the institutional framework. - Growing awareness of society about the needs for improvement of political institutions and for assistance to the population's needs (urban infrastructure, education and health etc.). - Political demonstrations and allegations of corruption. Discredit to traditional forms of political representation (parties, unions etc.). 	<ul style="list-style-type: none"> - How will the system of political representation evolve facing the current problems of governability and the emergence of new social groups? - Will the country evolve towards a political agreement around a development project or will it maintain the fragmentation of politics and parties interests? Will the agenda of governance, accountability and evaluation for results in the public sector deepen? - Will there be new forms of representation or will there be a slow recovery in the legitimacy of traditional forms of political representation and changes in favor of a strengthening of democratic institutions agenda?
ECONOMIC AND SOCIAL STRUCTURES	<ul style="list-style-type: none"> - Discoveries of significant reserves of natural resources creates new challenges for the country's economy. - Transformation of the economic structure in favor of the sectors of basic goods and services with reflections in the pattern of growth, innovation, aggregate value and productivity. - Internalization of economic dynamism, leading to the reduction of inter and intra-regional inequalities. - Rapid demographic change, generating impacts on competitiveness and public finances. 	<ul style="list-style-type: none"> - Will the interests over natural resources lead to a specialization and passive insertion in the international economy or will there will political and social cohesion for a development project characterized by the diversification of the productive structure and the active insertion into the international economy? - Will the government have political strength and ability to set consistent policies (monetary, fiscal, foreign trade, industrial, social etc.)? Or will a merely reactive government action through <i>ad hoc</i> policies, often contradictory in themselves, and of limited efficiency, prevail in response to the risks and challenges of the moment? - Will the internalization of economic growth help reduce old political practices of populism, clientelistic and concentration of the political forces in the capital? - Will rapid demographic change have negative effects on the international competitiveness of industry and on social security and health?
RESTRICTIONS AND BOTTLENECKS WHICH MAY HALT ECONOMIC GROWTH	<ul style="list-style-type: none"> - Growth in formal employment and in payroll contributed to the improvement of social indicators and growth of the internal market. - Recent growth led by consumer spending, leading to deterioration of the current transactions. - Growth of housing supply and durable consumption. 	<ul style="list-style-type: none"> - Will it be possible to conciliate the growth of payrolls and the improvement of social indicators with the maintenance of internal (low inflation) and external balance (current transactions)? - Will Brazil be able to design mechanisms and develop policies that reduce external vulnerability? - Will a healthy growth of the capital and real estate markets, avoiding bubbles in asset prices which lead to financial crises be possible?
ECONOMIC PERFORMANCE	<ul style="list-style-type: none"> - Difficulty in raising investment and productivity rates. - Deficit of infrastructure and slow increase of investments. - Increase in the gap between the quality of basic education and the requirements for the job market. - Increase in the distance from the ability to generate and disseminate innovations in relation to potential competitors. 	<ul style="list-style-type: none"> - Will growth potential be detained? Or will it advance via increased industrial competitiveness, education to increase productivity, reforms to raise the efficiency of services? - Will the country be able to increase the supply of infrastructure and of investments intended to combat the process of de-industrialization? - Will the proficiency government programs for elementary and secondary school students be able to reduce the gap between the quality of basic education and the requirements for the job market? - Will the country be able to establish a clear governance in its national innovation system and spread a culture of innovation?

Scenarios in numbers

GDP	2014	2030			
		"Sonho Meu"	"Deixa a Vida me Levar"	"Apesar de Você"	"O Mundo é um Moinho"
Dólar GDP - PPP (Billions)*	2.346	5.860	4.510	4.900	3.286
GDP PIB per capita (Milhões)*	11.569	26.265	20.211	21.963	14.725
GDP per capita Brazil/GDP per capita US	21,2%	24,8%	19,1%	27,2%	18,2%

*GDP in billions, relative PPP, base year = 2014.

GDP - Demand Side (%)	2014	2030			
		"Sonho Meu"	"Deixa a Vida me Levar"	"Apesar de Você"	"O Mundo é um Moinho"
Government Consumption	20,2	16,2	24,9	20,7	25,6
Households Consumption	62,5	58,1	56,9	54,9	57,8
Investment	19,7	25,2	18,2	24,2	15,3
Goods and Services Balance	-2,8	0,2	-0,5	-0,2	0,8

*The difference to 100% is explained by capital stock variation

GDP - Average Growth (%) 2016-2030	"Sonho Meu"	"Deixa a Vida me Levar"	"Apesar de Você"	"O Mundo é um Moinho"
GDP	4,5	2,8	3,6	1,0
Government Consumption	3,0	4,3	3,8	2,6
Households Consumption	4,1	2,2	2,7	0,5
Investment	6,6	2,6	5,3	-0,4

GDP Sectors - Average Growth (%) 2016-2030	"Sonho Meu"	"Deixa a Vida me Levar"	"Apesar de Você"	"O Mundo é um Moinho"
Agriculture, Forestry, Fishing and Hunting	4,9	4,0	3,1	1,9
Industry (PMI/PF)	6,3	2,4	4,8	0,8
Mining	6,8	4,7	3,0	2,2
Manufacturing	5,9	1,1	5,0	-0,2
Construction	6,6	2,6	5,7	1,4
Utilities	6,3	2,4	4,8	0,8
Services	3,8	2,9	3,2	1,0

Market Variables - Average 2016-2030	"Sonho Meu"	"Deixa a Vida me Levar"	"Apesar de Você"	"O Mundo é um Moinho"
Central Bank target Rate (SELIC) Average - % a.a	6,1	9,6	7,8	12,8
Exchange Rate				
Nominal	3,85	3,54	5,02	6,48
Real Effective Exchange Rate (CPI deflated) - Jun	111,7	83,4	133,7	112,4
Consumer Price Index (%)				
IPCA (dec/dec)	3,9	7,0	4,1	10,1

* R\$/currencies basket, Consumer index price deflator, IPCA

Trade (US\$ Billions)	"Sonho Meu"		"Deixa a Vida me Levar"		"Apesar de Você"		"O Mundo é um Moinho"	
	2030	Média 2016-30	2030	Média 2016-30	2030	Média 2016-30	2030	Média 2016-30
Trade Balance	80,1	40,1	24,4	19,1	28,8	13,6	33,4	47,0
Exports of goods (US\$ Bil)	934,6	502,1	588,7	387,6	424,9	312,1	252,6	241,6
Imports of goods (US\$ Bilhões)	854,5	462,0	564,3	368,5	396,1	298,4	219,2	194,6
Services (US\$ Bilhões)	-72,4	-56,3	-48,6	-46,9	-35,2	-39,3	-12,6	-15,9
Incomes	-148,4	-93,0	-175,2	-135,9	-72,3	-61,9	-17,9	-31,6
Trade Balance/GDP (%)	-2,8	-3,5	-3,7	-4,4	-2,6	-3,8	0,2	0,0

Labor Market	"Sonho Meu"		"Deixa a Vida me Levar"		"Apesar de Você"		"O Mundo é um Moinho"	
	2030	Média 2016-30	2030	Média 2016-30	2030	Média 2016-30	2030	Média 2016-30
Unemployment rate (end of the period - %)	5,0	6,0	6,5	6,9	6,4	6,6	13,1	10,8
Work Productivity (Growth Rate %)	3,9	3,5	2,0	1,9	2,8	2,7	0,7	0,6

Public Sector	"Sonho Meu"		"Deixa a Vida me Levar"		"Apesar de Você"		"O Mundo é um Moinho"	
	2030	Média	2030	Média 2016-	2030	Média	2030	Média
Primary Surplus (GDP %)	0,8	1,3	-2,9	-0,1	0,3	0,8	-4,6	-2,1
Public sector borrowing requirements (GDP %)	0,0	1,1	7,0	4,4	1,7	2,3	14,0	9,1
Nominal Interest Rates	0,8	2,4	4,1	4,4	2,0	3,2	9,4	7,1
Public Sector Net Debt	15,2	26,3	46,4	40,3	27,3	31,4	81,3	52,6
Public Sector Gross Debt	23,0	41,9	52,5	54,8	33,4	44,9	92,2	70,2