Presalt Oil Discoveries and the Long-Term Development of Brazil

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Newly discovered oil reserves off the coast of Brazil present a unique opportunity for the country to boost an already successful trajectory of growth and development. This note examines potential choices for the government when it contemplates how to disburse this newfound wealth. This review suggests that Brazil would be well served by saving a large amount of the windfall, ensuring that the country’s increased wealth reaches the poor, putting in place strong fiscal planning to guide efficient investment, and building the country’s research and development capacity.

The Promise of Presalt Oil

Brazil has made remarkable economic and social progress in the last decade, bringing 22 million people out of poverty since 2003, but important challenges remain. New offshore oil reserves in the so-called presalt territory will bring sudden, new wealth to the country. If well-managed, this oil presents Brazil with an opportunity to address some of its most tenacious problems, including a looming demographic shift and a level of income inequality that is among the 10 highest in the world. These oil reserves could help Brazil build strong foundations for inclusive, sustainable growth and development.

Brazil’s oil revenues will increase tremendously in the next decade. Petrobras, the national oil company, projects a doubling of its proven oil reserves (currently 12.8 billion barrels) by 2020. The U.S. Energy Information Administration (EIA) projects that Brazilian oil production will expand by 70 to 90 percent between 2010 and 2020, reaching at least 3.4 million barrels of oil equivalent per day. The share of Brazilian oil production in the country’s gross domestic product (GDP) could potentially double during the current decade (it was 2.6 percent in 2010), depending on the evolution of international oil prices. And Brazil’s net oil exports could reach as much as US$83 billion in 2020, at least in the most optimistic scenarios developed by the Brazilian government.

This newfound wealth, if used wisely, could provide two distinct macroeconomic benefits to the country. It could be applied to current consumption and provide badly needed assistance to current generations of poor people, or, alternatively, it could raise aggregate investments and savings, which have been constraints to long-term growth in Brazil.

There are a number of reasons for Brazil to save, beyond the traditional motivation of reducing the volatility of the economy around oil price fluctuations. Other goals include investing in human and physical capital to help ensure intergenerational equity; smoothing the consumption of poor households during economic downturns; preventing sudden exchange appreciations in the short run by means of saving and investing part of the windfall in foreign assets; and funding pro-diversification investments.

One critical issue in making the tough choice between investment and consumption is a fast-approaching demographic transition (and implied pension contingent liabilities). Brazil’s labor force will peak in 2020 (figure 1). After that point, the country will face a decline in the number of workers available to keep the economy going. Saving and investing oil revenues today could help ensure that the incomes
that the government cannot easily predict its income. Global oil prices, the magnitude of usable deepwater oil reserves, and the total investment needed to extract the oil will all affect government income. Brazilian oil production estimates for 2020 vary from 3.4 million barrels per day to 6.1 million barrels per day.

The Brazilian government will need to ensure quality and efficiency in public projects funded with oil revenues. Research shows that expenditures associated with municipal oil royalties tend to be concentrated in central secretariats focused on administrative functions—for example, financing, planning and budgeting, and human resource management—rather than in direct service provision. This raises the question of whether oil windfalls might hamper government efficiency.

These phenomena—the uncertainty surrounding the size of the windfall and the possible efficiency and quality concerns in using oil revenues for public projects—create a strong rationale for increasing public savings. Savings can be used during downturns to provide timely assistance to poor families through well-targeted social expenditures. Transferring higher shares of expenditures to the poorest families raises national welfare because each additional real improves the lives of the poor to a much greater extent than the rich. Indeed, estimates by Engel and Neilson (2011) suggest that even if the windfalls were to be spent under a balanced budget rule—which would imply spending all of any annual windfall from oil, rather than saving a portion for the future—there would be large gains in terms of national welfare.

The oil windfalls are likely to lead to an appreciation of the equilibrium real exchange rate and associated Dutch disease effects. This will probably hurt some tradable industries and increase the concentration of Brazilian exports. The appreciation is expected to be between 1 and 8 percent, and Brazil would see an increase in merchandise exports concentration of between 0.3 and 2.5 percent. As a result, the Brazilian economy is likely to become more volatile. Terms-of-trade volatility could rise by 1 to 11 percent, meaning the country could face somewhat stronger external sources of macroeco-

The Challenges of Presalt Oil

To make effective use of the presalt oil income, the government of Brazil will need to consider a number of factors specific to natural resources wealth. Importantly, uncertainty surrounding the size and timing of the oil windfalls means

of a declining and aging labor force will cover future consumption.

The process of extracting the oil itself could augment the country’s knowledge base and development potential. Brazil’s offshore oil industry has overcome substantial scientific, technological and engineering challenges since the 1970s, as oil exploration and extraction moved into progressively deeper waters (figure 2). Petrobras plans to almost quintuple its average annual investments in research and development (R&D), excluding physical capital investments directly related to exploration and extraction, to about US$920 million per year during 2011–15. Brazil as a whole spends about 1 percent of its GDP on R&D (Maloney 2012); if Petrobras follows its plan, it would be responsible for 5 percent of the country’s total R&D effort. These investments have the potential to generate significant positive spillovers to other sectors of the Brazilian economy.

Figure 2. Landmarks in Petrobras Offshore Drilling

nomic volatility. Furthermore, if the appreciation occurs through nontradable goods inflation, household welfare across the whole distribution of income could be negatively affected.

An additional challenge is that of ensuring that the country takes advantage of potential interindustry knowledge spillovers that could result from investments in R&D and human capital required for the oil extraction. The Brazilian oil and gas industry will increase its demand for specialized human capital: in addition to the US$920 million per year that Petrobras plans to invest in R&D during 2011–15, the company has planned investments in information and communication technologies of US$540 million per year, and of US$23.5 billion per year in exploration and production activities. To respond to this increased demand, Petrobras and the Ministry of Science and Technology have created the Promip program\textsuperscript{1} to train 212,000 professionals in related fields.

A final challenge will be managing the environmental risks associated with the exploitation of the new oil reserves. While associated environmental risks are beyond the scope of this note, they can have significant impacts on presalt costs and income and on biodiversity, and therefore require careful consideration.

**Using Presalt Oil to Overcome Development Challenges**

This note takes an optimistic view of the net impact of presalt oil on the Brazil’s development prospects. Brazil’s pursuit of fiscal discipline during the past decade creates a solid starting point for optimizing the use of the oil windfalls for macroeconomic stabilization and countercyclical social policy. For example, the government has established limits for personnel expenditures and indebtedness at all levels of government. Permanent spending mandates are only allowed if they are based on permanent revenue increases. Strong government balances at the federal and subnational levels reduced the net public sector debt-to-GDP ratio from 57 percent in 2002 to below 40 percent at the end of 2011.

Partly because of its sheer size and competitive agriculture, Brazil is a highly diversified economy and protected against some of the destabilizing effects of sudden oil wealth. In the worst case scenario of increased export concentration and macrovolatility, estimates suggest that Brazil’s terms-of-trade volatility and GDP growth volatility would still be below the Latin America and Caribbean average.

Targeting the poor for social expenditures and improving the quality of public spending are already priorities in Brazil. Brazil has an excellent track record in targeting its conditional cash transfers (CCTs) program. Over the past decade, Brazil’s federal government and a number of states and municipalities have made systematic use of performance information throughout the planning, budgeting, and policy cycle. These recent trends create favorable conditions for ensuring the quality of new investments and other government programs.

The Brazilian government is also working on optimizing the level of R&D investment and addressing complementary factors that may help raise R&D returns. In the oil industry, R&D seems embedded in Petrobras and its networks of partners and is directly linked to exploration and production needs. With regard to other complementary factors that may help increase the efficiency of the innovation system, the government has announced various initiatives to improve the quality and openness of the education system, as well as to improve conditions for accelerating physical capital accumulation, including through enhanced private participation in infrastructure sectors.

**Potential Policy Choices**

The government’s signals to the private sector about the size of the windfall might affect private consumption and investment. Given the unpredictability of oil revenues, Brazil could assume the least optimistic scenario and behave based on modest projections of oil wealth. Following the least optimistic scenario can help attenuate the investment-reduction effects of the expected wealth. Indeed, the expectation of higher wealth would rationally justify an increase in current consumption at the expense of investment. Under this scenario, national welfare would increase, but investment, and thus GDP per capita growth, especially nonoil GDP growth, would decline. If, however, oil production growth were to be slower than anticipated, Brazil would have to go through a potentially painful adjustment in consumption.

Brazil might be better off saving and investing a large share of the windfall. This would help the government use countercyclical fiscal policies during fluctuations in oil prices and reduce short-term pressures on the exchange rate. It could also allow the government to ensure intergenerational equity through investments in human and physical capital (including innovation). In addition, savings and investments could help raise the competitiveness of nonoil industries. Finally, a share of the annual windfalls could be saved to fund social transfers to poor families. Large welfare gains can be obtained even by using suboptimal pro-cyclical fiscal rules if public transfers are targeted to the poorest households.

Brazil has an opportunity to leverage oil-related innovation as a means to push forward a pro-diversification policy agenda. Growth in Brazilian oil production and exports will likely lead to Dutch disease effects, including an increased concentration of the country’s exports and heightened macroeconomic volatility. To minimize these impacts, the government could improve the conditions for other tradable industries by accelerating the accumulation of human capital and facilitating investments in science and technology. It could address current infrastructure bottlenecks and other legal...
and regulatory hurdles that limit the competitiveness of Brazilian industries, notably the manufacturing industry.

As the Brazilian government makes new, oil-financed investments, it should ensure that they are of high quality. Of particular importance are improving procedures for selecting, appraising, and evaluating investment projects. The government could also improve its monitoring and evaluation (M&E) systems, which are key to ensuring successful execution and implementation of all public investment projects.

Finally, the government could pace the exploitation of the new oil reserves. While the presalt discoveries could place Brazil on strong footing in the 21st century, maximizing those opportunities may call for moderating the pace at which the new wealth is extracted. Gradualism in the exploitation of the oil reserves can help ensure the quality of oil-financed public expenditures by allowing all levels of government to develop appropriate plans and M&E mechanisms. Slower extraction can also buy time for the nonoil industrial sector to absorb positive externalities from related public investments. Lastly, gradualism can help reduce pressures to prevent real exchange rate appreciation.

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References


Note

1. The purpose of the Prominp program is to strengthen the national oil and gas industry (http://www.prominp.com.br).