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## Brazil and Offshore Oil Transcript

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**Tom Heintjes:** *Welcome to another EconSouth Now podcast. The world's thirst for oil is not news. What is relatively new, however, is the discovery of large oil reserves off the coast of Brazil. A world leader in the production of alternative fuels such as ethanol, Brazil is in the early stages of preparing to extract this oil and of preparing for the potential economic impact of newfound resource wealth.*

*Laurel Graefe and Steve Kay of the Atlanta Fed's research department have written an article for EconSouth magazine about Brazil's oil resources and its potential implications for its economy and energy markets. They are here to speak with me about the situation and its potential impact. Steve and Laurel, thanks for joining me today.*



Laurel Graefe

**Laurel Graefe:** Thanks for having us.

**Steve Kay:** Thanks, Tom.

**Heintjes:** *Laurel, I'm going to get you to supply some background on this discovery. The Lula oil field lies off the coast of Brazil, four miles beneath the seabed. What led to its discovery in the first place?*

**Graefe:** Well, as you pointed out, the four-mile depth beneath the seabed is very significant in terms of oil exploration. So, the seismic techniques that have developed over time have an amazing capacity to see beneath very enormous depths of ocean, and even beneath the seabed. However, one of the main barriers in geologists' ability to see within the layers of the earth's surface is salt. And within the four miles that separates the Santos Basin—the overall network of fields that the Lula field is located in—and the bed of the sea is an enormous amount of salt mixed with sand and rock. And only in the middle of the past decade were the seismic techniques developed that enabled geologists to get a better, clearer glimpse of what actually was lying at such depths.

So it was largely a technological find. The Lula field, which was originally named the Tupi field, was discovered in 2006 and only recently began

producing, although it probably won't be for several more years that it is producing on a larger commercial scale.



Stephen Kay

**Heintjes:** *This gets to the discussion of oil that is easy to extract versus the oil that is harder to extract, doesn't it?*

**Graefe:** Correct.

**Heintjes:** *Steve, in the Gulf of Mexico, we've seen in the last year a vivid example of the environmental risks of deep-sea oil drilling. What are the potential environmental impacts of the extraction of oil from the Lula field?*

**Kay:** Well, there are risks inherent in deep-water oil drilling. Other countries have experienced disasters and near-disasters, including Brazil, where there was a fire on an oil rig off the coast of Rio de Janeiro in 2001 that killed 11 people and spilled 10,000 barrels of fuel and crude. So officials from Petrobras, which is the Brazilian oil company, say that they have improved safety and have emergency-response systems that could better deal with future disasters.

Brazil's plans to develop its offshore reserves have not been affected by the Gulf oil disaster—they are proceeding full speed ahead—and given high demand for oil, that is to be expected. The bottom line is that globally, like we were just discussing, large increases in international reserves are offshore. Most of the onshore and near-shore oil has already been discovered. In fact, 70 percent of the increase in the U.S. Geological Survey's estimate of recoverable oil in the U.S. is offshore oil, and that is where the drilling is going to take place.

**Graefe:** So this falls back in line with Brazil's experience, where we see a lot of the cheaper-to-access and easier-to-access oil, a lot of it has already been produced. So, globally we are seeing a trend where producers are heading more toward the more expensive, whether it's arctic oil—these more difficult to both locate and extract—oil is starting to really come to play.

**Heintjes:** *Laurel, we hear a lot about Canadian oil shale. Does this fall into that category?*

**Graefe:** Absolutely. So, as the price of oil increases, suddenly technologies that weren't economically feasible in the past suddenly start coming into play. And that is absolutely what we are seeing with the Canadian oil shale.

**Heintjes:** *Laurel, one estimate indicates that the Santos Basin could hold as much as 123 billion barrels of oil, although only a fraction of that amount is considered proven given today's technological limitations. Still, it's a large enough find to have an impact on world energy markets. What do you think the impact will be on the petroleum markets?*

**Graefe:** Well, as you pointed out, the estimates of the actual resources can vary extremely widely just because, again, these resources are so far from land. They are so far from anything we can actually physically assess. One hundred and twenty-three billion barrels is one of the extremes, the very optimistic forecast. However, regardless of what the actual amount of resources that lie underground, you pointed out the most important measure, which is what can actually be produced. Proven reserves are those that, given today's economic limitations, technological, political limitations, what's actually reasonably likely to come into production.

So, to put that into some perspective, Brazil's proven reserves are around 13 billion barrels right now. So, despite the fact that this is an enormous resource, the

challenges that are presented—unprecedented depths and unprecedented challenges in terms of the subsalt terrain—make this particular find very difficult to extract, at least in current times. Although I imagine at some point in the future as technology advances or prices change, we might actually, even without further discoveries, these same fields could continue to add to proven reserves as circumstances change.

However, regardless of whatever actually exists underground and how much is proven, I guess the fields could affect world oil markets in two primary ways. One is the traditional supply channel. So, when you see a large, unexpected increase in supply, eventually we would expect for that to have some downward influence on prices, whether that's actually pushing prices lower or just curtailing a rise in oil prices. Generally—I mean, just Econ 101—that's what you would expect with an increase. Brazil has just recently become a net exporter of oil, and so you can imagine an increase in their overall ability to produce would also influence the country's economic position. So, there's this one kind of general "any large oil discovery would generally be expected to have this sort of effect" pushing down prices, increasing global supply.

On the other hand, there's another important element to the find, which has really come into focus in light of the recent violence in the Middle East and North Africa, which is the world has been focusing increasingly on sources of excess production capacity globally, and Brazil's potential ability to provide some swing production sometime in the future as a non-?cartel member could really play a very valuable geopolitical role in the coming years.

**Heintjes:** *Steve, Brazil has been a world leader in ethanol production and consumption. Could this new discovery make ethanol a less appealing fuel source?*

**Kay:** Well, Brazil has been the global leader in ethanol production, and that won't change. Of course, Brazil developed its ethanol industry as a means to reduce its dependence on petroleum after the devastating impact of the oil shocks of the 1970s. And now that Brazil has discovered so much oil, that doesn't mean it will turn away from ethanol, which Brazil produces from sugar cane, which it can do at a much lower price and with less of an environmental impact than is the case with corn.

Ethanol nearly always costs less to produce than petroleum, and Brazil's fleet of cars are increasingly flex-fuel, which means that they can run on either gas or ethanol, the driver can choose based on the price. So if Brazil is consuming more of the cheaper ethanol at home, it just means that more petroleum can be exported.

**Heintjes:** *Among energy-industry analysts, Laurel, there's a robust debate about how much oil remains for human consumption. Is Brazil's find likely to alter the outlook?*

**Graefe:** Yes and no. Brazil's find was not substantial enough to create some long-term shift in the way that industry analysts are viewing longer-term trends in oil supplies. So, the international energy agency, the global energy watchdog, last fall came out with a report saying that they expected that the world had already reached peak oil production. So, that didn't necessarily mean that we were headed for some imminent sharp decline in production, but that production was unlikely to increase any more.

Brazil's find didn't change that assessment. However, inevitably, the potential for a large amount of oil to come online, particularly within the next decade or so, could play an extremely valuable and marginal supply role, especially as the global economy continues to trend toward recovery, emerging markets have been performing particularly strongly, and those tend to be much more energy dependent than some of the more developed economies. And as we continue with that trend, likely having an additional source of oil supply online could really play a very valuable role in balancing out world oil markets.

**Heintjes:** *Steve, my last question is for you. In your article for EconSouth, you discuss the "resource curse." Could you delve a little bit more deeply into this phenomenon, and how sudden resource wealth can have negative effects on a nation's economy?*

**Kay:** Well, it may seem strange to think of the discovery of billions of barrels of oil as having potentially negative economic consequences. But as it turns out, there are some risks. Economists talk about this as the "resource curse," which is based on the fact that growth rates in countries rich in natural resources are lower than in countries without them. Two examples are Venezuela and Ecuador, which are the two largest oil exporters in Latin America, measured as a percentage of gross domestic product. Both countries have averaged lower economic growth and higher inflation than other countries in Latin America over the past few decades.Â

So *The Economist* magazine coined the term "Dutch disease," and that is named after the impact of North Sea gas on the Dutch economy in the 1960s. And essentially, the returns on investment in oil are so large—this is what took place in the Netherlands—they were so large that they divert investment from other economic activities. The surge in revenue from petroleum exports can lead to a surplus in a nation's balance of payments, and that leads to a stronger domestic currency. The overvalued exchange rate means that the country loses its competitiveness in other sectors of the economy; its exports become too expensive, and imports become cheaper, and that hurts domestic industry.

In fact, there has been some research in Brazil comparing growth in states that receive oil royalties with those that don't, and it found lower growth rates in the states that do get royalties. The CEO of Petrobras, the Brazilian oil company, recently warned that the rapid expansion of the development of Brazil's deepwater reserves could harm other industries in Brazil as they compete with one another for labor, resources, and capital.

So, to deal with Dutch disease, Brazil is doing what other natural resource-rich countries like Chile have done, it has started an economic stabilization fund that will invest in education, health, science, technology, climate change mitigation, all of this in an effort to harness this revenue to use it for social development and to lessen the impact on the economy of volatile oil prices.

**Heintjes:** *Steve and Laurel, I'd like to thank you both for being with us today.*

**Graefe:** Thanks for having us.

**Kay:** Thanks, Tom.

**Heintjes:** *Again, we've been speaking today with Laurel Graefe and Steve Kay of the Atlanta Fed's research department. This concludes our EconSouth Now*

*podcast on Brazil's discovery of offshore oil. For more information, please see the first quarter 2011 edition of EconSouth magazine. On our website, [www.frbatlanta.org](http://www.frbatlanta.org), you can read the full article about this topic or subscribe to EconSouth in print.*

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