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Economist**

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Special report

Sep 11th 2010 edition

It's only natural

Commodities alone are not enough to sustain flourishing economies

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IT MAY seem a safe bet that billions of Asians will continue to gobble up oil, iron ore, copper, soyabeans and meat as they get richer. But one day they may not; and one day, too, the world will surely come up with alternatives to fossil fuels that emit less carbon. Indeed Brazil already has, in the form of ethanol from sugar cane, and Colombia and Central America are following suit.

Latin America is uncomfortably dependent on commodities. In the past decade they accounted for 52% of the region's exports, according to the World Bank. That is down from 86% in the 1970s, but over the same period the figure in East Asia and the Pacific fell from 94% to 30%. Chile, Peru and Venezuela still rely on raw materials for more than three-quarters of their total exports. In all, as the World Bank notes in a report published this month, more than 90% of Latin Americans live in countries that are net exporters of commodities, the exceptions being in Central America and the Caribbean. Governments have also become more reliant on raw materials for their tax revenues (see chart 1).

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There is nothing wrong with producing raw materials. The rise in world prices for Latin America's commodities, and the related increase in their output, may have accounted for between one-third and half of the region's growth over the past decade. And thanks to Asia's economic vigour, commodity prices fell only briefly during the recession and remain at historically high levels. Over the past decade a region that has habitually suffered from balance-of-payments troubles has

benefited from the foreign exchange that commodities bring in. This bonanza seems to refute the thesis put forward by Raúl Prebisch, the founding director of ECLAC, that the price of commodities is bound to decline in relation to the price of manufactured goods.

Even so, relying on raw materials carries a series of risks. One is volatility: their prices are more variable than those of manufactures. Second, many economists worry about “Dutch disease”, a term coined by this newspaper in 1977 to describe the impact of a North Sea gas bonanza on the economy of the Netherlands. This malady involves commodity exports driving up the value of the currency, making other parts of the economy less competitive, leading to a current-account deficit and even greater dependence on commodities. This matters all the more because mining and hydrocarbons are capital-intensive businesses, generating relatively few jobs.

The commodity boom, together with capital inflows attracted by better economic prospects, has already pushed up the value of some of the region's currencies. For example, São Paulo seems extraordinarily expensive to any visitor. The strength of the Brazilian currency, the real, worries officials and industrialists.

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the tax revenues they generate in infrastructure and training to diversify the economy. Producing commodities may also involve local environmental damage. In parts of Latin America mines and oilfields are in areas inhabited by people of indigenous descent and have caused cultural clashes.

A fourth problem is the potentially corrosive effect of commodity production on political institutions. Many commodities incorporate rents (ie, excess profits derived from the fact that supply is usually limited in the short term). It is in the state's interest to capture those rents, but corruption often follows when it does. Mines and oil- and gasfields often involve high sunk costs and low variable costs, making them a tempting target for expropriation. Venezuela provides the clearest evidence of these ills.

Given the risk of price volatility and depletion, it is sensible to save some of the bonanza from commodities for a rainy day. That is what Chile has done. The price of copper, its main export, has been high for the past few years, allowing the country to accumulate \$20 billion, equal to about 12% of GDP, in a stabilisation fund by the end of 2008. It was able to draw on this fund to pay for a big fiscal stimulus, equal to about 3% of GDP, during the recession. On a smaller scale, Mexico, Peru and Bolivia too have saved part of their windfall gains from high commodity prices. Brazil's Congress is considering a bill under which part of the revenues from big new deep-sea oilfields will be placed in a special social fund. But most of the money will be spent on education and anti-poverty programmes rather than saved.

Where innovation flourishes

Agriculture in Latin America shows clearly that commodities can be a blessing, not a curse. Much of the region enjoys fertile soils and sunshine, but it has also made the best of that natural bonus. Since 1990 productivity in farming in Latin America has risen faster than in East Asia or the United States, according to a study by the IDB. Colombia's Federation of Coffee Producers has managed to extract a brand premium for its product through clever marketing, and has successfully diversified into retailing with its international chain of Juan Valdez coffee shops. Chile has created new export industries for fruit and vegetables. In Peru the spontaneous privatisation in the 1980s of state farms set up by a left-wing military government has spawned labour-intensive commercial farming on the fertile coastal strip. Argentina's farmers, and its agricultural-research institute, are consistently innovative.

Brazil has the most impressive record of agricultural innovation. In 1973, when the country was still a net food importer, its military government set up Embrapa, an

adapted plant and animal varieties so that they could thrive in the tropics and especially in the acid soil of the *cerrado*, the vast, largely flat savannah of the interior. This green revolution hugely increased productivity: over the past 30 years only 20% more land has come into agricultural use but production has risen by 150%, says Pedro Antonio Pereira, Embrapa's director.

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Brazil is now the world's biggest exporter not only of coffee, sugar, orange juice and tobacco but also of ethanol, beef and chicken, and the second-biggest source of soya products. It is exporting fruit and wine from the São Francisco river region, close to the equator. Its goal, says Mr Pereira, is to become the world's leading food exporter by 2025, displacing the United States, without inflicting damage on the environment. That means pushing up productivity further, and in particular putting some 70m hectares (173m acres) of degraded pasture to better use. Much of that pasture supports just one cow for every two hectares. With better breeding and improved techniques, each hectare could accommodate three cows as well as some grain and trees.

In São Carlos, in São Paulo state, Embrapa has the world's only laboratory deploying nanotechnology for agriculture, creating plant varieties that absorb fertiliser more efficiently. Embrapa has a research centre in Central America and is planning to open one in Peru.

Unfortunately there is little of this kind of innovation in other parts of Latin America's economies. Latin American firms invest only 0.5% of gross revenues in research and development, compared with the 2% spent by companies in the rich



How do you go from copper to computers?

The idea that governments should help particular companies or industries went out of fashion in the region a generation ago, mainly because it had been taken to extremes. In the 1960s and 1970s governments tried to foster industrialisation through tariff protection, state ownership and heavily subsidised credit. Brazil and Mexico did indeed industrialise. But across the region these policies also funded expensive white elephants and giveaways to favoured businessmen, all courtesy of the taxpayer. Mr Chávez in Venezuela is echoing some of these policies, as are the Kirchners in Argentina, albeit on a minor scale.

Elsewhere there is little appetite for a return to the past, but many agree that the state needs to do more to promote innovation and co-ordinate production chains and clusters to add value. In Mexico the government has encouraged the clustering of software and electronics firms in Guadalajara and an aerospace industry around Querétaro, including a factory in which Bombardier makes components for its aircraft. In Chile Fundación Chile, a public-private partnership, and Corfo, a state development agency, have promoted new industries. Chile's government persuaded

components for the electricity industry. A similar joint effort in Costa Rica secured an Intel chip plant and other foreign investments in high-tech projects.

Brazil never wholly abandoned industrial policy. Interest on loans made by its giant national development bank, the BNDES, is set at less than half market rates, involving a selective subsidy. Since Luiz Inácio Lula da Silva was elected president in 2003, industrial policy has become more pronounced and explicit. The BNDES supports innovation by providing seed money for ventures in biotechnology, pharmaceuticals and information technology. More controversially, it backs mergers and foreign takeovers by big Brazilian companies. These have included the creation of Brasil Foods, a big food company, and the merger of two big meat firms, JBS and Friboi. The petrochemical industry has consolidated in Braskem, a joint venture between Odebrecht, a construction giant, and Petrobras, the national oil company. The electricity industry is reorganising around Eletrobras, the former state monopoly.

Critics denounce all this as the creation of “national champions” that are beholden to the government, either directly or indirectly. Luciano Coutinho, the BNDES's president, retorts that Brazil's new multinationals are highly competitive Darwinian survivors of decades of economic volatility. “We have an open economy, it's different from the model of the 1960s and 1970s. The market is imperfect, but the state also makes mistakes,” he concedes.

The guiding hand

Defenders of industrial policy—who include Dilma Rousseff, Lula's chosen candidate in next month's presidential election—as vindication point to the examples of the ethanol industry (which began with a 1970s government programme to reduce dependence on imported oil), Embrapa and Embraer, an aircraft-maker. Critics counter that Embraer started to thrive only after being privatised (see [article](#)), and that ethanol took off only after multinational car companies developed engines capable of running on either petrol or ethanol.

The Lula government's most ambitious attempt to go beyond commodities involves trying to use new oil discoveries to build an oil-services industry. The new fields, known as *pré-sal* because they lie beneath a volatile layer of salt 7km below the surface of the Atlantic, were discovered in 2007, with huge proven reserves. What led to the discovery was the previous government's oil-policy liberalisation, which meant ending Petrobras's monopoly, selling 60% of its shares on the stockmarket (though the government retains control of the company) and granting concessions for exploration rights in auctions that were open to foreign companies.

Lula has respected these contracts (in sharp contrast to Mr Chávez, Mr Morales and the Kirchners), but after the 2007 discoveries his government decided to draw up new rules for exploring the rest of the *pré-sal* (about 90% of the total area). These involve vesting the oil in a new state company, Petrosal, which will operate the new sovereign-wealth fund. Petrobras will be the monopoly operator of new fields, and both it and its partners will get a share of the output.

To finance its massive investment plan of \$224 billion over the next five years, Petrobras is to get a capital injection. The government has paid its share in oil, and the company hopes to raise \$25 billion in what will be the world's biggest ever public share offering. The government has required Petrobras to buy at least 65% of its inputs—from tankers to drilling rigs and platforms—in Brazil. It is applying similar rules to other oil companies.

Such national-content rules may make sense, but only if they are temporary, since they will drive up costs. And Petrobras itself is said to favour a lower requirement for national content. Officials point out that the new rules have revived Brazil's shipbuilding industry, which in the 1970s was bigger than South Korea's but then shrivelled. Norway adopted similar rules when it used its North Sea discoveries to establish a thriving oil services industry.

Cordeiro of Bain, a management consultancy that produced a study on the subject for the BNDES. But he worries that having Petrobras as the sole operator may make it more difficult to create a competitive oil-services industry. "Monopsony is always bad for innovation," he says.

It may also foster corruption and cronyism. Norway, one of the world's richest countries, grants concessions to oil companies, which is more transparent. Brazil's new rules give Petrobras enormous power but also place it under huge strain, especially since the oil is at even greater depths than that in the Gulf of Mexico.

Brazil, the world's 16th-largest oil producer, is set to move up the scale. According to official forecasts, output is due to reach 5m barrels per day by 2020. Some of the government's critics worry that the country may go the way of Mexico and Venezuela, where state oil monopolies have been plagued by mismanagement and corruption. Colombia operates an alternative model, granting concessions to the highest bidder. Oil production there should reach 1.2m b/d by 2012, nearly double that in 2009.

Other critics are concerned that Brazil will lose its status as a clean-energy power. At present around 30% of its energy comes from hydro power and another 15% from biomass. The government expects both of these to keep growing. But the ethanol industry, which is made up of a large number of private companies, worries about the growing clout of Petrobras.

The ethanol industry has an impressive record of innovation, including electricity generation from cane residue and the development of bioplastics. To some, that suggests a different kind of industrial policy: providing more support for research and development, cutting Brazil's budget deficit (currently around 3% of GDP) and promoting saving. That would allow interest rates to fall and make companies less dependent on the BNDES.

There is no evidence that Brazil is suffering from Dutch disease and deindustrialisation, according to a paper by Albert Fishlow of Columbia University and Edmar Bacha, an economist who advised Lula's predecessor, Fernando Henrique Cardoso. But the authors share the concern about the economic volatility that comes with commodity wealth. "The question is how to cope. That internal response determines whether natural resources translate into a virtue or a curse," the authors conclude.

Dutch disease or not, though, non-commodity industries find it harder to export than they used to, although they have plenty of room to expand in the domestic