



Dutch Disease, informality, and employment intensity in Colombia

By Ricardo Arguello, Dora Jimenez, Edwin Torres and Monica Gasca

In 2012, with support of the UK Department for international Development (DfID or UK Aid) and the International Development Research Centre (IDRC) of Canada, PEP launched a new program to support and build capacities in "Policy Analyses on Growth and Employment" (PAGE) in developing countries.

This brief summarizes the main features and outcomes of one of the projects supported under the 2nd round of the PAGE initiative (2014-2015).

This study shows that a sustained oil export boom in Colombia would lead to Dutch Disease effects, but also to a shift in employment from informal (not paying taxes) to formal labour. The researchers test the effectiveness of the government's mitigating policies, and outline specific recommendations for policy that will provide a workforce ready to meet the future needs of the Colombian economy.

Effects of the oil boom on labour dynamics

An oil and mining production and export boom in Colombia, from the first half of the 2000s to 2014, triggered the risk of Dutch Disease.

The past 30 years have seen a shift in the composition of the Colombian economy as the mining and related services sector has grown, to the detriment of other sectors such as manufacturing and agriculture.

While the annual average growth rate for the economy between 2003 and 2013 was 4.6%, the manufacturing sector only increased at an average annual rate of 2.9%. However, the mining sector grew at an average annual rate of 5.9%.

Colombian exports grew sevenfold between 1991 and 2011 (equivalent to an annual average compound growth rate of 11%) with mining exports growing from 33.6% of total exports in 1991 to 71% in 2011.

The increase in mining exports along with foreign direct investment (FDI) meant there was an influx of foreign currency (24.6 billion dollars added to the investment stock between January 2010 and the second quarter of 2013), which affected the exchange rate. Coupled with the contrasting growth rates in different sectors, some policy makers believed the economy was showing symptoms of Dutch Disease.

This issue became the centre of important policy debates and it merits attention as Dutch Disease can have a significant impact on the economy with

resources moving into the boom sector, to the detriment of the rest of the economy.

Part of the policy response by the Colombian government to the potential Dutch Disease effects, was to establish a Savings and Stabilization Fund or FAE (Spanish-language acronym) to hold up to 30% of royalties revenue and to invest these resources abroad as a sterilization scheme until required.

In Colombia, the informal labour sector (defined as not paying taxes) is sizeable, accounting for almost 50% of total employment with the agricultural sector making the most use of informal labour (76%). The boom sectors of oil and refinery are, by contrast, 100% formal.

Furthermore, unemployment levels remained high, an average unemployment rate of 11.9% between 2003 and 2012, despite a relatively dynamic economy. It is only since policy changes in May 2013 (the reduction of surcharges associated with hiring formal labour) that employment levels have started to increase.

In light of these factors, the research team decided to investigate the impact of the oil and mining production and export boom on the evolution of the productive structure of the economy, the evolution of import intensity in non-boom sectors and its implications for employment dynamics, and the evolution of the informal sector.

Data and methodology

The team developed a recursive dynamic computable general equilibrium (CGE) model to calculate the effect of increased oil exports on the rest of the economy and on the labour market. To do so, the team adapted the PEP single country recursive dynamic CGE (Decaluwé et al, 2012) to account for the influx of resources to the government from the oil and mining sectors in the form of royalties and dividends, for the role of FDI, and to encompass a labour market representation that includes formal and informal market segments. The team built a Social Accounting Matrix (SAM) to run the model. In the SAM, activities are differentiated as formal or informal and the revenue stream received by the government from booming activities is accounted for. This allowed the team to investigate how the oil boom affects labour dynamics.

Using this model the researchers ran three sets of simulations. The first corresponds to the baseline and traces the behaviour of the economy over a 15-year period during which the economy is assumed to grow at the steady state rate (4.3% per year). The second, in which international prices of oil and coal grow at the rates forecast by the World Bank in 2013. And a final simulation that accounts for the implementation of the FAE by the Colombian government.

Key findings

The results from the simulations show that had international oil prices behaved as predicted in 2014 (before the sudden drop in international markets), the Colombian economy in 2025 would have been 10.4% larger than if growth had continued on average as it had before 2011.

The boom scenario would also generate a 13% depreciation of the real exchange rate and an increase in the share of oil exports, going from 39% of total exports (as expected under the baseline scenario) to 56%. This would result in the share of commodities coming from mining and oil increasing from 53% of total exports in 2011 to 66% in 2025. This increase would be due to an expected increase in oil exports coupled with a decrease in exports of other commodities (see the Commodities Shares charts below).

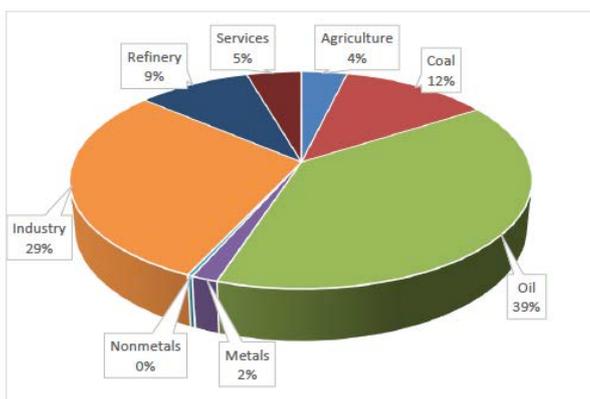
This behaviour conforms to expected Dutch Disease effects: the prices of exportable products are linked to international prices and cannot adjust to remain competitive in the international market.

Furthermore, the combination of fewer exports and less demand for domestically produced goods would lead to reduced domestic production in the sectors other than oil and mining.

In the boom scenario, the demand for unskilled workers in general would be higher than in the absence of the oil boom, but the increase would be entirely due to demand for formal workers (as the demand for informal workers declines).

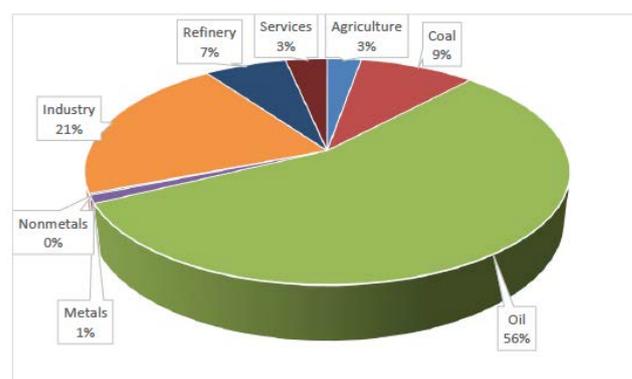
Graph 1: Impact of the oil/mining sector's boom on commodities shares in exports in 2025

Baseline scenario



Source: CGE model simulations

Boom scenario

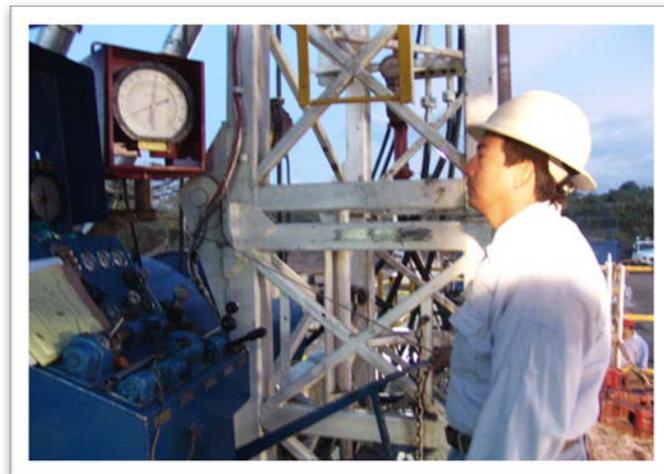


Source: CGE model simulations

Demand for skilled workers also increases more in the boom scenario, again, entirely due to the demand for formal workers.

This means that a boom scenario would also see a decrease in the demand for informal workers. As a consequence, the oil boom would favour formal over informal employment and skilled over unskilled labour.

The researchers found that the policy package implemented by the Colombian government to reduce the potential Dutch Disease effects on the economy did little towards improving the resource shift and spending effects with no



substantial differences between the results of the boom simulation and the FAE simulation.

Implications for policy

The impact of a sustained oil export boom would lead to a reduced demand for informal labour, thereby changing a persistent characteristic of the Colombian labour market in a positive way. However, unskilled workers (especially those employed in the informal sector) would face reduced opportunities for employment. It is therefore recommended that the government increase its efforts to improve both the provision and quality of the education system to fall in line with the expected requirements and behaviour of the labour market.

In the simulation, the FAE does little to reduce the relative erosion of Colombia's export base and the risk of "deindustrialization". A more successful policy intervention would most likely comprise a more determined saving strategy, coupled with an aggressive program of increased spending in the provision of public goods in order to increase productivity in non-boom sectors (such as roads, applied research, education, and infrastructure in general). This would go some way to avoiding "deindustrialization" while also increasing formal employment rates.



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To find out more about the research methods and findings, read the [working paper 2016-10](#)