

Slide 1 Introduction

My name is Bernabé Sánchez and I am a mineral and development economist. I spent the first decade of my career in the British civil service including 3 years as the country economist for the DFID in Malawi. In 2010 I made the move to the private sector focusing on the mining sector. Since 2022 I have spent most of my time analysing the Simandou iron ore project in Guinea, living there for most of the time.

My co-author, Dr Ismael Fofana, who unfortunately cannot be here, is an Agricultural Economist with a trajectory of over 20 years as a CGE-modeller, first with the Partnership for Economic Policy in Canada and then a decade at IFPRI both in DC and Dakar. Since 2023 he has led a capacity strengthening programme at the Ministry of Finance in Guinea focused on modelling the impacts of the Simandou project.

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In this presentation I will:

First, present the context and rationale for the analysis.

Second, provide some of the key assumptions underpinning the modelling.

Third, summarise the results on both the direct fiscal impact of the project and the overall direct and indirect impacts on the broader economy.

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So first I start with some background on the rationale for this analysis.

With annual GDP increases averaging 6.7%, Guinea has been the fourth fastest growing economy in the world since 2016 driven by the boom in the mining sector. As a result, in 2022 Guinea became a (lower) middle income country according to the World Bank's classification.

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The mining boom has been driven up to now by two commodities:

- (1) Bauxite, the ore used to produce alumina and from there aluminium. Guinea's production has multiplied by more than 7 since 2015, and in 2023 it overtook Australia as the largest producer in the world. That's a remarkable feat, given the difference in landmass between the two nations!
- (2) But it has also been about gold, which trebled during COVID. Most (80% in 2020) of this production remains small scale and artisanal, representing a major challenge both for policymakers and for the analyst.

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The challenge has been to translate this GDP growth into human development, into better education outcomes for girls and boys, and longer and healthier lives for everyone. Although there have been slight improvements in its score, Guinea remains firmly in the bottom decile of the UN's Human Development Index distribution.

As measured by the HDI, Guinea is 16 places below where it should be based on its income per capita. As you can see, in terms of income it is actually above Rwanda but is 17 places below in terms of human development.

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Economic growth is now entering a new phase driven by the Simandou iron ore project. There are reasons why this new phase of growth can have a greater impact on people's lives than the current mining boom has had so far:

- Simandou's capital expenditure is bigger than the total of all other investment in Guinea in the previous 10 years.
- Through its shared-use infrastructure the project's footprint impacts every one of the four natural regions of Guinea, unlike bauxite and gold which are regionally concentrated.
- Iron ore has historically been a better market than bauxite and even gold, and that should be reflected in government revenues.

But a good starting point to NOT miss this opportunity is to have a good understanding of the direct impact of Simandou on the public finances and the broader macroeconomic impacts. The analysis that is being presented today is a first step in this journey.

Let me start with a summary of the key metrics of Simandou. We are talking of:

- Two mines run by two different joint ventures, a Chinese-led one in the northern concession and one led by the Anglo-Australian company Rio Tinto further south. Each mine is aiming to produce 60 million tonnes of iron ore.
- The iron ore will be transported along a new railway line measuring over 600 kilometres and which once built will be operated by a joint venture of the joint ventures running the mines. It has been agreed that the railway will be shared with passengers and other cargo.
- The third component is the new port in the coast, with a capacity of 120 million tonnes of mineral export.

All of these are currently under construction and expected to start operating at the end of this year.

What follows are three slides discussing the inputs and assumptions, and a further three presenting the results.

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The first set of inputs refer to the capital and operating costs of the mine and of the infrastructure as well as the tax settings agreed. Rio Tinto shared with investors in December 2023 the final assumptions for the Simfer mine and the infrastructure company la Compagnie du Transguinéen.

Some high level observations from this are:

- (1) As is now well understood, the Government of Guinea benefits from a free 15% equity stake in both the mines and the infrastructure.
- (2) The 0% tax exoneration during the first eight years no longer applies to Rio Tinto – instead there's a reduced 15% rate before returning to the mandated 30% rate.
- (3) The total capital cost for the infrastructure and the Simfer mine only is expected to be over \$18 billion.
- (4) Operating costs and sustaining capex total \$28 per wet metric tonne.

WCS has not made the same data available, so we rely on their published 2020 convention for the tax settings (even though they might also have lost the 0% tax holiday during the negotiations), and for opex and capex we assume similar costs to the Simfer mine.

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The second set of assumptions refer to the profile over time of the capital expenditure. For this we can rely again on Rio Tinto, whose 2024 results were released in February. We assume the level of expenditure achieved in the second half of 2024 is the peak rate, and that it is sustained throughout 2025, with the remaining capex spent all in 2026.

Again, in the absence of other information we have to assume that WCS is following the same expenditure path.

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The final assumption we must make is the price of iron ore. Historical spot prices are summarised on a monthly basis by the World Bank in their Pink Sheet. These prices are

quoted on a delivered China basis, so we must subtract freight. But they also refer to iron ore of a lower grade than Simandou.

Fortunately, we also have the realised prices by AngloAmerican's Kumba mine in South Africa, which also sells higher grade iron ore to China. These show that the higher quality roughly offset the freight the costs.

Based on these sources, we make an assumption that prices will trade in future at approximately their historical ten-year average of \$100/t.

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We bring all these assumptions together in the framework of the IMF's Fiscal Analysis for Resources Industries (FARI) model. The last publicly available excel template is the 2023 version, which we populate with the data to produce this profile of Government revenues over time from 2026 to 2040.

The chart illustrates how revenues grow as production expands over 30 months to full production in 2029, and then when corporate tax returns to its regular rate of 30% by the middle of next decade.

We show revenues at the 10-year average price of \$100/t but also at what we estimate to be the breakeven price for the investment , which is \$70/t.

Under these price assumptions, the direct fiscal impact of the project for Guinea is estimated at between \$0.8 billion and \$2.7 billion annually at full production before 2035. Corporate tax rates increase in 2035, resulting in higher government revenues of between \$1.9 billion and \$3.5 billion thereafter.

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We have built separate sheets in the FARI model for each of the two mines and also the infrastructure company.

It is interesting to observe the breakdown of contributions to the state from each of the entities.

An important observation is that at the breakeven price of \$70/t all entities contribute roughly equal amounts to the state, but the mining JVs provide upside in the case of higher iron ore prices.

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Ismael Fofana has built a CGE model of a small open economy in which economic agents are price takers for both exports and imports. The dynamics are recursive, with no future expectations taken into account. The model is calibrated to the Social Accounting Matrix for the year 2021.

The new CGE model is run in GAMS to project the Guinean economy over the period 2022-2040 according to three scenarios: without Simandou, and with Simandou at \$70/t and \$100/t iron ore prices. This assessment assumes that the government's windfall revenues from the project are ALL invested productively in the local economy.

The first set of results we present are those for the real exchange rate. In line with the Dutch Disease literature, we see significant appreciation (over 5%) during the peak years of investment, which happen to be last year and this year.

An interesting result is that our assumption that ALL additional Government revenues get re-invested productively reverses entirely the real exchange appreciation story once the initial investment period is complete.

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Next I show you the GDP impacts, broken down by direct and indirect impacts for each of the two price scenarios.

The chart shows that direct impacts dominate, representing about 85% of the total.

Indirect impacts are negative during the initial investment period, as other exports shrink and non-project related imports increase as a result of the real exchange appreciation.

As the additional government revenues are ploughed into investment, indirect impacts also become positive in the mid to longer run.

The incremental GDP ranges from \$7.8 billion in 2030 at a \$70/t iron ore price to \$13.4 billion in 2035 at a \$100/t iron ore price.

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I use a final slide to focus on the impact of Simandou on GDP growth rates and make an observation that was already visible in the previous slide.

This observation is that without structural change growth rates return to a lower path than in the Reference case once Simandou production is fully ramped up. The reason

for this is that in the Simandou simulations iron ore exports represent between 22% and 28% of GDP by 2030 and they stop growing.

Further analysis is needed to estimate the impact of policies that could lead to additional and sustained growth over time. In particular, the literature identifies three policy areas that could drive the structural transformation of the economy:

- First, local content policy and investment in sectors with strong synergies with mining, both upstream but also downstream processing.
- Second, the example of Brazil's largest iron ore corridor shows that shared-use infrastructure can have an impact on the productivity of the agricultural sector.
- Finally, modelling of public expenditure choices has shown that additional investment in education could lead to a sustainable increase in economic growth in Guinea.

There is also a need to analyse the impact of Simandou investment on poverty, income distribution and gender inequality.

Over the next few years, Guinea and the Simandou project should provide a rich source of research and policy evidence on how to translate mining-driven economic growth into sustained and broader-based human development.

I hope many other researchers will join us in building this evidence base!