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The Resource Curse - A Natural Experiment

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Abstract

This paper compares Mauritius and Trinidad and Tobago which have a very similar climate, history, institutional framework, ethnic composition, size, etc., but are different in the natural resources they possess. Trinidad and Tobago has achieved a higher per capita GDP based on its petrodollars, but Mauritius has achieved a more robust and stable growth path and a diversified economy based on an export-oriented economic strategy. Trinidad and Tobago is highly dependent on the world market prices for oil and gas and engages in a smaller variety of economic activities, giving it a worse perspective for its future economic development. It appears that this curse is mainly working through Dutch disease effects.

JEL Classification: N56, N57, Q32

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“Le don d’une plante utile me parait plus précieux que la découverte d’une mine d’or, et un monument plus durable qu’une pyramide.” Bernardin de Saint-Pierre (Voyage à l’Isle de France, à l’Isle de Bourbon et au Cap de Bonne-Espérance, 1773)

1 Introduction

Whether there is a resource curse is still debated, especially the conditions under which a country can overcome the curse and make it a blessing.¹ This paper presents a natural experiment to compare the development outcome of a substantial natural resource deposit. The intellectual father of this experiment is Bernardin de Saint-Pierre who in his account of a journey to Mauritius in 1773 already suspected that a useful plant can be worth much more than a gold mine (or an oil-deposit from today’s perspective). The experiment started at the beginning of the 19th century when the British brought Trinidad & Tobago and Mauritius under their control and guaranteed a very similar history, institutional and economic development of these islands. At the beginning of the 20th century, oil was discovered in Trinidad. This is the beginning of the different treatment of both countries.²

Although both countries started with the same useful plant (sugarcane), Trinidad moved away from agriculture as the petroleum industry started to expand. Mauritius stayed to the “useful plant” and only very recently diversified its economy into manufacturing and services. It seems that de

¹See Collier & Venables (2010) and Frankel (2010*b*) for recent surveys on the resource curse. Another interesting contribution is Brunnschweiler & Bulte (2008) who investigate whether the resource curse is only a statistical artefact.

²In all sections “Trinidad” and “Mauritius” will mostly refer to both the island and the country and it will be clear if only the island is meant.

Saint-Pierre made a good prediction as Mauritius has a better economic perspective for the next decades, despite having a lower per capita GDP than resource-rich Trinidad.

This paper shows that Trinidad and Tobago suffers from the resource curse through Dutch disease effects, the petroleum industry has crowded out other forms of economic activities, especially sugar cane production. As soon as its natural resources run out, Trinidad and Tobago will have problems catching up with Mauritius and its decades of experience in other sectors (agriculture, textiles and tourism).

This natural experiment is still running, but as soon as Trinidad has depleted all its resources we can say something about the long-run effects of such windfalls and especially if Trinidad will suffer from lacking learning-by-doing in other sectors. The preliminary result presented here already show that natural resources can be a curse even for countries with good institutions. A smaller economic base and a less diversified economy might result in a long-run resource curse that even includes lower GDP per capita for Trinidad & Tobago. Although the similarity between these two countries is stunning, I am not aware of any research comparing them.

The petroleum sector in Trinidad has crowded out sugar and other (potential) export sectors through the exchange rate, making it difficult for the country to prepare for the post-petroleum time (under the assumption that learning-by-doing is an important feature of other export sectors). The natural resource endowment does also seem to undermine institutions and stimulate inefficient public policies. The findings presented in this paper are very much in line with the current literature as it is surveyed in e.g. van der Ploeg (2011).

The structure of the paper is as follows. The next section compares Trinidad & Tobago and Mauritius in terms of geography, (economic) history,

culture and institutions. Section 3 presents some statistics on both countries to see their current state of development and section 4 concludes.

2 Trinidad & Tobago and Mauritius

For an excellent introduction to the history of Mauritius and the puzzles that still surround its economic success see Frankel (2010*a*). Sections 2.2 and 2.3 are mainly based on Frankel (2010*a*) and Mehta & Mehta (2010). An excellent overview and analysis of the problems the Trinidadian economy faces is given by Artana, Auguste, Moya, Sookra & Watson (2007).

2.1 Geography

The island-nation of Trinidad and Tobago is located in the southern Caribbean, close to Venezuela. The main island (Trinidad) is 5131 km² large, mountainous and laying outside the Hurricane belt. Hurricanes hit the island only very occasionally, making it especially suitable for agriculture. The main dependency is Tobago, which is located to the north-east of the main island. Tobago is with 300 km² much smaller. All other islands are uninhabited. The climate is tropical with a dry season in the first half of the year and a wet season in the second.

Mauritius on the other hand located in the Indian Ocean, about 900 km east of Madagascar. The main island (Mauritius) is around 2040 km² large and mountainous. Mauritius occasionally gets affected by cyclones (as hurricanes in the Indian Ocean are called), making it in that way less suitable for agriculture than Trinidad. The main dependency is Rodrigues, which is located to the north-east of the main island. Rodrigues is with 109 km² much smaller than Mauritius. All other islands have combined a population of several hundred people. The climate is tropical with a warm and dry

winter from May to November and a hot and wet summer the rest of the year.

2.2 General History

Subsequent to the arrival of the Spanish in 1498, Trinidad was inhabited by Arawakan-speaking people, whose descendants still live on the island, but their number is extremely small. Mauritius did not have an indigenous population when the Dutch first tried to settle on the island. They first came to the island in 1638, but abandoned Mauritius in 1710. The French took over in 1715, started to develop the island, but lost it to the British in 1810/1814. It remained a British colony until independence. Trinidad & Tobago on the other hand was first colonized by the Spanish, who lost their colony to the British in 1802. It also remained a British colony until independence.

Both colonies were used by the British to produce and process sugarcane. In the beginning, this labor-intensive work was done by African slaves. After the abolition of slavery and the end of the slave-trade, the British brought contract workers from India to work on the fields. The first contract workers arrived in Mauritius in 1834 and in Trinidad in 1845. Although theoretically free men, these people worked and lived under circumstances comparable to what the slaves had to suffer before.

Both islands were not only important producers of sugar, but also of strategic importance. Mauritius was long used as a stopover on the long way to India. During the Napoleonic wars, the French used the island to attack British ships. Mauritius lost its status of strategic importance throughout the centuries (especially with the opening of the Suez channel in 1869), Trinidad & Tobago remained important as petroleum, natural gas and asphalt were discovered on the island and offshore. During World War II, Trinidad &

Tobago was an important source of crude oil for the USA who also had a military base on Trinidad.

Before these natural resources were discovered in Trinidad, the economic structure of Trinidad & Tobago and Mauritius were quite similar. Both countries lacked natural resources, suffered from remoteness to the important world markets, had a small domestic market, virtually only produced a single crop (sugar) and were therefore highly dependent on its exogenous world-market price, had a population that was divided across ethnic and religious lines and a tropical climate including occasional devastating cyclones (especially in the case of Mauritius). Nobel prize winner Meade (1961) based his negative outlook of the development of Mauritius on these facts.

Despite all these obstacles, Mauritius became an independent nation in 1968. Trinidad & Tobago, having a better outlook due to their natural resources, gained independence in 1962.

2.3 Economic History

In the 1960s, the focus of Mauritian economic policy was on import substitution. This resulted in low growth rates and high unemployment. Only in the 1970s did this change as the government moved the economic focus outwards and started to apply an export-led growth strategy that was supported by a high sugar price. In the late 1970s, the economy was hit hard by the oil-price shock and the global recession. Inflation increased, growth rates dropped and the IMF had to step in with a structural adjustment programme. From the early 1980s on, the economy got back on track by diversifying into manufacturing and tourism. Today only around 5% of the GDP comes from agriculture (mainly sugarcane).

Over the years, Mauritius enjoyed preferential access to Western markets under the Multi Fibre Arrangement (for textiles) and the Lomé and Cotonou

Conventions (for sugar). With the liberalization of world trade, these agreements started to phase out around 2004. Although this liberalization (which led to an output drop in the textile sector of 30%) was followed by a sharp increase in food prices (which Mauritius has to import) as well as the global recession, the government further improved economic conditions to dampen these adverse effects. It did so by simplifying the tax system, reducing red tape and other pro-business measures.

Trinidad & Tobago was also actively setting up an economic policy in the 1960s. These policies mainly included state interventionism and monopolies, but did not bear the fruits the country hoped for. With the oil-booms the country took the chance to change its economic model and transformed into an open and trade-oriented economy. For many years, the main economic activity was based on crude oil, but the country recently started to focus on natural gas as well as encouraging (less successful) other economic activities.

From a similar economic starting point (mono-crop plantation economy based on the exploitation of workers), Trinidad transformed into a natural-resource based economy with no need to support other economic activity (it scores 81 on the “Doing Business” ranking by the World Bank). Mauritius on the other hand transformed into a diversified economy, based on a wide range of manufacturing industries as well as tourism. One might argue that Mauritius has a natural advantage over Trinidad & Tobago to attract tourists, but the virtually undeveloped northern coast of Trinidad has a great potential as a tourist destination and also Tobago has a lot of potential to further increase its gains from tourism. Especially since Trinidad does not suffer from Hurricanes and many people sailing in the Caribbean already use its harbors to dock their boats during the hurricane season. Mauritius on the other hand has a disadvantage for its agricultural and manufacturing sector

as it is more exposed to cyclones and that it has longer trading routes for its manufactured goods than Trinidad.

But Mauritius has established a pro-business environment and scores as number 17 on the “Doing Business” Ranking by the World Bank. Its economy is export-oriented, competitive and diversified, yielding growth rates that are not only robust, but also very stable given that it is a small open developing country. Especially its liberal trade policies and its high level of financial development (especially concerning foreign direct investments) have contributed to this success story (Subramanian (2009), Boopen, Kesseven, Jashveer & Binesh (2010)). Sugarcane is still grown on large parts of Mauritius, but high population density, development projects and global competition put pressure on this industry.³ Whereas Mauritius still has a sugarcane industry which can compete on liberalized world markets, Trinidad & Tobago recently officially ended cultivation of sugarcane, which had been a subsidies industry for many years.

2.4 Culture and Institutions

Both Mauritius’ and Trinidad’s main ethnicities are people of east-Indian descent. They make up 68% of the population in Mauritius and 40% of the population in Trinidad & Tobago. Descendants of former slaves make up 27% (Mauritius) and 37.5% (Trinidad and Tobago). Notable minorities are people with Chinese and European roots. Both countries have a population of around 1.3 million, with a few ten thousands living on Rodrigues and Tobago.

Both countries are stable democracies with free and fair elections, good human rights records, a free press, etc. (only Trinidad & Tobago had a small

³Subramanian (2009) provides an excellent summary of Mauritius economic history. For a more detailed analysis see Mehta & Mehta (2010).

coup attempt in 1990). Parliament and voting system of both countries are based on the British system, the legal system in Trinidad & Tobago is based on the British system as well; Mauritius' legal system is based on French civil law with elements of British common law. Both countries also share a common language for official purposes (English), but in daily life Mauritians prefer to speak a French-based Creole. Many Mauritians are therefore fluent in three languages (Creole, French, English).

3 Trinidad & Tobago and Mauritius - Current State of Development

If not stated otherwise, all data come from the World Banks World Development Indicators and are usually the latest data available. The focus is on statistics that can easily be compared. Nevertheless, especially when comparing data from different sources, interpretation should be done carefully.

GDP, Public Finances and Income Inequality

Per capita income in Trinidad & Tobago is substantially larger than in Mauritius (figure 1), but Trinidad & Tobago has a more volatile economy (see figures 2, 3 and 4). Looking at figure 2, we see where this volatility comes from. The GDP of Trinidad & Tobago follows the oil price⁴, which also explains the recent sharp increase in income. Mauritius suffered from the oil-price shock at the end of the 1970s, but since then managed to grow on a very stable pace.

Trinidad seems to be substantially richer per capita than Mauritius, but it is questionable whether the PPP data presented actually truthfully represent differences in the price level of both countries. The data presented

⁴source: International Financial Statistics (IMF)

in Figure 1 are World Bank data based on different version of the reports of the International Comparison Program (ICP (2008)). Whereas Trinidad was part of the 1993/1996 round, it did not participate in the 2005 report and its GDP levels at PPP (and its price levels in the different years) had to be estimated. These estimations yield that the price level in Trinidad & Tobago increased by roughly 3% between 1993 and 2007. The Central Statistical Office of Trinidad and Tobago (CSOTT) on the other hand measured an increase of the price level between 1993 and 2007 of 99.18%. Assuming that the CSOTT statistics are a better reflection of the changes in the price level in Trinidad and Tobago than the out-of-sample estimation of the 2005 ICP report, the per capita GDP data in Figure 1 are biased upwards and the difference between the two countries becomes much smaller.

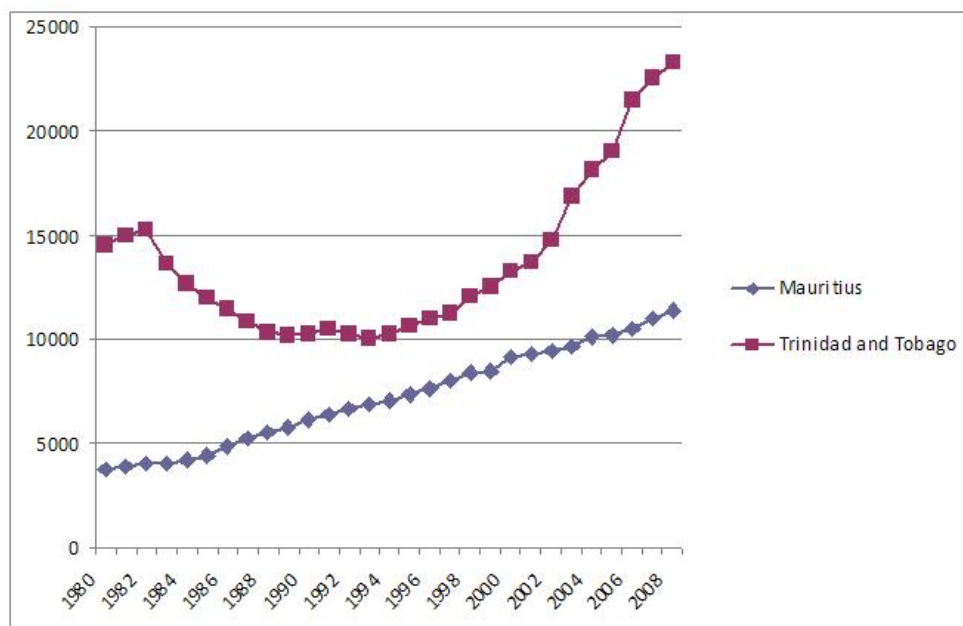


Figure 1: per capita GDP of Mauritius and Trinidad & Tobago; in constant USD (PPP)

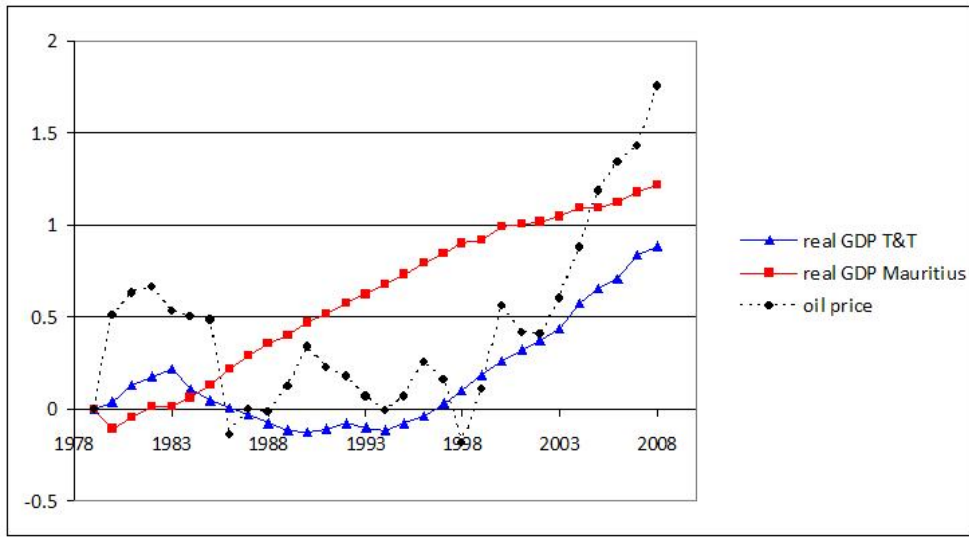
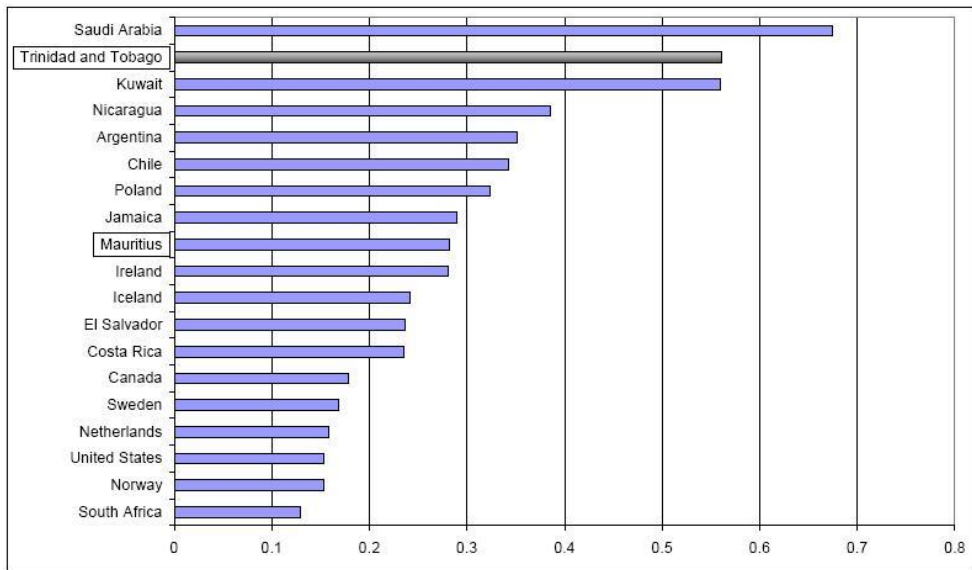


Figure 2: real GDP and oil price (base year: 1979 = 1; log scale)



(*) coefficient of variation of real GDP per capita at constant prices of 1996 terms (HP filtered).

Figure 3: coefficient of variation of real GDP per capita at constant prices (in 1996 terms), source: Artana et al. (2007)

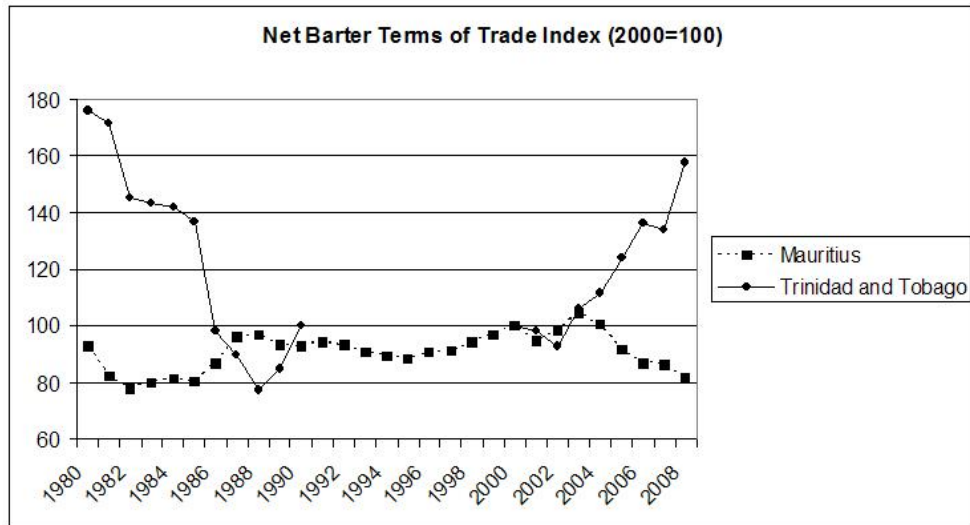


Figure 4: terms of trade, source: Worldbank (2010)

Both countries partly financed their growth through public debt, which stands at 36.1% of GDP in Mauritius (2008) and is expected to reach 49.4% of their GDP in Trinidad & Tobago in 2010⁵. Although blessed by resource revenue windfalls, Trinidad & Tobago has a higher public debt than Mauritius (in percentage of GDP), supporting the concept that resource revenues weaken the incentive for state building (see Besley & Persson (2010)).

In 2005, both countries had a Gini coefficient of 39. This values has not changed much as Mauritius scored 37 in 1987 and Trinidad 39 in 1998.⁶

⁵Budget Statement 2011 of the Minister of Finance of Trinidad & Tobago on September 8, 2010. This number does not include the assets in the “Heritage and Stabilisation Fund”, Trinidad’s sovereign wealth fund, which (at the end of 2009) sum up to around 10% of Trinidad & Tobago’s GDP.

⁶Source: Mauritius: CIA World Factbook (09-13-2011), Trinidad & Tobago: *Analysis of the Trinidad and Tobago Survey of Living Conditions* (2005)

Business Environment and Exchange Rates

Whereas Trinidad has a higher volatility in their GDP, Mauritius has a more volatile nominal exchange rate (figure 5). The Mauritian Rupee (MUR) has substantially weakened and experienced some sharp movements during that period. On average, Mauritius had a competitive exchange rate, supporting export-oriented sectors (Subramanian (2009)). The Trinidad & Tobago Dollar (TTD) on the other hand was virtually trading at a constant rate.

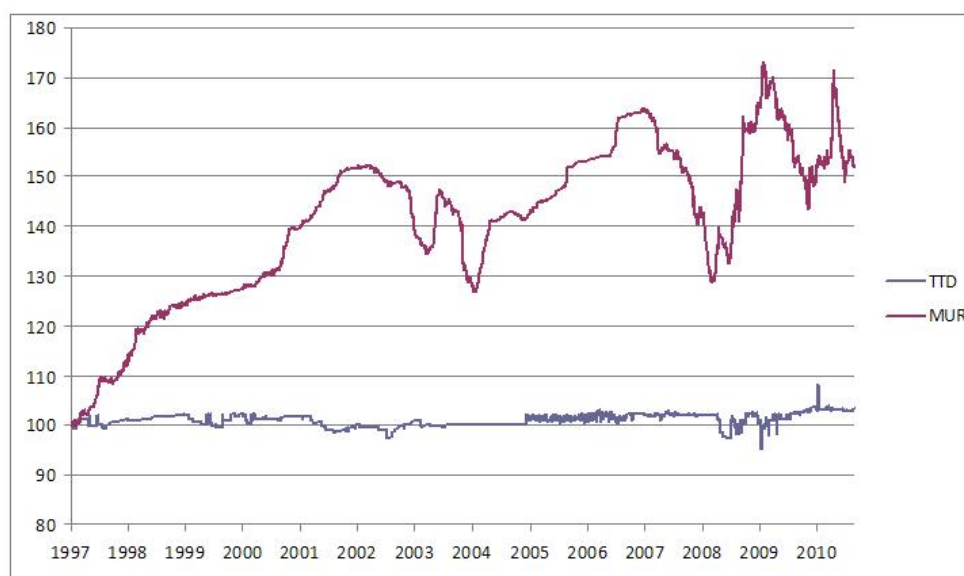


Figure 5: exchange rates of MUR and TTD to USD, base year 1997, source: Datastream

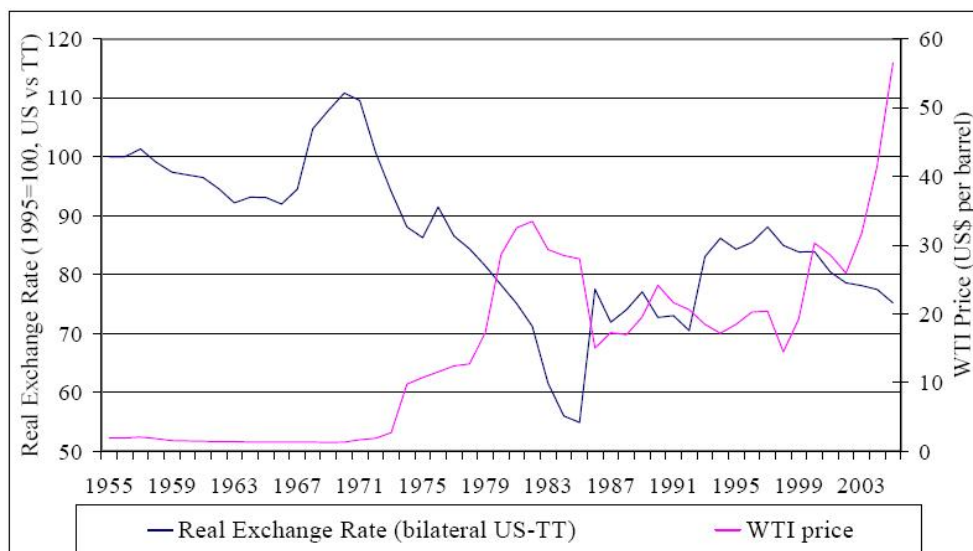


Figure 6: real exchange rate and oil price, source: Artana et al. (2007)

Thanks to high inflation rates in Trinidad in recent years, the TTD has been appreciating against the USD, lowering the competitiveness of Trinidadian exporters (figure 6). The appreciation of the real exchange rate has crowded out other sectors in the Trinidadian economy. As we can see in figure 7, sugar cane production has been decreasing in Trinidad from the mid 1970s onwards, a time when the real exchange rate was appreciating (figure 6). Although the real exchange rate depreciated again, from the mid 1980s on, sugar production was leveling out at a lower level than before the appreciation. One reason could be that learning-by-doing (or other externalities) are an important feature of this industry and temporarily losing competitiveness damages this sector also in the long run.

Another interesting aspect of figure 7 is that sugar cane production has been much lower in Trinidad than in Mauritius since 1961, although Mauritius is much smaller than Trinidad and has a higher population density.

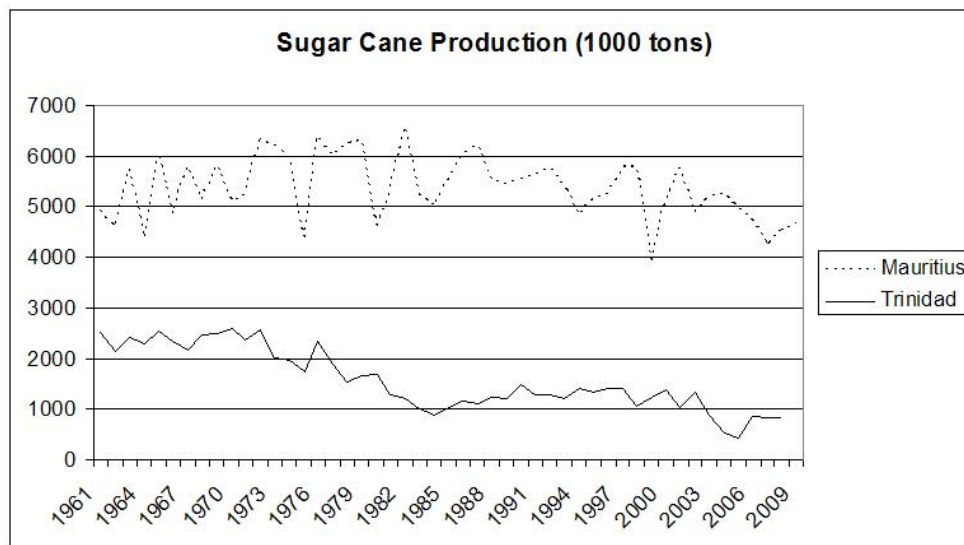


Figure 7: sugar cane production, source: FAO (2010)

But the agricultural sector is not the only one that seems to be influenced by the petroleum and gas industries. Overall, the number of registered business in 2009 was much higher in Mauritius (120,071) than in Trinidad & Tobago (29,483).⁷ But whether this is a direct Dutch Disease effect or an indirect effect through governmental policies is not clear as it is easier to start and run a business in Mauritius than in Trinidad. Mauritius scores higher on the Global Competitiveness Index (World Economic Forum) than Trinidad. It comes 55th with a score of 4.32, whereas Trinidad & Tobago comes 84th with a score of 3.97. The main pillars of this index are institutions, infrastructure, macroeconomic environment, health and educational statistics.

⁷Source: Central Statistical Office of Trinidad and Tobago and Central Statistics Office of Mauritius.

4 Conclusion

Mauritius and Trinidad and Tobago have a lot of common features, a very similar history and ethnic composition. Their institutional frameworks as well as geography and population size are very similar. This makes it possible to treat the development of these two countries as a natural experiment as the only important difference between these two nations is the fact that Trinidad has important natural resources. The outcome of this experiment is that although Trinidad and Tobago has a larger per capita income, its volatility is much higher than in Mauritius. And although both countries have a very good institutional framework, Trinidad & Tobago has great difficulties translating the highly volatile oil price into stable economic growth.

Mauritius on the other hand started with a very negative economic outlook around independence. But good economic policy helped this poor country develop itself towards a relatively rich and stable economy. Part of this economic policy strategy is to have a pro-business, export-oriented environment. Trinidad & Tobago did not have the pressure to diversify its economy; great windfalls generated enough revenues to increase national income substantially, resulting in a mono-industry economy.

Sharing similar exogenous conditions such as geography, disease environment and a de facto missing pre-colonial history made these places attractive for colonization for strategic and economic reason. And sharing similar exogenous conditions results in institutions that are very similar (Sokoloff & Engerman (2000)), especially if both countries had been British colonies for a long time. But although both countries share similar institutions, they have been experiencing very different economic outcomes over the last decades. Although Trinidad is richer than Mauritius, it has a very volatile economy, a less attractive business-environment and a less diversified economy. This

resource curse Trinidad is suffering works mainly through Dutch disease channels and missing learning-by-doing (in agricultural and other potential exporting sectors) as well as undermining and stimulating inefficient policies (Mauritius scores higher in all governance indicators (in 2008) of Kaufman, Kraay & Mastruzzi (2010)) than Trinidad.

The data presented indicate that Mauritius is better prepared for the future. It does not (anymore) rely on preferential trade agreements, but has a competitive and diversified economy, whereas Trinidad & Tobago relies on its natural resource extractions and has not yet been successful in widening its economic base. The last decades Trinidad had a higher GDP per capita than Mauritius, but if that will hold in the near future depends on the price of natural gas. If this price decreases, Mauritius could actually overtake Trinidad in a few years time with a higher GDP per capita. Especially since Mauritius spends more on research and development than Trinidad (0.37% vs. 0.12% of their GDP⁸).

An appreciating Trinidad and Tobago Dollar seems to have diminished competitiveness of the non-petroleum sectors. More efforts are needed by the government of Trinidad & Tobago to enhance economic activity, to diversify its economy and to stabilize economic growth rates. One aspect could be to start growing sugarcane again on a large scale (which the new government is considering), especially since Trinidad will enjoy preferential excess to European markets under the CARIFORUM-EU Economic Partnership Agreement, which will bring duty and quota free access of Caribbean sugar as of October 2015. Other opportunities are the already-mentioned tourism sector, but also more downstream products from oil and gas. Trinidad & Tobago could also learn from Mauritius' success with its export processing

⁸average value 2000-2005, source: WDI

zones. But the baseline is that Trinidad & Tobago needs to stimulate research and development as well as entrepreneurship and export-oriented industries. This needs a holistic approach of subsidies, investments, but also a different exchange-rate policy. Keeping the nominal exchange rate fixed (within a very narrow band) against the US dollar is not the best strategy to support other non-petroleum industries if the country suffers from high inflation rates.

The resource curse Trinidad & Tobago is experiencing is less one of low GDP (like Nigeria), but one of negative economic perspectives. It seems that for a country to make natural resources be a blessing in the long run, it does not only need very good institutions, but also good policy decisions and that even countries as developed as Trinidad & Tobago have great difficulties translating their resource wealth into long-run development.

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