

Martin on Dutch Disease

Dutch Disease is a term coined by The Economist magazine in 1977 to characterize the fear of de-industrialization of a country resulting from a boom of a natural resource. The phenomenon first came to light when, in late 1950s and leading into 1960s, the Netherlands discovered new natural gas deposits in the North Sea within its jurisdiction. The discovery, coupled with rising gas prices, led to an influx of foreign currencies into the Netherlands. While this seems to be good news, exports of the country suffered as a result of appreciating guilder (the Netherlands' domestic currency at the time). By 1967, Netherlands' exports as percentage of GDP declined from around 45% in 1960 to 39%. Exports of natural gas not only crowded out exports of other sectors; it disproportionately lowers other exports due to resource mobilization into the natural gas industry. Fortunately for the country, its exports proved to be resilient, and the much-feared de-industrialization did not materialize. Many other countries, including much of OPEC and many African nations, among others, were not as lucky and suffered from prolonged subdued economic growth. This paper characterizes the symptoms of Dutch Diseases, suggests theoretical explanations of the observed consequences, and offers some cures of the phenomenon. The paper then concludes with case studies of countries that show symptoms of the Dutch Disease.

The Causes

The Dutch Disease, in the original sense, focused on a rapid, sudden influx of foreign currencies following a discovery of natural resources that the country can export. Recently, the term is used more broadly to encapsulate the notion where a country loses competitiveness due to a rapid influx of foreign currency. Therefore, being a recipient of foreign aid, finding techniques that lower cost of natural resource gathering, increase in global commodity prices, and changes in trade structure can all be sources of the Dutch Disease.

Receiving inflows of foreign currency should be a good thing: it increases official international reserves of a country and strengthens its resilience against global turmoil. It also increases national wealth and opens up more trading opportunities. Two effects are observed from such inflow: the spending effect and the resource mobilization effect. The spending effect is when the population becomes richer and consumes more. This causes import demands to rise and domestic absorption to increase. The resource mobilization effect is when labor moves from other sectors to the industry through which foreign currency comes in. This is a result of that sector being richer, thus employers being able to produce more and give higher wage to their workers. However, when the inflow of foreign currency is drastic and abnormally large, and especially when it is coupled with poor wealth management, that inflow can cause trade to falter, investment to fade, and growth to slow. The influx adversely affects the economy through exchange rate channel and investment channel. In the exchange rate channel, real currency appreciation is the source of lost competitiveness. In the investment channel, growth is slowed in the long term due to lower investments in the productive resources and movement of labor to the lower value-added sectors.

Currency Appreciation

The real appreciation of a domestic currency occurs regardless of the country's exchange rate regime, and whether the transaction is denominated in international currencies (euro, U.S. dollar, British pound sterling, Japanese yen, and Chinese yuan) or in domestic currency.

Under a floating exchange rate regime, the value of the domestic currency is allowed to fluctuate according to demand for and supply of the currency in the market with minimal intervention by the monetary authority. Thus, when a country increases its exports, importers need to convert more of their currencies to the exporting country's currency to fund their increased purchase, increasing demand pressure on the currency. Even if the transaction is denominated in an international currency, the exporters still need to convert that foreign currency to their domestic currency when they repatriate the fund, driving up demand pressure on the domestic currency in the same amount. That is, all else equals, the domestic currency is expected to appreciate when a country increases its exports.

An appreciating currency is detrimental to the country's export. Even if domestic price of the product remains constant, it is more expensive when translated into other currencies because it takes more of foreign currency to buy the same amount of domestic currency. Thus, an appreciating currency makes the export more expensive to international buyers, thereby reducing quantity demanded in the market. The country has lost its competitiveness in the commodity being exported.

Under a fixed exchange rate regime, the country's monetary authority fixes the nominal value of its domestic currency to a certain amount of a reference currency, usually the U.S. dollar, or a basket of currencies. Although market mechanism is not at play to determine currency value when the country increases its exports, there is still an increased inflow of foreign currency into the economy. This inflow, if managed poorly, may increase money supply within the economy, causing people to be nominally richer, while the amount of output is still constant. This, in turn, causes domestic inflation, which also drives up prices of exports due to higher labor wage and domestic absorption of products (reduced supply lowers amount of goods available for exporting). The higher export prices decrease quantity demanded in the international market.

Lower Investments

The Dutch Disease can hurt investment in two ways. First, when the economy is booming, monetary theory suggests that the monetary authority increases policy interest rate to keep the growth in-check and reduce inflationary pressure. This higher policy rate, however, skews investments from productive real sector to monetary sector because investors in the financial sector obtains higher returns on capital. In contrast, business owners who would like to invest in productive capacity often need to borrow funds at a higher interest rate, driving up their actual cost and opportunity cost. Second, commodity prices are notoriously volatile. For producers to invest in expanding their productive capacity or improve manufacturing process, they need to be adequately certain of future prices. But since the prices of these commodities are determined in the world stage and are hardly predictable, producers usually decide to defer their investments due to lack of certainty.

The effect of lower investment is worsened by the fact that, in reality, when natural resources run out, the country will have to revert to the sector it used to export before discovery of natural resources. This sector is usually manufacturing, which needs a long period of learning by doing. In other words, it's not as easy to go back to a sector as it was to leave it in the first place. Long periods of inactivity in manufacturing can cause the country to lag behind other world players, and permanently lose comparative advantage in that sector.

The Dutch Disease can be particularly strong in countries where there is oligopolistic banking sector and centrally-agreed labor wage. When banking sector is oligopolistic, financial integration is not as deep and free as it should be; less buffer is available to absorb larger influx of capital and smaller pool of funds is left for investments in productive sector. When labor wage is centrally negotiated, wage is sticky downwards but flexible upwards, so the wage differentials across industries are stronger and can remain so for a longer time. This drives up motivation for labors to mobilize, causing the exodus into lower value-added industries more severe.

The Cures

To long-term economic effect of the Dutch Disease depends on whether the influx of foreign currency is expected to be transitory or permanent. When the influx is expected to be temporary, it is obviously a disruption to trade structure whose effects need to be dampened. When the influx is expected to be permanent, economists split on whether the phenomenon is a disease that needs to be cured at all.

In the case where foreign currency influx is temporary, foreign exchange intervention should be implemented to prevent domestic currency from appreciating too quickly. The monetary authority can sell domestic currency in exchange for foreign currency with the view to offset demand imbalance in the market. Although the result of this intervention could be to drive up inflationary pressure in the economy, thereby driving up export prices, many measures exist to prevent such outcome. Two of such measures are fiscal and structural policies.

On the fiscal side, the fund can be used to invest in foreign assets which provide a stream of cashflow into the country over multiple years. This reduces income volatility and also increases currency stability. Examples of these funds include Government Pension Fund in Norway, Stabilization Fund of the Russian Federation, the State Oil Fund of Azerbaijan. Alternatively, government could direct this income to import-heavy expenditures so that higher income does not put pressure on domestic supply of final goods and services.

On the structural side, immigration policy could be relaxed to bring in more labor supply. The larger workforce increases domestic supply of goods to reduce price effect of increased domestic demands. Immigration labor also increases labor supply and demands lower wage, helping companies keep production costs down and the country keep its competitiveness.

When the inflow of foreign currency is expected to be permanent, then the pain is in sectorial adjustment of resource utilization. Resource mobilization is not perfect, so the time it takes for people to move from one sector to another is toxic both politically and socially. Also, manufacturing is the sector that generates

learning by doing, the deprivation of which can cause human development to slow and long-term growth to suffer. The country suffering from long-term Dutch Disease should train its worker to compensate for lower learning by doing from the manufacturing sector. To promote domestically-driven economic growth, the country must increase its middle-income population size by investing in infrastructures that improve business environment such as rail transport, legal frameworks, property and intellectual rights, and trade institutions. Alternatively, it could invest to diversify its exports to dampen the effect of possible future commodity price crash. Investment in education is needed to improve its human capital to export in the high value-added sectors or skilled service sectors.

Case Studies

The symptoms of Dutch Disease are that of appreciating currency, lowering of manufacturing employment and output, and international trade being highly correlated to price of certain commodities. Since around the year 2000, Russian Federation seems to exhibit these signs of the disease. This coincides with the time when the Soviet Union fell apart and the country relies on oil export to support its economy. In 2017, Russia produces upwards of 10 million barrels of oil per day, making it the largest non-OPEC oil producer the second largest oil producer in the world (second only to Saudi Arabia). Its production capacity is around one-third that of all of OPEC combined. Arguably, Russia's economy is heavily dependent on oil to stay afloat. From Fig. 1, Russian's domestic currency, the ruble, is plotted, in real effective exchange rate terms (rhs), against crude oil price (lhs) and GDP (rhs). GDP index and crude price index uses 1990 as the base year, while REER uses the year 2010. Strong trends exist between crude price and REER and crude price and GDP. These two trends seem to have started around the year 1999-2000 and have persisted ever since. This shows that oil price is a major determinant of

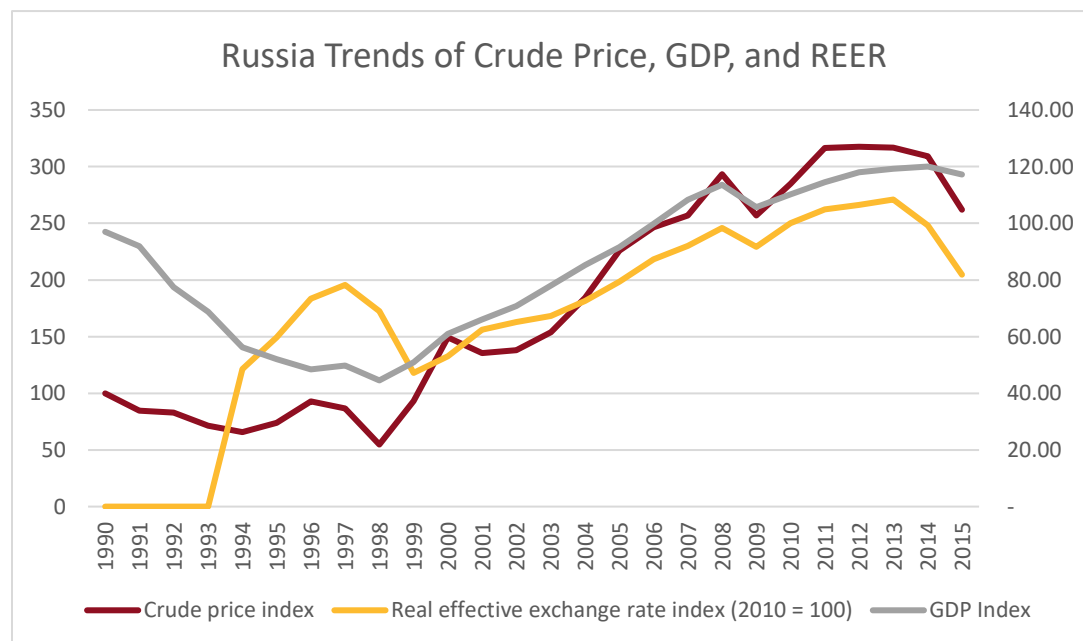


Fig. 1: Trends of crude price (lhs), Russian GDP (rhs), and ruble REER (rhs)

Russia's economic output.

In the next two figures, Fig. 2 and Fig. 3, employment in Russia and GDP components are examined. Specifically, the Dutch Disease predicts that there should be movement of labor away from manufacturing sector into the booming commodity industry and service sector. Since employment data from world bank aggregates employment in oil and petroleum sector into industry employment, the reduction in employments in industry can only be marginally observed. However, employment in service increases significantly. This signifies that there is at least mild industrialization in the economy. Data in Fig. 1C confirms this observation, where, starting since 1990, there is a downward trend in industry contribution to national output, while contribution from services sector has been rising.

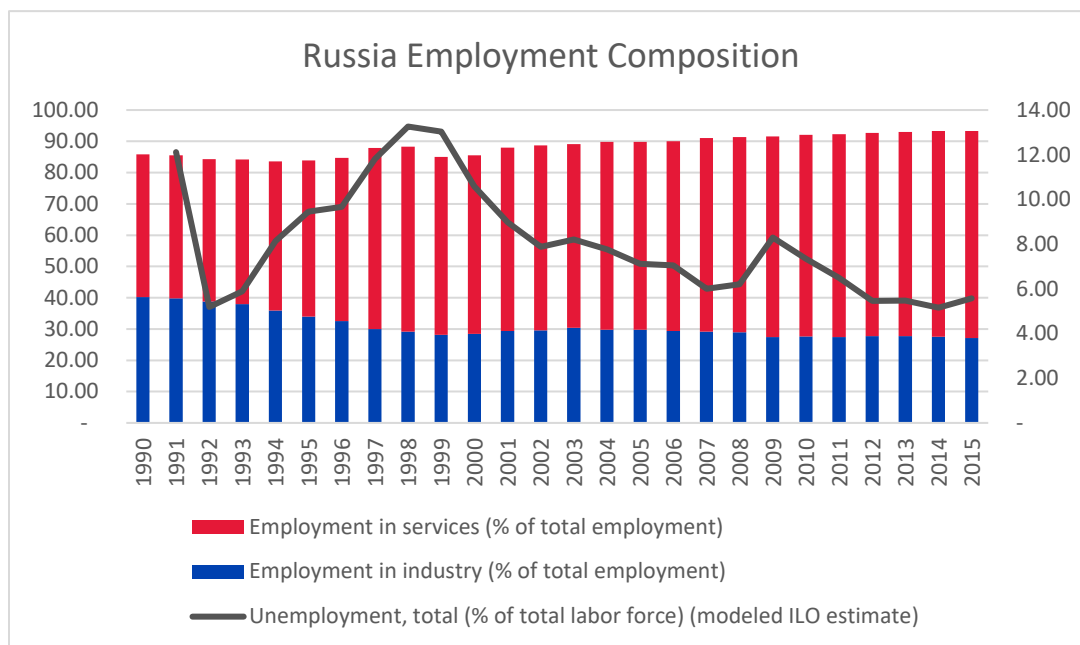


Fig. 2: Proportion of Russian labor employed in industry sector (ISIC 2-5) and services sector (ISIC 6-9) (lhs) and unemployment rate (rhs)

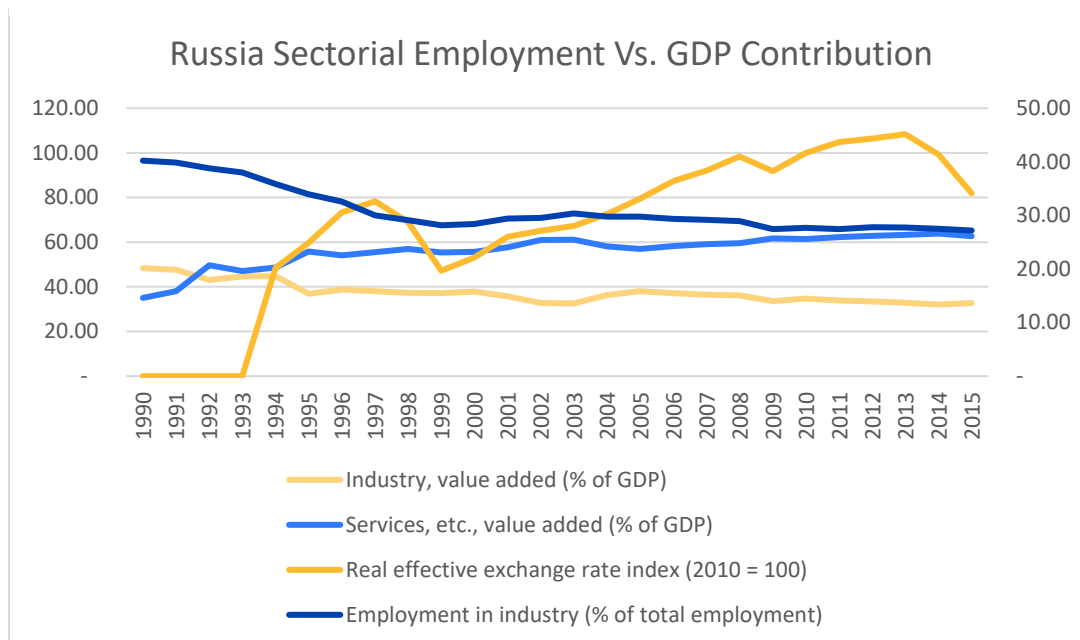


Fig. 3: Breakdown of Russia GDP into industry and services sector

As Kalcheva and Oomes (2007) noted, while this observed trend in Russia GDP composition is consistent with a contraction of the Dutch Disease, other explanations may be possible. For an example, there is also a global trend towards services sector, especially in a newly-industrialized country. Russia, having been transformed only recently from a total command economy to a more open market economy, might channel its funding to develop the service sector more than industrial sector. Nevertheless, close

movement of its national currency to a single commodity, along with its output structure, makes it an excellent research topic of whether the economy is suffering from the Dutch Disease.

In contrast, the Netherlands, the namesake of the disease, suffered a mild symptom in the 1970s when it discovered natural gas deposits. Fortunately, the country quickly recovered from the disease and turns to be independent of natural gas exports. As Fig. 4 below illustrates, there is little correlation between the country's guilder (pre-euro, 1990-1999) and the price of its natural resource—natural gas. Also, its output seems to increase regardless of movement in gas price.

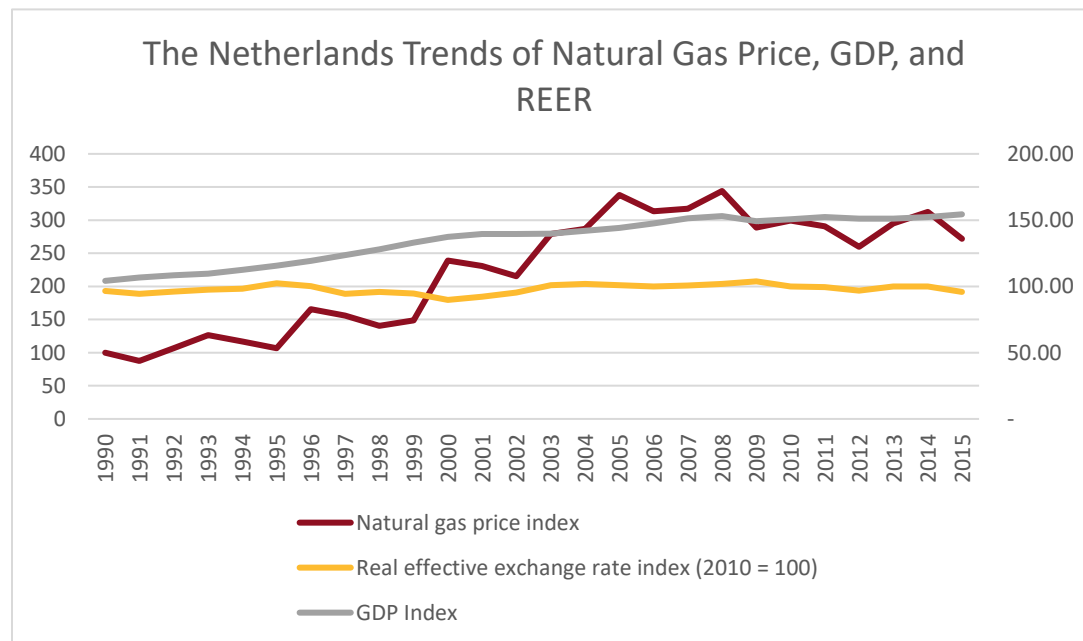


Fig. 4: Trends of natural gas price (lhs), Dutch GDP (rhs), and guilder (pre-1999) and euro (post-1999) (rhs)

Fig. 5 and Fig. 6 show that industrial sector has not been an important part of the country's output since at least 1990, and employment in such sector is minimal. One reason the Netherlands could have escaped the disease is because, by the time of contraction, the nation was already fairly developed such that it did not rely much on industrial output. Hence, it could quickly move to its service sector as the main driver of growth. This is in contrast to Russia where apparent de-industrialization is taken as a sign of the disease. The difference is that in the Netherlands, the country was already moving up the value chain into a higher-value-added sector, while for Russia, de-industrialization comes amid when almost half of the economy relies on the sector for output and employment.

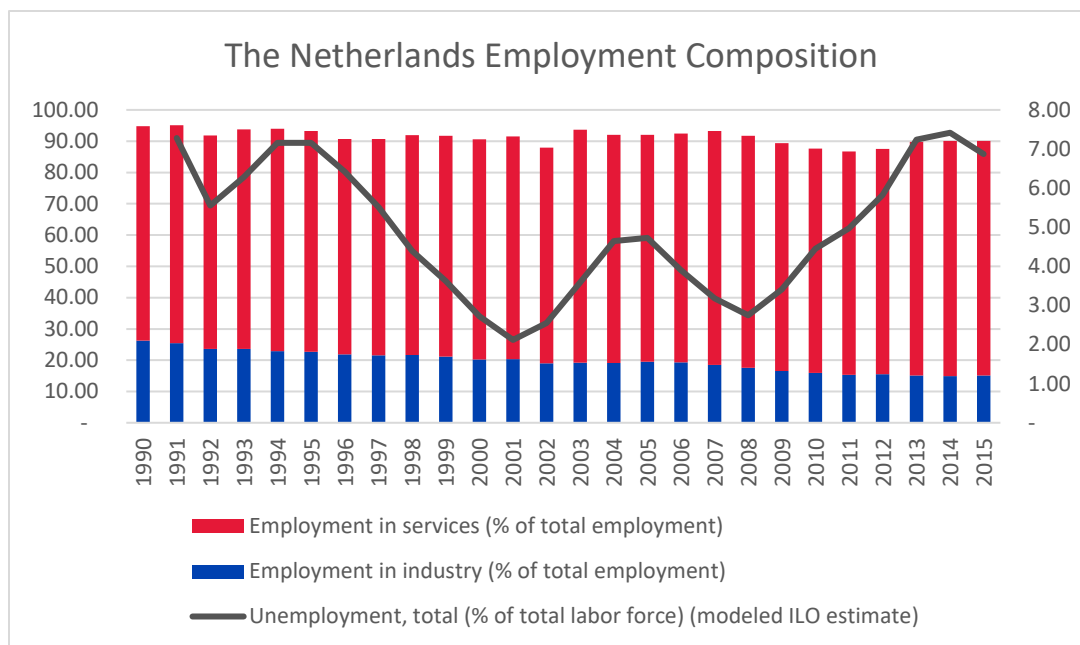


Fig. 5: Proportion of Dutch labor employed in industry sector (ISIC2 2-5) and services sector (ISIC2 6-9) (lhs) and unemployment rate (rhs)

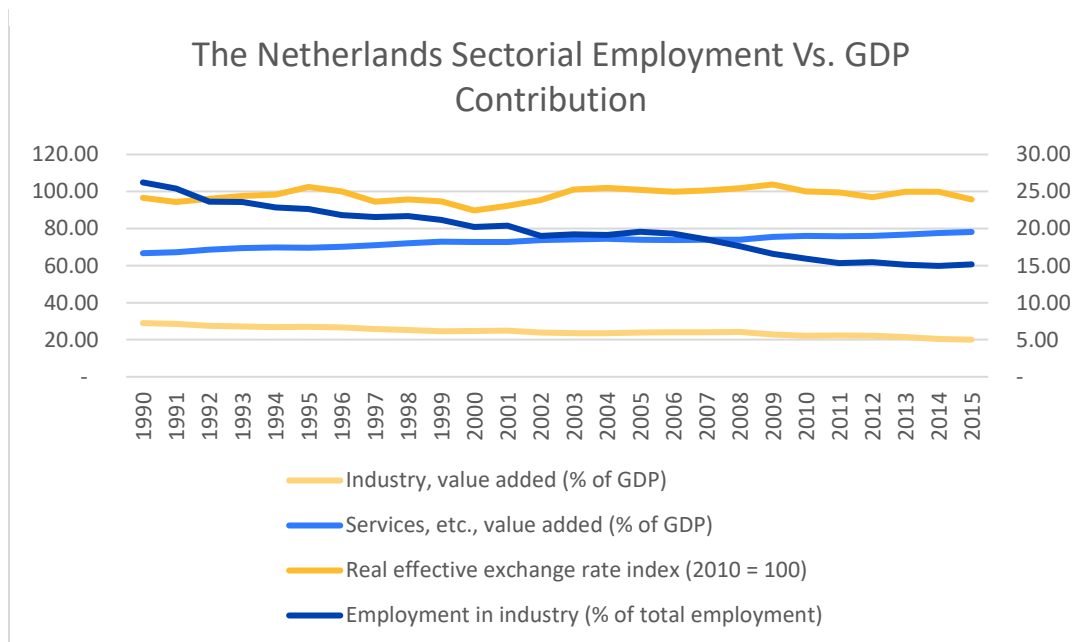


Fig. 6: Breakdown of Dutch GDP into industry and services sector

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