



Gold and economic activity in the Guayana Region, Venezuela for the period 1870 -1920

Oro y actividad económica en la región de Guayana, Venezuela para el periodo 1870-1920

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ABSTRACT:

The present investigation, studies the impact that the gold mining activity had on the economic activity of the Guayana Region, Venezuela for the period 1870-1920. The methodology used is that of a correlational study. A first approximation is made to the estimation of the impact that the gold exploitation has on the internal market of the Guayana region, calculations that had not been elaborated in any previous study. On the other hand, the behavior model of the gold mining industry in Venezuela for the period under study is described in detail.

Keywords: Gold mining industry, Guayana, Venezuela, Economic activity

RESUMEN:

La presente investigación, estudia el impacto que la actividad minera aurífera tuvo sobre la actividad económica de la Región de Guayana, Venezuela para el periodo 1870-1920. La metodología empleada es la de un estudio correlacional. Se realiza una primera aproximación a la estimación del impacto que la explotación aurífera tiene sobre el mercado interno de la región de Guayana, cálculos que no habían sido elaborados en ningún estudio previo. Por otro lado, se describe de forma detallada el modelo de comportamiento de la industria minera aurífera en Venezuela para el periodo en estudio.

Palabras clave: Industria minera aurífera, Guayana, Venezuela, Actividad económica

1. Introduction

Man's attention to the auriferous metal can be traced back to ancient times. Its presence on all continents allowed different cultures to appreciate its unique characteristics, since its fungibility and high value in small proportions gave it a relevant place in the international monetary concert, which still persists to this day. According to Einzing (1972), the role of gold in commercial exchange was cemented with the adoption of the minting of gold coins, especially after certain currencies managed to maintain public confidence and allow their exchange, without the need for carry out continuous weighing processes and check the

purity of the metal. As a result, the exploration and exploitation of the gold metal in the world became one of the most important actions for humanity for centuries. In Venezuela in the late nineteenth and early twentieth century, prior to the emergence of oil as the main source of foreign exchange, there were three major export raw materials: coffee, cocoa and gold. The other economic activities carried out in the country, served as a way to complement these main sectors. These economic activities were distributed in the Andean region, the eastern region and the south-eastern region of Guayana. In a way, these raw materials and precious metals were the referential economic sources in the country and at the same time served to promote capitalist development in the country and as a link with the world capitalist system.

Consequently, the impact of agricultural items on the Venezuelan economy has been studied exhaustively by a large number of social scientists. For example, the evolution of economic activity associated with coffee and cocoa is widely developed in the texts by Brito (1973), Rangel (1969) and Cartay (1988) ; nevertheless, the external economic, political and social environment associated with the exploitation of the gold material has not been fully documented. Several reasons can justify this situation. On the one hand, the rise of the gold mining activity was concentrated in the late nineteenth century, then represents a fraction of the total exports of Venezuela at the beginning of the 20th century; likewise, the political instability characteristic of this period considerably reduced foreign investments in this sector, limiting the capital available for its extraction. Therefore, once the importance of black gold in the country is felt, the sector of the extraction of gold metal had lost its characteristic luster.

The real exploitation of gold in Venezuela began in the second half of the nineteenth century. According to Cartay (1988), for the year 1858, the Venezuelan State granted a privilege to Luis Plassard and his associates, for the exploitation of the gold mines in the Caratal area, which had been discovered by the Brazilian Pedro Ayres towards the year 1842. From 1871, the role of gold as an international monetary standard was cemented. For Bordo and Eichengreen (1998), the importance of gold as a pattern of international payments was established when Germany adhered to the gold standard previously established in the United Kingdom. The fact that the major nations settle their international trade transactions in gold forced smaller to imitate this action, because they keep the same monetary arrangement that other nations with which the commercial exchanges were carried out generated network externalities, such as the simplification of trade and the greater facility to obtain external financing. The purpose of this was to reduce the obstacles to commercial exchange and increase the possibilities of increasing the profits of the industry of the countries involved. To join the gold standard, a country should define the value of their domestic currency in terms of the gold metal, buy/sell gold at the exchange rate established, and allows unlimited import and export of gold. Doing this, each country effectively anchored its currency in relation to the price of gold and, therefore, a system of fixed exchange rates was created.

The combination of advanced technology for the time, skilled labor and new knowledge in geology, applied mechanics and chemistry allowed to consolidate the gold mining industry in the Guayana region. It should be noted that if only to official figures are used, gold production in Venezuela in 1885 (about 8,193 kilograms of gold) could only be surpassed, for the first time after more than a century, during the period of opening of the gold sector to foreign direct investment in the 1990s (in the year of 1993 a production of 8,984 kilograms of gold was obtained).

Another aspect of significant importance has to do with the participation of the country's gold production, which, by the year 1885, represented more than 5% of the total world gold exploitation and from that time, that participation began to decrease. On the other hand, the growing political uncertainty of the era that originated from the Legalist Revolution of 1892, as well as the fall of the price of the troy ounce of gold in real terms could have a negative impact on the interests that controlled the Mining Company to reinvest the benefits that were still being generated. In addition, the discovery of new gold mines in South Africa (Witwatersrand) and the territory of Alaska, where the eyes of the financial capital of the time focused, played against the expectations of the shareholders of Minera "El Callao" Company, based in Bolivar state to find external financing in Europe. With its veins

exhausted, the Mining Company had to declare bankruptcy and its possessions were sold to English and British capital for a small sum.

In this sense, the present work has the purpose of understanding the impact that the gold mining industry had on the economic activity of the Guayana region for the period 1870-1920. For this, in the present section the introduction to the subject is advanced. In section II, the method used to carry out the estimates of the economic activity in the Guayana region for the period under study is described. In section III, the results and findings of the study are presented and finally the conclusions are offered in section IV.

2. Methodology

In this section the steps required to measure how Gross Domestic Product (GDP) changed in the Guayana region are presented (Y_{Gt}) in relation to the country's GDP (Y_{Vt}). To achieve this objective, the methodology developed by Mejía (2015) is used, based on using precise indicators of economic activity, that is, aggregated production, in the understanding of the relative participation of regional production in the national one. By using these standard indicators of the economic literature, it is possible to circumscribe the experience of the regions in the discussion about the impact of specific economic activities on the national GDP. To estimate the relationship between regional and domestic product, the following product ratio is used:

$$Y^* = \frac{Y_{Gt}}{Y_{Vt}} = \left[\frac{(x_{V_{ot}} q_{G_{ot}})}{(x_{V_{Tt}} q_{V_{ot}})} \right]^\alpha + \left(\frac{P_{Gt}}{P_{Vt}} \right)^\beta \quad (1)$$

In this case, $x_{V_{Tt}}$, are the income in bolivars of the total exports of Venezuela for the year t , $x_{V_{ot}}$, represents the income in bolivars of gold exports in Venezuela for year t . $q_{G_{ot}}$, is the gold production of the Guayana region for period t , while $q_{V_{ot}}$, the production of gold in Venezuela for year t . On the other hand, P_{Gt} , is the population of the Guayana region and P_{Vt} is the population of Venezuela for year t . All the data used in the estimation come from Baptista (1997) and Carrillo (2001).

In this order of ideas, the value of Y^* , represents in this case the ratio between the products of the Guayana region and Venezuela, which is no more than the division between the income generated by the external sector (first bracket of equation 1) and the domestic sector (second bracket of Equation 1). The parameters β and α , represent in turn the participation of the internal and external sector on the GDP.

Table 1

Alternative scenarios of composition of economic activity
(external and internal) of the Guayana region

Alternative	Condition	Description
1	$\alpha = \beta = 0.5$	It represents a situation in which the export sector and the internal one contribute identically to the economic activity.
2	$\alpha = 1, \beta = 0$	Consider only the external sector. It would represent an extreme situation in which the economy would have been exclusively exporting.
3	$\alpha = 0, \beta = 1$	Consider only the dynamics of the internal market. Represent an economy of internal consumption.
4	$\alpha = 0.75, \beta = 0.25$	It represents a situation in which the export sector contributes more to economic activity than the domestic one.
5	$\alpha = 0.25, \beta = 0.75$	It represents a situation in which the domestic sector contributes more to economic activity than the exporter.

Source: Mejía (2015)

The value of the participation of each of the sectors (α and β) usually obeys to an empirical development, as it is done when obtaining the accounting of the economic growth (work and capital). However, since the interest of this section is to obtain an estimate of the level of economic activity of the Guayana region in the GDP of Venezuela, we will start from different alternatives of values that are described in table 1.

3. Results

The present section estimates the proportion of Venezuela's total GDP that is contributed by the Guayana region, for a selection of years during the period under study. This will be the first quantitative approach for such a broad period of the Guayana region for the period of study. Contrary to what one might think, the economic reality of the region developed as part of a global financial force. As isolated as one might think the Guayana region was against, it could not escape the impact of these global economic swings. On the one hand, in its neighborhood, was colonies of the British Empire, but at the same time, the forces of commercial capitalism were unmistakably hovering over this section of the national geography.

3.1. The Guayana region: An initial description

The total population of the region was low, with a small density compared to other areas of Venezuela. According to Carrillo (2001), the number of inhabitants of Guayana only represented 1.29% of the total population of Venezuela for the year 1833. However, in terms of geographical area the situation is quite different, because this comprises approximately 30% of the total area of Venezuela.

For Bell (1922), the region of present Bolivar state was less developed and, in turn, the

most interesting regions of Venezuela. This is due, in part, to the fact that this territory includes the Orinoco hydrographic system and the Guayana shield. The fluvial system allows the connection with the plains of Colombia towards the southwest and the Orinoco delta towards the northeast, with the Guayana Esequiba and the island of Trinidad. Innumerable are the references that have been made about this territory in relation to El Dorado, the mythical region that was believed to exist in the area of the Orinoco River. These recurrent mentions throughout history led to English intervention on the island of Trinidad towards the end of the 16th century, as well as the dispute between Venezuela and the United Kingdom over the Esequibo territory. Initially, the main products of the region were related to the usufruct of the forest region, as well as livestock, where the fluvial system was the main means of access and communication. Also, was the gold material, which in the first instance was practically underdeveloped.

3.2. The route of the big business capital in the gold extraction

Like other areas that experienced the so-called "gold rush", gold sand excavations and washes were initiated through eminently speculative actions and with a high degree of risk and illegally, by not complying with legal requirements. If you managed to hold on to discovering a good vein or specific spot in a stream, it was possible to accumulate significant capital in a few months. This made possible the development of the investment with the right to percentage, that is, they achieved the control of the gold extraction by providing equipment and basic tools to the seekers of fortune. The high risks of loss were accompanied by juicy returns and profits in case of the occurrence of a fortuitous event. This procedure of the gold mining activity undoubtedly did not lead to modern methods of administration to miner. On the contrary, it leads to deepening the actions in primitive methods in order to obtain an immediate gain.

The mid-nineteenth century, gold placers along the Columbia River or Yuruari and Anacupay Valley. This situation, of basic tools and methods if you want primitive for the gold exploitation, led to a low yield in relation to the extracted gold sands. The gold mining was mainly artisanal gold with washing manually and using wooden punts. The mining legislation was not exactly friendly to foreign capital. According to Osorio (2010), thanks to the Constitution of 1864 the disposition with respect to the property of the mines, established in the respective one, was reformed Regulation. The mandate of this legal instrument established that each Federal State was responsible for the free administration of its natural products. Thanks to this modification, federal entities could grant concessions, thus proliferating state mining laws. The new legislation aimed to attract mining companies and increase the production of gold in the country. This is how the first gold quartz crusher arrives in the country (with a design similar to that used in the State of California in the United States).

In a first instance, it was considered that the gold formation of the region was eminently alluvial and that the source of the mineral did not come directly from the area, but was dragged after hundreds of years of sedimentation. Only with the prospective and application of the most recent technological and scientific advances of the time was it possible to discover that the gold was lodged in the quartz veins in the area of El Callao. According to the geological conformation of the area, the Yuruari River divides the gold formation in two. The northern part is composed of granite rock, while the southern part is where the main mines are located. At the beginning of the gold extraction activities, mining at depths had not yet developed or was in an incipient phase. Even the most optimistic about the technology available, it was predictable that the gold reserves were not unlimited, although it is considered that there was ample availability to carry out gold mining for several decades.

Another element of interest was related costs for the extraction of gold. Of all the raw materials of the time, gold and silver had a common denominator: they had a fixed price. Unlike "*balata*", for example, whose daily trading was associated with economic cycles, because its price could go up or down and thereby significantly affect producers. This intrinsic stability, associated with gold metal and guaranteed by the international monetary

system, meant that supply and demand for the metal does not impinged on its valuation on world markets, as the official price of a troy ounce of gold was fixed. In this sense, the cost of extracting the gold metal was of the greatest importance when it came to have a successful company. Therefore, in order to have extraordinary benefits, it was necessary to have a cost management that minimizes expenditures.

Therefore as the technological frontier of mining extraction (greater levels of depth) or with a low degree of extraction per ton of material is reached, toward difficult for companies the possibility of continuing in the market. This reality made it possible to bring to Venezuela the best engineers, graduates from the most prestigious universities in the world, to manage some of the gold companies in the country. For the sole purpose of simplifying the analysis, it will be assumed in this study, that the extraction costs were associated with two big lines: work and materials and equipment. The first labor was made up of local workers, migrants from different parts of the country and of African descent, mostly related with a significant migratory flow, so a permanent workforce was not found. In a certain sense, this played in favor of the gold companies, since they had an important source of labor not predisposed to unionization or labor conflicts.

In the same way, at least at the beginning, the gold mining activity was labor-intensive, since it did not require a period of expensive or extensive training. The worker could return to his home in case of illness or if he was fired or was not still employable due to some illness or injury. In most cases, the workers represented individual work units, while their families were in other places or countries; therefore, the salary received did not necessarily include the maintenance costs of the home, but the worker's. It is worth noting the complacency of the State to this situation of "exploitation" of workers, in some cases due to ineptitude or incompetence when guaranteeing minimum working and laboring conditions.

Perhaps the only disruption to the availability of labor lay in the fortuitous discoveries or "bullae" of important alluvial gold sources. This caused a significant dropout of workers and with it a shortage of labor. Feeding was scarce and expensive, particularly in the areas located towards the periphery of the known mining activity. Poor weather conditions and endemic diseases of the tropics, such as malaria, were recurrent among workers. The natives of the region generally tended to artisanal mining in order to obtain some cents a day and live with the hope to someday build a significant capital through gold mining. Workers with particular skills could receive up to three times more than a worker without skills (Bell, 1922). In relation to materials and equipment, these include all the machinery and supplies required for the extraction of gold. Likewise, it was necessary to have chemical and coal instruments. Most of these instruments should be imported from the United States or the UK. A key element of the entire extraction operation was in transportation. Taxes and tariffs for the transportation of machinery and equipment were significant, so the companies were exposed to transportation costs. All these support activities and support of the gold extraction activity radiated in a certain way on the regional economy.

3.3. Population and internal market

The population growth in the region of Guayana was tied to heavy immigration occurred during the gold rush. The origin of it was mainly from the islands of the Antilles. Table 2 presents the evolution of the demographic growth of this region of the country between 1833-1920. The gaps that can be seen in the data are due, in part, to the fact that the administrative figures were interrupted for several years due to political events and armed conflicts that hit Venezuela in most of the 19th century. Although it may not be so evident, in a first examination, the impact that this growth had on the level of economic activity, at least in the domestic market, should have a direct causality in economic growth.

Table 2
Population of Venezuela and the Guayana region

			Participation of the Guayana

Year	Venezuela	Guayana region	region over total population
1833	960.589	12.439	1,3%
1839	1.117.305	14.790	1,3%
1844	1.240.443	13.588	1,1%
1847	1.321.013	13.588	1,0%
1856	1.559.118	28.064	1,8%
1873	1.784.194	51.793	2,9%
1881	2.075.245	56.862	2,7%
1891	2.323.527	58.088	2,5%
1920	2.470.682	65.473	2,7%

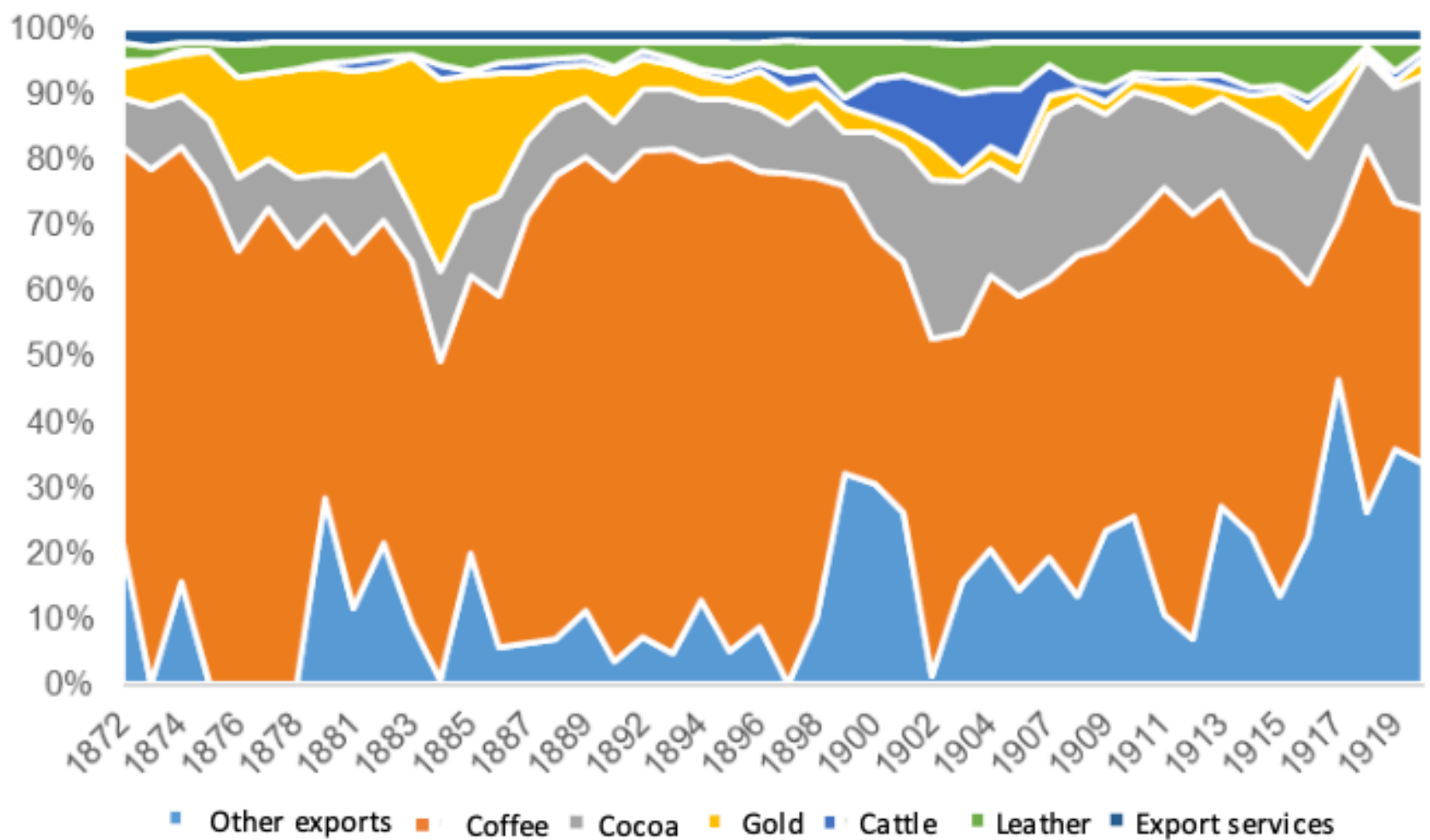
Source: Carrillo (2001) and Baptista (1997). Own elaboration.

The consolidation of gold mining in the region, allowed developing various economic activities that served as support to exploitation extractive. The demographic explosion of the Guyanese territory is strong in the decade of 1870 and it has been going on for at least three decades. This apogee for the extraction of the gold seems to be the only explanation of the considerable demographic increase, which was accompanied besides a greater economic activity. This migration to the gold zone, as mentioned above, allowed the establishment and expansion of new populated areas with small traders and workshops, thus generating an important internal market despite the significant costs of moving and transportation of materials and food.

3.4. Exports and domestic markets

From the events on Venezuelan economic history, one of the less discussed is that of economic growth induced by exports. This is especially true in the nineteenth century. This trend is particularly reflected in the behavior of economic cycles, caused by the rise and fall of the terms of trade of its main export products.

Figure 1
Main exports of Venezuela (1870-1920)



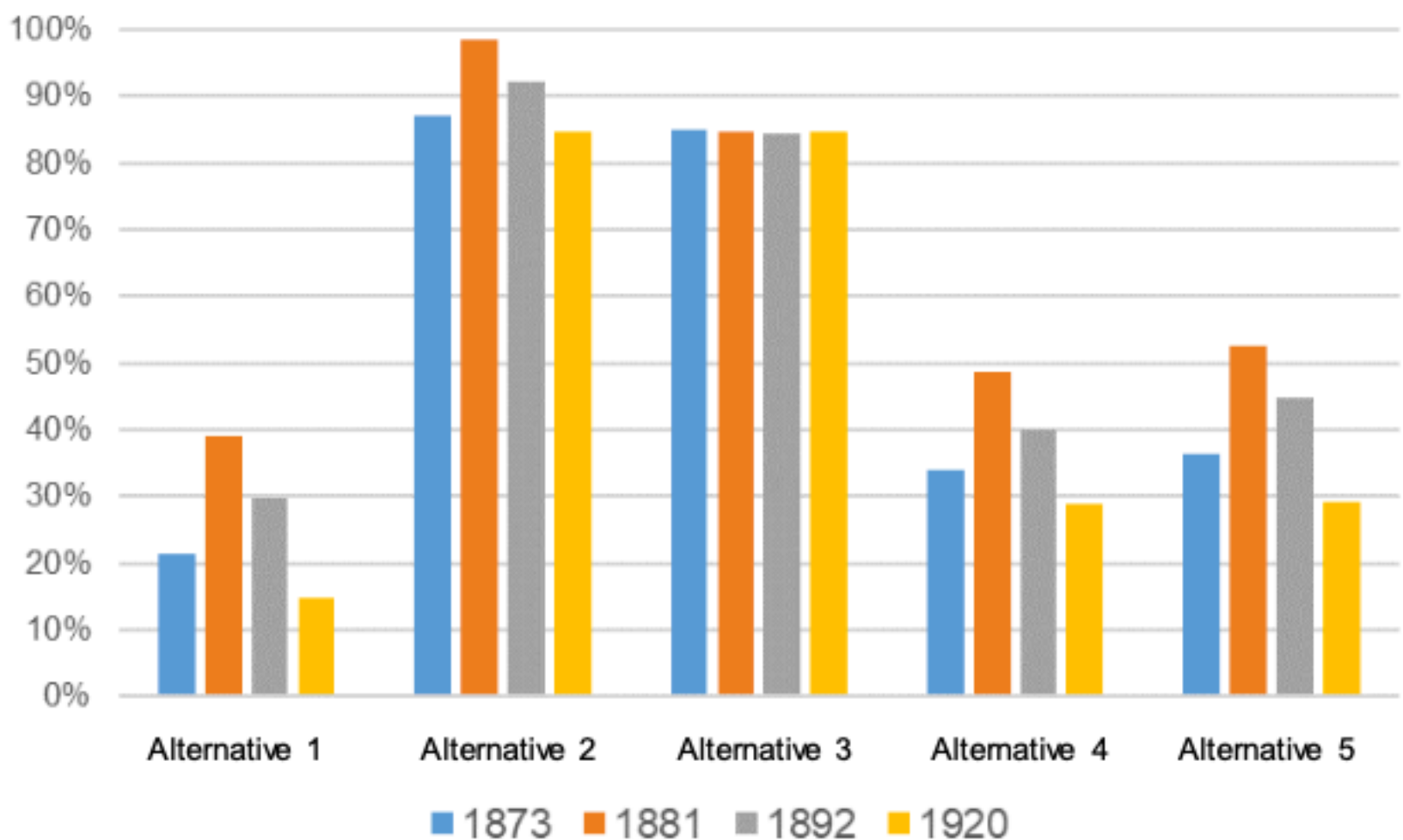
Source: Baptista (1997). Own elaboration

For the specific study period, Venezuelan exports were dominated by coffee, cocoa, cattle, leathers and gold (see Figure 1). In 1868, coffee occupied the first place, followed by leather, while in the third place was the auriferous material (Baptista, 1997). By 1884, gold was in second place in terms of exports, surpassed only by coffee. A high proportion of the product of this raw material, gold, came from the economic torrent of the country. However, in a sense, different sectors in the region profited from the production process.

3.5. Estimation of the economic activity of the Guayana region

According to the literature review, there are no GDP estimates for the Guayana region (which is known today as Bolivar state) for the period under study. The task of homogenizing the GDP components for this region implies several obstacles. First, official figures are scarce, as is the availability of a wide range of prices that allows a reliable estimation of this important variable for the Guayana region. Some observations on this application can already be advanced to the case of the Guayana region. In the first place, it is assumed that the only export product is the gold metal. Although there are other export raw materials, it is fairly reasonable that the main export was gold. In relation to the domestic market, this is linked to the evolution of the population. Although it may not be as accurate, assume that the domestic market (agriculture, transport services, among others) grows at the same rate as the population can be sensible (Kalmanovitz and López, 2010).

Figure 2
Estimation of the GDP share of the Guayana region in that of Venezuela, 1873-1920



Source: Authors

By applying the methodology explained in the selected data to the region Guayana (ie 1873, 1881, 1892 and 1920), it shows that alternatives as 2 and 3 are extreme scenarios (economy totally dependent of external or fully autarkic). The scenario that is considered the most rational is alternative 1, even when there are severe changes in the level of economic activity in the Guayana region. On the other hand, given that this is an estimate, alternatives 4 and 5 can be considered as the intervals in around which the real value could fluctuate (see figure 2). Of the years, it is evident that there were periods of significant growth in the regional economy of Guayana, particularly during the peak of gold mining activity and a significant recession in times of decline. It is necessary to indicate that these figures are only indicative, however, this first approximation allows shedding light on the impact that the gold mining activity had on the GDP of the Guayana region.

4. Conclusions

Geopolitical elements, had a significant impact on the exploitation of gold in Guyana for the period of study. In general, there were countries with capital surpluses (continuous inflows of gold) and others with capital deficits (continuous gold outflows). The second group (capital exporting countries) had additional mechanisms to avoid periods of recession; mainly, mitigate the investment that its citizens made abroad. The debtor countries, on the other hand, did not have the capacity to influence capital inflows, since these were contracted by capital exporting countries. This made it necessary to have new sources to generate cash within the economies and satisfy the growing requirements of money.

One of the most expeditious to achieve this goal by the world economic powers was to expand the sources of gold extraction, particularly under their control or influence. According to preliminary estimates, the contribution of the region of Guayana to the gross domestic product of Venezuela happened to be of about 39% in its moment of greater apogee, soon to descend until an amount near 15% in the year of 1920. The decline of gold mining in Venezuela also occurs in an adverse international context.

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