



Impact of Covid-19 on Ecuador's international trade

Efectos del Covid-19 en el comercio internacional del Ecuador

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Abstract

In 2020, Ecuadorian oil exports fell by 39%, while non-oil exports grew by 6%, where bananas and cocoa stand out. In this context, the objective of this study is to determine the effects of Covid-19 on Ecuador's international trade, as well as to analyze the influence of exports of the four main products on GDP. La metodología utilizada es de carácter exploratorio y con el objetivo de conocer las elasticidades y la dependencia de los cuatro principales productos de exportación sobre el PIB del Ecuador se realizó una estimación logarítmica. The results obtained show that, in the case of imports, consumer goods fell by 48% and capital goods by 51%. The volume of international freight transport fell to 20% in April, while in June it fell by 23%. The dependency analysis allowed verifying that shrimp exports are not significant, while at 10% significance, cocoa exports explain the changes in GDP and at 1%, banana and shrimp exports directly influence GDP.

JEL Code: F10, F14, F19

Keywords: commerce; exports; imports; Covid-19; Ecuador

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Resumen

En 2020, las exportaciones ecuatorianas petroleras cayeron en 39%, mientras que las exportaciones no petroleras crecieron en un 6%, donde destacan el banano y cacao. En este contexto, el objetivo del presente estudio es determinar los efectos del Covid-19 en el comercio internacional del Ecuador, así como analizar la influencia de las exportaciones de los cuatro principales productos sobre el PIB. La metodología utilizada es de carácter exploratorio y con el objetivo de conocer las elasticidades y la influencia de los cuatro principales productos de exportación sobre el PIB del Ecuador se realizó una estimación logarítmica. En los resultados se observa que, las importaciones de bienes de consumo se redujeron en 48% y los bienes de capital en un 51%. El volumen del transporte internacional de mercancías, cayó al 20% en abril, y en 23% en junio. El análisis de dependencia permitió verificar que el valor de las exportaciones de camarón no es significativa para el PIB, mientras que a un 10% de significancia el valor de las exportaciones de cacao explican los cambios en el PIB y a un 1% de significancia el valor de las exportaciones petroleras y las exportaciones de banano influyen directamente en el PIB.

Código JEL: F10, F14, F19

Palabras clave: comercio; exportaciones; importaciones; Covid-19; Ecuador

Introduction

The effects caused by Covid-19 (Severe Respiratory Syndrome coronavirus 2 [SARS-CoV-2]) and the subsequent pandemic declared by the World Health Organization (WHO) in March 2019 have scourged global economies on an unprecedented scale. The unfavorable effects in developing countries have been greater than in more advanced nations (Landa *et al.* 2020). Regions such as Africa (-8.8%), South America (-9.3%), and the Middle East (-11.3%) recorded the largest declines in imports, while in North America it was relatively small (-6.1%) (ECLAC, 2021). Clavellina (2020) warned that, in the short term, the effects of the Coronavirus on the global economy will be substantial and pointed out that sectors such as trade and tourism are suffering from the impact of the rapid expansion of the outbreak.

According to data from the Economic Commission for Latin America and the Caribbean ([ECLAC], 2021), in 2020 the value of world merchandise exports fell by 8% compared to the previous year, and revenue from commercial services plummeted by 20%. The rapid spread of Covid-19 and the actions taken by governments seriously affected the world's major economies. This led to a marked increase in unemployment, especially in the United States, with a consequent reduction in the demand for goods and services (ECLAC, 2020). Despite this, the World Bank forecasts that global economic activity will increase by 4 % in 2021. However, it will remain well below pre-pandemic projections.

The manufacturing industry, services, global trade chains, financial markets (bond and credit), and commodity prices have collapsed. The Covid-19 health crisis emerged when Latin American economies were already showing accentuated macroeconomic vulnerability (Landa *et al.* 2020). Gross Domestic Product (GDP) growth in the region went from 6% to -0.8% from 2010 to 2019 (ECLAC, 2020).

In the case of Ecuador, in 2020 GDP recorded a 7.8% drop compared to 2019. This behavior is explained by the decrease in gross fixed capital formation, decrease in consumption, reduction in public spending, and contraction of trade in goods and services (ECB, 2021).

The objective of this research is to determine the effects of Covid-19 on Ecuador's international trade, as well as to analyze the influence of the value of exports of the four main export products (oil, bananas, shrimp, and cocoa) on GDP. The methodology used is exploratory for the analysis of the effects of Covid-19 on international trade. To estimate the elasticities to describe the behavior of Ecuador's four main export products, Ordinary Least Squares (OLS) estimation was used.

From here on, the paper is divided into the following sections: first, the context of the research, which contains some implications of Covid-19 at a general level. Subsequently, the behavior of foreign trade in the face of the COVID-19 pandemic at the global, regional, and national levels is detailed, followed by an estimation of elasticities to analyze the behavior of Ecuador's main export products and the extent to which they were affected by the pandemic. Finally, the main conclusions reached are detailed.

Research context

Economic studies on international trade are very extensive, and the literature has shown that exchanging goods and services between countries generates significant benefits. In this regard, Comejo (2015) defines international trade as the constant and dynamic exchange of elements related to the production of goods and services between two or more countries, which tends to definitive integration over time in order to achieve equilibrium and appropriate regulation. Therefore, the importance of international trade as a development factor is indisputable, given that it promotes, on the one hand, essential international relations between partners and, on the other, the prosperity of peoples (Quevedo et al. 2020). According to the Product Life Cycle model (Motta & Norman, 1996), international trade is a dynamic process closely related to technological progress, favoring the concentration of innovations in the largest companies and thereby generating conditions of imperfect competition (Orosco, 2017).

The Covid-19 pandemic forced companies, governments, and families worldwide to modify living and working conditions, accelerating digitalization processes at an unexpected speed, to adapt to the "new normal." According to Clavellina (2020), all these changes are a reminder to the world to be prepared for crises and risks, such as health and environmental crises. This author considers that public spending on research and development and strengthening health systems will be extremely important in addressing these problems.

According to Hayakawa and Mukunoki (2021), the changes experienced globally due to the lockdown reduce the supply of goods, make them less price elastic, and disrupt the transportation sectors

in exporting countries, increasing the cost of shipping by increasing port and terminal handling costs. These episodes impact global value chains; as Espitia et al. (2021) mention, participation in value chains can mitigate or increase the negative trade effects of Covid-19 shocks. In this sense, if a supply shock hits the exporting country, the sectors that depend more on imported inputs are affected to a lesser extent than those that rely on domestic inputs. Still, when a supply shock hits countries that are a source of inputs for exporters, those sectors that are most dependent on imported inputs are hit harder.

It is important to note that maritime transportation plays a key role in value chains in international trade. The pandemic caused a massive bottleneck in transportation networks and ports, leading to a decline in cargo volumes and stifling prospects for expansion (Kumar & Jolly, 2021). In addition, trade tensions have become more acute, given that in 2019 there was already a weakening in international maritime trade. According to the United Nations Conference on Trade and Development (UNCTAD), the sector grew by just 0.5% compared to 2.8% in 2018; at the same time, container traffic fell to 2%, while in 2018, it was 5.1%.

Foreign trade behavior in the face of the Covid-19 pandemic

Context of foreign trade worldwide

International trade in goods at the global level was already weak and had not reached the levels attained prior to the 2008 crisis. Between 1990 and 2007, the mean growth rate of trade was 6%, while in the period 2012 to 2020, it was 1.6% (Figure 1). According to World Trade Organization estimates, the volume of world merchandise trade is expected to increase by 8% in 2021 after declining by 5.3% in 2020 (WTO, 2021).

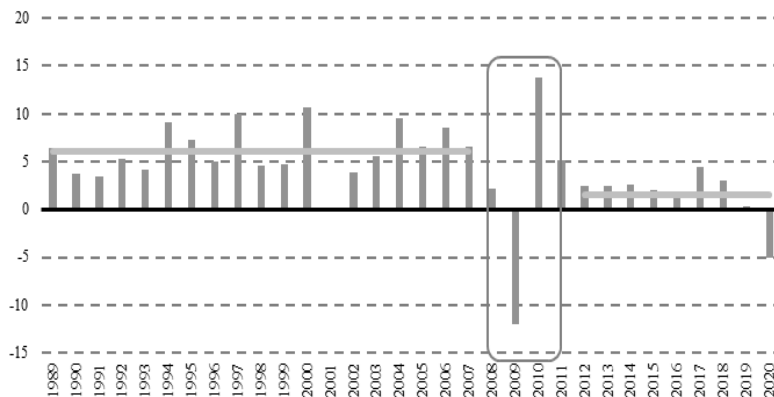


Figure 1. Change in world merchandise trade (1990 -2020).

Source: created by the author with data from the World Trade Organization (WTO, 2021)

The effects caused by the pandemic on merchandise trade varied from region to region in 2020, with most recording declines, except for Asia, with a 0.3% increase in exports and a 1.3% decrease in imports. On the other hand, China, where the Coronavirus originated, experienced a smaller contraction than the world average, as it controlled the outbreak and reopened its economy relatively quickly (ECLAC, 2020). The largest import decline was recorded in Africa, South America, and the Middle East (WTO, 2021).

Hayakawa and Mukunoki (2021) demonstrated the existence of heterogeneity in industries; for example, supply shocks will be lower in industries that provide essential products such as food and medical products than non-essential products such as automobiles and machines. This is because governments are prioritizing maintaining the supply of essential commodities.

On the other hand, exports will continue to decline in industries where remote working is not feasible despite technological development. Factories such as textiles and footwear require labor-intensive operations, even in capital-intensive sectors such as machinery and transportation equipment. Meanwhile, in medical input suppliers, the positive effects of Covid-19 on imports were observed (Hayakawa & Mukunoki, 2021). Likewise, due to their intrinsic characteristics, durable goods can be marketed online, increasing the willingness to pay. The demand for durable goods such as computers, televisions or household appliances increases with remote working (Espitia et al. 2021).

Context of foreign trade in Latin America

In order to slow down the transmission of the Coronavirus and reduce mortality, countries adopted health policies and containment measures such as border closures, interruption of air transport, lockdowns, isolation, and social distancing. These measures, in one way or another, exacerbated the persistent economic problems in Latin America and the Caribbean. According to Hernández (2020), the region showed a disappointing economic performance in the last five years, burdened by adverse shocks due to natural disasters, falling commodity prices, tightening financial conditions, and a contraction in international trade.

ECLAC reveals that in 2020 foreign trade in the region had the worst performance since 2008, and from 1990 to 2007, the mean annual growth rate reached 10%, while in the period 2014 and 2020, a negative rate of -1.7% was recorded (Figure 2); the organization also points out that Latin America is the region in the world that is the most affected by the Coronavirus crisis. These countries' fiscal and monetary efforts have not been sufficient to curb the economic and social effects of the pandemic due to the structural problems that the region has been experiencing for years.



Figure 2. Year-on-year change in merchandise trade in Latin America.
 Source: created by the author with data from the World Trade Organization (WTO, 2021)

The degree of openness to international trade in Latin America is lower than in other emerging regions, and there is a high degree of heterogeneity among countries. On the one hand, Chile, Peru, and Mexico reach rates between 50% to 80% of trade openness concerning GDP while others are more closed, such as Argentina, Brazil, or Colombia, with rates between 30% to 40% (Peñañiel, 2021). Merchandise trade in the last 4 months of the study (October 2020 - January 2021) shows no signs of recovery; in January 2021, the volume exported recorded a decrease of -3.8, compared to 0.2% recorded in January of the previous year (Figure 3).

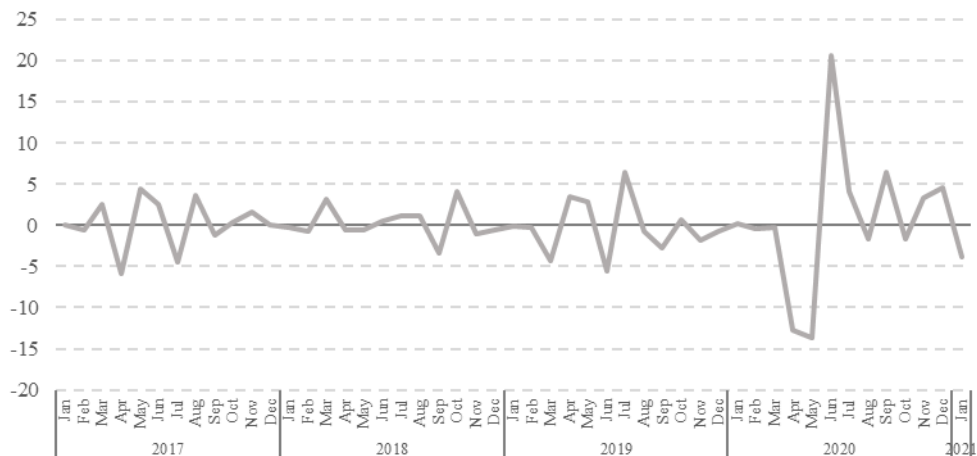


Figure 3. Change in merchandise trade in Latin America, January 2017 to January 2021.
 Source: created by the author with data from Netherlands Bureau for Economic Policy Analysis (CPB), World Trade Monitor [online database] <https://www.cpb.nl/en/worldtrademonitor>

By 2021, according to the WTO (2021), South America will register export growth of 3.2%; the World Bank (2021) estimates that the price of a barrel of oil will be USD 56; in turn, the prices of agricultural products will increase by 14%. All this is in an optimistic scenario in which the production and diffusion of vaccines would accelerate, allowing countries to relax their containment measures while promoting growth in the volume of world merchandise trade (WTO, 2021).

Context of foreign trade in Ecuador

This section explores data on monthly Ecuadorian exports and imports from January to December 2019 and 2020, with data expressed in U.S. dollars and international transport data in metric tons.

The analysis of international trade in goods was carried out based on databases of the Central Bank of Ecuador and the World Trade Organization (WTO), as well as processed data on international cargo transportation from the Port Authority of Guayaquil (APG), Port Authority of Puerto Bolívar (APPB), and Port Authority of Manta (APM). These three ports have been used in this study since they have the highest international cargo trade traffic, APG with 17% of international cargo traffic, APPB with 3%, and APM with 2% (Ministry of Transportation and Public Works, 2019).

Ecuadorian foreign trade responded similarly to global economic behavior. In terms of exports in the period 2000 - 2020, oil exports have been the most affected. In 2008, due to the real estate crisis that collapsed the financial market, exports fell by 4%. In turn, in 2015, due to the fall in crude oil prices, exports fell by 5%, and due to the Covid-19 pandemic in 2020, a decrease of 39% was recorded (Figure 4) caused by the international fall in prices. National production in 2020 was 175.4 million barrels, 9.5% less than in 2019 (ECB, 2021).

Oil has been the principal source of revenue for the Ecuadorian State for decades. It constitutes the most important estimated source of revenue for the State's General Budget. This is why the economy is in a state of serious economic dependence and vulnerability and is not very resistant to international market shocks. By the second quarter of 2020, Ecuadorian oil sales had fallen drastically due to the global economic crisis caused by the Covid-19 pandemic. In April, crude oil prices experienced their steepest monthly drop since the 2008 global financial crisis. The collapse in demand, refinery operating cutbacks, and increased global oil supply resulted in a large surplus in the oil market, causing the price of a barrel of WTI (West Texas Intermediate) oil to stand at \$16.52, down 71% from the price in April 2019 (OPEC [Organization of Petroleum Exporting Countries], 2021).

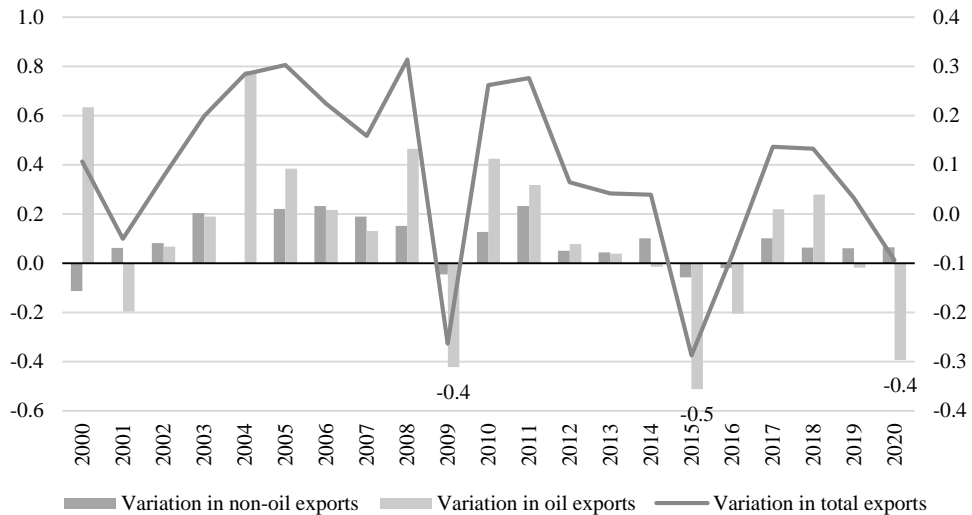


Figure 4. Year-on-year change in Ecuadorian exports 2000 – 2020.
 Source: created by the author with data from the Central Bank of Ecuador (BCE, 2021)

As of the first quarter of 2020, the shocks to the world economy caused by the coronavirus pandemic began to be demonstrated in Ecuadorian trade. In April 2020, oil exports fell by 76% (Figure 5) and non-oil exports by 8% with respect to the previous month (Figure 6). However, as of May, the outlook shows signs of recovery, leading to a 6% annual growth in 2020 compared to 2019.

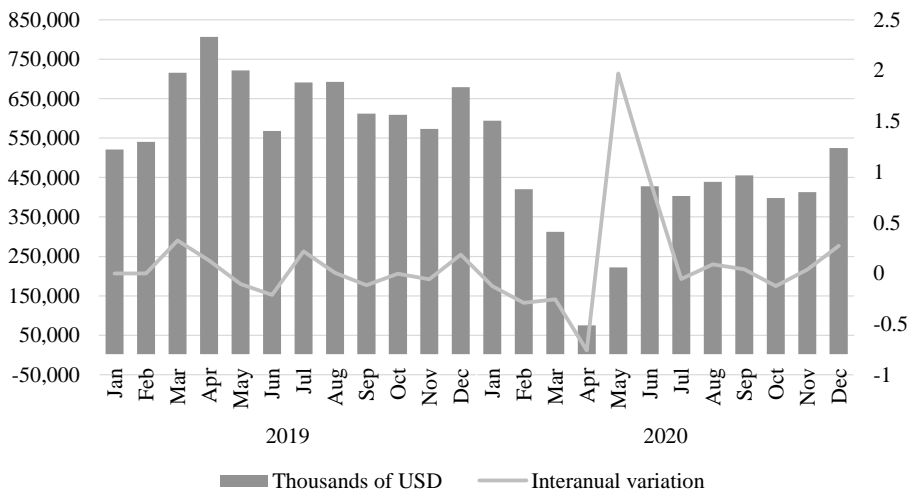


Figure 5. Monthly oil exports in Ecuador.
 Source: created by the author with data from the Central Bank of Ecuador (BCE, 2021)

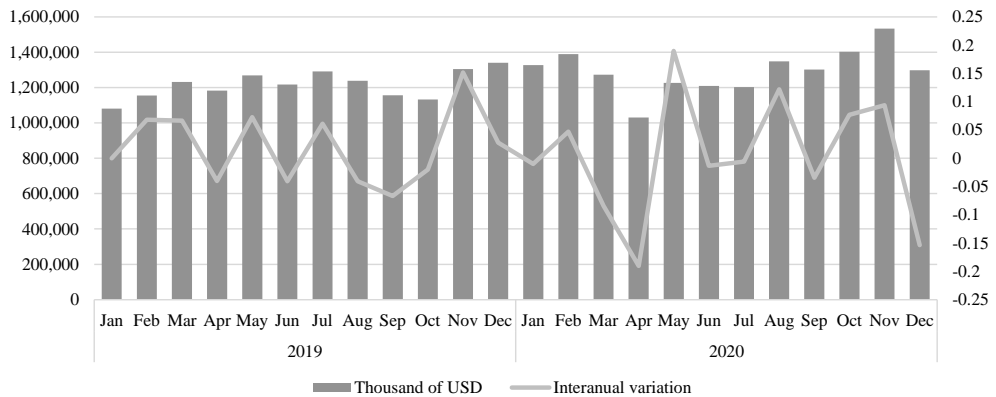


Figure 6. Monthly non-oil exports 2019 -2020.

Source: created by the author with data from the Central Bank of Ecuador (BCE, 2021)

Traditional and non-traditional exports

In 2020, traditional exports grew by 6% compared to 2019. Banana (11%) and cocoa (22%) exports stand out, while coffee and shrimp recorded negative values with 13% and 2%, respectively (Figure 7). Serrano (2020) mentions that during the first seven months of 2020, the five main export destinations for Ecuadorian cocoa were the United States, Indonesia, Malaysia, the Netherlands, and Mexico, totaling 119 357 thousand metric tons and with a 14% increase in exports compared to the previous year, according to figures from Anecacao (National Association of Cocoa Exporters).

In particular, Ecuadorian shrimp exports were severely affected by the pandemic. In July 2020, 115 million less was exported than in July 2019. Shrimp is the second most exported non-oil product after bananas; therefore, it is considered a key base for economic development (Jiménez, 2021).

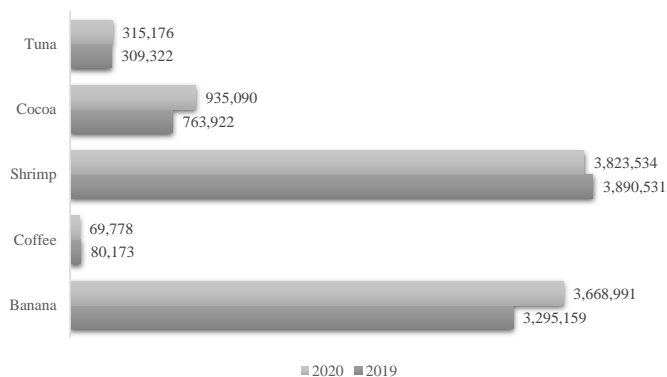


Figure 7. Traditional exports: Main products, 2019 – 2020.

Source: created by the author with data from the Central Bank of Ecuador (BCE, 2021)

On the other hand, non-traditional exports recorded 16% growth in 2020 compared to the previous year, mainly due to the vertiginous growth of mining exports. In 2019 USD 326 million were exported, while in 2020, it was USD 921 million, representing an increase of 182%. The data indicate that minerals rank fourth in national exports after petroleum, bananas, and shrimp, not including industrialized products. In the case of flowers, in 2020 a negative variation of 6% was recorded (Figure 8). Until 2019, flowers were the fourth most important non-oil export product for Ecuador; as a consequence of the Covid-19 pandemic, there has been an 80% drop in flower exports, according to Expoflores (Coba, cited in Macías et al. 2020).

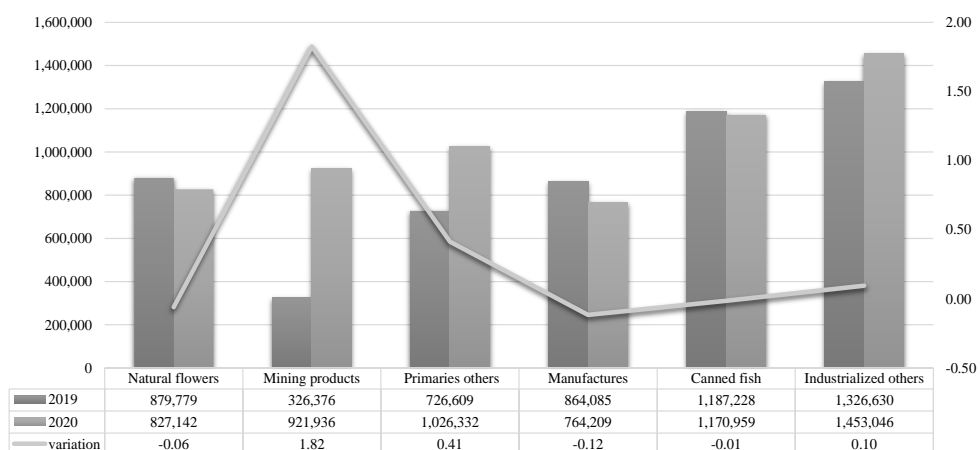


Figure 8. Non-traditional exports, 2019 – 2020.

Source: created by the author with data from the Central Bank of Ecuador (BCE, 2021)

Exports by country of destination

Internationally, the Ecuadorian economy was affected by a significant drop in the prices of its main export product, crude oil, and lower external demand for non-oil products (Coba, cited in Macías et al. 2020). The Ministry of Production, Foreign Trade, Investment, and Fisheries of Ecuador (MPCEIP, 2020) mentions that, due to the pandemic, the country’s major trading partners, China, Europe, and the United States, closed many production plants, consumption and purchase orders have fallen, and this has caused an illiquidity effect, a slowdown in commercial mechanics (Serrano, 2020). As shown in Figure 9, the United States is the main destination for Ecuadorian exports; however, in 2020, total exports fell by 29%.

In the case of non-oil exports, the Ecuadorian Federation of Exporters (FEDEXPOR, 2011) states that the European Union is one of the main destinations, while the U.S. market is the one with the

greatest increase in demand in 2020. This organization points out that 1,400 Ecuadorian companies are linked to exports to the United States, generating 1.2 million direct jobs.

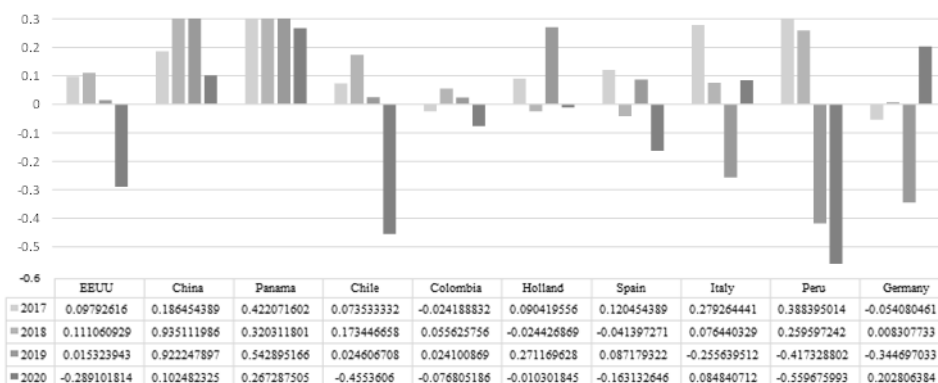


Figure 9. Year-on-year variation of Ecuadorian exports by main destinations 2017-2020.
 Source: created by the author with data from the Central Bank of Ecuador (BCE, 2021)

Imports by type of goods

Of total imports during 2020, 60% were of raw materials, intermediate goods, and capital goods necessary for production. It is noteworthy that from January to November 2020, imports recorded sharp decreases compared to 2019, especially in April and May, in consumer goods at 48% and 32% and capital goods at 51% and 52%, respectively (Figure 10). However, in December there was an increase in imports of consumer goods (11%). It is important to emphasize that, within this last category, the trade in medical supplies related to health protection increased significantly. These products recorded growth of 47% in their imported value, totaling more than USD 1 040 million (FEDEXPOR, 2021).

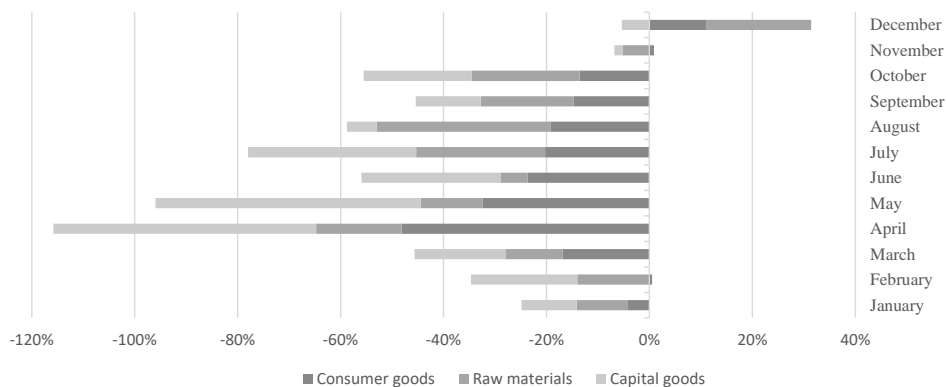


Figure 10. Year-on-year change in imports by type of goods, 2020.
 Source: created by the author with data from the Central Bank of Ecuador (BCE, 2021)

Table 1
 Year-on-year change in total imports by country of origin.

<i>Country</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>
United States	10%	22%	-5%	-15%
China	20%	17%	4%	-15%
Colombia	21%	12%	-3%	-18%
Panama	43%	35%	-7%	-56%
Peru	21%	5%	-5%	-20%
Brazil	29%	11%	-4%	-29%
Mexico	35%	11%	-4%	-20%
Spain	74%	-8%	19%	-29%
Chile	17%	-4%	-6%	-4%
Germany	21%	8%	-9%	1%

Source: created by the author with data from the Central Bank of Ecuador

Within the economic structure that has prevailed for decades, Ecuador is characterized as an importer of goods and services with higher value-added from industrial countries such as the United States, China, Vietnam, Japan, Russia, and countries of the European Union (E.U.). In addition, it faces constant changes in the international prices of raw materials and the growing gap vis-à-vis the costs of higher value-added and high-tech products (Tene, 2020).

The United States has been Ecuador's main trading partner for several years, accounting for 25% of total imports. As shown in Table 1, total imports from the U.S. market fell by 15% in 2020, while imports from China fell by the same percentage. Nevertheless, imports from Panama recorded the largest fall, with 56%. According to Hayakawa and Mukunoki (2021), the damage of Covid-19 to importing countries would be caused mainly by the decrease in aggregate demand, accompanied by an increase in port and terminal handling costs.

International transport

International transport has also been one of the sectors most affected by the pandemic, forcing the shipping and maritime industries to go through the toughest times due to the shutdown of activities in these fields to mitigate and prevent the Covid-19 outbreak (Kumar & Jolly, 2021). For this research, only the maritime sector has been considered within the international transport sector. Data are expressed in metric tons. According to data from the Andean Community (CAN, 2020), from January to June 2020, Ecuadorian private ports handled 52.6% of the country's container traffic. The port of Guayaquil represented 36.5%, Puerto Bolivar represented 9.9%, and trailing far behind are the ports of Esmeraldas and Manta, with 0.6% and 0.4%, respectively.

Seaborne merchandise trade recorded in 2019 shows wide variation; in April, the volume in metric tons fell by 9% and in June by 18%, reflecting a weak performance of international transport even before the pandemic. In 2020, trade was down 20% in April, while in June it was down 23%. Nevertheless, there was a slight recovery in the last months of the year, with an annual mean rate of 2.3% (Figure 11).

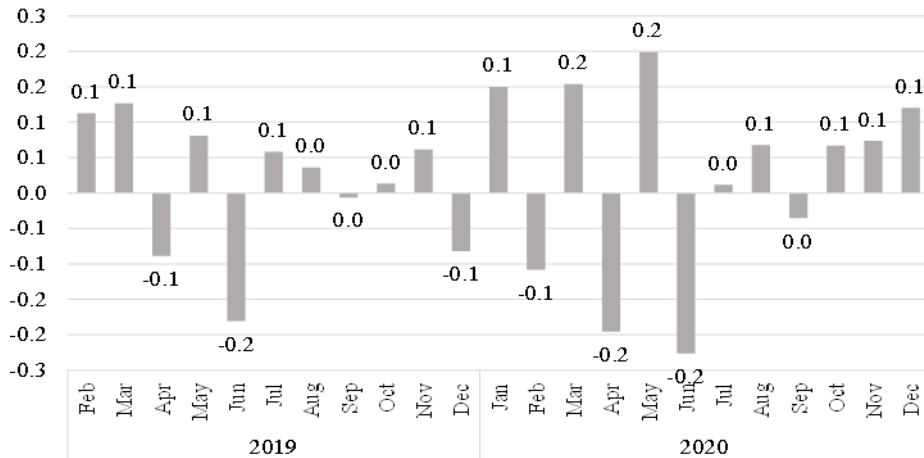


Figure 11. Year-on-year change in international port cargo volume.

Source: created by the author with data from Autoridad Portuaria de Guayaquil (APG), Autoridad Portuaria de Manta (APM), and Autoridad Portuaria Puerto Bolívar (APPB). Note: only the ports of Guayaquil, Manta, and Puerto Bolivar are included

Estimation of elasticities of Ecuador’s four main export products

After describing the behavior of Ecuador’s main export products and the degree to which the pandemic impacted them, an ordinary least squares (OLS) estimation was performed to determine the elasticities and the dependence of the four main export products on Ecuador’s GDP. The data are for the period 1985 to 2020; they were obtained from the quarterly national accounts of the Central Bank of Ecuador (BCE, 2021); GDP is in thousands of dollars, while export value is in thousands of dollars FOB; data from 1985 were used due to i) availability of data, ii) for previous years some of the export categories were not significant for total exports. These results also made it possible to determine possible scenarios for the following years and their impact on the country’s economy.

The model is as follows:

$$\ln \text{PIB} = \beta_0 + \beta_1 \ln E_p + \beta_2 \ln E_b + \beta_3 \ln E_c + \beta_4 \ln E_{ncc} + ut$$

(1)

Where:

lnGDP= logarithm of Gross Domestic Product

lnEp= logarithm of the value of oil exports

lnEb= logarithm of the value of banana exports

lnEc= logarithm of the value of shrimp exports

lnEcc= logarithm of the value of cocoa exports

It is necessary to mention that this model is the OLS regression with robust standard errors since heteroscedasticity was detected in the first instance. The estimated results are shown in Table 2.

Table 2
 Regression results.

lnPIB	
lnEp	0.254***
(7.36)	
lnEb	0.374***
(6.41)	
lnEc	0.110
(1.65)	
lnEcc	0.196*
(2.33)	
Constant	4.565***
(14.60)	
Observations	36
R ²	0.976

The t statistic is shown in parentheses

* p < 0.05; *** p < 0.001

Source: created by the author

To validate the model's results, multicollinearity, autocorrelation, normality of the residuals, and Ramsey's Reset tests were performed.

As shown in Table 3, the model's explanatory variables do not have an exact linear relation between them, given their variance inflation factor of less than 10; consequently, there is no collinearity between the explanatory variables used in the regression model. This corresponds to the Tolerance (inverse of IVF) because the further its value is from zero, the lower the degree of correlation between the independent variables.

Table 3
 Variance inflation factor.

<i>Variable</i>	<i>VIF</i>	<i>1/VIF</i>
lnEp	7.71	0.129622
lnEb	6.79	0.147241
lnEc	5.88	0.170179
lnEcc	5.76	0.173722
Mean VIF	6.53	

Source: created by the author

The Durbin-Watson statistic was estimated by contrasting the null hypothesis test of no autocorrelation when $d \approx 2$ and the alternate hypothesis of autocorrelation when $d \approx 0/d \approx 4$. For this model, the value of this statistic was 1.641809, which helps to conclude that there is no autocorrelation of order one. In this context, as shown in Figure 12, it could be said with 95% confidence that in the ten lags of the estimated residuals of the regression, there is no autocorrelation, and a pattern of alternation over time can be seen.

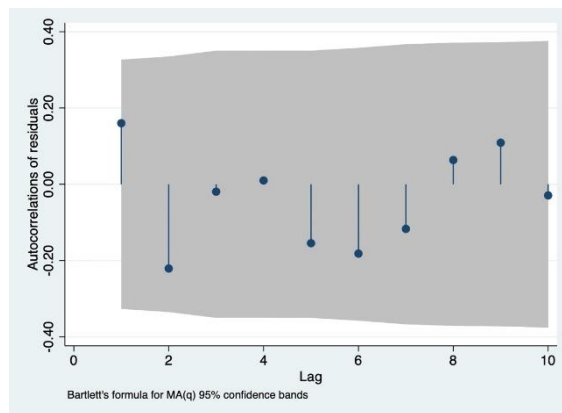


Figure 12. Correlogram graph.
 Source: created by the author

The normality test for the residuals is shown in Figure 13. Although all the points (residuals) are not aligned with the line, a distribution very close to normal is demonstrated since when calculating the skewness and kurtosis, these were 0.22 and 3.6, very close to the ideal, which would be 0 and 3, respectively, to achieve perfect normality.

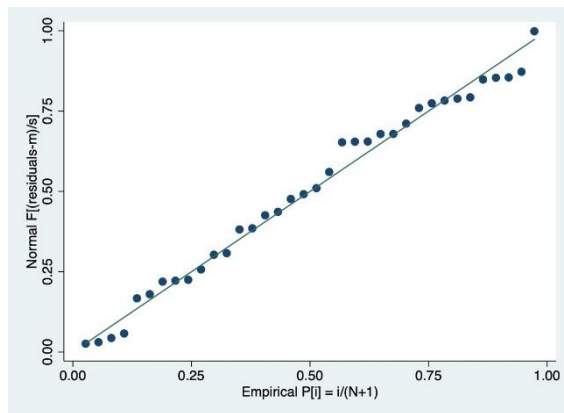


Figure 13. Normality of residuals.
Source: created by the author

The last diagnostic test of the model was the Ramsey RESET test, which verifies whether the linear model used is correct and the model proposed has not omitted relevant independent variables. The outcome from this test ($\text{Prob} > F = 0.3320$) corroborates that the model proposed is well specified and that no variables were omitted.

Based on the regression results in Table 2, it can be observed that, of the 4 explanatory variables, the value of shrimp exports is not significant at any level. This is because, although shrimp exports are currently important for Ecuador's economy, for a decade (1999-2009) the shrimp sector was affected by White Spot Syndrome (WSS), which led to a considerable drop in production, prices, and exports of this product.

At 10% significance, the value of cocoa exports explains the changes in GDP, and at 1%, the value of banana and shrimp exports directly influences GDP. The coefficients obtained indicate that the value of banana exports would have the greatest impact on GDP; if these exports increase by 1%, GDP will increase by 0.37%. Similarly, GDP will grow by 0.25% on a 1% increase in the value of oil exports, while a 1% increase in the value of cocoa exports would lead to a 0.2% increase in GDP.

The calculated elasticities will be useful for simulations for the following periods. The following are the different hypothetical scenarios (there may be many more). The first scenario assumes that by 2021 the value of oil exports will recover by 20% (half of what was lost in 2020) and that the value of banana and cocoa exports will return to the level of 2019 (in other words, decrease by 11% and 9%, respectively); if such a scenario were to occur, GDP would decrease by almost 1%.

Table 4
 Scenarios.

<i>Scenario 1</i>			<i>Scenario 2</i>			<i>Scenario 3</i>		
Change in GDP			Change in GDP			Change in GDP		
E. oil	+20%	+5.08%	E. oil	+20%	+4.95%	E. oil	+39%	+9.90%
E. banana	-11%	-4.11%	E. banana	+1%	+0.37%	E. banana	+ 2%	+0.75%
E. cocoa	-9%	-1.76%	E. cocoa	+1%	+0.20%	E. cocoa	+ 2%	+0.39%
Total		-0.80%	Total		+5.52%	Total		+11.04%

Source: created by the author

For the second, more optimistic, scenario, it is also proposed that the value of oil exports will recover by 20% and that the value of banana and cocoa exports will increase by 1%, which would result in a 5.52% increase in GDP. In the third scenario, the most optimistic of the three, the value of oil exports returns to 2019 levels (rising 39% from 2020 to 2021), and banana and cocoa export figures grow steadily by 2% each, which would lead to GDP increasing by 11%.

Conclusions

The effects of the global coronavirus crisis in 2020 caused Ecuador's total exports to fall by 9%; oil exports fell by 39%, while non-oil exports grew by 6%. Within traditional exports, increases in products such as bananas (11%) and cocoa (22%) stand out. On the non-traditional export side, mining products grew significantly, with USD 921 million exported in 2020, representing an increase of 182%. In comparison, products such as flowers and manufactured goods registered negative values.

The main destinations for Ecuadorian exports are the United States, China, and E.U. countries such as Spain and Italy, markets that were greatly affected by the Covid-19 pandemic; in 2020, exports to the United States fell by 29%, to Spain by 16%, while exports to China grew by 10%. Nevertheless, these figures are well below the growth recorded in previous years.

As a result of the lockdown and the decrease in demand due to the cessation of activities, imports in 2020 recorded substantial reductions, especially in April and May. Imports of consumer goods fell by 48%, capital goods by 51%, and raw materials by 20%. Total imports from the United States and China fell by 15%.

International maritime transport has been one of the sectors most affected by the pandemic. In April 2020, freight traffic in terms of volume fell by 20% and in June by 23%; nevertheless, a modest recovery was observed from October to December, representing an annual growth rate of 2.3%.

The estimation demonstrated that the value of shrimp exports is not significant in the model proposed. In contrast, at 10% significance, the value of cocoa exports explains the changes in GDP, and

at 1%, the value of banana and oil exports directly influences GDP. The value of banana exports would have the greatest impact on GDP; if these exports increase by 1%, GDP will increase by 0.37%. Similarly, GDP will grow by 0.25% on a 1% increase in the value of oil exports, while a 1% increase in the value of cocoa exports would lead to a 0.2% increase in GDP. In these scenarios, the role of exports is essential for the recovery and growth of the economy. Of course, as indicated by the WTO (2021), these scenarios will depend on the acceleration of the production and availability of vaccines, promoting growth in the volume of world trade in goods.

Finally, given the importance for the exporting and importing sectors of knowing the effects of Covid-19 and its impact on the country's economy, it is considered relevant to extend the research to other severely affected economic sectors. However, the main limitations of this study are, in the first place, the availability of disaggregated information related to Ecuadorian international trade and transport, in addition to the uncertainty in international trade given the pandemic and the volatility of the prices of the commodities that Ecuador sells abroad.

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