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The impact of COVID-19 on the performance of South American financial market indices-Standard study using panel models for the period (May 2020 - September 2020)

تأثير كوفيد 19 على أداء مؤشرات الأسواق المالية لدول أمريكا الجنوبية

– دراسة قياسية باستخدام نماذج بانل للفترة (ماي2020– سبتمبر2020

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Abstract

This study aimed to analyze the impact of Covid-19 cases on the performance of financial market indicators in South American countries, by choosing 6 main indicators representing 6 countries, as we adopted the new cases as the first independent variable, deaths as a second independent variable, and the performance of financial market indicators for countries South America as a dependent variable, through the application of Panel models, where 89 views were selected for the daily closing price based on the availability of these data, and the corresponding Covid 19 cases.

The statistical analysis and the corresponding interpretations showed acceptance of the fixed effects model to represent the relationship between the variables, with a statistically significant positive effect of new cases of Covid 19 infection and a negative statistical significance effect of Covid 19 deaths on the performance of financial market indicators for the studied South American countries.

Keywords : Covid 19,the performance,financial market indicators,Panel models,South American countries.

ملخص

هدفت هذه الدراسة إلى تحليل تأثير حالات كوفيد 19 على أداء مؤشرات الأسواق المالية لدول أمريكا الجنوبية، من خلال اختيار 6 مؤشرات رئيسية ممثلة لـ: 6 دول، حيث اعتمدنا حالات الإصابة الجديدة كمتغير مستقل أول، وحالات الوفيات كمتغير مستقل ثاني، وأداء مؤشرات الأسواق المالية لدول أمريكا الجنوبية كمتغير تابع، من خلال تطبيق نماذج بانل، حيث تم اختيار 89 مشاهدة لسعر الإغلاق اليومي بناءً على توفر هذه المعطيات، وحالات كوفيد 19الموافقة لها.

أظهر التحليل الإحصائي والتفسيرات الموافقة له، قبول نموذج التأثيرات الثابتة لتمثيل العلاقة بين المتغيرات، مع وجود تأثير ايجابي ذو دلالة إحصائية لحالات الإصابات الجديدة بكوفيد 19 وتأثير سلبي ذو دلالة إحصائية لحالات الوفيات بكوفيد 19 على أداء مؤشرات الأسواق المالية لدول أمريكا الجنوبية المدروسة.

الكلمات المفتاحية: كوفيد 19، الأداء، مؤشرات الأسواق المالية، نماذج بانل، دول أمريكا الجنوبية.

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1. INTRODUCTION

Since the emergence of the Covid19 epidemic in December 2019, its spread has accelerated all over the world until it became a global table in a short period, which affected the largest economics of the world countries in all fields, which insures that the situation measures are taken. And considering it financially and economically, with the countries that preceded the emergence of the covid 19 pandemic, American countries have rapidly developed regulation, cases, and plans to cope with the effects of the outbreak of the Covid19 pandemic.

The value of stocks, stock indices the value of the index can be relative to the index, the value besides this, is a suitable indicator for forecasting the performance of the market, and it can also be used in the chart as a benchmark and the relationship of their portfolio of indicators. (Kamru & Shabyashachi, 2011, p. 15)This study answers the following main question: « Is there an impact of COVID-19 cases on the performance of South American financial market indices during the period (May 1, 2020 - September 30, 2020) »

Based on the main question stated above, we ramified three sub-questions as follows:

-Is there a statically significant effect of new cases of COVID-19 on the financial market indicators of south American countries during the period (1May 2020 – 30 September 2020)?

- Is there a statistically significant effect of COVID-19 deaths on the financial market indicators of South American countries during the period (1May2020 – 30 September 2020)?

According to the economic conditions that accompanied the COVID-19 pandemic, the study starts from the following two hypotheses:

-There is a significant statistical effect of new cases of COVID-19 on the financial market indicators of South American countries during the period (1 May 2020 – 30 September 2020).

-There is a statistically significant of COVID-19 deaths on the financial market indicators of South American countries during the period (1 May 2020 – 30 September 2020).

To get acquainted with the reality of the performance of financial market indicators in South American countries during the COVID-19

pandemic, work has been done on panel models, where the most important objectives can be mentioned as follows:

-Conducting an evolutionary analysis of the performance of financial market indicators in South American countries during the period (1 May 2020 – 30 September 2020) and try to interpret and link them to cases of COVID-19 development;

-Conducting an evolutionary analysis of new cases of Covid-19 in South American countries during the period (1 May 2020 – 30 September 2020) and try to explain them

-Conducting an evolutionary analysis of new cases of Covid-19 in South American countries during the period (1 May 2020 – 30 September 2020) and try to explain them.

-Determining the nature of the relationship and the impact of new cases of Covid-19 on the performance of financial market indicators in South American countries during the period (1May 2020 – 30 September 2020).

-Determining the nature of the relationship and the impact of Covid-19 deaths on the performance of financial market indicators in South American countries during the period (1 May 2020 – 30 September 2020).

2. previous studies

Many recent studies have examined the impact of the Covid-19 pandemic on the performance of financial market indicators, in different environments and periods, so we will review the most important elements in the relevant studies, as follows:

-Study (Zeren & Hizarci, 2020) . This study aimed to analyze the impact of the Covid-19 pandemic on the stock markets for a selected sample of indicators, where the daily data for the period from 23 January 2020 to 13 March 2020 were used, by studying the complementary relationship between total cases of injuries and the performance of the selected indicators, as the study found complementary relationship between Covid-19 cases and indicators: SSE, KOSPI and IBEX35? While the lack of complementarily relationship with indicators: FTSE, MIB, CAC40, DAX30.

This study contributes to clarifying the relationship between stock market risks and the outbreak of Covid-19 in the 10 countries with the most recorded infections, in which the number of confirmed cases totaled 466.693 cases, by using the standard deviation of daily returns and the

correlation coefficient to spread of the pandemic. The study showed that global financial risks have increased dramatically in response to the epidemic, and that the stock market reactions alone are clearly linked to the severity of the disease outbreak in each country, and the great uncertainty that accompanied the spread of the epidemic and the associated economic losses caused the markets to be very volatile and could not predict it.

-Study (Ali, Alma, & Rizvi, 2020)The study measures the impact of Covid-19 pandemic on market returns for several countries and regional market indicators and major commodity exchanges have been used to investigate the effects of the pandemic on these markets for the period from December 2019 to 10 March 2020, which divided into 3 phases, the stage of the emergence of the pandemic in China, the stage of the pandemic spread in Asia and Europe, and the stage of the pandemic spread in North America.

The results of the study revealed a negative impact of the Covid-19 pandemic on the studied markets through the erosion of a quarter of the wealth in a month's period in addition to an increase in the average volatility of stock markets in the United States, the United Kingdom, Germany and South Korea, and European indicators also witnessed the highest volatility in the third phase, although the second phase. The death rate was higher in Europe.

-Study (Ashraf, 2020) This study is based on determining the extent of stock market response in 64 countries to the Covid-19 pandemic during the period from 22 January 2020 to 17 April 2020, by adopting cross-sectional data technology to estimate the impact of change in confirmed cases cof Covid-19, as market returns decreased when the number of confirmed cases increased, and the study also found that stock markets interacted more with the growth in the number of confirmed cases compared to the growth in the number of deaths, and the response of stock markets differed over time as the negative market reaction was strong during the first days of registering confirmed cases then between 40 and 60 days after registering initial confirmed cases.

-Study (Sansa, 2020)The study seeks to highlight the impact of Covid-19 on the financial markets in China and the United States of America during the period from 01 March 2020 to 25 March 2020. To achieve this, the study uses the Shanghai stock Exchange index as a sample for China and the Dow Jones index on the New York Stock Exchange as a sample for the

United States, where it applied a linear regression model. The simple correlation between Covid-19 cases as an independent variable and the performance of the Shanghai Stock Exchange and New York as a dependent variable, and this study revealed a strong positive correlation between Covid-19, the Shanghais Stock Exchange and the Down Jones Index during the period from (01 March 2020 to 25 March 2020)

-Study (Shaharyar, 2020) Theory aims to measure the impact of Covid-19 on the performance of the Pakistani stock market, as it relied on positive cases related to Covid-19 and the number of deaths in addition to recoveries and closing prices for the PSX 100 index for the first half of 2020.

The results of the study indicated that recoveries from Covid-19 affect the performance the PSX 100 index while daily injuries and deaths had no effect on the performance of the PSX 100.

-study (Okorie & Lin, 2020) The study contributes to determining the effect of the Covid-19 pandemic infection on the stock markets of more than 32 countries affected by the pandemic, as of 31 March 2020 the study was conducted on a first and second period i.e. before and during the pandemic, using the correlation, the results of this study indicate the effect of the Covid-19 pandemic infection on Equity Markets although this effect faded with the passage of time, the stock market activity returned to its previous level.

After reviewing the most important previous studies that we were able to obtain, we note the effect of the Covid-19 pandemic on the performance of the financial market indicators studied in all previous studies of different environments and the development of pandemic cases, and accordingly through this study we link the findings with these results, and try interpreted in line with reality.

3. Theoretical framework of variables

In order understand and analyze the study variables, we will try to give some basic concepts in the study, such us financial market indicators, cases of Covid-19, as follows:

3.1 Financial Market Index

In 2016Svirydzenka presented a modern concept for the financial market index, considering it a comprehensive measure of financial development, given its wide coverage of the main indicators of financial

markets, including their accessibility and determination of their efficiency (Can, 2017, p. 5)In addition, he defined the market index as: an index A statistic used as a standard to measure the overall performance of the market, and it differs in terms of the method of calculation and the number of securities to calculate the index (Al-abedallat & Al Shabib, 2012, p. 131)The financial market index is also defined as a measure of the changing value of a group of stocks over time, the index can reflect the prices of stocks or debt securities as well as foreign currencies, but the stock index is the most used in the financial market. An index can be configured to present an exchange, an industry, or a part of a market or an industry (Kamru & Shabyashachi, 2011, p. 13).

Financial market indicators are affected by changes in the economic fluctuations that regularly affect the levels of economic and financial activity, and the movement of the market index "up or down." (Al-abedallat & Al Shabib, 2012, p. 130), knowing the movement of the index by drawing the general trend line, and estimating the regression equation between performance and time development. If the general trend lines has a positive slope, the market index movement, is an upward movement, and vice versa in the case of a negative slope.

3.2Analysis of COVID-19 cases in the studied South American countries

The covid-19 pandemic swept the South American countries quickly, in terms of injuries and the number of deaths, and by reading the results in the table below, we note that the date of the start of the pandemic was in Ecuador o 20 February 2020, followed by Brazil with the first case on the date of 26 February 2020, while Peru and Colombia were the two countries to be hit by the pandemic on 06 March 2020, through this we note that the dates of the outbreak of the pandemic in the studied countries were close.

Table 1. Descriptive statistics of cases of injury the state

Average	The slightest injuries	The highest casualities	The date of the pandemic began	The state
5242.23	104	13477	03 .3. 2020	Argentina
868.85	0	2461	20 .2. 2020	Ecuador

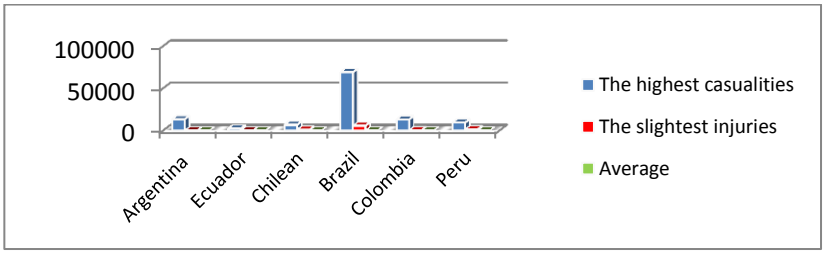
2580.25	980	6754	03 .3. 2020	Chilean
33679.32	5632	69074	26 .2. 2020	Brazil
5424.71	305	13056	06 .3. 2020	Colombia
5091.14	1444	9507	06 .3. 2020	Peru

Source: Prepared by the researchers based on Eviews10

As for the maximum number of daily injuries that the studied American countries witnessed, the highest peak in the number of new injuries was in Brazil with: 69.074 new injuries, followed by Argentina with: 13.477 new injuries, while the lowest peak of the number of new injuries was in Ecuador with: 2.461 new injuries.

The highest daily average during the studied period was in Brazil: 33.679.32 cases and the lowest average number of injuries were in Ecuador with: 868.85 cases

Fig.1.representation of cases



Source: Prepared by the researchers using Excel 2013

3.3Analysis of Covid-19 deaths in the studied South American countries

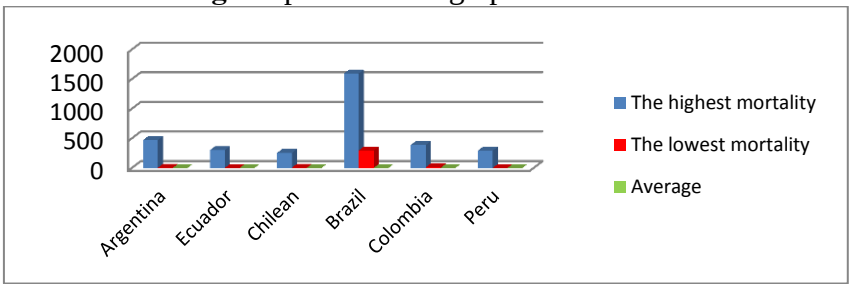
Through table No.02, we note that the first death from the Covid-19 pandemic in the studied countries was in Argentina on 07 March 2020, then in Ecuador on 13March 2020, while Chile was the last studied country to record the first death on 21 March 2020. The highest daily deaths were in Brazil with 1595 cases, followed by Argentina with: 470 deaths, while Chile was the lowest with 252 deaths, and with regard to the lowest daily deaths, it was low and reached 0 cases in some countries, such as Ecuador and Peru, while the lowest daily number of injuries in Brazil was 296 cases, and as for the highest daily average during the studied period, it was in Brazil: 999.73 cases followed by Colombia with an average of 168.25 injuries, and the lowest average injuries were in Ecuador: 44.89 cases per day.

Table 2. Descriptive statistics of deaths

Average	The lowest mortality	The highest mortality	Date of first death	The state
131.56	3	470	07 March 2020	Argentina
44.89	0	301	13 March 2020	Ecuador
64.42	3	252	21 March 2020	Chilean
999.73	296	1595	17 March 2020	Brazil
168.25	10	389	16 March 2020	Colombia
152.86	0	291	19 March 2020	Peru

Source: Prepared by the researchers based on Eviews10

Fig.2.representation graphic of deaths



Source: Prepared by the researchers using the Excel 2013

3.Research design

3.1 Study Population and Sample

In order to study the relationship and impact between Covid-19 cases and the performance of financial market indicators in South American countries, a sample consisting of 06 indicators representing 6 financial markets for the following countries was chosen: Argentina, Ecuador, Chile, Brazil, Colombia and Peru. All study data, whether related to Covid-19 cases or the studied financial market trading days.

3.2Limits of the applied study

The limits of this study are as follows:

-Time limits : The time period for the study extends from 01 May 2020 to 30 September 2020, however, for special circumstances, 89 days have been chosen in line with the trading days of the financial markets for the studied

indicators and cases of disclosure of Covid-19, meaning the days in which trading was absent were excluded.

-Study variables: The study variables are:

-the first independent variable: new cases of Covid-19 in the studied countries.

-the second independent variable: daily deaths from Covid-19 in the studied countries.

-the dependent variable: the performance of the financial market indicators of the countries of South America.

3.3Statistical tools used

-**Panel model:** Where the choice made between the aggregate model, the fixed effects model and the random effects model.

-**Chow test:** to make a comparison between the aggregate model and the fixed effects model, in terms of the strength of the representation of the relationship between variables;

-**Housman's test:** to make a comparison between the fixed effects model and the random effects model if the aggregate model rejected;

-**Descriptive tests:** similar to the arithmetic mean of the study variables during the period, the standard deviation and the coefficient of variation.

4.Empirical findings

4.1 Evolutionary and comparative analysis of the studied indicators

In order to track the performance of the South American financial market indicators during the study period, we calculated the descriptive statistics and the equation for taking the general trend indicator, where the coefficient of variation is the most appropriate test to make a comparison between the performance of the studied indicators, as we note that the BVG index representing the Ecuadorian financial market was the best performance during the studied period with the lowest variance coefficient of 1.84%, followed by the SPIPSA index representing the Chilean financial market with a variance factor of: 3.78%, while the MERV index representing the Argentine financial market was the least performing with a larger variance factor of 10.02%.

Table 3. :Descriptive statistics of the study indicators

Coefficient of variation	Standard deviation	Average	Indications	Countries
10.02%	4369.40	43587.96	MERV	Argentina
1.84%	3.72	201.91	BVG	Ecuador
3.78%	174.259	3886.46	SPIPSA	Chilean
8.50%	8112.62	95429	BVSP	Brazil
4.32%	49.85	1153.381	COLCAP	Colombia
6.39%	1092.689	17079.79	SPBLPGPT	Peru

Source: prepared by the researchers based on Eviews10

To know the movement of the direction of the indicators during the studied period, we calculated the regression equation, and determined the movement of the index direction shown in Table No 04, where we note that 4 indicators had an upward movement despite the fluctuation in performance during the studied period, while BVG and SPIPSA indicators had a downward movement during the studied period

Table 4. : The movement of indicators' trend

Mouvement pointers	Equation of the general trend line	Indications
Raisin	MERV = 90,21 x+ 39528	MERV
Descende	BVG = -0131 x + 207,8	BVG
Descende	SPIPSA = - 1,290 x +3944	SPIPSA
Raisin	BVSP = 235,3 x + 84840	BVSP
Raisin	COLCAP =1,452 x + 1088	COLCAP
Raisin	SPBLPGPT = 37,76 x+ 15380	SPBLPGPT

Source: prepared by the researchers based on Excel 2013

4.2 Results of selecting the study model

In this element, we will choose the appropriate model to study the impact of COVID-19 on the performance of financial market indicators in South American countries, through a comparison between the following models: (Pooled Regression Model):

$$yit = B0 + \sum_{j=1}^{k} BjXj(it) + \varepsilon it \text{ , i=1,2 …N t= 1, 2, …T}$$

Fixed effects model:

$$yit = \alpha 1 + \sum_{d=2}^{N} \alpha dDd + \sum_{j=1}^{k} BjXj(it) + \varepsilon it \quad i=1,2 \ldots .=N \ , \ t= 1,2,\ldots T$$

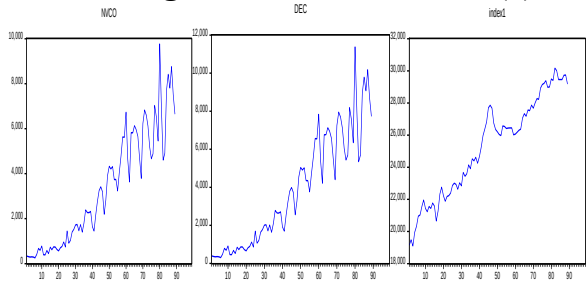
Random effects model:

$$yit = \mu + \sum_{j=1}^{k} BjXj(it) + Vi + \varepsilon it \quad i=1,2 \ldots .=N \ , \ t= 1,2,\ldots T$$

4-2-1 time series stability

Among the tests of studying the stability of time series, we relied on Augmented Dickey-Fuller (ADF) Test, where Table No. 06 shows the results of stability at the level, where we noticed that all the studied time series were not stable at the level, where the values calculated for the test were less than the critical values in the three cases (None, Intercept , Trend and intercept), at the 5% significance level. Therefore, the stability of the time series after At level I (1), must be studied.

Fig.3. Time series At level I (0)



Source: Prepared by the researchers based on Eviews10

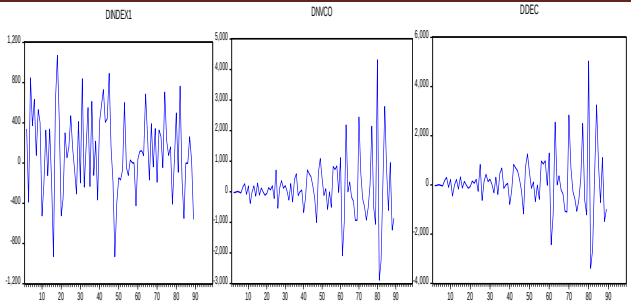
Table 5. Augmented Dickey-Fuller (ADF) Test At level I (0)

variables	None	Intercept	Trend and intercept
financial market indicators	2.058	-2.094	-1.568
new cases of COVID-19	- 1.3868	-1.7603	-1.6837
COVID-19 deaths	-1.3232	-1.6947	-1.5885
the 5% significance level	-1.9414	-2.8667	-3.4183

Source: Prepared by the researchers based on Eviews10

As a result of the instability of the studied time series at the level, we studied the stability after At level I (1), as it was found that all of them are stable after At level I (1), as shown in Figure 03 and Table 07

Fig.4. Time series At level I (1)



Source: Prepared by the researchers based on Eviews10

Table 6. Augmented Dickey-Fuller (ADF) Test At level I (1)

variables	None	Intercept	Trend and intercept
financial market indicators	-8.8625	-9.2420	-9.4372
new cases of COVID-19	-25.5120	-25.480	-25.4764
COVID-19 deaths	-12.2750	-12.2634	-12.2744
the 5% significance level	-1.9414	-2.8667	-3.4183

Source: Prepared by the researchers based on Eviews10

4-2-2 homogeneity test

In order to verify the homogeneity property and the applicability of cross-sectional time series, we tested Hsiao through its three steps, total homogeneity, homogeneity of β coefficients and homogeneity of constants α, the results of which are shown in the following table:

Table 7. Hsiao test

Test stages	tests	F-Stat	Decision
overall homogeneity	F1	1633.251	Reject $H^1 0$
homogeneity coefficients β	F2	3.184	Accept $H^2 0$
The homogeneity of the constants α	F3	4698.241	Reject $H^3 0$

Source: Prepared by the researchers based on Eviews10

4-2-3 Differentiating between the aggregate model and the fixed effects model

We use Chow's test to choose between an aggregate model and fixed effects model and its hypotheses are given as follows:

- $H_{0:}$›0.05P-Value we accept the summative regression model.
- $H_{1:}$‹0.05 : P-Value we accept the fixed effects model.

Table 8. : Chow test

The probability value	Test value
0.0000	2002.038536

Source: prepared by the researchers based on Eviews10

Through the probability value of the Chow test of 0.0000, which is less than 0.05, therefore we reject H0 and accept H1, meaning that the fixed model is appropriate.

4-2-4 Differentiating between the fixed effects model and the stochastic effects model

We use the Housman test to choose between a stochastic and static model. His hypotheses are given as follows:

-H0 : 0.05 P-value We accept the random effects model;

-H1 : 0.05 P-value We accept the fixed effects model.

Table 9. : Housman test

The probability value	Test value
0.0000	2002.038536

Source: prepared by the researchers based on Eviews10

We notice from Table 09 that the probability value is equal to 0.000 and it is less than 0.05, meaning that we reject H0 and accept H1, i.e. the fixed model because it is more significant and efficient in representing the relationship between the study variables.

4-3 Significance of fixed effects model parameters

4-3-1 Significance of the estimated parameters

We discuss the statistical significance of the estimated coefficients in the fixed effects model:

-The statistical significance α_0 expressing the initial value

$$\begin{cases} H_0: \alpha_0 = 0 \\ H_1: \alpha_0 \neq 0 \end{cases}$$

Through attached Table NO 08 we notice that the probability value (prob) reached 0.0000, which is less than 0.05, the level of significance adopted in the study, from which we reject H0 and accept H1, meaning that the estimated parameter differs significantly in fact from zero and that its estimated value has a statically significant level at 0.05 significance level

-The statistical significance related to the first independent variable: new cases of Covid-19 we notice through attached table No 08 that we notice that the probability value (prob) amounted to 0.0000, Which is less than 0.05 the level of significance adopted in the study, and from it we reject H0 and accept H1, meaning that the estimated parameter differs significantly in fact from Zero and that its estimated value is statistically significant at significance level 0.05

-The statistical significance $\boldsymbol{\alpha}^2$related to the second independent variable: deaths from

Covid-19

$$\begin{cases} H_0: \alpha_2 = 0 \\ H_1: \alpha_2 \neq 0 \end{cases}$$

we notice through attached table No 08 that we notice that the probability value (prob) amounted to 0.0000, Which is less than 0.05 the level of significance adopted in the study, and from it we reject H0 and accept H1, meaning that the estimated parameter differs significantly in fact from Zero and that its estimated value is statistically significant at significance level 0.05.

4-3-2 The overall significance of the model

$$\begin{cases} H_0: \alpha_0 = \alpha_1 = \alpha_2 = 0 \\ H_1 \text{aumois} (\alpha_j \neq 0) \forall_j = 1.2. \end{cases}$$

In this test, we test the statistical significance of the coefficients as a whole according to two hypotheses:

$$\begin{cases} H_0: \alpha_0 = \alpha_1 = \alpha_2 = 0 \\ H_1 \text{aumois} (\alpha_j \neq 0) \forall_j = 1.2. \end{cases}$$

We also note that the probability value of the test is 0.0000 brob (F.statistic), from which we reject H0, of the test is 0.0000 brob (F.statistic),

from which we reject H0, and we accept H1, meaning that there is at least a parameter that differs significantly from zero; meaning that there is a statistical significance for the estimated equation at 0.05 significance level.

4-3-3 Good matchmaking morale

We note from attached table No 08 that the value of the coefficient of determination, which amounted to 0.9934, means that the equation of the fixed effects model explains to us 99.34% of the changes that occur in the performance of financial market indicators in South American countries, which is a good percentage to explain the relationship between the variables.

5.Discussing results and their relationship to previous studies

The results of this study are consistent with the results of most of the previous studies presented in the fact that there is an impact of the cases of the Covid-19 pandemic on the financial market indicators of the South American countries, despite the presence in the nature of the effect and the relationship, as it was opposite in deaths and negative in new cases it is important to discuss these results, and link them with the findings in previous studies, as follows:

-Although there was some fluctuation in the performance of the studied indicators, all of them were characterized by a low coefficient of variation, as they were below the required rate of 20% in addition to the high average performance in some periods;

-It was also observed that there was a discrepancy in the movement of the studied indicators, as 4 indicators were distinguished by general trend line with a positive slope, and two

Indicators with a general trend line with a negative slope during the study period.

-Although there are many that the measures taken by the studied South American countries, such as closing air and land borders, decisions of central banks and commercial transactions, in addition to decisions related to sectors and companies for the studied indicators, Covid-19 has a negative impact on the studied financial market indicators, as they correspond .

This result, along with the results of several studies, the most important of which are:

(Ali, Alma, & Rizvi, 2020)(Qing, Junyi, Sizhu, & Jishuang, 2020)

-There is a discrepancy in new cases of Covid-19 between the studied countries, as we noticed a large difference in the numbers recorded during the study period;

-We also note that there is a discrepancy in the new cases of Covid-19 deaths among the studied countries, as the results of the descriptive statistics varied during the study period;

-The statistical analysis showed acceptance of the fixed effects model to represent the relationship between Covid-19 cases and the performance of financial market indicators in South American countries.

-Realistic evidence of the impact of Covid-19 on the performance of financial market indicators in South American countries, through the presence of fluctuation in the performance of the studied indicators during the period 1 May 2020 to 30 September 2020,

This result is consistent with the results of several studies such as:

(Zeren & Hizarci, 2020) It is the opposite of the results of the study (Sansa, 2020)

Based on the statistical evidence of the study represented in the parameters of the fixed effects model chosen in the study, we realize the extent of the impact of the Covid-19 pandemic cases on the performance of financial market indicators in South American countries.

This study is part of recent studies that dealt with the state of performance of financial market indicators in South American countries in light of the Covid-19 pandemic, and accordingly, the summary of what can be included from the study of the impact of Covid-19 on the performance of financial market indicators in South American countries is that they have been affected by the Covid-19 pandemic.

6. Conclusion:

The study analyzed the relationship and effect between Covid-19 cases (new infections and deaths) and the performance of financial market indicators for South American countries, by using Panel models during the period from 1 May 2020 to 30 September 2020, where the fixed effects model was chosen to represent the relationship between the variables.

The following are the most important conclusions of the study:

-Despite the decrease in the coefficient of variation for all the studied indicators, there is fluctuation in their performance during the studied

period, as some indicators were characterized by their high standard deviation and low arithmetic mean for the total period;

-The studied countries witnessed a continuous increase in new cases of Covid-19 during the study period, as they were characterized by a general trend line with a positive slope;

-The statistical tests (Chow and Housman) showed acceptance of the fixed effects model to represent the relationship between the variables, as its features were marked significantly at the significance level adopted in the study 0.05;

-The existence of a positive effect (positive relationship) with statistical significance for new cases of Covid-19 on the performance of financial market indicators in South American countries during the studied period as the estimated parameter of the first independent variable was significant at the significance level of 0.05, this result corresponds to the results of studies: (Ashraf, 2020)(Sansa, 2020)(Okorie & Lin, 2020)؛

-The presence of a negative (inverse relationship) statistically significant effect of daily deaths with Covid-19 on the performance of financial market indicators for South American countries during the studied period, where estimated parameter of the second independent variable was significant at the significance level of 0.05, this result corresponds to the results of studies: (Ali, Alma, & Rizvi, 2020)(Qing, Junyi, Sizhu, & Jishuang, 2020)

In light of the findings, the study recommends the following:

-Preparing plans and strategies to avoid various shocks and financial crises in light of the economic conditions of the South American continent;

-Activating the ability of the available financial information to predict various breakdowns in the path of financial market indicators for South American countries in line with early detection and warning of crises;

-The need to work on the integration of the financial markets of South American countries and to activate the degree of their efficiency.

The conditions for preparing this study were characterized by many difficulties related to the study data on the rest of the financial market indicators of the South American countries that were not studied in order to reach comprehensive results of the reality of the performance of the South American financial market indicators, as the study was limited to 6 main indicators, and despite these difficulties, the study she was able to highlight

the impact of Covid-19 cases on the performance of studied financial indicators.

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