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COVID-19, GOVERNMENT POLICIES AND THEIR EFFECTS ON LATIN AMERICAN CAPITAL MARKETS

COVID-19, POLÍTICAS GUBERNAMENTALES Y SUS EFECTOS EN LOS MERCADOS DE CAPITALES DE AMÉRICA LATINA

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José Luis Ruiz Vergara
Facultad de Economía y Negocios, Universidad de Chile, Chile
https://orcid.org/0000-0002-1574-8738
jlruiz@unegocios.cl

Angie Guzmán Hoyos
Facultad de Economía y Negocios, Universidad de Chile, Chile
aguzmanh@fen.uchile.cl

Abstract

The COVID-19 pandemic has led governments to implement policies that affect households and companies. In this study, we analyze the impacts of government policies and COVID contagion rates on stock market returns for the countries that belong to the Latin America Integrated Market through robust OLS regressions. We find evidence that the daily growth rate of confirmed COVID-19 cases and social distancing measures negatively influence the financial performance of stock indexes, while public awareness campaigns and contact tracking test policies are seen to have had positive effects. These findings are helpful for evaluating government policy impacts and portfolio performances.

Keywords: COVID-19, emerging capital markets, government policies, MILA, social distancing.

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Resumen

La pandemia de COVID-19 ha llevado a los gobiernos a implementar políticas que afectan a hogares y empresas. En este estudio, analizamos los impactos de las políticas gubernamentales y las tasas de contagio de COVID en los rendimientos bursátiles de los países que pertenecen al Mercado Integrado de América Latina a través de regresiones OLS robustas. Encontramos evidencia de que la tasa de crecimiento diario de casos confirmados de COVID-19 y las medidas de distanciamiento social influyen negativamente en el desempeño financiero de los índices bursátiles, mientras que se considera que las campañas de concientización pública y las políticas de prueba de seguimiento de contactos han tenido efectos positivos. Estos hallazgos son útiles para evaluar los impactos de las políticas gubernamentales y el desempeño de la cartera.

Palabras Clave: COVID-19, mercados de capitales emergentes, políticas gubernamentales, MILA, distanciamiento social.

1. Introduction

The pandemic caused by the Coronavirus (COVID-19) is strongly affecting world economic activity and one year on from the onset of the pandemic there seems to be no short-term end in sight (Junior et al. (2021)). The impact on stock markets has been massive and the pandemic is considered the worst in the world's recent history (Baker et al. (2020)). As a result of the greater uncertainty surrounding the performance of the economy and companies, capital markets have experienced strong movements. Stock markets around the world performed negatively in the aftermath of the huge increase in uncertainty when the virus first began to spread in March 2020 (Al-Awadhi et al. (2020), Ashraf (2020), Topcu & Gulal (2020), Zhang et al. (2020)). There were also spillovers to the cryptocurrency market (Corbet et al. (2021)), increases in market inefficiency in India (Okorie & Lin (2021)), the US, and Europe (Frezza et al. (2021)), as well as evidence of a rise in herding behavior in Europe (Espinosa-M´endez & Arias (2021)). Equity and USD indexes were the primary transmitters of shocks before the Coronavirus, whereas the bond index took over this role during the COVID-19 outbreak (Bouri et al. (2021)). The pandemic also triggered changes in business and consumer behavior (Donthu & Gustafsson (2020)). Stock markets reacted to COVID health news (Salisu & Vo (2020)). Ftiti et al. (2021) showed that news related to the number of cases and deaths sparked an increase in overall risk by increasing stock market returns volatility and reducing the level of stock market liquidity. In the same line, Harjoto et al. (2020) showed how stock markets in emerging economies were affected by the number of deaths and cases, whereas developed economies were affected only by cases. Liu et al. (2021) showed that the pandemic also increased the risk of a stock market crash. Seven & Yılmaz (2021) report that economies based on natural resources and tourism are negatively associated with countries' stock market recovery performance. Governments have been taking measures to curb the climate of uncertainty (Wagner (2020); Sebastiani et al. (2020)). Zaremba et al. (2021) provide evidence that information campaigns about COVID-19 facilitate trading activity. These measures include social distancing, public awareness campaigns, quarantine policies,

and programs to support household income, which have had an adverse impact on economic activity (Ashraf (2020)). One of our hypotheses is that stock markets are negatively affected by government rules constraining people's freedom to move around the country or government decisions to close borders to prevent the spread of the virus. Specifically, we follow Ashraf (2020) who quantifies governments' responses to the health crisis through information from the University of Oxford in four indices: The Government Response Stringency Index, the Containment and Health Index, the Index of Economic Support to Households, and the Risk of Openness Index.

To examine our hypotheses, this study focuses on the Latin America emerging economies of Chile, Colombia, Mexico, and Peru, which are the countries that belong to the Latin American Integrated Stock Market (MILA). These countries created a unified stock index in order to promote the development of the region (Yepes-Rios et al. (2015)). The main contributions of this research focus on providing evidence for policymakers and investors concerning the performance drivers of the stock exchange indexes that make up the MILA. First, we find evidence that the daily growth rate of confirmed COVID-19 cases negatively impacts the performance of these Latin American stock indexes, with the exception of Peru. Second, public policies have had a mixed effect on capital markets. Social distancing measures have negatively impacted the financial performance of these economies, while public awareness campaigns and contact tracking test policies have had positive effects. Third, increases in the local volatility of commodities have had a positive effect on capital market indexes, while global uncertainty has had the opposite effect on said indexes. These findings are helpful for evaluating policy impacts for policymakers and portfolio performance for investors.

The remainder of this paper is organized as follows. Section 2 reports the data and methodology. Section 3 provides the results. Finally, Section 4 concludes.

2. Data and Methodology

Our dependent variable is the performance for the main stock indexes of Chile (IPSA), Colombia (COLCAP), Mexico (IPC), and Peru (IGVL). These indexes are based on the most traded stocks, with the number of stocks that make up the index being 30, 20, 35, and 33, respectively. We convert returns to dollars (USD) and use the daily closing price for a daily sample period that covers 2020.

The baseline model for each country is:

$$Y_t = \beta 0 + \beta_1 DGRCov19_t + \beta_2 S\ Index_t + \beta_3 CH\ Index_t + \beta_4 Eco\ Index_t + \beta_5 Risk\ Index_t + \varepsilon_t \quad (1)$$

where our dependent variable is Y_{it}, the logarithm return for the stock index for country i at time t. The independent variables are: DGRCov19, the daily growth rate of confirmed COVID-19 cases. We expect an increase in the rate of confirmed cases to have a negative effect on the performance of the index. S Index is the Stringency Index that records information on social distancing policies. We expect these policies to have a negative impact on the performance of the index. CH Index is the Containment and Health Index that represents public awareness campaigns and contact tracking test policies. We expect these policies to induce greater responsibility and to create better conditions for a positive impact on the performance of the index. Eco Index is the Economic Support to Households Index that represents assistance programs for households. We expect this policy to be associated with a negative context and thus to negatively impact the performance of the index. Risk Index is the Risk of Openness

Index that calculates the measure of risk a country faces in taking an open political stance. This index is associated with better control of the pandemic and thus we expect a positive effect on the performance of the index. Finally, ε_t is the error term.

We also extend the baseline model by considering financial variables that could affect the country´s index of stock returns. Thus, the model is:

$$Y_t = \beta_0 + \beta_1 DGRCov19_t + \beta_2 S_Index_t + \beta_3 CH_Index_t + \beta_4 Eco_Index_t + \beta_5 Risk_Index_t + \beta_6 Spread_t + \\ + \beta_7 Local_DVol_t + \beta_8 DVIX_t + \varepsilon_t \quad (2)$$

where the additional control variables are: Spread, that is based on the difference between the rate of return from long-term bonds (10-year) and short-term bonds (3-month) from the Federal Reserve (FED). A positive difference is associated with a better economic context and thus the effect is positive on the performance of the index; Local DVol, that proxies the variation for the main commodity volatility of the local countries (we use copper for Chile and Peru, and oil futures for Colombia and Mexico, since they export oil and have an automotive industry, respectively). Therefore, we expect a positive effect on the performance of the index; DVIX, the percentage variation of the CBOE Volatility Index (VIX). VIX is derived from the prices of SPX index options with near-term expiration dates. It generates a 30-day forward projection of volatility and is commonly used to reflect global volatility. We thus expect this variable to have a negative effect on the performance of the index.

Finally, variable definitions and sources of information are explained in detail in Appendix A (Table A1).

3. Results

The summary of the variables and their statistics are reported in the following Table 1 for the daily period for 2020. Latin American countries are affected negatively by the COVID-19 in stock performance, and the high value of the standard deviations evidences wide fluctuations. The growth in confirmed COVID-19 cases has a daily mean of 3.2%, 5.1%, 3.6%, and 3.8% for Chile, Colombia, Mexico, and Peru, respectively. The highest means and volatility are reported in Colombia. Distancing policies, public awareness campaigns and tracking test policies are stronger in Chile and Mexico, while economic support is greatest (lowest) in Chile (Mexico). The risk of reopening the economy is greater for Chile and Colombia, while this risk is much lower for Mexico.

Table 1. Summary Statistics.

VARIABLES	(1) Chile	(2) Colombia	(3) Mexico	(4) Peru
Returns				
Mean	-0.0003	-0.0008	-0.0001	-0.0003
Std. Dev.	0.0231	0.0251	0.0240	0.0180
DGRCov19				
Mean	0.0321	0.0509	0.0362	0.0382
Std. Dev.	0.0907	0.1925	0.0921	0.1112
S Index				

VARIABLES	(1) Chile	(2) Colombia	(3) Mexico	(4) Peru
Mean	0.2417	0.2363	0.2627	0.1275
Std. Dev.	23.442	29.750	27.391	24.489
CH Index				
Mean	0.2286	0.2084	0.2462	-0.0883
Std. Dev.	17.593	25.455	19.819	46.507
Eco Index				
Mean	0.3984	0.3086	0.2976	0.1969
Std. Dev.	36.865	35.802	47.245	38.449
Risk Index				
Mean	0.0033	0.0032	0.0027	0.0015
Std. Dev.	0.0477	0.0405	0.0471	0.0536
Spread				
Mean	0.5252	0.5235	0.5286	0.5277
Std. Dev.	0.2500	0.2519	0.2474	0.2495
Local DVol				
Mean	0.0011	-0.0005	0.0003	0.0010
Std. Dev.	0.0143	0.0441	0.0426	0.0143
DVIX				
Mean	0.0053	0.0076	0.0038	0.0055
Std. Dev.	0.0962	0.0971	0.0923	0.0956
Observations	251	243	252	254

Notes: DGRCov19, the daily growth rate of confirmed COVID-19 cases; S Index, the Stringency Index; CH Index, the Containment and Health Index; Eco Index, the Economic Support to Households Index; Risk Index, the Risk of Openness Index; Spread, that is based on the difference between the rate of return from long term bonds (10-year) and short term bonds (3-month); Local DVol, that proxies the variation for the main commodity volatility of the local countries; and DVIX, the percentage variation of the CBOE Volatility Index (VIX).
Source: own elaboration based on data from The University of Oxford, investing.com and ourworldindata.org.

Table 2 shows the results for the determinants of stock market performance for each country analyzed. In the baseline model, for Chile and Colombia, Covid daily growth rate proves to be significant at 1%, and negatively affects capital market returns. This is in line with our expectations that when there are more daily cases reported people decide to avoid engaging in normal activities, which negatively affects company performance. Mexico presents a negative, but not significant, effect. For its part, Peru shows a positive and significant effect at 1%. Additionally, distancing policies (proxied by the Stringency Index) show a negative effect on stock market returns. The latter is significant at 1% for Chile and Peru, but not significant for Colombia and Mexico. The negative effect of distancing policies on market performance is in line with our expectations, as more constraints on free movement create worse conditions for the normal sale of products and services by companies, thus negatively affecting

their performance. In contrast, public awareness campaigns and tracking test policies (proxied by the Containment and Health Index) generate positive performance in stock market indexes, with this being significant at 5% for Chile and at 10% for Mexico and Peru. These results reinforce the notion that governments need to continue creating awareness amongst the population and to continue testing people for the presence of the virus. Economic support to households does not generate significant impacts on stock index performance, except in Peru, which generates a negative and significant effect at 1%. As we expected for this proxy, government announcements of economic support are associated with poor economic conditions, which generates a negative impact on stock index performances. For its part, the reopening risk index does not significantly affect stock market index returns.

Table 2. Stock market returns and government interventions during the COVID-19 pandemic.

VARIABLES	Chile		Colombia		Mexico		Peru	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
DGRCov19	-0.0519***	-0.0498***	-0.0303 ***	-0.0322***	-0.0234	-0.0345**	0.0260***	0.0221***
	(0.0179)	(0.0159)	(0.0083)	(0.0073)	(0.0165)	(0.0139)	(0.0099)	(0.0085)
S_Index	-0.0042***	-0.0032**	-0.0003	0.0004	-0.0029	-0.0024	-0.0035***	-0.0023***
	(0.0015)	(0.0014)	(0.0012)	(0.0011)	(0.0020)	(0.0017)	(0.0005)	(0.0005)
CH_Index	0.00490**	0.0048***	0.0004	0.0003	0.0051*	0.0044*	0.0004*	0.0001
	(0.0021)	(0.0018)	(0.0014)	(0.0013)	(0.0028)	(0.0023)	(0.0002)	(0.0002)
Eco_Index	0.0007	0.0002	-0.0003	-0.0004	0.0002	0.0001	-0.0011***	-0.0006**
	(0.0004)	(0.0003)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0003)	(0.0002)
Risk_Index	0.0442	0.0493*	0.0626	0.0599*	-0.0196	-0.0213	0.0027	0.0083
	(0.0300)	(0.0266)	(0.0390)	(0.0347)	(0.0330)	(0.0273)	(0.0186)	(0.0157)
Spread		0.0086*		0.0132**		0.0016		0.0034
		(0.0052)		(0.0057)		(0.0053)		(0.0035)
Local_DVol		0.4800***		0.1590***		0.1250***		0.4050***
		(0.0928)		(0.0340)		(0.0314)		(0.0645)
DVIX		-0.0622***		-0.0609***		-0.116***		-0.0558***
		(0.0141)		(0.0161)		(0.0148)		(0.0101)
Constant	0.0010	-0.0039	0.0006	-0.0058*	0.0002	0.0003	-0.0006	-0.0026
	(0.0015)	(0.0030)	(0.0016)	(0.0033)	(0.0016)	(0.0030)	(0.0011)	(0.0020)
Observations	251	251	243	243	252	252	254	254
R-squared	0.083	0.298	0.068	0.280	0.030	0.346	0.248	0.475

Notes: DGRCov19, the daily growth rate of confirmed COVID-19 cases; S Index, the Stringency Index; CH Index, the Con- tainment and Health Index; Eco Index, the Economic Support to Households Index; Risk Index, the Risk of Openness Index;

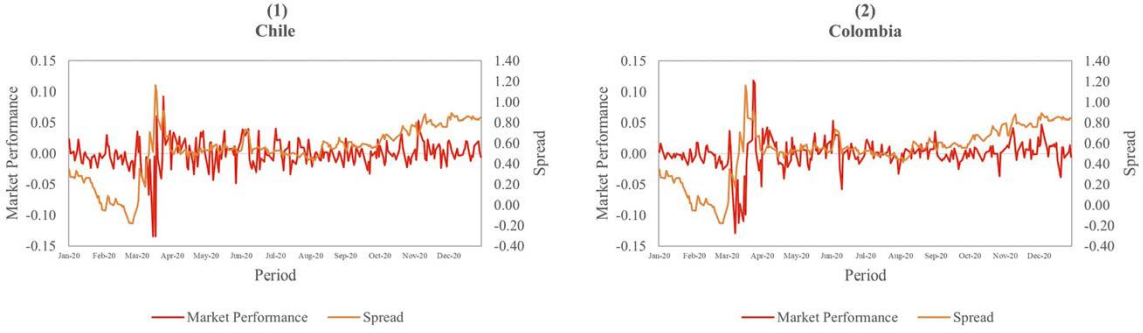
Spread, that is based on the difference between the rate of return from long term bonds (10-year) and short-term bonds (3- month); Local DVol, that proxies the variation for the main commodity volatility of the local countries; and DVIX, the percentage variation of the CBOE

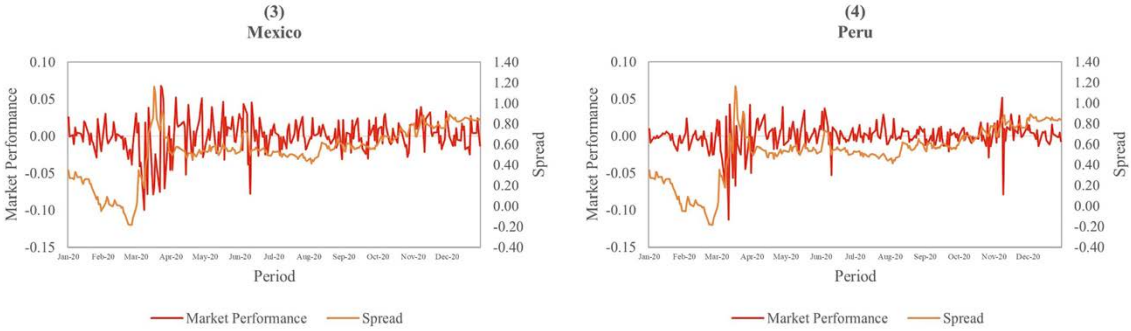
Volatility Index (VIX). Standard errors in parentheses, where *** p<0.01, ** p<0.05, * p<0.1.
Source: Own elaboration.

Model 2 in Table 2 shows that as the rate of confirmed cases of COVID-19 (DGRCov19) increases, the expected return on the countries' capital markets decreases, except in Peru, which increases significantly to 1%. Thus, an increase of 1% in confirmed cases implies a daily decrease in stock index returns of 0.5%, 0.32%, and 0.35% for Chile, Colombia, and Mexico, respectively. The results found in these three countries are in line with expectations. Social distancing measures (proxied by the S.Index) show a negative effect on stock returns in Chile and Peru, with a significance of 5% and 1%, respectively. For their part, measures associated with public awareness and contact tracking test policies positively affect the stock market index performance for Chile and Mexico. The latter result shows there is room for government policies that are related to creating awareness and to continuing to track the virus. Government economic support measures are not seen to affect the countries' stock index performance, with the exception of Peru, where the effect is negative, evidencing some degree of substitution effect between government benefits and company performance. The risk of openness index evidences the expected result for Chile and Colombia at a 10% significance level. The latter result is consistent with the idea that reducing the constraints on the normal functioning of the economy increases companies' stock performance.

The rest of the variables are the financial controls and display consistency in their signs. A higher spread in long term bonds and short-term bonds represents better economic conditions and stock index performance is expected to increase. The evidence shows the expected signs for all the countries, although the result is only significant for Chile and Colombia, at 10% and 5% levels of significance, respectively. An increase in local volatility associated with the country's main commodity generates a positive effect on market index performance. This result aligns with our expected outcomes as they are associated with a better future performance for the economies. An increase in global uncertainty, proxied by the VIX, has a negative effect on market performance in all the emerging Latin American economies analyzed. The latter result also makes economic sense, as poorer expected economic conditions send out a negative signal to capital market investors, and company performance worsens since these adverse conditions usually generate sales pressure on stocks.

Figure 1. Market Performance vs. Spread (January - December, 2020).





Source: Own elaboration.

Finally, there is a positive Spearman correlation that occurs between the returns of the main stock indexes of Chile, Colombia, Mexico, and Peru, which proves to be significant, as shown in Table A2. This result is interpreted as a "contagion effect", in line with Celık (2012) and Akhtaruzzaman et al. (2021).

4. Conclusions

The pandemic caused by the coronavirus (COVID-19) is strongly affecting world economic activity which, over one year after its onset, seems to have no short-term end in sight. This has led countries to seek a compromise between promoting measures aimed at trying to stop the spread of the virus whilst striving to maintain economic activity. However, temporary government intervention in both health and expenditure affects economies' stock indexes. In this article, we examine the impact of government policies related to COVID-19 on the capital markets of the emerging countries that form part of MILA (Chile, Colombia, Mexico, and Peru).

When the rates of confirmed COVID-19 cases increased, the capital markets of the different countries analyzed evidenced a fall in their stock market yields. This shows that investors react to news about COVID and are afraid about the uncertainty related to this pandemic.

In general, we conclude that social distancing policies have a negative effect on the stock market indexes in the countries under analysis. For this reason, policymakers should seek the right balance when they need to implement this kind of policy in order to avoid having any adverse effects on the economy. We also find that governments which promote public awareness campaigns and contact tracing test policies create better conditions for positive stock market performance, a result that reinforces the need to implement in-depth policies amongst the population. In addition, financial aid programs for households have no impact on stock market performance, except for the negative effect seen in Peru. Furthermore, economic reopening has a positive effect on stock market performance in Chile and Colombia, showing that in these countries people react favorably to economic market conditions. Further future research on this topic could benefit from longer time periods of data under the presence of COVID-19, new in-depth policy variables, and by performing sector analysis.

Conflict of interest

The authors of this manuscript state that there are no conflicts of interest with any entity or institution, or of a personal nature in this publication.

Appendix

Appendix A
Table A1. Variables.

Variable	Measurement	Data / Definition	Country	Data Source
Market Returns or Market Performance (Yit)	LN(Index Value t/ Index Value t-1)	IPSA COLCAP IPC IGBVL	Chile Colombia Mexico Peru	www.investing.com
Daily growth rate of confirmed COVID-19 cases (DGRCov19)	(Cases t - Cases t-1 / Cases t-1)	Cases COVID-19	Chile Colombia Mexico Peru	https://ourworldindata.org/coronavirus-data-explorer?yScale=log&zoomToSelection=true&time=2020-03-23&country=CHL~COL~PER~MEX&region=World&casesMetric=true&interval=total&aligned=true&hideControls=true&smoothing=0&pickerMetric=location&pickerSort=asc
Stringency Index (S Index)	(Stringency Index t - Stringency Index t-1) Records information on social distancing policies. The index ranges from 0 to 100. 0 = Countries that have taken fewer measures. 100 = Countries that have taken more measures	Distancing policies	Chile Colombia Mexico Peru	https://raw.githubusercontent.com/OxCGRT/covid-policy-tracker/master/data/OxCGRT_latest.csv
Economic Support Index (Eco-Index)	(Economic Support Index t - Economic Support Index t-1) 0= Countries that have taken fewer measures. 100 = Countries that have taken more measures	Assistance programs for households	Chile Colombia Mexico Peru	https://raw.githubusercontent.com/OxCGRT/covid-policy-tracker/master/data/OxCGRT_latest.csv

Variable	Measurement	Data / Definition	Country	Data Source
Risk of Openness Index (Risk Index)	(Risk of Openness Index t - Risk of Openness Index t-1) 0 = Lower risk of reopening. 1= Higher risk of reopening.	Calculates a measure of risk a country faces in taking an "open" political stance (that is, one that does not include political measures to contain the virus through physical distancing measures).	Chile Colombia Mexico Peru	https://raw.githubusercontent.com/OxCGRT/covid-policy-scratchpad/master/risk_of_openness_index/data/riskindex_timeseries_latest.csv
Long-term and Short term Bonds (Spread)	(10-year US Treasury yield at time t - 3-month US Treasury yield at time t)	Treasury Bond Rates	U. S.	https://www.federalreserve.gov/datadownload/Review.aspx?rel=H15
Diff. Local Volatility (Local DVol)	(Variation% of Volatility from one day to another).	Copper Futures (HGZ0) Crude Oil Futures WTI (TZ0) Crude Oil Futures WTI (TZ0) Copper Futures (HGZ0)	Chile Colombia Mexico Peru	www.investing.com
USA Volatility (Global) (DVIX)	(Variation% of Volatility from one day to another).	CBOE Volatility Index (VIX)	U. S.	www.investing.com

Source: Own elaboration.

Table A2. Spearman's correlation coefficient between the returns of the main Chilean stock indices; Colombia; Mexico; and Peru.

Market Performance	Spearman's Rho	Prob. t
Chile; Colombia	0.5088	0.0000
Chile; Mexico	0.4473	0.0000
Chile; Peru	0.3254	0.0000
Colombia; Chile	0.5088	0.0000
Colombia; Mexico	0.4292	0.0000
Colombia; Peru	0.3160	0.0000
Mexico; Chile	0.4473	0.0000
Mexico; Colombia	0.4292	0.0000
Mexico; Peru	0.6511	0.0000
PERU (4); CHILE (1)	0.3254	0.0000
PERU (4); COLOMBIA(2)	0.3160	0.0000
PERU (4); MEXICO(3)	0.6511	0.0000

Source: Own elaboration.

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