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Determining Factors for the Formation of an Optimum Currency Area: An Analysis of the Pacific Alliance Countries + 4 (2018-2023)

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Abstract

The issue of economic cooperation and integration in the Latin American region has been a topic of regional and global debate since its founding as nation-states. It is from this discussion that various initiatives have emerged, such as the Andean Community of Nations and the Southern Common Market (Mercosur). However, the Pacific Alliance now appears promising in terms of trade and its potential progress towards monetary and political issues have been attractive to academia. This justifies its research, as well as the evaluation and analysis of its integration into an Optimum Currency Area through the influence of labor mobility and the symmetry of shocks. Through a theoretical review and an econometric model of multiple linear regression and a correlational analysis, the aim is to analyze the formation of an optimum currency area between the countries of the Pacific Alliance +4 in the period 2018-2023; The results highlight significant differences in the economic structure and GDP per capita among the countries of the bloc, which represents a challenge to achieve solid economic cohesion, in which it is worth highlighting that for each percentage point increase in trade integration, GDP per capita increases by $341.25, thus, the implementation of a common monetary policy in this region would depend on the capacity of the countries to strengthen economic adjustment mechanisms and cooperation in matters of financial stability, thus promoting balanced growth and cohesion within the group.

Keywords: Economic integration, Pacific Alliance +4, Optimum Monetary Area, Economic cohesion, Monetary policy

Introduction

The Pacific Alliance is a regional integration agreement signed by Chile, Colombia, Mexico and Peru through the Lima Declaration on April 28, 2011, by which these countries consider the Alliance as “a mechanism for political and economic articulation, cooperation and integration that aims to create a space to promote greater growth and

competitiveness" through "a progressive advance in the free movement of goods, services, capital and people". The Cali Declaration of June 30, 2017, sought to reinforce members' commitment to free trade, additionally, it established negotiations with Australia, Canada, New Zealand and Singapore to implement trade agreements and even free trade agreements.

Based on the above, the convenience of the exercise is highlighted for its contribution to understanding possible economic integrations in the region in a scenario of social relevance that stands out for its impact on economic stability and the well-being of the populations. Regarding its practical implications, it provides guidance for monetary and trade policies, as well as, from the theoretical level, it broadens the approaches and theory of monetary areas by evaluating key factors such as shock symmetry, and finally, its methodological usefulness is based on the use of replicable models for economic integration studies. In general terms, the aim is to analyze the formation of an optimum currency area among the countries of the Pacific Alliance +4 in the period 2018-2023, in order to identify common conditions and differences that influence the viability of this economic integration. This, evaluating the degree of labor mobility and symmetry of economic shocks between the Pacific Alliance countries and the four additional countries, to later compare trade integration policies and their effects on macroeconomic stability between these countries during the study period, and finally, to identify the challenges and opportunities in the implementation of a common monetary policy that favors the cohesion and economic growth of the bloc.

Theorical references

Within the exercise of cooperation and even more so of trade and economic integration, regarding its viability and how to implement it, a great academic debate was unleashed, transcending the political, among those who maintain from the structuralist thinking that the best strategy to ensure exchange rate stability and the single currency is to submit the economies to the criteria of the theory of optimum currency areas (Mundell, 1961; McKinnon, 1963; Kenen, 1969). Theory that defines the conditions under which it would be advantageous for a group of countries or regions to adopt a common currency or integrate their monetary policy. Table 1 incorporates the Main Criteria for the Conformation of an Optimum Currency Area.

Table 1. Main Criteria for the Conformation of an Optimum Currency Area (OCA)

CRITERIA	DESCRIPTION
LABOR MOBILITY	The ease of movement of the labor force between regions allows workers to migrate to areas with better economic conditions, helping to reduce the impact of local recessions and thus reducing the need for monetary adjustments.
PRICE AND WAGE FLEXIBILITY	The ability to change prices and wages in response to economic changes helps the economy to adjust without requiring an independent monetary policy.
TRADE INTEGRATION	High levels of trade between countries encourage and stimulate the creation of a monetary union as they eliminate exchange rate uncertainty and substantially reduce transaction costs, generating greater economic stability.

DIVERSIFICATION OF THE ECONOMY	A diverse economy reduces the likelihood of simultaneous economic shocks in all participating countries, reducing the need for exchange rate adjustments.
FISCAL TRANSFER SYSTEM	Financial compensation mechanisms help stabilize the economies of regions in difficulty, allowing a response without devaluation or currency exchange.

Source: Own elaboration based on Mundell, R. A. (2024).

Acharyya, Rajat,(2023) notes that since the 1990s, there has been a dramatic increase in the number of regional trade agreements (RTAs) between a group of countries in a given region, particularly neighboring ones, in pursuit of freer trade and unified trade policies within that region. This is based on a reciprocal and coordinated liberalization of trade policy, thus allowing member countries to participate in deeper and broader levels of economic cooperation through these RTAs, including the coordination of fiscal and monetary policy in more advanced integration scenarios.

For the case of real economic activity in the Pacific Alliance countries, Carlos Guevara, Gabriel Rodriguez, (2020) investigate the effect of loan supply shocks on the real economic activity of the Alliance members using a time-varying parameter VAR model with stochastic volatility (TVP-VAR-SV) concluding that loan supply shocks have a significant impact on real economic activity in all Pacific Alliance countries: around 1% in Colombia, Mexico and Peru, and around 0.5% in Chile. Additionally, it is evident that the power of loan supply shocks to affect economic activity does not remain constant over time and its evolution across periods is heterogeneous among all Pacific Alliance countries. Finally, the study recommends monetary authorities to increase the use of macroprudential instruments such as reserve requirements to regulate liquidity and smooth credit cycles.

It is for the above and subsequent theoretical considerations that it is convenient to review from the basic literature of this theory of Optimum Currency Areas, its benefits and potential challenges mentioned in Table 2.

Table 2. Benefits and Challenges of an Optimum Currency Area

BENEFITS	CHALLENGES
REDUCED TRANSACTION COSTS, FACILITATED TRADE AND INVESTMENT BETWEEN COUNTRIES AND GREATER ECONOMIC STABILITY BY ELIMINATING EXCHANGE RATE FLUCTUATIONS.	Renouncing independent monetary policy limits each country's ability to respond autonomously to its economic conditions.
INCREASED PRICE TRANSPARENCY, FACILITATING COMPARISON BETWEEN COUNTRIES AND TRADE.	Countries must have the necessary adjustment mechanisms (e.g., labor mobility and price flexibility) to adapt to changes in the economy without the need for devaluation or monetary intervention.
IMPROVED ECONOMIC AND POLITICAL INTEGRATION.	To function effectively, a OCA requires the existence of strong support and compensation mechanisms between nations.

Source: Own elaboration based on Mundell, R. A. (2024).

The theoretical review may point to the existence of a direct relationship between competitiveness and labor stability in the countries of the Pacific Alliance, as pointed out by Julio-Rospigliosi Porretti, et al. (2024) who conclude that this can occur thanks to the regulatory frameworks of their laws for the protection of the individual rights of workers, even in a reality of economic informality of its members and the strong socioeconomic inequalities of its citizens.

Following the discussion of the potential benefits and challenges or disadvantages of an optimum currency area and a theoretical review of competitiveness and labor stability in the alliance, it is worth discussing the role of investment, i.e., the movement of capital among a group of countries, in the context of an optimum currency area, this is the case of Ganic, M., & Novalic, A. (2023) who in their work found that the affiliation of a country to a trade bloc improves capital mobility across the group and the region for the case of Eurasian Economic Union (EAEU) countries, however, they relate low capital mobility in the Pacific Alliance region and in which they additionally discuss the role of the legal protection system, which by itself, provided to investors, does not improve the level of capital mobility unless its interaction with investment is included, finally revealing that high trade openness does not necessarily lead to better capital mobility for the trade blocs studied.

In a discussion exercise based on capital and financial stability, Rodríguez Cairo, V. et al. (2023) found that stability, being a public good, is a constitutive commitment that promotes social values and its preservation, which is why it requires the responsibility of Financial Stability Councils or regulatory bodies to promote the general welfare of the population through the elimination or reduction of systemic risk.

Taking the discussion to the regional scenario and in real terms, Padilla, L., & Marín, E. (2022) evaluate the possibility of a South American integration in which, according to the grouping of nominal and industrial indicators, the countries in the best position for a potential monetary integration in the region are Chile, Colombia and Peru (and Ecuador to a lesser extent). Additionally, Kheifets L.S., Konovalova K.A. (2019) postulate that there are current Latin American “grand discourses” on integration: political-economic, geopolitical and state-centered, it is here that these discourses takes into account the internal and external conditions that led to the post-liberal phase of integration, finally, expert forecasts are presented on the prospects for regional associations in the context of the crisis trends of recent years in the context of a new phase, the most important features of which are the slowdown in globalization and the complication of inter-American relations.

Probably the best thermometer of the integration of the Pacific alliance has been the Integrated Market of Latin America since its birth in 2010 and whose results have not been entirely promising, according to Gallegos Zúñiga, J. (2024), due to the lack of adjustments and harmonization of regulations in different areas, such as corporate and tax, organic, exchange and control, which seriously questions the capacity for investment and capital mobility among the founding members.

Methods

The paper arises from the theoretical approaches of Mundell (1961), regarding the concept of optimum currency areas, a scenario in which a region of countries integrate their currency and monetary policy in a scenario of fixed exchange rates. To obtain that, a mixed methodology was developed in the presence of an exhaustive theoretical review and its complementation with quantitative analysis tools such as Pearson correlation to analyze the statistical relationship between several variables and a multiple linear regression model to determine the impact of the independent variables on GDP per capita; Table 3 shows the operationalization of the variables considered.

Table 3. Definition and Operationalization of Variables

VARIABLE	DEFINITION	OPERATIONALIZATION

PER CAPITA GDP, PPP ($ AT CURRENT INTERNATIONAL PRICES)	Measures the value of all final goods and services produced within a country, adjusted for price differences between countries (purchasing power parity, PPP).	Measured in international dollars, billions of dollars (World Bank, 2024).
LABOR MOBILITY (NET MIGRATION)	Difference between the number of immigrants and emigrants in a country in a given period, indicative of labor market flexibility.	Net number of migrants per 1,000 inhabitants (World Bank, 2024).
TRADE INTEGRATION (INTERNATIONAL TRADE)	Degree to which a country is involved in international trade of goods and services (trade openness).	Exports + imports as a percentage of GDP, billions of dollars (World Bank, 2024).
SHOCK SYMMETRY (GDP)	Degree to which countries experience similar economic shocks, i.e., a greater degree of symmetry reduces the need for independent monetary policies.	Correlation between countries' gdp growth rates, historical GDP data in billions of dollars (World Bank, 2024).
INFLATION, CONSUMER PRICES (ANNUAL %)	Annual percentage change in the price level of goods and services in the economy, indicating economic stability.	Annual percentage of inflation (World Bank, 2024)
CURRENT ACCOUNT BALANCE (BALANCE OF PAYMENTS, US$ AT CURRENT PRICES)	Measures the difference between a country's exports and imports of goods, services and net income.	In U.S. dollars. balance of payments for each country, available at (World Bank; 2024).

Source: Own elaboration, based on concepts from World Bank (2024).

Once the variables have been operationalized, we proceed to collect the data that will serve as input to the model, which is collected from the official figures of the World Bank for the period 2018-2024. Table 4 shows the variables and data collected.

Table 4. Indicators for dependent and independent variables 2018-2023

Year	Country	Per capita GDP, PPP ($ at current international prices)	Labor mobility (net migration)	Trade integration (international trade)	Shock symmetry (GDP)	Inflation, consumer prices (annual %)	Current account balance (balance of payments, US$ at current prices)
2018	Colombia	$15.161,32	494.364	27,83	$334.198.218.098,28	3,24	-$14.040.948.614,95
2018	Chile	$25.564,54	237.358	50,51	$295.857.562.991,71	2,43	-$13.265.293.208,04

2018	Peru	$12.953,82	326.831	41,01	$222.597.009.739,24	1,51	-$2.608.871.424,30
2018	Mexico	$21.015,93	-99.430	73,83	$1.256.300.182.879,73	4,90	-$25.931.803.949,00
2018	Australia	$50.251,34	220.307	34,45	$1.429.733.668.185,91	1,91	-$31.888.709.226,76
2018	Canada	$48.590,68	417.974	53,41	$1.725.329.192.783,02	2,27	-$41.150.336.771,28
2018	New Zealand	$42.499,38	80.419	39,40	$211.846.555.690,74	1,60	-$8.576.001.804,42
2018	Singapur	$103.899,68	35.726	207,97	$376.892.697.588,01	0,44	$60.209.735.513,80
2019	Colombia	$16.091,50	395.803	28,54	$323.031.701.192,84	3,52	-$14.808.662.077,61
2019	Chile	$25.824,65	230.162	49,82	$278.285.058.719,47	2,56	-$14.505.468.953,67
2019	Peru	$13.408,35	136.558	38,86	$228.346.006.003,65	2,25	-$1.423.795.027,08
2019	Mexico	$21.095,71	-47.764	71,08	$1.305.211.135.822,61	3,64	-$3.871.166.263,00
2019	Australia	$52.746,72	235.860	35,32	$1.394.671.325.960,57	1,61	$4.876.229.870,09
2019	Canada	$50.498,97	391.914	52,29	$1.743.725.183.672,52	1,95	-$34.032.332.330,54
2019	New Zealand	$45.163,70	103.392	38,47	$212.846.907.683,44	1,62	-$5.944.952.527,40
2019	Singapur	$105.542,41	40.624	199,00	$376.901.649.222,45	0,57	$60.458.744.402,84
2020	Colombia	$15.427,59	229.437	27,56	$270.348.342.541,47	2,53	-$9.266.809.779,60
2020	Chile	$25.443,21	98.439	52,44	$254.042.159.309,31	3,05	-$4.952.326.391,71
2020	Peru	$12.387,45	79.456	37,60	$201.409.694.755,93	2,00	$1.889.612.885,85
2020	Mexico	$19.473,09	-9.949	72,31	$1.120.832.412.468,85	3,40	$26.905.287.483,00
2020	Australia	$54.064,08	117.929	34,78	$1.330.381.544.909,30	0,85	$31.189.027.912,21
2020	Canada	$48.590,68	195.181	49,03	$1.655.684.730.000,19	0,72	-$33.287.434.317,39

2020	New Zealand	$45.283,47	38.220	35,51	$212.697.530.897,56	1,71	-$2.400.615.210,43
2020	Singapur	$101.612,09	21.324	198,11	$349.488.382.610,66	-0,18	$57.956.646.473,68
2021	Colombia	$17.587,23	211.978	31,83	$318.524.633.225,40	3,50	-$17.949.402.964,31
2021	Chile	$29.050,08	113.709	59,32	$315.515.014.838,54	4,52	-$22.962.267.945,55
2021	Peru	$15.028,63	68.012	48,83	$226.354.278.280,89	4,27	-$4.674.292.509,23
2021	Mexico	$21.131,92	-52.649	77,48	$1.313.069.763.986,60	5,69	-$4.493.755.873,00
2021	Australia	$57.406,18	117.929	38,87	$1.559.033.756.285,13	2,86	$49.091.762.935,85
2021	Canada	$55.781,70	195.181	50,51	$2.007.472.181.464,15	3,40	$256.504.117,92
2021	New Zealand	$48.194,04	38.220	37,31	$253.644.079.784,98	3,94	-$14.803.987.779,03
2021	Singapur	$131.864,09	19.321	198,93	$434.111.559.282,85	2,30	$86.137.205.522,96
2022	Colombia	$21.055,66	-167.924	38,92	$345.329.875.078,51	10,18	-$21.204.986.317,47
2022	Chile	$31.586,14	-66.850	67,22	$302.116.539.409,03	11,64	-$26.161.979.059,60
2022	Peru	$16.363,09	-60.652	50,26	$ 246.488.757.636,21	8,33	-$9.743.217.958,05
2022	Mexico	$23.859,13	-51.399	82,28	$ 1.463.323.889.036,56	7,90	-$17.599.407.119,00
2022	Australia	$65.365,95	139.991	42,64	$1.692.956.646.855,70	6,59	$14.593.226.173,34
2022	Canada	$62.041,56	248.586	54,71	$2.161.483.369.422,01	6,80	-$7.622.082.461,72
2022	New Zealand	$52.327,70	12.999	40,25	$246.733.522.841,35	7,17	-$21.627.319.276,59
2022	Singapur	$141.796,10	26.998	198,88	$498.474.540.987,78	6,12	$89.701.450.676,98
2023	Colombia	$21.548,01	-175.051	30,90	$363.540.156.234,87	11,74	-$9.153.774.490,88
2023	Chile	$33.284,49	-71.205	53,78	$335.533.331.669,22	7,58	-$ 11.899.037.356,07

2023	Peru	$16.717,38	-61.442	42,25	$267.603.248.655,25	6,46	$ 2.219.454.938,95
2023	Mexico	$25.601,63	-50.239	67,89	$1.788.886.821.046,81	5,53	-$ 5.426.071.068,00
2023	Australia	$69.114,74	139.991	38,21	$1.723.827.215.334,71	5,60	$ 4.700.951.734,63
2023	Canada	$61.582,35	249.746	53,25	$2.140.085.567.791,45	3,88	-$ 15.630.911.197,27
2023	New Zealand	$54.109,80	12.999	36,09	$253.465.703.232,15	5,73	-$ 17.065.136.806,70
2023	Singapur	$141.500,22	26.998	179,43	$501.427.500.080,06	4,82	$ 99.127.721.371,30

Source: Own elaboration, based on concepts from World Bank (2024).

With the above variables, we start with the proposal to search for results, using the multiple linear regression model in a straight line of the form:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$$

Y = Dependent variable GDP per capita, PPP ($ at current international prices)

Independent variables:

X_1 Labor mobility (Net migration)

X_2 Trade Integration (International trade)

X_3 Shock simmetry (GDP)

X_4 Inflation, consumer price (% annual)

X_5 Current account balance (balance of payments, US$ at current prices)

β_0= Intersection

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$= Coeffients that represent the relationship between the independent and dependent variables

ε = Error

Model assumptions

1. Linearity: There is a linear relationship between GDP per capita (PPP) and each of the independent variables: labor mobility, trade integration, shock symmetry, inflation and current account balance.
2. Independence of the errors: The errors or residuals of the model (ε) must be independent of each other. That is, the errors of one observation should not be correlated with the errors of another observation.
3. Homoscedasticity: The variance of the errors must be constant for all observations (homoscedasticity).
4. Normality of Errors: Errors (ε) should follow a normal distribution.

Correlation analysis explains the direction taken by the behavior of variables, which is why researchers such as Hernández Sampieri, (2014) present it as a valuable tool in the research process, given that this correlation is calculated considering the scores obtained in a sample in two or more variables. Romero Garibello, J. R., Barbosa Guerrero, L. M., & Martínez Ladino, O. O. (2022).

Equation 1. Pearson's Correlation Coefficient Formula

$$r = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{[N\sum x^2 - (\sum x)^2][N\sum y^2 - (\sum y)^2]}}$$

Pearson's r coefficient may vary from +1.00 to -1.00.

Results

The results are framed within the theory of optimum currency areas (OCA) proposed by Mundell (1961), which provides a conceptual framework for evaluating a nation's initiative to share a common currency in a geographic region, considering factors such as mobility of factors of production, economic and trade integration, as well as price flexibility that are of importance in determining whether a region constitutes an OCA (McKinnon, 1963; Kenen, 1969). The authors use these concepts as a starting point for the analysis of a multiple linear regression analysis model, which aims to examine how various economic indicators influence the formation and sustainability of a monetary area for the countries that make up the Pacific Alliance and its associated states.

Table 5. Regression statistics

Regression statistics	
Multiple correlation coefficient	0,87334917
Coefficient of determination R^2	0,76273878
R^2 adjusted	0,7344934
Standard error	17422,8967
Observations	48

Source: Own elaboration in Data analysis and regression MS Excel (2024).

From the beginning, a strong positive correlation between the independent variables and the dependent variable (GDP per capita, PPP) can be seen, which is revalidated with an R^2 (0.762738779), meaning that 76.27% of the variability in GDP per capita (PPP) can be explained by the independent variables included in their model, reinforcing its good explanatory power, capturing a substantial part of the factors that influence GDP per capita.

Table 6. Variance analysis

	Degrees of freedom	*Sum of squares*	*Average of squares*	*F*	*Critical value of F*
Regression	5	4,0986E+10	8197266867	27,00401566	0,000000000004071
Residues	42	1,2749E+10	303557329		
Total	47	5,3736E+10			

Source: Own elaboration in MS Excel data analysis and regression (2024).

From the analysis of variance it is worth mentioning that the critical value of F (p-value) is extremely low (4.07185E-12), much lower than the conventional significance level of 0.05 or even 0.01 showing that the model as a whole is highly significant, in turn, the sum of squares of the regression (4.0986E+10) is considerably higher than the sum of squares of the residuals (1.2749E+10), which supports the claim that the model explains a large part of the variability in the dependent variable.

Table 7. Coefficients

	Coefficients	*Standard error*	*Statistic t*	*Probability*
Interception	5560,68393	9549,11457	0,58232456	0,563461311
Labor mobility (net migration)	0,04385609	0,02245906	1,95271276	0,057539122
Trade integration (Internacional trade)	341,245522	83,5289802	4,08535482	0,000193658
Shock symmetry(GDP)	9,1164E-09	3,9641E-09	2,29974449	0,026501078
Inflation, Consumer price (% annual)	1191,65644	1178,28077	1,01135185	0,31763922
Current account balance (balance of payments, US$ at current prices)	4,679E-07	1,3177E-07	3,55089403	0,000962421

Source: Own elaboration in Data analysis and regression MS Excel (2024).

Among the results, the most noteworthy are the independent variables:

Labor Mobility (Net migration): 0.043856086: For each unit increase in net migration, GDP per capita increases by approximately $0.044, which is a positive but very small effect.

Trade Integration (International Trade): 341.2455222: For each percentage point increase in trade integration, GDP per capita increases by $341.25, contrary to the previous variable, in this case it is a substantial and positive effect.

Shock symmetry (GDP): 9.11638E-09: another positive, but extremely small effect appeared where for each unit increase in shock symmetry, GDP per capita increases by $0.00000000911638.

Inflation, consumer prices (annual %): 1191.656437: surprisingly, this coefficient suggests that, for every percentage point increase in inflation, GDP per capita increases by $1,191.66. This is a considerable and positive effect that could eventually challenge the common view and theory on optimum currency areas.

Current account balance: 4.67904E-07. For every dollar increase in the current account balance, GDP per capita increases by $0.000000467904, this is another positive but very small effect.

In an additional section, the correlation confirms what was expressed by the model, i.e., that there are correlations along the independent variables and significance in the process proposed. Table 8 shows the correlations between variables.

Table 8. Correlations

Correlations

		Year	PPPGDPPERCAP	MOBILITY MIGRATION	TRADE_INTEGRATION	SHOCK_SIMMETRY_GDP	INFLATION	BZAPAGOSCTACTE
Year	Pearson`s correlation	1	,150	-,503**	,010	,111	,705**	,122
	Sig. (bilateral)		,309	,000	,944	,454	,000	,408
	N	48	48	48	48	48	48	48
	Pearson`s correlation	,150	1	-,057	,798**	,107	-,203	,785**

PPPGDPPERCAP	Sig. (bilateral)	,309		,702	,000	,469	,166	,000
	N	48	48	48	48	48	48	48
MOBILITYMIGRATION	Pearson`s correlation	-,503**	-,057	1	-,268	,230	-,530**	-,227
	Sig. (bilateral)	,000	,702		,066	,116	,000	,120
	N	48	48	48	48	48	48	48
TRADE_INTEGRATION	Pearson`s correlation	,010	,798**	-,268	1	-,110	-,178	,802**
	Sig. (bilateral)	,944	,000	,066		,458	,227	,000
	N	48	48	48	48	48	48	48
SHOCK_SIMMETRY_GDP	Pearson`s correlation	,111	,107	,230	-,110	1	-,026	-,126
	Sig. (bilateral)	,454	,469	,116	,458		,863	,392
	N	48	48	48	48	48	48	48
INFLATION	Pearson`s correlation	,705**	-,203	-,530**	-,178	-,026	1	-,219
	Sig. (bilateral)	,000	,166	,000	,227	,863		,135
	N	48	48	48	48	48	48	48
BZAPAGOSCTACTE	Pearson`s correlation	,122	,785**	-,227	,802**	-,126	-,219	1
	Sig. (bilateral)	,408	,000	,120	,000	,392	,135	
	N	48	48	48	48	48	48	48

**. Correlation is significant at the 0.01 level (bilateral).

Source: Own elaboration in IBM SPSS based on data from the World Bank (2024).

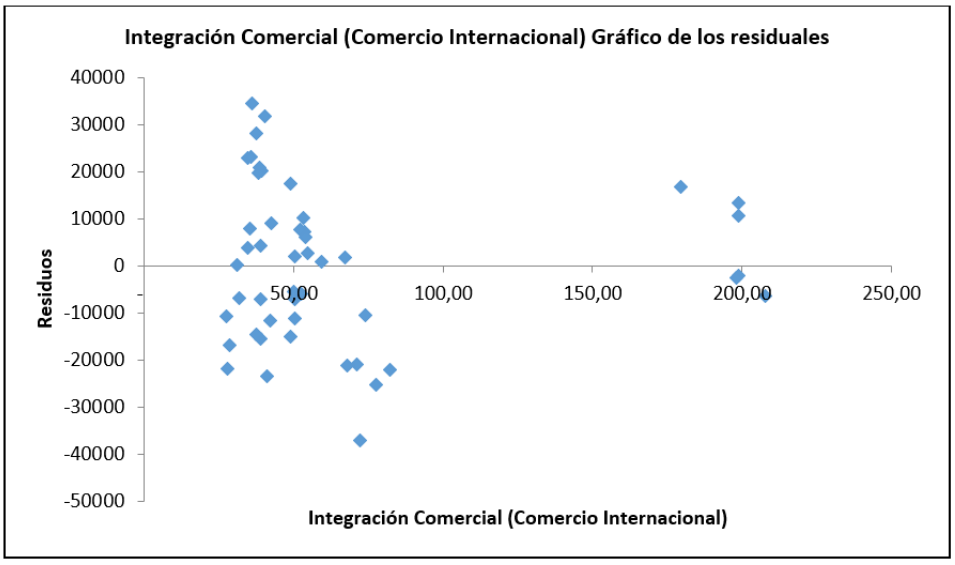
From the above it can be concluded that inflation has increased over time, that GDP per capita is strongly related to trade integration and the current account balance of payments, and that net migration, surprisingly and contrary to theory, decreases over time and is negatively influenced by inflation.

Within the model assumptions, linearity between the dependent and independent variables is evidenced by the multiple correlation coefficient and the coefficient of determination (R^2 = 0.76) indicating a strong linear relationship between the variables. Additionally, with respect to the independence of the errors, the analysis of variance (ANOVA) and the critical value of F are extremely low (p = 4.07E-12), suggesting that the model is statistically significant.

Finally, Graph 1 initially shows compliance as the dispersion of the residuals is located on both sides of the axes, however, this should be constant over the range of values, which would imply that the residuals should not show a clear pattern or an increasing or decreasing variability which may be doubtful in this case.

Graphic 1.

Graph of residuals



Source: Own elaboration in MS Excel based on figures from the World Bank (2024).

Discussion

At this point of the discussion and in line with economic theory, as well as the theory of Optimum Currency Areas, it is appropriate to point out that trade integration seems to be the most significant and positive factor for GDP per capita, inferring that countries with a higher level of trade could benefit more from a monetary union. On the other hand, it is worrying that the model shows a low influence of labor mobility and shock symmetry considering that these are key factors in the theory of optimum currency areas.

In summary, Chile, Peru and Colombia present the best opportunities for integration due to their economic similarities, similar levels of GDP per capita and have significant trade integration with some cultural and historical similarities, facts that could be revalidated with a gravity model of international trade in which Mexico could take place in the medium term. In another geographic area, Australia, Canada and New Zealand have higher GDP per capita levels and more developed economic systems with historical and cultural ties that could facilitate integration leaving a complex section for Singapore which, due to its unique economic structure and high GDP per capita, could be more difficult to integrate into any of these groups.

For some authors such as the case of Parias, Carlos Hernán González et al. (2024), the decision to join the Alliance goes more through the political, in this case, from a neoclassical realist approach in which the perceptions of Colombian political leaders influenced the country's decision to join the Pacific Alliance from the way in which decision makers interpreted the international and regional context as well as this perception of the leaders is especially relevant when foreign policy is mainly concentrated in the president.

Conclusions

An optimum currency area in the Pacific Alliance countries and their potential partners (Australia, Canada, New Zealand and Singapore) revalidates Mundell's (1961) theory that trade integration is the most relevant factor for boosting GDP per capita growth, this suggests that greater openness to international trade strengthens the possibility of a monetary union; likewise, this theory highlights the importance of labor mobility and shock

symmetry, however, the quantitative results of the econometric model show that these variables have a limited impact in the region analyzed.

Trade integration is a fundamental and positive factor for GDP per capita, suggesting that countries with higher levels of trade would benefit more from a monetary union as such integration contributes to economic stability and facilitates the elimination of exchange rate barriers and transaction costs. However, the low influence of labor mobility and shock symmetry in the model raises concerns, considering that these are key elements in the theory of optimum currency areas to cushion local economic shocks.

The model shows that 76.27% of the variability in GDP per capita can be explained by variables such as trade integration, labor mobility, inflation, shock symmetry and current account balance. Nevertheless and surprisingly, inflation shows a considerable positive impact on GDP per capita, which is contrary to theoretical expectations, in a scenario in which labor mobility and shock symmetry do not play such a decisive role in practice.

Finally, it should be noted that in a scheme of economic integration between nations, the first steps are taken based on the strong trade interaction between nations. Thus, in order to move towards a monetary union, the process is complex and involves a period of time in which, based on a gradual and coordinated approach, a real possibility that the countries of the Pacific Alliance and its associates may eventually join a successful monetary union can be contemplated.

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