Effect of Dollarization on Real GDP Growth of Latin and Caribbean Countries

Introduction

The shift to using the U.S. dollar instead of, or alongside, a country's own currency—a process known as dollarization—significantly changes the economic game for those countries involved. This study dives into the complex world of dollarization, highlighting why it's such a big deal for economic stability, growth, and development. We're taking a closer look at the nuances of dollarization to reveal its two-sided effect: it could lead to a more stable economy and greater confidence among investors, but it might also reduce a country's control over its financial policies and lead to a reliance on the U.S. dollar.

To those less familiar with financial intricacies, dollarization may seem like a straightforward economic strategy. Yet, its implications and origins are deeply integrated into the economic framework of a nation. There are primarily two forms of dollarization: official and unofficial. Official dollarization occurs when a nation formally adopts the U.S. dollar as its legal currency. In contrast, unofficial dollarization arises when the dollar is extensively used in conjunction with or in preference to the local currency, even without formal endorsement. This practice significantly influences a range of economic aspects, from daily transactions to the strategic economic planning that guides a nation's path in the global market. Typically, countries resort to dollarization in the face of severe inflation, currency instability, or diminished confidence in their monetary policies. As such, the presence and degree of dollarization serve as a vital indicator of a country's economic robustness and the effectiveness of its governance.

This study utilizes ordinary least square regression models to evaluate the effect of dollarization on Latin and Caribbean countries' real GDP growth. The result would help testify to the hypothesis that dollarization would have a positive effect on economic growth, control inflation, and enhance financial stability.

We will further evaluate the impact by constructing interaction terms with economic structure and sectoral export to see if there's an additional effect. These interaction terms will allow for the assessment of potential moderating effects, providing insights into whether certain economic conditions or factors amplify or mitigate the impact of dollarization on GDP growth.

Literature Review

Based on the literature review, we can formulate several arguments regarding the effects of dollarization on economic stability and growth in Latin America and the Caribbean.

The research by Glick and Spiegel (1999) suggests that dollarization can enhance international trade volumes, particularly in the United States, by reducing transaction costs and exchange rate volatility. This argument posits that dollarization could promote economic stability and trade integration in Latin American and Caribbean countries, leading to increased investment and economic growth.

Padilla (2022) highlights the potential drawbacks of dollarization, including the loss of independent monetary policy and economic sovereignty. This argument suggests that while dollarization may stabilize economies, it also strips nations of critical tools to manage economic shocks effectively. This viewpoint cautions against the adoption of a one-size-fits-all approach to dollarization and advocates for tailored monetary strategies that consider each country's specific economic circumstances.

Vedia-Jerez and Chasco (2016) emphasize the importance of comprehensive policy measures, including strong governance, investments in human capital, open trade policies, and stable political environments, for sustainable economic development in South American countries. This argument suggests that while dollarization may play a role in economic stability, it is just one component of a broader set of policies needed to foster long-term growth and development.

In conclusion, these arguments highlight the complex interplay between dollarization, economic stability, and growth in Latin America and the Caribbean. While dollarization may offer benefits such as increased trade integration and stability, it also poses risks such as loss of monetary policy autonomy. Therefore, policymakers must carefully consider the implications of dollarization and implement comprehensive policy measures to maximize its potential benefits while mitigating its risks.

Data Description

The study collects macroeconomic data of Latin and Caribbean countries from 2000 to 2022 from the World Bank Dataset. The dataset includes information on 42 countries, such as Argentina, El Salvador, and Mexico. The cleaned panel contains 132 observations and 19 variables.

Economic growth is assessed through the percentage change in GDP per capita. Predictors of GDP per capita growth encompass government expenditure, consumption, investment and net export. Additionally, economic structure, as indicated by the proportion of the agricultural manufactory and service sectors, and sectoral exports are integrated into the model to account for the fixed effects of countries.

The variable of interest, the dollarization level, is a crucial metric that captures the extent of foreign currency adoption within an economy. It is defined as the ratio of total foreign currency

holdings to the overall money supply in circulation. To compute this ratio accurately, we adopt a two-step approach.

Firstly, we ascertain the foreign currency component by examining net foreign assets, which is the sum of foreign assets held by monetary authorities and deposit money banks, less their foreign liabilities. Secondly, the denominator, representing the total money in circulation, is approximated by net domestic credit. This encompasses the summation of net claims on the central government and those on other sectors of the domestic economy. The data originates from surveys based on standardized report forms (SRFs) by country conducted by the International Monetary Fund (IMF) which provides great measurement on a cross-country level.

The measurement of dollarization levels draws on estimates provided by the IMF's Statistics Department, according to the composite dollarization index developed by Reinhart et al. (2003).

The control variables are categorized into classical growth factors, economic structure, and South America specific growth factors which are defined in detail in the appendix.

Table 1: Descriptive Statistics

	max	min	sd	mean
political_stability	1.3	-2.4	0.8	-0.1
export_growth	39.9	-12.9	8.2	4.6
exchange_rate	151	54.6	15	96.9
structure_agri	17.8	0.6	4.3	7.3
govt_exp	19.8	7.4	3	13.1
saving	40.6	8.6	5.5	20.5
structure_manu	21.8	1	4.8	13
structure_service	82.4	35.1	10	56.5
consumption	88.8	46.8	7.1	65.7
export_percent	57.1	10.9	10.8	32.3
gdp_pc_growth	16.3	-10.5	3.8	2.2
remittance	25.3	0	6.4	5.6
fdi	16.2	-3.1	3	3.9
investment	36	11.6	4.8	22.3
expo_agri	13.5	0	2.4	2.6
expo_fuel	98.8	0	21.8	15.1
expo_food	92.7	0	21.9	38.5
dollarization	2.4	-0.5	0.4	0.3
t	22	0	5.7	9.2

Methodology

This study utilizes ordinary least square regression (OLS) models to assess the effect of dollarization on GDP per capita growth in Latin and Caribbean countries. The GDP per capita growth rate is regressed by dollarization (variable of interest), along with four classical growth factors, three economic structure identifiers, three sectoral export proportion factors, and six other factors specific to South American growth. The model also includes a time factor to account for time varying effects including population growth and inflation. 50% of the variation in real GDP growth is explained by the variation of 18 explanatory variables.

$$Y = \beta_0 + \beta_1 * D + \beta_{2-5} * Classical\ Growth\ Factors_i + \beta_6 * t + \beta_{8-10} * Economy\ Structre_j + \beta_{11-13} * Sectorial\ Export_k + \beta_{14-18} * South\ America\ Specific\ Growth\ Factors_g + \varepsilon$$

The detailed exhibition is as below.

$$GDP\ Per\ Capita\ Growth\ Rate = \beta_0 + \beta_1 * Dollarization + \beta_2 * Government\ Expenditure + \beta_3 * Investment + \beta_4 * Consumption + \beta_5 * Net\ Export + t + \beta_7 * Saving + \beta_8 * Agriculture\ Proportion + \beta_9 * Manufacturing\ Proportion + \beta_{10} * Service\ Proportion + \beta_{11} * Agriculture\ Export + \beta_{12} * Fuel\ Export + \beta_{13} * Food\ Export + \beta_{14} * Political\ Stability + \beta_{15} * Export\ Growth\ Rate + \beta_{16} * Exchange\ Rate + \beta_{17} * Remittance + \beta_{18} * Foreign\ Direct\ Investment + \varepsilon$$

Furthermore, the study evaluates the synergic impacts of dollarization by constructing interaction terms with economic structure and sectoral export variables. These interaction terms will allow for the assessment of potential moderating effects, providing insights into whether certain types of economic structure amplify or mitigate the impact of dollarization on GDP per capita growth.

$$Y = \beta_0 + \beta_1 * \boldsymbol{D} + \beta_{2-5} * Classical\ Growth\ Factors_i + \beta_6 * time + \beta_{8-10} * \boldsymbol{Economy\ Structre_j} + \beta_{11-13} * Sectorial\ Export_k + \beta_{14-18} * South\ America\ Specific\ Growth\ Factors_g + \beta_{19-21} * \boldsymbol{Economy\ Structre_i} * \boldsymbol{D} + \varepsilon$$

$$Y = \beta_0 + \beta_1 * \boldsymbol{D} + \beta_{2-5} * Classical\ Growth\ Factors_i + \beta_6 * time + \beta_{8-10} * Economy\ Structre_j + \beta_{11-13} * \boldsymbol{Sectorial\ Export_k} + \beta_{14-18} * South\ America\ Specific\ Growth\ Factors_g + \beta_{22-24} * \boldsymbol{Sectorial\ Export_k} * \boldsymbol{D} + \varepsilon$$

To investigate the determinants of export growth, political stability, and exchange rate fluctuations, the study specifies the following econometric models:

1. Export Growth Model

$$Export\ Growth = \beta_0 + \beta_1 * Dollarization + \beta_2 * Government\ Expenditure + \beta_3 * Investment + \beta_4 * Consumption + \beta_5 * t + \beta_6 * Saving + \beta_7 * Agriculture\ Proportion + \beta_8 * Manufacturing\ Proportion + \beta_9 * Service\ Proportion + \beta_{10} * Agriculture\ Export + \beta_{11} * Fuel\ Export + \beta_{12} * Food\ Export + \beta_{13} * Exchange\ Rate + \beta_{14} * Remittance + \beta_{15} * FDI + \beta_{16} * Political\ Stability + \varepsilon$$

2. Political Stability Model

$$Political\ Stability = \beta_0 + \beta_1 * Dollarization + \beta_2 * Government\ Expenditure + \beta_3 * Investment + \beta_4 * Consumption + \beta_5 * Net\ Export + \beta_6 * t + \beta_7 * Saving + \beta_8 * Agriculture\ Proportion + \beta_9 * Manufacturing\ Proportion + \beta_{10} * Service\ Proportion + \beta_{11} * Agriculture\ Export + \beta_{12} * Fuel\ Export + \beta_{13} * Food\ Export + \beta_{14} * Export\ Growth + \beta_{15} * Exchange\ Rate + \beta_{16} * Remittance + \beta_{17} * FDI + \varepsilon$$

3. Exchange Rate Model

$$Exchange\ Rate = \beta_0 + \beta_1 * Dollarization + \beta_2 * Government\ Expenditure + \beta_3 * Investment + \beta_4 * Consumption + \beta_5 * Net\ Export + \beta_6 * t + \beta_7 * Saving + \beta_8 * Agriculture\ Proportion + \beta_9 * Manufacturing\ Proportion + \beta_{10} * Service\ Proportion + \beta_{11} * Agriculture\ Export + \beta_{12} * Fuel\ Export + \beta_{13} * Food\ Export + \beta_{14} * Export\ Growth + \beta_{15} * Remittance + \beta_{16} * FDI + \beta_{17} * Political\ Stability + \varepsilon$$

The choice of variable is guided by economic theory and previous empirical literature. Government expenditure is expected to influence economic activity and stability, while investment and consumption are standard determinants of growth. The structure of the economy captures the relative importance of different sectors, which may have varied implications for exports, political stability, and exchange rates. Foreign direct investment and remittances are included to reflect external economic influences.

Result

From the OLS regression result, dollarization has a significant positive impact on the GDP per capita growth rate. Fully dollarized South American countries would on average have 1.974% higher GDP per capita growth rate than non-dollarized countries. Time varying factors, political stability, and export growth rate have significant positive effects on the GDP per capita growth while the proportion of remittance in GDP has a negative impact. The result indicates that the GDP per capita growth of South American countries heavily depends on exports. The negative impact of remittances on the GDP per capita growth rate may be due to reverse causality, meaning less developed countries tend to have more labor force working or immigrating abroad and sending their payroll back to their home country. This is also a support for the "Brain Drain effect" in less developed countries.

Table 2: OLS Regression Result

VARIABLES	gdp_pc_growth
dollarization	1.974**
	(0.830)
govt_exp	-0.142
	(0.145)
investment	-0.008
	(0.062)
consumption	0.056
	(0.091)
export_percent	-0.063
	(0.039)
t	0.170***
	(0.055)
saving	0.137
	(0.097)

structure_agri	0.027
	(0.139)
structure_manu	-0.058
	(0.091)
structure_service	-0.097
	(0.063)
expo_agri	-0.073
	(0.121)
expo_fuel	-0.009
	(0.015)
expo_food	0.014
	(0.013)
political_stability	1.030**
	(0.459)
export_growth	0.254***
	(0.035)
exchange_rate	0.003
	(0.020)
remittance	-0.086*
	(0.047)
FDI	0.092
	(0.105)
Constant	2.178
	(9.208)

Observations	132
R-squared	0.499

The study also incorporates interaction terms of toleration and economic structure into the regression. The regression results reveal that the interaction term between dollarization and agricultural exports significantly enhances GDP per capita growth. Specifically, the coefficient of this interaction term suggests that dollarization increases the GDP per capita growth rate by an additional 0.252% for countries primarily exporting agricultural products compared to those that do not. This finding highlights the importance of considering both monetary policy and sectoral composition when assessing economic outcomes.

Table 3: OLS Regression results on Interaction terms

	(1)	(2)	(3)
VARIABLES	gdp_pc_growth	gdp_pc_growth	gdp_pc_growth
dollarization	1.974**	5.213	0.686
	(0.830)	(7.483)	(2.001)
govt_exp	-0.142	-0.214	-0.169
	(0.145)	(0.178)	(0.143)
investment	-0.008	-0.009	-0.023
	(0.062)	(0.063)	(0.062)
consumption	0.056	0.006	0.001
	(0.091)	(0.121)	(0.094)
export_percent	-0.063	-0.070*	-0.060
	(0.039)	(0.041)	(0.038)
t	0.170***	0.180***	0.180***
	(0.055)	(0.062)	(0.055)

saving	0.137	0.114	0.086
	(0.097)	(0.113)	(0.098)
structure_agri	0.027	0.100	0.045
	(0.139)	(0.176)	(0.137)
structure_manu	-0.058	-0.008	-0.039
	(0.091)	(0.137)	(0.093)
structure_service	-0.097	-0.068	-0.086
	(0.063)	(0.088)	(0.063)
expo_agri	-0.073	-0.059	-0.309*
	(0.121)	(0.125)	(0.164)
expo_fuel	-0.009	-0.010	-0.009
	(0.015)	(0.015)	(0.017)
expo_food	0.014	0.014	0.019
	(0.013)	(0.013)	(0.017)
political_stability	1.030**	0.952**	0.928**
	(0.459)	(0.474)	(0.453)
export_growth	0.254***	0.251***	0.252***
	(0.035)	(0.035)	(0.035)
exchange_rate	0.003	0.003	0.008
	(0.020)	(0.021)	(0.021)
remittance	-0.086*	-0.087*	-0.085*
	(0.047)	(0.048)	(0.046)
fdi	0.092	0.091	0.114
	(0.105)	(0.106)	(0.105)

agri_dollar		-0.131	
		(0.182)	
manu_dollar		-0.166	
		(0.261)	
service_dollar		0.001	
		(0.093)	
eagri_dollar			0.663**
			(0.272)
fuel_dollar			-0.006
			(0.034)
food_dollar			-0.027
			(0.036)
Constant	2.178	4.217	6.284
	(9.208)	(9.665)	(9.303)
Observations	132	132	132
R-squared	0.499	0.503	0.528

The regression analysis presented in Table 4 delineates the impact of various economic indicators on export growth, political stability, and exchange rate.

Table 4: Secondary Regression Result

VARIABLES	(1) export_growth	(2) political_stability	(3) exchange_rate
dollarization	0.860	-0.035	0.998
	(2.222)	(0.169)	(3.804)
govt_exp	-0.303	-0.036	-1.393**

	(0.377)	(0.029)	(0.653)
investment	-0.121	-0.007	0.087
	(0.168)	(0.013)	(0.285)
consumption	-0.028	-0.020	0.004
	(0.228)	(0.018)	(0.416)
export_percent		0.017**	0.184
		(0.008)	(0.177)
t	0.161	-0.002	0.371
	(0.145)	(0.011)	(0.251)
saving	-0.137	-0.041**	-0.384
	(0.257)	(0.019)	(0.443)
structure_agri	0.596**	-0.004	1.051*
	(0.288)	(0.028)	(0.629)
structure_manu	0.175	-0.020	-0.328
	(0.247)	(0.019)	(0.418)
structure_service	0.131	0.038***	0.263
	(0.159)	(0.012)	(0.286)
expo_agri	0.471	0.002	-0.851
	(0.325)	(0.025)	(0.550)
expo_fuel	0.012	-0.001	0.010
	(0.039)	(0.003)	(0.067)
expo_food	-0.037	0.003	0.075
	(0.035)	(0.003)	(0.060)
export_growth		0.002	-0.284*
		(0.007)	(0.158)
exchange_rate	-0.091*	0.006	
	(0.054)	(0.004)	
remittance	-0.238*	-0.009	0.025
	(0.125)	(0.010)	(0.216)
FDI	0.611**	-0.008	-0.297
	(0.278)	(0.021)	(0.479)
political_stability	0.854		3.146
	(1.216)		(2.084)
Constant	7.977	-0.361	94.660**
	(24.719)	(1.879)	(41.291)
Observations	132	132	132
R-squared	0.192	0.500	0.316

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

From the result of secondary regression, the agricultural sector plays a crucial role in driving export growth, with a positive and significant relationship at the 5% level. The inverse correlation of export growth with both the exchange rate and remittances suggests that while dollarization helps stabilize the currency, it may also, paradoxically, reduce expert competitiveness due to a stronger domestic currency. Additionally, foreign direct investment is confirmed as a key driver of export growth.

Regarding political stability, the data shows a worrying negative trend over time, highlighting the need for policies that bolster economic sectors that contribute to political cohesion. Specifically, the growth of the service sector has a positive and significant impact on political stability, suggesting that its development can be strategic for maintaining stability.

The complexity of the exchange rate's behavior is evident, with government expenditures negatively affecting the currency's value, which indicates a nuanced interplay between fiscal policy and exchange rates. At the same time, the structure of the agricultural sector and its influence on export growth suggests a self-adjusting mechanism for the currency.

In light of these results, increasing the level of dollarization appears as a viable strategy to foster economic stability and growth, particularly for agriculture and export-oriented economies.

Conclusion

The impact of dollarization on the economic development of Latin American and Caribbean countries is multifaceted. On one hand, dollarization significantly enhances trade relations and promotes stable economic development, particularly by mitigating currency instability and inflation. On the other hand, it compromises national currency autonomy and can hinder a country's ability to effectively respond to economic recessions. Consequently, while dollarization can be beneficial for these countries' economies, policymakers should be cautious of the potential for reduced control over monetary policies and increased dependence on the US dollar.

Looking ahead, it is pertinent to expand this research globally, investigating dollarization's effects not only in Latin American and Caribbean nations but also in countries like Afghanistan, the Bahamas, Barbados, and Belize, among others. These nations present a diverse array of policies toward dollarization, which despite their differences, generally contribute positively to economic development. Our future research aims to substantiate the hypothesis that dollarization bolsters economic stability and enhances investor confidence.

The findings of this study suggest that increasing the level of dollarization is a practical strategy to curb inflation and boost GDP per capita growth in South American and Caribbean countries,

particularly if they are agriculture and export-oriented. Future studies should explore the delayed effects of dollarization on GDP per capita growth and include additional indicators of economic development such as human and physical capital accumulation, inequality, and female participation in the labor force, to provide a more comprehensive understanding of dollarization's impact.

References

Crockett, Andrew. "The theory and practice of financial stability." *De Economist* 144.4 (1996): 531-568.

Ewards, S., & Magendzo, I. (2003). “Dollarization and Economic Performance: An Empirical Investigation.” *Journal of Monetary Economics*.

Díaz, J. P. (2023). “Does dollarization promote trade? evidence from two recent episodes.” *Applied Economics.*

Glick, R., & Spiegel, M. (1999). “Dollarization and Trade.” *Journal of International Money and Finance*.

Padilla, L. (2022). “Reassessing the feasibility of adopting dollarization in Latin America.” *Journal of Economics, Finance and Administrative Science*, *27*(53), 34–51.

Reinhart, C. M., Rogoff, K. S., & Savastano, M. (2003). *Addicted to dollars*.

Savastano, M. A. (1996). “Dollarization in Latin America: Gresham's Law in Reverse?” *IMF Staff Papers*.

International Monetary Fund. Statistics Dept. (1958). *International Financial Statistics: International Financial Statistics, September 1958*. International Monetary Fund.

Cartas, J. (2010). Dollarization Declines in Latin America. *Finance & Development, 47*(1). Retrieved from https://www.imf.org/external/pubs/ft/fandd/2010/03/dataspot.htm

Appendices

Table: Variable definitions and types

Variables	Type	Definition
gdp_PC_growth	Y	GDP growth per capita (annual %)
govt_Exp	Classical model	General government final consumption expenditure (% of GDP)
investment		Gross capital formation (% of GDP)
consumption		Households and NPISHs final consumption expenditure (% of GDP)
dollarization		Calculated by Net foreign asset/Net domestic credit (in current LCU)
export_Growth		Exports of goods and services (annual % growth)
export_Percent		Exports of goods and services (% of GDP)
saving		Gross savings (% of GDP)
structure_Agri/Manu/Serv	Econ structure	Agricultural, Manufacturing and Service (% of GDP)
expo_Agri/Fuel/Food		Agricultural raw materials, Fuel and Food exports (% of merchandise exports)
political_Stability	South America exclusive	Political Stability and Absence of Violence/Terrorism: Estimate
exchange_Rate		Real effective exchange rate index (2010 = 100)
remittance		Personal remittances, received (% of GDP)

FDI		Foreign direct investment, net inflows (% of GDP)

Graph: Visualization of observation distribution