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**Structural Adjustment Programs in Latin America: A Critical Analysis of their
Impact from 1982-1998**

Abstract

This paper attempts to analyze the impact of the World Bank and International Monetary Fund (IMF) prescribed “Structural Adjustment Programs” (SAP) to Latin America around the time of the Latin American debt crises. We look at nineteen Latin America countries and attempt to measure the extent of reform that each country undertakes. We then use simple regressions to determine the impact the extent of reform had on the following key economic indicators: GDP growth, rate of inflation, debt to GDP ratio, and life expectancy. Despite our regressions lacking statistical significance, we find that for GDP growth there is a weak positive relationship with the extent of reform; for rate of inflation there is a strong negative relationship with extent of reform; for debt to GDP ratio there is a weak negative relationship with extent of reform; and for life expectancy there is a weak positive relationship with extent of reform.

Introduction

Structural adjustment programs (SAPs) are a set of economic policies implemented by international financial institutions such as the International Monetary Fund (IMF) and the World Bank in developing countries since the 1980s. These policies aim at reducing macroeconomic imbalances and achieving economic stability, usually in exchange for loans to alleviate debt crises. A debt crisis is a financial condition that arises when a debtor country is incapable of fulfilling its financial obligations, such as repaying loans or servicing its debt, which could potentially result in a default or bankruptcy. Typically, a debt crisis stems from a situation where the debtor has amassed a substantial amount of debt that exceeds their capacity to service or repay using their income or assets. The consequences of a debt crisis are far-reaching and could have significant economic and financial implications. These may include a decline in credit ratings, a rise in borrowing costs, a fall in the value of the currency, and, in extreme cases, political and social unrest.

When a country is facing a debt crisis, it typically engages in negotiations with its creditors and financial institutions, such as the IMF and World Bank, to address its financial obligations and restore financial stability. These financial institutions that engage with the debtor country to provide liquidity are referred to as international lenders of last resort. Without these institutions, the liquidity crisis could spread to other countries causing a wider economic contagion. Given how dependent a debtor country is on these institutions, there is significant power held by the creditors in the negotiation process. The Latin American debt crisis of the 1980s presented an opportunity for these crediting financial institutions to reform dysfunctional economic systems that they viewed were based on an outdated school of economic thought. Like doctors, these creditors believed that the only way these countries could avoid another debt crisis

would be to administer the prescribed remedy, which were the programs of structural adjustment. In Latin America, the debt crisis of the 1980s compelled states to borrow from the IMF and World Bank and adopt SAPs, which included measures such as fiscal and trade reforms, financial market liberalization, labor market deregulation, and privatization of state-owned enterprises.

While proponents argue that SAPs have helped to stabilize economies and promote growth, critics have argued “while [SAPs have] been effective in reducing macro imbalances and restoring some growth, the basic development problems have not been solved” (Summers, Pritchett 1993). By examining the effects of SAPs in Latin America, this paper aims to contribute to the ongoing debate about the effectiveness of SAPs in promoting economic growth, monetary stability, fiscal health, and level of development in Latin America during the period from 1982 to 1998. We use the term “development” in the context of socio-economic progress. In this understanding we view development to be a function of poverty, and thus the level at which society has developed infrastructure to protect against societal problems and concerns ranging from contagious viruses to homelessness. Our hypothesis is that while countries that adopted extensive SAPs had higher economic growth, greater monetary stability, and better fiscal health, the level of development was unrelated or negatively related to the extent of structural adjustment.

Literature Review

The theoretical underpinnings of structural adjustment lay their roots in the neoclassical school’s central components of homo-economicus and methodological individualism, that is “rationally calculating individuals maximize their welfare” and “the exchanges that take place within markets arise spontaneously from atomistic interaction of self-seeking individuals” (Stein,

Nissanke 1999). Understanding these neoclassical principles is essential to the discussion since they inform the stabilization and supply-side policies of the SAPs. According to Stein and Nissanke, the stabilization policy side of the SAP is a combination of reducing expenditures and tightening monetary policy so that the amount of credit available to borrowers is reduced. These “deflationary” and “contractionary” measures are assumed to be offset by liberalization and privatization reforms which are believed to be “growth-enhancing” and “socially welfare-maximizing.” As the state’s role is diminished through this liberalization and deregulation, individuals would be expected to respond positively to changed incentives by investing in and producing goods and services. “Thus, deregulation of goods and factor markets and trade liberalization are supposed to result in a removal of the ‘structural’ causes of macroeconomic imbalances” (Stein, Nissanke 1999).

While both the stabilization and supply-side policies are recommended by the financial institutions acting as the lenders of last resort, not every country that implemented SAPs applied both even-handedly. “Macroeconomic balances can be achieved with large differences in the degree of economic liberalization and, conversely, liberalized economies can maintain significant macroeconomic imbalances” (Ocampo 2004). These differing degrees of stabilization and liberalization a country implements are “shaped by a combination of international economic constraints, domestic economic performance, and political conditions” (Remmer 1998). Countries hit the hardest by the debt crisis, especially with respect to inflation and GDP growth, “see a greater probability of reform initiation” (Remmer 1998).

While previous research on the impact of structural adjustment in Latin America since the debt crisis has been abundant, none are able to determine the overall effectiveness of SAPs in promoting economic growth and social welfare. Sebastian Edwards, a World Bank economist, is

certainly a relevant source on the impact of structural adjustment as he details how he was approached and persuaded by the then chief economist of the World Bank's Latin America and Caribbean Region, Marcelo Selowsky, to evaluate the Latin American structural adjustment program (Edwards 1995). His over 300-page book goes into vivid detail the struggles of each Latin American country during the "lost decade" in their transition from the import substitution industrialization orthodoxy to the neoliberal developmentalism prescribed by the IMF. Most important of the findings in Edwards's paper was his categorization of the reform policies into "fiscal", "trade", "financial market", "labor market", and "privatization" reform. On page 70, Edwards actually writes a brief summary of each countries reform measures for each category, giving an efficient means for future papers to gather key information on extent of reform of each country.

The study conducted by Crisp and Kelly, "The Socioeconomic Impacts of Structural Adjustment," was a significant contribution to the measurement of the extent reform in Latin America since the debt crisis. Their study uses said key information in Edwards's book to build a regression analysis that regresses key economic indicators such as GDP growth and inflation on Edward's extent of reform. Using Edwards's data, Crisp and Kelley essentially create their own values to represent differing levels of reform on a scale from 0 to 2. This is an incredibly useful way to statistically determine the impact of structural adjustment, however, it is not accomplished without faults. The glaringly obvious one being the time series data used spans only a decade. Data even into the late 1990s is important to draw conclusions on the impact of SAPs in the mid-1980s. Many countries undertook structural adjustment in the early 1990s that certainly would impact their economic landscape in 1998. Supporters of structural adjustment would argue that the lower-than-expected growth and monetary stability for countries that

undertook extensive reform is because the time series of this data set does not give enough time for these countries to adjust to the newly implemented economic model. Understanding this fault is key to understanding why the results seem counterintuitive to our hypothesis. The findings of this paper seem counterintuitive as it finds adjustment to be weakly associated with growth and inflation, while “adjustment appears to be negatively associated with both poverty and inequality” (Crisp, Kelly 1999).

The values for extent of reform calculated in Crisp and Kelly uses insufficient data. For example, Peru is given zeros in all 5 categories because it does not factor in the reforms beginning in 1990. In Edward’s *Crisis and Reform in Latin America*, country by country analysis is limited up to 1993. For countries like Ecuador and El Salvador (SAPRIN 1998) which implemented major reforms after Edward’s cutoff, we use the US Department of State’s analysis for Ecuador (Department of State 1996) and the organization SAPRIN’s analysis for El Salvador (Rubio-Fabian 1998).

Like Crisp and Kelly, our paper will use Edwards’s detailed historical research to base my data on the extent of reform a given country takes, in addition with other sources specifically on Ecuador and El Salvador.

Although the study conducted by Agarwal and Sengupta is narrow in that they only compared ten countries and did not analyze socio-economic measures such as poverty and inequality, their data started in 1980 and continued into the 1990s up until 1997, almost exactly when my data’s time series ends. With respect to the economic measures relevant in my paper such as GDP growth and inflation, Agarwal and Sengupta find that “Latin America has performed much better in the nineties in terms of growth in per capita GDP as compared to the eighties” (Agarwal and Sengupta 1999). Similarly, their study also found that “Most Latin

American economies did better on the inflation front in the period 1987-94 than in the eighties.”

Their study, however, does not measure the degree to which each country implemented structural adjustments.

Methodology

To assess my hypothesis, we analyze a sample set of Latin American countries, assessing their extent of reform, as determined by the average of their scores on five categories of structural adjustment: fiscal reform, trade reform, financial market reform, labor market reform, and privatization. To determine the score a country receives for each category of structural adjustment, we use the data collected by Sebastian Edwards in his book *Crisis and Reform in Latin America*. Based on his comprehensive historical analysis of structural adjustment in Latin America, we assign a numerical value for each category of structural adjustment. The value is based on a scale from 0 to 2 where 0 stands for limited or no reform, 1 stands for moderate reform, and 2 stands for extensive reform. For each country we then take the average of the five

values, giving a single value to represent the total level a country went through with structural adjustment.

While this alone can be a valuable set of data to use in a regression on economic indicators, we want to go a step further and adjust the extent of reform according to when each country implemented reform. We believe that this value for average extent of reform alone does not accurately reflect the extent of reform a country has undergone as of the final year of the times series, 1998. For example, while El Salvador implemented more reform in their economy than Bolivia, Bolivia was an early reformer having undergone structural adjustment in 1985. El Salvador, on the other hand, only began implementing their structural adjustment in 1993. To

Extent of Structural Adjustment Reform (1982-1998)						
Country	Fiscal Reform	Trade Reform	Financial Market Reform	Labor Market Reform	Privatization	Extent of Reform (Average)
Extensive Reformers						
Chile	2	2	2	2	2	2
El Salvador	2	2	2	1	2	1.8
Mexico	2	2	2	1	2	1.8
Peru	1	2	2	2	2	1.8
Colombia	2	2	2	1	1	1.6
Jamaica	2	2	2	0	2	1.6
Moderate Reformers						
Argentina	1	2	1	1	2	1.4
Bolivia	2	2	1	1	1	1.4
Ecuador	2	2	2	0	1	1.4
Trinidad and Tobago	2	2	2	0	1	1.4
Guyana	2	2	1	0	1	1.2
Nicaragua	2	2	1	0	1	1.2
Limited Reformers						
Costa Rica	2	2	1	0	0	1
Guatemala	2	1	2	0	0	1
Paraguay	1	1	1	0	1	0.8
Uruguay	1	1	2	0	0	0.8
Venezuela	1	2	0	0	1	0.8
Honduras	1	1	1	0	0	0.6
Brazil	0	1	0	0	1	0.4

account for the differences in times each country reforms, we create a new reform value for each of the categories for each of the countries called the adjusted reform value. Each adjusted reform value will be the reform value times an assigned multiplier value. The multiplier assigned will depend on the wave in which the reform takes place. In *Crisis and Reform*, Edwards refers to the Latin American countries implementing structural adjustment around the same time as a wave of reform (Edwards 1995). An early reform (1975-1986) is assigned a multiplier of 1 as they have had ample time for the reform to yield its intended effects. A second-wave reform (1987-1989) receives a multiplier of 0.75 and a third-wave reform (1989-1998) receives a multiplier of 0.5. If a reform had not taken place, no multiplier is attached as it would just be multiplied by zero.

Adjusted Extent of Structural Adjustment Reform for Reform Duration (1982-1998)

Country	Fiscal Reform	Trade Reform	Financial Market Reform	Labor Market Reform	Privatization	Extent of Reform (Average)
Early Reformers						
Chile (1975)	2(1)	2(1)	2(1)	2(1)	2(1)	2
Mexico (1985-86)	2(1)	2(1)	2(1)	1(1)	2(1)	1.8
Bolivia (1985)	2(1)	2(1)	1(1)	1(1)	1(.5)	1.3
Second-wave Reformers						
El Salvador (1989-90)	2(0.75)	2(0.75)	2(0.75)	1(0.75)	2(0.75)	1.35
Jamaica (1987-88)	2(0.75)	2(0.75)	2(0.75)	0(0)	2(0.75)	1.2
Costa Rica (1988)	2(0.75)	2(0.75)	1(0.5)	0(0)	0(0)	0.25
Trinidad and Tobago (1987-88)	2(0.75)	2(0.75)	2(0.75)	0(0)	1(0.5)	1
Guyana (1989)	2(0.75)	2(0.75)	1(0.75)	0(0)	1(0.75)	0.9
Uruguay (1987-88)	1(0.75)	1(0.75)	2(0.75)	0(0)	0(0)	0.6
Venezuela (1989)	1(0.75)	2(0.75)	0(0)	0(0)	1(0.5)	0.55
Third-wave Reformers						
Colombia (1990-91)	2(0.5)	2(0.5)	2(0.5)	1(0.5)	1(0.5)	0.8
Argentina (1990-91)	1(0.5)	2(0.5)	1(0.5)	1(0.5)	2(0.5)	0.7
Honduras (1990)	1(0.5)	1(0.5)	1(0.5)	0(0)	0(0)	0.3
Guatemala (1992)	2(0.5)	1(0.75)	2(0.5)	0(0)	0(0)	0.55
Brazil (1991)	0(0)	1(0.5)	0(0)	0(0)	1(.5)	0.2
Peru (1991)	1(0.5)	2(0.5)	2(0.5)	2(0.5)	2(0.5)	0.9
Nicaragua (1990)	2(0.5)	2(0.5)	1(0.75)	0(0)	1(0.75)	0.7
Ecuador (1993)	2(0.5)	2(0.5)	2(0.5)	0(0.5)	1(0.5)	0.7
Paraguay (1991-92)	1(0.5)	1(0.5)	1(0.5)	0(0)	1(0.5)	0.4

	Early	Second-wave	Third-wave
Extensive	Chile	El Salvador	Colombia
	Mexico	Jamaica	Peru
Moderate	Bolivia	Trinidad and Tobago	Argentina
		Guyana	Ecuador
Limited	n.a.	Costa Rica	Nicaragua
		Uruguay	Guatemala
		Venezuela	Paraguay
			Honduras
			Brazil

For us to evaluate the impact of structural adjustment, we use key economic indicators that we think capture economic growth, monetary stability, sovereign risk, and level of development. To measure economic growth we use the GDP growth rate (adjusted for inflation). Not only does the GDP growth rate provide a broad measure of economic activity, but it is widely available information from international agencies. While there are limitations to using this indicator as a measure for economic growth, such as the fact that it does not account for income distribution or environmental sustainability, for the purposes of this paper, it remains a useful measure for the overall health of the economy. For each country, we take the average rate of GDP from 1982 to 1998 and regress those values with the adjusted average extent of reform to assess the relationship between the degree of structural adjustment and economic growth.

The type of regression analysis used in this paper is a simple linear regression, which was chosen due to its simplicity and ease of interpretation. Simple linear regression is a basic statistical technique that models the relationship between a single independent variable (in this case, the extent of reform) and a dependent variable (the GDP growth rate). It estimates the best-fitting straight line through the data points, aiming to minimize the sum of the squared differences between the observed and predicted values. It is essential to note, however, that simple linear regression has limitations, particularly when dealing with more complex relationships or multiple independent variables.

In measuring monetary stability we will use the headline CPI indicator. The headline CPI is based on a basket of goods and services that are typically consumed by households, providing a measure of changes in the prices that individuals actually pay for goods and services. While there are limitations to using headline CPI as a measure of inflation, such as the fact that it may not fully capture changes in quality or substitution effects, it remains the most widely recognized

and commonly used measure for assessing changes in the cost of living and overall inflation trends. While Crisp and Kelly base their analysis of the relationship between extent of structural adjustment and monetary stability on the change in inflation from 1982 to 1998 by subtracting the latter by the former, this method seems flawed as it ignores all the fluctuations in between. This is why we use the average CPI value to regress on the adjusted average extent of reform to evaluate the relationship between the degree of structural adjustment and monetary stability.

Debt to GDP ratio is an important metric for assessing a country's fiscal health and sustainability. At the time of the Latin American debt crisis in the early 1980s, this metric was especially relevant for the World Bank and IMF as the lender of last resort. A country overly burdened with debt relative to the country's output can be a cause of concern for those lenders of last resort as it may indicate that the country is not generating enough economic activity to support its debt burden. In our analysis for impact on structural adjustment we use the difference in debt to GDP ratio from 1982 to 1998. We use the difference in debt to GDP ratio from 1982 to 1998 to regress on the adjusted average extent of reform to assess the relationship between the degree of structural adjustment and fiscal health.

Life expectancy is a commonly used measure for development because it reflects improvements in access to medical treatments and technologies, public health infrastructure, and disease prevention. Specifically, life expectancy measures the average number of years a person is expected to live based on mortality rates. Unlike our analysis for inflation, we will use the difference of the life expectancy in 1982 and 1998 as our response variable. We do this because life expectancy is not volatile like inflation. We take the difference as the change in life expectancy and regress that on the adjusted average extent of reform to assess the relationship between the degree of structural adjustment and life expectancy.

To conclude our methodology, we explain why we choose the time series used in this paper. Our time series data begins in 1982, the most critical year of the Latin American debt crisis. This resulted in widespread economic hardship, commonly known as *La Década Perdida* (The Lost Decade) prompting Latin American governments, most notably in Brazil, Argentina, and Mexico, to turn to the IMF for assistance. The time series begins this year for the purpose of isolating the effect of structural adjustment. While the impact of the structural adjustment is enduring even today, for the purpose of isolating the effect of the structural adjustment we will limit the time series up until 1998 for the following reason. Beginning with Hugo Chavez's electoral victory in 1998, a wave of anti-neoliberal social unrest swept across Latin America as left-wing political parties associated with the São Paulo Forum took control of governments. In addition to Venezuela, left-wing governments were formed in Brazil, Argentina, Peru, Bolivia, and many others in the following millennium. This continental shift towards anti-neoliberal state-interventionist policy is known as the *Pink tide*. We want to avoid data during the *Pink tide* because these new governments were critical of the macroeconomic policies that came with structural adjustment, which they viewed as economic tools of coercion by a ruling elite to exploit the working class. The policies they implemented attempted to undo or alleviate the perceived damages that came with structural adjustment; thus it is possible that the *Pink tide* is a confounding variable that should be excluded from our data set.

Results

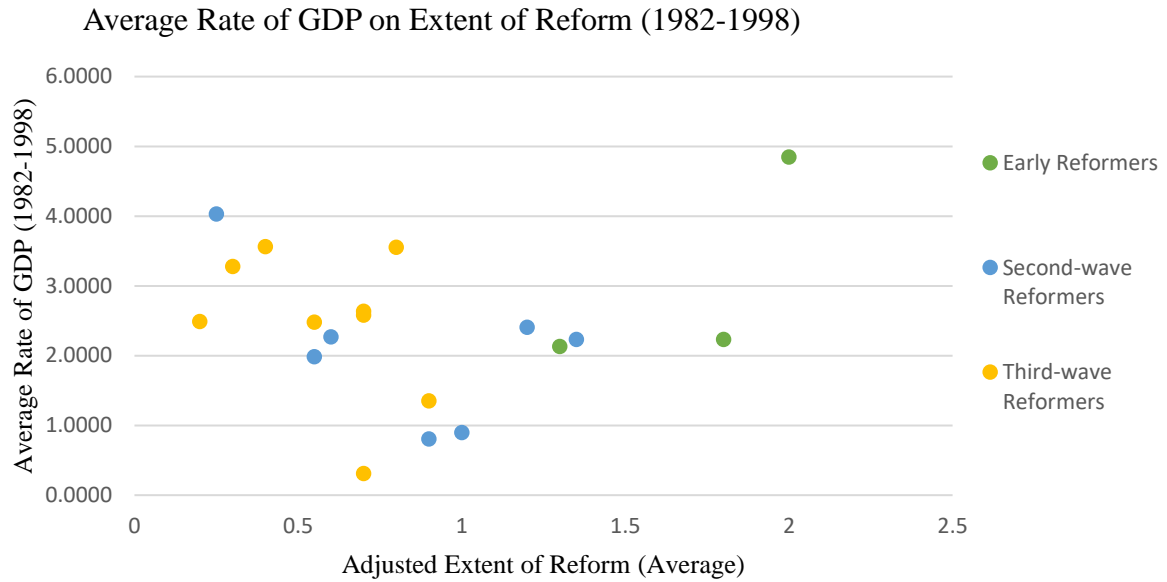
This section evaluates the impact of structural adjustment on various aspects of the Latin American countries, including GDP growth, inflation, debt-to-GDP ratio, and life expectancy. The analysis is based on the extent of structural adjustment, which considers five reform areas: fiscal reform, trade reform, financial market reform, labor market reform, and privatization.

1. Impact on GDP Growth

We collected World Bank data on annual percent growth rates of GDP from 1982 to 1998 based on constant local currency. Over this period we take the average for each country and get the following values. To evaluate the impact of structural adjustment policies on GDP growth, we can perform a regression analysis using the extent of reform as the independent variable and GDP growth rate as the dependent variable. This method helps to establish the relationship between the extent of reform and GDP growth.

Average Rate of GDP from 1982 to 1998	
Country	Rate of GDP (Average)
Argentina	2.5821
Bolivia	2.1318
Brazil	2.4913
Chile	4.8483
Colombia	3.5552
Costa Rica	4.0291
Ecuador	2.6374
El Salvador	2.2306
Guatemala	2.4783
Guyana	0.8071
Honduras	3.2782
Jamaica	2.4076
Mexico	2.2312
Nicaragua	0.3095
Paraguay	3.5631
Peru	1.3518
Trinidad and Tobago	0.8966
Uruguay	2.2696
Venezuela	1.9851

The regression output reveals a weak relationship between the extent of reform and GDP growth, with an R Square value of 0.0016. This value indicates that only 0.16% of the variation in GDP growth rate can be explained by the extent of reform. The adjusted R Square value, which accounts for the degrees of freedom, is even lower at -0.0608. This result implies that the model does not fit the data well, and the relationship between the extent of reform and GDP growth rate might be spurious or influenced by other factors.



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.040177234
R Square	0.00161421
Adjusted R Square	-0.060784902
Standard Error	1.191641926
Observations	18

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.036734423	0.036734423	0.025869121	0.874233625
Residual	16	22.72016766	1.420010479		
Total	17	22.75690208			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	2.338101998	0.563956125	4.145893437	0.000759841	1.14256842	3.533635576	1.14256842	3.533635576
0.7	0.09134257	0.56791376	0.160838804	0.874233625	-1.112580821	1.29526596	-1.112580821	1.29526596

RESIDUAL OUTPUT

Observation	Predicted 2.58209325424664	Residuals
1	2.456847339	-0.325090275
2	2.356370512	0.134881222
3	2.520787138	2.327507781
4	2.411176054	1.144025222
5	2.36093764	1.66811937
6	2.402041797	0.235364464
7	2.461414467	-0.230807055
8	2.388340411	0.089962952
9	2.420310311	-1.613173594
10	2.365504769	0.912714278
11	2.447713082	-0.040130777
12	2.502518624	-0.271330438
13	2.402041797	-2.092567208
14	2.374639026	1.188419972
15	2.420310311	-1.068475729
16	2.429444568	-1.532826079
17	2.39290754	-0.123319419
18	2.388340411	-0.403274686

The P-value for the extent of reform variable is 0.8742, which is greater than the significance level of 0.05. This finding suggests that there is no statistically significant relationship between the extent of reform and GDP growth rate. In other words, we cannot conclude that structural adjustment policies have a significant impact on GDP growth in the studied countries. The coefficient for the extent of reform variable is 0.0913, which means that for a one-unit increase in the extent of reform, the GDP growth rate is expected to increase by \$0.0913. However, due to the high P-value, this result should be interpreted with caution.

While the regression analysis does not establish a clear relationship between structural adjustment policies and GDP growth, it is important to consider the individual country's experiences. For example, countries such as Chile, Costa Rica, and Colombia experienced relatively higher GDP growth rates during the studied period. These countries implemented extensive reforms in various areas, particularly in trade and financial market reforms. On the other hand, countries like Brazil, Argentina, and Venezuela experienced lower GDP growth rates and implemented limited reforms. The mixed experiences of the Latin American countries suggest that the impact of structural adjustment policies on GDP growth cannot be generalized. The effectiveness of these policies may depend on the specific context and the extent to which they are implemented in each country. Additionally, other factors, such as political stability, institutions, and external economic conditions, might also play a crucial role in determining GDP growth.

Looking at the findings of Crisp and Kelley, we can see a similar shape and distribution in our scatter plots, however Crisp and Kelley found a "weakly positive relationship between extent of adjustment and growth" with an r equal to .250, slightly higher to our .04. While we

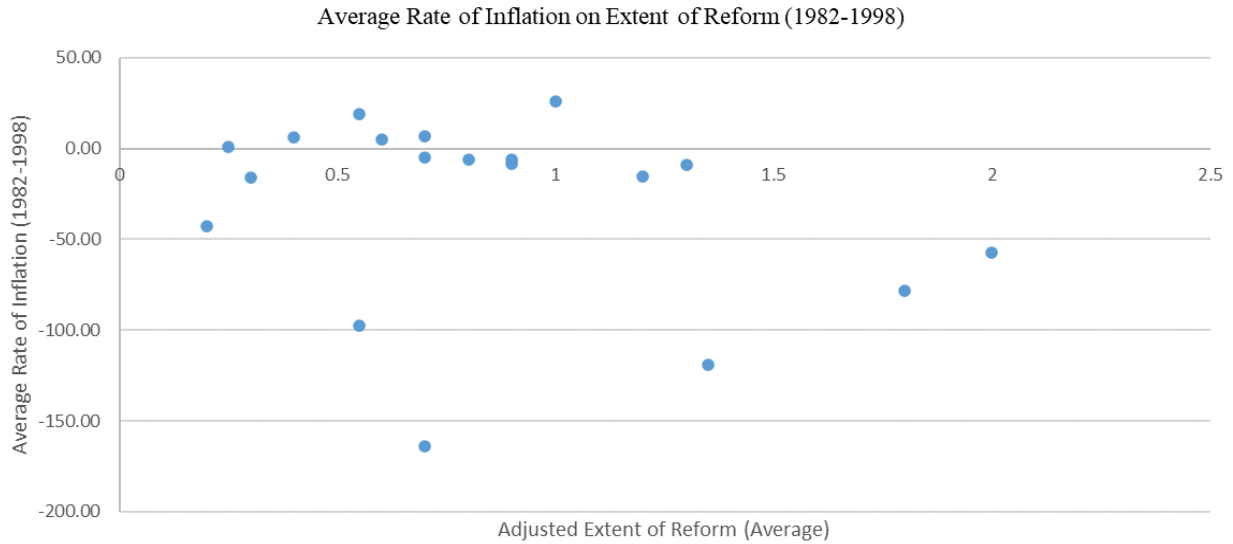
would have expected for our data to be at least slightly more significant than Crisp and Kelley's data given their much shorter span of observation, a possible factor in our regression results may have been the contribution of the adjustments made on the extent of reform for the time duration through the assignment of multipliers.

Overall, the given data and regression analysis do not provide strong evidence to support the claim that structural adjustment policies significantly impact GDP growth in Latin American countries. While some countries experienced higher GDP growth rates after implementing extensive reforms, others experienced lower growth rates despite limited reforms. The effectiveness of structural adjustment policies likely depends on a variety of factors, including the specific context of each country and the extent of reform implementation. Further research is needed to examine the individual country's experiences and explore the role of other factors in shaping GDP growth in the region.

2. Impact on Inflation

Like our analysis for the rates of GDP, we collected our data from the World Bank. We use the average Consumer Price Index (AVG CPI) values as the dependent variable in a simple linear regression model with the adjusted extent of reform as the independent variable. The following is the CPI data and the output of our regression.

Latin American Rate of Inflation 1982 to 1998				
Country	CPI 1982	CPI 1998	AVG CPI	1998-1982
Extensive Reformers				
Chile	9.94	5.11	16.06	-4.83
El Salvador	11.76	2.55	15.22	-9.21
Mexico	58.91	15.93	48.45	-42.99
Peru	64.46	7.25	738.36	-57.21
Colombia	24.70	18.68	23.02	-6.02
Jamaica	7.39	8.56	22.83	1.17
Moderate Reformers				
Argentina	164.78	0.93	469.53	-163.85
Bolivia	126.45	7.67	812.56	-118.78
Ecuador	16.93	36.17	38.18	19.25
Trinidad and Tobago	11.64	5.63	8.48	-6.01
Guyana	20.61	4.57	28.49	-16.04
Nicaragua	28.50	13.05	1775.19	-15.45
Limited Reformers				
Costa Rica	90.11	11.66	22.01	-78.45
Guatemala	0.10	6.62	14.15	6.53
Paraguay	5.29	11.60	19.13	6.31
Uruguay	18.99	10.80	56.47	-8.19
Venezuela, RB	9.67	35.78	37.85	26.11
Honduras	8.83	13.66	13.65	4.82
Brazil	100.54	3.20	677.45	-97.35



SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.041412162
R Square	0.001714967
Adjusted R Square	-0.060677847
Standard Error	53.83551939
Observations	18

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	79.66343736	79.66343736	0.027486613	0.870398353
Residual	16	46372.21037	2898.263148		
Total	17	46451.8738			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-26.81349132	27.47322539	-0.97598629	0.343597737	-85.0541274	31.42714476	-85.0541274	31.42714476
2	-5.120961614	30.88807954	-0.165790871	0.870398353	-70.60076511	60.35884188	-70.60076511	60.35884188

As shown in the regression statistics, the model does not appear to be particularly useful in explaining the relationship between structural adjustment and inflation. The R-squared value is very low at 0.0017, suggesting that the model explains only 0.17% of the variation in the change of inflation rates across countries. The adjusted R-squared is even lower at -0.0607, indicating that the model is a poor fit for the data. The ANOVA table reveals a very high p-value of 0.8704 for the significance of the F statistic, well above the conventional threshold of 0.05. This suggests that the model is not statistically significant, meaning that there is insufficient evidence to conclude that the adjusted extent of reform has a significant impact on inflation rates. The coefficient table provides further evidence of the model's lack of significance. The coefficient for the adjusted extent of reform is -5.12 meaning that for every one-unit increase in adjusted extent of reform there is a 5.12% decrease in extent of reform. The intercept and the coefficient for the adjusted extent of reform both have high p-values (0.3436 and 0.8704, respectively). This indicates that neither the intercept nor the coefficient for the adjusted extent of reform is statistically significant.

Given the lack of statistical significance in the model, it is not appropriate to draw any conclusions about the impact of structural adjustment on inflation rates across individual Latin American countries. However, this result may be due to the small sample size, the limitations of the simple linear regression model, or the fact that the adjusted extent of reform may not be the most appropriate measure for capturing the impact of structural adjustment on inflation rates.

Looking at the findings of Crisp and Kelley, we notice a significant departure in our results from their results. Crisp and Kelley found that “The change in inflation rates across the decade seems to indicate some success for structural adjustment” with an r equal to -0.258 compared to ours with an r equal to 0.04. A possible explanation could be that in measuring the

change in inflation rate from one year to another year in the future, the more years in-between the two being measured may involve an increased amount of extraneous and confounding variables. With Crisp and Kelley only measuring over a decade and not adjusting extent of reform for time duration, less variables are at play, thus potentially yielding their slightly more statistically significant results.

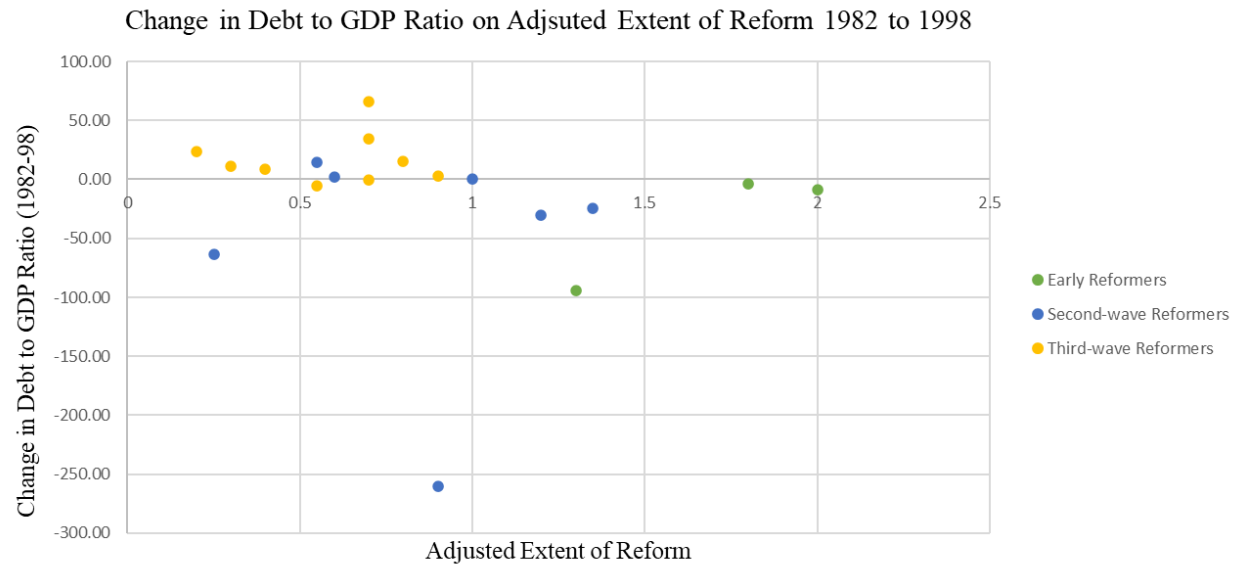
To better understand the relationship between structural adjustment and inflation, it may be necessary to use a more sophisticated model or to include additional control variables. For instance, controlling factors such as global economic trends, regional factors, and the initial conditions of each country's economy could help to isolate the effects of structural adjustment on inflation rates. Additionally, exploring alternative measures of structural adjustment or investigating the impact of specific reforms on inflation rates could provide further insights into the relationship between structural adjustment policies and inflation in Latin American countries.

3.Impact on Debt to GDP Ratio

To evaluate the relationship between the degree of structural adjustment and fiscal health in Latin American countries, we employed a cross section data regression analysis. The analysis was based on the countries' extent of reform data and changes in their debt-to-GDP ratio between 1982 and 1998. In our dataset, we classified countries into early reformers, second-wave reformers, and third-wave reformers. The extent of reform was calculated as the average of five policy areas, namely fiscal reform, trade reform, financial market reform, labor market reform, and privatization. The data also provided each country's debt-to-GDP ratio in 1982 and 1998, allowing us to calculate the change in debt-to-GDP ratio over the period.

Latin American Debt to GDP Ratio 1982 to 1998

Country	1982 Debt to GDP Ratio	1998 Debt to GDP Ratio	Change in Debt to GDP Ratio (1982-1998)
Argentina	35.99	35.20	-0.79
Bolivia	155.38	61.16	-94.22
Brazil	36.63	59.89	23.26
Chile	33.96	25.14	-8.82
Colombia	16.23	31.96	15.73
Costa Rica	101.27	37.64	-63.63
Ecuador	27.17	61.43	34.26
El Salvador	49.23	24.47	-24.76
Guatemala	32.88	27.83	-5.05
Guyana	509.33	249.32	-260.01
Honduras	54.34	65.92	11.58
Jamaica	104.97	74.82	-30.14
Mexico	47.55	44.09	-3.46
Nicaragua	159.12	225.39	66.27
Paraguay	17.98	26.58	8.60
Peru	34.24	36.82	2.58
Trinidad and Tobago	n.a.	n.a.	n.a.
Uruguay	34.61	36.58	1.96
Venezuela	16.77	31.44	14.67



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.06409142
R Square	0.00410771
Adjusted R Square	-0.062285109
Standard Error	122.160492
Observations	17

ANOVA

	df	SS	MS	F	Significance F
Regression	1	923.294454	923.294454	0.061869796	0.806938154
Residual	15	223847.7871	14923.1858		
Total	16	224771.0815			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-71.83488188	57.92419974	-1.240153204	0.233968658	-195.2973911	51.62762733	-195.2973911	51.62762733
0.7	-14.51497987	58.35486887	-0.248736398	0.806938154	-138.8954386	109.8654789	-138.8954386	109.8654789

RESIDUAL OUTPUT

Observation	Predicted -35.9909	Residuals
1	-90.7043557	-64.6716443
2	-74.73787785	38.10527785
3	-100.8648416	66.90694161
4	-83.44686577	67.21836577
5	-75.46362685	-25.80637315
6	-81.99536779	54.82936779
7	-91.4301047	42.2006047
8	-79.81812081	46.93522081
9	-84.89836376	-424.4286362
10	-76.18937584	21.84807584
11	-89.25285772	-15.71414228
12	-97.96184564	50.40964564
13	-81.99536779	-77.12263221
14	-77.64087383	59.65807383
15	-84.89836376	50.65396376
16	-80.5438698	45.9303698
17	-79.81812081	63.04752081

The regression analysis indicates a weak relationship between the degree of structural adjustment and the change in debt-to-GDP ratio, with an R square value of 0.00410771 and an adjusted R square value of -0.062285109. The negative coefficient of adjusted extent of reform (-14.51497987) suggests a minimal negative relationship between the extent of reform and the change in debt-to-GDP ratio. However, the high p-value of 0.806938154 indicates that this relationship is statistically insignificant. These results imply that there is no strong evidence to support a clear relationship between the degree of structural adjustment and fiscal health, as measured by changes in the debt-to-GDP ratio in Latin American countries.

Despite the poor regression results, we can still examine some of the outliers and other factors that may have influenced the debt-to-GDP ratios in these countries. This analysis can help provide a more nuanced understanding of the complex relationship between structural adjustment programs and fiscal health in Latin American countries.

Some notable outliers in the data include Guyana, which experienced a drastic reduction in its debt-to-GDP ratio from 509.33% in 1982 to 249.32% in 1998, and Nicaragua, which saw its debt-to-GDP ratio increase from 159.12% to 225.39% over the same period. Both countries implemented structural adjustment programs during this time, but the differing outcomes suggest that other factors may have played a significant role in determining their fiscal health.

One possible explanation for these divergent outcomes is the effectiveness of policy implementation. Structural adjustment programs often require substantial institutional reforms, and the success of these reforms may depend on the capacity of governments to implement them effectively. In countries where institutions are weak or corrupt, the desired effects of structural adjustment programs may be diluted or even reversed.

Another factor that may have influenced the debt-to-GDP ratio during the studied period is the global economic environment. Latin American countries experienced a range of external shocks during the 1980s and 1990s, including fluctuations in commodity prices, changes in global interest rates, and financial crises. These factors may have had a significant impact on the fiscal health of countries, irrespective of their efforts to implement structural adjustment programs.

Political stability is another crucial factor that can influence the effectiveness of structural adjustment programs. Countries that experienced political turmoil during the implementation of structural adjustment programs may have struggled to maintain the necessary focus and commitment to these reforms. In such cases, political instability may have hindered the success of structural adjustment programs and contributed to the weak relationship between the extent of reform and changes in debt-to-GDP ratios.

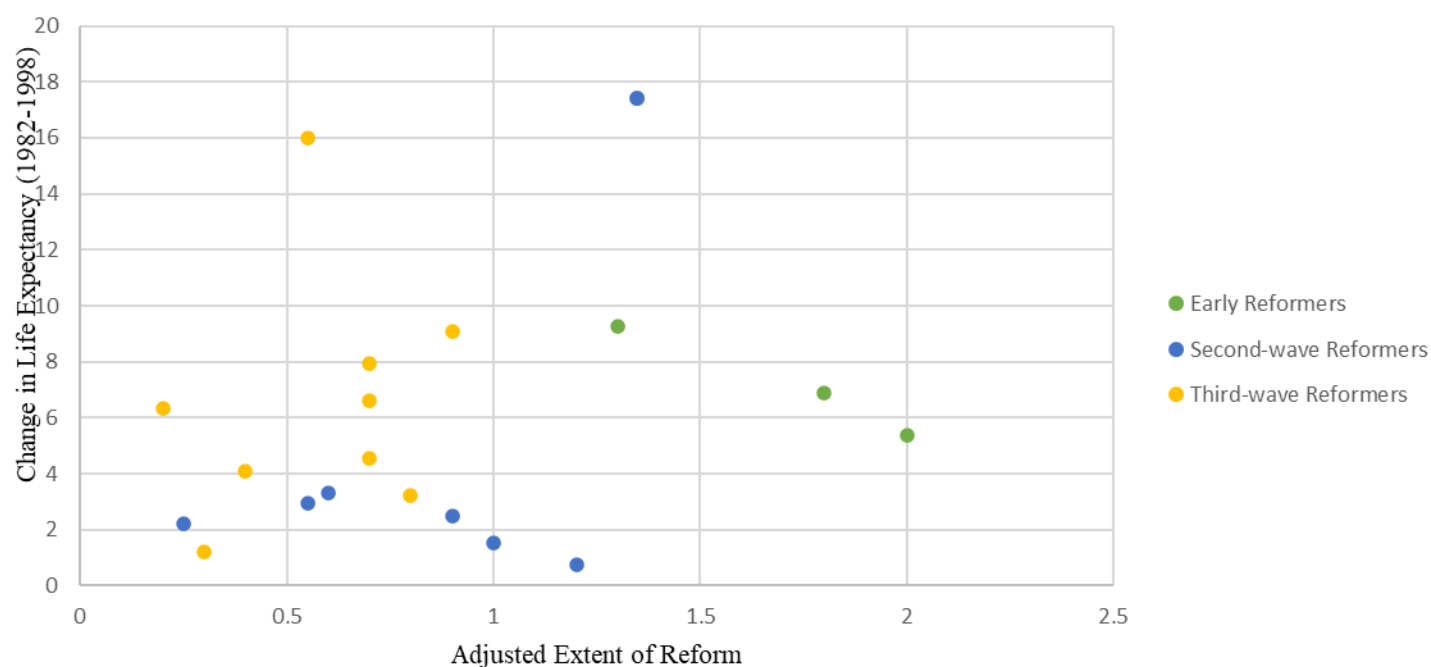
4.Impact on Life Expectancy

In this section, we present a comprehensive analysis of the impact of structural adjustment programs on life expectancy in Latin American countries between 1982 and 1998. Our data collected from the IMF provides each country's life expectancy in 1982 and 1998, enabling us to calculate the change in life expectancy over this period.

Latin American Life Expectancy 1982 to 1998

Country	1982 Life Expectancy	1998 Life Expectancy	Change in Life Expectancy
Extensive Reformers			
Chile	70.299	75.669	5.37
Mexico	65.975	72.845	6.87
El Salvador	51.105	68.478	17.373
Bolivia	52.053	61.332	9.279
Jamaica	70.244	70.99	0.746
Trinidad and Tobago	67.646	69.16	1.514
Moderate Reformers			
Guyana	61.406	63.9	2.494
Peru	60.015	69.082	9.067
Colombia	67.531	70.738	3.207
Nicaragua	58.605	65.209	6.604
Argentina	68.937	73.474	4.537
Ecuador	64.11	72.045	7.935
Uruguay	71.223	74.527	3.304
Limited Reformers			
Venezuela, RB	69.723	72.668	2.945
Guatemala	50.134	66.114	15.98
Paraguay	65.385	69.478	4.093
Brazil	62.856	69.189	6.333
Costa Rica	74.654	76.896	2.242
Honduras	61.527	62.721	1.194

Change in Life Expectancy on Extent of Reform 1982 to 1998



SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.211368344
R Square	0.044676577
Adjusted R Square	-0.015031137
Standard Error	4.761037341
Observations	18

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	16.96104552	16.96104552	0.748254684	0.399813462
Residual	16	362.6796249	22.66747656		
Total	17	379.6406704			

		<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept		4.229306625	2.253207203	1.87701629	0.078873244	-0.547279265	9.005892514	-0.547279265	9.005892514
	0.7	1.962740694	2.269019377	0.865017158	0.399813462	-2.847365508	6.772846896	-2.847365508	6.772846896

RESIDUAL OUTPUT

<i>Observation</i>	<i>Predicted 4.537000000000001</i>	<i>Residuals</i>
1	6.780869527	2.498130473
2	4.621854763	1.711145237
3	8.154788013	-2.784788013
4	5.79949918	-2.59249918
5	4.719991798	-2.477991798
6	5.60322511	2.33177489
7	6.879006562	10.49399344
8	5.308814006	10.67118599
9	5.995773249	-3.501773249
10	4.818128833	-3.624128833
11	6.584595457	-5.838595457
12	7.762239874	-0.892239874
13	5.60322511	1.00077489
14	5.014402902	-0.921402902
15	5.995773249	3.071226751
16	6.192047319	-4.678047319
17	5.406951041	-2.102951041
18	5.308814006	-2.363814006

The regression analysis indicated a weak relationship between the degree of structural adjustment and changes in life expectancy, with an R square value of 0.044676577 and an adjusted R square value of -0.015031137. The positive coefficient of 1.962740694 suggests a minimal positive relationship between the extent of reform and the change in life expectancy. However, the high p-value of 0.399813462 indicates that this relationship is statistically insignificant.

Despite the poor regression results, we can still examine some of the outliers and other factors that may have influenced life expectancy in these countries. This analysis can help provide a more nuanced understanding of the complex relationship between structural adjustment programs and life expectancy in Latin American countries.

Some notable outliers in the data include El Salvador, which experienced a significant increase in life expectancy from 51.105 in 1982 to 68.478 in 1998, and Guatemala, which saw its life expectancy increase from 50.134 to 66.114 over the same period. Both countries implemented structural adjustment programs during this time, but the differing outcomes suggest that other factors may have played a significant role in determining life expectancy.

A crucial factor that may have influenced life expectancy during the studied period is the level of investment in public health. Structural adjustment programs often involve cuts to public spending, which can lead to reduced investment in health care and social services. The impact of these cuts on life expectancy may depend on the efficiency of the health care system and the ability of governments to target resources effectively.

Additionally, our use of life expectancy for our measure of development presents an issue. While our time series spans a much wider time period than Crisp and Kelley's paper, the 16 years in use are still potentially too short of a time horizon for use to see any significant changes in life expectancy in relation to the extent of reform.

In conclusion, our regression analysis suggests that there is no strong evidence to support a clear relationship between the degree of structural adjustment and life expectancy in Latin American countries. However, a more comprehensive analysis of the data reveals that outliers and other factors, such as the effectiveness of policy implementation, the level of investment in

public health, and political stability, may have played a significant role in determining life expectancy. To better understand the complex relationship between structural adjustment programs and life expectancy, future research should consider incorporating these factors.

Omitted Variable Bias

The statistically insignificant results of this paper are due in part to the omitted variable bias. The two most impactful omitted variable biases are the state of the economy and the level of political will. The government of a country does not decide to drastically change the structure of the economy independent of outside phenomena, but rather in response to the outside phenomena. Entrenched political establishments in Latin America countries have unwillingness to change the system if the current system is functional and operative. The import substitution industrialization model had been working fairly well in the period since the Great Depression until the debt crisis, thus a sharp economic downturn such as a debt crisis would be necessary to change course to the IMF prescribed model. This is done so, more often than not, through a new regime or newly elected government.

To determine the likely direction of the bias of omitting the prior state of the economy, we would have to determine its likely correlation with the extent of reform variable and apply that to each of the dependent variables we are estimating (GDP growth, inflation, etc.). If we designed a variable called “prior state of economy” to measure the overall health, the best design would be to incorporate multiple economic indicators such as GDP growth, unemployment rate, inflation rate, and stock market performance by assigning each of the indicators a weight based on relative importance. Assuming this variable is positive with the economy in a healthy state and negative in an unhealthy state, there is likely a positive correlation of the prior state of the economy and GDP growth, negative correlation with inflation rate, negative correlation with

debt to GDP ratio, and a positive correlation with life expectancy. As previously described how the impetus to embark on structural adjustment reforms are “shaped by a combination of international economic constraints, domestic economic performance, and political conditions” (Remmer 1998), we assume that the more a country’s economy is in an unhealthy state, the more likely a country reform to a greater extent. Thus, for GDP growth the prior state of economy will have a negative bias, for inflation rate the prior state of economy will have a positive bias, for debt to GDP ratio the prior state of economy will have a positive bias, and for life expectancy the prior state of economy will have a negative bias.

The second omitted variable we look at is the level of political will to reform. If we apply the same to this omitted variable as we did to prior state of economy to determine its direction, we will have to design the “political will” variable to be positive if there is a high degree of political will to implement reform and negative if there is not a high degree of political will. Given this, we will assume there is likely a negative correlation between the political will and GDP growth, positive correlation between political will and inflation rate, positive correlation between political will and debt to GDP ratio, and a negative correlation between political will and life expectancy. We will also assume that the more political will there is to reform, the more likely a country will reform to a greater extent. Thus, for GDP growth the “political will” will have a negative bias, for inflation rate the “political will” will have a positive bias, for debt to GDP ratio the “political will” will have a positive bias, and for life expectancy the “political will” will have a negative bias.

To address these omitted variable biases, future papers could include these as covariates to control their effects. They could also perform sensitivity analyses to assess the robustness of the results.

Conclusion

In this study, we aimed to evaluate the impact of structural adjustment on various aspects of Latin American countries, including GDP growth, inflation, debt-to-GDP ratio, and life expectancy. Our regression analysis revealed weak relationships and statistical insignificance between the extent of reform and each of these aspects. This suggests that structural adjustment policies might not have a generalized significant impact on these measures in Latin American countries. However, our analysis of individual country experiences highlights that some countries experienced positive outcomes after implementing extensive reforms, while others experienced negative outcomes despite limited reforms. This suggests that the effectiveness of structural adjustment policies is likely to depend on the specific context of each country and the extent of reform implementation.

Other factors, such as political stability, institutions, and external economic conditions, might also play a crucial role in determining the impact of structural adjustment on these measures. To gain a deeper understanding of the relationship between structural adjustment policies and their effects on Latin American countries, future research should consider incorporating these factors and exploring alternative measures of structural adjustment.

Our analysis of outliers and other factors in the data revealed that the effectiveness of policy implementation, the level of investment in public health, and political stability might significantly influence the outcomes of structural adjustment programs. In countries where institutions are weak or corrupt, the desired effects of structural adjustment programs may be diluted or even reversed. Furthermore, global economic trends and regional factors can also impact the fiscal health and life expectancy of countries, irrespective of their efforts to implement structural adjustment programs.

In conclusion, our findings suggest that there is no strong evidence to support a clear relationship between the degree of structural adjustment and the studied measures in Latin American countries. However, the mixed experiences of these countries indicate that the effectiveness of structural adjustment policies is likely to depend on various factors, including the specific context of each country, the extent of reform implementation, and other external factors. Future research should focus on exploring the role of these factors in shaping the impact of structural adjustment policies on Latin American countries. This could involve using more sophisticated models or including additional control variables to isolate the effects of structural adjustment on the studied measures. Additionally, investigating the impact of specific reforms on these measures could provide further insights into the relationship between structural adjustment policies and their effects in the region.

Overall, while our regression analysis does not provide strong evidence for the impact of structural adjustment policies on GDP growth, inflation, debt-to-GDP ratio, and life expectancy in Latin American countries, the complex interplay of factors influencing these outcomes necessitates further research. A more nuanced understanding of the relationship between structural adjustment programs and these measures could contribute to the development of more effective policies and strategies for promoting economic growth and improving the well-being of people in the region.

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