THE MODERATING EFFECT OF THE SOVEREIGN CREDIT RATING BETWEEN GDP AND SOVEREIGN DEBT

El efecto moderador de la calificación crediticia soberana entre el PIB y la deuda soberana

Chavez Rodríguez, Yovani Edgar

Yovani Edgar Chavez Rodríguez
yovanychavez@hotmail.com
Universidad Metropolitana de Educación, Ciencia y Tecnología, Panamá, Panamá

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faecosapiens@gmail.com

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Resumen: Las calificaciones crediticias soberanas son muy importantes para cualquier economía nacional e internacional. Si bien una mejora de la calificación crediticia soberana puede alentar a los inversores internacionales y aumentar el Producto Interno Bruto (PIB) de un país, una rebaja puede tener efectos devastadores para una economía ya débil. Por otro lado, las deudas soberanas pueden tener efectos económicos importantes y están relacionadas, en cierta medida, con el PIB de un país. En consecuencia, existe la necesidad de estudiar cómo las calificaciones crediticias soberanas pueden moderar la relación entre el PIB y las deudas soberanas. Para el estudio de la calificación crediticia soberana se tuvo en cuenta a Moody's y Standard and Poor's, como dos de las agencias de calificación crediticia más prestigiosas. Se analizaron los datos públicos de Panamá de 2000 a 2019 relacionados con el PIB y la deuda soberana. Se realizaron dos análisis de moderación para probar dos hipótesis utilizando SPSS AMOS Versión 27.0. Los resultados de la investigación empírica demostraron que la calificación crediticia soberana modera la relación entre las dos variables. La calificación crediticia soberana de Moody's y Standard and Poor's demostró ser significativa en ambos casos.

Palabras clave: Calificaciones Crediticias Soberanas, Producto Interno Bruto, Deuda Soberana.

Abstract: Sovereign credit ratings are very important for any national and international economy. While a sovereign credit rating upgrade can encourage international investors and boost a country's Gross Domestic Product (GDP), a downgrade can have devastating effects for an already weak economy. On the other hand, sovereign debts can have important economic effects and it is related, to some degree, to a country's GDP. Consequently, there is a need to study how sovereign credit ratings can moderate the relationship between GDP and sovereign debts. To study sovereign credit rating, Moody's and Standard and Poor's, as two of the most prestigious credit rating agencies, were taken into consideration. Panama's public data from 2000 to 2019 related to GDP and sovereign debt was analyzed. Two moderation analyses were performed to test two hypotheses by using SPSS AMOS Version 27.0. The results in the empirical research demonstrated that sovereign credit rating moderates the relation between the two variables. Moody's and

Standard and Poor's sovereign credit rating demonstrated to be significant in both cases.

Keywords: Sovereign credit ratings; Gross Domestic Product; Sovereign debt.

INTRODUCTION

Sovereign credit ratings are highly influential because they can affect directly and indirectly Gross Domestic Product (GDP) and sovereign debts. While a credit rating upgrade can encourage international investors and boost a national economy, a downgrade can have overwhelming effects for an already weak economy.

Around the world there is a need to understand how GDP, sovereign credit ratings, and sovereign debts behave because of their positive and negative consequences in every society. Consequently, there is an interest in studying how sovereign credit ratings can moderate the relationship between GDP and sovereign debts. In that regard, scholars have proposed ideas about what some governments can do in terms of political economies and how they can control sovereign debts while increasing GDP. For instance, it is advisable to develop models that consider the ratio between GDP and the amount of sovereign debt in default in order to identify countries that need to be monitored (Dufrénot & Paret, 2018, pp. 6422–6423).

Similarly, there is a need to decipher unforeseen consequences. For instance, economic crisis due to sovereign debt mismanagement can devastate societies and political structures. Economic crisis in the United States, Argentina, and Greece have highlighted the need to propose suitable solutions. Consequently, scholars have suggested that there should be adequate fiscal reforms, more budget constraints, international administrative centralization, and proper sanctions if deficit ceiling is reached (Baskaran & Hessami, 2017, pp. 268–269).

Likewise, other scholars have suggested different solutions such as keeping a close relationship between sovereign debt and economic growth, developing economic reforms that improve efficiency and productivity, and reducing negative public intangibles like corruption, relaxed financial regulations, and unprofessional vested interests (Alexakis et al., 2018, p. 2,18).

On the other hand, it is important that government maintain ownership for their economic decisions, sustainable fiscal discipline to avoid overspending and identification of financial vulnerabilities (Asonuma et al., 2018, p. 95). However, political structures tend to think in terms of short and medium terms rather than thinking about the generations will have to pay the negative consequences of adding more debts.

If governments tend to increase sovereign debts without considering future negative consequence, then, more severe countermeasures should be implemented as a way to deter economic irresponsibility. Consequently, because of bailout policies incentives governments to pursue fiscal undiscipline and overspending; some scholars have suggested that no country should be financially rescued (Steinbach, 2015, p. 1117). In that sense, Article 125 of the Lisbon Treaty demands the application of no bail-out policy, which is intended to prohibit that a country of the European Union could assume debts from another country (Basu & Stiglitz, 2015, p. 126).

Similarly, it has been suggested that countries should introduce constitutional mandates for future governments that will set adequate sovereign debt limits in correspondence with their GPD (Acharya & Rajan, 2013, p. 1551). However, political and economic consequences of letting an economic crisis destroy a country can propel international financial institutions and political alliances to intervene on behalf of an ally or partner nation.

Moreover, other scholars have proposed interesting ideas. For instance, by amplifying creditors from decentralized global bond markets, it is also possible that countries with high indebtedness can behave more

rational and pursue fiscal discipline to honor their financial commitments (Kaplan & Thomsson, 2017, p. 621).

On the other hand, it has been suggested that legislators need to consider the introduction of anti-vulture initiatives, which have the objective of preventing investors from purchasing a debt instrument when those investors have the clear intention of suing the debtor to exponentially increase their profits (Pavlidis, 2018, p. 97). However, because debts are always a business opportunity, it will be difficult to eliminate potential economic

predators that could see an opportunity when a country need an economic rescue or bank lending to avoid famine, devastation or an incoming war or invasion.

Other models have highlighted the importance of regulating international financial institutions and the type of assistance they can provide in which a country should respect financial legal framework and accept a partial bail-in based on what they have before receiving financial assistance (Esposito, 2015, pp. 522–523).

Finally, although there could be strict legal frameworks, government can behave rational o irrational depending on their interests. For instance, there is a huge difference between using key macroeconomic indicators to determine countries' abilities to pay their debts and changeable factors that influence countries' willingness to honor their sovereign debts (Bodea & Hicks, 2018, p. 343). However, the present research proposes a model that can explain the moderating effect of sovereign credit rating between the relationship of GDP and sovereign debt.

Gross Domestic Product (IV)

GDP which is one of the most trusted indicators to measure economic growth or decline, is the sum of values in goods and services produced in a country in one-year period (Villanueva, 2020, p. 170). As a result, GDP can be the sum of investments, consumptions, expenditures, and international trade in a country (Liao et al., 2019, p. 401). Moreover, GDP can be influenced by other factors. For instance, there is a significant relationship between GDP and housing prices in certain regions (Chi-Wei et al., 2018, p. 3181). Additionally, there is a significant relationship between GDP and employment rate (Agarwal et al., 2019, p. 52). Nonetheless, it is also possible that there is negative and positive relationship between GDP growth and population growth (Saidi & Zaidi, 2019, p. 4).

GDP growth can not only positively impact the economic system but also the population directly and indirectly (Tiwari, 2020, p. 98). Likewise, scholars have suggested that GDP growth can be used to assess how heavy a debt burden can be for a country over time (Benito et al., 2016, p. 315). There is a tangible relationship between GDP and

sovereign debt. For instance, GPD's percentage distribution includes sovereign debt as part of its elements (Shopov, 2020, p. 60). Likewise, when it comes to indicators, there are some indicators to take into consideration such as GDP per capita, the debt-to-GDP ratio, and the size of the debt (Engel, 2016, p. 156).

During debt crisis, the relationship between GDP and sovereign debt can be affected when the executive power implement reduction of government spending, which has the unintended consequence of affecting tax revenue (Ailincă & Georgeta, 2018, p. 94). For instance, because of the 2008-2010 world economic meltdown and no compliance of debt-to-GDP ratio in countries like Cyprus, Greece, Ireland, Italy, Portugal, and Spain, there is a repetitive recommendation to implement ever-increasing austerity measures, which, in turn, complicates recovery and causes economic stagnation (Apergis & Cooray, 2014, p. 786).

Another negative consequence for countries is that the higher the debt-to-GDP ratio is, the higher risk premium will be demanded by investors, which in turn, increases the sovereign debt (H. Kim, 2020, p. 118). Nonetheless, it is possible that the debt-to-GDP ratio can be ignored by investors, if a country has a stable GDP growth, which significantly reduces the probabilities of default (Collard et al., 2015, p. 384).

Another problematic aspect of GDP is that this economic indicator is available with deferment, which complicates the decision-making process for governments and private investors in real time and in ever-evolving external conditions (Hepenstrick & Marcellino, 2019, p. 69). Moreover, GDP can influence

governmental authorities' decision, which can indirectly impact individuals by means of bank rate of interests, reduction of workforce and levels of unemployment (Hussain, 2020).

It should be noted that GDP growth is implicitly related to sovereign debt credit rating. For instance, GDP is a suitable measure of economic health in country (Higgs, 2015, pp. 156– 157). Although there are some efforts to replace GDP with other indicators that take into account explicit and tacit factors in a society, GDP is still widely used and accepted by

economics because it reflects the values, interests, and goals of a capitalist market where income and monetary wealth are top priorities (Felice, 2016, pp. 986–990).

Sovereign Debt (DV)

While a debt is a promise to pay a certain amount of money in the future, a sovereign debt is a formal promise that governments make in a form of a legal contract (Velde, 2016, p. 1).

Although sovereign debt can be defined as the debt that a government has with foreign investors, it can also include external and domestic debt that allows a state to function without having compelling mechanism to force a state to pay its compromises (Singh, 2018, pp. 239–240).

Moreover, sovereign debts are debt instruments used by countries to obtain funds by the compromise of paying fixed amounts of interests to investors until cancelling the totality of the debt (Brutti, 2020, p. 1822). Nonetheless, sovereign debts are dynamic because of the limited capacity of creditors to enforce agreed upon payment and governmental decisions to implement economic reforms like market deregulation and improved fiscal capacity to achieve recovery (Müller et al., 2019, p. 4220). In the past, it was possible that powerful countries could enforce punitive measures. For instance, from 1880 to 1913, powerful creditors were able convince their governments to take military actions against foreign governments who refuse to pay (Samples, 2014, p. 55).

On the other hand, sovereign debt problems can cause reduction of bank loans and degrading of a country's domestic economy (Wang, 2019, p. 176). For example, sovereign debt crisis in Argentina and Greece have highlighted several problems like the lack of adequate legal frameworks, controversies with countries' constitutional frameworks, complex legal litigations in domestic and international courts, negative consequence for small savers and banks, and conflicting interpretations of sovereignty immunity (Giupponi, 2015, pp. 561–575).

Conversely, a good policy in terms of sovereign debt can propel economy growth, reduction of macroeconomic disparities among states, national and international stability, and stability of national currency (Yordanova, 2018, p. 184).

Sometimes sovereign debts can increase because of the lack of adequate regulations in which state officials, who do care for the public interest, have the ability to borrow sovereign debts and then, convert that money into personal financial benefits (Lienau, 2020, p. 307). Additionally, sovereign debts can trigger alarms of high level of economic vulnerabilities and problems in accessibility of cash (Jarmuzek & Vesperoni, 2018, p. 928). This problem is complex because current governments can control borrowing; however, they cannot deter future governments from increasing borrowing which can increase the risk of default (Hatchondo et al., 2016, p. 1384).

Similarly, governments can avoid honoring loan agreements by asserting immunity from legal responsibilities, applying the principle of international comity when convenient, refusing judicial jurisdiction from another state, and even disregarding former debt agreements related to war, peoples' oppression, and criminal purposes (Yu, 2017, pp. 537–538).

Sovereign Debt Credit Rating (Moderator)

Credit ratings are standardized economic forecast to assess states' creditworthiness through the use of interdimensional tools that consider the risk of default and expected loss, among other factors (Blanchard, 2018, p. 497).

Sovereign credit ratings takes into account quantitative and qualitative assessment of a country's capacity to repay a debt, which in turn make them very influential for governments wanting to attract investors and investors wanting to reduce risks (Grittersová, 2020, p. 36). For instance, some governmental officials argued that credit rating agencies accelerated sovereign debt crisis in countries like Greece, Italy, Ireland, Portugal, and Spain due to unwelcomed forecasts that lowered bond prices and categorized national economies as trash (Aizenman et al., 2013, p. 2).

Likewise, in Latin America and the Caribbean, sovereign credit ratings have more tangible impact when they experience a downgrade than a upgrade, which demonstrates how they can alter the access to investors (Bustillo et al., 2019, p. 189). As a result, there have been proposals to dismantle, control, and replace credit rating agencies because they have wrongfully blamed for default crisis (Petit, 2011, p. 587).

The biggest credit rating agencies in the world are Standard & Poor's, Moody's and Fitch, which have the power to affect investment strategies, economies, and financial markets (Körner & Trautwein, 2015, p. 256). Nonetheless, there have significant differences among sovereign credit ratings because of subjective evaluations, and the use of different indicators and parameters to evaluate countries (Iyengar, 2010, p. 21). Although sovereigns can ask for credit assessment, they cannot influence credit rating agencies' evaluation of government's willingness and ability to pay their debt responsibilities (Brooks et al., 2015, p. 590,593). However, credit rating agencies can suffer from inertia to update rating levels to avoid a wrongful prediction, keep similitudes with rating peers, and protect their prestige (Uribe-Teran & Mosquera, 2019, p. 107).

Although some scholars have tried to analyze the influence of quantitative macroeconomic variables, institutional and political factors, difference among countries' level of economic development, membership in economic group, inherent bias, it is not clear what are the key variables that are taken into account in the credit rating process (Stawasz-Grabowska, 2020, pp. 48–51). For instance, although a good record of repayment will have a direct relationship with good credit rating, the quality of sovereign credit ratings depends on prospective analysis that takes into account qualitative and quantitative factors (Ozturk, 2016, p. 186).

It is important to highlight that sovereign credit ratings can even influence international banks' decision-making process to lend money from developed markets to emerging ones (S. J. Kim & Wu, 2011, p. 360). As a result, sovereign credit rating can have a moderating effect. For instance, countries with good credit rating gets bank loans more quicky than countries that do not because sovereign credit rating are used by investors to measure a country's ability to pay its debt (Halim et al., 2008, p. 37).

METHODOLOGY

GDP: It is defined as the sum of product and services produced in a country's economy for one-year period (Salvaris, 2013, p. 80). For this study, Panama's GDP comprehends ten-year period from 2000 to 2019 and it is expressed in millions of dollars (The World Bank, 2021b).

Sovereign Debt: This variable can be defined as the internal and external debt owed by a country (Chen, 2020). Panama's sovereign debt goes from the year 2000 to 2019 and it is expressed in millions of dollars (Ministry of Economy and Finances, 2021).

Sovereign Credit Rating: For this empirical study, Standard and Poor's (S&P) and Moody's sovereign credit rating are used. In general, Standard and Poor's credit rating can have the following values (from the highest to the lowest): AAA, AA, A, BBB, BBB-, BB+, BB, B, CCC, CC, C, D (S&P Global Rating, 2019, p. 13). On the other hand, Moody's credit rating can issue the following values (from the best to the worst): Aaa, Aa1, Aa2, Aa3, A1, A2, A3, Baa1, Baa2, Baa3, Ba1, Ba2, Ba3, B1, B2, B3, Caa1, Caa2, Caa3, Ca,

C (Moody's Corporation, 2021). To perform the statistical analysis, Moody's and Standard and Poor's alphanumeric credit ratings were transformed to a numeric values by using Majnoni, Ferri, and Liu's system (Majnoni et al., 2000, p. 17).

Later, moderation analysis was performed to test two hypothesis by using SPSS AMOS Version 27.0:

· H1: Moody's credit rating moderates the relationship between GDP and sovereign debt.

· H01: Moody's credit rating does not moderate the relationship between GDP and sovereign debt.

· H2: Standard and Poor's credit rating moderates the relationship between GDP and sovereign debt.

· H02: Standard and Poor's credit rating does not moderate the relationship between GDP and sovereign debt.

RESULTS

Table 1 presents the descriptive statistics. Out of the 10 years, GDP has an average of

50.6 billion dollars (SD = 12.9 billion dollars). While the minimum GDP was 29.4 billion, the maximum GDP was 66.8 billion dollars. Additionally, sovereign debt has an average of 19.5 billion dollars (SD = 6.2 billion dollars). The lowest sovereign debt was 11.63 billion dollars, and the highest sovereign debt was 31.02 billion dollars.

On the other hand, Moody's and Standard and Poor's credit rating were very similar. Moody's credit rating has an average of 59.5 (SD = 2.8), which is equivalent to Baa2. Baa2 means that there is moderate risk because it is an average quality. Likewise, Standard and Poor's credit rating has an average of 60 (SD = 2.4), which is equal to BBB. BBB means that there is normal capacity to pay its debt; however, it is not too resilient to endure economic problems.

TABLE 1
Descriptive Statistics.

	N	Mean	Std. Deviation
GDP	10	50.6230	12.92698
SOVEREIGN DEBT	10	19.4526	6.15615
MOODY'S	10	59.5000	2.83823
STANDARD AND POOR'S	10	60.0000	2.35702
Valid N (listwise)	10		

Table 2 indicates moderating role of Moody's credit rating between GDP (independent variable) and Sovereign Debt (dependent variable). Results showed that Moody's credit rating

significantly moderated the relationship between the independent and dependent variables ($b = 0.042$, $F(3,6) = 666.139$, $p<0.01$). The variance explained by the model was 99.7% (R2 Change=0.997).

TABLE 2
Moderating role of Moody's Credit Rating (n=10)

	Unstandardized Coefficients		Standardized Coefficients	95.0% CI	
Model	b	Std. Error		LL	UL
(Constant)	103.275 **	11.138		76.021	130.529
GDP	-2.081 **	0.207	-4.370	-2.586	-1.576
MOODY'S	-1.799 **	0.196	-.829	-2.278	-1.319
GDP x Moody's	0.042 **	0.004	6.030	0.034	0.051
R2	0.997				
F	666.139				
R2 Change	0.997				
F Change	666.139				

Figure 1 shows the results of the Standardized Model and the correlations among variables using AMOS. GDP and Moody's credit rating were 0.81. Moody's and the interaction (GDP x Moody's) were 0.86. Finally, GDP and the interaction (GDP x Moody's) were 0.99. Likewise, the graph presents the interaction effect of Moody's credit rating between GPD and sovereign debt.

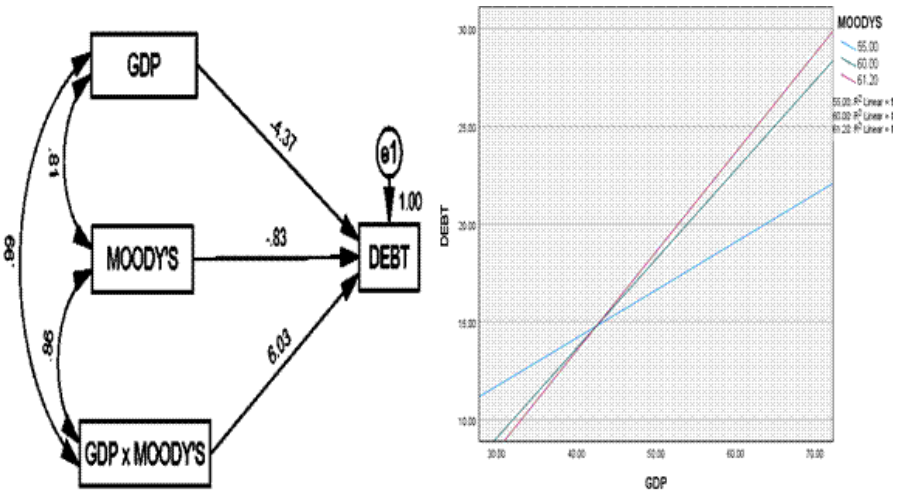

FIGURE 1
Standardized Model and the Interaction effect

Table 3 also indicates moderating role of Standard and Poor's credit rating between GDP (independent variable) and Sovereign Debt (dependent variable). Results showed that Standard and Poor's credit rating significantly moderated the relationship between the independent and dependent variables (b = 0.039, F (3,6) = 285.047, p<0.01). The variance explained by the model was 99.3% (R2 Change=0.993).

TABLE 3
Moderating role of S&P Credit Rating (n=10)

Model	Unstandardized Coefficients		Standardized Coefficients	95.0% CI	
	b	Std. Error	Beta	LL	UL
(Constant)	89.253*	17.277		46.978	131.528
GDP	-1.931**	0.320	-4.054	-2.715	-1.147
S&P	-1.533*	0.297	-0.587	-2.259	-0.807
GDP x S&P	0.039**	0.005	5.445	0.026	0.052
R2	0.993				
F	285.047				
R2 Change	0.993				
F Change	285.047				

Figure 2 demonstrates the results of the Standardized Model and the correlations among variables using AMOS. GDP and Standard and Poor's credit rating had a correlation of 0.68. Standard and Poor's credit rating and the interaction (GDP x S&P) were 0.75. Finally, GDP and the interaction (GDP x S&P) were 0.99. Likewise, the graph presents the interaction effect of Standard and Poor's credit rating between GPD and sovereign debt.

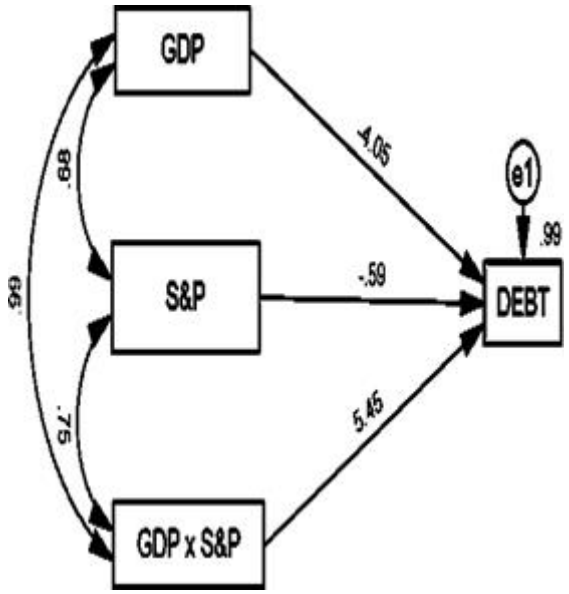

FIGURE 2
Standardized Model and the Interaction Effect

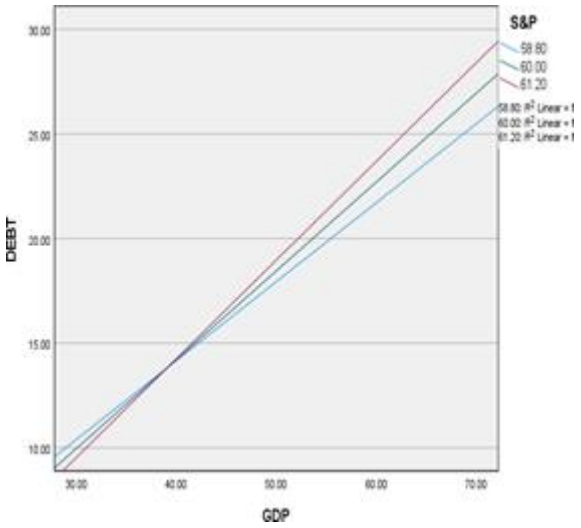

FIGURE 2
Standardized Model and the Interaction Effect

Based on the presented results, Hypothesis 1 and Hypothesis 2 were accepted:
· H1: Moody's credit rating moderates the relationship between GDP and sovereign debt.
· H2: Standard and Poor's credit rating moderates the relationship between GDP and sovereign debt.

DISCUSSION

The results demonstrate the moderating effect of sovereign credit rating (Moody's and S&P) between the relationship of GDP and sovereign debt, which highlight how sovereign credit rating can affect a country both positively and negatively. The significance of both models allows to predict the behavior of countries' sovereign debts based on the moderating effect of sovereign credit rating to increase or decrease sovereign debts in the short and long term.

TABLE 4
Sovereign Credit Rating Conditions

Condition No. 1: · Decrease in GDP · Decrease in credit rating Predicted Behavior: · Increase in Sovereign Debt	Condition No. 2: · Increase in GDP · Increase in credit rating Predicted Behavior: · Increase in Sovereign Debt
Condition No. 3: · Decrease in GDP · Increase in credit rating Predicted Behavior: · Decrease in Sovereign Debt	Condition No. 4: · Increase in GDP · Decrease in credit rating Predicted Behavior: · Decrease in Sovereign Debt

According to this model, it can be predicted the effect of GPD (independent variable) on the sovereign debt (dependent variable) when the credit rating acts as moderator:

Condition No. 1: Countries with low GDP and a decreasing credit rating will increase their sovereign debt, which will deteriorate their economic conditions. Although a decrease in credit rating will discourage international investors from lending great amounts of money, governments will desperately look for any

alternative source of money to solve their political compromises or allow their governmental structure to operate. At the same time, other investors will find many opportunities to acquire vulture funds from countries in economic crisis. For instance, then-ascending Greece's GPD decreased from 355 billion USD in 2008 to 330 billion USD in 2009 (The World Bank, 2021a). Interestingly, S&P gradually plummeted from A (negative watch) in January 2009 to BBB+ (negative watch) in December 2009.(Trading Economics, 2021a) As a consequence, its Debt dramatically grew from 109% of its GDP in December 2008 to 148% of its GDP in December 2010 (Countryeconomy.com, 2021).

Likewise, decreasing credit ratings will send the expected signal for predatory investors or international financial institutions to invest for different purposes, which will increase countries' sovereign debts despite investors' good or questionable intentions. For instance, Argentina's experience with vulture funds and the intervention of the International Monetary Fund highlights the problems of high sovereign debts and demands of powerful creditors that can cause unintended economic distress (Guzmán, 2020).

Condition No. 2. Contrary to expectations, countries with high GDP and growing credit ratings will increase their sovereign debt. Similar to human beings' behavior, countries with good credit rating will take ever-increasing sovereign debts based on the good performance of their economies. For instance, countries like the United States of America and Japan demonstrate that good credit ratings will propel unimaginable sovereign debts. Likewise, good credit rating will encourage international investors to concede loans based on high GDP, which will cause the increase of sovereign debts. Although one could think that a country with good economic performance will use its financial resources to cancel their sovereign debt, the reality is that why a current government will bother to cancel debts if the next government will go to ask for more loans.

As a result, if a country has high GDP with good credit rating, it will ask for more loans to invest in infrastructure projects or improve social service, which will be translated into in increasing sovereign debts. Moreover, those economic investments can facilitate the possibilities of political leaders to be re-elected. Consequently, more debts will be added despite long-term consequences.

Condition No. 3. Countries with low GDP and growing credit ratings will reduce their sovereign debt. For instance, in the late 1990s Sweden had a decreasing GDP (The World Bank, 2021d). However, by analyzing the data, it can be demonstrated that the improvement of Moody's credit rating helped Sweden reduce its sovereign debt from

83.2% of its GDP to less than 64.2% of its GDP (Commodity.com, 2020; Trading Economics, 2021c).

Likewise, despite having a decreasing GDP from 1.7 trillion USD in 2008 to 1.2 trillion USD in 2009, Russia had an increasing Moody's credit rating from Baa2 in March 2008 to Baa1 in July 2008 (The World Bank, 2021c; Trading Economics, 2021b). As a result, Russia was able to reduce its sovereign debt from 8.7% of its GPD in 2009 to 8.6% of its GPD in 2012 (MacroTrends, 2021). It is possible that governments will be encouraged to be prudent despite experiencing a decrease in GDP. Consequently, those governments will focus their interest in reducing their sovereign debt to demonstrate their good economic reforms or enhanced fiscal policies. At the same, international investors will also be motivated to trust in those countries. It is important to note that credit ratings play an important role even when a country is experiencing a temporal reduction of its GPD.

Condition No. 4. Countries with an ascending GDP and a decrease in credit rating will tend to reduce their sovereign debts. Although the GPD growth can be a desirable indicator, a reduction of its credit rating will send a warning message to revise and control their economic policies to comply with financial compromises.

As a result, those countries will focus to reduce their sovereign debts to send convincing signals to the international markets that they are a reliable and capable country that can pay out its debts. However, it is also possible that GDP growth plus a decrease in credit rating will make increasing sovereign debts be perceived as not problematic based on the debt-to-GDP ratio, which can minimize gargantuan amounts of money to be paid.

Limitations

The models cannot explain other variables that can alter proposed predictions, which can be the result of factors such as political leadership, corruption, executive re-election, regional crisis, wars, currency debasement, and COVID-19. For example, while governments can refuse to pay its sovereign debt, corruption can deplete massive economic resources produced in time of economic success.

Nonetheless, no government will ignore decrease o increase in credit rating because its tacit and explicit consequences for countries' economies. For instance, in 2011 U.S. Treasury officials

accused S&P report of being flawed when the company decided to downgrade United States credit rating to AA+ (Goldfarb, 2011). In 2020, Bahamas authorities publicly recognized S&P downgrade and the urgent necessity to implement economic reforms (Chester, 2020). Moreover, COVID-19 has caused unforeseen economic consequences around the world. For example, in 2020, South African president promised to fight COVID-19 despite the consequences of Moody's downgrade (Mvumvu, 2020). As a result, credit ratings will always matter.

CONCLUSION

This empirical research intends to analyze the moderating effect of sovereign credit rating between the relationship of GDP and sovereign debt. To study sovereign credit rating, Moody's and S&P were taken into consideration. Panama's public data from 2000 to 2019 related to GDP and sovereign debt was analyzed.

The result demonstrates that sovereign credit rating moderates the relation between the two variables. When using Moody's sovereign credit rating, the results were significant ($b = 0.042$, $F(3,6) = 666.139$, $p<0.01$; R2 Change=0.997). Likewise, Standard and Poor's sovereign credit rating was also significant ($b = 0.039$, $F(3,6) = 285.047$, $p<0.01$; R2 Change=0.993). As a result, the models propose a model, which can predict countries' behavior rela

ted to the sovereign debt when GPD and sovereign credit rating play a role.

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