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Article

Economic and Political Determinants of Sovereign Default and IMF Credit Use: A Robustness Assessment Post 2010

Lina Maddah, Hassan Sherry and Hussein Zeaiter *

Department of Economics, Lebanese American University, Beirut P.O. Box 13-5053, Lebanon; lina.maddah@lau.edu.lb (L.M.); hassan.sherry@lau.edu.lb (H.S.)
* Correspondence: hussein.zeaiter@lau.edu.lb

Abstract: According to the IMF, the current public debt makes up nearly 40 percent of the global debt, marking the highest share since the mid-1960s. Despite the vast research on alarming levels of sovereign default, the literature remains inconclusive. This paper investigates macroeconomic, financial, and political determinants of IMF credit use in the post-2010 era. The main contribution of our study lies in its temporal analysis as we investigate how the robustness of different factors has evolved. By utilizing an extensive dataset on 216 countries over the period of 2010–2021 and employing a variant of the Extreme Bounds Analysis (EBA) method, our study reveals that fluctuations in the IMF credit to external debt ratio can be attributed to changes in the total reserves to external debt ratio, where this relationship is statistically significant and reliable. However, high political risks seem to no longer affect the IMF's decision, post 2010. Furthermore, our findings demonstrate that excluding countries with low debt arrears strengthens the results' robustness. These findings contribute to a better understanding of the complexities surrounding IMF credit use in the contemporary global economic scene and offer new standpoints on the Fund's lending choices.

Keywords: sovereign debt default; extreme bound analysis; IMF; panel

JEL Classification: F34; H63

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1. Introduction

Rising indebtedness within a nation often precipitates financial instability, constraining resources available for investment purposes. In instances where governments face a balance of payments (BoP) crisis as well as difficulties in securing new loans from commercial creditors, recourse is frequently sought from the International Monetary Fund (IMF). This is because the IMF is recognized as an important source of foreign financing, which can significantly impact GDP and the Human Development Index (HDI) by enhancing the availability of financial resources that can be used for investment in vital sectors such as industry, services, and agriculture (Das 2023). Additionally, the IMF is regarded as a lender of last resort, particularly for countries facing financial crises or on the brink of such crises (IMF n.d.).

While the idea is shared that the primary objective of IMF credit is to restore economic stability by providing the necessary funds to restore BoP equilibrium, a substantial body of the literature suggests that reliance on IMF borrowing may carry adverse repercussions such as economic contraction, higher unemployment, and social unrest. This is attributed to the increase in a country's debt burden, which exacerbates concerns about debt sustainability (El Ghonemy 1998; El-Said and Harrigan 2014). The repercussions associated with using IMF credit have prompted a scholarly[1] interest in further investigating the role of IMF credit. Such an investigation aims to address existing gaps in the literature and provide insights into policymaking processes.

This study employs a comprehensive and temporal methodology, encompassing economic, financial, and political dimensions. Its focus is on the post-2010 period. Employing

the Extreme Bounds Analysis (EBA) approach, the study examines the primary determinants of sovereign default, while acknowledging the inherent limitations associated with this analytical approach. This analytical framework is particularly attuned to concerns regarding the reliability and consistency of estimated correlations. More specifically, the analysis involves examining the robustness and credibility of prevailing empirical findings, as well as correcting for omitted variable bias. Moreover, the study incorporates a comprehensive dataset comprising annual observations spanning from 2010 to 2021, across 216 countries.

The findings in this study are instructive for policy; they hold relevance for policymakers and international financial institutions as they provide a better understanding of the implications of influencing decisions related to IMF loans. This can effectively offer valuable insights for the effective management of future debt crises. Section 2 presents a historical account of the changing landscape of IMF lending decisions, followed by a tabular presentation of the explanatory variables covered in an extensive list of preceding studies. Section 3 explains the data and methodology. Section 4 presents the findings, and Section 5 concludes.

2. Literature Review

The extant literature on IMF lending has significantly evolved over time, with various studies examining its relationship with debt sustainability or the likelihood of sovereign debt default. For instance, Jorra (2012) investigates the impact of IMF lending on the chances of sovereign default. The study finds that although IMF programs may offer short-term relief, they typically do not lower the long-term risk of default. Similarly, Goldstein (2003) explores debt sustainability and overall fiscal health in Brazil in the context of IMF lending. The study shows that IMF programs often fail to ensure long-term debt sustainability (https://euc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en-US&rs=en-US&wopisrc=https%3A%2F%2Flauedu74602-my.sharepoint.com%2Fpersonal%2Fhassan_sher-ry_lau_edu_lb%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdc1a4b417fa3452383f0959382a5ef24&wdenableroaming=1&mscc=1&wdodb=1&hid=E41630A1-5049-8000-FED0-AA640B05C0C5.0&uih=sharepointcom&wdlcid=en-US&jsapi=1&jsapiver=v2&corrid=766644dc-9451-14f1-20c0-f1833d237ce9&usid=766644dc-9451-14f1-20c0-f1833d237ce9&newsession=1&sftc=1&uihit=docaspx&muv=1&cac=1&sams=1&mtf=1&sfp=1&sdp=1&hch=1&hwfh=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Flauedu74602-my.sharepoint.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=Sharing.DirectLink.Copy&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush#_ftn1 accessed on 11 April 2024), despite its success in short-term stabilization. On the other hand, Shadlen (2006) provides a historical account on the IMF's role in managing debt crises in Latin America over three decades. The study highlights an unchanging pattern in the IMF's approach to macroeconomic stabilization, namely the imposition of austerity measures, which offers mixed results in terms of resolving long-term debt problems.

Despite the large corpus of research on IMF lending, several gaps remain in the literature. One area which merits further investigation is the long-term impact of IMF programs on economic growth and development. While short-term stabilization is often achieved, the longer-term impact on debt sustainability, poverty reduction, and social welfare is less examined.

Moreover, many studies, such as Abosedra and Fakih (2017), Jorra (2012) and Goldstein (2003), focus on specific countries or regions, leaving a gap in comparative analyses that could provide more generalizable results. Last but not least, as outlined in papers by Shadlen (2006) and Guzman and Heymann (2016), the literature on IMF lending and its relationship with sovereign default requires further examination of the political economy of IMF lending—an area that could provide valuable insights for policymakers and scholars as well as allow for more effective IMF policies and interventions.

This study aims to contribute to bridging these gaps in the literature by providing insights into these underexplored areas.

Guzman and Heymann (2016) (https://euc-word-edit.officeapps.live.com/we/wordeditorframe.aspx?ui=en-US&rs=en-US&wopisrc=https%3A%2F%2Flauedu74602-my.sharepoint.com%2Fpersonal%2Fhassan_sher-ry_lau_edu_lb%2F_vti_bin%2Fwopi.ashx%2Ffiles%2Fdc1a4b417fa3452383f0959382a5ef24&wdenableroaming=1&mscc=1&wdodb=1&hid=E41630A1-5049-8000-FED0-AA640B05C0C5.0&uih=sharepointcom&wdlcid=en-US&jsapi=1&jsapiver=v2&corrid=766644dc-9451-14f1-20c0-f1833d237ce9&usid=766644dc-9451-14f1-20c0-f1833d237ce9&newsession=1&sftc=1&uihit=docaspx&muv=1&cac=1&sams=1&mtf=1&sfp=1&sdp=1&hch=1&hwfh=1&dchat=1&sc=%7B%22pmo%22%3A%22https%3A%2F%2Flauedu74602-my.sharepoint.com%22%2C%22pmshare%22%3Atrue%7D&ctp=LeastProtected&rct=Normal&wdorigin=Sharing.DirectLink.Copy&instantedit=1&wopicomplete=1&wdredirectionreason=Unified_SingleFlush#_ftnref1 accessed on 11 April 2024) offer a critical evaluation of the IMF's Debt Sustainability Analysis (DSA). They argue that the DSA often underestimates the risks associated with debt and overestimates the effectiveness of IMF policies.

The following segment of the literature review offers a historical context on the International Monetary Fund's (IMF) practice of providing loans to countries in debt. It investigates the origins, development, and consequences of this policy in relation to sovereign debt restructurings and crisis management. The segment after next, namely Table 1, provides a comprehensive overview of the existing body of research pertaining to the documented impact of different explanatory factors on the occurrence of debt default.

Table 1. The literature on explanatory variables.

Explanatory Variables	Observed Effect on Debt Default		
	Significant, Positive	**Significant, Negative**	**Insignificant**
Reserves/GDP		Edwards (1984) Taffler and Abassi (1984) Rahnama-Moghadam (1995) Thacker (1999) Bird and Rowlands (2001) Catao and Sutton (2002) Georgievska et al. (2008) Afonso et al. (2010) Hilscher and Nosbusch (2010) Kışla et al. (2022) Ghulam and Saunby (2023)	
Total external debt/GDP (GNP)	Edwards (1984) Callier (1985) Feder and Uy (1985) Solberg (1988) Lee (1991) Balkan (1992) Li (1992) Haque et al. (1996) Aylward and Thorne (1998) Detragiache and Spilimbergo (2001) Peter (2002) Kruger and Messmacher (2004) Kohlscheen (2010) Hilscher and Nosbusch (2010) Celasun and Harms (2010) Carlos (2011) Ghulam and Saunby (2023)	Rivoli and Brewer (1997) Lau and Lee (2016)	Taffler and Abassi (1984) Karayalcin and Temel (1988) Thacker (1999) Oatley and Yackee (2000) Bird and Rowlands (2001) Oatley (2002) Georgievska et al. (2008) Lau and Lee (2016) Gokmenoglu and Rafik (2018)

Table 1. *Cont.*

Explanatory Variables	Observed Effect on Debt Default		
	Significant, Positive	**Significant, Negative**	**Insignificant**
Total external debt/exports	Euh (1979) McFadden et al. (1985) Hajivassiliou (1987) Hajivassiliou (1989) Elmore and McKenzie (1992) Hajivassiliou (1994) Marashaden (1997) Peter (2002) Kruger and Messmacher (2004)		Berg and Sachs (1988) Karayalcin and Temel (1988) Oatley and Yackee (2000) Oatley (2002) Lee (2009)
Interest service (due)/exports	Hajivassiliou (1989) Li (1992) Hajivassiliou (1994) Marashaden (1997)		Hajivassiliou (1987)
Total debt service (due)/exports	Frank and Cline (1971) Sargen (1977) Euh (1979) Feder et al. (1981) Cline (1984) Edwards (1984) McFadden et al. (1985) Hajivassiliou (1987) Berg and Sachs (1988) Karayalcin and Temel (1988) Solberg (1988) Snider (1990) Balkan (1992) Marashaden (1997) Rivoli and Brewer (1997) Thacker (1999) Detragiache and Spilimbergo (2001) Bird and Rowlands (2001) Catao and Sutton (2002) Karagol and Sezgin (2004) Georgievska et al. (2008) Kohlscheen (2010)	Elmore and McKenzie (1992)	Saini and Bates (1984) Taffler and Abassi (1984) Rahnama-Moghadam (1995) Aylward and Thorne (1998) Oatley (2002)

Table 1. *Cont.*

Explanatory Variables	Observed Effect on Debt Default		
	Significant, Positive	**Significant, Negative**	**Insignificant**
Real effective exchange rate	Sargen (1977) Solberg (1988) Bird and Rowlands (2001) Catao and Sutton (2002) Peter (2002) Afonso et al. (2010)	Ghulam and Saunby (2023)	Edwards (1984) Hajivassiliou (1994) Haque et al. (1996) Al Fawwaz (2016) Gokmenoglu and Rafik (2018)
Reserves/imports	Hajivassiliou (1987) Rivoli and Brewer (1997)	Frank and Cline (1971) Feder et al. (1981) Edwards (1984) Feder and Uy (1985) Karayalcin and Temel (1988) McFadden et al. (1985) Elmore and McKenzie (1992) Li (1992) Haque et al. (1996) Marashaden (1997) Oatley and Yackee (2000) Bird and Rowlands (2001) Kohlscheen (2010)	Sargen (1977) Euh (1979) Saini and Bates (1984) Hajivassiliou (1989) Balkan (1992) Hajivassiliou (1994) Aylward and Thorne (1998) Detragiache and Spilimbergo (2001) Celasun and Harms (2010)
Exports/GDP	Ghulam and Saunby (2023)	Feder et al. (1981) Karagol and Sezgin (2004)	Cline (1984) McFadden et al. (1985) Citron and Nickelsburg (1987) Hajivassiliou (1987) Balkan (1992) Elmore and McKenzie (1992) Rivoli and Brewer (1997) Aylward and Thorne (1998)
Imports/GDP	McFadden et al. (1985) Elmore and McKenzie (1992) Aylward and Thorne (1998)	Solberg (1988)	Frank and Cline (1971) Hajivassiliou (1987) Edwards (1984) Saini and Bates (1984) Karayalcin and Temel (1988)

Table 1. *Cont.*

Explanatory Variables	Observed Effect on Debt Default		
	Significant, Positive	**Significant, Negative**	**Insignificant**
Current account balance/GDP (exports)	Edwards (1984) Hajivassiliou (1989) Oatley (2002)	Bird and Rowlands (2001) Peter (2002) Kruger and Messmacher (2004)	Callier (1985) Karayalcin and Temel (1988) Hajivassiliou (1994) Haque et al. (1996) Marashaden (1997) Thacker (1999) Detragiache and Spilimbergo (2001) Oatley and Yackee (2000) Lee (2009) Panizza et al. (2009)
Money and quasi money/international reserves (GDP)	Sargen (1977) Saini and Bates (1984) Callier (1985) Hajivassiliou (1994) Peter (2002)		Cline (1984) Citron and Nickelsburg (1987) Balkan (1992) Thacker (1999)
GDP (GNP) per capita	Rahnama-Moghadam (1995) Oatley and Yackee (2000) Celasun and Harms (2010) Berg and Streitz (2016)	Feder and Uy (1985) McFadden et al. (1985) Berg and Sachs (1988) Aylward and Thorne (1998) Thacker (1999) Bandiera et al. (2010) Kışla et al. (2022)	Frank and Cline (1971) Sargen (1977) Euh (1979) Edwards (1984) Saini and Bates (1984) Hajivassiliou (1987) Karayalcin and Temel (1988) Balkan (1992) Elmore and McKenzie (1992) Hajivassiliou (1994) Bird and Rowlands (2001) Panizza et al. (2009) Gartner et al. (2011) Al Fawwaz (2016) Lau and Lee (2016) González-Fernández and González-Velasco (2018a) Gokmenoglu and Rafik (2018) Chronopoulos et al. (2019)

Table 1. *Cont.*

Explanatory Variables	Observed Effect on Debt Default		
	Significant, Positive	**Significant, Negative**	**Insignificant**
GDP growth rate		Sargen (1977) Euh (1979) Feder and Uy (1985) Lee (1991) Li (1992) Haque et al. (1996) Detragiache and Spilimbergo (2001) Catao and Sutton (2002) Kruger and Messmacher (2004) Afonso et al. (2010) Hilscher and Nosbusch (2010) Kohlscheen (2010) Celasun and Harms (2010) Ojeda-Joya and Gómez-González (2012)	Edwards (1984) McFadden et al. (1985) Hajivassiliou (1987) Karayalcin and Temel (1988) Bird and Rowlands (2001) Lee (2009) Gartner et al. (2011)
Inflation rate	Sargen (1977) Saini and Bates (1984) Aylward and Thorne (1998) Peter (2002) Bandiera et al. (2010) Gartner et al. (2011) Kışla et al. (2022) Das and Mandal (2022) Das (2023)	Lau and Lee (2016) Ghulam and Saunby (2023)	Hajivassiliou (1994) Balkan (1992) Celasun and Harms (2010) Panizza et al. (2009) Edwards (1984) Stamatopoulos et al. (2016)
Outward orientation (openness)	Ojeda-Joya and Gómez-González (2012) Maltritz and Molchanov (2014)	Bandiera et al. (2010)	Callier (1985) McFadden et al. (1985) Thacker (1999) Celasun and Harms (2010) Al Fawwaz (2016)
Real interest rate on international lending	Lee (1991)	Bandiera et al. (2010)	Callier (1985)
	Detragiache and Spilimbergo (2001) Peter (2002) Semik and Zimmermann (2021)		McFadden et al. (1985) Hajivassiliou (1994) Bird and Rowlands (2001) Lau and Lee (2016)

Table 1. *Cont.*

Explanatory Variables	Observed Effect on Debt Default		
	Significant, Positive	**Significant, Negative**	**Insignificant**
Government expenditure			Gokmenoglu and Rafik (2018) González-Fernández and González-Velasco (2018b)
Short-term debt to reserves ratio	Bandiera et al. (2010)		
Governmental debt/GDP	Stamatopoulos et al. (2016) González-Fernández and González-Velasco (2018b)		Bai et al. (2015)
Total debt/GDP	Ojeda-Joya and Gómez-González (2012) Chronopoulos et al. (2019) Kışla et al. (2022)		Berg and Streitz (2016)
Terms of trade	Al Fawwaz (2016)		
Regional risk aversion	Ghulam and Saunby (2023)		
CDS	Qian and Luo (2015) Stamatopoulos et al. (2016)		Kadiric (2022)
Fiscal space			Al Fawwaz (2016) Stamatopoulos et al. (2016)

2.1. The IMF's Policy of Lending: A Historical Perspective

The global financial crisis of 2007–2008, which had put at risk the stability of the global financial system, provoked governments to dispense large public guarantees and generous fiscal stimuli. What followed was a problem of looming debt crises, especially for developing countries. As Jorra (2012) and Dibeh et al. (2018) argue, politicians in advanced economies have turned to the International Monetary Fund (IMF) in an attempt to remedy the impending problem of global debt crises.

Nonetheless, the evolution of the role of the IMF as crisis manager, and, more specifically, as a lender to countries in default precedes the Great Recession. In fact, it has to be sought in the emergence of an uneven bargaining power between private international creditors, namely commercial banks, and the IMF, towards the end of the 1980s. As Díaz-Cassou et al. (2008) argue, the IMF had adhered to a policy of not lending to countries in default before 1989, meaning that any potential lending arrangement from the Fund to a member country was conditional on the country's elimination of debt to private creditors during the period of the program. Such a long-standing policy was reversed in 1989 when the Fund started to lend to countries in default. Nonetheless, the seeds of transformation in the Fund's policy to lend countries with accumulated debt to commercial creditors have sprung in the aftermath of the first oil crisis in the early 1970s.

2.1.1. The First Oil Crisis of 1973

The fourfold increase in the price of oil in 1973–74 allowed oil exporters to accumulate current account surpluses, which have driven multilateral institutions such as the IMF and the OECD, as well as governments of oil-importing countries, to explore optimal ways to 'recycle' those surpluses (Boughton 2000). What followed was a textbook example of financial intermediation, whereby the surplus economies—that is, the oil exporters—turned to advanced economies' banking systems to invest the bulk of these surpluses, which in turn were partially on-lent to the oil-importing emerging economies. As indicated in Boughton (2000) and Herrera et al. (2019), between 1973 and 1978, international bank lending increased threefold, especially since, on the one hand, the loans came with no strings attached and, on the other hand, real interest rates during the said period were negative. As for developing country debt, it soared from USD 130 billion in 1973 to around USD 612 billion in 1982 (IMF 1984).

2.1.2. The World Debt Crisis of the 1980s

The early 1980s witnessed the onset of a global debt crisis, which weighed heavily on developing countries. The crisis was the outcome of a rapid and disproportionate increase in external debt relative to those countries' debt service capacities, triggered to a large degree by their need to finance the deficits on the current accounts of their balance of payments—especially since the start of the oil crisis of 1973–1974—coupled with unfettered lending[2] by international banks (Stambuli 1998). Their internal fiscal positions and balance of payments were further worsened in the wake of the collapse of commodity prices, rising market interest rates, and the ensuing appreciation of the US dollar. Consequently, many developing countries resorted to rolling over their debts or obtaining loans to re-finance maturing debt (Stefanidis 2023).

At this time, international banks suddenly stopped lending or even rolling over existing debt to a large number of crisis-ridden emerging economies. As Stambuli (1998) points out, twenty-one countries had defaulted on their debt by 1983. This was a turning point for the IMF, let alone for the international financial system; the IMF took on the role of crisis manager. It would lend to a country in default granted that international banks, or creditors, would provide written assurances to the Fund that they would raise their exposure to this country. This practice was referred to as 'concerted lending', and it was carried out on a case-by-case basis (Boughton 2000). The rationale for the role of crisis management by the IMF in the early 1980s was as follows (ibid.): first, many developing countries with a large debt burden would easily default on their debt if denied additional

financing, and a default would pose a grave threat not only to the economic health of the defaulting countries but also to the international financial system; second, more borrowing could prove to be a good strategy if carried out in conjunction with macroeconomic reforms; and third, both large-scale funding and economic reforms could not be advanced without multilateral cooperation.

For most of the decade, until 1989, the practice of 'concerted lending' was in congruent with the IMF's policy of non-default to private creditors. In other words, any financial arrangement between the Fund and the indebted country would require the elimination of arrears by the latter and the non-accumulation of new arrears during the program period (Díaz-Cassou et al. 2008).

2.1.3. The Fund's Departure in 1989: Lending to Countries in Default

The IMF's policy of not lending to countries in default in the 1980s was capable of being maintained mainly because international creditors viewed their cooperation in funding IMF-supported programs to be in their own interest. By the end of the 1980s, however, private creditors demonstrated increasing unwillingness to negotiate with their sovereign borrowers and thereby give the requisite financing assurances that the Fund required in the context of the standard 'concerted lending' approach. Such reluctance could be attributed, in large part, to the development of a secondary market for banks' claims and to the bolstering of commercial banks' balance sheets (IMF 2022). An important implication was that IMF support for structural adjustment programs in developing countries had been impeded. This meant that the basis for the Fund's policy of concerted lending had slowly been undermined because the Fund's long-standing policy of not lending had inadvertently conferred excessive clout on creditors at the expense of debtors. As Díaz-Cassou et al. (2008, p. 11) point out, the policy of not lending to countries in default (vis vis-à-vis private creditors) has increasingly come to be regarded as a 'de facto veto power assigned to commercial banks over the Fund's lending decisions.'

In 1989, the IMF departed from the concerted lending approach and introduced the policy of lending to countries in default. This was regarded as an overt move to curtail the leverage of international private banks over their lending decisions. The Fund's modified policy allowed it to lend to countries in default—and/or tolerate temporary arrears to private creditors—contingent on the existence of a straightforward process of negotiations between private creditors and the sovereign. Pursuant to the terms under its 1989 policy, the Fund would lend to countries in default under the following conditions (IMF 2022): first, an IMF-supported program of a member country was deemed crucial for the country's implementation of reforms; second, both creditors and debtors had embarked on a process of negotiations around restructuring the latter's debt; and third, any financing arrangement with the debtor would be consistent with its external viability, and approved within a sensible time frame.

This new policy of lending to countries in default has cleared the way for the IMF to become an active player in debt-crisis resolutions and, more precisely, sovereign debt restructurings. Since 1989, the global economy has faced a handful of debt- and financial crises that weighed heavily on individual economies. Nonetheless, most elements of the role of the IMF as crisis manager have already been in place, and the countries[3] in default—namely those that have not been able to navigate crises internally or via bilateral support—would swiftly resort to the Fund in an attempt to resolve their problems (Wells 1993; Boughton 2000; Haidar 2011, 2012).

2.2. Explanatory Variables in Existing Literature

While sound literature includes models with varying sets of explanatory variables, there is an ongoing debate regarding which variables are crucial determinants of default risk. For instance, many studies have investigated the 'real effective exchange rate'[4] effect on debt default. The results are mixed with studies like Sargen (1977) and Solberg (1988) finding a positive effect; Ghulam and Saunby (2023) and Hajivassiliou (1994) finding a

negative effect; and Edwards (1984) and Al Fawwaz (2016) finding an insignificant effect. Also, the variable 'reserves/GDP' has been studied by multiple authors such as Edwards (1984), Taffler and Abassi (1984), and Ghulam and Saunby (2023), among others. All these studies observed that the effect of 'reserves/GDP' on debt default is insignificant. In contrast, the variable 'Total external debt/GDP (GNP)' has studies that observed a positive, negative, and insignificant effect on debt default. Edwards (1984), Rivoli and Brewer (1997), and Taffler and Abassi (1984) are some authors who contributed to these observations. These studies underscore the fact that there is no agreement in the academic literature regarding the significance and magnitude of the impact of explanatory variables as key determinants of default.

3. Data and Methodology

Annual observations on 216 countries are included in this study over the period of 2010–2021.[5] Depending on the data that are available for the variables used in specific regressions, the sample size differs among various EBA regressions. The political indices were obtained from ICRG tables of the PRS group, and the rest of the data were collected from the World Bank database. Table 2 describes the variables employed in this investigation. Political indices include the elements of corruption, political stability, democratic accountability, military involvement in politics, and ethnic tensions; the risk levels go from 0 (highest risk) through 6, 6, 12, 6, and 6, respectively.

Table 2. List of variables: W, X, Q, and Z.

Variable Name	Description
Dependent Variable	
IMFcredit/ED	Use of IMF credit to the external debt
X-variable	
Res/ED	Reserves to external debt
Q-Variables	
Arrears	Interest and principal arrears to external debt
ResDebt/ED	rescheduled debt to external debt
PrinArears/ED	Principal arrears to external debt
ED/GNP	External debt stocks of GNP
Res/Imp	Total reserves in months of imports
Openess	Exports + imports to GDP ratio
TDS/Exp	Total debt service of exports of goods
Inf	Inflation based on consumer prices annual growth
Money	Money and quasi money M2 to total reserves
Intrate	Real lending interest rate
Imp/GDP	Imports of goods and services of GDP
Exp/GDP	Exports of goods and services of GDP
GGDP	GDP annual growth
ED/Exp	External debt stocks of exports of goods
PCGNP	GNP per capita PPP current international currency
ExRate	Real effective exchange rate index (CPI 2000)
CA/GDP	Current account balance of GDP
EthTen	Ethnic tensions (ICRG)
MilPol	Military involvement in politics (ICRG)
Corr	Corruption (ICRG)
Democ	Democratic accountability (ICRG)
GovtStab	Government stability (ICRG)
LTServ/Res	Long-term debt service to reserves
Z-variables	
LTServ/GDP	Long-term debt service to GDP
Crdt/GDP	Domestic credit to private sector of GDP
Capflow	Private capital flows total of GDP

Table 2. *Cont.*

Variable Name	Description
ToT	Net barter terms of trade growth
DebtServ	Total debt service of GNP
STD/Res	Short-term debt of total reserves
PR/exp	Principal repayments to exports
GExp	Exports of goods and services annual growth
FisBal	Fiscal balance to GDP
VGNP	Standard deviation of the previous seven years of GNP
MilExpn	Military expenditure of central government
GovDebt	Central government debt total of GDP

3.1. Extreme Bound Analysis

In our study, we employ Extreme Bounds Analysis (EBA), a comprehensive sensitivity analysis technique, to assess the robustness of empirical findings and examine the sensitivity of results to potential sources of bias or omitted variables. In the context of sovereign debt, EBA helps identify the key determinants of defaults while accounting for the uncertainties and complexities inherent in the analysis. It provides a way to address concerns regarding the robustness and reliability of the estimated relationships. Many of the earlier analyses of sovereign default fall short of offering a complete and cohesive understanding of which variables should be included in the model as consistent determinants of sovereign risk. Because sovereign default rates vary across nations and across time, no particular independent variable, within prior studies, has been identified as a certain significant determinant with static influence. In the literature on sovereign debt, no single variable is employed in all the earlier studies, and no single variable produces consistent outcomes and indicators.

The early inspiration for the EBA method came from Cooley and LeRoy (1981) who argued that economic theory typically fails to provide a full description of which variables are to be held unchanged when statistical examinations are carried out. Thus, the EBA evaluates the robustness of the estimates' coefficients, and its findings can provide convincing justifications. Leamer (1983) conceptualized the EBA technique, which was then utilized by Levine and Renelt (1992) to investigate the factors influencing cross-country economic growth. Soudis (2016) applied the EBA to approximately 30 factors proposed by the literature to assess their robustness in shaping sovereign bond ratings. The EBA is also applied as an important tool to test the robustness of conventional growth regression coefficients to changes in the set of conditioning variables (Haan 2000; Minier 2005). Additionally, Hwang and Wang (2004) applied it to examine the robustness of trade to the determination of productivity growth. Its primary purpose is to offer robustness and sensitivity analyses of the explanatory variables in an economic regression.

Our panel data set includes annual observations on 216 countries from 2010 through 2020. The sample size varies across the regressions run for the EBA depending on the availability of data on the specific variables included in a particular regression. Data sources include The World Bank and The International Country Risk Guide (ICRG) (n.d.) by the PRS Group. Careful attention is given to data quality, consistency, and comparability across countries and periods. The model specification is guided by economic theory, previous literature, and statistical considerations to identify the key factors affecting sovereign debt (see Table 1 in the literature).

To conduct the analysis, a comprehensive dataset is thus compiled, consisting of relevant macroeconomic, financial, political, and institutional variables that are expected to influence sovereign debt outcomes by countries borrowing from the IMF. All variables that have been identified in the literature as potential determinants of default risk are considered, and we categorize them as follows:

Macroeconomic indicators: inflation based on consumer price annual growth (*Inf*), GDP annual growth (*GGDP*), exports of goods and services annual growth (*GExp*), net barter

terms of trade growth (*ToT*), standard deviation of the previous seven years of GNP (*VGNP*), external debt stocks of GNP (*ED/GNP*), total reserves in months of imports (*Res/Imp*), exports + imports to GDP ratio (*Openness*), total debt service of exports of goods (*TDS/Exp*), imports of goods and services of GDP (*Imp/GDP*), exports of goods and services of GDP (*Exp/GDP*), external debt stocks of exports of goods (*ED/Exp*), GNP per capita PPP current international currency (*PCGNP*), real effective exchange rate index (CPI 2000) (*ExRate*), current account balance of GDP (*Capflow*), fiscal balance to GDP (*FisBal*).

Financial indicators: reserves to external debt (*Res/ED*), interest and principal arrears to external debt (*Arrears*), rescheduled debt to external debt (*ResDebt/ED*), principal arrears to external debt (*PrinArrears/ED*), money and quasi money M2 to total reserves (*Money*), real lending interest rate (*Intrate*), long term debt service to reserves (*LTServ/Res*), long term debt service to GDP (*LTServ/GDP*), domestic credit to the private sector of GDP (*Crdt/GDP*), short term debt of total reserves (*STD/Res*), principal repayments to exports (*PR/exp*), total debt service of GNP (*DebtServ*), and central government debt total of GDP (*GovDebt*).

Institutional and political variables: the political risk variables are derived from ICRG tables (www.prsgroup.com) accessed on 10 November 2023; every index ranges from 0 to 6, Corruption (Corr), military involvement in politics (MilPol), ethnic tensions (EthTen), government stability (GovStab), and democratic accountability (Democ).

Where the value zero indicates high risk, these variables are expected to have a negative effect on IMF credit. A higher value of the index indicates increased political risk in the country, which increases the probability of default.

3.2. Sensitivity Analysis

The baseline econometric model is specified to estimate the relationship between the sovereign debt default and the selected explanatory variables. In the EBA, this model is systematically modified by introducing alternative specifications, such as different model structures, or variable inclusion/exclusion. Each modified model is iteratively estimated to assess the sensitivity to different modeling choices. This process identifies the robustness of the empirical findings and sheds light on the key factors driving credit from the IMF.

The general form of the baseline model can be expressed as

$$W = \beta_0 + \beta_1 X + \beta_2 Q + \beta_3 Z + \varepsilon$$

where

W is the dependent variable (IMFcredit/ED), the use of the IMF credit to the external debt, representing the phenomenon under investigation (sovereign debt default). $\beta_0, \beta_1, \beta_2, \beta_3$ are the coefficients that measure the relationship between the dependent variables and the corresponding explanatory variables. X is the variable always included upfront in the regression due to its theoretical and empirical relevance (also called a free variable), Q is the focus variable or variable of primary interest, Z is a vector of doubtful variables (financial, macroeconomic, and political) that can potentially be correlated with W (based on existing literature), and ε represents the error term capturing unobserved factors or random variation that cannot be explained by the explanatory variables (Table 2).[6]

By iteratively estimating different model specifications, EBA allows for assessing the sensitivity of the estimated coefficients to changes in the model. Following Leamer (1983), Levine and Renelt (1992)[7], and Chakrabarti and Zeaiter (2014), the empirical exercise of the EBA involves an order of steps as follows. First, the above model is estimated for each Q-variable, initially including X, the free variable, and Q, the focus variable. Second, the model is re-estimated N times, after adding all possible subset combinations of Z, doubtful variables, to produce the extreme upper and lower bounds. The extreme upper bound (EUB) represents the maximum value of the estimated coefficient, β_2, of the Q-variable plus two standard deviations. The extreme lower bound (ELB) represents the minimum value of the estimated coefficient, β_2, of the focus variable, Q, minus two standard deviations. For the Q-variable to be robust, β_2 should remain significant at the 90% level of confidence, and the coefficients of β_2 must hold the same sign for the lower and upper bounds in

all regressions. This process helps identify the robustness of the empirical findings and provides insights into the factors that are consistently associated with *W* across different model specifications. The significance of the estimated coefficients and their stability across different model specifications are key considerations in interpreting the results of EBA. Robust findings, where the estimated coefficients remain consistently significant and exhibit similar magnitudes across various model specifications, provide stronger evidence for the relationships between the *Q*-variable and the *W*-variable. Otherwise, *Q* is judged to be fragile if it cannot withstand any changes in the *Z*-variable subset.[8]

4. Results

We first conducted an Extreme Bounds Analysis on the primary equation, utilizing all the variables delineated in Table 1. Initially, a regression analysis was executed, where the IMF credit to external debt ratio (IMFcredit/ED) was regressed against the ratio of total reserves to external debt (Res/ED). The t-statistics are presented in parentheses.

$$\begin{array}{c} \text{IMFcredit/ED} = 0.081 + 0.014\ \text{Res/ED}\ ^{***} \\ \qquad\qquad (19.09) \qquad\qquad (79.73) \\ (n = 2592;\ R^2 = 0.99;\ F = 63.4) \end{array}$$

According to the aforementioned results, approximately 99% of the fluctuations in the IMF credit to external debt ratio can be attributed to changes in the total reserves to external debt ratio. This finding is consistent with several studies listed in Table 1 (previous studies), which also indicate a significant positive coefficient at the 1% level.

As depicted in Table 3, the Extreme Bounds Analysis (EBA) for the independent variable Res/ED reveals that the coefficient is not only positive but also robust. Specifically, the coefficients of Res/ED at the upper and lower bounds are 0.0106 and 0.0533, respectively, with corresponding t-statistics of 11.45 and 6.53. According to Chakrabarti and Zeaiter (2014), Zeaiter and El-Khalil (2016), and Bitar et al. (2018), this robustness confirms that "there is enough independent variation of the Res/ED that explains variations in the dependent variable". The variance inflation factor (VIF) determines whether the variable of interest may be thought of as a linear combination of Z-variables. 1/VIF is also utilized in numerous research to assess the degree of collinearity. Many studies suggest that a VIF greater than 10 indicates a substantial correlation between the independent variables. A VIF between 1 and 5 indicates no connection, whereas a VIF between 5 and 10 indicates considerable correlation. The X-variable's VIF reveals no meaningful link with the other Z-variables.

Table 3. Sensitivity analysis for the X-variables (Res/ED), all Z-variables, all observations (dependent variable: IMFcredit/ED).

X-Variable		β	t	*p*-Value	0.95 C.I.		VIF	Z-Variables	Robust?
Res/ED	Min	0.0106	11.4599	0.0554	−0.0012	0.0223	1.28	ExRate, MilExpn	Yes
	Base	0.0136	7962.73	0	0.0136	0.01364			
	Max	0.0533	6.5301	0.0967	−0.0504	0.1569	1.6	Res/Imp, GovDebt/GDP	

Table 4 lists the EBA tests for the Q-variables: MIN and MAX in the second column denote the extreme lower bound, ELB and extreme upper bound, EUB, respectively. It is vital to notice that the same sample of Z-variables is utilized across all regressions in each test. As a result, the results of these tests are dependent on the combination of the Z-variables and the Q-variables, rather than on the sample size.

Table 4. Sensitivity analysis for the Q-variables, panel including all Z-variable except political indices, all observations (dependent variable: IMFcredit/ED, X-variable Res/ED).

Q-Variables		β	T	*p*-Value	0.95 C.I.		VIF	Z-Variables		Robust?
	Min	0.00	−9.80	0.06	0.00	0.00	1.12	CA/GDP	TOT	
ED/GNP	Base	−0.02	−1.04	0.30	−0.06	0.02				No
	Max	0.00	−6.82	0.09	0.00	0.00	1.11	Res/Imp	FisBal	
	Min	−0.02	−8.42	0.08	−0.05	0.01	1.59	IntRate	GovDebt/GDP	
Res/Imp	Base	0.12	0.45	0.65	−0.40	0.64				No
	Max	−0.01	−6.33	0.10	−0.02	0.01	1.25	ED/Exp	FisBal	
	Min	−0.47	−6.87	0.09	−1.35	0.40	7.61	ExRate	PR/Exp	
Openness	Base	5.36	2.06	0.04	0.26	10.45				Yes
	Max	−0.21	−7.43	0.09	−0.57	0.15	8.53	PR/Exp	PCGNP	
	Min	0.00	−6.61	0.10	−0.01	0.00	1.07	Money	TOT	
TDS/Exp	Base	−0.05	−0.83	0.41	−0.17	0.07				No
	Max	0.00	−6.37	0.10	0.00	0.00	1.11	CapFlow	TOT	
	Min	0.01	6.87	0.09	−0.01	0.03	1.14	ExRate	TOT	
Inf	Base	0.01	0.24	0.81	−0.07	0.09				No
	Max	0.01	6.34	0.10	−0.01	0.03	1.10	ExRate	CA/GDP	
	Min	0.00	−7.65	0.08	−0.01	0.00	1.44	Openness	PrinArrears/ED	
Money	Base	−0.03	−0.32	0.75	−0.20	0.14				No
	Max	0.00	−6.80	0.09	−0.01	0.00	1.17	PrinArrears/ED	TOT	
	Min	0.00	3.59	0.17	−0.01	0.01	1.07	Exp/GDP	TOT	
IntRate	Base	−0.08	−0.41	0.68	−0.49	0.32				No
	Max	0.01	4.66	0.13	−0.01	0.02	1.22	GovDebt/GDP	VGNP	
	Min	0.37	7.14	0.09	−0.29	1.02	8.53	Openness	CapFlow	
Imp/GDP	Base	22.75	4.97	0.00	13.77	31.73				Yes
	Max	0.77	6.92	0.09	−0.64	2.18	7.61	Openness	ExRate	
	Min	−0.01	−6.84	0.09	−0.02	0.01	4.50	Openness	ExRate	
Exp/GDP	Base	−0.08	−1.46	0.15	−0.18	0.03				No
	Max	0.00	−6.32	0.10	0.00	0.00	1.13	ED/Exp	TOT	
	Min	0.00	−2.23	0.27	−0.02	0.02	1.02	ExRate	Crdt/GDP	
GGDP	Base	0.04	0.21	0.84	−0.31	0.39				No
	Max	0.00	2.61	0.23	−0.02	0.03	1.77	ExRate	GovDebt/GDP	
	Min	−0.03	−7.66	0.08	−0.07	0.02	8.56	Imp/GDP	Openness	
ED/Exp	Base	−0.85	−1.07	0.28	−2.39	0.70				No
	Max	−0.02	−6.41	0.10	−0.07	0.02	1.58	CA/GDP	PCGNP	
	Min	0.00	−9.26	0.07	0.00	0.00	1.34	ExRate	MilExpn	
PCGNP	Base	0.00	0.20	0.84	0.00	0.00				Yes
	Max	0.00	−6.37	0.10	0.00	0.00	1.20	Exp/GDP	GovDebt/GDP	
	Min	0.00	−3.56	0.17	−0.01	0.00	1.87	LTServ/GDP	GovDebt/GDP	
ExRate	Base	−0.02	−1.04	0.30	−0.06	0.02				No
	Max	0.00	4.16	0.15	−0.01	0.01	1.29	Gexp	MilExpn	
	Min	−0.01	−6.44	0.10	−0.03	0.01	1.02	ExRate	GEXP	
CA/GDP	Base	1.36	22.42	0.00	1.24	1.48				No
	Max	0.00	−6.38	0.10	−0.01	0.00	1.40	TDS/Exp	STD/Res	

Openness, Imp/GDP, and PCGNP exhibit robustness, indicating that variations in these Q-variables consistently explain a significant portion of the variance in the use of IMF credit.

More specifically, the base coefficient for Imp/GDP is 22.75, with a t-value of 4.97 and a *p*-value of 0.00, which falls within the 95% confidence interval of 13.77 to 31.73. This suggests that an increase in Imp/GDP by one unit increases the IMFcredit/ED by 22.75 units, holding all other variables constant. This is consistent with the economic theory that more open economies and those with higher imports relative to GDP (relatively poorer countries with scarce natural resources) may require more external financing, including IMF credit, to manage their balance of payments and external debt. This is in line with the argument that "financial development is an equilibrium outcome that depends strongly on a country's trade patterns" (Do and Levchenko 2007).

Conversely, ExRate, ED/GDP, Money, Exp/GDP, ED/Exp, LTServ/Res, STD/Res, Res/Imp, Inf, IntRate, CA/GDP, Crdt/GDP, GGDP, CapFlow, ToT, Gexp, MilExpn, VGN, TDS/Exp, LTServ/GDP, DebtServ/GNP, GovDebt/GDP, FisBal, LTServ/GDP, and PR/Exp do not demonstrate robustness, despite many of these variables showcasing predictive value in numerous studies documented in the literature.

Numerous studies have underscored the significance of political factors as crucial determinants of sovereign default, including works by Maddah et al. (2023), Kohlscheen (2010), Snider (1990), Feder and Uy (1985), McFadden et al. (1985), Berg and Sachs (1988), Thacker (1999), and Celasun and Harms (2010). These studies utilized political risk indices such as corruption, government stability, democratic accountability, military involvement in politics, and ethnic tensions. The present study also employs the same political indices, with the inclusion of identical Z-variables in the dataset. As shown in Table 5, the EBA tests on Corr, Democ, MilPol, GovStab, and EthTen are not robust. This confirms that in the post-2010 period, countries having high political risks did not significantly impact the IMF's decision to use its credits. One can argue that post 2010, the IMF has been adopting a selective financing strategy that solely relies on debt risk indicators (accumulated debt arrears) without any consideration for political risks. Policymakers could interpret these findings as an indication that the IMF may need to reassess its lending policies.

Table 5. Sensitivity analysis for the Q-variables, panel including all Z-variables, political indices (dependent variable: IMFcredit/ED, X-variable Res/ED).

Q-Variable		β	T	*p*-Value	0.95 C.I.		VIF	Z-Variables		Robust?
	Min	−0.03	−4.14	0.15	−0.11	0.06	1.15	GExp	TOT	
Corr	Base	−0.01	−0.71	0.48	−0.03	0.01				No
	Max	0.04	3.42	0.18	−0.12	0.20	1.36	PrinArrears/ED	milpol	
	Min	0.01	3.12	0.20	−0.04	0.07	1.09	TOT	ED/GNP	
Democ	Base	0.00	0.94	0.35	−0.01	0.02				No
	Max	0.02	3.34	0.19	−0.07	0.12	1.71	GovDebt/GDP	Res/Imp	
	Min	−0.01	−1.60	0.36	−0.13	0.10	1.02	PrinArrears/ED	ExRate	
GovStab	Base	−0.01	−0.96	0.34	−0.02	0.01				No
	Max	−0.01	−1.39	0.40	−0.06	0.05	1.01	LTServ/Res	Exp/GDP	
	Min	−0.02	−4.54	0.14	−0.08	0.04	1.23	Democ	Imp/GDP	
MilPol	Base	−0.02	−3.68	0.00	−0.03	−0.01				No
	Max	−0.01	−3.46	0.18	−0.04	0.02	1.09	TOT	Exp/GDP	
	Min	−0.03	−4.71	0.13	−0.10	0.05	1.18	Inf	Imp/GDP	
EthTen	Base	−0.02	−3.94	0.00	−0.03	−0.01				No
	Max	−0.01	−3.15	0.20	−0.07	0.04	1.1	Democ	TOT	

Testimony to this is that in the aftermath of the Arab Uprisings, the IMF has still lent money to Arab countries that witnessed political instability (Sherry 2017). Since the uprisings, and as of 30 April 2017, the IMF's financial arrangements with Arab countries totaled USD 57.43 billion, of which USD 42 billion was in 2016 alone (IMF 2017).

Moreover, all the political risk indices are not shown to have significant impact after they are added to the main dataset (see Table 5). On the other hand, the Z-variables used in this paper include all the Q-variables in addition to other less important variables and used in the literature. A number of z-variables are used more than once due to their inclusion in the literature, which creates multicollinearity (see correlation matrix, Table A1).

This is why we dropped the variables that show high correlation with other variables, PrinArrears/ED, PR/Exp, Imp/GDP, Exrate, ED/Exp, Exp/GDP, and DebtServ/GNP.

As shown in Table 6, ED/GNP, Res/Imp, TDS/Exp, PC/GNP, Openness, and CA/GDP are robust. On the other hand, Inf, Money, IntRate, GGDP and the political indices are not robust. Relative to the previous EBA results (Tables 4 and 5), the results after correcting for multicollinearity show that the number of variables that are robust is six compared to three. This proves that excluding the variables that are highly correlated with each other

gives more significance power. In addition, all the variables have VIF values less than 5. By removing highly correlated variables, the VIF values improves significantly (see Table 6).

Several studies have deemed arrears to be significant if the ratio of principal arrears to external debt exceeds 0.1 percent, and the ratio of total arrears to external debt is over 1 percent, as noted by Hajivassiliou (1989, 1994) and McFadden et al. (1985). Table A2 showed that 10 variables are robust compared to 3 in the previous section when all data are included. These results are in line with the aforementioned studies that small amounts of arrears do not seriously threaten the economy. Moreover, it increases the robustness of the variables. Compared to the previous sections discussed, the EBA models demonstrate improved robustness and significance when countries with a low number of principal arrears are omitted from the analysis.

Using total arrears to external debt above 5% and 1% as dependent variables in this section shows more Q-variables are robust (see Appendix A). This verifies the importance of the dependent variable that is used in this study, which, as explained in the previous section, is the use of the IMF credit. This result aligns with Zeaiter (2015a) who finds that debt arrears precede rescheduling agreements and can be considered a signal for sovereign defaults. On the other hand, numerous studies cited in the literature have employed a binary measure for sovereign default, where a value of 1 signifies receiving credit from the IMF. Even though this model shows better results (14 robust variables in Table A5), according to Zeaiter (2015b), "the use of a discrete measure of the dependent variable presents only a resort when a continuous measure of the dependent variable is absent since conversion of qualitative information to cardinal measures is necessary for any estimation. Using a binary dependent variable does not allow comparison in terms of the 'degree' of solvency and whether the default itself is complete or partial".

Data from the World Bank corroborate this trend. An analysis of IMF credit in relation to Syria's external debt reveals a progressive escalation from 2010 to 2021. Initially constituting 10% of the external debt in 2010, this proportion soared to a peak of 22% in 2021. This trajectory suggests a concurrent increase in both Syria's arrears and the proportion of IMF credit to its total external debt. In a parallel examination, Yemen's IMF credit, expressed as a percentage of its external debt, demonstrates notable fluctuations over the same period. Starting at 7% in 2010, there was a marginal decline in subsequent years, followed by an increase to 16% by 2021.

Finally, we test the appropriateness of the random effects estimator by including all the variables in one equation without distinguishing between X-, Q-, and Z-variables. As shown in Table A6, Model 1 includes all the variables of the original model, excluding the political risk indices. Several variables in fixed and random effects models do not show significant effects. According to the Hausman test, the null hypotheses cannot be accepted and shows that the fixed effect coefficients are consistent. In Model 2, all the political risk indices are added to the variables listed in Model 1. In this model, the random effect coefficients are consistent. In Model 3, variables that were omitted from Table 6 because of multicollinearity concerns have been excluded from the analysis. Thus, the model shows that the fixed effect model is consistent. Comparing Models 1, 2, and 3, variables in Model 3 show more significant and predictive power.

Table 6. Sensitivity analysis for the Q-variables, panel including all Z-variables (dependent variable: IMFcredit/ED, X-variable Res/ED).

Q-Variables		β	T	*p*-Value	0.95 C.I		VIF	Z-Variables		Robust?
	Min	0.00	−9.80	0.06	0.00	0.00	1.12	CA/GDP	TOT	
ED/GNP	Base	−0.02	−1.04	0.30	−0.06	0.02				yes
	Max	0.00	−6.82	0.09	0.00	0.00	1.11	Res/Imp	FisBal	
	Min	−0.02	−6.83	0.09	−0.06	0.02	1.71	GovDebt/GDP	Democ	
Res/Imp	Base	0.12	0.45	0.65	−0.40	0.64				yes
	Max	−0.01	−6.46	0.10	−0.02	0.01	1.05	Res/Imp	CapFlow	
	Min	−0.06	−3.40	0.18	−0.27	0.16	1.1	Res/Imp	IntRate	
Openness	Base	5.36	2.06	0.04	0.26	10.45				yes
	Max	0.06	4.95	0.13	−0.09	0.20	1.16	GovDebt/GDP	CapFlow	
	Min	0.00	−6.61	0.10	−0.01	0.00	1.07	Money	TOT	
TDS/Exp	Base	−0.05	−0.83	0.41	−0.17	0.07				yes
	Max	0.00	−6.37	0.10	0.00	0.00	1.11	CapFlow	TOT	
	Min	0.00	3.12	0.20	0.00	0.01	2.41	TDS/Exp	STD/Res	
Inf	Base	0.01	0.24	0.81	−0.07	0.09				no
	Max	0.01	4.15	0.15	−0.01	0.02	1.19	GovDebt/GDP	Democ	
	Min	−0.01	−4.78	0.13	−0.05	0.02	1.27	GovDebt/GDP	CapFlow	
Money	Base	−0.03	−0.32	0.75	−0.20	0.14				no
	Max	0.00	−3.33	0.19	−0.01	0.00	1.57	Res/Imp	TOT	
	Min	0.00	3.77	0.16	−0.01	0.01	1.08	TOT	GExp	
IntRate	Base	−0.08	−0.41	0.68	−0.49	0.32				no
	Max	0.01	4.66	0.13	−0.01	0.02	1.22	GovDebt/GDP	VGNP	
	Min	0.00	−3.04	0.20	−0.01	0.01	1.05	PCGNP	TOT	
GGDP	Base	0.04	0.21	0.84	−0.31	0.39				no
	Max	0.00	2.07	0.29	−0.02	0.03	1.32	GovDebt/GDP	Corr	
	Min	0.00	−6.43	0.10	0.00	0.00	1.14	IntRate	Corr	
PCGNP	Base	0.00	0.20	0.84	0.00	0.00				yes
	Max	0.00	−6.51	0.10	0.00	0.00	1.2	GovDebt/GDP	CapFlow	
	Min	−0.01	−10.85	0.06	−0.02	0.00	1.32	GovDebt/GDP	Corr	
CA/GDP	Base	1.36	22.42	0.00	1.24	1.48				yes
	Max	0.00	−6.38	0.10	−0.01	0.00	1.4	TDS/Exp	STD/Res	
	Min	−0.03	−4.14	0.15	−0.11	0.06	1.15	TOT	Gexp	
Corr	Base	−0.01	−0.71	0.48	−0.03	0.01				no
	Max	−0.03	−4.14	0.15	−0.11	0.06	1.15	TOT	Gexp	
	Min	0.01	3.12	0.20	−0.04	0.07	1.09	ED/GNP	TOT	

Table 6. *Cont*.

Q-Variables		β	T	*p*-Value	0.95 C.I		VIF	Z-Variables		Robust?
Democ	Base	0.00	0.94	0.35	−0.01	0.02				no
	Max	0.02	3.34	0.19	−0.07	0.12	1.71	Res/Imp	GovDebt/GDP	
	Min	−0.01	−1.51	0.37	−0.06	0.05	1.18	PCGNP	FisBal	
GovtStab	Base	−0.01	−0.96	0.34	−0.02	0.01				no
	Max	−0.01	−1.45	0.38	−0.06	0.05	1.06	TDS/Exp	FisBal	
	Min	−0.02	−4.29	0.15	−0.08	0.04	1.21	Democ	Money	
MilPol	Base	−0.02	−3.68	0.00	−0.03	−0.01				no
	Max	−0.01	−3.91	0.16	−0.04	0.02	1.15	TOT	FisBal	
	Min	−0.02	−4.04	0.15	−0.09	0.04	1.74	Money	Res/Imp	
EthTen	Base	−0.02	−3.94	0.00	−0.03	−0.01				no
	Max	−0.01	−3.15	0.20	−0.07	0.04	1.1	Democ	TOT	

5. Concluding Remarks and Policy Implication

In summary, this study comprehensively analyzes the macroeconomic, financial, and political factors that contribute to sovereign default and the use of IMF financing post 2010. It particularly investigates the lending policy in situations when a country has outstanding debt payments. The study uncovers a noteworthy change in the factors and mechanisms influencing sovereign defaults and the use of IMF credit, which have not been sufficiently examined in the current body of scholarly research, using the EBA methodology to contribute to a better understanding of the processes that regulate global financial markets. The primary focus of this study is to test the resilience and importance of several economic and political factors that influence the use of IMF credit, specifically within the framework of the IMF's policy of extending loans to countries with sovereign debts. The novelty of this study not only lies in its examination of the robustness of economic drivers of IMF loan use but on applying the EBA, which allows to include all the explanatory variables that have been used in the sovereign debt literature.

Also, the present analysis not only validates the resilience of certain economic indicators (e.g., the ratio of total reserves to foreign debt) as influential factors in the use of IMF loans but also importantly reveals those political concerns in the period after 2010. Our main findings suggest that the relationship between the total reserves to external debt ratio and the use of IMF loans in foreign debt are statistically significant and reliable. Furthermore, it is seen that political considerations, which have been recognized as crucial predictors of sovereign default in prior research, do not exhibit a substantial influence on the IMF's choice to use its credit after the year 2010. It may be inferred that since 2010, the IMF has implemented a discerning approach to lending that only depends on debt risk indicators, namely cumulative debt arrears while disregarding political concerns.

Furthermore, the findings of this analysis demonstrate that by excluding countries with low debt arrears, the robustness of the results is strengthened. This offers new perspectives on the fund's lending choices. The tendency to lend to countries with higher accumulated arrears may signal a breakup of the fund with its past practices of not lending to these countries. Still, this might serve as a window of opportunity for a more proactive role played by the IMF in devising debt relief strategies for developing countries based on economic and social reforms.

Policymakers may interpret these results as suggesting the need for the IMF to reevaluate its lending policies. It may consider investigating the creation of financial instruments that are specifically designed to meet the requirements of nations with varying degrees of outstanding debt. The inclination to grant loans to nations with more outstanding debts necessitates a more sophisticated strategy to guarantee the efficient allocation of cash and the successful provision of assistance to countries that would use it optimally for the purposes of economic stability and development. The IMF might consider implementing early intervention measures in countries with rising debt arrears to prevent them from escalating to levels where they significantly affect the economy's stability. Countries that have avoided high arrears and successfully managed to prevent significant debt repayment defaults may be implementing effective economic policies and undertaking structural changes. The IMF could help these nations by acknowledging and strengthening their successful strategies, therefore acting as exemplars for other countries. Overall, credit use may require a more informed and proactive approach to ensure that funds are allocated effectively at an early stage and that assistance is provided to countries that will utilize it most successfully for economic stabilization and growth.

Finally, our study employs the Extreme Bounds Analysis (EBA) approach, which identifies the most important variables in a regression model by estimating the extreme bounds of the regression coefficients. The EBA approach does not differentiate between short- and long-term variables, as it is designed to identify the most robust variables regardless of time period. Future research could explore this distinction using alternative methodologies, such as a Panel Vector Error Correction Model (VECM), to analyze short-run dynamics and long-run equilibrium. Also, future research can address regional differences

that can be attributed to various factors such as economic, political, and financial conditions. For instance, countries in Africa and Asia may have different economic structures, trade patterns, and institutional frameworks that influence their demand for IMF credit use.

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Appendix A

List of Countries:

Afghanistan
Albania
Algeria
American Samoa
Andorra
Angola
Antigua and Barbuda
Argentina
Armenia
Aruba
Australia
Austria
Azerbaijan
Bahamas, The
Bahrain
Bangladesh
Barbados
Belarus
Belgium
Belize
Benin
Bermuda
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
British Virgin Islands
Brunei Darussalam
Bulgaria
Burkina Faso
Burundi
Cabo Verde
Cambodia
Cameroon
Canada
Djibouti
DoMinica
DoMinican Republic
Ecuador
Egypt, Arab Rep.
El Salvador
Equatorial Guinea
Eritrea
Estonia
Eswatini
Ethiopia
Faroe Islands
Fiji
Finland
France
French Polynesia
Gabon
Gambia, The
Georgia
Germany
Ghana
Gibraltar
Greece
Greenland
Grenada
Guam
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
Hong Kong SAR, China
Hungary
Iceland
India
Latvia
Lebanon
Lesotho
Liberia
Libya
Liechtenstein
Lithuania
Luxembourg
Macao SAR, China
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Marshall Islands
Mauritania
Mauritius
Mexico
Micronesia, Fed. Sts.
Moldova
Monaco
Mongolia
Montenegro
Morocco
Mozambique
Myanmar
namibia
nauru
Nepal
Netherlands
New Caledonia
New Zealand
Nicaragua
Niger
Nigeria
Samoa
San Marino
Sao Tome and Principe
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Sint Maarten (Dutch part)
Slovak Republic
Slovenia
Solomon Islands
Somalia
South Africa
South Sudan
Spain
Sri Lanka
St. Kitts and Nevis
St. Lucia
St. Martin (French part)
St. Vincent and the Grenadines
Sudan
Suriname
Sweden
Switzerland
Syrian Arab Republic
Tajikistan
Tanzania
Thailand
Timor-Leste
Togo
Tonga
Trinidad and Tobago
Tunisia
Turkiye

Cayman Islands	Indonesia	North Macedonia	Turkmenistan
Central African Republic	Iran, Islamic Rep.	Northern Mariana Islands	Turks and Caicos Islands
Chad	Iraq	Norway	Tuvalu
Channel Islands	Ireland	Oman	Uganda
Chile	Isle of Man	Pakistan	Ukraine
China	Italy	Palau	United Arab Emirates
Colombia	Jamaica	Panama	United Kingdom
Comoros	Japan	Papua New Guinea	United States
Congo, Dem. Rep.	Jordan	Paraguay	Uruguay
Congo, Rep.	Kazakhstan	Peru	Uzbekistan
Costa Rica	Kenya	Philippines	Vanuatu
Cote d'Ivoire	Kiribati	Poland	Venezuela, RB
Croatia	Korea, Dem. People's Rep.	Portugal	Vietnam
Cuba	Korea, Rep.	Puerto Rico	Virgin Islands (U.S.)
Curacao	Kosovo	Qatar	West Bank and Gaza
Cyprus	Kuwait	Romania	Yemen, Rep.
Czechia	Kyrgyz Republic	Russian Federation	Zambia
Denmark	Lao PDR	Rwanda	Zimbabwe

Summary Statistics:

Variable	Observations	Mean	Std. dev.	Min	Max
IMFcredit/ED	1445	0.9446472	31.56612	0.00287	1200
Arrears	1445	7.043463	20.44812	0	258.193
ExRate	1123	101.1622	24.14906	53.7878	741.702
ED/GNP	1422	50.28545	41.75963	1.15419	429.738
Money	1697	4.962382	10.84513	0.001312	195.47
Exp/GDP	2198	43.2427	32.48009	0.459601	340.303
PrinArears/ED	1445	0.0468347	0.1307643	0	0.952
LTServ/GDP	1422	0.0455073	0.0617455	0	0.857
DebtServ	1422	0.0468873	0.0641559	0	0.923
ED/Exp	1330	1.493216	1.181676	0.0001	13
LTServ/Res	1263	1.84×10^{10}	4.91×10^{11}	497	4.95×10^{11}
PR/exp	1328	0.1151007	0.1375679	0	1.31
STD/Res	1264	0.7506178	4.329648	0	122
Res/Imp	1263	5.182502	3.641743	0.064197	35.0888
Oppeness	2175	0.9141926	0.5628202	0.121	5.27
Imp/GDP	2175	0.4930016	0.28499	0.0754	2.62
Inf	2173	5.534625	20.50108	−4.29487	557.202
Intrate	1489	8.590096	5.69554	0	56.5183
CA/GDP	2175	−2.578468	14.35847	−65.0289	235.784
Crdt/GDP	2022	54.65447	44.58602	4.80×10^{-6}	267.934
GovDebt	751	61.0793	41.17149	−1.17073	252.523
PCGNP	2299	19716.83	20873.39	590	152630
GGDP	2446	2.684624	5.895908	−54.2359	86.8268
Capflow	2081	24.61396	8.826149	−3.94592	79.4011
ToT	2209	120.5246	44.38141	42.8438	458.574
GExp	1989	4.738723	31.73221	−96.3644	1051.42
FisBal	2198	−6.007997	18.53837	−127.97	59.8889
MilExpn	1790	1.863867	1.520439	0.0054	15.4796
VGNP	2522	4.18×10^{10}	1.74×10^{11}	2100000	2.30×10^{12}
TDS/Exp	1362	14.38889	14.69876	0.003495	133.177
Res/ED	1264	71.01969	2475.164	0.00304	88000
ResDebt/ED	435	1.230834	5.339036	0	52.1952
Corr	1417	2.720335	1.197976	0.375	6
Democ	1417	4.227035	1.498709	0	6
Govtstab	1417	7.208392	1.087037	4.458333	11.5
MilPol	1417	3.838038	1.649126	0	6
EthTen	1417	3.935456	1.197267	1	6

Table A1. Pairwise correlation matrix.

	Corr	Democ	GovStab	MilPol	EthTen	Arrears	ResDebt/ ED	IMFcredit/ ED	PrinArrears/ ED	Res/ ED	LTServ/ GDP	DebtServ	ED/ GNP	ED/Exp	TDS/ Exp	LTServ/ GDP	PR/ exp	STD/ Res
Corr	1.00																	
Democ	0.57 *0.00*	1.00																
GovStab	0.07 *0.01*	−0.23 *0.00*	1.00															
MilPol	0.70 *0.00*	0.60 *0.00*	0.02 *0.53*	1.00														
EthTen	0.31 *0.00*	0.07 *0.01*	0.12 *0.00*	0.39 *0.00*	1.00													
Arrears	−0.45 *0.00*	−0.21 *0.00*	−0.11 *0.00*	−0.28 *0.00*	−0.22 *0.00*	1.00												
ResDebt/ED	−0.06 *0.36*	0.00 *0.99*	0.05 *0.41*	−0.12 *0.05*	−0.04 *0.51*	0.23 *0.00*	1.00											
IMFcredit/ED	−0.02 *0.58*	0.03 *0.35*	−0.02 *0.55*	−0.12 *0.00*	−0.13 *0.00*	−0.01 *0.76*	0.18 *0.00*	1.00										
PrinArrears/ED	−0.45 *0.00*	−0.21 *0.00*	−0.10 *0.00*	−0.29 *0.00*	−0.23 *0.00*	0.96 *** *0.00*	0.22 *0.00*	−0.01 *0.76*	1.00									
Res/ED	−0.01 *0.84*	−0.04 *0.26*	−0.02 *0.62*	−0.04 *0.23*	−0.03 *0.37*	−0.01 *0.70*	−0.01 *0.84*	0.99 *** *0.00*	−0.01 *0.71*	1.00								
LTServ/GDP	0.00 *0.89*	0.10 *0.00*	−0.07 *0.05*	0.25 *0.00*	0.34 *0.00*	−0.13 *0.00*	−0.03 *0.56*	−0.18 *0.00*	−0.14 *0.00*	−0.10 *0.00*	1.00							
DebtServ	0.00 *0.94*	0.09 *0.01*	−0.06 *0.09*	0.25 *0.00*	0.34 *0.00*	−0.13 *0.00*	−0.03 *0.58*	−0.18 *0.00*	−0.14 *0.00*	−0.10 *0.00*	0.99 *** *0.00*	1.00						
ED/GNP	−0.04 *0.27*	0.08 *0.02*	−0.07 *0.04*	0.28 *0.00*	0.26 *0.00*	0.00 *0.96*	0.00 *0.95*	−0.03 *0.22*	−0.02 *0.52*	−0.03 *0.24*	0.66 *0.00*	0.66 *0.00*	1.00					
ED/Exp	−0.10 *0.00*	0.10 *0.00*	−0.09 *0.01*	0.09 *0.01*	0.07 *0.05*	0.10 *0.00*	0.00 *1.00*	−0.04 *0.19*	0.10 *0.00*	−0.04 *0.21*	0.34 *0.00*	0.34 *0.00*	0.72 *0.00*	1.00				
TDS/Exp	0.03 *0.36*	0.16 *0.00*	−0.11 *0.00*	0.21 *0.00*	0.28 *0.00*	−0.10 *0.00*	0.00 *0.98*	−0.03 *0.30*	−0.11 *0.00*	−0.03 *0.31*	0.84 *** *0.00*	0.84 *** *0.00*	0.57 *0.00*	0.49 *0.00*	1.00			
LTServ/GDP	0.05 *0.16*	0.00 *0.96*	0.01 *0.82*	0.15 *0.00*	−0.03 *0.40*	−0.05 *0.11*	0.02 *0.77*	−0.14 *0.00*	−0.04 *0.13*	−0.05 *0.07*	0.27 *0.00*	0.28 *0.00*	0.10 *0.00*	0.08 *0.00*	0.42 *0.00*	1.00		
PR/exp	0.01 *0.84*	0.12 *0.00*	−0.11 *0.00*	0.19 *0.00*	0.27 *0.00*	−0.09 *0.00*	0.01 *0.80*	−0.21 *0.00*	−0.09 *0.00*	−0.11 *0.00*	0.89 *** *0.00*	0.88 *** *0.00*	0.51 *0.00*	0.42 *0.00*	0.91 *** *0.00*	0.37 *0.00*	1.00	
STD/Res	−0.26 *0.00*	−0.16 *0.00*	−0.09 *0.01*	−0.15 *0.00*	−0.06 *0.09*	0.45 *0.00*	−0.02 *0.74*	0.00 *0.87*	0.43 *0.00*	0.00 *0.87*	0.00 *0.88*	0.00 *0.87*	0.02 *0.46*	0.07 *0.02*	0.02 *0.45*	0.15 *0.00*	0.03 *0.36*	1.00
Res/Imp	0.11 *0.00*	0.11 *0.00*	−0.01 *0.77*	0.06 *0.13*	−0.02 *0.64*	−0.18 *0.00*	−0.03 *0.60*	0.01 *0.74*	−0.17 *0.00*	0.01 *0.73*	−0.02 *0.59*	−0.02 *0.52*	−0.11 *0.00*	−0.07 *0.02*	0.01 *0.79*	−0.02 *0.59*	0.01 *0.62*	−0.15 *0.00*

Table A1. *Cont.*

	Corr	Democ	GovStab	MilPol	EthTen	Arrears	ResDebt/ ED	IMFcredit/ ED	PrinArrears/ ED	Res/ ED	LTServ/ GDP	DebtServ	ED/ GNP	ED/Exp	TDS/ Exp	LTServ/ GDP	PR/ exp	STD/ Res
Exp/GDP	0.37 *0.00*	0.14 *0.00*	0.12 *0.00*	0.42 *0.00*	0.28 *0.00*	−0.18 *0.00*	−0.01 *0.88*	−0.04 *0.16*	−0.20 *0.00*	−0.04 *0.16*	0.22 *0.00*	0.23 *0.00*	0.23 *0.00*	−0.28 *0.00*	−0.06 *0.04*	−0.07 *0.01*	−0.02 *0.50*	−0.07 *0.03*
Oppeness	0.32 *0.00*	0.13 *0.00*	0.10 *0.00*	0.38 *0.00*	0.27 *0.00*	−0.12 *0.00*	−0.03 *0.54*	0.06 *0.03*	−0.12 *0.00*	0.06 *0.04*	0.24 *0.00*	0.25 *0.00*	0.33 *0.00*	−0.15 *0.00*	−0.04 *0.15*	−0.18 *0.00*	0.01 *0.78*	−0.09 *0.00*
Imp/GDP	0.24 *0.00*	0.13 *0.00*	0.07 *0.01*	0.32 *0.00*	0.23 *0.00*	−0.07 *0.01*	−0.03 *0.54*	0.14 *0.00*	−0.07 *0.01*	0.14 *0.00*	0.21 *0.00*	0.20 *0.00*	0.34 *0.00*	−0.01 *0.69*	−0.04 *0.11*	−0.26 *0.00*	0.02 *0.58*	−0.09 *0.00*
Inf	−0.18 *0.00*	−0.13 *0.00*	−0.08 *0.00*	−0.17 *0.00*	−0.08 *0.01*	0.32 *0.00*	−0.03 *0.58*	0.01 *0.79*	0.32 *0.00*	0.01 *0.77*	0.02 *0.42*	0.02 *0.40*	0.07 *0.01*	0.07 *0.01*	0.07 *0.02*	0.16 *0.00*	0.05 *0.07*	0.76 *0.00*
Intrate	−0.30 *0.00*	−0.07 *0.05*	0.00 *0.90*	−0.25 *0.00*	−0.15 *0.00*	0.15 *0.00*	0.11 *0.05*	0.00 *0.97*	0.14 *0.00*	0.00 *0.90*	−0.10 *0.00*	−0.10 *0.00*	−0.03 *0.28*	0.05 *0.12*	−0.06 *0.06*	−0.07 *0.04*	−0.04 *0.18*	−0.06 *0.09*
ExRate	−0.03 *0.40*	−0.21 *0.00*	0.11 *0.00*	−0.13 *0.00*	−0.09 *0.02*	0.20 *0.00*	0.00 *0.97*	0.31 *0.00*	0.21 *0.00*	0.00 *0.94*	−0.22 *0.00*	−0.21 *0.00*	−0.21 *0.00*	−0.21 *0.00*	−0.29 *0.00*	−0.37 *0.00*	−0.26 *0.00*	−0.18 *0.00*
CA/GDP	0.28 *0.00*	−0.03 *0.29*	0.06 *0.02*	0.20 *0.00*	0.14 *0.00*	−0.15 *0.00*	−0.09 *0.08*	0.52 *0.00*	−0.16 *0.00*	0.53 *0.00*	−0.08 *0.00*	−0.08 *0.00*	−0.25 *0.00*	−0.30 *0.00*	−0.08 *0.00*	0.11 *0.00*	−0.06 *0.04*	0.02 *0.52*
Crdt/GDP	0.67 *0.00*	0.42 *0.00*	−0.01 *0.83*	0.55 *0.00*	0.29 *0.00*	−0.27 *0.00*	−0.09 *0.08*	−0.02 *0.38*	−0.27 *0.00*	−0.03 *0.38*	0.25 *0.00*	0.25 *0.00*	0.14 *0.00*	−0.07 *0.01*	0.16 *0.00*	0.10 *0.00*	0.19 *0.00*	−0.08 *0.00*
GovDebt	0.29 *0.00*	0.29 *0.00*	−0.06 *0.18*	0.31 *0.00*	0.36 *0.00*	−0.05 *0.37*	−0.02 *0.81*	−0.13 *0.01*	−0.05 *0.34*	−0.34 *0.00*	0.19 *0.00*	0.17 *0.00*	0.44 *0.00*	0.48 *0.00*	0.31 *0.00*	−0.11 *0.04*	0.20 *0.00*	0.01 *0.80*
PCGNP	0.73 *0.00*	0.33 *0.00*	0.14 *0.00*	0.62 *0.00*	0.41 *0.00*	−0.23 *0.00*	−0.07 *0.14*	0.00 *0.95*	−0.24 *0.00*	0.00 *0.99*	0.39 *0.00*	0.39 *0.00*	0.13 *0.00*	−0.10 *0.00*	0.34 *0.00*	0.45 *0.00*	0.38 *0.00*	−0.05 *0.09*
GGDP	−0.10 *0.00*	−0.11 *0.00*	0.14 *0.00*	−0.10 *0.00*	−0.10 *0.00*	−0.04 *0.12*	−0.05 *0.32*	0.01 *0.78*	−0.05 *0.06*	0.01 *0.77*	−0.11 *0.00*	−0.10 *0.00*	−0.12 *0.00*	−0.15 *0.00*	−0.18 *0.00*	−0.07 *0.01*	−0.15 *0.00*	−0.08 *0.00*
Capflow	−0.05 *0.06*	−0.18 *0.00*	0.23 *0.00*	−0.02 *0.52*	−0.05 *0.08*	−0.05 *0.07*	−0.09 *0.09*	0.10 *0.00*	−0.08 *0.00*	0.11 *0.00*	−0.02 *0.40*	−0.02 *0.43*	0.13 *0.00*	0.17 *0.00*	−0.08 *0.00*	−0.02 *0.48*	−0.06 *0.04*	−0.03 *0.40*
ToT	−0.29 *0.00*	−0.31 *0.00*	0.03 *0.31*	−0.26 *0.00*	0.03 *0.33*	0.02 *0.54*	0.00 *0.94*	0.06 *0.03*	0.01 *0.79*	0.20 *0.00*	0.01 *0.69*	0.03 *0.34*	−0.09 *0.00*	−0.05 *0.06*	0.00 *0.88*	0.01 *0.82*	0.00 *0.93*	0.06 *0.05*
GExp	−0.05 *0.10*	0.00 *0.87*	0.05 *0.07*	−0.01 *0.76*	−0.01 *0.81*	0.00 *0.88*	−0.05 *0.38*	0.03 *0.36*	0.00 *0.96*	0.03 *0.39*	−0.04 *0.20*	−0.04 *0.21*	−0.04 *0.15*	−0.07 *0.02*	−0.07 *0.03*	−0.04 *0.18*	−0.06 *0.05*	−0.04 *0.19*
FisBal	0.38 *0.00*	0.03 *0.21*	0.16 *0.00*	0.33 *0.00*	0.24 *0.00*	−0.19 *0.00*	−0.04 *0.44*	−0.20 *0.00*	−0.17 *0.00*	−0.21 *0.00*	0.00 *0.87*	0.01 *0.69*	−0.20 *0.00*	−0.36 *0.00*	−0.01 *0.66*	0.24 *0.00*	−0.05 *0.07*	0.05 *0.13*
MilExpn	−0.07 *0.01*	−0.32 *0.00*	0.16 *0.00*	−0.06 *0.03*	0.14 *0.00*	−0.03 *0.32*	0.03 *0.56*	−0.03 *0.31*	−0.03 *0.25*	−0.03 *0.32*	0.00 *0.90*	−0.01 *0.80*	−0.08 *0.00*	−0.11 *0.00*	0.03 *0.38*	−0.01 *0.86*	0.01 *0.82*	−0.05 *0.13*
Money	0.08 *0.02*	0.03 *0.29*	−0.08 *0.02*	−0.07 *0.03*	−0.13 *0.00*	0.38 *0.00*	−0.03 *0.64*	−0.01 *0.73*	0.37 *0.00*	−0.01 *0.74*	−0.06 *0.03*	−0.06 *0.03*	−0.06 *0.05*	0.07 *0.02*	−0.01 *0.78*	0.09 *0.00*	−0.03 *0.36*	0.56 *0.00*
VGNP	0.11 *0.00*	0.00 *0.90*	0.12 *0.00*	0.04 *0.12*	0.01 *0.78*	−0.05 *0.06*	−0.03 *0.54*	−0.01 *0.83*	−0.05 *0.06*	−0.01 *0.84*	−0.06 *0.02*	−0.06 *0.02*	−0.13 *0.00*	−0.12 *0.00*	−0.03 *0.33*	0.15 *0.00*	−0.02 *0.38*	−0.02 *0.56*

Table A1. *Cont.*

	Res/Imp	Exp/GDP	Oppeness	Imp/GDP	Inf	Intrate	ExRate	CA/GDP	Crdt/GDP	GovDebt	PCGNP	GGDP	Capflow	ToT	GExp	FisBal	MilExpn	Money	VGNP
Res/Imp	1.00																		
Exp/GDP	−0.13 *0.00*	1.00																	
Oppeness	−0.17 *0.00*	0.94 *** *0.00*	1.00																
Imp/GDP	−0.18 *0.00*	0.80 *0.00*	0.94 *** *0.00*	1.00															
Inf	−0.07 *0.02*	−0.10 *0.00*	−0.08 *0.00*	−0.07 *0.00*	1.00														
Intrate	−0.10 *0.00*	−0.21 *0.00*	−0.17 *0.00*	−0.09 *0.00*	−0.03 *0.28*	1.00													
ExRate	0.03 *0.51*	0.01 *0.66*	0.05 *0.13*	0.04 *0.24*	0.71 *0.00*	−0.12 *0.00*	1.00												
CA/GDP	0.08 *0.00*	0.17 *0.00*	0.12 *0.00*	0.04 *0.10*	−0.01 *0.68*	−0.17 *0.00*	0.07 *0.02*	1.00											
Crdt/GDP	0.23 *0.00*	0.33 *0.00*	0.28 *0.00*	0.21 *0.00*	−0.14 *0.00*	−0.38 *0.00*	0.01 *0.78*	0.12 *0.00*	1.00										
GovDebt	−0.02 *0.75*	0.07 *0.07*	0.05 *0.18*	0.01 *0.71*	−0.20 *0.00*	−0.14 *0.00*	−0.20 *0.00*	0.02 *0.52*	0.43 *0.00*	1.00									
PCGNP	0.19 *0.00*	0.53 *0.00*	0.36 *0.00*	0.18 *0.00*	−0.12 *0.00*	−0.37 *0.00*	−0.02 *0.49*	0.32 *0.00*	0.58 *0.00*	0.37 *0.00*	1.00								
GGDP	−0.09 *0.00*	0.03 *0.13*	0.04 *0.09*	0.03 *0.23*	−0.08 *0.00*	0.10 *0.00*	0.02 *0.44*	0.04 *0.04*	−0.14 *0.00*	−0.23 *0.00*	−0.08 *0.00*	1.00							
Capflow	0.13 *0.00*	−0.04 *0.07*	0.04 *0.07*	0.12 *0.00*	−0.05 *0.03*	−0.01 *0.66*	0.04 *0.26*	−0.10 *0.00*	−0.04 *0.10*	−0.18 *0.00*	−0.06 *0.01*	0.15 *0.00*	1.00						
ToT	0.10 *0.00*	−0.12 *0.00*	−0.21 *0.00*	−0.24 *0.00*	0.12 *0.00*	0.04 *0.16*	0.02 *0.56*	0.08 *0.00*	−0.27 *0.00*	−0.33 *0.00*	−0.11 *0.00*	0.07 *0.00*	0.11 *0.00*	1.00					
GExp	−0.04 *0.15*	0.01 *0.52*	0.03 *0.29*	0.03 *0.16*	−0.03 *0.18*	0.05 *0.06*	−0.03 *0.31*	0.02 *0.42*	−0.06 *0.02*	−0.07 *0.08*	−0.04 *0.12*	0.42 *0.00*	−0.01 *0.53*	−0.03 *0.16*	1.00				
FisBal	0.10 *0.00*	0.44 *0.00*	0.16 *0.00*	−0.13 *0.00*	−0.01 *0.62*	−0.21 *0.00*	−0.01 *0.65*	0.19 *0.00*	0.26 *0.00*	0.12 *0.00*	0.57 *0.00*	0.02 *0.27*	−0.27 *0.00*	0.15 *0.00*	−0.01 *0.78*	1.00			
MilExpn	0.32 *0.00*	−0.02 *0.37*	−0.05 *0.03*	−0.10 *0.00*	−0.01 *0.55*	−0.13 *0.00*	0.00 *0.99*	0.01 *0.69*	0.03 *0.22*	0.02 *0.61*	0.14 *0.00*	−0.12 *0.00*	0.07 *0.00*	0.10 *0.00*	−0.06 *0.02*	0.16 *0.00*	1.00		
Money	−0.19 *0.00*	−0.13 *0.00*	−0.18 *0.00*	−0.20 *0.00*	0.23 *0.00*	−0.20 *0.00*	0.02 *0.58*	−0.01 *0.64*	0.12 *0.00*	0.36 *0.00*	0.06 *0.02*	−0.09 *0.00*	−0.06 *0.03*	0.04 *0.13*	−0.02 *0.50*	0.05 *0.06*	0.05 *0.05*	1.00	
VGNP	0.37 *0.00*	−0.12 *0.00*	−0.16 *0.00*	−0.20 *0.00*	−0.02 *0.41*	−0.10 *0.00*	0.04 *0.14*	0.06 *0.01*	0.35 *0.00*	0.24 *0.00*	0.13 *0.00*	0.03 *0.10*	0.11 *0.00*	−0.07 *0.00*	−0.01 *0.53*	0.10 *0.00*	0.06 *0.01*	0.17 *0.00*	1.00

Significance codes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table A2. Sensitivity analysis for the Q-variables, panel including all Z-variables, PrinArrears/ED > 0.1% (dependent variable: IMFcredit/ED, X-variable Res/ED).

Q-Variables		β	t	*p*-Value	0.95 C.I		VIF	Z-Variables		Robust?
	Min	0.00	−6.08	0.10	−0.01	0.00	1.53	ExRate	ED/Exp	
ED/GNP	Base	0.00	−1.31	0.19	0.00	0.00				No
	Max	0.00	3.16	0.20	0.00	0.00	1.35	Res/Imp	EthTen	
	Min	−0.07	−9.88	0.06	−0.16	0.02	1.43	Money	GovDebt/GDP	
Res/Imp	Base	0.01	3.97	0.00	0.00	0.01				Yes
	Max	−0.02	−6.51	0.10	−0.06	0.02	1.56	CA/GDP	TDS/Exp	
	Min	−0.53	−7.72	0.08	−1.40	0.34	2.07	PCGNP	Govtstab	
Openness	Base	−0.04	−2.83	0.01	−0.08	−0.01				Yes
	Max	−0.22	−6.78	0.09	−0.64	0.19	1.3	ExRate	Corr	
	Min	0.00	−4.32	0.14	−0.02	0.01	1.37	ExRate	ED/Exp	
TDS/Exp	Base	0.00	−4.61	0.00	−0.01	0.00				No
	Max	0.01	4.37	0.14	−0.02	0.03	1.68	ExRate	DebtServ/GDP	
	Min	0.01	6.88	0.09	−0.01	0.03	1.24	Openness	ExRate	
Inf	Base	0.00	0.60	0.55	0.00	0.00				Yes
	Max	0.01	7.19	0.09	−0.01	0.04	1.32	ExRate	Money	
	Min	−0.04	−4.69	0.13	−0.15	0.07	1.34	ExRate	Democ	
Money	Base	0.00	−1.84	0.07	0.00	0.00				No
	Max	0.00	−3.34	0.18	−0.01	0.00	1.23	PrinArrears/ED	ToT	
	Min	0.01	7.50	0.08	−0.01	0.04	1.3	PrinArrears/ED	GovDebt/GDP	
IntRate	Base	0.00	−0.26	0.80	0.00	0.00				No
	Max	0.01	7.50	0.08	−0.01	0.04	1.3	PrinArrears/ED	GovDebt/GDP	
	Min	−0.49	−6.81	0.09	−1.42	0.43	1.31	ExRate	FisBal	
Imp/GDP	Base	−0.01	−0.42	0.67	−0.07	0.05				Yes
	Max	0.71	7.46	0.08	−0.50	1.92	1.17	Openness	ED/Exp	
	Min	−0.01	−9.91	0.06	−0.02	0.00	1.22	ExRate	STD/Res	
Exp/GDP	Base	0.00	−2.97	0.00	0.00	0.00				Yes
	Max	0.00	−6.68	0.09	0.00	0.00	1.16	TDS/Exp	CapFlow	
	Min	0.00	−2.58	0.24	−0.03	0.02	1.35	GExp	MilExpn	
GGDP	Base	0.00	−0.32	0.75	−0.01	0.00				No
	Max	0.01	2.07	0.29	−0.03	0.04	1.28	PrinArrears/ED	GovDebt/GDP	
	Min	−0.03	−5.35	0.12	−0.10	0.04	1.26	CA/GDP	MilExpn	
ED/Exp	Base	−0.02	−4.13	0.00	−0.03	−0.01				Yes
	Max	0.08	5.76	0.11	−0.10	0.26	2.29	Res/Imp	ExRate	
	Min	0.00	−11.52	0.06	0.00	0.00	1.1	ExRate	MilExpn	
PCGNP	Base	−1.38	−0.57	0.57	−6.15	3.39				Yes
	Max	0.00	−6.89	0.09	0.00	0.00	1.3	CA/GDP	CapFlow	
	Min	0.00	6.43	0.10	0.00	0.01	1.21	Inf	TDS/Exp	
ExRate	Base	0.02	10.68	0.00	0.01	0.02				Yes
	Max	0.01	7.13	0.09	−0.01	0.02	1.17	Inf	Gexp	
	Min	−0.01	−6.86	0.09	−0.03	0.01	2.1	ED/Exp	GovDebt/GDP	
CA/GDP	Base	0.00	−6.45	0.00	0.00	0.00				Yes
	Max	0.00	−6.31	0.10	−0.01	0.00	4.6	TDS/Exp	PR/Exp	
	Min	−0.17	−4.62	0.14	−0.65	0.30	1.49	GovDebt/GDP	ToT	
Corr	Base	0.04	3.03	0.00	0.02	0.07				No
	Max	0.15	4.37	0.14	−0.28	0.57	1.76	ExRate	IntRate	
	Min	0.04	6.36	0.10	−0.04	0.11	1.23	Res/Imp	Crdt/GDP	
Democ	Base	0.03	3.86	0.00	0.01	0.04				Yes
	Max	0.11	6.43	0.10	−0.11	0.33	2.07	Openness	GovDebt/GDP	
	Min	−0.02	−3.40	0.18	−0.12	0.07	1.26	Corr	PCGNP	
Govtstab	Base	0.01	0.66	0.51	−0.01	0.02				No
	Max	−0.02	−3.14	0.20	−0.11	0.07	1.23	CA/GDP	ED/GNP	
	Min	−0.02	−3.43	0.18	−0.10	0.06	1.59	Democ	LTServ/Res	
MilPol	Base	−0.01	−1.05	0.30	−0.02	0.01				No
	Max	0.06	4.93	0.13	−0.09	0.21	2.81	Exp/GDP	GovDebt/GDP	
	Min	−0.02	−2.06	0.29	−0.11	0.08	1.59	MilPol	Crdt/GDP	
EthTen	Base	−0.02	−2.44	0.02	−0.03	0.00				No
	Max	0.03	2.88	0.21	−0.10	0.17	1.35	ExRate	ToT	

Table A3. Sensitivity analysis for the Q-variables, panel including all Z-variables, Arrears/ED > 5% (dependent variable: IMFcredit/ED, X-variable Res/ED).

Q-Variables		β	t	*p*-Value	0.95 C.I.		VIF	Z-Variables		Robust?
	Min	0.00	−3.96	0.16	−0.01	0.01	1.54	ExRate	Gexp	
ED/GNP	Base	0.00	−5.18	0.00	0.00	0.00				No
	Max	0.00	4.35	0.14	0.00	0.01	1.74	Crdt/GDP	MilPol	
	Min	−0.08	−6.32	0.10	−0.24	0.08	1.79	Money	GovDebt/GDP	
Res/Imp	Base	0.00	−0.79	0.43	−0.01	0.01				No
	Max	−0.03	−6.46	0.10	−0.08	0.02	1.36	PCGNP	EthTen	
	Min	−0.65	−6.66	0.09	−1.88	0.59	9.05	ED/Exp	Imp/GDP	
Openness	Base	−0.03	−0.68	0.50	−0.10	0.05				No
	Max	0.35	6.50	0.10	−0.33	1.03	5.29	Exp/GDP	Crdt/GDP	
	Min	0.00	−3.78	0.16	−0.02	0.01	1.4	ExRate	GExp	
TDS/Exp	Base	−0.01	−3.11	0.00	−0.01	0.00				No
	Max	0.00	−3.09	0.20	−0.01	0.00	1.26	ToT	FisBal	
	Min	0.01	6.65	0.10	−0.01	0.03	1.68	Res/Imp	ExRate	
Inf	Base	0.00	−0.26	0.80	0.00	0.00				No
	Max	0.01	8.42	0.08	−0.01	0.03	1.36	ExRate	PR/Exp	
	Min	−0.05	−4.38	0.14	−0.18	0.09	1.95	ExRate	Democ	
Money	Base	0.00	−2.06	0.04	0.00	0.00				No
	Max	0.00	4.23	0.15	0.00	0.01	1.48	ToT	EthTen	
	Min	−0.01	−4.55	0.14	−0.02	0.01	1.47	PCGNP	Democ	
IntRate	Base	0.00	−0.63	0.53	−0.01	0.00				No
	Max	0.02	3.56	0.17	−0.06	0.10	1.65	Crdt/GDP	GovDebt/GDP	
	Min	−0.78	−6.39	0.10	−2.34	0.77	2.3	ExRate	FisBal	
Imp/GDP	Base	0.11	1.69	0.09	−0.02	0.23				Yes
	Max	1.13	6.82	0.09	−0.97	3.23	9.05	Openness	ED/Exp	
	Min	−0.01	−9.45	0.07	−0.03	0.00	1.58	ExRate	VGNP	
Exp/GDP	Base	0.00	−2.33	0.02	−0.01	0.00				Yes
	Max	0.00	−6.59	0.10	−0.01	0.00	1.17	Money	VGNP	
	Min	0.00	−3.18	0.19	−0.02	0.01	1.34	Res/Imp	Corr	
GGDP	Base	0.00	0.45	0.66	−0.01	0.01				No
	Max	0.00	−3.12	0.20	−0.02	0.01	1.18	Res/Imp	MilPol	
	Min	0.07	6.49	0.10	−0.07	0.22	1.67	Res/Imp	Corr	
ED/Exp	Base	−0.04	−3.58	0.00	−0.06	−0.02				Yes
	Max	0.07	6.49	0.10	−0.07	0.22	1.67	Res/Imp	Corr	
	Min	0.00	−12.96	0.05	0.00	0.00	1.49	ExRate	MilExpn	
PCGNP	Base	0.00	0.20	0.84	0.00	0.00				No
	Max	0.00	−6.36	0.10	0.00	0.00	1.13	Imp/GDP	CapFlow	
	Min	−0.01	−3.63	0.17	−0.02	0.01	3.84	Exp/GDP	GovDebt/GDP	
ExRate	Base	0.02	8.77	0.00	0.02	0.03				No
	Max	0.01	4.19	0.15	−0.02	0.03	2.28	Inf	FisBal	
	Min	−0.01	−7.14	0.09	−0.04	0.01	2.28	Imp/GDP	GovDebt/GDP	
CA/GDP	Base	−0.01	−7.13	0.00	−0.01	0.00				Yes
	Max	0.00	−6.36	0.10	−0.01	0.00	1.63	Res/Imp	CapFlow	
	Min	0.13	6.33	0.10	−0.13	0.38	2.35	PrinArrears/ED	FisBal	
Corr	Base	0.11	4.78	0.00	0.07	0.16				Yes
	Max	0.13	6.33	0.10	−0.13	0.38	2.35	PrinArrears/ED	FisBal	
	Min	0.06	6.84	0.09	−0.05	0.17	1.93	PCGNP	PrinArrears/ED	
Democ	Base	0.05	4.17	0.00	0.03	0.08				Yes
	Max	0.07	6.47	0.10	−0.07	0.21	1.47	PCGNP	IntRate	
	Min	−0.02	−3.20	0.19	−0.12	0.07	1.6	Democ	PCGNP	
GovStab	Base	0.02	1.25	0.21	−0.01	0.05				No
	Max	0.11	3.74	0.17	−0.26	0.47	1.82	Money	GovDebt/GDP	
	Min	−0.55	−3.95	0.16	−2.33	1.22	24.6	GovDebt/GDP	EthTen	
MilPol	Base	0.01	0.90	0.37	−0.01	0.03				No
	Max	0.03	4.16	0.15	−0.06	0.13	1.73	PCGNP	PrinArrears/ED	
	Min	0.02	3.35	0.18	−0.06	0.11	1.28	Res/Imp	PrinArrears/ED	
EthTen	Base	−0.01	−0.77	0.44	−0.04	0.02				No
	Max	0.23	4.08	0.15	−0.49	0.94	24.6	MilPol	GovDebt/GDP	

Table A4. Sensitivity analysis for the Q-variables, panel including all Z-variables, Arrears/ED > 1% (dependent variable: IMFcredit/ED, X-variable Res/ED).

Q-Variables		β	t	*p*-Value	0.95 C.I.		VIF	Zs		Robust?
	Min	0.00	−7.27	0.09	−0.01	0.00	1.69	ExRate	ED/Exp	
ED/GNP	Base	0.00	−5.36	0.00	0.00	0.00				Yes
	Max	0.00	−7.27	0.09	−0.01	0.00	1.69	ExRate	ED/Exp	
	Min	−0.07	−8.90	0.07	−0.18	0.03	1.54	Money	GovDebt/GDP	
Res/Imp	Base	0.00	−0.48	0.63	−0.01	0.01				Yes
	Max	−0.02	−6.44	0.10	−0.07	0.02	1.24	CA/GDP	Govtstab	
	Min	−0.56	−7.37	0.09	−1.53	0.41	5.08	ExRate	Imp/GDP	
Openness	Base	−0.05	−2.41	0.02	−0.08	−0.01				Yes
	Max	−0.25	−7.06	0.09	−0.69	0.20	1.24	ExRate	Inf	
	Min	−0.01	−5.16	0.12	−0.02	0.01	1.43	ExRate	ED/Exp	
TDS/Exp	Base	0.00	−3.99	0.00	−0.01	0.00				No
	Max	0.01	4.47	0.14	−0.02	0.04	7.64	ExRate	DebtServ/GNP	
	Min	0.01	7.32	0.09	−0.01	0.03	1.23	TDS/Exp	ExRate	
Inf	Base	0.00	0.28	0.78	0.00	0.00				No
	Max	0.01	7.69	0.08	−0.01	0.03	1.16	ExRate	CA/GDP	
	Min	−0.04	−4.38	0.14	−0.17	0.08	1.47	ExRate	EthTen	
Money	Base	0.00	−1.96	0.05	0.00	0.00	6			No
	Max	0.00	3.40	0.18	0.00	0.01	1.34	ToT	EthTen	
	Min	0.00	−3.61	0.17	−0.02	0.01	1.34	PCGNP	Democ	
IntRate	Base	0.00	−0.34	0.73	0.00	0.00				No
	Max	0.02	5.13	0.12	−0.02	0.06	5.53	ExRate	GovDebt/GDP	
	Min	−0.65	−8.48	0.07	−1.63	0.33	1.35	ExRate	FisBal	
Imp/GDP	Base	−0.01	−0.26	0.80	−0.08	0.06				No
	Max	0.85	7.32	0.09	−0.62	2.32	12.16	Openness	EXD/Exp	
	Min	−0.01	−10.55	0.06	−0.02	0.00	1.33	ExRate	FisBal	
Exp/GDP	Base	0.00	−2.70	0.01	0.00	0.00				Yes
	Max	0.00	−6.33	0.10	0.00	0.00	1.56	Res/Imp	VGNP	
	Min	0.00	−3.59	0.17	−0.02	0.01	1.23	Res/Imp	Corr	
GGDP	Base	0.00	−0.15	0.88	−0.01	0.00				No
	Max	0.00	−3.22	0.19	−0.02	0.01	1.21	Res/Imp	Democ	
	Min	−0.03	−5.24	0.12	−0.11	0.05	1.24	CA/GDP	MilExpn	
ED/Exp	Base	−0.02	−3.57	0.00	−0.03	−0.01				No
	Max	0.09	6.01	0.11	−0.10	0.28	2.42	Res/Imp	ExRate	
	Min	0.00	−9.50	0.07	0.00	0.00	2.86	GovDebt/GDP	Democ	
PCGNP	Base	−38.9	−0.13	0.90	−6.45	5.67				Yes
	Max	0.00	−6.57	0.10	0.00	0.00	1.29	CA/GDP	CapFlow	
	Min	0.01	6.75	0.09	−0.01	0.02	1.22	DebtServ/GDP	Inf	
ExRate	Base	0.02	9.63	0.00	0.01	0.02				Yes
	Max	0.01	6.33	0.10	−0.01	0.02	1.21	Inf	GExp	
	Min	−0.01	−8.07	0.08	−0.02	0.00	1.24	ED/Exp	MilExpn	
CA/GDP	Base	0.00	−6.11	0.00	−0.01	0.00				Yes
	Max	0.00	−6.45	0.10	−0.01	0.00	1.32	TDS/Exp	LTServ/Res	
	Min	−0.25	−4.12	0.15	−1.00	0.51	2.68	GovDebt/GDP	EthTen	
Corr	Base	0.07	3.74	0.00	0.03	0.11				No
	Max	0.13	3.69	0.17	−0.32	0.58	1.73	IntRate	ExRate	
	Min	−0.11	−4.88	0.13	−0.40	0.18	2.26	GovDebt/GDP	MilExpn	
Democ	Base	0.03	3.57	0.00	0.01	0.05				No
	Max	0.06	3.66	0.17	−0.16	0.29	2.86	PCGNP	GovDebt/GDP	
	Min	−0.03	−4.45	0.14	−0.13	0.06	1.14	CA/GDP	PCGNP	
GovStab	Base	0.01	0.83	0.41	−0.01	0.03				No
	Max	0.09	3.24	0.19	−0.26	0.45	1.7	Money	GovDebt/GDP	
	Min	−0.04	−3.27	0.19	−0.22	0.13	1.42	Democ	ExRate	
MilPol	Base	0.00	−0.69	0.49	−0.02	0.01				No
	Max	0.08	5.78	0.11	−0.10	0.26	3.71	Exp/GDP	GovDebt/GDP	
	Min	0.03	3.95	0.16	−0.06	0.11	1.18	Res/Imp	ToT	
EthTen	Base	−0.01	−1.32	0.19	−0.03	0.01				No
	Max	0.04	3.48	0.18	−0.12	0.20	1.31	IntRate	ToT	

Table A5. Sensitivity analysis for the Q-variables, panel including all Z-variables, all observations (dependent variable: DummyIMFcredit/ED, X-variable Res/ED).

Q-Variables		β	t	*p*-Value	0.95 C.I.		VIF	Z-Variables		Robust?
	Min	0.0053	3.4925	0.1775	−0.014	0.0245	1.17	ED/GNP	IntRate	
ExRate	Base	0.02	10.68	0.00	0.01	0.02				no
	Max	0.0066	3.6869	0.1686	−0.0163	0.0295	1.1	IntRate	MilPol	
	Min	0.0025	6.4899	0.0973	−0.0024	0.0073	1.46	Crdt/GDP	TDS/Exp	
ED/GNP	Base	0.00	−1.31	0.19	0.00	0.00				no
	Max	0.0062	6.8558	0.0922	−0.0053	0.0176	1.44	ExRate	PR/Exp	
	Min	−0.0961	−4.413	0.1419	−0.373	0.1807	1.3	GovDebt/GDP	MilExpn	
Money	Base	0.00	−1.84	0.07	0.00	0.00				no
	Max	0.0134	3.5418	0.1752	−0.0346	0.0613	1.09	LTServ/Res	IntRate	
	Min	0.005	6.5873	0.0959	−0.0046	0.0146	1.09	PrinArrears/ED	PCGNP	
Exp/GDP	Base	0.00	−2.97	0.00	0.00	0.00				yes
	Max	0.0158	9.0018	0.0704	−0.0065	0.0381	1.21	Crdt/GDP	GovDebt/GDP	
	Min	0.9223	6.5345	0.0967	−0.8711	2.7158	1.15	Crdt/GDP	TOT	
PrinArrears/ED	Base	0.7654	6.7665	0.0987	−0.9876	5.876				yes
	Max	5.1962	6.9888	0.0905	−4.2508	14.6431	1.22	GovDebt/GDP	FisBal	
	Min	4.357	6.5584	0.0963	−4.0843	12.7984	4.2	PR/Exp	GovDebt/GDP	
LTServ/Res	Base	0.00	−5.02	0.00	0.00	0.00				yes
	Max	4.357	6.5584	0.0963	−4.0843	12.7984	4.2	PR/Exp	GovDebt/GDP	
	Min	−2.7478	−3.909	0.1594	−11.678	6.1822	2.4	ED/GNP	ExRate	
DebtServ/GNP	Base	−0.77	−7.03	0.00	−0.98	−0.55				No
	Max	18.1956	4.095	0.1525	−38.263	74.6546	348.3	LTServ/GDP	MilPol	
	Min	−0.0758	−4.321	0.1448	−0.2985	0.147	2.34	ED/GNP	Crdt/GDP	
ED/Exp	Base	−0.02	−4.13	0.00	−0.03	−0.01				No
	Max	0.0778	3.629	0.1712	−0.1947	0.3504	1.5	Exp/GDP	GovDebt/GDP	
	Min	0	−7.437	0.0851	0	0	1.27	ExRate	VGNP	
LTServ/Res	Base	0.00	−5.02	0.00	0.00	0.00				yes
	Max	0	−6.373	0.0991	0	0	1.06	IntRate	VGNP	
	Min	−2.5579	−6.575	0.0961	−7.5012	2.3854	3.42	LTServ/GDP	ExRate	
PR/Exp	Base	−0.25	−7.83	0.00	−0.31	−0.19				yes
	Max	−2.5364	−6.627	0.0953	−7.3996	2.3267	3.31	DebtServ/GNP	ExRate	
	Min	−0.0171	−3.295	0.1876	−0.0832	0.049	2.98	PrinArrears/ED	Inf	
STD/Res	Base	−0.03	−0.15	0.88	−0.46	0.40				No
	Max	0.2694	5.4097	0.1164	−0.3633	0.9021	1.35	IntRate	GovDebt/GDP	
	Min	−0.0834	−9.543	0.0665	−0.1945	0.0277	1.59	IntRate	GovDebt/GDP	
Res/Imp	Base	0.01	3.97	0.00	0.00	0.01				yes
	Max	−0.0278	−6.604	0.0957	−0.0812	0.0257	1.19	Crdt/GDP	MilExpn	
	Min	0.2483	6.5629	0.0963	−0.2324	0.729	1.11	PrinArrears/ED	Crdt/GDP	
Openness	Base	−0.04	−2.83	0.01	−0.08	−0.01				yes
	Max	0.7565	7.345	0.0861	−0.5522	2.0651	1.29	GovDebt/GDP	EthTen	
	Min	0.4868	6.7698	0.0934	−0.4269	1.4005	1.32	Crdt/GDP	VGNP	
Imp/GDP	Base	−0.01	−0.42	0.67	−0.07	0.05				yes
	Max	1.3499	7.5733	0.0836	−0.9149	3.6147	1.21	GovDebt/GDP	EthTen	
	Min	0.0022	3.0831	0.1997	−0.007	0.0115	1.01	Imp/GDP	GovStab	
Inf	Base	0.00	0.60	0.55	0.00	0.00				No
	Max	0.0217	3.7938	0.1641	−0.0509	0.0942	1.21	ExRate	EthTen	
	Min	0.0149	6.3371	0.0996	−0.015	0.0448	1.19	Res/Imp	VGNP	
IntRate	Base	0.00	−0.26	0.80	0.00	0.00				yes
	Max	0.023	8.6461	0.0733	−0.0108	0.0568	1.04	Openness	GExp	
	Min	−0.0157	−4.0157	0.1554	−0.0654	0.034	1.02	ExRate	GExp	
CA/GDP	Base	0.00	−6.45	0.00	0.00	0.00				No
	Max	−0.0039	−3.278	0.1885	−0.0189	0.0112	1.43	Res/Imp	PCGNP	
	Min	−0.0078	−14.69	0.0433	−0.0145	−0.001	1.09	Exp/GDP	GExp	
Crdt/GDP	Base	−0.03	−0.81	0.42	−0.09	0.04				yes
	Max	−0.0033	−6.486	0.0974	−0.0097	0.0031	1.67	Res/Imp	TOT	
	Min	−0.01	−3.446	0.1798	−0.0467	0.0268	1.89	ExRate	Democ	

Table A5. *Cont.*

Q- Variables		β	t	*p*-Value	0.95 C.I.		VIF	Z-Variables		Robust?
GovDebt/GDP	Base	0.00	−1.98	0.05	0.00	0.00				No
	Max	−0.0091	−3.291	0.1878	−0.0441	0.026	1.93	ExRate	EthTen	
	Min	0	−7.312	0.0865	−0.0001	0	1.2	IntRate	EthTen	
PCGNP	Base	−1	−0.57	0.57	−6	3				yes
	Max	0	−6.442	0.098	0	0	1.09	PrinArrears/ED	ED/GNP	
	Min	0.0064	2.2889	0.2622	−0.0293	0.0421	1.03	Inf	ED/GNP	
GGDP	Base	0.00	−0.32	0.75	−0.01	0.00				No
	Max	0.0127	2.2601	0.2652	−0.0586	0.084	1.05	ExRate	MilPol	
	Min	−0.0053	−3.08	0.1999	−0.027	0.0165	1.68	CA/GDP	GExp	
CapFlow	Base	0.00	−0.32	0.75	−0.01	0.00				No
	Max	0.0175	4.5635	0.1373	−0.0312	0.0661	1.36	ExRate	Corr	
	Min	0.001	3.1776	0.1941	−0.0031	0.0052	1.07	PrinArrears/ED	ED/Exp	
TOT	Base	0.00	2.12	0.03	0.00	0.00				No
	Max	0.002	3.4034	0.1819	−0.0056	0.0096	1.38	ExRate	FisBal	
	Min	−0.0007	−1.965	0.2997	−0.0054	0.004	1.03	Crdt/GDP	Res/Imp	
GExp	Base	0.03	0.97	0.33	−0.03	0.08				No
	Max	−0.0007	−1.965	0.2997	−0.0054	0.004	1.03	Crdt/GDP	Res/Imp	
	Min	−0.0115	−3.962	0.1574	−0.0483	0.0253	14.58	Imp/GDP	Exp/GDP	
FisBal	Base	−0.44	−7.07	0.00	−0.56	−0.31				No
	Max	0.0054	4.9834	0.1261	−0.0083	0.019	1.27	PCGNP	ED/GNP	
	Min	−0.1585	−7.067	0.0895	−0.4434	0.1265	1.39	ExRate	EthTen	
MilExpn	Base	−0.86	−0.96	0.34	−2.61	0.89				No
	Max	−0.0907	−6.319	0.0999	−0.2731	0.0917	1.17	PrinArrears/ED	Democ	
	Min	0	−6.770	0.0934	0	0	1.12	FisBal	GExp	
VGNP	Base	0.00	−0.24	0.81	0.00	0.00				yes
	Max	0	8.411	0.0753	0	0	1.32	Crdt/GDP	Res/Imp	
	Min	−0.0188	−5.594	0.1126	−0.0616	0.0239	3.06	DebtServ/GNP	ExRate	
TDS/Exp	Base	0.00	−4.61	0.00	−0.01	0.00				No
	Max	−0.0031	−3.084	0.1996	−0.0158	0.0096	1.06	TOT	STD/Res	
	Min	−0.1536	−4.596	0.1364	−0.578	0.2709	1.03	Gexp	Exp/GDP	
Corr	Base	0.04	3.03	0.00	0.02	0.07				No
	Max	−0.0993	−3.089	0.1993	−0.5076	0.3091	1.05	LTServ/Res	ED/GNP	
	Min	−0.1249	−7.671	0.0825	−0.3319	0.082	1.05	FisBal	IntRate	
Democ	Base	0.03	3.86	0.00	0.01	0.04				yes
	Max	−0.086	−6.341	0.0996	−0.2582	0.0863	1.22	PCGNP	LTServ/Res	
	Min	−0.1453	−3.445	0.1799	−0.681	0.3905	2.01	GovDebt/GDP	ExRate	
GovStab	Base	0.01	0.66	0.51	−0.01	0.02				No
	Max	0.0736	3.8535	0.1616	−0.1691	0.3163	1.08	Crdt/GDP	IntRate	
	Min	0.2884	6.8321	0.0925	−0.248	0.8249	2.01	GovDebt/GDP	ExRate	
MilPol	Base	−0.01	−1.05	0.30	−0.02	0.01				yes
	Max	0.2884	6.8321	0.0925	−0.248	0.8249	2.01	GovDebt/GDP	ExRate	
	Min	−0.1461	−5.21	0.1207	−0.5022	0.2101	1.29	GovDebt/GDP	Openness	
EthTen	Base	−0.02	−2.44	0.02	−0.03	0.00				No
	Max	0.0647	3.7279	0.1668	−0.1557	0.285	1.2	PCGNP	IntRate	

Table A6. Panel regressions (dependent variable: IMFcredit/ED).

	Model 1		Model 2		Model 3	
	FE	**RE**	**FE**	**RE**	**FE**	**RE**
Res/ED	0.00407	0.032856	0.032196	−0.01958	0.007845 ***	0.007901 ***
	(0.03212)	(0.02938)	(0.048114)	(0.040441)	(0.00067)	(0.000653)
ExRate	−0.00046	−0.00048	0.000881	0.001025 **	−0.00101 **	−0.00109 **
	(0.000552)	(0.000525)	(0.000529)	(0.00048)	(0.000556)	(0.000549)
ED/GNP	−0.00053	−0.00036	−0.00111	−0.0013	−0.00231 ***	−0.00185 ***
	(0.000596)	(0.000547)	(0.000952)	(0.000656)	(0.000531)	(0.000491)

Table A6. *Cont.*

	Model 1		Model 2		Model 3	
	FE	**RE**	**FE**	**RE**	**FE**	**RE**
Money	−0.00459	−0.00875	−0.02646	−0.028 ***	−0.00185	−0.00228
	(0.007571)	(0.007177)	(0.01585)	(0.007861)	(0.004933)	(0.004858)
TDS/Exp	−0.00354	−0.00248	−0.0041	−0.0039	−0.00525	−0.00586 *
	(0.002335)	(0.00221)	(0.00331)	(0.002491)	(0.003265)	(0.003182)
Exp/GDP	−0.00594	−0.00212	0.010129 *	0.007382 *	0.01368 ***	0.013286 ***
	(0.003464)	(0.003207)	(0.00508)	(0.004196)	(0.003854)	(0.003824
PrinArrears/ED	0.7247 ***	0.7247 ***	0.7254 ***	0.7073 ***	0.589229 ***	0.70562 ***
	(0.137799)	(0.136368)	(0.188794)	(0.147397)	(0.162205)	(0.155197)
LTServ/Res	-5.82×10^{-14}	-1.31×10^{-13}	6.58×10^{-13} **	7.06×10^{-13} ***	-4.66×10^{-13} **	-4.30×10^{-13}
	(1.53×10^{-13})	(1.48×10^{-13})	(3.01×10^{-13})	(2.26×10^{-13})	(1.92×10^{-13})	(1.88×10^{-13})
PR/Exp	0.55393 **	0.5115 **	0.183692	0.106699	0.469526	0.55428 *
	(0.222011)	(0.210111)	(0.333349)	(0.234692)	(0.346043)	(0.337352)
STD/Res	0.004004	0.013259	0.002625	0.012062	0.063956	0.049873
	(0.019958)	(0.019616)	(0.045264)	(0.029428)	(0.026833)	(0.025499)
Openness	−0.13458	−0.45822	−0.44158	−0.29481	−0.28744	−0.25037
	(0.318055)	(0.299172)	(0.384995)	(0.301222)	(0.34785)	(0.338773)
Imp/GDP	0.768709	1.003588 *	0.132409	0.097066	−0.59103	−0.69179
	(0.573326)	(0.552981)	(0.750223)	(0.614203)	(0.505987)	(0.485108)
Inf	0.000025	0.000402	0.000229	−0.00023	0.002502	0.001488
	(0.001073)	(0.000932)	(0.00103)	(0.000851)	(0.001477)	(0.001413)
IntRate	0.000189	0.001115	0.00237*	0.00247 ***	0.000216	−0.00058
	(0.001108)	(0.001054)	(0.001289)	(0.000853)	(0.001292)	(0.001146)
CA/GDP	0.000624	−0.00028	−0.00397	−0.00066	−0.00737 ***	−0.00716 ***
	(0.001993)	(0.001855)	(0.002784)	(0.002206)	(0.002034)	(0.002002)
Crdt/GDP	0.000522	0.000954	0.0033 ***	0.00336 ***	−0.00105 ***	−0.00093 **
	(0.000695)	(0.000609)	(0.000752)	(0.000711)	(0.000377)	(0.000369)
GGDP	0.000738	−0.00075	0.001803	0.001192	−0.00632***	−0.00823 ***
	(0.002011)	(0.001464)	(0.001688)	(0.00132)	(0.001994)	(0.001701)
Capflow	−0.00194	−0.00234	−0.00248	−0.0004	0.001237	0.001732
	(0.001626)	(0.001554)	(0.003089)	(0.002429)	(0.001439)	(0.00139)
ToT	−0.00012	0.000113	0.00016	0.000213	−0.00011	−0.00019
	(0.000209)	(0.000195)	(0.000545)	(0.000368)	(0.000172)	(0.000162)
FisBal	0.004308	0.004063	−0.00492	−0.00583	−0.00957 ***	−0.00937 ***
	(0.003142)	(0.003004)	(0.004785)	(0.003744)	(0.002378)	(0.002323)
MilExpn	−0.00698 *	−0.00675	0.014538	0.007471	0.029181 ***	0.027927 ***
	(0.004163)	(0.004132)	(0.010363)	(0.009003)	(0.006169)	(0.006034)
VGNP	-5.69×10^{-14}	-6.41×10^{-14}	-2.53×10^{-13} *	−1.95E-13 **	-7.98×10^{-15}	-2.47×10^{-14}
	(7.37×10^{-14})	(7.30×10^{-14})	(1.23×10^{-13})	(8.30×10^{-14})	(3.35×10^{-14})	(3.21×10^{-14})
Res/Imp	−0.00507	−0.00762	−0.00452	−0.00057		
	(0.004279)	(0.00386)	(0.005416)	(0.004011)		
ED/Exp	−0.0051	−0.02463	0.055454	0.038044		
	(0.021857)	(0.021942)	(0.031346)	(0.025637)		
LTServ/GDP	−1.25062	−1.0154	−0.87144	−1.15904		
	(1.340687)	(1.254754)	(1.242649)	(1.103773)		
GovDebt/GDP	−0.00078 *	−0.0011 ***	0.000353	0.000577		
	(0.000454)	(0.000405)	(0.000587)	(0.000469)		
DebtServ/GNP	1.354476	0.883592	1.169662	1.500618		
	(1.344129)	(1.217801)	(1.287311)	(1.1296)		
PCGNP	1.11×10^{-6}	-9.51×10^{-7}	-6.21×10^{-6}	-9.04×10^{-6} ***		
	(1.51×10^{-6})	(1.34×10^{-6})	(3.66×10^{-6})	(1.95×10^{-6})		
GExp	−0.00022	−0.00024	−0.00071	−0.00087		
	(0.000515)	(0.000504)	(0.000611)	(0.000555)		
Corr			0.079505 **	0.0871 ***	−0.0101	0.00342
			(0.028471)	(0.020705)	(0.020046)	(0.018862)

Table A6. *Cont.*

	Model 1		Model 2		Model 3	
	FE	**RE**	**FE**	**RE**	**FE**	**RE**
Democ			0.003782	0.006688	−0.01022	−0.01271
			(0.035375)	(0.02217)	(0.010535)	(0.010305)
GovStab			−0.00441	−0.00472	−0.00055	0.001141
			(0.004489)	(0.003901)	(0.006582)	(0.006406)
MilPol			−0.02573	−0.01888	0.016437	0.010876
			(0.020401)	(0.018143)	(0.011622)	(0.011341)
EthTen			−0.0525 ***	−0.03452 **	−0.01536 *	−0.01954 **
			(0.017399)	(0.015495)	(0.008519)	(0.008333)
Constant	0.222869	0.261323	−0.03684	−0.13927	0.255052	0.290645
	(0.105432)	(0.101237)	(0.213568)	(0.15359)	(0.111614)	(0.106625)
R^2	0.82	0.87	0.95	0.97	0.85	0.89
Chi-Sq	15.26		11.41		13.51	
Prob. N Chi-sq.	0.123		0.3264		0.226	

Significance codes: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Notes

1 The aftermath of the 2008 financial crisis has spurred a proliferation of empirical studies on this subject, particularly in light of the significant shifts observed in global external debt dynamics (Chakrabarti and Zeaiter 2014).

2 No thorough management of the risks involved with the lending 'obsession' among international banks in advanced economies until Mexico's unilateral default on its external debt in August 1982 (Stambuli 1998).

3 As Christofides et al. (2005) point out, the Fund has, in cases such as the Mexican crisis of 1994–1995, helped countries avert a costly default on their sovereign debt.

4 The weighted average of a country's currency in relation to an index or basket of other major currencies.

5 The appendix includes Descriptive statistics and list of countries.

6 For detailed analysis on free and doubtful variable selection, see Chakrabarti and Zeaiter (2014).

7 Also, we restrict the number of explanatory variables included in any regression to be 8 or less, as implied by Levine and Renelt (1992).

8 See Levine and Renelt (1992) for information on potential econometric issues with the specification relating to the selection of *Z*-variables, such as multicollinearity. We follow their approach, before implementing the EBA: we do not include more than 3 free variables (*X*), we only include one; we cap the total number of regressors by the size of the pool of doubtful variables, *Z*, from which a subset is selected for each regression run; and we drop any *Q*-variable that is found to actually measure the same attribute as a *Z*-variable.

References

Abosedra, Salah, and Ali Fakih. 2017. Assessing the Role of Remittances and Financial Deepening in Growth: The Experience of Lebanon. *Global Economy Journal* 17: 1–17. [CrossRef]

Afonso, Antonio, Pedro Gomes, and Philip Rother. 2010. *What Hides Behind Sovereign Debt Rating?* European Central Bank Working Paper. Frankfurt: European Central Bank.

Al Fawwaz, Torki Mejhim. 2016. Determinants of External Debt in Jordan: An Empirical study (1990–2014). *International Business Research* 9: 116. [CrossRef]

Aylward, Lynn, and Rupert Thorne. 1998. Countries' repayment performance vis-à-vis IMF. *IMF Staff Papers* 45: 595–619. [CrossRef]

Bai, Yan, Seon Tae Kim, and Gabriel Mihalache. 2015. *The Maturity and Payment Schedule of Sovereign Debt*. New York: National Bureau of Economic Research. [CrossRef]

Balkan, Erol. 1992. Political instability, country risk and probability of default. *Applied Economics* 24: 999–1008. [CrossRef]

Bandiera, Luca, Jesus Crespo Cuaresma, and Gallina Andronova Vincelette. 2010. *Unpleasant Surprises: Sovereign Default Determinants and Prospects*. Washington, DC: The World Bank, Poverty Reduction and Economic Management Network, Economic Policy and Debt Department.

Berg, Andrew, and Jeffrey Sachs. 1988. The debt crisis: Structural explanations of country performance. *Journal of Development Economics* 29: 271–306. [CrossRef]

Berg, Tobias, and Daniel Streitz. 2016. Determinants of the size of the sovereign Credit default swap market. *The Journal of Fixed Income* 25: 58–73. [CrossRef]

Bird, Graham, and Dane Rowlands. 2001. IMF lending: How is it affected by economic, political, and institutional factors? *Journal of Policy Reform* 4: 243–70. [CrossRef]
Bitar, Nicholas, Hussein Zeaiter, and Avik Chakrabarti. 2018. Were Reinhart and Rogoff Right? *International Review of Economics and Finance* 58: 614–20. [CrossRef]
Boughton, James M. 2000. From Suez to Tequila: The IMF as crisis manager. *The Economic Journal* 110: 273–91. [CrossRef]
Callier, Philippe. 1985. Further results on countries debt service performance: The relevance of structural factors. *Weltwirtschaftlishes Archive* 121: 385–92.
Carlos, Santos. 2011. The Euro Sovereign Debt Crisis, Determinants of Default Probabilities and Implied Ratings in the CDS Market: An Econometric Analysis Munich Personal RePEc Archive. Available online: https://mpra.ub.uni-muenchen.de/31341/ (accessed on 1 December 2023).
Catao, Luis, and Bennett Sutton. 2002. *Sovereign Defaults: The Role of Volatility*. IMF Working Papers, No. 149. Washington, DC: IMF.
Celasun, Oya, and Philipp Harms. 2010. Financial deregulation, private foreign borrowing and the risk of sovereign default: A political–economic analysis. *Frontiers in Finance and Economic* 7: 82–100.
Chakrabarti, Avik, and Hussein Zeaiter. 2014. The determinants of sovereign default: A sensitivity analysis. *International Review of Economics & Finance* 33: 300–18.
Christofides, Charalambos, Atish R. Ghosh, Uma Ramakrishnan, Alun H. Thomas, Laura Papi, Juan Zalduendo, and Juan I. Kim. 2005. The design of IMF-supported programs. In *The Design of IMF-Supported Programs*. Washington, DC: International Monetary Fund.
Chronopoulos, Dimitris K., George Dotsis, and Nikolaos T. Milonas. 2019. International evidence on the determinants of domestic Sovereign Debt Bank holdings. *Journal of Financial Services Research* 58: 143–60. [CrossRef]
Citron, Joel-Tomas, and Gerald Nickelsburg. 1987. Country risk and political instability. *Journal of Development Economics* 25: 385–92. [CrossRef]
Cline, William R. 1984. *International Debt: Systematic Risk and Policy Response*. Washington, DC: Institute of International Economics.
Cooley, Thomas F., and Stephen F. LeRoy. 1981. Identification and estimation of money demand. *American Economic Review* 71: 825–44.
Das, Ramesh Chandra. 2023. *Growth and Developmental Aspects of Credit Allocation: An Inquiry for Leading Countries and the Indian States*. Bingley: Emerald Publishing Limited.
Das, Ramesh Chandra, and Jagabandhu Mandal. 2022. Long-Run Associations and Short-Run Dynamics Between Corruption and Inflation: Examining Social Unsustainability for the Panel of Countries. *International Journal of Social Ecology and Sustainable Development (IJSESD)* 13: 1–16. [CrossRef]
Detragiache, Enrica, and Antonio Spilimbergo. 2001. *Crisis and Liquidity: Evidence and Interpretation*. IMF Working Paper, No. 02. Washington, DC: IMF.
Dibeh, Ghassan, Ali Fakih, and Walid Marrouch. 2018. Decision to Emigrate Amongst the Youth in Lebanon. *International Migration* 56: 5–22. [CrossRef]
Díaz-Cassou, Javier, Aitor Erce-Domínguez, and Juan J. V. Zamora. 2008. *The Role of the IMF in Recent Sovereign Debt Restructurings: Implications for the Policy of Lending into Arrears*. Documentos Ocasionales-Banco de España. Washington, DC: IMF, pp. 1–39.
Do, Quy-Toan, and Andrei A. Levchenko. 2007. Comparative Advantage, Demand for External Finance, and Financial Development. *Journal of Financial Economics* 86: 796–834. [CrossRef]
Edwards, Sebastian. 1984. LDC foreign borrowing and default risk: An empirical investigation. *American Economic Review* 74: 726–34.
El Ghonemy, M. Riad. 1998. *Affluence and Poverty in the Middle East*. London: Psychology Press.
Elmore, C., and G. McKenzie. 1992. *Predicting LDC Debt Arrears*. Southampton: University of Southampton.
El-Said, Hamed, and Jane Harrigan. 2014. Economic reform, social welfare, and instability: Jordan, Egypt, Morocco, and Tunisia, 1983–2004. *The Middle East Journal* 68: 99–121. [CrossRef]
Euh, Yoon-Dae. 1979. *Commercial Banks and the Credit Worthiness of Less Developed Countries*. Ann Arbor: UMI Research Press, p. 11.
Feder, Greshon, and Lily Uy. 1985. The determinants of international creditworthiness and their implications. *Journal of Policy Modeling* 7: 133–56. [CrossRef]
Feder, Gershon, Richard Just, and Knud Ross. 1981. Projecting debt-servicing capacity of developing countries. *Journal of Quantitative and Financial Analysis* 16: 651–69. [CrossRef]
Frank, Charles R., and William R. Cline. 1971. Measurement of debt servicing capacity: An application of discriminant analysis. *Journal of International Economics* 1: 327–44. [CrossRef]
Gartner, Manfred, Bjorn Griesbach, and Florian Jung. 2011. Pigs or lambs? The European sovereign debt crisis and the role of rating agencies. *International Advances in Economic Research* 17: 288–99. [CrossRef]
Georgievska, A., L. Georgievska, A. Stojanovi, and Natasa Todorovic. 2008. Sovereign rescheduling probabilities in emerging markets: A comparison with credit rating agencies' ratings. *Journal of Applied Statistics* 35: 1031–51. [CrossRef]
Ghulam, Yaseen, and Benedict Saunby. 2023. Does increase in defence spending lead to more risk of sovereign debt defaults? *Defence and Peace Economics* 1: 1–19. [CrossRef]
Gokmenoglu, Korhan K., and Rabiatul Adawiyah Mohamed Rafik. 2018. Determinants of external Debt: The case of Malaysia. In *Springer Proceedings in Business and Economics*. Berlin and Heidelberg: Springer, pp. 16–33.
Goldstein, Morris. 2003. Debt Sustainability, Brazil, and the IMF. Available online: https://ssrn.com/abstract=384022 (accessed on 1 January 2024). [CrossRef]

González-Fernández, Marcos, and Carmen González-Velasco. 2018a. Bond Yields, Sovereign Risk and Maturity Structure. *Open Access Journal of Risk Management* 6: 109. [CrossRef]
González-Fernández, Marcos, and Carmen González-Velasco. 2018b. What drives sovereign debt maturity in European countries? *Panoeconomicus* 65: 137–61. [CrossRef]
Guzman, Martin, and D. Heymann. 2016. The IMF debt sustainability analysis: Issues and problems. *Journal of Globalization and Development* 6: 387–404. [CrossRef]
Haan, Sturm. 2000. No Need to Run Millions of Regressions. *SSRN Journal*.
Haidar, Jamal. 2011. Haidar, Jamal. 2011. Currency Valuation and Purchasing Power Parity. *World Economics* 12: 1–12.
Haidar, Jamal. 2012. Sovereign Credit Risk in the Euro Zone. *World Economics* 13: 123–36. [CrossRef]
Hajivassiliou, Vassilis. 1987. The external debt repayments problems of LDC's. *An Econometric Model Based on Panel Data* 36: 205–30. [CrossRef]
Hajivassiliou, Vassilis. 1989. *Do the Secondary Markets Believe in Life after Debt?* Policy Research Working Paper Series, No. 252; Washington, DC: World Bank.
Hajivassiliou, Vassilis. 1994. A simulation estimation analysis of the external debt crises of developing countries. *Journal of Applied Econometrics* 9: 109–31. [CrossRef]
Haque, Nadeem, Manmohan Kumar, Nelson Mark, and Donald Mathiesonm. 1996. The economic content of indicators of developing country creditworthiness. *IMF Staff Papers* 43: 688–724. [CrossRef]
Herrera, Ana Maria, M. B. Karaki, and Sandeep Kumar Rangaraju. 2019. Oil price shocks and US economic activity. *Energy Policy* 129: 89–99. [CrossRef]
Hilscher, Jens, and Yves Nosbusch. 2010. Determinants of sovereign risk: Macroeconomic fundamentals and the pricing of sovereign debt. *Review of Finance* 14: 235–62. [CrossRef]
Hwang, Insang, and Eric C. Wang. 2004. Does openness to trade affect total factor productivity growth? Evidence from 45 Japanese manufacturing industries. *Journal of Economic Research* 9: 147–73.
IMF. 2017. *IMF Annual Report 2017: Promoting Inclusive Growth*. Available online: https://www.imf.org/external/pubs/ft/ar/2017/eng/index.htm (accessed on 10 January 2024).
IMF. 1984. *International Financial Statistics*. Yearbook. Washington, DC: IMF.
IMF. 2022. *Fund Policy on Lending into Arrears to Private Creditors—Further Consideration of the Good Faith Criterion*. Washington, DC: International Monetary Fund.
IMF. n.d. IMF at a Glance. Retrieved 3 June 2024. Available online: https://www.imf.org/en/About/Factsheets/IMF-at-a-Glance (accessed on 10 November 2023).
International Country Risk Guide (ICRG). n.d. Political Risk Indices. Available online: http://www.prsgroup.com/icrg.aspx (accessed on 10 November 2023).
Jorra, Markus. 2012. The effect of IMF lending on the probability of sovereign debt crises. *Journal of International Money and Finance* 31: 709–25. [CrossRef]
Kadiric, Samir. 2022. The determinants of sovereign risk premiums in the UK and the European government bond market: The impact of Brexit. *International Economics and Economic Policy* 19: 267–98. [CrossRef]
Karagol, Erdal, and Selami Sezgin. 2004. Do defense expenditures increase debt rescheduling in Turkey? probit model approach. *Defense and Peace Economics* 15: 471–80. [CrossRef]
Karayalcin, Ayse, and Tugrul Temel. 1988. *Debt Services Capacity of Developing Countries and the Case of Turkey*. The Central Bank of Turkey (Discussion Paper No. 8810). Ankara: The Central Bank of Turkey.
Kışla, Gul H., Muradoglu Gulnur, and A. Özlem Önder. 2022. Spillovers from one country's sovereign debt to CDS (credit default swap) spreads of others during the European crisis: A spatial approach. *Journal of Asset Management* 23: 277. [CrossRef]
Kohlscheen, Emanuel. 2010. Sovereign risk: Constitutions rule. *Oxford Economic Papers* 62: 62–85. [CrossRef]
Kruger, Mark, and Miguel Messmacher. 2004. *Sovereign Debt Defaults and Financing Needs*. IMF Economic Papers, No. 53. Washington, DC: IMF.
Lau, Evan, and Alvina Lee. 2016. Determinants of external debt in Thailand and the Philippines. Available online: https://econpapers.repec.org/RePEc:eco:journ1:2016-04-89 (accessed on 5 November 2023).
Leamer, Edward E. 1983. Let's take the con out of econometrics. *American Economic Review* 73: 31–43.
Lee, Seund Jung. 1991. Ability and willingness to service debt as explanation for commercial and official rescheduling cases. *Journal of Banking and Finance* 15: 5–27. [CrossRef]
Lee, Seung Jung. 2009. How information quality of macro aggregates affects sovereign risk: An empirical investigation. *Review of International Economics* 17: 510–32. [CrossRef]
Levine, Ross, and David Renelt. 1992. A sensitivity analysis of cross-country growth regressions. *American Economic Review* 82: 942–63.
Li, Carmen. 1992. Latin America: A case for debt relief and foreign aid? *Journal of International Development* 4: 217–31. [CrossRef]
Maddah, Lina, Josep-Maria Arauzo-Carod, and Fernando A. López. 2023. Detection of geographical clustering: Cultural and creative industries in Barcelona. *European Planning Studies* 31: 554–75. [CrossRef]
Maltritz, Dominic, and Alexander Molchanov. 2014. Country credit risk determinants with model uncertainty. *International Review of Economics and Finance* 29: 224–34. [CrossRef]
Marashaden, Omar. 1997. A logit model to predict debt rescheduling by less developed countries. *Asian Economies* 26: 25–34.

McFadden, Daniel, R. Eckaus, G. Feder, A. V. Hajivassiliou, and S. O'Connell. 1985. Is there life after debt? An econometric analysis of the creditworthiness of developing countries. In *International Debt and the Developing Countries*. Edited by G. W. Smith and J. T. Cuddington. Washington, DC: World Bank.
Minier. 2005. Nonlinearities and Robustness in Growth Regressions. *SSRN Journal*. [CrossRef]
Oatley, Thomas. 2002. *Commercial Banks and the International Monetary Fund: An Empirical Analysis*. Chapel Hill: University of North Carolina at Chapel Hill.
Oatley, Thomas, and Jason Yackee. 2000. *Political Determinants of IMF Balance of Payments Lending: The Curse of Carabosse?* Chapel Hill: University of North Carolina at Chapel Hill.
Ojeda-Joya, Jair, and Jose E. Gómez-González. 2012. *The Term-Structure of Sovereign Default Risk in Colombia and Its Determinants*. Bogotá: Banco de la Republica de Colombia.
Panizza, Ugo, Federico Strurzenegger, and Jeromin Zettelmeyer. 2009. The economic and law of sovereign debt and default. *Journal of Economic Literature* 3: 651–98. [CrossRef]
Peter, Marcel. 2002. *Estimating Default Probabilities of Emerging Market Sovereigns: A New Look at-So-New Literature*. HEI Working Paper, No. 6. Norwalk: HEI.
Qian, Zongxin, and Qian Luo. 2015. Regime-Dependent determinants of China's sovereign credit default swap spread. *Emerging Markets Finance and Trade* 52: 10–21. [CrossRef]
Rahnama-Moghadam, Mashaalah. 1995. Debt rescheduling in less developed countries: World or regional crisis. *Journal of Developing Areas* 30: 11–22.
Rivoli, Pietra, and Thomas Brewer. 1997. Political instability and country risk. *Global Finance Journal* 8: 309–21. [CrossRef]
Saini, Krishan G., and Philip S. Bates. 1984. A survey of the quantitative approaches to country risk analysis. *Journal of Banking and Finance* 8: 341–56. [CrossRef]
Sargen, Nicholas. 1977. *Economic Indicators and Country Risk Appraisal*. Economic Review of the Federal Reserve Bank of San Francisco. San Francisco: Federal Reserve Bank of San Francisco, pp. 19–35.
Semik, Sofia, and Lilli Zimmermann. 2021. Determinants of substantial public debt reductions in Central and Eastern European Countries. *Empirica* 49: 53–70. [CrossRef]
Shadlen, Ken. 2006. Debt, Finance, and the IMF: Three Decades of Debt Crises in Latin America. *South America, Central America and the Caribbean*, 8–12.
Sherry, Hassan. 2017. *Debunking the Myth of a Changing IMF: Unpacking Conditionality in the Arab Region Post-Uprisings*. Beirut: Arab NGO Network for Development (ANND).
Snider, Lewis. 1990. The political performance of third world governments and debt crisis. *The American Political Science Review* 84: 1263–80. [CrossRef]
Solberg, Ronald. 1988. *Sovereign Rescheduling: Risk and Portfolio Management*. London: Unwin Hyman, pp. 9–21.
Soudis, Dimitrios. 2016. Determinants of Sovereign Bonds Ratings: A Robustness Analysis. *Bulletin of Economic Research* 2: 164–77. [CrossRef]
Stamatopoulos, Theodoros V., Stavros Arvanitis, and Dimitris Terzakis. 2016. The risk of the sovereign debt default: The Eurozone crisis 2008–2013. *Applied Economics* 49: 3782–96. [CrossRef]
Stambuli, P. Kalogna. 1998. Causes and consequences of the 1982 world debt crisis. *Predoctoral Research Paper Department of Economics University of Surrey Guildford* 3: 1–35.
Stefanidis, Georgios. 2023. IMF lending in Sovereign Default. *Macroeconomic Dynamics* 28: 1–35. [CrossRef]
Taffler, R. J., and B. Abassi. 1984. A model for predicting debt-servicing problems in developing countries. *Royal Statistical Society* 147: 541–68. [CrossRef]
Thacker, Strom. 1999. The high politics of IMF lending. *World Politics* 52: 38–75. [CrossRef]
Wells, Robin. 1993. Tolerance of arrearages: How IMF loan policy can affect debt reduction. *The American Economic Review* 83: 621–33.
Zeaiter, Hussein. 2015a. Debt Arrears as a Signal of Sovereign Default. *The Journal of Developing Areas* 2: 127–36. [CrossRef]
Zeaiter, Hussein. 2015b. Sovereign Debt Defaults: Evidence from Developing Countries. *Journal of Economic Research* 20: 199–230.
Zeaiter, Hussein, and Raed El-Khalil. 2016. Extreme bounds of sovereign defaults: Evidence from the MENA region. *International Review of Economics & Finance* 41: 391–410.