Problematic Public Debt in Jordan

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Abstract: - Current research aims to highlight the impact of public debt on the Jordanian economy exploring whether public debt is problematic for the Jordanian economy. For this purpose, a systematic review is conducted based on the previous relevant articles selected from the SCOPUS database. Based on the process of classification, selection, and eligibility process of thirty-one articles are finally included as the leading articles being reviewed by the current research. This review helped generate an opinion about the impact of public debt (PD) on economic growth (EG) in light of previous literature and then discussing these findings in the context of the Jordanian economy highlighted the impact of Jordanian public debt. The findings indicate that although there are contrary views reported in the literature about the relationship of public debt with different economic factors and especially economic growth, the context of Jordan's public debt is problematic for the Jordanian economy. The current study has significant implications for government officials and policymakers so that they can plan accordingly keeping in mind the negative impact of public debt.

Key-Words: - Problematic, Public debt, Jordanian economy, Jordan, economic growth, Systematic Review

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1 Introduction

The SDGs ("sustainable development goals") proposed by the United Nations also include the achievement of higher economic growth before 2030, [1]. While on the other hand, the emergence of the fourth industrial revolution in the world has significantly influenced the countries' economic structures, compelling them to make huge investments in machine learning, human capital, artificial intelligence, and technology development. This has become the fact of recent scenarios, that countries could not achieve the goal of economic development unless they invest in these key areas. A lack of focus on such key areas results in investments being made in typical production methods, leading to the countries' stagnant economic growth, [2]. According to [3], it is western governments are encouraging AI and machine learning investment, setting up educational initiatives, and engaging in R&D to boost economic growth.

Another key fact is the requirement for a substantial amount of financing. Therefore, most of the countries having lower amounts of investments from local or cross-border trades mostly require public borrowings for sustaining their economic growth and development, [4]. On the other side, the countries being hit by natural catastrophes require a huge amount of funds kept as reserves to cope with emergency situations. Hence, taxation is considered one of the significant sources of funding to support uncertain economic situations, [5], otherwise, economies are hit severely by such levels of uncertainties as [6], [7], [8], [9]. Taxation is among the dominating sources of raising funds for meeting government expenses but in most economies, especially developing ones; governments are unable to raise sufficient funds through taxation. Therefore, public debt is considered by under-developed economies to finance their expenses and development projects of the economy in case they lack sufficient funds, [4]. Moreover, taxation is also a less popular means among stakeholders due to the excess burden on the public by a reduction in their purchasing power and enhanced cost of living, [10]. Previous literature reports both; the positive and the negative impacts of public debt on economies varying significantly according to the purpose and its amount. As [11] says, the debt-to-GDP ratio shows how probable it is for the nation to make good on its debt obligations. Investors typically demand a higher interest rate when debt reaches a threshold. The country's bonds may have a worse credit rating if it continues to spend. This shows the likelihood that the nation will not pay its debts in full and may default. When interest rates climb, it costs more money for a nation to refinance its current debt. Over time, income must be allocated more toward paying down debt and less toward state offerings/services.

[12] argued that the debt-to-GDP ratio must be at least 0.9 while the economy would still hold the potential for growth having a debt threshold lower than this. On the other hand, if the amount of public debt exceeds this threshold, it starts hurting the economy. Such adverse effects are widely reported in the literature of developing economies where the threshold level of debt is found to be at 88.2% on average, [9]. Hence, economic development indicates positive signs of debt levels lower than the threshold level. In contrast, economic growth indicates declining trends when the debt-to-GDP ratio exceeds a certain threshold level.

Therefore, the current research mainly focuses on highlighting the literary consensus on the contribution of public debt towards Jordanian economic development through a systematic review. In light of the findings of previous studies published from 2018 to 2021; the current research aims to indicate the threshold level applicable to the Jordanian economy. Moreover, the study aims to find generalized findings about the impact of PD on countries' economic growth and development.

1.1 Systematic Review

The systematic review aims to identify, accumulate and assess all handy quantitative information gathered from previous studies. The focus of the current systematic review is to accumulate reliable information from reliable articles relevant to the particular subject matter under study. Public debt (PD) becomes a critical and vital need for economies facing a lack of funds, investments, and savings for their growth and development. Therefore, the current study aims to find out a common threshold level of debt that can be applicable to all economies and then indicate the threshold level of Jordanian PD to find out whether it is problematic for the Jordanian economy or not. The systematic review helps find out the consensus about the impact of variables under study so that policymakers can also think and design their policies accordingly. The gathered information from the review of previous relevant literature is coded so that findings can be interpreted meaningfully and the gap prevailing in the previous literature could be filled effectively.

2 Method

2.1 Resources; Classification, Selection, and Eligibility

For gathering reliable quality information, the articles should be chosen from trustworthy database sources, hence the SCOPUS database is employed by the current research because the publications of this database are considered reliable and follow higher quality standards. Moreover, the database also contains sufficient journal articles effectively available for the period under study. The time span for the study is 2018 to 2021 so that the latest trends about the influence of PD can be captured.

The initial stage for conducting the systematic review is classifying and selecting articles according to the scope of the study. For this purpose, the researcher developed a search string in December 2021 on the basis of specific keywords associated with PD in relation to economic growth. The search string used in the current study is reported in Table 1. On the basis of this search string, the database (SCOPUS) gathered almost 928 articles.

Table 1. The Search-String of Current Research (Adapted from [13])

Name of Database	Search-String
SCOPUS	"title-abs-key ((“public debt” or “public fund” or “government debt”) and (“national income” or “economic growth” or “GDP”) and ((limit-to (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020) OR LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018)) AND ((LIMIT-TO (PUBSTAGE, “FINAL”)) AND (LIMIT-TO (DOCTYPE, “RE”) OR LIMIT-TO (DOCTYPE, “ART”)) AND (LIMIT-TO(SRCTYPE, “J”)) AND (LIMIT-TO(LANGUAGE, “ENGLISH”))”

After the accomplishment of the initial stage of the classification of articles on the basis of the developed search string, the collected articles were gone through the screening process on the basis of defined exclusion and inclusion criteria. These criteria result in the exclusion of the relevant articles for enhancing the reliability of the findings.

Only particular articles are retained that fulfill the inclusion criteria which include publication stage, year of publication, the type of source and document, and the language. Therefore, based on these criteria the journal articles published during the years 2018 to 2021 (in the final stage), in the English language are included. After such screening and exclusion of the articles on the basis of defined criteria, the final number of articles included for review is 119 articles. The five defined criteria for current research are reported in the table below.

Table 2. The Criteria for Inclusion and Exclusion of Articles for Current Research

Criterion	Eligibility for inclusion	Exclusion criteria
Language	English	Other than English
Document Type	Article	Conference papers, editorials, short surveys, conference reviews, book chapters, business articles, books, reviews, and erratum.
Source Type	Journals	Book series, books, trade publications, and conference proceedings
Publication stage	Final	Articles in press
Year	2017-2021	Before 2018

Further, the selection of articles is not finalized on the basis of screening only rather the eligibility assessment is also done so the selected 119 articles are also assessed on the basis of their titles, the main theme and content of the articles, and their abstracts. Thus, the articles elaborating on the association of PD with economic growth are finally selected. Hence 21 articles are selected finally for the systematic review as they are found according to the objectives of current research. The whole procedure elaborated above is indicated in the following figure.

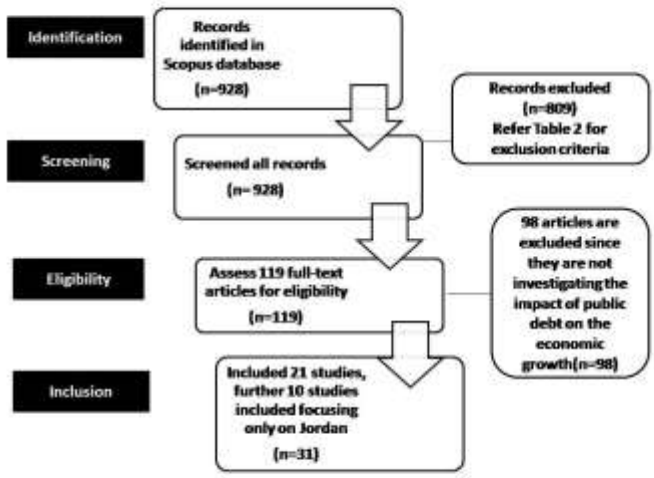

Fig. 1: The Process of Articles Selection (Adopted from [14])

2.2 Abstraction of Data and Analysis

After having all the above-discussed selection criteria, 10 further articles are included which are just focusing on the relationship between PD and economic growth in Jordan only. These articles are selected randomly from different journals based on the criteria; journal articles published in English between the years 2017 to 2021, indicate the relationship between PD and economic growth in Jordan. So finally a total of 31 articles have become part of the study.

The selected 31 articles are further analyzed quantitatively by tabulating their findings into the main themes of the articles and then their sub-themes. The two mainly focused themes employed for these articles are linear; indicating the linear association between PD and economic growth, and non-linear; indicating a non-linear association between economic growth and PD. These two main themes indicate the major findings of all the selected 31 articles of current research. The main themes are further divided into sub-themes like three sub-themes are developed for the linear theme including significantly negative, significantly positive, or insignificant relationships between the variables under study. While there are six sub-themes developed for the non-linear theme indicating different threshold levels of the debt-to-GDP ratio. These six sub-themes include; no non-linear association coded as “0”, debt to GDP threshold level <20% coded as “1”, threshold level between 21% and 50% coded as 2, threshold level between 51% and 70% coded as 3, threshold level between 71% and 90% coded as 4, threshold level beyond 90% coded as 5. The next section incorporates the findings of current research.

3 Results

Out of the finally selected 31 articles, 16 have employed the time series analysis, while the other 15 articles have employed the panel data analysis. Most of the articles using time series analysis have employed ARDL ("Autoregressive Distributed Lag Model"), [15], [16], [17]. However, the employed methodology has no association with the results of the study as the results indicated a negative impact of PD on the economic growth of South Africa and Sri Lanka, [16], [17], while a positive association is found in Malaysia, despite having the same methodology of ARDL model, [14]. The other reasons for the difference in effect include the level of debt and the stability of economies. Studies employing panel data analysis have incorporated different panel methods including the fixed effect, [18], panel VAR, [19], SYS-GMM, [20], panel ARDL, [21], least square dummy variable, [20], and so on. Studies have employed varying methodologies due to the difference in years of analysis and the number of cross-sections for each study. Studies having time and cross sections less than 25 may employ the SYS-GMM approach while the others having time and cross sections more than 25 may apply fixed effects, pooled OLS, or random effects.

Most of the selected articles have focused on either high-income economies or mixed economies, while limited evidence is found in this selected literature, reporting the impact of PD on the economic growth of middle-income (lower-middle, upper-middle) economies and low-income economies, such as Jordan. Hence, having an investigation into the Jordanian economy contributes to filling this gap that should be further filled by researchers in the future. Moreover, this relationship must be highlighted in these kinds of economies because such economies mostly face issues of lack of capital accumulation. Hence, the lower levels of investments lead to the requirements of PD for transformation and grooming of their economic condition. Therefore, such economies require significant focus in this regard.

The assessment of the relationship under study based on the findings of selected 31 articles is tabulated according to the main themes and their sub-themes into two tables; one for all other selected articles and the other for Jordan only. These are summarized in Tables 3. and 4.

Table 3. Themes indicating the Relationship between PD and EG in Different economies

articles	**Year**	**Debt**	**Data**	**Method**	**Linear**			**Non-Linear**
					+ve	-ve	Insig.	0-5
[23]	2018	ED	TS	ARDL		*		
[17]	2019	ED	TS	VAR		*		
[16]	2019	DD	TS	ARDL	*			
[24]	2018	DD	TS	OLS,ARMA				5
[25]	2018	DD	TS	Dynamic OLS				0
[19]	2019	DD	PN	Panel VAR		*		
[26]	2018	DD	TS	ARDL		*		
[27]	2018	DD	TS	Undefined		*		
[28]	2020	DD	PN	Median Regression				2
[29]	2019	DD	TS	Regression with multiple TH				2, 5
[30]	2020	DD	PN	Autoregressive model		*		
[31]	2018	DD	PN	Panel ARDL			*	
[32]	2021	ED	PN	ARDL and Corelation				3
[33]	2019	DD	PN	Panel VAR				3
[34]	2019	DD	PN	Panel VAR			*	
[35]	2018	DD	PN	Fixed effect				3
[20]	2018	DD	PN	SYS-GMM				1,5
[9]	2018	DD	PN	PSTR				4,5
[36]	2017	DD & ED	PN	Trimmed and winsorised mean		*		
[37]	2017	DD	PN	Panel OLS		*		

DD=domestic debt, ED= external debt, TS= time series, PN= panel data, Insig= insignificant

Table 4. Themes indicating the Relationship between PD and EG in Jordan

articles	Year	Debt	Data	Method	Linear			Non-Linear
					+ve	-ve	Insig	0-5
[38]	2020	NPD, ED, DD	TS	SLR		*		
[39]	2019	PD	TS	MLR		*		
[40]	2021	ED	TS	Granger causality		*		
[41]	2020	PD	TS	OLS		*		
[42]	2019	ED	TS	SLR		*		
[43]	2018	ED	TS	MLR		*		
[44]	2019	PD	TS	SLR		*		
[45]	2019	PD	TS	SLR		*		
[46]	2020	PD	TS	DTS				4
[22]	2018	DD	TS	SLR		*		

NPD= net public debt, PD= public debt, DD=domestic debt, ED= external debt, TS= time series, PN= panel data, Insig= insignificant, SLR= simple linear regression, MLR=multiple linear regression, DTS= dynamic threshold structure

4 Discussion
The findings of the studies are divided into different categories according to the themes.

4.1 Linear Relationship
Among the selected 31 articles, 21 have investigated the linear relationship between the variables under study which is further categorized as an insignificant, negative, or positive relationship. A linear positive relationship indicates that the increasing level of debt results in the growth of the economy. It is a desired situation since the nation may expand public debt to achieve its economic goals, like improving infrastructure and investing in human capital, entrepreneurship, innovative ventures, and other developments, [13]. This relationship is always preferred by all economies as governments enhance their PD level to fulfill their public objectives and make investments in infrastructure, human capital, etc. On the other hand, the negative linear association indicates the vice versa effect which results in declining the competence of the economy and declining levels of investors' interest in making investments in that economy. Most of the articles under study have indicated negative linear relationships including the 9 articles focusing on the Jordanian economy.

Hence, the findings indicate the negative impact of PD on EG in all other economies as well as in Jordan.

4.2 Non-Linear Relationship
When the PD has a two-way effect on economic growth i.e. both in positive and negative directions, it indicates the presence of a non-linear relationship. Previous literature has also indicated the threshold effect, [21], [22], and the PSTR (panel smooth transition regression), [9]. The assessment of non-linear relationships indicates two main aspects, the presence or absence of non-linear relationships. The findings indicate the presence of non-linear relationships is mostly indicated in other economies but rare evidence is found in the context of Jordan.

As indicated, when the threshold level exceeds 90%, the economic growth is affected negatively by the PD and findings of selected studies indicate that in some economies, the threshold level is found to be exceeding 90%. It means these economies are immensely indebted that this debt level is halting their economic growth. Moreover, one of the studies conducted for Jordan has also indicated the presence of non-linear relationships and the threshold level is at 70-90% category.

Hence, it indicates that the debt level of the Jordanian economy has increased to an extent that contributes negatively to its economic growth. [23] states that simple regression studies confirm that public debt has a detrimental effect on economic growth in Jordan, during which it was discovered that a rise in the ratio of public debt to GDP of roughly 9.4% lowers GDP growth by 1%. In other words, if somehow the public debt ratio rises from 80% to 89.4%, the GDP growth rate will fall from 3% to 2%.

Based on all these findings it is indicated that the PD in Jordan is problematic for the Jordanian economy and the increasing level of PD is having a negative impact on the economic growth of Jordan.

5 Conclusion

The aim of the current research is to focus on the impact of PD on economic growth, especially in the context of Jordan. The systematic review is conducted in a way that initially the consensus of findings is assessed from all other economies and then includes the articles from Jordan only. This assessment has highlighted the impact of PD on EG in general and then in the context of Jordan also. The findings indicate that PD has a negative impact on economic growth and when the level of PD exceeds a certain threshold level i.e. 90% then it becomes problematic for the economic growth of the country. Similar findings are reported for the relationship in the Jordanian economy. The level of PD is found to be increasing hence having a negative impact on the economic growth of Jordan. These findings have significant implications for the policymaker of the Jordanian economy as they should design their policies that the level of PD should be within a certain threshold level because, within this threshold level, the PD shares a positive association with economic growth and contributes positively in the form of investments by the government for the economic development of the country.

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Conflict of Interest

The author have no conflict of interest to declare.