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Article

How does public debt affect economic growth? A systematic review

Cogent Business & Management

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Taylor & Francis Group

Suggested Citation: Nur Hayati Abd Rahman; Shafinar Ismail; Abdul Rahim Ridzuan (2019) : How does public debt affect economic growth? A systematic review, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 6, pp. 1-16, <https://doi.org/10.1080/23311975.2019.1701339>

This Version is available at:

<https://hdl.handle.net/10419/244769>

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To cite this article: Nur Hayati Abd Rahman, Shafinar Ismail & Abdul Rahim Ridzuan | (2019) How does public debt affect economic growth? A systematic review, Cogent Business & Management, 6:1, 1701339, DOI: [10.1080/23311975.2019.1701339](https://doi.org/10.1080/23311975.2019.1701339)

To link to this article: <https://doi.org/10.1080/23311975.2019.1701339>



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Published online: 13 Dec 2019.



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BANKING & FINANCE | REVIEW ARTICLE

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Cogent Business & Management (2019), 6: 1701339



Received: 30 August 2019
Accepted: 19 November 2019
First Published: 09 December 2019

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Reviewing editor:
David McMillan, University of Stirling, UK

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BANKING & FINANCE | REVIEW ARTICLE

How does public debt affect economic growth? A systematic review

Nur Hayati Abd Rahman^{1*}, Shafinar Ismail¹ and Abdul Rahim Ridzuan¹

Abstract: The controversial findings by Reinhart and Rogoff have continuously generated debates on the threshold of debt towards GDP. Hence, the aim of this study is to examine whether there exists mutual consensus on the effects of public debt on the economic growth of a country or group of economies. A systematic review on related articles from SCOPUS database was conducted by adopting a standard procedure in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), namely identification, screening and eligibility. Thirty-three articles were chosen as the main articles to be reviewed. It was found that there is no mutual consensus on the relationship between public debt and economic growth. The relationship can be positive, negative or even non-linear. Besides, the 90% threshold as argued in the Reinhart-Rogoff hypothesis is also not applied across all countries. The findings may help governments and policymakers to design their fiscal policy by investigating how existing debts affect the growth level. Future studies should investigate the effects of public debt on the economic growth in the upper-middle-income economies. These economies were least studied in this context.

Subjects: Economics and Development; Macroeconomics; Development Economics; Political Economy; Public Finance

Keywords: Public debt; economic growth; systematic review; PRISMA

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PUBLIC INTEREST STATEMENT

This paper examines how public debt affects the economic growth of the selected countries. The investigations were conducted by analyzing past literature that focus on the same subject matter, but with different countries, income size, debt level and methods of analyses. This study is important because we want to prove that a 90% debt threshold as discussed previously by Reinhart and Rogoff are not the same for all countries in the world. In this regard, Reinhart and Rogoff argued that the public debt can give positive effects of the economic growth if the debt level is not exceeding 90% of the GDP. However, our findings suggest that the threshold is not identical for all countries. Instead, it varies depending on the countries' income, macroeconomic stability, institutional quality and so on.

1. Introduction

The sustainable development goals (SDGs) by the United Nations outlined 17 goals that need to be achieved by 193 countries before 2030. One of the goals (goal no. 8) is to achieve higher economic growth (United Nations, 2018). Since the world economic structure is changing towards the fourth industrial revolution, the countries have been obliged to invest in critical areas such as artificial intelligence, machine learning, technological development and human capital. Without these important investments, the economic growth will be stagnant and the countries will become less competitive with investments being channeled into traditional production methods (World Economic Forum, 2017).

Investing in the critical areas specified above requires a massive amount of funds. Therefore, countries that are receiving fewer investments through domestic or international trades might require public borrowings to support their economic development. Moreover, some countries like Indonesia and Japan which are regularly affected with a series of natural catastrophes necessitates them to put aside a relevant amount of fund for emergencies. Even though funds can be collected from domestic and foreign aids, it might not be sufficient if the impacts are disastrous. Hence, in this case, taxation is regarded as one of the potential source of funds to finance emergencies (Ono & Uchida, 2018). However, since taxation creates distortionary effects on economic growth, it is less popular among the policymakers (Barro, 1979). Therefore, public debt is the only feasible option to finance government expenditures and other development projects if the country lacks funds. This argument is following the Ricardian invariance theorem, in which taxation gives excess burden to the public by increasing the cost of living and reducing the purchasing power of people (Barro, 1979).

Based on previous literature, public debt can either positively or negatively affect the whole economy. The effect depends on the amount of debt and its purposes. Usually, the amount of debt to be borrowed is measured using the debt-to-GDP ratio. To the contrary, Reinhart, Reinhart and Rogoff (2015) claimed that the ratio should be at most 90%. The economy would still be able to grow with the debt threshold of less than 90%. Beyond the threshold, public debt will cause an adverse effect on the economy. It is proven empirically by looking at the case of developing countries, in which the debt threshold was found at 88.2% (Karadam 2018). The economy is able to grow positively when the debt level is below the threshold. However, when public debt to GDP exceeds the threshold, the growth start to decline.

Therefore, the main objective of this paper is to prove whether there is a mutual consensus on the effects of public debt on the economic growth of a country or group of economies. Is 90% debt threshold is applicable to all countries? If not, what is the right threshold for each country or group of economies? Besides, the other objective is to simplify the previous findings by assessing the major consensus on how public debt affects economic growth. In deriving the answers, a systematic review was conducted on selected articles that discussed the relationship between public debt and economic growth. The findings from these articles were grouped into two main themes in order to answer the objective.

1.1. The need for a systematic review

A systematic review is aimed to recognize, combine and evaluate all accessible quantitative data obtained from previous literature. This systematic review is focused on reliable articles that are related to this subject matter. Public debt is crucial for economic growth and development especially for countries with a lack of savings and investments. However, if not managed properly, public debt could also harm the economy. Therefore, this paper is aimed to address the gap whether there is a specific threshold for the public debt which can be applied to all economies. Besides, the other objective is to simplify the previous findings by assessing the major consensus on how public debt affects economic growth. The reason is to help the government and policy-makers to carefully design their fiscal policy initiatives by considering the impact on high public debt to the economic growth of their countries.

2. Materials and methods

In ensuring the quality of the review, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was used as publication standard due to its ability to classify previous literature in a specific database based on certain requirements. The information which is gathered from the review is then coded in order to help in the interpretation of the findings and to address the potential gaps that exist in the current literature.

2.1. Resources

The gathering of information from selected journal articles should commence from a credible source of database. Hence, the Scopus database was employed since the journal articles published in this database are of high quality and reliable. Besides, Scopus contains a large number of journal articles related to public debt successfully published from 2017 to 2019. These 3 years were chosen because we want to investigate the latest trends on how public debt affect the economic growth.

2.2. Identification, screening and eligibility

The first step of the review is to identify and select articles suitable for the scope of this study from the Scopus database. To do so, a search string was developed in April 2019 based on certain keywords related to public debt and economic growth. Table 1 lists the search string used in this study. Based on the search string and the keywords, Scopus database managed to gather 1,046 articles.

Once the identification stage is successfully completed, the populated articles were subjected to screening based on the inclusion and exclusion criteria. Non-relevant articles are to be excluded from the study to ensure the reliability of the outcome. Only articles suitable for the inclusion criteria were retained. The five inclusion criteria include the year, document type, publication stage, source type and language. For this study, only journal articles published in English (in the final stage) from 2017 to 2019 were included. Other articles that were published in other types of documents in other languages prior to 2017 were excluded from this study. The final count upon completing screening was 223 articles from 1,046 selected articles. The five criteria are tabulated in Table 2.

However, screening alone is not sufficient without the eligibility assessment. Each of the 223 articles was assessed based on the titles, abstracts and the main contents. Hence, the articles explaining the relationship between public debt and economic growth were selected. As a result, 33 articles were selected for the systematic review since they suited to the objective of this study. The whole process of the selection of 33 articles is illustrated in Figure 1. This diagram is adopted from Moher et al. (2009).

2.3. Data abstraction and analysis

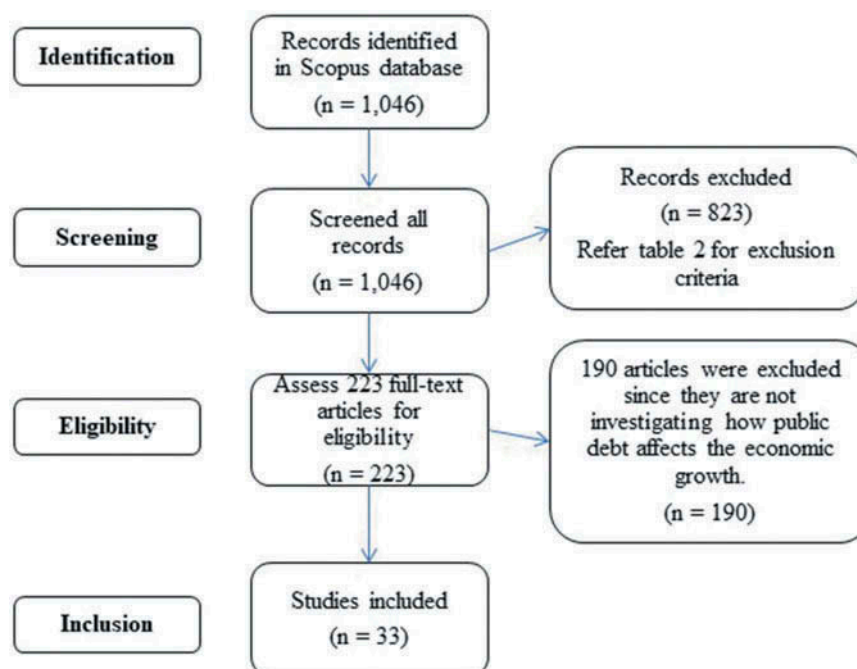
The quantitative review was conducted by analyzing all 33 articles that have been selected. The analysis was conducted by tabulating the findings into main themes and sub-themes. The two main themes were employed are linear and non-linear. These two themes represent the main findings in all

Table 1. The search string

Database	Search String
Scopus	TITLE-ABS-KEY (("public debt" OR "government debt") AND ("economic growth" OR "GDP" OR "national income")) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (PUBYEAR, 2019) OR LIMIT-TO (PUBYEAR, 2018) OR LIMIT-TO (PUBYEAR, 2017)) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (SRCTYPE, "j"))

Table 2. The inclusion and exclusion criteria		
Criteria	Eligibility	Exclusion
Year	2017–2019	Before 2017
Document type	Article	Book chapter, review, conference paper, book, editorial, business article, conference review, erratum and short survey
Publication stage	Final	Article in press
Source type	Journals	Books, conference proceedings, book series and trade publications
Language	English	Non-English

Figure 1. The process of selecting articles.



33 articles, in which the relationship between public debt and economic growth can be either be linearly¹ or non-linearly² related. Within the linear theme, three sub-themes were developed. They represent the linear relationship in the forms of a positive, negative or insignificant linear relationship. Meanwhile, the non-linear relationship was further divided into six sub-themes based on a debt-to-GDP threshold. The sub-themes were coded with (0) indicating no non-linear relationship, (1) debt-to-GDP threshold less than 20%, (2) threshold of 21% to 50%, (3) threshold 51% to 70%, (4) threshold 71% to 90% and (5) debt-to-GDP threshold exceeding 90%. The findings were discussed in the next section of this paper.

3. Results

Out of 33 articles, 15 of them were using time series analysis, while the remaining 18 articles were employing panel data analysis. In the time series analysis, the Autoregressive Distributed Lag Model (ARDL) is widely used by previous researchers (Burhanudin, Muda, Nathan, & Arshad, 2017; Maitra, 2019; Mhlab & Phiri, 2019). However, the use of the same method does not guarantee the same results. For instance, there is a negative relationship found between public debt and economic growth in Sri Lanka and South Africa (Maitra, 2019; Mhlab & Phiri, 2019). By employing

the same ARDL method, the results were different in the case of Malaysia (Burhanudin et al., 2017). One of the reasons might be due to the level of debt a country possess, together with different stability in macroeconomic conditions. From the perspective of the panel data analysis, various methods have been used in previous empirical studies such as panel ordinary least square (Butkus & Seputiene, 2018), panel VAR (Liaqat, 2019), panel ARDL (Gómez-Puig and Sosvilla-Rivero 2018a), fixed effects (Arčabić et al. 2018; Ahlborn & Schweickert, 2016), GMM (Arčabić et al. 2018; Butkus & Seputiene, 2018), least square dummy variable (Butkus & Seputiene, 2018) and so on. Different studies employed different methods based on the number of cross sections and year for each analysis. For example, any studies that have cross sections and time less than 25 should employ GMM, while studies with more than 25 cross sections and time should use pooled ordinary least square (POLS), fixed effects (FE) or random effects (RE).

Besides, most of the articles were focusing on the mixed economies and high-income economies. Based on Table 3, very limited research on the relationship between public debt and economic growth have been conducted specifically on the low-income economies, lower-middle-income economies and upper-middle-income economies. Hence, there is room to investigate these economies since some of the countries within these economies are facing a problem of low capital accumulation. Given the lower level of investments, public debt is highly sought after to transform the economic condition and groom it to a higher level. Therefore, attention should be given to low, lower-middle-income and middle-income economies as they might be facing difficulties in uplifting the economic growth without the assistance from public debt.

During the assessment of the relationship between public debt and economic growth, the findings from the 33 articles were tabulated based on two main themes and nine sub-themes. Table 4 summarizes the findings. In both lower-middle-income-economies, public debt in Sri Lanka and Nigeria were found to give adverse effect to the economic growth of these countries.

3.1. Discussion

Generally, the findings were divided into two main themes, namely linear and non-linear relationship. From the main themes, nine sub-themes were developed.

3.1.1. Linear negative relationship

Overall, 24 of 33 articles which were investigated revealed a linear relationship between public debt and economic growth. The linear relationship can be further divided into a positive, negative or insignificant relationship. Linear positive relationship means that the economy is able to grow as the debt level increases. It is a preferred condition since the country is able to increase public debt to meet their national objectives such as enhancing their infrastructures, investing in human capital and so on. On the other hand, a linear negative relationship indicates that the economic growth is declining when the country increases its debt level. If it happens, many projects might need to be postponed, as additional debts will only lead to the slowdown of the economic growth.

Table 3. Types of countries under investigation

No.	Types of Economies	Samples	No. of Articles
1	Low income economies		0
2	Lower middle income economies	Sri Lanka, Nigeria	2
3	Upper middle income economies	South Africa, Malaysia, Lebanon	3
4	High-income economies (including European Union countries)	Spain, Greece, EU, UK, Israel, Japan, US,	13
5	Mixed economies	Developing, emerging, advanced economies OECD & non-OECD countries, MENA countries	15

Table 4. The main themes and sub-themes for the relationship between public debt and economic growth

Author/Year	Scope of Study	Year	Type of Debt	Type of Data*	Method	Linear*			Non-Linear Threshold*
						POS	NEG	INS	
LOWER-MIDDLE-INCOME ECONOMIES									
(Maitra, 2019)	Sri Lanka	1977-2016	External debt	TS	Autoregressive Distributed Lag Model (ARDL)		x		
(Onafowora & Owoye, 2017)	Nigeria	1970-2014	External debt	TS	VAR, impulse response & structural variance decomposition analysis		x		
UPPER-MIDDLE-INCOME ECONOMIES									
(Mhlab & Phiri, 2019)	South Africa	2002-2016	Domestic debt	TS	ARDL			x	
(Burhanudin et al., 2017)	Malaysia	1970-2015	Domestic debt	TS	ARDL	x			
(Taher, 2017)	Lebanon	1989-2014	Domestic debt	TS	OLS, Autoregressive moving average (ARMA)				(5)
HIGH-INCOME ECONOMIES									
(Esteve & Tamarit, 2018)	Spain	1851-2013	Domestic debt	TS	Dynamic Ordinary Least Square (DOLS)				(0)
(Liaqat, 2019)	39 high income countries	1980-2017	Domestic debt	PN	Panel VAR		x		
(De Vita et al., 2018)	10 EMU, US, UK and Japan	1970-2014	Domestic debt	TS	Granger causality & ARDL cointegration		x		
(Shahar, 2018a)	Israel	1983-2013	Domestic debt	TS	Undefined				
(Amann & Middleditch, 2017)	United Kingdom	1995-2013	Domestic debt	TS	Granger causality & cointegration tests		x		
(Lee et al., 2017)	Advanced economies	1946-2009	Domestic debt	PN	Median regression				(2)

(Continued)

Table 4. (Continued)

Author/Year	Scope of Study	Year	Type of Debt	Type of Data*	Method	Linear*			Non-Linear Threshold*
						POS	NEG	INS	
EUROPEAN UNION COUNTRIES									
(Pegkas, 2019)	Greece	1970–2016	Domestic debt	TS	Regression model with multiple thresholds				(2) & (5)
(Snieska & Burksaitiene, 2018)	EU countries	2004–2016	Domestic debt	PN	Least square and autoregressive AR(p) model	x			
(Pegkas, 2018)	Greece	1970–2016	Domestic debt	TS	ARDL and VAR				(5)
(Gómez-Puig & Sosvilla-Rivero, 2018b)	Euro area countries	1961–2015	Domestic debt	PN	Panel ARDL	x			
(Kempa & Khan, 2017)	11 major Euro zone countries	1991–2014	Domestic debt	PN	Panel VAR			x	
(Gómez-Puig & Sosvilla-Rivero, 2017b)	11 Euro countries	1961–2013	Domestic debt	TS	2-stage least square (2SLS)	x	x		
(Gómez-Puig & Sosvilla-Rivero, 2017a)	11 Euro countries	1961–2015	Domestic debt	TS	2-stage least square (2SLS)				(2) & (3)
MIXED ECONOMIES									
(Shkalnyk & Koilo, 2018)	Ukraine and 10 emerging economies	2006–2016	External debt	PN	ADL model and correlation analysis				(3)
(Lim, 2019)	41 advanced and emerging economies	1952–2016	Domestic debt	PN	Panel VAR		x		
(Intartagila, Antoniades, & Bhattacharyya, 2018)	48 developing and developed countries	1961–2015	Domestic debt	PN	Panel VAR		x		

(Continued)

Table 4. (Continued)

Author/Year	Scope of Study	Year	Type of Debt	Type of Data*	Method	Linear*			Non-Linear Threshold* (0)–(5)
						POS	NEG	INS	
(Arčabić, Tica, Lee, & Sonora, 2018)	OECD and non-OECD countries	1960–2009	Domestic debt	PN	Panel VAR, fixed effect, fixed effect with instrumental variables, system GMM			x	(0)
(Ahlborn & Schweickert, 2016)	111 developing and developed economies	1971–2010	Domestic debt	PN	Fixed effect & 2SLS				(3)
(Butkus & Seputiene, 2018)	152 countries	1996–2016	Domestic debt	PN	System GMM, POLS and LSDV				(1) & (5)
(Karadam, 2018)	135 countries	1970–2012	Domestic debt	PN	Panel smooth transition regression (PSTR)				(4) & (5)
(Ramos-Herrera & Sosvilla-Rivera, 2017)	115 developed and developing economies	1970–2013	Domestic and external debt	PN	Mean, median, winsorized mean & trimmed mean		x		
(Chudik et al., 2017)	40 countries	1965–2010	Domestic debt	PN	Panel ARDL		x		
(Ewaída, 2017)	Highly indebted countries in Euro and non-Euro zone	1993–2013	Domestic debt	PN	POLS		x		
(Awdeh & Hamadi, 2017)	18 MENA countries	2002–2016	Domestic debt	TS	Cointegration and VECM		x		
(Kim et al., 2017)	77 countries	1990–2014	Domestic debt	PN	POLS, fixed effects and system GMM				(0)
(Chiu & Lee, 2017)	61 countries	1985–2009	Domestic debt	PN	Panel smooth transition regression (PSTR)	x	x		

(Continued)

Table 4. (Continued)

Author/Year	Scope of Study	Year	Type of Debt	Type of Data*	Method	Linear*			Non-Linear Threshold*
						POS	NEG	INS	
(Brida et al., 2017)	16 countries in Euro and non-Euro	1977–2015	Domestic debt	TS	Minimal spanning tree & hierarchical tree				(0)–(5) (4)
(Chen et al., 2016)	65 developing and developed economies	1991–2014	Domestic debt	PN	Panel smooth transition regression (PSTR)				(2)
						6	20	3	

***Codes:**

- PNPanel data
- TSTime series
- POSPositive
- NEGNegative
- INSInsignificant
- (0)No threshold
- (1)<20%
- (2)21%–50%
- (3)51%–70%
- (4)71%–90%
- (5)>90%

As a result, the country might not be able to remain competitive since investors would no longer interested to invest in the country.

Regardless of the type of public debt, the majority of the articles that discussed the relationship between public debt and economic growth from 2017 to 2019 demonstrated a significant negative relationship between the two series. This relationship is applicable to all types of economies, regardless whether they are lower-middle-income, upper-middle-income or high-income economies. By referring to Table 4, this relationship exists in highly indebted countries such as Sri Lanka and Nigeria (lower-middle-income economies), South Africa (upper-middle-income economies) as well as high-income economies such as Japan, United States, United Kingdom and European countries.

The negative relationship is consistent with the conventional view of debt (Elmendorf & Gregory Mankiw, 1998), in which there will be a crowding-out effect on the private investment when the economy is facing high debt problem (Bahal, Raissi, & Tulin, 2018; Chudik, Mohaddes, Hashem Pesaran, & Raissi, 2017; De Vita, Trachanas, & Luo, 2018; Kim, Ha, & Kim, 2017; Shahor, 2018). The effect is valid for the long-run. It happens when the interest rate starts to increase as the government borrow more funds in the loanable funds market. An increase in the interest rate will demotivate investors from investing in a country. If this condition persists, the economic growth will face an adverse effect in the long-run.

Lower economic growth that is caused by high public debt can also be explained through the overlapping generations model (Blanchard, 1985; Diamond, 1965; Modigliani, 1961), where the increase in the public debt will be partly used up national savings that were meant for the future generation. A reduction in the level of national savings will force the interest rate to increase, thus demotivate incoming investors. Lower investments will result in lower capital accumulation, leading to lower economic growth.

Apart from that, the linear negative relationship can also be explained theoretically using the debt overhang (Krugman, 1988). Debt overhang happens when the highly indebted countries have a lower present value of the national income relative to their total accumulated debt (Burhanudin et al., 2017; Ewaida, 2017; Snieska & Burksaitiene, 2018). One possible reason is the inefficiency of the country to manage the borrowed funds (Shkolnyk & Koilo, 2018). Instead of channeling the borrowed funds to productive purposes, the governments choose to use the funds to pay previous debts, or to finance operating expenditures which are normally non-productive in nature. Consequently, these funds which are not being used for productive purposes will not create significant value added to the economy, thus contributing to lower economic growth.

3.1.2. *Linear positive relationship*

On the other hand, public debt can also contribute to higher economic growth, for instance, Malaysia (Burhanudin et al., 2017) and European countries (Gómez-Puig & Sosvilla-Rivero, 2017a). Theoretically, it can be explained by using the conventional view of debt by Elmendorf and Gregory Mankiw (1998). Even though this view has a negative perspective on public debt to economic growth, it also has a positive standpoint on the two series. An increase in public debt will help to stimulate aggregate demand and output, among others, via the employment generation and productive investment. However, this relationship is only applicable in the short-run. If it continues to increase in the long run, the effect can switch to becoming negative. Therefore, it is important for the government to be alert on the debt threshold that can switch the debt's effect from positive to negative. The findings on the threshold are further discussed in the next section.

3.1.3. *Non-linear relationship*

In addition, when public debt can affect economic growth in both positive and negative directions, the non-linear relationship appears. The previous literature captured the threshold effect by including the square term of debt in the growth equation (Ahlborn & Schweickert, 2016; Butkus

& Seputiene, 2018) or by conducting the panel smooth transition regression (Chen, Yao, Hu, & Lin, 2016; Karadam, 2018).

When testing the existence of the non-linear relationship, two main findings emerged. The non-linear relationship may or may not exist. The non-linear relationship exists in the European countries (Brida, Gómez, & Seijas, 2017; Gómez-Puig & Sosvilla-Rivero, 2017b; Pegkas, 2018, 2019) and emerging economies (Shkolnyk & Koilo, 2018). In contrast, it is also found that non-linear relationship does not exist in Spain (Esteve & Tamarit, 2018) and other countries (Arčabić et al. 2018; Kim et al., 2017). One possible reason for the contradictory findings is the years under investigation. Two of the three studies which revealed the non-existence of non-linear relationship were conducted in the early years of 1851 in Spain (Esteve & Tamarit, 2018) and 1960 onwards in Organization for Economic Cooperation and Development (OECD) and non-OECD countries (Arčabić et al. 2018). The economic condition then is totally different from the scenario in the last thirty to fifty years.

The Reinhart-Rogoff hypothesis argued that public debt can positively affect the economic growth if the debt to GDP level is lesser than 90% (Reinhart, Reinhart, & Rogoff, 2015). Once the debt-to-GDP is beyond the threshold, the effect changes to negative. Empirically, the evidence from previous literature demonstrated that the debt-to-GDP threshold for all countries is not necessarily 90%. The threshold can range from 15% (Butkus & Seputiene, 2018) up to 2000% (Pegkas, 2018).

The studies that found the threshold to be 90% and above were conducted in Lebanon (Taher, 2017), Israel (Shahor, 2018) and Greece (Pegkas, 2018, 2019). The debt level that is beyond 90% of the GDP indicates that the countries are among the highly indebted countries. In this case, these countries may not be able to pay back the debt within the stipulated time period. In order to limit the default risk, the risk premium is added in the interest rate on public debt, leading to the high cost of borrowings. Indirectly, it distorts the economic growth once the threshold is met through the crowd-out effects on private investments.

There were also studies that found the threshold to be lower than 50%. Among them were the European countries (Gómez-Puig & Sosvilla-Rivero, 2017b) and advanced economies such as Belgium, Canada, United Kingdom and United States (Lee, Park, Seo, & Shin, 2017). For these high-performing economies, the debt threshold is lower due to the lack of investments since the investors fear that the governments will impose higher taxes to finance the debt. As a result, the investors would prefer to channel their investments into other developing economies that costs lower to run a business.

Based on the above findings, it cannot be concluded that the debt-to-GDP threshold for the advanced economies is below 50% while for the highly indebted countries is 90% and above. Besides, the findings from Reinhart & Rogoff (2010) may not be true for all economies since the threshold reported by other researchers varied. Hence, no mutual consensus on the right threshold for each country or group of economies. The threshold for each country depends on their current economic situation, the period of studies, the method and the proxies used to test the relationship. Countries such as Lebanon and Greece that have a debt threshold more than 90% should start in reducing their public debt level in order to ensure greater economic prosperity in the future. Further increase in public debt will not only burden the current generation due to an increase in taxation and reduce in investments. It will also create a burden to the future generation who will have to bear higher costs. In their cases, the government should not impose higher taxes to generate more income since the countries are having a debt crisis. Instead, in order to stimulate higher economic growth, they should slowly reduce inappropriate expenditures and attract more investors to invest in the countries.

In addition, for high-income economies, even though the threshold is in between 21% and 50% (Lee et al., 2017), they should carefully design their fiscal policy by limiting the amount of debt as previous researches found linear negative relationship between public debt and economic growth (Amann &

Middleditch, 2017; De Vita et al., 2018; Liaqat, 2019). In this regard, they might have to impose higher taxes to generate more revenues since public debt is not a good choice for their economic growth.

Thus, the policy recommendation to achieve higher economic growth for a country should not be applied to the other country or group of economies (Balaguer-Coll, Prior, & Tortosa-Ausina, 2016).

4. Conclusion

This paper intends to examine whether there exists a mutual consensus on the effects of public debt on the economic growth of a country or group of economies. In reference to the 33 selected articles, 20 were found to report a negative relationship between public debt and economic growth. However, the findings also indicated that the relationship could turn out to be positive if the borrowings were used for productive purposes. At the same time, both positive and negative relationship can also occur if a threshold for the debt-to-GDP exists. Therefore, there is no mutual consensus on the relationship between public debt and economic growth. The relationship can be positive, negative or even non-linear. Even if a country was found to have a positive relationship between public debt and economic growth, the government should still be cautious in designing their fiscal policy by investigating the best level of debt to be borrowed from time to time. The economic growth could turn out to be negative if the funds are not being managed properly. Due to the above findings, different countries should design their own fiscal initiatives to combat higher public debt and stimulate economic growth. Imposing higher taxes to replace debt might not be a good move for all countries especially for low and middle-income economies. The governments can embark with other fiscal initiatives such as providing tax incentives, with an aim to boost the private sector's contribution as an engine of growth.

5. Policy suggestions

The findings from the current systematic review have led to several suggestions for policymakers. Firstly, policymakers should not set the debt-to-GDP threshold at 90% as proposed by Reinhart and Rogoff without prior investigation. The government should carefully analyze the economic condition of the country by considering the purposes of the borrowings, the sources of the borrowings along with the ability of the country to pay back. Since each country has its own uniqueness and capabilities, a standard threshold cannot be applied to all.

A country with high debt but with low income should consider to reduce their debt level up to a condition in which the national income is sufficient to pay back the debt. However, in case if the country needs an additional source of financing, increase in tax rate to replace the debt level is not a good move. Instead, the government should create an investment friendly environment to attract more investments in supporting the national income.

On the other hand, a high-income country with a high debt level might consider to increase taxes to replace the debt if the debt level is unmanageable. Nevertheless, the government should implement progressive tax system, in which the imposition of tax is only for individuals and firms who earned higher income. Or else, it will cause disruption to the entire economy due to lower purchasing power and lower private consumptions.

6. Recommendation for future research

It is proposed that the future research should be conducted on how the public debt affects the economic growth of the low, lower-middle-income and upper-middle-income economies. This proposal was made because these economies are suffering from low capital accumulation. Due to the lack of information on these economies, more attention needs to be channeled towards them since they require a massive amount of fund to groom their economies and uplift their economic status to a higher level.

Funding

The authors received no direct funding for this research.

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Cover Image

Source: Author.

Citation information

Cite this article as: How does public debt affect economic growth? A systematic review, Nur Hayati Abd Rahman, Shafinar Ismail & Abdul Rahim Ridzuan, *Cogent Business & Management* (2019), 6: 1701339.

Notes

1. Linear relationship means public debt affects economic growth in a positive or negative way.
2. Non-linear relationship indicates the existence of inverted U-curve, in which public debt helps the economy to grow at the first place. Once the debt threshold is reached, further increase in the debt level will slow down the economic growth.

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