

Analysing sustainability based relationship between debt and growth in South-Asian economies and their impact on textile industry: a case for developing economies

DOI: 10.35530/IT.073.06.202187

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ABSTRACT – REZUMAT

Analysing sustainability based relationship between debt and growth in South-Asian economies and their impact on textile industry: a case for developing economies

This research aims to quantify the linear and non-linear relationship between debt and economic growth in selected developing economies. Based on theoretical arguments and annual data considerations in modelling the debt and growth as a complex relationship across countries, our panel methodology is based on the fixed effect technique. Our core finding indicates that government debt lowers the GDP in selected developing economies. We also find that the urban population is a key factor that improves economic growth. Moreover, government expenditures on health and industrialization are helpful to enhance the growth of the economies. Our study also suggests increased exports, industrial development, and investment in education for growth. We also propose certain supporting strategies to reduce the adverse effects of debt-growth relation in the considered economies. Given developing economies' status, the prerequisite for broad, dynamic and rule-based debt policy is of paramount importance, ensuring the factual choices among numerous possibilities, addressing financial constraints and ensuring intergenerational welfare impact.

Keywords: debt, industrialization, economic growth, developing economies

Analiza relației sustenabile dintre datoriile și creșterea economică în țările din Asia de Sud și impactul acestora asupra industriei textile: Un studiu de caz pentru economiile în curs de dezvoltare

Acest studiu de cercetare își propune să cuantifice relația liniară și neliniară dintre datoriile și creșterea economică în cazul economiilor în curs de dezvoltare selectate. Pe baza argumentelor teoretice și a considerațiilor de date anuale în modelarea datoriei și a creșterii economice ca o relație complexă între țări, metodologia de cercetare de tip panel aplicată în acest studiu, se bazează pe tehnica cu efect fix. Constatarea noastră de bază indică faptul că datoria guvernamentală contribuie la scăderea PIB-ului în anumite economii în curs de dezvoltare. De asemenea, constatăm că populația urbană este un factor cheie care îmbunătățește creșterea economică. În plus, cheltuielile guvernamentale pentru sănătate și industrializare sunt utile pentru a spori creșterea economică. Studiul nostru sugerează, de asemenea, creșterea exporturilor, dezvoltarea industrială și investițiile în educație pentru a sprijini creșterea economică. De asemenea, propunem anumite strategii de sprijin pentru reducerea efectelor adverse ale relației de creștere a datoriilor în economiile luate în considerare. Având în vedere statutul economiilor în curs de dezvoltare, condiția prealabilă pentru o politică de îndatorare amplă, dinamică și bazată pe reguli este de o importanță capitală, asigurând alegerile factive dintre numeroasele posibilități, abordând constrângerile financiare și asigurând impactul asupra bunăstării intergeneraționale.

Cuvinte cheie: datorie, industrializare, creștere economică, economii în curs de dezvoltare, Produsul intern brut (PIB)

INTRODUCTION

Debt is a double-edged sword. Used pragmatically and in fairness, it recovers welfare. However, if it is used improvidently and in excess, it has adverse effects on the economy. At the micro level, too much debt indicates bankruptcy and financial devastation. At the macro level, high debt recompenses the administration's ability to deliver indispensable services to the public.

The interface of debt and economic growth is multifaceted as it has effects on economic growth dynamics and the return growth rates affect the debt size.

High rates of economic growth make enable borrowing and the burden of debt. The sustainability of debt is depending on the capability of improving revenue which tends to decrease in a recession. The defaulting of the private sector affects economic movements and tends to enhance debt when private debt is backed by flexible fiscal policy [1].

The link between public debt and economic growth has in recent times seemed emerged again as a strongly debated topic in the academic world and among policymakers. Preliminary from the influential involvement of Reinhart and Rogoff [2, 3] much of the

works has well-thought-out this link, in recognizing potential non-linearities and explaining their damaging and fundamental influences on growth [4]. The debt–growth nexus can be analysed within a standard neo-classical growth model. Certain notice of the concerned issue, studies done across countries are diligently associated with this work [5, 6].

Industrialization, the result of the industrial revolution that caused structural changes, has regularly increased production levels and employment, promoting extraordinary income growth. So, consistent industrial sector development can be significant for sustainable development. It is required now in a good way in the growth and development literature that the growth of manufacturing output and the growth of GDP are strongly related to each other [7].

The effect of industrialization on economic development has been extensively studied. Entirely past development successes and catch-up since 1870 have been helping raise and gather wealth by investing in their industries [8]. It resulted in amplified capacity and varieties of manufactured goods due to increased employment and better living standard. In the industrialization process, Kaldor [9] suggests the industrial sector as the engine of growth, as it results in the highest potential productivity growth in this sector. This empowers the economy with accurate plans, by transforming sluggish retrieval into an economic recovery.

Education and health are thought foundations for the development of a society. Dissimilar from income, these sectors wholly promote the economy's prosperity. In this moving era, humans are thou of out as the actual capital of the economy and efficiency and healthy actual capital can serve excellently with competition and efficiency. To provide better living standards, investing in humans is needed in economies. Developing economies having inadequate human capital and with deficit financing by foreign aid, can make use of this foreign aid to control their capital deficiency.

High quality of institutions has been contested as an economic growth impetus by incentivizing economic happenings like consumption and investment, improving efficiency, and making the allocation of resources more proficient [10].

Above mentioned studies on the topic suggest how some factors affect economic growth in different countries. The research aims to analyse how Government debt affects the growth of the economy. The hypothesis is that public debt adversely affects economic growth in selected developing economies. The analysis covers the period from 2002 to 2018. However, we check the influence of government debt (considering gross public debt, even though the net debt would seem like a better measure of government indebtedness [6], government health expenditures, urban population and industrialization on economic growth by using the random effect technique in some selected developing countries in this research. This study appears to contribute to the existing literature in many ways. Firstly, here we

investigate how government debt which is an emerging issue for the development of the economy affects economic growth. Secondly, we incorporate domestic general government health expenditures, urban population and industrialization specifically in these selected economies. This research highlights the positive role of the urban population towards enhanced economic growth of these selected developing economies. Moreover, the study results are different from some of the previous studies due to variables, areas and applied methodology. Our study results highlight that, debt significantly affects the growth of selected developing economies.

Objectives of the study

This research investigates whether the relationship between public debt and economic growth is significantly negative or not. The study analyses the role of the urban population in some selected Asian countries. It examines the impact of government education expenditures and industrialization in India, Pakistan and Sri Lanka.

Organization of the study

The paper is organized as follows. After giving an introduction, the literature review is shown in the second section. The third section comprises a data source and the model specification along with the important variable discussion. The discussion of results and empirical analysis are presented in the fourth section. The concluding remarks are presented in the last section.

LITERATURE REVIEW

Much of the work has been done to seek out the link between debt and economic growth. However, an important review of some of the studies is presented here.

Many theoretic opinions provoke public debt and growth nexus in the long-run [11]. In standard overlapping generation models of growth, public debt makes lessens savings and accretion of capital, hence lowering economic growth [12–14]. In endogenous growth models, public debt generally affects long-run growth negatively [15, 16]. Additionally, high public debt bounds the proficiency of fruitful public spending on long-run growth [17], makes vagueness or potentials for future economic suppression [18] and could be linked with complex independent results [19] resulting in high rates of interest and private investment [20].

Non-linearities in the debt–growth nexus may rise too in case of high debt and as it could unswervingly affect investment, it will happen when investors have to pay tax on new projects for sharing debt burden [21, 22]; or else, as levels of debt levels increase regarding GDP, creditors would be demanded high rates of interest to make compensation of default risk and this influence would rise the cost of limiting investment and financing [23].

The debt-growth nexus is found to be negative but not statistically significant [24]. There is found a one-third effect of debt on growth due to accumulation of physical capital and a two-thirds effect on growth due to growth of factor productivity [25].

Debt and economic growth are associated even in the long-run, and they are positively related if the government obtains and uses the loans for the development of the economy sincerely instead of channelling the funds to get benefits personally [26]. Though debt affects the growth of the Nigerian economy positively in the short-run it depresses growth in the long-run [5].

Panizza and Presbitero [7] show a negative relationship between debt and growth in OECD countries. Moreover, Spulbar et al. [27] investigated the effect of tax revenue on GDP patterns for the European Union – 28 considering the period from 2005 to 2017.

Moreover, China is undoubtedly considered by dynamic changes. The critical economic incidents have a strong effect on this economy. Rahman [28] explains the causal relationship between health expenditures and education expenditures on GDP in Bangladesh from 1990 to 2009. It is concluded that health and education expenditures increase the growth of the country.

Kourtellos et al. [5] find that higher public debt tends to decrease growth for countries in the Low-Democracy regime by using a structural threshold regression method. Stylianou [29] finds no causality relationship between debt and growth in Greece. Anita et al. [30] indicate that debt decreases growth both in the short-run and long-run.

The debt-to-GDP ratio damages the growth of economies chiefly in high financial stress for European Monetary Union countries. It is also found that a high debt-to-GDP ratio hardly decreases growth in calm financial markets [31]. Teles and Mussolini [17] propose that the debt-to-GDP ratio influences fiscal policy negatively which as a result decrease growth. The results reveal a significant non-linear relationship between public debt and growth. Naeem et al. [32] also discussed the implications of CO₂ emission, global climate change and economic factors including household incomes and expenditures, which also have an impact on health. Mehdiabadi et al. [33] investigated the impact of industry 5.0 and also discussed global economic growth based on lower business costs.

Domestic debt is detrimental to the economy from the results of both short-run and long-run models. Contrarily, external debt is found to be beneficial in the short-run but has mixed effects found in the long-run. The debt service and inflation rate variables show a consistent negative relationship with GDP while the effect of the exchange rate is rather mixed. The exchange rate effect on the economy is based on the success or otherwise of government policy tools [34].

Isiksal [35] highlights that no economic growth can be achieved without industrialization in Nigeria. He finds

a positive link between both variables. Ndiaya and Lv. [36] work on the role of institutions in economic growth in Senegal from 1960 to 2017. The study results find that foreign direct investment and industrialization increase economic growth. Moreover, the inflation rate and foreign exchange decrease economic growth. Nguyen et al. [37] find that institutional quality enhances economic growth for emerging economies growth over the 2002–2015 period by using SGMM methods.

Lim [38] shows the link between debt and growth from a vantage point that takes care of the totality of private and public debt by using data from 41 countries from 1952 to 2016. The vector autoregression model and GMM are used in the study. The result finds a negative link between the rate of total debt accumulation and economic growth, with a one standard deviation innovation in the former leading to a 0.2 percentage point contraction in the latter.

Pegkas, Staikouras, and Tsamadias [39] also find a negative long-run effect of public debt on growth by using data from 12 eurozone countries from 1995 to 2016. Moreover, the results show that there is long-run unidirectional causality running from investment, trade openness, and human capital to growth and bidirectional causality between public debt and growth.

The above mention studies show the relationship between debt and growth and other explanatory variables in different areas with different methodologies.

DATA AND METHODOLOGY

Data sources

We employ a panel dataset covering some selected developing economies such as India, Indonesia, Malaysia, Pakistan, Philippines, Sri Lanka, Thailand, Jordan and Namibia from 2013 to 2018. Data has been drawn from the source of the World Development Indicators database. The dependent variable is computed as LGDP. The other independent variables are Debt to GDP ratio (Central Government debt), Log urban population, Government expenditures on health (percentage of GDP) and Industrialization (manufacturing value added \$ US). However, we know that growth is not exclusively the result of deb. Consequently, we incorporate numerous factors as control variables that might influence growth. For the analysis, we use the fixed effect technique to check the effect of explanatory variables on the dependent variable. We are using public debt as literature generally recognized a relationship between debt extended and low level of growth [40].

Model specification

The variables are gross domestic product (LGDP), log of urban population (LUBNP), Government expenditures on health (GHEXP) as a percentage of GDP) and Industrialization (manufacturing value added) financial.

$$LGDP_{it} = \beta_1 GDBT_{it} + \beta_2 LUBNP_{it} + \beta_3 GHEXP_{it} + \beta_4 INDS_{it} + u_{it} \quad (1)$$

The subscript i indicates each country and the subscript t describes each period in this empirical work. The term u_{it} represents the error term.

RESULT AND EMPIRICAL ANALYSIS

This section analyses the role of Government debt and other explanatory variables such as debt (% of GDP), urban population, government health expenditures and industrialization on gross in some selected Asian countries.

Descriptive statistics

The descriptive analysis of variables is shown in the above table. Large variations are found in GDP as it ranges from 10.4123 to 16.0181. The average debt of the selected countries is 53.17% percent from 2002 to 2018. Likewise, variations are observed in industrialization (manufacturing value added) from 9.16000 to 2.5388 percent. On average, government health expenditures are 3.0141 percent of GDP in selected developing countries (table 1).

Unit root test

In table 2, we have checked the existence of unit root in panel data. For this we have used different tests such as Levin, Lin & Chu, IP, Shin W-stat, ADF – Fisher Chi-square and PP – Fisher Chi-square. Test statistics of four methods used for LGDP, DEBT and INDS at level form are not significant which indicates the data is non-stationary at level form. However, all these variables are significant at 1st difference.

Moreover, the other variables like LUBNP and GHEXP are stationary at level.

Empirical results and interpretations

Table 3 reveals the fixed effects results and the dependent variable is log GDP. Hausman specification test (REM): this test is a common technique to make a comparison of fixed and random effects estimates of coefficients. To choose FEM or REM, we have used the Hausman test.

Probability of $\chi^2_2 = 0.9907$. The p-value by Hausman indicates is in favour of random effects.

The study results highlight a nonlinear association between Government debt and gross domestic product. Economic growth might be reduced by increasing government debt.

Government debt affects the growth of the economy. A high debt burden creates a lot of problems for the economies. The findings show that the coefficient of DBT is negative and significant. One unit increase in Government debt decreases GDP by 0.0004 percent. High debt is a burden for the general public and the economy. It hampers the growth of the economy. People are unable to avail finance and cannot make sure their resource allocation towards education and health. These results is in line with most of the past analysis done by Presbitero [40], Kourtellos et al. [5], Teles and Mussolini [17], Mencinger [32], Vanlaer et al. [41] and Alshyab [42].

The result shows a positive coefficient of URBNP. One percent increase in urban population increases the GDP by 0.3328 percent in selected developing economies. When a well-educated and employed population play a positive role in employment,

Table 1

SUMMARY STATISTICS					
Variables	Observation	Mean	Std. Dev	Min	Max
GDP	54	12.8392	1.5282	10.4123	16.0181
GDBT	54	53.167	17.1014	23.7479	84.2100
LUBNP	54	7.4171	0.7612	5.9998	8.6630
GHEXP	54	2.5388	3.4889	0.6984	26.2149
INDS	54	10.5735	0.7438	9.1600	11.6862

Table 2

RESULTS OF PANEL UNIT METHODS					
Variables	Probability	Levin, Lin & Chu t*	IP & Shin W-stat	ADF – Fisher Chi-square	PP – Fisher Chi-square
LGDP	At level	0.7388	0.8984	0.1725	0.0003
	At 1st difference	0.0000	0.0773	0.1731	0.0036
DEBT	At level	0.0011	0.5394	0.5705	0.5872
	At 1st difference	0.0000	0.0002	0.0034	0.0006
LUBNP	At level	0.0000	0.0000	0.0000	0.0000
GHEXP	At level	0.0000	0.0000	0.0395	0.0110
INDS	At level	0.0070	0.9795	0.9732	0.3505
	At 1st difference	0.0000	0.0000	0.0000	0.0000

Table 3

RANDOM EFFECT RESULTS	
Variables	Coefficients Standard Errors T-statistics
DEBT	-0.0004** 0.0002 (-1.65)
LUBNP	0.3328* 0.0845 (3.94)
GHEXP	0.0003 0.0003 (0.92)
INDS	0.8780* 0.0457 (19.20)
R-Square within	0.97
R-Square between	0.59
R-Square overall	0.59

improves investments, per capita income, growth and development.

The variable government health expenditure is found to be significantly positive (0.0003). These results show that spending on health tends to improve the GDP in selected developing countries during this time. This indicates that high human capital investments in these economies are connected with increasing growth. The results are in line with Rahman [28] which shows a positive link between health and education expenditures and the growth of the country.

Industrialization is most important for heavy industrial production, growth and development.

Industrialization increases gross domestic product. The result is statistically significant. The study result shows that a one percent increase in industrialization increases 0.8780 percent of GDP. The reason can be that industrialization enhances employment, income and economic growth. The result is consistent with Isiksal [35] and Ndiaya and Lv. [36].

CONCLUSION AND POLICY RECOMMENDATIONS

This research makes a significant contribution while discussing the relationship between public debt and long-run economic performance. The prevailing literature focuses on whether there exist nonlinear effects of public debt on growth. The findings show evidence for such nonlinearities.

The debt burden is a challenging issue in South Asian economies. The theories under discussion and work done empirically are incapable to find out the reasons for the influences of debt burden on economic growth. This study is a good contribution to examining the effect of government debt burden with industrialization on the gross domestic product by using 10 years of data in selected developing countries. Findings of the negative influence of government debt and gross domestic product are found by Presbitero [40], Kourtellos et al. [5], and Mencinger [32].

Government debt is a great hurdle for investment and human capital development and the growth of the economy. It decreases the chances of investment and saving. There is a dire need to control government debt in these selected developing economies. In these countries, there should be an inclusive set of policies to develop financial crisis know-how and intensity of this issue to lessen its burden on the economy. Moreover, institutional quality leads to improves growth and this is a good indicator of the growth and development of the economy. This institutional quality must be improved further.

The study concludes that more expenditure on health may increase human capital development and economic growth in developing economies so free-of-cost health facilities must provide to all segments of society. For this, institutions must play an important role. In addition, industrialization is contributing well towards growth. Moreover, more education of people must be ensured providing equal opportunities to males and females. In addition, Government must play a transparent and very effective role in lowering the debt burden by making regulations and reforms in the financial sector.

REFERENCES

- [1] Cecchetti, S, Mohanty, M., Zampolli, F., *The future of public debt*, In: Gokarn, S. (ed), Challenges to central banking in the context of the financial crisis, New Delhi: AcademicFoundation, 2011, 183–217
- [2] Reinhart, C., Rogoff, M., Kenneth, S., *Growth in a time of debt*, In: Am. Econ. Rev. Pap. Proc., 2010, 100, 2, 573–578
- [3] Reinhart, C., Rogoff, M., Kenneth, S., *Debt and growth revisited*, MPRA Paper 24376. University Library of Munich, Germany, 2010
- [4] Panizza, U., Presbitero, A.F., *Public debt and economic growth in advanced economies: A survey*, In: Swiss Journal of Economics and Statistics, 2013, 149, 175–204
- [5] Kourtellos, A., Stengos, T., Tan, Chih M., *The effect of public debt on growth in multiple regimes*, In: J. Macroecon., 2013, 38, 35–43
- [6] Panizza, U., Presbitero, A.F., *Public debt and economic growth in advanced economies: a survey*, In: Swiss J. Econ. Stat., 2013, 149, 2, 175–204

- [7] Pacheco Lopez, P., Thirwall, A.P., *A New interpretation of Kaldor's First Growth Law for Open Developing Economies*, University of Kent, School of Economics Discussion Paper, 2013, KDPE 1312
- [8] Szirmai, A., *Industrialization as an Engine of Growth in Developing Countries 1950-2005*, In: *Structural Change and Economic Dynamics*, 2012, 23, 406–420
- [9] Kaldor, N., *Strategic Factors in Economic Development*, Cornell University Press, Ithaca, NY, 1967
- [10] Park, D., Kwanho, S., *Economic Growth, Financial Development and Income Inequality*, In: *Asian Development Bank Economics Working paper series*, 2015, 441
- [11] Elmendorf, D.W., Mankiw, G.N., *Government debt*, In: Taylor, J.B., Woodford, M. (Eds.), *Handbook of Macroeconomics*, Elsevier, 1999, 25, 1615–1669
- [12] Modigliani, F., *Long-run implications of alternative fiscal policies and the burden of the national debt*, In: *Econ. J.*, 1961, 730–755
- [13] Diamond, P.A., *National debt in a neoclassical growth model*, In: *Am. Econ. Rev.*, 1965, 55, 5, 1126–1150
- [14] Blanchard, O.J., *Debt, deficits, and finite horizons*, In: *J. Polit. Econ.*, 1985, 93, 2, 223–247
- [15] Barro, R.J., *Government spending in a simple model of endogenous growth*, In: *J. Polit. Econ.*, 1990, 98, 5 pt 2, S103–S125
- [16] Saint-Paul, G., *Fiscal policy in an endogenous growth model*, In: *Q. J. Econ.*, 1992, 107, 4, 1243–1259
- [17] Teles, V.K., Mussolini, C.C., *Public debt and the limits of fiscal policy to increase economic growth*, In: *Eur. Econ. Rev.*, 2014, 66, 1–15
- [18] Cochrane, J.H., *Inflation and Debt*, In: *National Affairs*, 2011, 53, National Affairs, Inc. and the American Enterprise Institute, Available at: <https://www.nationalaffairs.com/publications/detail/inflation-and-debt>. [Accessed on September 2021]
- [19] Codogno, L., Favero, C., Missale, A., *Yield spreads on EMU government bonds*, In: *Econ. Policy*, 2003, 18, 37, 503–532
- [20] Laubach, T., *New evidence on the interest rate effects of budget deficits and debt*, In: *J. Eur. Econ. Assoc.*, 2009, 7, 4, 858–885
- [21] Krugman, P., *Financing vs. forgiving a debt overhang*, In: *Journal of Development Economics*, 1988, 29, 3, 253–268
- [22] Aguiar, M., Amador, M., Gopinath, G., *Investment cycles and sovereign debt overhang*, In: *Rev. Econ. Stud.*, 2009, 76, 1, 1–31
- [23] Greenlaw, D., Hamilton, J., Hooper, P., Mishkin, F.S., *Crunch time: fiscal crises and the role of monetary policy*, In: *Proceedings of the U.S. Monetary Policy Forum 2013*, 2013
- [24] Shuanglin, L., Kim, S., *Foreign debt and economic growth*, In: *Economics of Transition*, 2001, 9, 3, 635–655
- [25] Pattillo, C., Poirson, H., Ricci, L., *What are the Channels through Which External Debt Affects Growth?*, 2004, IMF Working Paper 04/15, Washington, D.C.: IMF, Available at: <http://www.imf.org/external/pubs/cat/longres.cfm?sk=17021.0> [Accessed on January 20, 2013]
- [26] Egbetunde, T., *Public Debt and economic growth in Nigeria: Evidence from Granger Causality*, In: *American Journal of Economics*, 2012, 2, 6, 101–106
- [27] Spulbar, C., Ehsanifar, M., Birau, R., Babaie, A., Doagă, D.I., *Advanced empirical research based on structural equation modeling (SEM) regarding the impact of tax revenue on GDP dynamics at EU-28 level*, In: *Scientific Annals of Economics and Business*, 2021, 68, 3, 285–307, <https://doi.org/10.47743/saeb-2021-0017>
- [28] Rahman, F., Rahman, N., *Effectiveness of Foreign Aid and Social-Economic Variables on HDI: A Comparative Study between Bangladesh and India*, In: *Journal of Business*, 2014, 35, 3
- [29] Stylianou, T., *Debt and economic growth: Is there any casual effect? An Empirical Analysis with Structural breaks and granger causality for Greece*, In: *Theoretical and applied Economics*, 2014, xxi, 1, 590, 51–62
- [30] Anita, C.C., Ana, A.B., Badurina, M.B.S., *Public debt and growth: Evidence from Central, Eastern and Southeastern European Countries*, In: *Zb.rad.Ekon.fak.Rij.*, 2014, 32, 1, 35–51
- [31] Proaño, C.R., Schoder, C., Semmler, W., *Financial stress, sovereign debt and economic activity in industrialized countries: Evidence from dynamic threshold regressions*, In: *Journal of International Money and Finance*, 2014, 45, 17–37, <https://doi.org/10.1016/j.jimonfin.2014.02.005>
- [32] Naeem, M.Z., Arshad, S., Birau, R., Spulbar, C., Ejaz, A., Hayat, M.A., Popescu, J., *Investigating the impact of CO2 emission and economic factors on infants health: a case study for Pakistan*, In: *Industria Textila*, 2021, 72, 1, 39–49, <http://doi.org/10.35530/IT.072.01.1784>
- [33] Mehdiabadi, A., Shahabi, V., Shamsinejad, S., Amiri, M., Spulbar, C., Birau, R., *Investigating Industry 5.0 and Its Impact on the Banking Industry: Requirements, Approaches and Communications*, In: *Applied Sciences*, 2022, 12, 10, 5126, <https://doi.org/10.3390/app12105126>
- [34] Ikudayise, A., Akin-Olagunju, U., Babatunde, A., Irhivben, B., Okoruwa, V., *Nigerian debt portfolio and its implication on economic growth*, In: *Journal of Economics and Sustainable Development*, 2015, 6, 18, 87–99
- [35] Isiksal, A.Z., Himeezie, O.J., *Impact of Industrialization in Nigeria*, In: *European Scientific Journal*, 2016, 12
- [36] Ndiaya, C., Ly, K., *Role of Industrialization on Economic growth: The Experience of Senegal (1960–2017)*, In: *American Journal of Industrial and Business Management*, 2018, 8, 2072–2085
- [37] Nguyen, C.P., Dinh, T.S., Nguyen, T., *Institutional Quality and Economic Growth: The Case of Emerging Economies*, In: *Theoretical Economics*, 2018, 8, 11, 1943–1956, <https://doi.org/10.4236/tel.2018.811127>
- [38] Lim, J.J., *Growth in the Shadow of Debt*, In: *Journal of Banking and Finance*, 2019, 103, 98–112

- [39] Pegkas, P., Staikouras, C., Tsamadias, C., *On the Determinants of Economic Growth: Empirical Evidence from the Eurozone Countries*, In: *International Area Studies Review*, 2020, 23, 2, 210–229
- [40] Presbitero, A.F., *Total Public Debt and Growth in Developing Countries*, In: *European Journal of Development Research* Forthcoming, 2012
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