



Debt Sustainability: Economic Growth is the Panacea

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Early development theory focused on the need for debt and foreign exchange, arguing that developing countries need external funds since they cannot generate adequate resources domestically to achieve economic growth to improve their livelihood.

The borrowing addiction has led to repayment difficulties opening up concerns for debt sustainability (see Box 1).

Therefore, the debt-growth nexus remains a widely discussed issue in the empirical literature. Mainly, Reinhart and Rogoff (2010) got colossal attention in this regard, which claimed that a debt to GDP ratio, which is higher than 90 %, negatively hurts economic growth. Though some research also challenges the Reinhart and Rogoff claim (2010).

This knowledge brief reviews the empirical studies on debt-growth nexus since 2010 to evaluate Reinhart and Rogoff (2010) claim that high debt to GDP ratio negatively impacts economic growth or vice versa. We shall also simulate the threshold level of economic growth for a sustainable debt to GDP ratio in Pakistan's case.

Box 1: What is Debt Sustainability?

The countries incur debt due to the shortage of local resources. In case of debt burden of country how much is too much depends on the debt sustainability of that country. When a country is able to meet all its payment obligations, current and future, without taking exceptional finances from the external resources without being default is known as debt sustainable country. The sustainability of the debt depends on the number of factors like the quality of institutions, debt management capacity and macroeconomic fundamentals, that is, economic growth.

1. DEBT AND ECONOMIC GROWTH: TWO DECADES OF STUDIES

The empirical literature can be divided into three main categories: linear negative relationship, positive linear relationship, and nonlinear relationship.

Linear positive relationship implies that a country grows as the level of debt increases. Theoretically, it is an ideal condition since the economy can increase debt to encounter their developmental goals, such as developing their physical and human infrastructure. Conversely, a negative link guides that an economy's growth declines when it increases its public debt. When the debt may affect both positively and negatively, then it is known nonlinear relationship.

Four main conclusions can be drawn from the review of the literature (see Table 1).

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Table 1

The Relationship Between Economic Growth and Public Debt

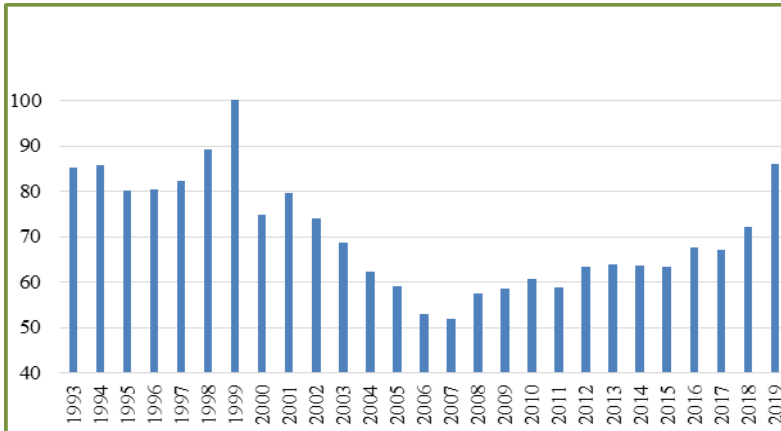
| Study | Economy | Year | Effect of Debt | Threshold |
|--|-----------------------------|-------------------|----------------|-----------|
| Reinhart and Rogoff (2010) | 45 economies | From 1947 to 2009 | Negative | 90% |
| Alfonso and Jalles (2013) | 155 economies | From 1970 to 2008 | Negative | 59% |
| Baum et al. (2013) | 12 European economies | From 1990 to 2010 | Negative | 95% |
| Kourtellos et al. (2013) | 82 economies | From 1980 to 2009 | Negative* | – |
| Ghosh et al. (2013) | 23 economies | From 1970 to 2007 | Negative | 90%–100% |
| Topal (2014) | 12 eurozone economies | From 1980 to 2012 | Negative | 72 % –80% |
| Mercinger et al. (2014) | 25 economies | From 1980 to 2010 | Negative | 94% |
| Alfonso and Alves (2015) | 14 EU economies | From 1970 to 2012 | Negative | 75% |
| Eberhardt and Presbitero (2015) | 118 economies | From 1961 to 2012 | Negative | – |
| Égert (2015) | 44 economies | From 1960 to 2010 | Negative | 20%–60% |
| Ahlborn and Schweickert (2016) | 111 economies | From 1971 to 2010 | Nonlinear | 50%–70% |
| Chen et al. (2016) | 65 economies | From 1991 to 2014 | Nonlinear | 50% |
| Brida et al. (2017) | 16 economies | From 1977 to 2015 | Nonlinear | 70%–90% |
| Chiu and Lee (2017) | 61 economies | From 1985 to 2009 | Negative | – |
| Kim et al. (2017) | 77 economies | From 1990 to 2014 | Negative | – |
| Awdeh and Hamadi (2017) | 18 MENA economies | From 2002 to 2016 | Negative | – |
| Ewaïda (2017) | High Indebted economies | From 1993 to 2013 | Negative | – |
| Chudik et al. (2017) | 40 economies | From 1965 to 2010 | Negative | – |
| Ramos and Rivero (2017) | 116 economies | From 1970 to 2013 | Negative | – |
| Gomez and Rivero (2017a) | 12 European economies | From 1962 to 2015 | Nonlinear | 50%–70% |
| Gomez and Rivero (2017b) | 12 European economies | From 1962 to 2013 | Negative | – |
| Kempa and Khan (2017) | 11 Euro economies | From 1991 to 2014 | insignificant | – |
| Lee et al. (2017) | Developed economies | From 1946 to 2009 | Nonlinear | 20%–50% |
| Amann and Middleditch (2017) | England | From 1995 to 2013 | Negative | – |
| Taher (2017) | Lebanon | From 1989 to 2014 | Nonlinear | 90% |
| Burhanudin et al.(2017) | Malaysia | From 1970 to 2015 | Positive | – |
| Onafowora and Owoye (2017) | Nigeria | From 1970 to 2014 | Negative | – |
| Shahor (2018a) | Israel | From 1983 to 2013 | Negative | – |
| De Vita et al.(2018) | 13 economies | From 1970 to 2014 | Negative | – |
| Esteve and Tamarit (2018) | Spain | From 1851 to 2013 | Nonlinear | – |
| Pegkas (2018) | Greece | From 1970 to 2016 | Nonlinear | 90% |
| Gómez-Puig and Sosvilla-Rivero (2018b) | Euro zone economies | From 1961 to 2015 | Positive | – |
| Arčabić et al. (2018) | OECD and non-OECD economies | From 1960 to 2009 | insignificant | – |
| Butkus and Seputiene (2018) | 152 economies | From 1996 to 2016 | Nonlinear | 90% |
| Karadam (2018) | 135 economies | From 1970 to 2012 | Nonlinear | 90% |
| Snieska and Burksaitiene (2018) | EU economies | From 2004 to 2016 | Negative | – |
| Maitra (2019) | Sri Lanka | From 1977 to 2016 | Negative | – |
| Mhlab and Phiri (2019) | South Africa | From 2002 to 2016 | Negative | – |
| Liaqat (2019) | 40 developed economies | From 1980 to 2017 | Negative | – |
| Pegkas (2019) | Greece | From 1970 to 2016 | Nonlinear | 90% |

1. The majority of the articles posit that there is a negative linear association between debt and economic growth regardless of the types of debt and level of the countries' income. This finding is in line with the theory of debt-growth nexus (See Box 2).
2. Burhanudin et al. (2017) and Gomes and Rivero (2017a) find a positive link between debt and growth in the short run.
3. There is no magic number of a threshold level of the debt. It may vary from 15% to 2000% (Pegkas 2018 and Butkus and Seputiene, 2018 for details).
4. The literature further suggests that the tax rate increase to substitute the debt will not make a reasonable attempt in lower-income countries. However, improvement in the economic environment to create an investment-friendly environment is suggested.

2. DEBT SUSTAINABILITY IN PAKISTAN: SOME SIMULATIONS

The debt to GDP ratio has continuously increased in Pakistan's last ten years (see Figure 1). Therefore, the question of debt sustainability is quite relevant here. Notably, we need to understand how the debt to GDP ratio will remain in a manageable range. The Fiscal Responsibility and Debt Limitation (FRDL) act suggests that the debt should remain around 60 percent of the GDP.

Fig. 1. The Debt to GDP Ratio in Pakistan



Box 2: The Theory on Negative Linear Relationship

There are three main explanations of the negative linear relationships between debt and economic growth.

Crowding Out Effect: Elmendorf and Gregory (Mankiw, 1998) document that the high public debt crowd out the private investment. This is the most conventional explanation that increase the government borrowing will elevate the interest rates which crowd out the private investment and ultimately will hit the economic growth.

Overlapping Generation Models (OLGMs) also explain the lower economic growth due to higher public debt (see Modigliani 1961, Diamond 1965 and Blanchard 1985). According to the OLGMs, the increase in public debt consume the savings which are supposed for the coming generations. The reduction in saving may raise the interest rates. This may discourage the future investment which lead to lower economic growth.

Debt Overhang explains that the debt overhang happens when a country has higher accumulated debt level than net present value of national income. Krugman (1988) notes that this happens due to inefficiently managed borrowed funds. In this situations, most of the indebted countries use the borrowed funds for the repayments of the debts instead of the developmental projects. That's why they get a negative hit on their economic growth.

In this regard, the interest rate-growth differential is essential to understand the long-run fiscal sustainability. The higher interest rate implies that higher debt servicing, which adversely affects the debt dynamics. On the other hand, higher economic growth means a lower debt to GDP ratio (see Box 3). Therefore, as long as the cost of borrowing is less than the economic growth, the debt burden will not rise. Consequently, debt sustainability will be questionable in lower economic growth and high-interest rate environment in Pakistan (see . Box 4).

We develop several scenarios, based on some assumptions, to evaluate the case of Pakistan. More clearly, what should be the threshold level of economic growth to be solvent.

Box 3: IMF Debt Law of Motion

The IMF debt law of motion move around the interest rate-growth differential, that is, if $(i-g)>0$ then the debt to GDP will increase where 'i' is the interest rate, and 'g' is the GDP growth.

The IMF Debt Dynamic Equation:

$$d_t = \frac{(1+r)}{(1+g)} * d_{t-1} - pb_t$$

Where

d =debt to GDP ratio

r=real interest rate

g=growth rate of real GDP

pb =primary balance as a percentage of GDP

t=time subscript

This equation implies that:

- (i) A positive primary balance leads to lower debt-to-GDP ratio.
- (ii) A high initial debt leads to a higher debt-to-GDP ratio.
- (iii) A higher growth rate leads to a lower debt-to-GDP ratio.
- (iv) A high real interest rate leads to a higher debt-to-GDP ratio.

Box 4: On the Fiscal Adjustments

Haque and Montiel (1991 1993) are some pioneer studies that made a case for the fiscal adjustments in the case of Pakistan. The high fiscal deficit remained a long standing issue for the economy of Pakistan. Haque and Montiel (1991 1993) investigated the causes of high deficit in Pakistan. The studies also analysed that why the macroeconomics performance remained good despite high level of fiscal deficit. The studies give several scenarios of the fiscal adjustments. The most favourable scenario for the medium term economic growth was associated with reducing the public consumption.

2.1. Assumptions and Scenarios

Assumptions

- The real interest is taken as a historical average, which is equal to around 1.5 percent.
- The initial value of the public debt to GDP ratio is 86 for 2019.
- The population growth rate is zero.

Scenarios

- We develop three scenarios for primary balance (see Box 5).
 - (a) **Baseline Scenario:** when the primary balance is zero.
 - (b) **Historical Scenario:** when the primary balance is -2.2 , which is the average of the last ten years.
 - (c) **Most Extreme Scenario:** when the primary balance is -4.3 , which is the historic high of the last ten years.
- We develop three scenarios for GDP growth.
 - (a) When GDP growth is 1.5, which is equal to the historical average interest rate.
 - (b) When GDP growth is 4.5, which is the average for the last 20 years.
 - (c) When GDP growth is 10 percent, which is the historic high of the last 20 years plus population growth.

Box 5 : Primary Balance (PB)

The PB is the difference between revenues of the government and its non-interest expenditure. When the primary balance is negative, that is, when revenues are less than non-interest expenditure, that can also be referred to as a *primary deficit*.

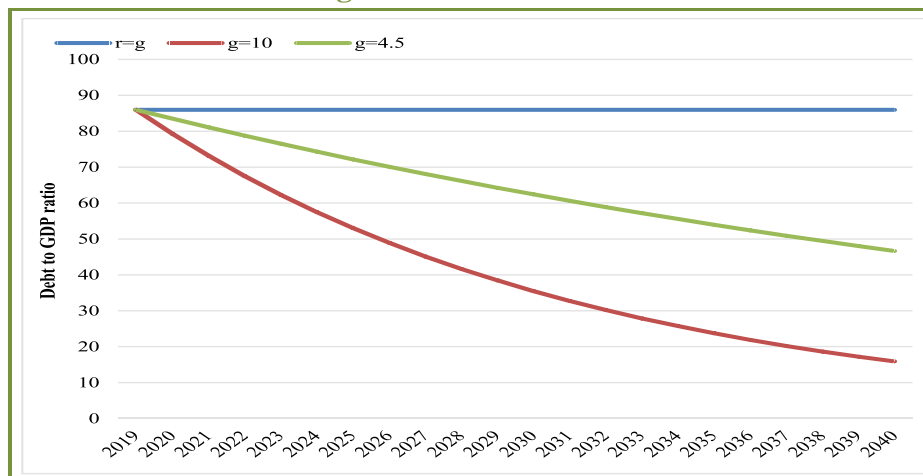
IMF approved Extended Fund Facility (EFF) in July 2019 and a strong fiscal consolidation of 4.5 % of GDP in primary balance over is suggested for the sustainable public debt.

2.2. The Threshold Level of GDP Growth Rate in Three Different Scenarios

Base Line Scenario: When Primary Balance is Zero.

- When the primary balance is zero, the real interest rate threshold level is equal to the real interest rate. This implies that the Debt to GDP ratio will not increase from the existing point when the growth rate is equal to the real interest rate.
- When $g > r$, then the debt to GDP growth rate will start decreasing.
- Suppose the GDP grows at 4.5 percent, which is the average of the last 20 years, then the debt to GDP ratio may reach 60 percent by 2031, which is suggested by FRDL.
- The FRDL suggested limit for debt to GDP ratio may be achieved more rapidly with 10 percent GDP growth when the primary balance is zero.

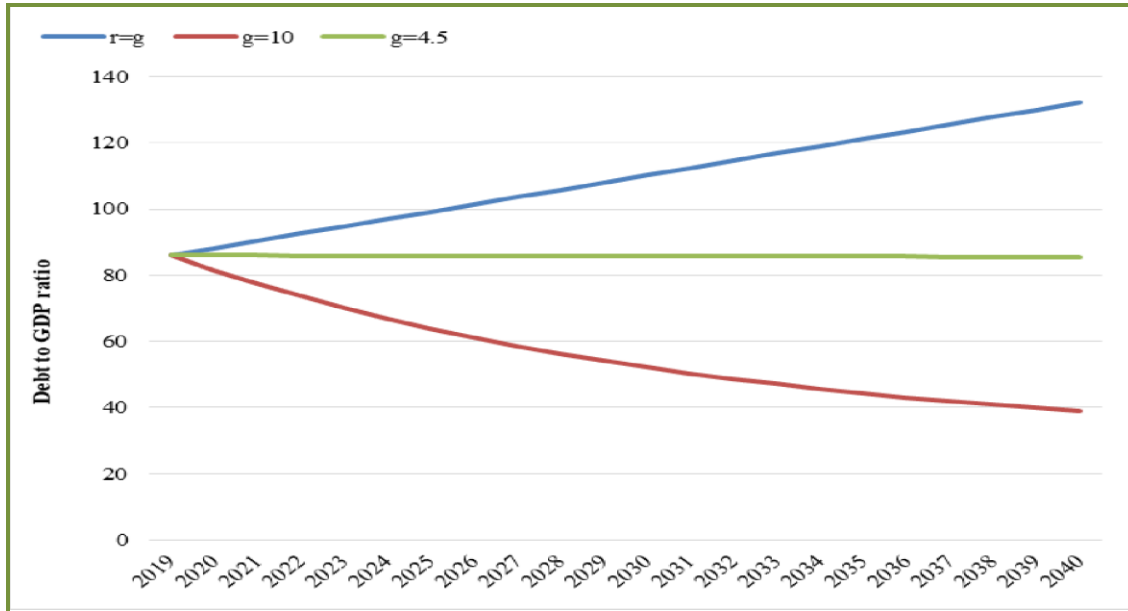
Fig. 2. Baseline Scenario



Historic Scenario: When Primary Balance is -2.2.

The debt to GDP ratio will worsen in the case of a negative primary balance. The GDP growth must be equal to 6.6 percent, the average of last twenty years 4.5 plus population growth 2.1, to maintain the current debt to GDP ratio.

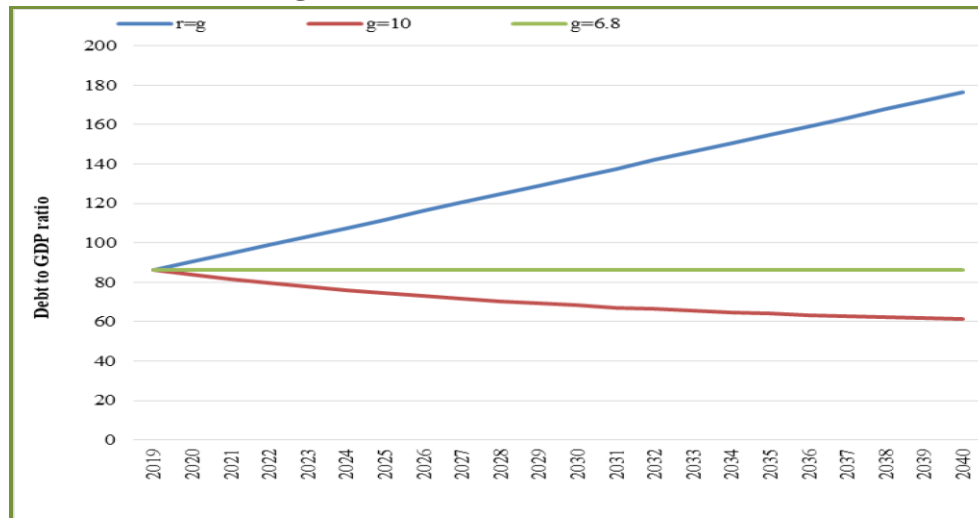
Fig. 3. Historic Scenario



Most Extreme Scenario: When the Primary Balance is -4.3.

- If we consider the most extreme scenario, then the threshold level of economic growth is 6.8 percent plus population growth (roughly 8.9 percent) to maintain the current level of Debt to GDP ratio. The FRDL limit, which is 60 %, will be achieved in 2040 with a 10 percent GDP growth.

Fig. 4. The Most Extreme Scenario



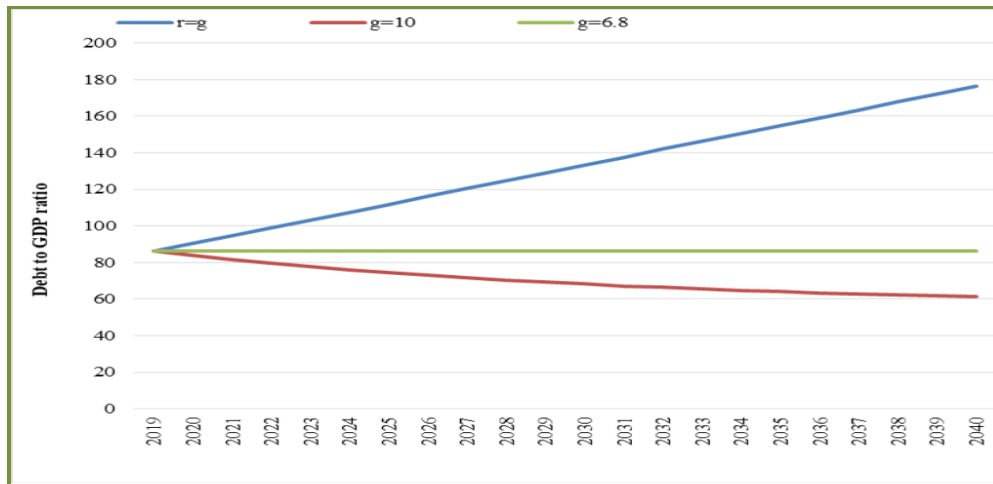
CONCLUSION

The evidence presented here reinforces the age-old principles.

- (1) We see overwhelming evidence from the literature that there is a negative relationship between debt and economic growth.
- (2) The cardinal principle for incurring debt remains that the expected growth rate must be higher than both payments and additional debt incurred. In other words, debt should only be used for high quality, high return investments?

Pakistan's debt difficulties are longstanding, as our repeated use of IMF facilities shows. We have had about three reschedulings in our history. The policy seems to be debt hungry, even if it means adopting stabilisation policies that reduce growth. Both economic growth and productivity are low and declining (see Figure 5; black Dots are IMF programmes in the corresponding year).

Fig. 5. GDP Growth, TFP Growth and IMF Programme



As pointed out in Haque (Haque 2020a and Haque 2020b), the policy continues to follow the Haq/HAG model to build low return 'brick and mortar' projects on borrowed funds. There is no policy or framework for maximising returns on assets created or better project selection through precise cost-benefit analysis or tighter control on project expenditures. Not only does debt grow because of this policy, growth, and productivity decline too.

As pointed out by Haque (Haque 2020a and Haque 2020b, Haque 2017a and Haque 2017b) as well as the Framework of Economic Growth 2011, the policy has not yet adopted the Lucas-Romer endogenous growth approach that would prioritise reform of institutions and the business environment for accelerating growth.

Our simulations and calculations show that the only way out of the debt difficulties that Pakistan has been in for the last 40 years has to be a strong growth acceleration. We urge the government to adopt a new growth strategy based on a market-friendly, investment-friendly, and transaction friendly environment. PIDE is actively engaged in developing one.

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