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Debt Accumulation and Economic Growth in Emerging Market Economies: Is Debt Promoting or Hindering Growth?

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DEBT ACCUMULATION AND ECONOMIC GROWTH IN EMERGING MARKET

ECONOMIES:

IS DEBT PROMOTING OR HINDERING GROWTH?

A Capstone Project Presented in Partial Fulfillment
of the Requirements for the Degree Bachelor of Arts
with Honors College Graduate Distinction at
Western Kentucky Univeristy

By

Kelly A. Stone

May 2019

CE/T Committee:

Professor Shannon Vaughan, Chair

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I dedicate this thesis to my parents, Linda and Jeff, and Mark and Cathy, who have continuously supported me in all of my academic endeavors, including reading almost all of my applications for graduate school and scholarships. Thank you!

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I would like to thank my advisor, Dr. Vaughan, for all of her encouragement and guidance throughout my undergraduate career. Thank you to Dr. Rich for giving me a starting point for a dataset when I was struggling. Also a big thank you to Dr. Locke for always answering any questions I had related to data models. I am so grateful to WKU, the Department of Political Science and the Department of Economics for the opportunities they have granted me, as well as the FUSE program, which provided the groundwork for this paper.

ABSTRACT

The International Monetary Fund (IMF) recently warned of the growing accumulation of debt in emerging market economies (EMEs) and the potential for debt crises, a clear warning for investors (Allen, 2018). While the IMF suggests investors may be better served elsewhere, EMEs hold an integral role in the international market as consumers, producers, and entrepreneurs. Despite regular research on advanced economies, middle income countries like EMEs are often ignored. As EMEs grapple with their inability to overcome the current increase in the value of the US Dollar, this study works to understand how debt impacts economic growth and other governance indicators hindering growth through regression analysis. Analyzing EMEs will include variables drawn from World Bank and IMF databases including external debt stocks, regulatory quality estimates, and corruption control estimates. The results will assist in determining what policy options are best to promote economic stability in EMEs, an important task as their impact on the global economy continues to grow. This study will be part of a growing body of research aiming to help EMEs become fully advanced economies.

Keywords: Economic Development, Emerging Market Economies, Debt, Economic Growth

VITA

EDUCATION

Western Kentucky University
Bachelor of Arts, Political Science and Economics Expected Graduation: May 2019
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Course Highlights: Statistics, Labor Economics, Econometrics and Regression, Research Methods, Public Policy, Financial Data Modeling

Scheduled for Completion: Forecasting and an Independent Study on Quantitative Data Analysis

Simpson College September 2015-May 2016
Transfer
GPA: 3.86 out of 4.0

PRESENTATIONS

Western Kentucky University 2019 Research Conference, Bowling Green, KY. “Effects of International Debt on Economic Growth in Emerging Market Economies,” March 2019

Southern Political Science Association, Austin, TX. “Effects of International Debt on Economic Growth in Emerging Market Economies,” January 2019

Southeastern Conference of Public Administration, Birmingham, AL. “International Debt & Economic Growth in Emerging Market Economies,” September 2018

MEMBERSHIPS/INTERNSHIPS

Western Kentucky University Speech and Debate Team, August 2016 - Present

- Member of two national championship winning teams, including a national closeout in Lincoln-Douglas Policy Debate.
- Effectively communicated technical policies related to health care, cybersecurity, and military action to lay audiences.
- Applied appropriate qualitative evaluation techniques to assess policy proposals and prepare supporting or opposing arguments.

Sales and Management Intern, Buckle, Inc., September 2018 – Present

- Work directly with store manager to learn fundamental management skills and their application in the workplace, as well as social media marketing and sales.

AWARDS/SCHOLARSHIPS/RESEARCH GRANTS

Outstanding Student in Political Science (2019): Awarded to a student selected by Faculty for strong work within the department

Outstanding Junior in Economics (2018): \$100 granted to two juniors selected by Faculty for exemplary work in the department

WKU Department of Economics (2018): \$1,000 from The Kenneth T. and Maria Cann Scholarship Fund

Faculty Undergraduate Student Engagement (FUSE) Grant (2017): \$4,000 for international research to supplement thesis writing

WKU Department of Political Science (2017): \$1,500 from The Betty Hoch Evans Scholarship

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SKILLS

Working knowledge within R, STATA, and SPSS software packages for statistical analysis and quantitative research methods.

Energetic communicator with 5+ years of experience in verbal and written communication for competitive and business oriented goals.

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LITERATURE REVIEW

In 2017, the Brookings Institution suggested that by 2019, a mere seven emerging market economies (EMEs) would account for nearly half of global growth (Kose, 2017). According to Brookings, Brazil, Turkey, China, Indonesia, Russia, Mexico and India were expected to fuel nearly 50% of global growth, while the G-7 would provide closer to 25%. Two years later, many authors agree that much of global growth will continue to come from EMEs, suggesting that they may make up closer to 60% of global growth (Rabouin, 2019). Although EMEs boast a large contribution to the global economy, mounting debt has left many with concerns about the security of their continued growth (Rabouin, 2019). At the end of 2018, US dollar denominated debt in EMEs reached \$3.96 trillion, and Quarter 1 of 2019 marked the highest amount of debt issued in dollars to EMEs (Rabouin, 2019). Further, the MSCI (a research driven global investment firm) index for EMEs recently hit its lowest point since June 2017 (Rabouin, 2019).

Despite EMEs becoming a buzzword in the finance industry and discussions of global growth, they lack a consistent definition. However, EMEs are routinely characterized by two primary features: high volatility and transitions (economically, politically, or demographically) (Mody, 2004). While it is generally recognized that emerging market economies have increased volatility, experience prolonged recessions, and are impacted greater by global market shocks, however the dynamics behind these issues are heavily debated by scholars. Some scholars indicate that these factors may be due to either poor institutions or failed economic policies (Emara, 2012). Others contend that emerging markets may be subject to the middle-income trap, which occurs when

countries move above the poverty line but then growth stagnates and they fail to become advanced economies (Kharas and Kohli, 2011). Market access is another area that is discussed as a problem for EMEs. Most advanced economies (AEs) rely upon fiscal policy during recessions, however, EMEs have limited options for market access to implement fiscal policy during recessions (Bernardini and Forni, 2017; Arellano, 2008). Due to the varying definitions of EMEs and the continued debate, the analysis within this paper focuses on those the MSCI declares as EMEs as it is a major driver of investment in EMEs as well as provides a clear and consistent country list.

The Importance of Emerging Market Economies

Despite the volatility and transitions occurring within their economies, EMEs play an important role globally, and their economic well-being has clear implications for those within the countries themselves. EMEs impact the global economy with a rising middle class; consumers in EMEs are becoming a new target audience for advanced economies (Das, 2010). AEs recognize consumers in EMEs as not only potential customers, but also employees. Several EMEs have garnered clear importance in the international community on their own, such as Argentina, Mexico, and South Africa (Das, 2010). EMEs are stimulating their economies to relieve poverty and elevate the standard of living in their countries, simultaneously increasing their international importance as their growing middle class becomes a new market for AEs. It has been evidenced that improving economic stability has a dramatic effect on the continued support of welfare policies that further improve the wellbeing of individuals living within EMEs (Emara, 2012).

Debt Accumulation in EMEs

Following the 2008 global economic crisis, advanced economies (characterized by lower growth levels, strong financial institutions, and higher GDP per capita) have largely worked to reduce private debt. In contrast, both public and private debt have been increasing in EMEs (Bernardini and Forni, 2017). While debt accumulation in advanced economies is countercyclical, in EMEs debt accumulation has been found to be pro-cyclical. The pro-cyclical nature of debt in EMEs may be caused by the inability to access further capital during instances of recessions. In contrast, in AEs debt buildup impacts the access the private sector has, rather than the public sector (Bernardini and Forni, 2017). Subsequently, during an economic downturn an advanced economy may respond with discretionary spending to spur the economy and counter a recession, while an EME may not be able to take the same action (Bernardini and Forni, 2017). Pro-cyclical spending has led to prolonged recessions and a more amplified impact to recessions overall in EMEs than in AEs (Bernardini and Forni, 2017).

In the status quo, total debt of the non-financial sector is rising, primarily due to increased borrowing by EMEs (Santacreu and Zhu, 2017). Additionally, the rise in borrowing is primarily debt held in foreign currencies, like the US dollar, making a rise in the value of a dollar a risk to EMEs (Santacreu and Zhu, 2017). India, Brazil, Turkey and Mexico have all battled currency crises in recent years due to currency fluctuations, specifically the rising US dollar (Bremmer, 2018). With rising debt in EMEs and the constraints that debt seemingly places on policy combined with the potential impact of an

appreciating dollar suggests that debt accumulation in EMEs may hold different impacts than debt accumulation in other economies.

Impacts of Debt

Debt garners both positive and negative impacts for countries, and nearly every country has some amount of public debt. Debt is often used to stimulate social and economic aims, such as responding to a natural disaster, improving infrastructure like roadways, or financing healthcare and education to improve human capital. Despite the potential for benefits from debt, the latent issues of debt remain. Debt overhang theory suggests that external debt hinders physical capital investments, and disincentivizes government's efforts to prompt structural or fiscal reforms, as lenders will want payment (Nguyen, Clements, and Bhattacharya, 2003). Additionally, when nations rapidly accumulate debt, it is often accompanied by capital flight due to concerns over devaluation or increasing taxes to repay debt (Nguyen, Clements, and Bhattacharya, 2003). Some scholars suggest that debt accumulation would have behavior similar to a Laffer Curve, with a positive initial impact, but a point at which the costs (due to above factors) will eventually outweigh the benefits (Nguyen, Clements, and Bhattacharya, 2003). The literature generally contends that debt has a small negative impact on economic growth in the long-run, but there remain some results which suggest the opposite.

The link between debt and institutional quality

The IMF in 2003 noted that stronger institutional quality (such as reduced corruption, strong bureaucracy, effective regulatory environments, etc.) was associated with more countercyclical policy choices (International Monetary Fund, 2003). This may further boost their ability to partake in countercyclical policy options. In AEs where institutions generally have more trust, there is less concern that lenders will be paid back (International Monetary Fund, 2003). In contrast, in EMEs, concern often mounts when debt increases as to whether they will be able to pay back their debt (International Monetary Fund, 2003). Additionally, countries that were recognized as having better institutions were likely to have lower debt levels than their counterparts with weaker institutions (International Monetary Fund, 2003). Public finances may be lowered through a reduction in revenue collection caused by tax evasion that may aid in increasing deficits (Hlatshwayo, Oeking, Ghazanchyan, Corvino, Shukla, & Leigh, 2018). Monetary and financial stability may be at risk due to corruption in governance, leading to less effective fiscal policies due to the erosion of central bank practices that can come from corruption, prompting increased borrowing costs and an increased risk of default (Hlatshwayo et al., 2018). Furthermore, inflation becomes more likely from the surrounding corruption and instability (Hlatshwayo et al., 2018). Corruption may harm economic growth in a multitude of ways: fostering emigration, increasing the incentives for corrupt practices, hindering competitiveness and innovation, and decreasing investments in important societal goods such as education and social services (Hlatshwayo et al., 2018). Further, the adverse impacts of corruption largely fall on lower socioeconomic classes (Ampratwum, 2008).

Current Policy Initiatives

In the status quo, the World Bank largely finances development initiatives through loans and aid with loose conditions intended to support governments promoting institutional reforms as well as broader policy such as disaster recovery or environmental policy for sustainable development initiatives ("2015 Development Policy Financing Retrospective - Results and Sustainability"). Development policy spending makes up approximately a quarter of World Bank lending and peaked recently during the global financial crisis (2015 Development Policy Financing Retrospective - Results and Sustainability). Funding often helps clients of the World Bank bridge financial gaps for developing institutional reforms, gain greater access to the international credit market, or improve overall macroeconomic stability through policy initiatives ("2015 Development Policy", n.d.). The IMF largely follows similar initiatives, working to finance development policy goals in low-income countries and to provide oversight ("The IMF at a Glance", n.d.).

In total

The literature suggests that both institutional factors and debt may hold negative economic impacts, but there is little analysis to determine which factor is more important for a country to focus on to garner the greatest impact for improving the well-being of their citizens. In addition, this paper hopes to contribute to the work done on the impact of debt in emerging markets by offering comparisons between emerging markets and other types of economies with regard to debt. In particular, with current policies being

largely based on accumulating debt to later spur growth will these policies effectively induce change?

DATA

There are two separate datasets that are analyzed for this paper. The first dataset features quarterly data on gross domestic product (GDP) and public sector debt from the Organization for Economic Cooperation and Development's (OECD) *Quarterly National Accounts* Database and the World Bank's *Quarterly Public Sector Debt* Database, respectively. Further description of these variables can be found in Table 1 in the appendix. Preliminary analysis focuses solely on these two variables, with the secondary dataset focused on additional control variables. Utilizing quarterly data analysis of these two variables allows the establishment of a balanced panel and a greater quantity of data, as the data for emerging markets is limited and often contains large gaps. The quarterly dataset includes a total of 29 countries, with four classified as EMEs by the MSCI. The four EMEs included within this dataset are Greece, Czech Republic, Hungary and Poland. The summary statistics for this dataset can be found in Table 3 in the appendix.

The second dataset for this paper includes 55 countries, of which eight are classified as EMEs by the MSCI. Data are drawn from the World Bank's *World Development Indicators* and *Worldwide Governance Indicators* from the online databank. Due to the nature of development data, there are limitations to the quantity of data that can be obtained. Subsequently, Data for GDP stems from 1960-2017, while data for governance indicators covers 1996-2016. Most of the data related to this topic is self-

reported to international organizations or reported by multilateral institutions and thus is limited in quantity. The variables included within this dataset are: GDP, Corruption Control Estimate, Regulatory Quality Estimate, Annual External Debt Stocks, Net Development Assistance, and Population Growth. Further information on each variable can be found in Table 2 of the appendix. The estimates for Corruption Control and Regulatory Quality can be found in the *Worldwide Governance Indicators*, while the rest can be found in the *World Development Indicators*. GDP has been transformed through the natural log for percent change and first differences to account for a unit root, while External Debt Stocks and Net Development Assistance have both been transformed through the natural log. To analyze EMEs, I have created a dichotomous variable, from which an interaction term for EMEs and debt is created. The summary statistics for this dataset can be found in Table 4 of the appendix.

EMPIRICAL ANALYSIS

Initial analysis focuses on the correlation between debt and gross domestic product in EMEs compared to other economies, and utilizes the quarterly dataset. Building upon prior studies such as Checherita and Rother (2010) that utilize lag models to avoid simultaneity bias, the quarterly dataset is analyzed through several OLS regression models with lagged public sector debt serving as the independent variable and GDP as the dependent variable. The first model analyzes the relationship between current debt levels and GDP, while the second and third model analyze the lagged impact of debt, including interaction terms to discover potential differences between EMEs and

other economies. Each of these models uses fixed effects and includes country clustered standard errors to account for unobserved variation.

Additional studies on the impacts of debt on economic growth have used a variety of different models from growth models and growth accounting to standard OLS regressions. This paper follows Kumar and Woo (2010) and Fincke and Greiner (2014) in using cross-country OLS regression models. The analysis utilizing the annual dataset follows the use of lags as Checherita and Rother (2010) similar to the quarterly data analysis. To test the hypothesis that GDP is affected by debt accumulation, as well as the impact of institutional factors such as controlling corruption and regulatory quality, multiple OLS models are generated using the annual dataset. The first model can be found below.

$$gdp_t - gdp_{t-1} = \beta_0 + \beta_1 gdp_{t-1} + \beta_2 gdp_{t-2} + \alpha + \varepsilon$$

where $dlgdp$ is the first difference of the natural log of GDP in current US dollars and uses two years of lags for GDP. Additionally, α_i accounts for the fixed effects and includes country clustered standard errors. The second model builds upon this model by adding two lags of debt to determine if GDP is impacted by debt later, rather than immediately. The results for the first two regression models can be found in Table 6 of the appendix. Further regression models build upon these results by including a variety of control variables as depicted by the regression model below.

$$gdp_t - gdp_{t-1} = \beta_0 + \beta_1 ExtDebtEmerging_{t-1} + \beta_2 Controls + \alpha + \varepsilon$$

where “ $\Delta \ln GDP$ ” is the first difference of the natural log of GDP in current US dollars as in the previous models, and “ $ExtDebtEmerging$ ” is an interaction term for external debt stocks and whether a country is categorized as an EME by the MSCI. Controls vary by each model, with the initial model including controls of population growth and lagged development assistance. Finally, α_i accounts for the fixed effects, which includes country clustered standard errors as the prior models have. The results for this regression can be found in Table 7 of the appendix.

To determine the impact corruption may have on GDP growth, the corruption control estimate is added as an additional control variable in the second model presented in Table 7. The third model within Table 7 considers the effect of regulatory quality rather than corruption. According to the World Bank, this indicator “captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development” (World Bank, n.d.). Regulatory quality can have a significant impact on a state’s ability to pursue strong economic growth policies (Jalilian, Kirkpatrick & Par, 2003). For this reason, an increase in regulatory quality is often found to result in an increase in economic growth as well (Jalilian, Kirkpatrick & Par, 2003). This measure also helps to account for the strength of regulatory institutions within countries and the overall institutional capacity of a country (Jalilian, Kirkpatrick & Par, 2003). The results for this regression can be found in Table 7 of the appendix.

The fourth model includes both regulatory quality and control of corruption.

Considering that the two estimates focus on two separate issues within governance, analyzing them together rather than apart may prove more valuable. The results for this model can be found in Table 7 of the appendix. However, the issue of multicollinearity within the model is possible, particularly since the variables are coded within the same scale of -2.5 to 2.5. The model appears to fall in a somewhat grey area; the results from including a single World Bank indicator prove to resolve this, indicating that including both does increase the risk of collinearity becoming an issue.

DISCUSSION

Within the initial quarterly dataset models displayed in Table 5, there are no statistically significant coefficients for any of the regression models. This suggests that the quarterly dataset, with the addition of lags, may not be able to provide a long enough time frame to determine the impact of debt on economic growth. Further, while it allows for a moderate increase in observations, due to them being closer in time to each other, they may not necessarily provide a stronger analysis for the impact of debt accumulation on economic growth. However, these models do suggest that the relationship between debt and GDP growth may change and perhaps become more determinant as time goes on.

In contrast, the annual dataset suggests a fairly strong relationship between debt accumulation and growth. The initial models displayed in Table 6 that focus just on lags show a weak relationship between the second lag of debt and GDP growth. The second model suggests that for a 1% increase in external debt stocks 2 years prior, then GDP will

be reduced by 3.9%. This model suggests that the negative relationship between external debt stocks 2 years prior and GDP growth is statistically significant at the $p \leq .05$ level.

However, with the addition of control variables, the impact of debt accumulation appears to be flipped. Table 7 depicts a positive impact of debt accumulation, while the interaction term for emerging markets suggests that there is no statistically significant relationship for debt accumulation within EMEs. Within the first model there is no statistically significant relationship for debt accumulation, however, development assistance has a small negative impact that is statistically significant at the $p \leq .01$ level. The model indicates that for a one percent increase in development assistance a year prior, GDP will fall by 0.5 percent. This model further indicates that population growth has a small positive impact on GDP growth that is also statistically significant at the $p \leq .01$ level.

While the first model fails to find a statistically significant relationship for debt accumulation for one year prior, models two through four suggest a strong positive relationship. The lagged debt variable indicates that debt accumulation will prompt a boost to economic growth of 13 percent that is statistically significant at the $p \leq .01$ level that remains constant for models two through four. While the significance for population growth is diminished in models two through four, development assistance continues to hold a slightly negative impact. Despite this negative impact increasing, it has lost some statistical significance. The second through fourth models find that a one percent increase

in development assistance will prompt a decline in GDP of around 1.63 percent, which is statistically significant at the $p \leq 0.1$ level.

CONCLUSION

The results of this study are in contrast to some of the literature regarding debt accumulation, as well as the growing concerns related to debt accumulation in EMEs. This analysis suggests that debt accumulation may hold mixed effects on economic growth, but that it largely holds positive effects. Considering the stipulations placed on lending by external sources, specifically organizations such as the IMF and World Bank it is less surprising that debt may hold a positive impact. As noted in the literature review, the World Bank and IMF largely utilize lending to promote macroeconomic stability and provide strong oversight during their lending processes (“2015 Development Policy Financing Retrospective - Results and Sustainability” & “The IMF at a Glance”). This analysis indicates that the debt accumulated related to such policy focuses may successfully be meeting the goals of the IMF and World Bank.

Future research initiatives should focus on articulating what forms of debt may be contributing to economic downturn compared to what forms of debt may foster growth. Considering the mixed results within the literature (and within this study) it is possible that debt holds differing impacts at different times, specific types of debt hold different impacts, or that different measurements of debt boast dramatically different impacts. An interesting area for future exploration may be found within the results of the control variable for development assistance, which suggests a negative impact on GDP growth.

Furthermore, future studies should focus on finding measures that have lower risks of collinearity between measures of governance. It is evident that these measures may inevitably impact each other to some degree, but measuring them together allows stronger policy analysis and may allow countries to determine what is best to focus on. While this research does not find any statistically significant effect for the governance variables, there is a strong link within the overall literature base. Finally, resolving some larger constraints on data availability would heavily improve the overall results and applicability of the analysis. With large quantities of information missing, the analysis must draw on a limited number of cases.

REFERENCES

- 2015 Development Policy Financing Retrospective - Results and Sustainability. (n.d.). Retrieved May 4, 2019, from <http://projects-beta.worldbank.org/en/projects-operations/products-and-services/publication/dpfretrospective2015>
- Allen, K. (2018, March 22). IMF warns of mounting debt crisis risk in poor countries. Retrieved from <https://www.ft.com/content/0b875b52-2d26-11e8-9b4b-bc4b9f08f381>
- Ampratwum, E. F. (2008). The fight against corruption and its implications for development in developing and transition economies. *Journal of Money Laundering Control*, 11(1), 76-87. doi:10.1108/13685200810844514

- Arellano, C. (2008). Default Risk and Income Fluctuations in Emerging Economies. *American Economic Review*, 98(3), 690-712. doi:10.1257/aer.98.3.690
- Bernardini, M., & Forni, L. (2017). Private and Public Debt: Are Emerging Markets at Risk? *IMF Working Papers*, 17(61). doi:10.5089/9781475588170.001
- Bremmer, I. (2018, September 06). Emerging Markets Are in Meltdown - But Not Because of Trump. Retrieved August 28, 2018
- Checherita, C., & Rother, P. (2010, August). Working Paper Series - ecb.europa.eu. Retrieved from <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1237.pdf>
- Das, D. K. (2010). Contours of Deepening Financial Globalization in the Emerging Market Economies. *Global Journal of Emerging Market Economies*, 2(1), 45-67. doi:10.1177/097491010900200104
- Emara, N. (2012). The Welfare Effects of Inflation Volatility and Institutions. *Global Journal of Emerging Market Economies*, 4(1), 5-27. doi:10.1177/097491011100400102
- Fincke, B., & Greiner, A. (2014). Public Debt and Economic Growth in Emerging Market Economies. *SSRN Electronic Journal*. doi:10.2139/ssrn.2449222
- Hlatshwayo, S., Oeking, A., Ghazanchyan, M., Corvino, D., Shukla, A., & Leigh, L. (2018). The Measurement and Macro-Relevance of Corruption: A Big Data Approach. *IMF Working Papers*, 18(195). doi:10.5089/9781484373095.001
- The IMF at a Glance. (n.d.). Retrieved from <https://www.imf.org/en/About/Factsheets/IMF-at-a-Glance>

- International Monetary Fund. (2003). World Economic Outlook, September 2003: Public Debt in Emerging Markets : Public Debt in Emerging Markets. World Economic Outlook, 113-152. doi:10.5089/9781589062863.081
- Jalilian, H., Kirkpatrick, C., & Parker, D. (2003). Creating the Conditions for International Business Expansion: The Impact of Regulation on Economic Growth in Developing Countries – A Cross-Country Analysis. Regulating Development. doi:10.4337/9781845429850.00010
- Kharas, H., & Kohli, H. (2011). What Is the Middle Income Trap, Why do Countries Fall into It, and How Can It Be Avoided? Global Journal of Emerging Market Economies, 3(3), 281-289. doi:10.1177/097491011100300302
- Kose, A. (2017, July 14). Big emerging market economies versus the G-7: Which group will drive the upswing in global growth? Retrieved December 18, 2018, from <https://www.brookings.edu/blog/up-front/2017/07/14/big-emerging-market-economies-versus-the-g-7-which-group-will-drive-the-upswing-in-global-growth/>
- Kumar, M. S., & Woo, J. (2010, July). Public Debt and Growth. Retrieved January 01, 2019, from <https://www.imf.org/external/pubs/ft/wp/2010/wp10174.pdf>
- Lawder, D. (2018, October 09). IMF cuts world economic growth forecasts on tariff war, emerging... Retrieved December 18, 2018, from <https://www.reuters.com/article/us-imf-worldbank-outlook/imf-cuts-world-economic-growth-forecasts-on-tariff-war-emerging-market-strains-idUSKCN1MJ025>

- Mody, A. (2004). What is An Emerging Market? IMF Working Papers, 04(177).
doi:10.5089/9781451858907.001
- MSCI. (2019, April 30). MSCI EMERGING MARKETS INDEX (USD). Retrieved from
<https://www.msci.com/documents/10199/c0db0a48-01f2-4ba9-ad01-226fd5678111>
- Nguyen, T. Q., Clements, B. J., & Bhattacharya, R. (2003). External Debt, Public Investment, and Growth in Low-Income Countries. IMF Working Papers, 03(249). doi:10.5089/9781451875904.001
- OECD (2019). Quarterly National Accounts. OECD National Accounts Statistics (database). <https://doi.org/10.1787/data-00017-en>
- Rabouin, D. (2019, April 30). Emerging markets' dollar debt threatens global growth. Retrieved from <https://www.axios.com/emerging-markets-us-dollar-strength-6b3c97dd-8123-4562-bca0-14153d63c873.html>
- Santacreu, A. M., Zhu, H., (2017, November 17). Global Debt Is Rising, Especially in Emerging Economies. Retrieved from <https://www.stlouisfed.org/on-the-economy/2017/november/global-debt-rising-emerging-economies>
- Shapiro, J. (2018, August 23). Strong dollar puts these emerging markets in danger of following Turkey's slide. Retrieved from
<https://www.marketwatch.com/story/strong-dollar-puts-these-emerging-markets-in-danger-of-following-turkeys-slide-2018-08-23>

- World Bank (Last Updated 2018, October 04). Combating Corruption. Retrieved November 26, 2018, from <http://www.worldbank.org/en/topic/governance/brief/anti-corruption>
- World Bank (2019). Quarterly National Accounts. OECD National Accounts Statistics (database).
- World Bank (2019). Quarterly Debt Statistics. (database). Retrieved from <https://datacatalog.worldbank.org/dataset/quarterly-public-sector-debt>
- World Bank (n.d.). Regulatory Quality. Retrieved November 25, 2018, from <https://info.worldbank.org/governance/wgi/pdf/rq.pdf>
- World Bank (2019). World Development Indicators. (database). Retrieved from <https://databank.worldbank.org/data/source/world-development-indicators>
- World Bank (2019). Worldwide Governance Indicators. (database). Retrieved from <https://databank.worldbank.org/data/source/worldwide-governance-indicators>

APPENDIX: TABLES

Table 1: Quarterly Variable Descriptions

Quarterly data	
Ln(GDP)	The natural log of gdp to reduce the impact of outliers and transform to percent change
Ln(public sector debt)	The natural log of public sector debt to reduce the impact of outliers and transform to percent change
Emerging	A dichotomous variable to denote whether a country is considered an EME or not

Table 2: Annual Data Descriptions

Annual data	
Ln(GDP)	The natural log of gdp to reduce the impact of outliers and transform to percent change
Ln(Development Assistance)	The natural log of development assistance to reduce the impact of outliers and transform to percent change
External Debt Stocks (debt)	“Total external debt is debt owed to nonresidents repayable in currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. Data are in current U.S. dollars,” (World Bank: International Debt Statistics, 2019)
Ln(debt)	The natural log of external debt stocks to reduce the impact of outliers and transform to percent change

Population growth	Annual growth for the population in a country
Regulatory Quality Estimate	“Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.” (World Bank: Governance Indicators)
Corruption control estimate	“measures the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as “capture” of the state by elites and private interests.”(World Bank: Governance Indicators)
Emerging	A dichotomous variable to denote whether a country is considered an EME or not

Table 3: Summary Statistics Quarterly Data

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Ln(GDP)	696	10.47	0.341	9.675	11.39
Ln(Public Sector Debt)	696	25.88	1.891	21.06	29.98
Emerging	696	0.138	0.345	0	1

Table 4: Summary Statistics Annual Data

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Gross Domestic Product(GDP)	3,190	5.151e+10	2.028e+11	1.307e+07	2.651e+12
Ln(GDP)	3,190	22.29	2.100	16.39	28.61
Ln(Development Assistance)	3,146	18.66	1.715	9.210	23.16
External Debt Stocks (debt)	2,640	1.817e+10	5.483e+10	739,740	5.569e+11
Ln(debt)	2,640	21.75	2.054	13.51	27.05
Population Growth	3,190	2.318	0.898	-6.185	7.918
Corruption Estimate	1,044	-0.566	0.528	-1.723	1.217
Regulatory Estimate	1,044	-0.443	0.550	-2.298	1.220
emerging	3,245	0.145	0.353	0	1
Number of country1	55	55	55	55	55

Table 5: Quarterly Regression Table

VARIABLES	(1) Model 1	(2) Model 2
Interaction Term: Other Economies & Ln(Public Sector Debt) Lag	0.00399 (0.00378)	-0.00805 (0.00689)
Interaction Term: EMEs & Ln(Public Sector Debt) Lag	-0.00231 (0.00845)	0.00747 (0.00801)
Interaction Term: Other Economies & Ln(Public Sector Debt) 2 nd Lag		0.0121* (0.00624)
Interaction Term: EMEs & Ln(Public Sector Debt) 2 nd Lag		-0.00510* (0.00268)
Constant	-0.0755 (0.0895)	-0.0933 (0.0692)
Observations	667	638
R-squared	0.001	0.003
Number of countrye	29	29
Fixed Effects	YES	YES
Country Cluster	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: Annual Regression Results: Debt & GDP

VARIABLES	(1) Model 1	(2) Model 2
First Difference Ln(GDP) Lag	0.101*	0.0829*
	(0.0532)	(0.0454)
Ln(debt) Lag		0.0165
		(0.0187)
Ln(debt) 2 nd Lag		-0.0399**
		(0.0180)
First Difference Ln(GDP) 2 nd Lag	0.00206	
	(0.0260)	
Constant	0.0636***	0.572***
	(0.00292)	(0.0576)
Observations	3,025	2,530
R-squared	0.010	0.050
Number of country1	55	55
Country FE	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 7: Annual Regression Results (with Controls & Interactions)

VARIABLES	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Lag DLGDP	0.0872 (0.0578)	0.134*** (0.0502)	0.134*** (0.0499)	0.134*** (0.0498)
Emerging(omitted due to collinearity)	-	-	-	-
Interaction: EME & Debt	0.0470 (0.0784)	0.102 (0.0674)	0.0974 (0.0683)	0.0995 (0.0675)
Population Growth	0.0149*** (0.00382)	-0.01000 (0.0149)	-0.00860 (0.0155)	-0.00892 (0.0154)
Lagged Develop Assistance	-0.00545*** (0.00136)	-0.0163* (0.00899)	-0.0164* (0.00892)	-0.0162* (0.00900)
Corruption Estimate		-0.0241 (0.0205)		-0.00953 (0.0257)
Regulatory Estimate			-0.0348 (0.0225)	-0.0313 (0.0268)
Constant	0.131*** (0.0278)	0.389** (0.189)	0.387** (0.184)	0.380** (0.187)
Observations	3,043	1,028	1,028	1,028
R-squared	0.019	0.030	0.032	0.032
Number of country1	55	55	55	55
Country FE	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1