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Growth Differences Between Former Colonies

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Abstract: The objective of this study are to examine the impact of colonization on former colonies on their economic growth performances. The relationship between economic growth and selected independents variables are discussed covering 72 former colonies for the period of 1995 to 2015. The objective is to investigate the determinants of growth in former colonies colonized by four former conquerors namely Spain, France, The United Kingdom and The Soviet Union (Russian Federation). To achieve this objectives, we employed Generalized Method of Moment (GMM) estimator popularized by Arellano and Bond (1991) and Blundell and Bond (1998) and the independent variables of the estimation to achieve the targeted objectives, are the control variables of growth gross fixed capital formation (GFCF), as a proxy for capital and total population (TPOP) as a proxy for labor. This study also uses other independent variables such as length of colonial period (COLOH) which is the focus variable, domestic credit to private sector (*DCPS*), trade openness (TOP), foreign direct investment (*FDI*) and a couple of institutional qualities representing variables such political rights (*PR*) and civil liberties (*CL*). The results are quite consistent and robust - colonization is positive and highly significant implying that colonization indeed has a positive impact on the colonized countries, though the masters are perceived as parasites. They also prepare the right infrastructures that could enable the colonized countries to grow economically. As for the other variables including the control variables population, domestic credit to private, trade openness, and gross fixed capital formation are also positive and significantly related.

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1.0 Introduction

Colonialism (or colonization) is a situation in which a central system of absolute power dominates the surrounding borders and its land. There are few interpretations of colonialism. According to The Oxford English Dictionary (n.d.), colonialism refer to "the policy or practice of acquiring full or partial political control over another country, occupying it with settlers, and exploiting it economically" while Wikipedia quoted colonialism as " a relationship between an indigenous (or forcibly imported) majority and a minority of foreign invaders and the fundamental decisions affecting the lives of the colonized people are made and implemented by the colonial rulers in pursuit of interests that are often defined in a distant metropolis by rejecting cultural compromises with the colonized population; the colonizers are convinced of their own superiority and their ordained mandate to rule" (Wikipedia, 2016). Other than that, it is also said to be a situation whereby a powerful country rules a weaker one and establishes its own trade and society as define by Longman Dictionary (2000).

Historically, there are three eras of colonialism starting from the classics period referring to ancient times which saw the rising of Egyptian around 1500 BC or 3,500 years' age, the middle-age colonialism which begun with the Vikings of Scandinavia carrying out large-scale colonization followed by the Persians and Arabians, and modern colonialism which refers to mostly Western European colonization of lands mainly in the Americas, Africa, Asia and Oceania which began in the 15th century with the "Age of Discovery" lead by Portuguese and Spain .

For the record, Spain and Portugal were the pioneer conquerors in modern colonization for more than a century.

Based on the modern colonialism theories, the phenomenon of colonialism came into existence because of a few reasons. Firstly, because of the economic factors such as to obtain more lands, raw materials, tap new markets to sell and buy product (industrial revolutionary) and valve for population pressure in the metropolis).

Secondly because of political factors such as national prestige, lobby groups interested in colonization and rivalry with other conquerors. Thirdly, because of geostrategic factors specifically geographic privileged enclaves, and lastly, due to religious and cultural expansion through their missionary (Aybar, 2005; Grier, 1999).

In terms of the number countries being colonized by a modern conqueror, The British Empire (Great Britain) leads the figures with 47 countries as their colonies followed by France second highest with 25 countries, Spain with 21 countries and The Soviet Union with 14 countries while Portugal, The Netherlands, Belgium and Italy invaded less than ten (10) countries at the pinnacle of their rule. Figure 1.1 below depicts the colonialism in 1800s.

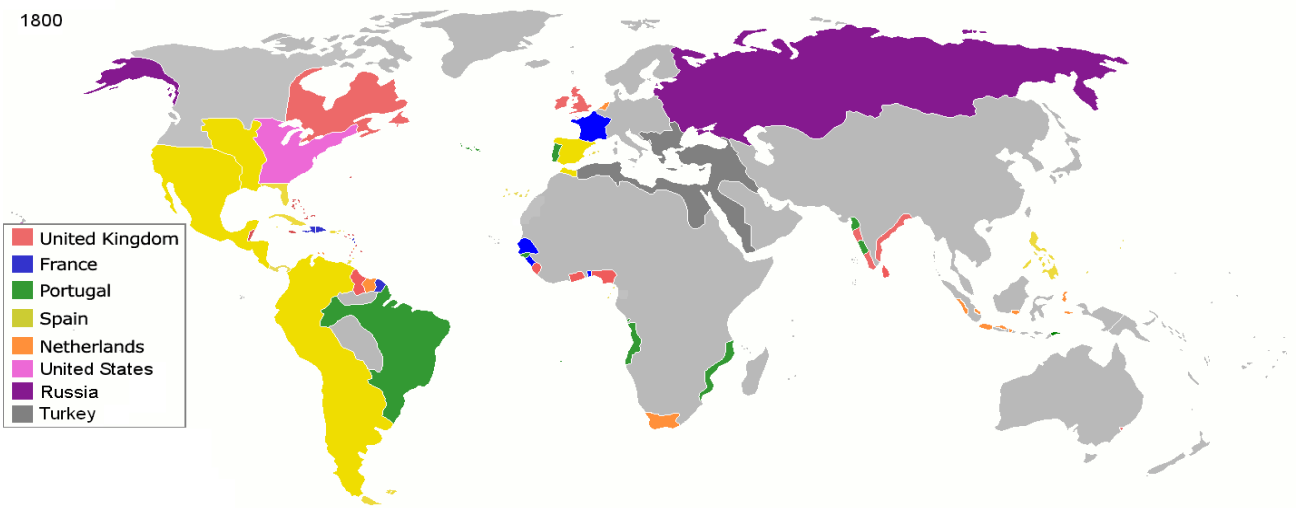

Figure 1.1: Colonialism Empire in 1800
Source: http://uploadwikimedia.org/Wikipedia/commons/2/2b/Colonization_1800.pg

1.1 Economic Growth

A sizable body of literature on colonization and the economic performance of former colonies has developed throughout the years. In their quest to understand why some former colonies have grown somewhat slower or faster than others, economists developed an interest in colonial legacies. Countries that possess stronger institutions and less skewed economic policies will perform better than those that do not (Frejka, 1973). Following this line of logic, academics involved in the discussion of colonialism and development contend that colonial powers transferred distinct institutions to their colonies, and that these diverse institutions have led to varying rates of economic development (Mahoney, 2000). Notably, recent cross-country empirical findings by Acemoglu, Johnson, and Robinson (2001, 2002) revealed that the identity of the colonizing power (or colonial origin) can help explain the observed growth gap across former colonies throughout the world (Engerman & Sokoloff, 2005; Grier, 1999; Lange, 2003; Mahoney, 2000).

Historically, since their decolonization, some of these former colonies countries have gone through massive development changes and accelerating growth span throughout the years while some others have faced slower growth. These changes of development consist of political changes and maturity, economic sustainability growth, social and cultural exchange, ethnic and religious preaching and other spheres. Many debates have occurred among the researchers on the issue of the effects of growth rate on former colonies especially on its determinants and the velocity process (convergence).

Grier (1999) for instance found that the nationality of the colonizing power does have a direct and significant impact on the growth of countries once they become independent, but Bertocchi (1998) found that former colonies have had weaker growth performances than other countries, and that most of them did not catch up in the decades that

followed. At the end of the modern colonial era, they were among the world's poorest countries.
These findings lead to greater emphasis on empirical analysis on the growth rate for former colonies and the consideration of the impact of factors such as human capital, geographical area, population growth, economic policies, economic integration, cultural and socio-economic aspects, macroeconomics and institutional variables in explaining the colonization effects on economic growth. Thus, it is important to determine the growth trend of former colonies after independence to evaluate the actual process and progress of growth related to their colonization years. This will help to capture the momentum of growth and identify the real effects of colonization on the former colonies and how the economic performed throughout years.

1.2 Problem Statement

The issue of economic growth has been a concern for many researchers for decades to debate. Former colonies must deal with the changes of political structure, socio-cultural shock, law and order adjustment, religious ideology spread, population expansion, economy climate changes and many other after achieving independence.
Thus, this leads to many questions to be answered. How do these countries react after independence? What determines these countries to accelerate growth? How does the impact of colonization affect the public and administration in the long run? More and more questions arise and there would be a need to fill the gap. The up and down of growth rate and uncertainty performance of former colonies become critical elements for policymakers to forecast the future wellbeing and look after the resources and wealth of the nation.

2.0 Literature Review

For decades, there have been arguments as to whether colonial heritage or historic events are crucial in determining the economic growth for former colonies. To illustrate this, we look at some works done by great scholars. Engerman and Sokoloff (1994) using former America colonies as case study, examined the importance of factor endowments and colonial rule on economic growth of colonies. Porta et al. (1998) tested the legal institutions that were transplanted by the different colonial powers as the element of colonial rule and their long-term consequences for economic growth and recently Acemoglu, Johnson, and Robinson (2002) conducted a research to seek a better understanding of historical origins of current institutions and their contribution for long-term economic growth. These can be triggered as the initial evidence on how colonial heritage or historic events became an important discussion at this age.
Several researchers on their studies have found that the impact of the colonization does indeed affect the growth rates and democratic survival for colonized countries. For instance, Grier (1999) discovered that growth is influenced by the country of origin of the colonizing county. Former British colonies had more than average real GDP growth from 1961 to 1990 compared to both Spanish and French colonies as according to Grier (1999), who looked at 63 modern country states that were once European colonies. She discovered that the relationship between longer periods of colonization and greater growth are due to Britain's superior colonial policies which were superior to those of either the French or the Spanish referring to better education, trade openness, and general colonial administration.
The Spanish Empire built an institutional structure that was as cohesive and uniform as any other colonial empire (Elliott, 2006). According to Acemoglu, Johnson, and Robinson (2002), colonial institutions created by Europeans have a significantly higher influence than any geographic location or European nationality. These institutions were described as governmental elements such a working legal system, openness in governance, property rights, democracy, and the structure of society. Similar to this, Lange, Mahoney, and Vom Hau (2006) agree that colonial institutions are crucial and that income has been distributed differently to the point where European nationality has less effect.

2.1 Growth and Foreign Direct Investment

Over the years, developing countries, emerging economies and countries in transition have increasingly seen foreign direct investment as an important source of growth of economic development and modernization, income growth as well as employment. A study by Demissie (2015), on 56 developing countries for the period of 1985 to 2014 analyze the growth effect of foreign direct investment into different macroeconomic situations found two different results from his study. He sampled the data into two categories;
i) 24 low-income developing countries and,
ii) 32 upper middle-income countries;
and found that the endogenous growth theory supported the positive growth effect of foreign direct investment for the pooled total 56 countries (both lower and upper), as well as for the stand alone upper middle income countries - however the growth effect of foreign direct investment for the stand alone low-income countries is in contrary statistically significant but negative.
Nevertheless, Suleiman, Kaliappan, and Ismail (2013) in their finding for the Southern Africa Custom Union (SACU) countries namely; Botswana, Lesotho, Namibia, South Africa and Swaziland using Dynamic Ordinary Least Squares (DOLS) found satisfactory evidence that there is a positive and significant impact of foreign direct investment on the economic growth for the SACU countries. Data for this study was pooled form 1980-2010. Sokang (2018) in his study suggested that the Cambodian government should bring more reforms in the domestic market to attract more foreign direct investment as his study revealed that foreign direct investment has a positive impact on the economic growth of Cambodia. He employed time series data throughout 2006-2016 and the correlation matrix and multiple regression analysis techniques were used to analyze the collected data.

2.2. Growth and Population

The influences of population growth on economic performance is not something new to debate among the scholars. It has been a long argument and one of the most debated through theoretical and empirical literature. According to Frejka (1973), the definition of population reflects to total number of all individuals alive in an area at time. Economically, it is defined as total number of individuals residing in an area, state, or country. The population supplies the labor forces that can contribute to the productivity and efficiency of a nation, thus becoming the resource of an economy.
In relation to population and economic growth, many studies have shown the positive and negative relationship between population and economic growth. Even some empirical leads to neutral result between population and economic growth (Gustiana, 2013). According to Okafor

(2004), to have an effective planning for development of a nation, it is vital to estimate the actual number of population (through census) as population plays a critical role in improving economic performance. Through this, the government will know how much allocation and distribution need to be spread in the awakening of more employment opportunities.

Based on study done by Grossman and Iyigun (1997), there is evidence that an increase in population during the colonial period increases the potential private return until the colonies turns into a burden on the conqueror. Contradictory, Acemoglu, Johnson, and Robinson (2002) analysis found that one of the factors that lower the GDP per capita for colonized countries in 1500 is the most densely populated second after the worse capitalist institution issues.

However as mentioned earlier, the influences of population growth on growth rate is still unfavorable. Previous studies have found non-or insignificantly negative relation for the period up to 1980, included Kelley and Schmidt (1994), Bloom and Freeman (1988), Brander and Dowrick (1994), and Barro, Mankiw, and Sala-i-Martin (1995). Mankiw, Romer, and Weil (1992) also found a significantly negative relation for the period 1960-85 using a Solow model and a human capital augmented Solow model.

2.3 Growth and Domestic Credit to Private Sector

The private sector is said to be the engine of economic growth for a country, especially for developing economies as according to Obeng-Amponsah et al. (2019). The correlation between domestic credit and economic growth is an interesting research topic that attracts different views from many scholars. For instance, a study by Toan (2020) on the correlation between domestic credit and economic growth using ASEAN countries during the period 2004-2017 found an inverted U-shaped nonlinear impact of domestic credit on economic growth. He employed the Generalized Method of Moment (GMM) suggesting an essential empirical evidence for ASEAN countries to launch credit policies with the aim of sustainable economic growth.

Meanwhile, Hailu (2014) in his empirical finding found that results show significant positive effect of gross domestic product per capita on domestic private credit in the short run while in the long run, the model shows a significant positive effect of gross domestic saving on domestic private credit. He applied vector error correction model using Ethiopia 31 years' time series data on his studies

Based on Mbulawa (2015), there is strong evidence suggesting that financial development, economic growth, trade openness and domestic credit by banks were important in explaining growth in credit to the private sector. He studied these using annual panel data for year 1996 to 2010 and applied both the fixed effects and dynamic model based on GMM estimations for eleven SADC countries to establish the determinants of credit to private sector. Furthermore, he suggested that the extension of financial resources to the private sector is enhanced by keeping low levels of corruption, improving government effectiveness as well as the regulation quality. Malarvizhi et al. (2019) on the other hand investigated the impact of financial sector development and economic growth, using a sample of ASEAN-5 countries (Malaysia, Indonesia, Singapore, Thailand and Philippines) from 1980 to 2011 and found domestic investment has a significant positive effect on economic growth.

However, some empirical implications of these reforms have been divergent. According to Begum and Aziz (2019) using the data for of domestic credit to private sector by bank on real GDP in Bangladesh by using time series data for the period of 1983-2017 found that there is a negative and statistically significant (at 10% level) relation between real gross domestic product and domestic credit to private sector using vector autocorrelation, while a study by Noureddine (2021) on domestic credit to private sector by banks on economic growth in Algeria found a negative impact on economic growth, a result that does not correspond to the theoretical and empirical studies conducted.

Furthermore, Puatwoe and Piabuo (2017) who investigated the impact of financial development on Cameroon economic growth using time series data discovered there is a short run negative relationship between bank deposits, private investment and economic growth however, in the long run, all indicators of financial development show a positive and significant impact on economic growth

2.4 Growth and Trade Openness

The impact between trade openness and economic growth has been one of the most queried in the body of literature for many years. Empirical framework has mixed finding on the relationship between these two variables. Some literature points out the positive and significant relationship with a country's rate of economic growth and its openness to international trade while others fail to find the linkages. The dissimilar findings are due to the differences in methodology and the way the openness variables were construct (Ajayi, 2003; Baldwin, 2004). As many findings eventually support the hypothesis of trade openness enhancing economic development, one might argue that an increase in trade openness eventually has the potential to curb economic movement (Clemens & Williamson, 2002).

The correlation between trade openness and growth is favorable, according to earlier research by Smith (1937) and Ricardo (1973). When nations specialize in what they have a comparative labor-productivity advantage, the Smith and Ricardian model claims that openness boosts income per capita. Additionally, openness can indirectly promote growth through a variety of means, including resource distribution and efficient resource allocation, product diversity, scale economies that are growing, and knowledge transfer.

Chang, Kaltani, and Loayza (2009), who studied the relationship between trade openness and economic growth in 82 countries (22 developed and 60 developing) between 1960 and 2000, found that trade openness has a significant impact on economic growth, particularly in emerging nations as opposed to developed ones. The research done by Villaverde and Maza (2011) for a sample of 101 countries during the years 1970–2005 demonstrates that increased trade openness promotes both increased economic growth and concurrent global wealth convergence. After conducting a cross-country examination into the relationship between trade and economic growth, Krueger and Berg (2003) concluded that trade had a very large impact on economic growth.

Other studies, on the other hand, have criticized the relationship between economic growth and trade openness. Contrary to Edwards (1992) and Dollar and Kraay (2003), Rodriguez and Rodrik (2000) argued that there are not sufficient factors that researchers take into account for the positive link between trade openness and economic growth to occur. Although free trade raises revenue, they contend that it does not produce long-term, sustainable growth. They challenged Alcalá and Ciccone (2004) and Dollar and Kraay (2003) for utilizing genuine openness measures, which always result in favorable biased estimations, as opposed to traditional measures of openness.

According to research done by Vamvakidis (2002), there was no evidence of a connection between openness and economic growth in the sample of industrialized and developing nations prior to 1970. Similar to Rigobon and Rodrik (2004), they found that trade openness had a negative impact on both developed and developing nations' growth rates in their sample. They utilized trade share in DP as a proximate for trade openness.

2.5 Growth and Democracy

In this study we used institutional factors namely political rights and civil liberty as proxies for democracy. The relationship between democracy and economic growth is considered to be very important in political economy. Most of the study found that democracy has been found to be positively correlated with economic growth as mentioned by Lipset (1993), Przeworski and Limongi (1993), Barro (1997), Minier (1998) and Przeworski (2004). But in contrast, some high-growth countries such as China, Saudi Arabia and the United Arab Emirates (UAE), have experienced low democracy rights as according to Przeworski and Limongi (1993) - they found a negative relationship between democracy and economic growth for Latin America and Asia countries. Their analyses are based on the finding that democracy undermines the security of property right by giving advantages to-people who have the political power to overtake the wealth of property owners. Another analysis by Helliwell (1994) and Przeworski (2000) on democracy and economic growth using different methodologies and techniques to deal with endogeneity found no linkages between these two variables.

However, as argued earlier, there are literature review which highlighted the positive impact of democracy on economic growth. For instance, Tang and Yung (2008) explored linkages between democracy and growth rate for Eight High Performing Asian Countries in East Asia, and they found a statistically significant relationship between these two variables especially in Hong Kong, Singapore, Malaysia, Indonesia and Philippines.

Prior to that, a study done by Sturm and De Haan (2001) focusing on a similar issue also found that the existence of democracy in a country has the direct causality with the economic growth. Furthermore, in raising the question on political democracy and growth, a broader analysis is needed, particularly on how it can encompass the channels or through indirect impact, rather than one-to-one causation between these two variables as one should know.

3.0 Methodology

This chapter will focus on the model specification in light of the theoretical and empirical study from the preceding chapter. Data for former colonies members will be used in this study. This study uses data sets from 1995 to 2015 to investigate the effects of colonisation on the growth of 72 former colonies. To achieve the primary goal, the study will use dynamic panel data analysis, notably Generalized Method of Moment (GMM) estimation.

3.1 General Model

Under this sub-topic, the empirical model that will be estimated is discussed.

The general functions are as follow:

$$GROWTH = f\{Colo, Macro, Inst\} \quad (3.1)$$

$$GDPc = f\{Conv, MIT\} \quad (3.2)$$

As equation (3.1) form a general equation, thus, equation (3.1) rephrase as:

$$GDPc = f\{initial\ GDPc, coloH, dcps, topop, top, gfcf, polR, civL,\} \quad (3.3)$$

Where equation (3.3) shows that *GDPc is* described as percentage growth of gross domestic product per capita, measurement of the economic growth.

Meanwhile the independent variables included in the model are initial GDPc, colonial heritage, macroeconomic variables and institutional factors as control variables. To start with, we define the colonial effects variable. Firstly, we have the *initial GDPc* is defined as the initial years of gross domestic product based on year 1995, as theory suggests that less developed countries will have higher growth rates than highly developed countries and as according to the neo-classical model will converge if there are diminish returns to investment. Dowrick and Nguyen (1989) found a correlation between initial GDPc with subsequent growth rates. Their result was in line with the finding of Barro and Sala-i-Martin (1992) but, in contrast, Romer (1987) and Rebelo (1991) found no correlation between these two variables.

Next, we have *coloH* which represent the colonial heritage or the length of colonial period as suggested by Grier (1999) and Kenyon (2016). They stated that some might argue perhaps longer periods of colonization might disrupt the economic growth, but it is also possible that longer periods of colonization are better because they allow the conquerors to establish better institutions and facilities in the nations they conquered.

Then we move to macroeconomic and institutional variables as control variables. First is the *dcps* variable, defined as domestic credit to private sector to represent financial liberalization as employed by Obeng-Amponsah et al. (2019) and Toan (2020) - domestic credit to private sector has a positive relationship with the performance of economic growth. Secondly is *pop* variable representing the population rate. According to Solow (1956), Swan (1956), Grier (1999), Abderrezak (2004), Agbor (2011) and Alonso (2011), there are mixed relationship between population rate and economic growth found through their finding.

Further is the *gross fixed capital formation (gfcf)* variable which is the term for capital, where several researchers pointed out they found evidence supporting a robust relationship between growth and income inequality (Lucas Jr, 1988; Mankiw, Romer, & Weil, 1992; Romer, 1986). Lastly is *the top* variable which refers to trade openness. According to Frankel and Romer (1999), a positive relationship between these two variables exist, similar with other studies prior to that. For institutional factors, we included two variables – firstly, political rights which represent democracy, as most studies found positive effects of democracy towards the growth as reported by Bhagwati (1995), Rodrik (2000), Sturm and De Haan (2001), and Mobarak (2005) and secondly, the institutional variable, which is civil liberties representing freedom

Further, to determine the relationship between the dependent variable and its explanatory as per Eq. (3.3), the following Dynamic panel log-log regression function is specified:

$$ln\ GDPc_{it} = \gamma ln\ GDPc_{it-1} + \beta_1 ln\ initial\ GDPc_{it} + \beta_2 ln\ coloH_{it} + \beta_3 ln\ dcps_{it} + \beta_4 ln\ pop_{it} + \beta_5 ln\ gfcf_{it} + \beta_6 ln\ top_{it} + \beta_7 ln\ polR_{it} + \beta_8 ln\ civL_{it} + \varepsilon_{it} \quad (3.4)$$

where $ln\ GDPc_{it}$ is the logarithm of the percentage growth of gross domestic product per capita, $\gamma ln\ GDPc_{it-1}$ is the logarithm of lagged percentage growth of gross domestic product per capita, ln initial $GDPc_{it}$ is the logarithm of initial years of gross domestic product per capita, $coloH_{it}$ represents the length of colonial rule or the number of

years between first colonization and independence, *ln* $dcps_{it}$ is the logarithm of domestic credit to private sector, *ln* pop_{it} is the logarithm of population rate, *ln* $gfcf_{it}$ is the natural logarithm of gross fixed capital formation, *ln* top_{it} is the natural logarithm of trade openess, *ln* $polR_{it}$ is the natural logarithm of political rights, *ln* $civL_{it}$ is the natural logarithm of civil liberties and εit is the error terms.

3.2 Data and Description of Variables and Expected Sign

The data set consists of a panel data for 72 members of former colonies for the period of year 1995-2015. The list of countries is provided in Appendix A. The independent variable and all explanatory variables are collected from different sources, as according to the summary of Table 3.1:

Table 3.1: Definition of Explanatory Variables and Data Source and Expected Sign

Variable Name	Brief Description	Data Sources	Expected Sign
Initial GDP per capita	This is GDP per capita 1960	WDI (2017) , IMF and Maddison (2010)	+ve/-ve
ColoH	Represent the length of period by the conquerors	Grier (1999), Agbor (2011), Kenyon (2016) and own estimation based on current research	+ve
Domestic Credit To Private Sector	Percentages ratio to GDP	WDI (2017)	+ve
Population	The rate of Population/ Labor forc	WDI (2017)	+ve/-ve
Gross Fixed Capital Formation	Percentages ratio to GDP	WDI (2017) OECD (2017)	+ve/-ve
Trade Openness	Export plus import divided by GDP	Penn World 9.0	+ve
Democracy	1) Political rights (PR) 2) Civil liberties (CL)	Freedom House and INSRC on Polity IV Annual Time Series Data	1) +ve/-ve 2) +ve/-ve

4.0 Results and Discussions

Table 4.1: Results of the determinant of economic growth model using static approaches

	POLS	Random Effect (RE)	Fixed Effect (FE)	Fixed Effect (VCE)
COLOH	0.2885***	0.5058***	0.5001***	0.5001***
	(0.0733)	(0.0673)	(0.0587)	(0.0778)
TPOP	0.8612***	0.2410***	0.0662**	0.0662
	(0.0368)	(0.0333)	(0.0303)	(0.0665)
DCPS	0.4270***	0.0850*	0.0651*	0.0651
	(0.0730)	(0.0447)	(0.0371)	(0.0911)
TOP	0.2526*	0.0230	0.1634***	0.1634**
	(0.1399)	(0.0748)	(0.0623)	(0.0827)
GFCF	0.9397***	0.2395***	0.1585***	0.1585
	(0.1850)	(0.0723)	(0.0575)	(0.1107)
PR	0.1027	-0.0254	-0.0040	-0.0040
	(0.2084)	(0.0820)	(0.0659)	(0.0783)
CL	-0.8566***	-0.3691***	-0.3806***	-0.3806***
	(0.2699)	(0.1166)	(0.0942)	(0.1268)
FDI	-0.0045	-0.0004	0.0024	0.0024
	(0.0095)	(0.0036)	(0.0029)	(0.0039)
Constant	0.6922	6.2426***	6.7474***	6.7474***
	(0.8568)	(0.4875)	(0.3835)	(0.6719)
$\overline{R}^2$	0.7752			
RMSE	0.8942			
BPLM Test	0.0000			
Hausman Test		0.0000		
Poolability Test		0.0000		
Heteroscedasticity Test			0.0000	
CSD Test			0.0000	
Number of groups		72	72	72
Number of observation	294	294	294	294

Notes: Figures in the parentheses are standard errors. $\bar{R}^2$ denotes as adjusted R-squared, RMSE denotes as root mean square error, BPLM denotes as Breusch–Pagan LM test, and CSD denotes as cross sectional dependence. All the BPLM test, Hausman test, Heteroscedasticity test, and CSD test are reported in p-values. *, **, and *** indicate the respective 10%, 5%, and 1% significance levels.

Based on the outcome reported in Table 4.1 above, all the static approaches show that the *COLOH* is positive and highly significant at 1%. It is quite robust and significant across all statistic estimators. This indicates an increase in 1% in the colonial period, the GDP of former colonies will be increased by 0.29%, 0.51%, and 0.50% for POLS, RE, and FE respectively. This finding is consistent with the previous findings by Grier (1999), Bertocchi and Canova (2002), Acemoglu, Johnson, and Robinson (2002), Glaeser et al. (2004), Acemoglu, Johnson, and Robinson (2005), Lange, Mahoney, and Vom Hau (2006), Huillery (2009), Nunn (2008), Nunn (2007).

In the case of POLS, increase in the *RGDP* is also highly and positively explained by 1% increase in the population,

domestic credit to private, trade openness, and gross fixed capital formation. In contrast, the economic performance for those selected countries would somehow reduce by 0.86% with higher civil liberties, and not be affected with the presence of political rights and foreign direct investment. The value of the adjusted R^2 also indicates the 78% of the variation in the dependent variable is explained by the regressors.

Likewise, the results of the RE test shows that the *RGDP* of these countries is significantly increased by 0.24% with 1% increase in the population and gross fixed capital formation. In the case of population, the positive outcome of this study is inconsistent with the previous findings by Acemoglu, Johnson, and Robinson (2002), Jhingan (2005), Todaro Smith (2006), and Nwosu, Dike, and Okwara (2014), where these studies clearly stated that increase in the population should lead to negative economic growth since the resources allocation and distribution need to be widely spread. In contrast, the positive relationship between the gross fixed capital formation and GDP growth is supported by Ali (2015), Ncanywa and Makhenyane (2016), Meyer and Sanusi (2019), and Lymonova (2019), where these studies also highlighted ~~on~~ the ultimate improvement in the citizen's livelihood.

However, the role of domestic credit proved to be weakly significant in determining the income model with only 10% significant level. However, the positive results of both indicators explained the significant of credit channel to private sectors to enhance their productive capacity of firms and enhance their potential to growth (Adu, Marbuah, & Mensah, 2013; Olowofeso, Adeleke, & Udoji, 2015). Again, the estimated coefficient of civil liberties remained to be negative and highly significant in explaining the growth model. This result implies that the higher level of economic freedom would discourages economic growth, which is not consistent with the findings by BenYishay and Betancourt (2010), Alfonso-Gil, Lacalle-Calderon, and Sánchez (2014), and Brkić, Gradojević, and Ignjatijević (2020).

Furthermore, it is also observed that the results of RE model are almost similar to the FE results except for trade openness, which appears to be highly significant at 1% level and in line with the previous findings by Lee, Ricci, and Rigobon (2004), Alcalá and Ciccone (2004), Villaverde and Maza (2011), and Krueger and Berg (2003). Since there are several static models (POLS, RE, FE) in these study, further tests need to be conducted to choose the most appropriate long-run models. The BPLM test helps to determine the selection of POLS and RE approaches, meanwhile the Hausman test is used to choose between RE and FE approaches, if the null hypothesis of the BPLM test is rejected. For this purpose, the p-value is used to quantify the significance level. However, based on the results reported in Table 4.1, based on the BPLM test it could be concluded the data is suitable for panel test rather than pooled, while the Hausman tests results show that the RE model is preferred over FE. Thus, the FE model is then chosen in this study to explain the determinant GDP growth model for above objective.

Since this is a panel data analysis, checking for heteroscedasticity and CSD issues are required as both will lead to biasness and inefficient estimators. Since the p-value of heteroscedasticity and CSD test are 0.000, it can be concluded that the long-run economic growth model is again estimated using the robust standard error estimator, where it corrects the standard error of the previous FE results. Surprisingly, the *COLOH* variable remained highly significant at 1% level, supporting the previous findings by Grier (1999), Bertocchi and Canova (2002), Acemoglu, Johnson, and Robinson (2002), Glaeser et al. (2004), Acemoglu, Johnson, and Robinson (2005), Lange, Mahoney, and Vom Hau (2006), Huillery (2009), Nunn (2008), Nunn (2007). Meanwhile, the insignificant results of TPOP, DCPS, and GFCF in explaining the income model is consistent with the previous findings by Koskei, Buigut, and Kibet (2013), Bucci (2015), and Khatiwada (2020).

Other than static approaches, the model also proved to be dynamic as well when the lagged dependent variable is highly significant and negative for all of the GMM approaches as Table 4.2 below:

Table 4.2: Results of the determinant of economic growth model using dynamic approaches

	1 Step Difference GMM	2 Step Difference GMM	1 Step System GMM	2 Step System GMM
RGDP (-1)	0.7593***	0.7301***	0.8642***	0.8029***
	(0.1423)	(0.1424)	(0.0602)	(0.0707)
COLOH	0.1980	0.2285	0.1252**	0.1556**
	(0.1872)	(0.2071)	(0.0619)	(0.0615)
TPOP	-0.2071	-0.1709	0.0297	0.0664
	(0.2231)	(0.1579)	(0.0643)	(0.0908)
DCPS	0.1226	0.1299	0.0712	0.1348**
	(0.0784)	(0.0946)	(0.0594)	(0.0627)
OPEN	0.4396*	0.4095*	0.2253	0.2752**
	(0.2395)	(0.2274)	(0.1438)	(0.1170)
GFCF	0.2086**	0.1958*	0.2960**	0.3359**
	(0.1027)	(0.1042)	(0.1494)	(0.1655)
PR	0.1187	0.1155	0.1438	0.0711
	(0.1702)	(0.1927)	(0.1148)	(0.0935)
CL	-0.2439	-0.2581	-0.1084	0.0013
	(0.3034)	(0.4041)	(0.1561)	(0.1551)
FDI	-0.0023	-0.0038	-0.0022	-0.0067
	(0.0086)	(0.0110)	(0.0077)	(0.0101)
Constant			-1.2134	-1.4224
			0.8649)	0.8596)
Number of instrument	12	12	22	22
Number of groups	72	72	72	72
Number of observation	150	150	222	222
AR (1)	0.061	0.076	0.007	0.024
AR (2)	0.519	0.654	0.140	0.278
Sargan test	0.747	-	0.044	-
Hansen test	-	0.700	-	0.324

Notes: Figures in the parentheses are standard errors. All the AR (1), AR (2), Sargan test, and Hansen test are reported in p-values. *, **, and *** indicate the respective 10%, 5%, and 1% significance levels.

This simply indicates that an increase in the current GDP is strongly influenced by the previous period GDP performance or so called a dynamic relationship. In comparison with other estimators, usually, the two-step estimator is more efficient. However, since there is a difference system GMM, the two-step difference GMM standard errors are associated with downward bias issue. On the contrary, the two-step system GMM method procedure by Blundell and Bond (1998) and Bond (2002) effectively monitors for autocorrelation and heteroscedasticity, which then provides consistent coefficient estimates and conducts more accurate autocorrelation Arellano and Bond test. Therefore, the two-step system GMM estimator is favoured in this study.

Moreover, variable (*COLOH*) also appears to be significant and positive for system GMM only. The estimated coefficient in the two-step system GMM implies that the *RGDP* of colonised countries will be increased by 0.16% with a 1% increase in the length of period by the conquerors. Similar to the static results, this result is consistent with the previous findings by Grier (1999), Bertocchi and Canova (2002), Acemoglu, Johnson, and Robinson (2002), Glaeser et al. (2004), Acemoglu, Johnson, and Robinson (2005), Lange, Mahoney, and Vom Hau (2006), Huillery (2009), Nunn (2008), Nunn (2007). The GDP growth for these countries is also positively and significantly affected by the ease in borrowing from the financial market with 0.13%, followed by the extent to which it is engaged in the global trading system (0.28%), as well as increase in the investment (0.34%) this is in line with the previous studies by Mishra and Narayan (2015), Chirwa and Odhiambo (2016), İyidoğan, Balıkçıoğlu, and Yılmaz (2018), and Ahuja and Pandit (2020).

5.0 Results Summary

Looking at the main variable in focus of this study, which is colonization, the results are robust and consistent, as well as positive and significant across all estimators. This implies that while the perceived notion the 'master' tends to act as a parasite on the host or colonized nation, draining its wealth as well as abusing its economy, it also proves that it acts like a launching platform for economic prosperity, whether intended or otherwise - the infrastructure, like roads, ports, airports, enabled the host country to be able to 'spring' upon its independence. The positive and significant coefficients clearly show that the longer the colonization period, the better the economic condition of the host country, albeit the host country should continue building on these good
fundamentals and make it better. It also clearly shows that the result or after effect of colonization is not all evil, Countries that have been colonized should also use this platform to build and strengthen the trade relationship with other countries with the same master, like in the context of the Commonwealth countries.

As for the control variables, capital and labor, the result is also consistent and robust, showing the importance of these variables in bettering the economic conditions, as indicated by the positive and significant results. Further enhancement of these variables should further spur the economy. As for the Foreign Direct Investment (FDI) the results are insignificant, though theoretically it should have a positive impact. However, for the sample that was tested and the period of the study, it is insignificant.

As for Institutional qualities, the results are quite the opposite of what was expected-it is negatively and significantly related with economic conditions. However, it is not isolated as explained in the previous chapter, it is quite similar to the findings of some earlier works and needs to be treated with caution, as too much freedom might be counterproductive to the nation's economy. As for trade openness, it is significant and positive, implying that the more open a nation is, the better for the economic condition of the country, and being in the same boat, albeit being colonized by the same master, could be a very good trade relation platform, and should be employed or used smartly and for the benefit of the nation.

5.1 Recommendation for Further Research

We conducted empirical work on the relationship between colonization and macroeconomic indicators on a macro and aggregated level in our study, and we would like to strongly recommend future research that might look at it on a micro level reflecting to particular countries.

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APPENDICES

Appendix A: List of former colonies

	COUNTRY Lower Income		Middle Income "Trap"		
ATG	Antigua and Barbuda	ARG	Argentina	ARM	Armenia
AZE	Azerbaijan	BHS	Bahamas, The	BGD	Bangladesh
BRB	Barbados	BLR	Belarus	BLZ	Belize
BEN	Benin	BOL	Bolivia	BWA	Botswana
BRN	Brunei	BFA	Burkina Faso	KHM	Cambodia
CMR	Cameroon	CAN	Canada	CAF	Central African Republic
TCD	Chad	CHL	Chile	COL	Colombia
ZAR	Congo, Dem. Rep.	CRI	Costa Rica	CIV	Cote d'Ivoire
CUB	Cuba	CYP	Cyprus	DJI	Djibouti
DMA	Dominica	DOM	Dominican Republic	ECU	Ecuador
EGY	Egypt, Arab Rep.	SLV	El Salvador	GNQ	Equatorial Guinea
EST	Estonia	FRA	France	GAB	Gabon
GMB	Gambia, The	GEO	Georgia	GHA	Ghana
GRD	Grenada	GTM	Guatemala	GIN	Guinea
GUY	Guyana	HTI	Haiti	HND	Honduras
HKG	Hong Kong SAR	IND	India	JAM	Jamaica
KAZ	Kazakhstan	KEN	Kenya	KGZ	Kyrgyz Republic
LAO	Lao PDR	LVA	Latvia	LBN	Lebanon
LSO	Lesotho	LTU	Lithuania	MDG	Madagascar
MWI	Malawi	MYS	Malaysia	MDV	Maldives
MLI	Mali	MLT	Malta	MRT	Mauritania
MUS	Mauritius	MEX	Mexico	MDA	Moldova
MAR	Morocco	NZL	New Zealand	NIC	Nicaragua
NER	Niger	NGA	Nigeria	PAK	Pakistan
PAN	Panama	PRY	Paraguay	PER	Peru
PHL	Philippines	RUS	Russian Federation	SEN	Senegal
SYC	Seychelles	SLE	Sierra Leone	SGP	Singapore
SLB	Solomon Islands	ZAF	South Africa	ESP	Spain
LKA	Sri Lanka	KNA	St. Kitts and Nevis	LCA	St. Lucia
VCT	St. Vincent and the Grenadines	SWZ	Swaziland	SYR	Syrian Arab Republic
TJK	Tajikistan	TZA	Tanzania	TON	Tonga
TTO	Trinidad and Tobago	TUN	Tunisia	TKM	Turkmenistan
TUV	Tuvalu	UGA	Uganda	UKR	Ukraine
GBR	United Kingdom	URY	Uruguay	UZB	Uzbekistan
VUT	Vanuatu	VEN	Venezuela, RB	VNM	Vietnam
ZMB	Zambia	ZWE	Zimbabwe	DZA	Algeria