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Abstract

Industrial revolution 4.0 requires the upper-middle-income economies to invest in critical areas such as technological advancement, infrastructure, internet of things, research and development, and so on. However, as majority of these economies are falling into the middle-income trap, they need huge supports from domestic and foreign investors to supply capital for growth stimulation. The issue on which type of investment should the governments rely on is crucial as it might help the countries to move out from the middle-income trap position. By using system GMM on four different growth models, it was found that gross saving is the main contributor to the economic growth of the upper-middle-income economies. Rather than domestic and foreign investments, the governments should accumulate more savings for future growth and development, which can be used as a source of capital especially in the areas of human capital development, technology, research, Internet of Things, in-line with the needs of industrial revolution 4.0.

Keywords: Economic Growth, Foreign Direct Investment, National Savings, Domestic Investment, Upper-Middle-Income Economies

Introduction

In-line with the industrial revolution 4.0, higher amounts of public and private investments are required to develop new infrastructures, enhance the performance of existing industries and train existing labors in meeting the industrial demand. For sure, it requires countries to inject higher amount of funds for the agenda of economic transformation. The sources of funds may come from the government itself, in the forms of national savings and public debt. The government can also acquire funds by attracting local and foreign investors to invest in critical areas such as education, infrastructure, research and development as well as technological advancement. These types of investments are highly crucial to achieve competitive advantage, thus allowing the countries to achieve economies of scale and penetrate bigger market size through export and import.

Nevertheless, attracting new investors to invest in a country is not an easy task. The macroeconomic foundation must be stable and resilient enough to confront with any shocks. The investors would be interested to invest in countries with high economic growth since it gives them confident that their return on investments will always be positive and significant. However, previous statistics show that some countries under the upper-middle-income economies (UMIE) were unable to maintain high economic performance, leading to demotion of their status from UMIE to lower-middle-income economies (LMIE). By definition, countries classified under the UMIE receive gross national income (GNI) per capita ranging from $3,896 to $12,055, while the countries with LMIE status earned GNI per capita from $996 to $3,895 (The World Bank, 2018). As illustrated in Table 1.1, 13 out of 56 countries within the UMIE have experienced demotion to LMIE since 1990 to 2019. The years of demotion varies from one year (Albania, Jordan, Tonga and Turkey) to fifteen years (Romania).

Table 1: Countries within UMIE that have been downgraded into LMIE

No.	Countries	Starting fiscal years with UMIE's classification	Fiscal years demoted into LMIE	Fiscal years retained back to UMIE's classification
1	Albania	2011	2013 (1)	2014 – 2019
2	Belize	2004	2010 – 2013 (4)	2014 – 2019
3	Bostwana	1993	1995 – 1998 (4)	1999 – 2019
4	Brazil	1991	2004 – 2007 (4)	2008 – 2019
5	Fiji	2009	2012 – 2013 (2)	2014 – 2019
6	Republic of Iran	1989	1992 – 2010 (9)	2011 – 2019
7	Jordan	2012	2018 (1)	2019
8	Romania	1989	1992 – 2006 (15)	2007 – 2019
9	South Africa	1990	2000 (1) 2003 – 2005 (3)	2001 – 2002 2006 - 2019
10	Suriname	1989	1995 – 2008 (14)	2009 - 2019
11	Tonga	2014	2017 (1)	2018 - 2019
12	Turkey	1999	2001 (1) 2003 – 2005 (3)	2002 2006 – 2019
13	Venezuela	1989	1996 – 1998 (3)	1999 – 2015 2017 - 2019

After all, Malaysia as one of the UMIE is able to maintain the status of UMIE since 1990 till now. However, our economic growth is still not increase at a promising rate, thus leading to a middle-income trap. It happens when the countries are trapping themselves in the UMIE for long-period of time, and struggling in transforming themselves from UMIE into HIE. This issue is also applicable to majority of the countries within the UMIE. Previous statistics show that only four countries within the UMIE are able to achieve GNI per capita more than $12,055 since 1990, namely American Samoa, Equatorial Guinea, Russian Federation and Venezuela. For instance, Venezuela was able to achieve the HIE status in the fiscal year of 2016, before being demoted back to UMIE due to high inflation and macroeconomic instability. Similarly, Russian Federation was only able to achieve HIE status for three years (fiscal year of 2014 to 2016) since 2006.

Indirectly, it shows that the countries within the UMIE cannot use the same strategies to boost the level of economic growth as what they did when they were at the lower level of economic development. Applying the same strategies will lead to economic stagnation, thus leading to the middle-income trap (Bulman, Eden, & Nguyen, 2017). Focusing too much on existing products without any invention and innovation will lead to economic stagnation as other countries started to produce similar products with better quality. It if happens, the countries may no longer retain their competitive advantage on the products, thus limiting their ability to grow further. In mitigating the problem, the needs of support from domestic and foreign investors are highly crucial for economic transformation agenda for all UMIE including Malaysia. The funds injected by these investors can be invested in critical areas parallel to the development of the IR4.0.

Therefore, this paper is meant to investigate which type of investment is the most crucial investment for UMIE to achieve higher economic growth. This issue is worth to be investigated since the investment is regarded as one of the critical success factors for the economic growth and development. The structure of this paper is as follows. The next section reviews previous studies on how investment affects economic growth. The reviews cover both theoretical and empirical aspects of investment on growth. Follow suit is the third chapter that explains the research design, research method and model specifications as well as variables used in the analyses. The fourth chapter discusses the empirical results and findings while the final chapter explains the conclusions and policy recommendations.

Literature Review

The Solow growth model which is built from the neoclassical aggregate production function (Solow, 1956), stress three main causes of economic growth namely capital, labor and technology. These three resources are complementary to each other. A labor is able to produce more outputs if he is assisted by additional capital. However, any additional capital injected in the production process will have a diminishing return to the labor productivity (Snowdon & Vane, 2005). Therefore, the usage of capital in the production process will contribute the most to the economic growth when the capital itself is relatively scarce. In opposite, if the capital is relatively abundant in the economy, its impact on the economic growth may not be at the optimum level due to the diminishing return.

In an open economy, capital mobility across countries is possible. The countries with relatively abundant capital will be attracted to invest in other countries that give higher returns, thus accelerating the process of capital accumulation in the countries that have relatively scarce capital. Ultimately, countries with scarce capital can still achieve higher economic growth via the role of capital mobility.

Similarly, the endogenous growth model which was developed to overcome the weaknesses of the Solow growth model, agreed on the importance of capital to stimulate economic growth. Higher capital leads to better technological improvement. In the Solow growth model, Solow (1956) believes that the technological improvement is exogenous across countries. In other words, all countries have the same level of technological improvement as it is publicly available for free. Nevertheless, in the endogenous growth model, the technological improvement is considered as endogenous (Lucas, 1988; Romer, 1986). Each

country has different level of technological improvement due to different abilities to absorb the knowledge. Thus, it is said that higher capital leads to improvement in technology and production of knowledge, which ultimately helps in stimulating the economic growth of a country. This is the main contribution of the endogenous growth model, which also highlights the importance of human capital in the growth literature. In this case, better human capital is developed due to the technological improvement which comes from the utilization of capital.

Empirically, a lot of research have been done on how capital investment affects the economic growth. The capital investment comes in various forms such as national savings (Mencinger, Verbic, & Aristovnik, 2015; Sulikova, Djukic, Gazda, Horvath, & Kulhanek, 2015), domestic investment (Akram, 2016; Gómez-Puig & Sosvilla-Rivero, 2018b) and foreign direct investment (Chirwa & Odhiambo, 2016; Fashina, Asaleye, Ogunjobi, & Lawal, 2018). No doubt that all of these capital investments bring prosperity and growth. For instance, domestic investment positively influenced the economic growth of Vietnam and selected Asian countries due to the effectiveness of the strategies in promoting the inflows of domestic investment (Bakari & Tiba, 2019). Similarly, by applying various types of methodologies such as two-stage least square (Akhanolu, Babajide, Victoria, Tolulope, & Godswill, 2018; Chirwa & Odhiambo, 2016; Dao, 2018), ordinary least square (Rana & Wahid, 2017) and system GMM (Kim, Ha, & Kim, 2017), the results confirmed the positive effect of domestic capital investment on economic growth.

With regards to FDI as a source of capital, it gives positive multiplier effect to the economic growth in the cases of Malaysia (Alzaidy et. al., 2017), Korea (Kim & Pang, 2008) and Pakistan (Shahbaz & Rahman, 2012). It is mainly due to the knowledge spillover from the multinational companies to local businesses that indirectly support the domestic economic growth. By combining both arguments from domestic and foreign investments, both types of investment generate higher capital that helps to increase purchasing power of people via new employment opportunities. Higher consumptions and investment would then increase the economic growth of the countries.

Even though vast studies have found positive relationship between capital and economic growth, there were also studies that found otherwise. For instance, Thailand's domestic investment was found to adversely affect the economic growth from 1975 to 2018. The reason being is because of the ineffectiveness of the domestic investment on projects and activities that give lesser positive impacts to the economy (Raza, Aldeehani & Alshebami, 2020). By looking at previous literature, most of the studies were conducted on one specific country or a group of economies. Besides, previous research looked at the positive or negative effect brought by each different type of capital investment. Nevertheless, lack of studies has been conducted on how each type of these capital investments affect economic growth, specifically for the UMIE. Which one should the government focus on to strive for higher economic growth? This paper is meant to contribute to the existing literature by covering this loophole.

Methodology

The foundation of the growth model is based on the Cobb-Douglas production function. It can be written as follows:

$$Y = K^{\alpha} L^{1-\alpha} \quad (1)$$

where Y is the aggregate output, K is the capital, L is the labor while α and 1-α are both representing the share of capital and labor in the national income. In this paper, we use three types of capital as previously discussed in past literature namely national savings (SAV), domestic investment (INV2) and foreign direct investment (FDI). Apart from K and L, other variables are also included in the growth model namely human capital (HC), trade openness (TO) and inflation (INF). Firstly, HC is included consistent with the endogenous growth model that highlights its importance. Secondly, TO is also included to represent the open economy that the countries within the UMIE are practicing. Thirdly, INF is added to indicate the macroeconomic stability of each country under investigation. Finally, the log of initial real GDP per capita ($\ln Y_{i0}$) is included to illustrate how countries within the UMIE converge to the steady state of the equilibrium level (Islam, 1995). By combining all variables, the baseline model specification is written as follows:

$$\ln Y_{it} = \alpha_i + \beta_1 \ln GDPPC_{i,t} + \beta_2 \ln L_{it} + \beta_3 \ln K_{it} + \beta_4 \ln HC_{it} + \beta_5 \ln TO_{it} + \beta_6 \ln INF_{it} + \varepsilon_{it} \quad (2)$$

where Y is the GDP growth representing, i is cross section, t is time, α is a constant term, β is the coefficient for each variable and ε is the error term. The variable under investigation is K (capital). It represents three types of capital namely SAV, INV and FDI. Meanwhile, the remaining variables (L, HC, TO and INF) are regarded as the control variables.

In order to ensure the robustness of the estimation results, four models were formed. The first three models include each and every type of capital separately, while the fourth model combines all types of capital in the same equation. All four models are shown in equation (3) to (6).

$$\ln Y_{it} = \alpha_i + \beta_1 \ln Y_{i0} + \beta_2 \ln L_{it} + \beta_3 \ln SAV_{it} + \beta_6 \ln HC_{it} + \beta_7 \ln TO_{it} + \beta_5 \ln INF_{it} + \varepsilon_{it} \quad (3)$$

$$\ln Y_{it} = \alpha_i + \beta_1 \ln Y_{i0} + \beta_2 \ln L_{it} + \beta_4 \ln INV2_{it} + \beta_6 \ln HC_{it} + \beta_7 \ln TO_{it} + \beta_5 \ln INF_{it} + \varepsilon_{it} \quad (4)$$

$$\ln Y_{it} = \alpha_i + \beta_1 \ln Y_{i0} + \beta_2 \ln L_{it} + \beta_5 \ln FDI_{it} + \beta_6 \ln HC_{it} + \beta_7 \ln TO_{it} + \beta_5 \ln INF_{it} + \varepsilon_{it} \quad (5)$$

$$\ln Y_{it} = \alpha_i + \beta_1 \ln Y_{i0} + \beta_2 \ln L_{it} + \beta_3 \ln SAV_{it} + \beta_4 \ln INV2_{it} + \beta_5 \ln FDI_{it} + \beta_6 \ln HC_{it} + \beta_7 \ln TO_{it} + \beta_5 \ln INF_{it} + \varepsilon_{it} \quad (6)$$

Description and sources of the data

The description and the sources of the data are explained in Table 2.

Table 2: The description and the sources of data

No.	Variable Notation	Variable Name	Description	Measurement Unit	Sources
1	lnY	Economic growth	Growth rate of GDP per capita	Percentage	World Development Indicator
2	lnY_{i0}	Lagged of initial income	Log of initial real GDP per capita	Logarithm	World Development Indicator
3	lnL	Labour	Population growth	Percentage	World Development Indicator
4	lnSAV	Domestic savings	Gross domestic savings to GDP	Percentage	World Development Indicator
5	LnINV2	Domestic investment	Gross capital formation to GDP	Percentage	World Development Indicator
6	lnFDI	Foreign direct investment	Net inflows of FDI to GDP	Percentage	World Development Indicator
7	lnHC	Human capital	Human capital index	Index	Penn World Table
8	lnTO	Trade openness	Sum of export and import to GDP	Percentage	World Development Indicator
9	lnINF	Inflation	Consumer price index	Percentage	World Development Indicator

All variables were derived from World Development Indicator database by the World Bank, except for HC. The data on HC is gathered from Penn World Table. It is calculated based on the years of schooling and returns to education (Feenstra, Inklaar, & Timmer, 2015).

Scope of Study

The scope of this study is covering on the countries within the UMIE only since majority of these countries are in the middle-income trap. Out of 56 countries in the UMIE, only 32 countries were selected due to data availability. The list of countries under investigation is shown in the Appendix 1. The period of study is from 1990 to 2017. Since the impact of investment on growth can only be realized after few years, the data were averaged into non-overlapping five-year period, leading to six time period. Following previous research (Karadam, 2018), the averaging procedure is conducted for two reasons. Firstly, we want to look at the long-run effects since the effects of investment cannot be realized on the same year. Secondly, the averaging procedure is initiated to avoid any structural break in the data that might influence the estimation results.

Method of Analyses

The first step in analyzing the data is by conducting the correlation analysis. The idea is to ensure all independent variables are free from multicollinearity problem. The next step is to

remove any outliers in the models in order to ensure accuracy of the estimation results. To do so, Cook's D test is conducted to all four models. The test is done by calculating the cutoff distance (divide 4 with the number of observations). Since the number of observations is 189, any observations with cutoff distance more than 0.021 are considered as outliers. These outliers will be removed to ensure better accuracy of the results.

Once the outliers are removed, the selection of the right method for panel data estimation should be based on the number of time and cross sections. Since we have large cross sections (32 countries) but small time period (t=6), the appropriate method is the generalized method of moments (GMM). Apart from that, this method is also suitable as it is able to manage endogeneity issue in the set of the independent variables (Arellano & Bond, 1991). The endogeneity issue exists for our model because some of the independent variables can be the dependent variable at the same time. For instance, higher economic growth is one of the factors that can increase the domestic and foreign investors in the countries. In this regard, INV2 and FDI can be dependent variables against GDPG. Following previous growth literature, all variables in the growth models are treated as endogenous variables (Cieślik & Goczek, 2018). This issue cannot be tackled by using traditional panel estimators such as pooled ordinary least square, fixed effects and random effects model (Zhang, Hao, Lu, & Deng, 2018). Instead, it can be solved using GMM estimation method by adding lagged levels of regressors as the instrumental variables. In between system GMM and difference GMM, system GMM is more preferable since it is able to reduce biases and provide better estimation results (Blundell & Bond, 1998). Hence, this study uses system GMM to gather the estimation results.

The results from system GMM will only be valid if two conditions are met. Firstly, there should be no serial correlation in the error terms at the second order. It is tested by using Arellano-Bond test, with a null hypothesis of no serial correlation in the error terms at second order. Secondly, the instruments should be exogenous (Hansen, 1982). In this case, Hansen J test is conducted to ensure that the null hypothesis is not rejected (overidentifying restrictions are valid).

Empirical Results and Discussion

The results of the descriptive statistics for all variables used in this paper are tabulated in Table 3. As illustrated in Table 3, the minimum and the maximum values for all variables show an increasing trend. Besides, the mean and median for all variables are closer to each other except for INF. Besides, there are huge differences between the minimum and maximum values of TO and INF. The two symptoms indicate the existence of outliers as the data might have extreme values.

Table 3: Descriptive Statistics

No.	Variable	Mean	Median	Standard Deviation	Minimum	Maximum
1	Y	2.324726	2.183728	3.15748	-12.57597	11.27283
2	Y_{i0}	8.521685	8.505189	0.5431781	6.591894	9.536264
3	L	1.177353	1.309962	1.135407	-1.505077	5.207555
4	SAV	22.46649	20.69014	13.337	-28.03556	56.01711
5	INV2	24.67995	23.30981	6.63747	12.66405	49.99508
6	FDI	3.043388	2.59497	2.672332	-4.17289	18.91545
7	HC	2.526	2.558554	0.4273671	1.467674	3.489187
8	TO	72.05042	64.61259	33.63603	15.56648	205.5394
9	INF	1290.627	6.8966	16878.62	-0.121	232662.3

Apart from that, the correlation analysis as tabulated in Table 4 show no multicollinearity problem exists since the correlation values between all independent variables did not exceed 0.8. Thus, all independent variables can be included in the models.

Table 4: Correlation Analysis

	Y	Y_{i0}	TO	L	HC	INF	SAV	INV2	FDI
Y	1.0000								
Y_{i0}	-0.2453	1.0000							
TO	0.0260	-0.0551	1.0000						
L	-0.2003	0.0782	0.1217	1.0000					
HC	0.1071	0.1240	0.2581	-0.4813	1.0000				
INF	-0.4422	-0.1107	-0.0063	-0.1700	0.0218	1.0000			
SAV	0.1175	0.3455	0.0489	0.2037	-0.1882	-0.1029	1.0000		
INV2	0.3015	-0.1294	0.0953	0.0398	-0.1258	-0.0287	0.5505	1.0000	
FDI	0.2758	-0.0346	0.2885	-0.1624	0.4709	-0.1167	-0.2162	0.0279	1.0000

As illustrated in Appendix 2, the scatter plots in between INV2, SAV and FDI against Y prove the existence of outliers in the dataset especially for observations that belong to Armenia, Kazakhstan, Albania and Russian Federation. After calculating the cutoff distance using Cook's D test, few observations were found to be outliers. All of these observations were removed following suggestion by previous research (Law, 2018).

Main Results

Table 5 illustrates the results of the two-step system GMM for all four models. The results are highly consistent for all four models, indicating the robustness of the findings. Firstly, the LGDPPC as the convergence variable, meet the expected negative sign (Barro, 1991; Barro & Sala-i-Martin, 2004) with coefficients ranging from -1.626 to -3.485. Secondly, all investment variables have positive relationship with GDPG in all four models (Fashina et al., 2018; Pegkas, 2018), with FDI as the highest contributor to the economic growth. Thirdly, the signs of all

control variables are parallel with previous literature, with negative sign for L (Kharusi & Mbah, 2018) and INF (Arčabić, Tica, Lee, & Sonora, 2018), and positive sign for HC (Karadam, 2018) and TO (Fashina et al., 2018). Finally, the p-values for both AR(2) and Hansen test suggest that the model is correctly specified and the instruments are valid.

Besides, the most important source of growth for the UMIE is human capital. In all four models (1.1 to 1.4), the coefficients of the HC are the largest (excluding the convergence variable), ranging from 0.999 (in model 1.2) to 1.484 (in model 1.3). It indicates that the increase in the years of schooling generate higher returns to education and create pool of talents that can contribute to the economic growth in a long period of time (Ali, Egbetokun, & Memon, 2018). No doubt that education creates innovative mindset and forms a better quality of human capital and entrepreneurs. Within the four models, the coefficient of the HC is the highest when FDI is included in the model (model 1.4). Thus, it gives strong signal on the importance of FDI in accumulating capital, building human capital and achieving higher economic growth.

Before discussing the roles of investments on the economic growth, it is worth to look at the convergence variable denotes by LGDPPC. Consistent with the conditional convergence hypothesis, the coefficients of this variable are negative and significant in all four models (Barro & Sala-i-Martin, 2004; Karadam, 2018). The convergence hypothesis claims that the developing countries are able to grow faster than the developed economies due to diffusion of technology and lower costs of product imitation. In this case, the UMIE are able to converge to the steady state of the development path at a high growth rate relative to the developed countries. However, as the countries converge to their steady state of the development path, other countries will start to catch-up with the development via product imitation and technological diffusion that can be obtained mainly from the FDI.

Table 5: Panel data estimation using two-step system GMM

	(1.1) Model with lnSAV	(1.2) Model with lnINV2	(1.3) Model with lnFDI	(1.4) Model with lnSAV, lnINV2 & lnFDI
	Coefficient	Coefficient	Coefficient	Coefficient
Y_{i0}	-0.1597*** (0.043)	-0.1613*** (0.028)	-0.1434*** (0.0435)	-0.1359*** (0.0.0)
lnL	-0.1658*** (0.053)	-0.1653*** (0.050)	-0.1239*** (0.034)	-0.2666*** (0.045)
lnHC	0.3695** (0.173)	0.1794** (0.093)	0.1476 (0.1218)	-0.0843 (0.128)
lnINF	-0.0554*** (0.015)	-0.0688*** (0.008)	-0.0708*** (0.016)	-0.0696*** (0.015)
lnTO	0.1693*** (0.035)	0.0709* (0.039)	0.2432*** (0.048)	-0.0549 (0.051)
lnSAV	0.2471*** (0.068)			0.2237*** (0.024)
lnINV2		0.2092*** (0.030)		0.2030** (0.075)
lnFDI			0.0806*** (0.023)	0.0773* (0.042)
Constant	2.3929*** (0.407)	3.3315*** (0.3233)	2.9352*** (0.294)	2.9840*** (0.331)
Observations	181	181	181	180
Number of countries	32	32	32	32
No. of instruments	26	28	29	27
Arellano-Bond test for AR(2) (p-value)	0.091	0.117	0.128	0.071
Hansen (p-value)	0.164	0.240	0.398	0.178

Notes:
1. ***, ** and * indicate 1%, 5% and 10% significant level respectively.
2. Values in parentheses are the standard errors.

Discussion on lnSAV to Economic Growth

In between all types of capital investments, lnSAV is the highest contributor to the economic growth due to its largest coefficient relative to lnINV2 and lnFDI. Parallel to previous studies (Gómez-Puig & Sosvilla-Rivero, 2018a), similar positive finding can be seen from the gross savings with the coefficient value of 0.2471 (model 1.1) and 0.2237 (model 1.4). It implies the deepening of the financial development in the UMIE, which assist the countries to increase their wealth and accumulate higher savings for future development (Grigoli, Herman, & Schmidt-Hebbel, 2018). Moreover, a significant positive relationship between lnSAV and lnY illustrates that the countries are channelling their savings for investment in productive purposes, thus boosting the economic growth (Wan Azman Saini, 2009).

Apart from that, gross savings lead to higher economic growth especially when the economy is facing with lower macroeconomic instability (Grigoli et al., 2018). In order to prove this statement, we should look at the coefficient of the lnINF since it measures the macroeconomic instability. By observing the models with lnSAV (model 1.1 and 1.4), lnINF has the lowest coefficients in both models with -0.0554 and -0.0696 respectively. Even though the signs of lnINF in both models are negative, the coefficient is very low. It indicates that the macroeconomic instability in the UMIE were under control. It gives good sign for the private sector to consume and invest more, thus playing the role as the engine of growth. The private sector's contribution helps the government to save more and invest the funds in productive expenditures, then contributing to the national growth and development.

If the gross savings are used for unproductive or corrupted purposes, it might not help in increasing the economic growth of a country. It is proven statistically, in which Gabon has the highest percentage of average gross savings to GDP from 1990 to 2019 (49.06 percent). Nevertheless, in 2018, Gabon was considered as among the corrupted countries (Transparency International, 2018) since the corruption perception index was close to 0 (scored at 31 out of 100). As a note, the score is ranging from 0 (highly corrupted country) and 100 (the cleanest country in terms of corruption). Due to misallocation or mismanagement of funds particularly from gross savings, the average GDP growth per capita was at the lowest level (-0.568 percent) as compared to the other UMIE (refer **Error! Reference source not found.**). However, when combining all other UMIE into the panel data analysis, lnSAV still gives positive effects to lnY despite a special case for Gabon.

Discussion on lnINV2 to Economic Growth

As a measure of domestic investment, lnINV2 is proven to have positive relationship with lnY. It is shown in the coefficients of lnINV2 in model 1.2 and 1.4, with 0.2092 and 0.2030, respectively. By comparing model 1.1 and model 1.2, lnINV2 is having a similar role relative to lnSAV in influencing lnY due to similar coefficient (0.2). One possible reason is due to the ability of the domestic investment in generating new employment opportunities to the public. An increase in the number of jobs will not just increase the purchasing power of the people. It is also helpful in reducing the poverty and income inequality, as well as increasing the growth of the country via higher private consumptions.

Moreover, the positive relationship postulates higher domestic investment have been channelled to research and development (R&D), technological progress and other productive purposes, which in turn leads to an increase in the productivity growth of the countries (Dao, 2018). Higher productivity will motivate the private sector to produce more goods and services at a lower cost, thus increasing the demand for labour. As long as the investment is supported by technological progress, UMIE will be capable in creating new knowledge and technology by combining both capital and skilled labours efficiently. This, in turn, will gives value added to the economic growth of the UMIE.

Nonetheless, the coefficient of lnINV2 in model 1.4 (0.2030) is lower than the coefficient of the same variable in model 1.2 (0.2092). It indicates that the contribution of the domestic investment is declining when the UMIE is also relying on the foreign investment as a source of growth. It might be due to fierce competition that domestic investors have to embrace as the foreign investors are normally equipped with far better technological progress (Krstevska

& Petrovska, 2012). Even so, this competition is good for the economic growth since the domestic and foreign investors can learn from each other, sharing expertise and transferring knowledge to ensure better growth.

Discussion on lnFDI to Economic Growth

The result for lnFDI is in agreement with our expectation. In achieving high economic growth, the UMIE needs to attract more investments from abroad, especially in relation to high-technology, digitalization and so on. High inflow of FDI would in turn, leads to a better human capital development due to transfer of skills, knowledge and technology that are deemed essential for economic transformation. The spill over from the FDI is transferred into the human capital investment in the forms of training, thus further helps the UMIE to achieve higher economic growth.

Consistent with previous research, the positive effect of lnFDI is partly contributed by the level of trade openness of a country (Akram, 2016; Jayasuriya, 2011). It can be shown by looking at the significant coefficient of the lnTO in the third model, amounting to 0.2432. As countries within the UMIE are willing to involve more in trade and partnership with the rest of the countries, the trade activities help them to receive valuable technology and expertise from abroad via the roles of FDI, thus boosting the productivity of the country.

Conclusion

The most relevant conclusions are as follows. Firstly, the economic growth of the UMIE is positively depends on both domestic (lnSAV and lnINV2) and foreign investments (lnFDI). When combining all the three investment variables into a model (model 1.4), lnSAV is the most contributing factor in achieving high economic growth, followed by lnINV2 and lnFDI.

Secondly, since human capital is proven to be the most important factor influencing the economic growth (in model 1.1 and 1.2), the countries within the UMIE should invest more on the human capital to ensure their labours are able to generate new ideas, knowledge and technology that are essential for future economic growth. Besides, high reliance on the foreign investors might be the right decision if they want to achieve a high-income nation. It is because FDI assists in human capital development through the transfer of knowledge, expertise as well as technological advancement. In this case, the governments should attract more FDI into the countries by introducing or enhancing the current tax incentives. Besides, the institutional and business environments' quality should be preserved to ensure rapid inflows of FDI to the countries. This is important as the foreign capital, expertise and technological advancement from other countries can help the UMIE to move out from the middle-income trap, hence uplift their status into HIE while implementing the IR4.0 successfully. Sole reliance on domestic investment and domestic savings are insufficient for that matter.

This paper contributes empirically to the body of knowledge by integrating all three types of investment into the endogenous growth model. Theoretically, as all of these investments are positively contributed to the economic growth and development, their contribution might vary for a country or a group of economies. For instance, this research found that the FDI is not the most significant contributor to the economic growth for the UMIE even though it gives positive multiplier effects to the countries in the forms of technological and knowledge

transfer. Instead, the UMIE should utilizes more of their domestic capital (in the forms of SAV and INV2) to further boost the economic growth.

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Appendix

Appendix 1: List of countries within UMIE

Countries included	1. Albania 2. Algeria 3. Argentina 4. Armenia 5. Belize 6. Botswana 7. Brazil 8. Bulgaria 9. China 10. Colombia 11. Costa Rica 12. Dominican Republic 13. Ecuador 14. Gabon 15. Guatemala 16. Islamic Republic of Iran	17. Jamaica 18. Jordan 19. Kazakhstan 20. Malaysia 21. Mauritius 22. Mexico 23. Paraguay 24. Peru 25. Romania 26. Russian Federation 27. Serbia 28. South Africa 29. Sri Lanka 30. Thailand 31. Turkey 32. Venezuela
Countries excluded due to unavailability of data	1. American Samoa 2. Azerbaijan 3. Belarus 4. Belize 5. Bosnia and Herzegovina 6. Cuba 7. Dominica 8. Equatorial Guinea 9. Fiji 10. Guyana 11. Grenada 12. Iraq 13. Lebanon 14. Libya	15. Macedonia 16. Maldives 17. Marshall Islands 18. Montenegro 19. Namibia 20. Nauru 21. Samoa 22. St. Lucia 23. St. Vincent and the Grenadines 24. Suriname 25. Tonga 26. Turkmenistan 27. Tuvalu

Appendix 2: Scatter plots of INV2, SAV and FDI against Y