ミャンマーの為替レート政策が与えた経済成長へのインパクトの分析

Analysis of Exchange Rate Policy Reforms and its Impact on the Economic Growth of Myanmar

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Introduction

For several decades, the relationship between exchange rate and economic growth has remained a controversial issue amongst policymakers and economists. Both the theories and evidence diverge for several reasons. Notably, the region-wise impact is volatile because the exchange rate significantly impacts developing countries rather than developed economies. Although most economists agree that a poorly managed exchange rate is an impairment for economic growth, it still exists among policymakers. Although the theoretical relationships are ambiguous, evidence suggests a strong link between the choice of the exchange rate regime and macroeconomic performance. Adopting a pegged exchange rate can lead to lower inflation and slower productivity growth. Despite all these facts, the exchange rate is still widely used as a tool in international trade policy and a tool to combat inflationary to forward the economic growth in most developing countries.

There are two main points of conducting an Exchange rate policy: choosing an exchange rate system and determining the exchange rate that conducts foreign exchange transactions in the respective economy. A country's exchange rate policy affects its relative price structure in domestic currency terms between tradable goods and non-tradable goods produced for the domestic market. Therefore, the exchange rate policy will widely impact the overall economy through the domestic price level (Barth, 1994). Moreover, if the policy's goal is to control inflation, the peg exchange rate regime is the best mechanism. It fosters increasing investment by eliminating policy uncertainty and lowering real interest rates. However, it is accompanied by lowering a vital adjustment mechanism of increasing protectionist pressure, deteriorating the economy's price signals, and promoting the inefficient allocation of resources across sectors. On the other hand, the floating exchange rate regime stimulates productivity growth under the ceteris paribus assumption. Both regimes have implications and limitations for growth.

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Economic theories have relatively little to say about how exchange rate impinges on growth; exchange rate effects are discussed indirectly in terms of international trade and investment. Most of these theories encompass misalignment. Real exchange rate misalignment implies some macroeconomic disequilibrium, which is a hinter for growth and loose the autonomy of monetary policy in the presence of a fixed exchange rate system. That may lead to appreciate the domestic currency and force to cause a sustainable current account deficit and contracts exports. According to Krueger (1983) such exchange rate misalignment would lead to reducing openness and growth. Large overvaluations adversely affect the growth associated with shortages of foreign currency, rent-seeking and corruption, unsustainably sizeable current account, and deficits in the balance of payment crises and deteriorating economic growth.

Reforming the foreign exchange regime is crucial concerning the expansion of trade and investment and the opening of the economy. The exchange rate regime is an essential financial instrument for Myanmar's outward economic orientation. The existence of multiple exchange rates and the massive disparity between the official exchange rate of Myanmar's currency (kyat or MMK) to the U.S. dollar and the parallel market rate (official rate of around MMK6 vs. MMK800-900 in the parallel market) before unification had led to a considerable distortion in transactions involving foreign currencies. It encouraged the black market for foreign currencies. It led to budgetary distortions, as the government of Myanmar used the official rate for its external trading. At the same time, the private sector was subjected to taxation based on arbitrarily stipulated rates much higher than the official rate. The multiple exchange rates were finally unified in April 2012. Since then, the central bank of Myanmar has held a daily auction to determine a reference rate with the U.S. dollar, the Euro and the Singapore dollar. On one set, other banks and money changers can then exchange the kyat within a band of +/-0.8 percent above or below the reference rate. The new exchange rate mechanism appears to be working well, with the kyat trading at around 953/US$1 on 16 May 2014 (Than, 2014). Although exporters had complained that the MMK was initially overvalued at K818/US$1, the new exchange rate mechanism appears to be working by following market conditions. After that, it gradually depreciated and traded at around K1032/US$1 on January 1, 2015. (Global New Light of Myanmar, January 2, 2015).

According to Kubo (2014), although the segmentation of the foreign exchange market within the private sector was alleviated, the foreign exchange market was insulated with the continuation of a form of soft budget constraint. Therefore, the reform of the state budget system is also essential for the unification of the private sector, where the bulk of foreign

exchange transactions still appears to take place in the parallel market, and it remains a challenge for the CBM and the new government. The management of the exchange rate is one of a major policy objective in Myanmar to achieve a set of diverse objectives of economic growth, containment of inflation and maintenance of external competitiveness. Policy suggests that a wrongly managed exchange rate regime can be a major impediment for improved economic performance. The exchange rate management reform was an essential component of trade liberalizations that Myanmar undertook, eventually replacing the earlier fixed exchange rate system with a floating exchange rate regime.

Since the late 1980s, the Myanmar economy has undergone significant changes. The switch to export-led growth from import substitution resulted in the lifting of significant restrictions on the economy placed on it by the government, which included the liberalization of the current account and the implementation of a floating exchange rate regime. The major economic problems during that period were inflation and declining output. Output growth performance was poor after the 1960s and 1980s and remained negative at the end of 1980s. In recent years, policy discussions have increasingly included references to real exchange rate stability and correct exchange rate alignment as crucial elements in improving economic performance in Myanmar. The government has considered the exchange rate as an essential macroeconomic instrument for combating a high inflation problem, installing a stable financial system, promoting exports, controlling imports, and enhancing economic growth.

The failure of the exchange rate policy is one of the significant factors that harmful macroeconomic instability with multiple exchange rate systems and the extremely overvalue of Myanmar kyat in terms of the official rate. An overvalued real exchange rate affects the economy with different factors: suffering the production pattern and level, the misallocation of expenditure, risk on the distribution and status of factor payments, unfavorable composition and size of trade flows, decline the level of international reserves and accumulate the external debts, and enhance the parallel foreign exchange markets, and force capital flight. Furthermore, the persistence of real overvaluation also seriously erodes business and consumer confidence, lowering the rate of savings and investment and adversely impacted on economic growth. (Tarawalie, 2010)

Previous empirical literature studied the link between the real effective exchange rate and GDP, and these can identify this relationship by two channels: the aggregate demand and aggregate supply channels. In the aggregate demand channel, a real exchange rate depreciation enhances the international competitiveness of domestic goods, boosts net exports,

and hence increases GDP. The aggregate supply channel points that the real exchange rate depreciation increases the cost of production (and hence reduced GDP), but it helps for redistributing income in favor of the rich. Some studies argue that real depreciation has expansionary effects on real output growth.[1] On the other hand, others have argued that real exchange rate depreciation has contractionary effects[2] . Because of these conflicting results, it is clear that the impact of exchange rate devaluation on real output growth remains an unresolved issue in the empirical literature.

Therefore, this study examines the nexus of exchange rate and output growth (GDP) in Myanmar. This study contributes to finding out the following questions. First and foremost, how does the exchange rate have a long-run and short-run dynamic impact on the country's economic growth rate? Secondly, how the real exchange rate, inflation, interest rate, and economic growth influence each other? Thirdly, how the exchange rate policy reforms significantly impact the country's economic growth? Fundamentally, the period of the study was fractured into three prominent distinctions of the political era- the era of the market-oriented economy under military rule from 1988 to 2011; the era of Economic Liberalization under U Thein Sein Government from 2011 to 2015; the era of New democratic government under the leading of National League for Democracy (NLD) from 2016 to 2019. Unfortunately, growth potential was harmful because of the military coup after 1st Feb 2021.

This study employed the Vector Autoregressive (VAR) model to explore the relationship between the exchange rate and the economic growth of Myanmar and the influence of employed variables in the systems. And then explicitly focusing on the Impulse Response factor and forecast error variance decomposition. In addition, this study adopted the Vector Error Correction (VECM)technique to perceive the model's long-run relationship and short-run dynamic. This study finds that in the long run, the real exchange rate has a positive impact while inflation debilitates the real GDP growth rate of Myanmar. However, the real exchange rate has no short-term dynamic impact on the real GDP growth of Myanmar. In addition, the 2011 CBM policy reform of the exchange rate do have significant impact on the country's growth rate. Therefore, the policy reforms provide the positive effect in the leading of sustainable growth with price stability. The remaining portion of the paper is structured into four parts. The second part is the literature review and theoretical framework; the third is the

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[1]   See Cooper, 1971; Gylfson & Schmid, 1983

[2]   Edwards, 1989; Agénor, 1991; Morley, 1992

analytical methodology. The fourth part is for empirical results and the final portion is the conclusion and policy implication respectively.

1. Brief Review on Exchange rate Policy and Economic Growth of Myanmar

Myanmar's multiple exchange rate system creates various economic distortions (Hori and Wong, 2008). Prior to the reform, since 1977, the multiple exchange rate system was implemented in Myanmar. That allowed Myanmar Kyat to have two different rates: official rate (fixed, pegged with special drawing rights of IMF) and Market rate (floating, determined by currency market performance which reflects supply and demand of the Kyat against foreign currency). The official rate, pegged with 1 Special Drawing Right=8.5 Kyats, was only applied to the public sector for fiscal accounting of such administrative allocation of foreign exchange (IMF, 2012). Moreover, the other elite groups that can use this official rate are the business groups, dominated mainly by the military and a few cronies with a strong relationship with the military and restricted to ordinary people. Therefore, ordinary individuals of Civilians and most of private sector transactions can only use the floating market exchange rate, which is unstable, weaker, and illegal that appear by determination of market performance, which reflects the supply and demand of the Kyat. That situation creates corruption and profit-seeking by the junta and their relative crony businessmen as the elites to monopolize the currency market. That was the crucial source of stimulation for emerging the parallel black market exchange rate and other chaotic economic situations in Myanmar's economy through chronicle inflation and economic deterioration.

While there has been a greater use of informal exchange rates by private sector agents over the years and that system was nontransparent and creates various distortions and imposes high costs on participants. Under this policy, the segmentation of foreign exchange market between the public sector and private sectors is very huge and the parallel black market exchange rate depreciated around 40 kyats per USD to nearly 1300 kyats per USD during 1988- 2007. The official exchange rate fixed by the government was overvalue value and differed from over 200 times when compared with the market exchange rate in 2007.The margins between official and unofficial rates lead to deceit actions and thus contributing to economic instability and even uncertainty inside the country.

The exchange rate is one of the most essential tools in economic development. In Myanmar, this overvalued official exchange rate undermined economic activity involving all tradable goods of the countries. The persistence of this situation suffered the country's industrial base

to shrink, discouraged the investors, encouraged the migration of the workers because of the lack of job creation in the country, wider the poverty gap between the rich and poor, and forced to deepen the poverty. Furthermore, the inconsistency of the currency exchange rate system of the country is also born to illicit economic activities, such as the black currency market and other related problems.

Moreover, the privatization of enterprise by the military in 1989 also created the new state-controlled economy regime. Due to military domination, the official exchange rate is limited for those with access to the government, such as military members, relatives, family members, and crony businessmen. By utilizing their privileges over economic activities, military and crony businessmen monopolize the currency market and other major economic activities, such as international trade. Monopoly over the official rate gives barriers to enterprises other than state-owned enterprises to develop and expand their businesses. This situation gives Myanmar some consequences, such as unemployment, difficulties in exporting, slow economic growth, and poverty. Therefore, Myanmar needs to address the problem of the overvalued official exchange rate and the growing illegal black market of the exchange rate; otherwise, the substantial economic damage will be unavoidable in the longer run. This is the reason why imperative to establish mechanisms and procedures to keep the exchange rate at levels that maintain the economy's competitiveness and promote the country's economic strength.

To overcome the problematic exchange rate policy, which distortion Myanmar's economic activities unifying the currency exchange rate system becomes the first step towards economic reform in Myanmar. Unifying the multiple rates would allow Myanmar to benefit from a more efficient allocation of resources. Since 2010, Myanmar has gained its reform momentum. Economic reform is crucial to political reform because Myanmar has experienced prolonged economic instability and stagnation. In April 2012, Myanmar's new government implemented the foreign exchange policy reforms and moved to a managed floating regime from the de facto multiple exchange rate system. After that, the country began unifying the official rate and market rate to produce a unique and practical exchange rate for the domestic currency. After implementing the exchange rate unification policy, the segmentation between two historical difference rates reduced from over 200 times in 2007 to nearly zero after 2012. The following Figure 1 illustrates the market and official exchange rate of Myanmar from 1988 to 2020.

Figure 1 Official and Market Exchange Rate of Myanmar
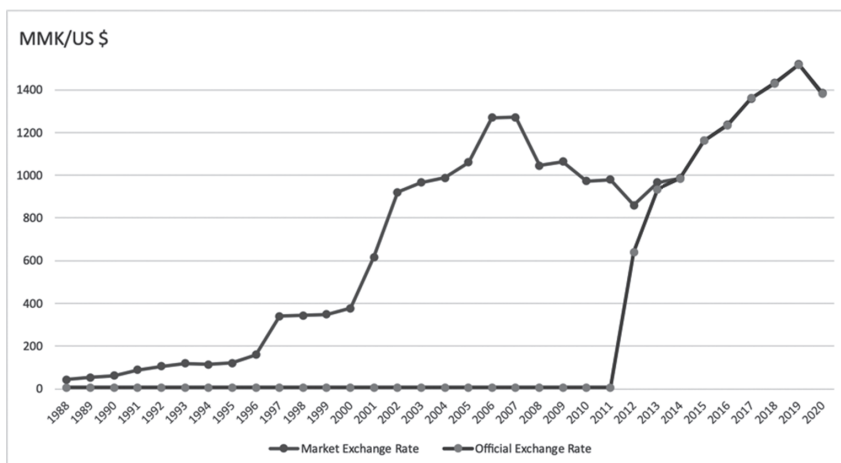
Source: World Bank [3] , Central Bank of Myanmar [4] Thein Phyu Private Foreign Exchange Market

In 2015, National League for Democracy (NLD) won the election, and the Leader Aung San Su Kyi also led various political and economic reforms. Under the new government, the policy focuses on sustainable macroeconomic stability, an indispensable prerequisite for peace, security, and many other SDGs. It prioritizes establishing appropriate fiscal, monetary, and exchange rate policies, improving Myanmar's balance of payments, and maintaining inflation appropriately. Inflation and exchange rate stability are closely correlated, especially in nominal terms. High exchange rate volatility is detrimental to export growth, the flow of foreign direct investment, and overall economic growth. Therefore, the effective management of the exchange rate is still considered to acquire the policy gold of stabilized growth of the economy.

An overvalued exchange rate combined with inflation is particularly disastrous for the economy because inflation drives up production costs. Inflation in Myanmar is mainly due to rapid increases in the money supply. While real increases in output can grow sustainably at 6-8% per year, Myanmar's money supply has generally grown at 25% or so per year. As a result, prices in Myanmar rise by 15-20% per year. Slower increases in the money supply and interest rates on kyat deposits that exceed the inflation rate could bring the inflation rate to single digits. With lower inflation, interest rates will drop. An overvalued exchange rate is a barrier

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[3]   https://data.worldbank.org/indicator/PA.NUS.FCRF

[4]   https://forex.cbm.gov.mm

to this sequence of desirable developments. The following figure shows the inflation in Myanmar from 1988 to 2019.

Figure 2 Inflation Rate of Myanmar

The inflation in Myanmar was induced by the inefficient socialist policies of the 1960s. The extent of inflation in Myanmar for over 30 years, from 1988 to 2020, is depicted in Figure. The Figure shows a giant fluctuation of the inflation rate with a high double-digit increase in 1988 and 2002.

High money supply growth to finance budget deficits and heavy government expenditures describes the fiscal and monetary aspects of causing inflation. Other cost-push factors include using out-of-date machinery and equipment in production and inefficient state-owned enterprises contributing to wastage and high production costs. In addition, Outdated, complex, and unaccountable laws and regulations create delays and uncertainty and add up production costs. These various cost-push factors were identified as responsible for such a high inflation rate in Myanmar. In the aspect of the balance of payment, deteriorating external value of the currency, causing increased cost of imported inputs and goods that also the key role of the cause higher inflation of the country. The establishment of new development by Myanmar authorities pushed costs further up. Government activities under the impact of gasoline price hike, heavy cost of shifting to the national capital Naypyitaw, and raising salaries of public

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[5]   https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=AE

employees were the other reason for the growing up inflation in the country.

In a deep economic downturn in September 1988, the military staged a coup d'état. Once assuming office, it commenced economic reforms to transition to a market-based economy. However, the incomplete reforms stimulated large informal economic activities. While legalizing international trade in the private sector, the junta left intact the overvalued official exchange rate pegged to the IMF's special drawing right (SDR) and the central administration of foreign exchange allocation in the state sector. Nonetheless, the junta imposed extensive exchange restrictions on the private sector to affect their use of the foreign exchange. The restrictions eventually stimulated smuggling and informal money transfers in addition to informal currency deals, further complicating the forex market structure.

Figure 3 Historical Real GDP Growth Rate of Myanmar
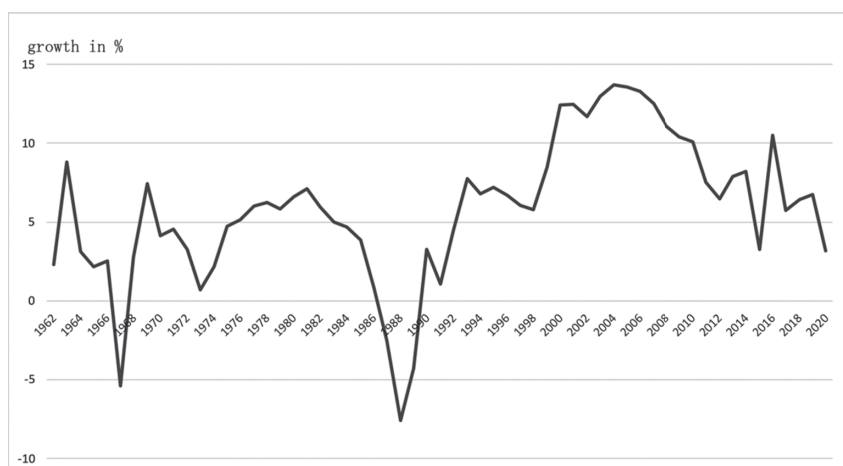
Source: World Bank [6]

The GDP growth rate of Myanmar from 1988 to 2020 is shown in Figure (1). Most analysts have doubts about Myanmar's official GDP growth rates; the ESCAP estimated Myanmar's economy to grow by 5% in 2005, while the IMF estimated a range of 3.2% to 5.3% for four years from 2004 to 2007. But Myanmar's rates were extraordinarily high, with a double-digit growth rate between 2000 to 2007. For 2007, Myanmar's official GDP growth estimate was 11.9%, but few, if any, accept it as realistic. A continuous real GDP growth rate of over 12% for a decade in a row is impossible unless a favorable environment persisted for that decade. The double-digit growth rate was acquired from 2000 to 2007, which most analyst doubted. After the 2012 reforms, the economy grew with a 6.5% average growth rate. In 2016, the growth rate

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[6]   https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG

increased to two digits again during the period of the democratic government of lead by NLD.

In February 2019, the CBM shifted the reference rate determination mechanism from a foreign exchange auction-based system to a market-based determination system. The CBM terminated a two-way foreign exchange auction in November 2019 and introduced a rule-based one-way FX auction to reduce short-term exchange rate volatility and accumulate foreign exchange reserves. During the financial year 2019-2020, the highest and lowest reference exchange rates were 1535 kyat and 1308 kyat, respectively, and the average exchange rate was 1426 kyat. During the financial year 2019-2020, the reference exchange rate had appreciated by 15 percent since the exchange rate went down to 1308.5 kyats in September 2020 from 1532.8 kyats in Sep 2019. The central bank of Myanmar is standing ready to intervene by dealing with USD through foreign exchange auctions to facilitate smooth transactions in the foreign exchange market and foster convergence among existing exchange rates to avoid redundant exchange rate volatility. (CBM, 2020)

From 1988 to 2020, there are two noticeable distinctions between the government era- the military government era and the democratic government era. The study reviewed the exchange rate policy reforms of Myanmar in this different government era and examined the impact of these policy reforms on the country's economic growth.

2. Literature Review and Theoretical Framework

The world is becoming globalized, and the country which isolated from the external economic activities might be left with slow growth. Therefore, no country can stand alone and try to interact with each other for economic interests and political strategies. Therefore, to have competitiveness of the economy is one of the prominent factors that policy makers for review, and exchange rate policy become a significant factor that can influence not only the foreign trade improvement but also the foreign capital acquirement and economic growth.

2.1 Review on the linkages between exchange rate and economic growth

The previous literature explored the exchange rate and economic growth have different results. Bo Tang (2015) examined the relationship between the real exchange rate and economic growth in China by applying a cointegrated VAR model. That analytical study found that the Chinese Economy has not benefited from the lower exchange rate of the RMB, and no direct linkages exist between the real exchange rate and growth in the long run. However, the Chinese Economy was stimulated by the expansion of exports and the inflow of foreign capital.

According to the empirical evidence, which also suggests that the long-term equilibrium real exchange rate is jointly determined by the foreign trade, foreign reserves, and the foreign direct investment.

Obama et al. studied the relationship between exchange rate, interest rate, and economic growth in the Nigerian Economy by adopting the vector auto-regression technique with specific emphasis on the Impulse Response factor and the Forecast Error Variance Decomposition. The result of this study indicated that the exchange rate had a more robust impact on economic growth than interest rate. In addition, the exchange liberalization was good for the Nigerian Economy as it promoted economic growth. Razzaque et al. (2017) examined the effect of exchange rate movements on economic growth of Bangladesh by using cointegration techniques to determine the output response to Bangladeshi currency depreciation. This analysis result suggested that the 10 percent depreciation of the real exchange rate can rise 3.2 percent in the country's aggregate output in the long run. However, the contractionary effect of real depreciation by same magnitude would result in a half percent decline in GDP. In contrast, the long-run expansionary effect of real depreciation may be appealing for considering exchange rate policy as a development strategy. The likelihood of rising inflationary pressures should be kept in mind while pursuing the policy option.

Aman et al., explored the relationship between exchange rate and economic growth in Pakistan by using a simultaneous equation model of two and three-stage least square (2SLS and 3SLS) techniques. The exchange rate positively affects economic growth through the channel of export promotion incentives, enlarging the volume of investment, enhancing FDI inflow, and promoting the import substitute industry. Although the exchange rate positively affects economic growth, it can't be used as a policy tool. Tarawal(2010) examined the impact of the real effective exchange rate on Sierra Leone's economic growth by employing a bivariate Granger Causality test. Evidence of the real effective exchange rate causing economic growth was profound. The main determinants of the real exchange rate in Sierra Leone are terms of trade, exchange rate devaluation, investment to GDP ratio, and an excessive supply of domestic credit. The real effective exchange rate correlates positively with economic growth, with a statistically significant coefficient, and monetary policy is relatively more effective than fiscal policy in the long run.

Dani Rodrik (2008) analyzed how the real exchange rate affects economic growth by using different measures of the real exchange rate and different estimation techniques. That analysis can prove that the undervaluation of the currency (a high real exchange rate) stimulates

economic growth, particularly in developing countries. In addition, studies also suggested that tradable suffer disproportionately from the government or market failures: institutional weakness and product-market failures. Ronald MacDonald (2002) explored the connection between exchange rates and economic processes and pointed out key features of flexible exchange rates, which are highly volatile and may affect growth through trade and investment channels. This research used Balassa-Samuelson and Houthakker-Mgee-Krugman's hypothesis to analyze the links between sectoral and aggregate growth and the exchange rate. As a result, the exchange rate arrangements for both internal and external of the euro-zone area during the research period stimulated economic growth.

Suna Korkmaz (2013) studied the effect of exchange rate on economic growth in nine randomly selected European countries by applying panel data analysis and the Granger Causality test. That study recognized the causality of exchange rate towards economic growth for the nine European countries. Kogid et al., (2011) investigated the effects of both real and nominal exchange rates on economic growth in Malaysia by using the ARDL approach. That analysis results in both nominal and real exchange rates similarly affecting economic growth. The ARDL bounds test suggests that long-run cointegration exists between exchange rate and economic growth with significant positive effects. In addition, the systematic exchange rate via monetary policy should be properly developed to promote the stability and sustainability of economic growth in Malaysia.

2.2. Review the Impact of exchange rate regime on growth

In macroeconomic policy, the choice of exchange rate regime and its impact on economic performance is a controversial factor until current years. The exchange rate regime have different economic results depending on the economy's size and development status. Study in the past explored the impact of choosing an exchange regime on macroeconomic performance and has found contrary results. Ghosh et al., 1996 point out there was a strong link between the choice of the exchange rate regime and macroeconomic performance. The exchange rate regime influences growth through investment and international trade. The stud classified the exchange rate as fixed, floating, and intermediate. Growth was faster under the intermediate regime than in the floating regime and lowered under the pegged regime. However, this pattern is only applicable in lower-middle and low-income countries because, in the case of the industrial and upper-middle-income countries, growth was somewhat higher under pegged rates. The analysis showed that the economy adopting a pegged exchange rate can lead to

lower inflation and slower productivity growth. The choice of exchange rate regime is more important for low-income countries than for high-income countries.

Moreover, Jeffrey Frankel et al. (2019) found that the relationship between exchange rate regimes and economic growth varies among countries at different income levels. In their analysis, they constructed a new database characterizing the de facto exchange rate regime from 145 countries and investigated this relationship. Their finding illustrated that the intermediate exchange rate regime is positively related to economic growth at the most incredible significance level.

In contrast, In 2019, Dao et al. analyzed Asia's exchange rate regime and economic growth by employing the Generalized Method of Moment technique on unbalanced panel data. The results found that the affixed exchange rate regime will affect economic growth in the same direction. This means that the country with a less flexible exchange rate regime will have higher growth. Bailliu et al. examined the impact of exchange rate arrangements on growth using panel-data analysis and found that exchange rate regimes characterized by a monetary policy anchor, whether pegged, intermediate, or flexible, exert a positive influence on economic growth. In addition, flexible exchange rate regimes without an anchor are detrimental to growth. Therefore, the presence of a monetary policy anchor, rather than the type of exchange rate regime per se, is crucial for economic growth.

However, Vita and Kyaw (2011) proved that there was a lack of solid relation between the choice of exchange rate regime and economic growth in the long run by employing fixed effects panel estimation on 70 developing countries. In addition, Fristedt (2016) investigated the choice of exchange rate regime effect on economic growth by studying different development levels of countries. That study applied the cross-sectional regression estimation of 60 countries and found out the choice of exchange rate regime holds no significant explanatory power over economic growth. Although no robust direct relationship was found, these findings support the argument that the choice of the regime may indeed affect growth indirectly through its impact on other deterministic factors, such as trade, investment, and productivity.

The study by Levy-Yeyati and Sturzenegger in 2003 found contrasting results from the previous findings. They analyzed 183 countries and, according to their finding, the growth of developing countries was slower with fixed exchange rate regimes as well as with greater output volatility. Nevertheless, the exchange rate regime did not appear to significantly impact growth in the industrial countries. The study of exchange rate regimes and growth in Central and Eastern European Countries was explored by Ihnatov and Capraru in 2012. They

employed the Ordinary Least Square and Generalized Method of Moment to estimate a growth model with dummy variables that isolate the effect of exchange rate regimes on economic growth. Their results suggest the effect of the floating and intermediate regimes is superior compared to the fixed regimes arrangements. In recent years, the study by Ha and Hoang in 2020 provided an empirical analysis of the impact of the exchange rate regime on growth. They apply the Generalized Method of Moments technique for unbalanced panel data of Asian countries. Their empirical results suggest that a fixed exchange rate regime affects economic growth in the same direction; this means that the country with a fixed exchange rate positively impacts growth. Therefore, it can be seen that the controversy on exchange rate policy is unresolvable until nowadays.

2.3 Theoretical Framework of the Study

Figure 4 Conceptual Framework
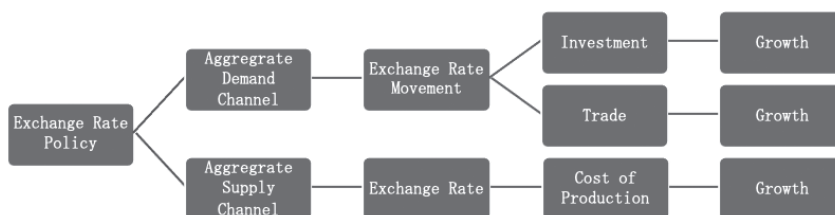
These are the aggregate demand and aggregate supply channels of exchange rate on economic growth. In the aggregate demand channel, a real exchange rate depreciation enhances the international competitiveness of domestic goods, boosts net exports, and hence increases GDP when the Marshall-Lerner condition are exists. On the other hand, the aggregate supply channel posits that the real exchange rate depreciation increases the cost of production (and hence reduced GDP) and helps redistribute income in favor of the rich. The case of exchange rate appreciation is vice visa.

3. Analytical Methodology

3.1 Data

To explore the purpose of the analysis, the data utilized in this study are mainly acquired from the world bank, International Monetary Fund (IMF), and Central Bank of Myanmar. The data frequency is yearly, covering the study period from 1988 to 2019. The occupied selected data in this study are real GDP (RGDP), Exchange Rate of Myanmar's Kyats (MMK) against

the US dollar ($) (MMK/$), US and Myanmar CPI as a proxy of the foreign and domestic price index, foreign exchange reserve (FER), exports (EX), Imports (IM). The annual time series data of the real growth rate of Real Gross Domestic Product (RGDP) as a proxy of economic growth was acquired from the World Bank data source. The data for inflation (INF) and interest rate (RIR) are also accessed from the world bank, and the data for the real exchange rate (RER) is calculated by the general definition of the real exchange rate. RER is adjusting the nominal exchange rate (NER) with foreign (Pt*) and domestic (Pt) price levels. These required data to calculate RER was used from the Central Bank of Myanmar and International Financial Statistics (IFS) of IMF. All variables in the series are expressed as logarithmic forms.

3.2 Foundation of the Models

In this empirical study, two types of models are employed to explore the research objectives. Vector Autoregressive (VAR) model was applied to explore the simultaneous relationship between real GDP growth rate and inflation rate. And then, Vector Error Correction Model (VECM) was employed to analyze the long-run and short-run dynamics of GDP, exchange rate, foreign exchange research, export, import, and FDI.

3.2.1 Model I: Specify Vector Autoregressive (VAR) Model for System Analysis

VAR models provide a coherent and credible approach to data description, forecasting, structural inference, and policy analysis. First and foremost, to explore the relationship between exchange rate, inflation rate, interest rate, and economic growth in Myanmar, the Vector Autoregressive (VAR) model was operated. Previous researchers [7] implied that these kinds of variables should all be treated equally without a priori distinction between endogenous and exogenous variables. This concept is satisfied with the VAR model, which has been employed in several studies. Christopher Sims (1980) initiated the popularity of the VAR model in his research of macroeconomics and reality. Afterward, various analysis concerning the forecast of macroeconomic variables such as GDP, inflation, interest rate, etc., and policy analysis widely used the VAR model. In the VAR model, each variable is regressed both its own lag and the lags of other variables in the system. This process grants each variable to be affected by its own past values and the past values of every other variable in the system. This is the crucial point to minimize the problem of simultaneity. [8] Therefore; the VAR model can

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[7]　Such as Sims(1989) and Todd(1990)

[8]　See (Kretzer, 1992)

construct and depict simultaneous relationships between exchange rate, inflation rate, interest rate, and economic growth in Myanmar as follow:

$$lnRGDP_t = \alpha + \sum_{i=1}^{\rho} \varphi_i \, lnRGDP_{t-i} + \sum_{j=1}^{\rho} \theta_j \, lnRER_{t-j} + \sum_{k=1}^{\rho} \pi_k \, lnINF_{t-k} + \sum_{m=1}^{\rho} \mu_m \, lnRIR_{t-m} + \varepsilon_{1t} \tag{1}$$

$$lnRER_t = \beta + \sum_{i=1}^{\rho} \varphi_i \, lnRG_{t-i} + \sum_{j=1}^{\rho} \theta_j \, lnRER_{t-j} + \sum_{k=1}^{\rho} \pi_k \, lnINF_{t-k} + \sum_{m=1}^{\rho} \mu_m \, lnRIR_{t-m} + \varepsilon_{2t} \tag{2}$$

$$lnINF_t = \gamma + \sum_{i=1}^{\rho} \varphi_i \, lnRGDP_{t-i} + \sum_{j=1}^{\rho} \theta_j \, lnRER_{t-j} + \sum_{k=1}^{\rho} \pi_k \, lnINF_{t-k} + \sum_{m=1}^{\rho} \mu_m \, lnRIR_{t-m} + \varepsilon_{3t} \tag{3}$$

$$lnRIR_t = \delta + \sum_{i=1}^{\rho} \varphi_i \, lnRGDP_{t-i} + \sum_{j=1}^{\rho} \theta_j \, lnRER_{t-j} + \sum_{k=1}^{\rho} \pi_k \, lnINF_{t-k} + \sum_{m=1}^{\rho} \mu_m \, lnRIR_{t-m} + \varepsilon_{4t} \tag{4}$$

where, RER_t and RER_{t-1} real GDP growth and its lagged value respectively. RERt and RERt-1 is real exchange and its lager value and INF_t and INF_{t-1} is for inflation rate and its legged value.

3.2.2 Model II: Defined the Vector Error Correction Model (VECM)

In examining the long-run and short-run relationship between the real exchange rate and economic growth in Myanmar follows the studies of Aguirre and Calderón (2005) and Wang et al. (2007) and then applies the Johansen cointegration approach. The Johansen cointegration approach is also known as the cointegrated VAR approach. It requires that all the endogenous variables in the system have the same integration of order one (Johansen & Juselius, 1990; Johansen & Juselius, 1992). Restricts the long-run behaviors of endogenous variables to converge to their cointegrating relationship. The vector error correction model of the system equation for Myanmar can be expressed as follow:

$$\Delta lnRGDP_t = \alpha + \sum_{i=1}^{\rho-1} \phi_i \, \Delta lnRGDP_{t-i} + \sum_{j=1}^{\rho-1} \psi_j \, \Delta lnRER_{t-j} + \sum_{k=1}^{\rho-1} \eth_k \, \Delta lnFER_{t-k}$$
$$+ \sum_{m=1}^{\rho-1} \Omega_m \, \Delta lnEX_{t-m} + \sum_{n=1}^{\rho-1} \Pi_n \, \Delta lnIM_{t-n} + \sum_{q=1}^{\rho-1} \Gamma_q \, \Delta lnFDI_{t-q} + \lambda_1 ETC_{t-1} + \varepsilon_{1t} \tag{5}$$

$$\Delta lnRER_t = \beta + \sum_{i=1}^{\rho-1} \Phi_i \, \Delta lnRG_{t-i} + \sum_{j=1}^{\rho-1} \Psi_j \, \Delta lnRER_{t-j} + \sum_{k=1}^{\rho-1} \eth_k \, \Delta lnFER_{t-k} + \sum_{m=1}^{\rho-1} \Omega_m \, \Delta lnEX_{t-m}$$
$$+ \sum_{n=1}^{\rho-1} \Pi_n \, \Delta lnIM_{t-n} + \sum_{q=1}^{\rho-1} \Gamma_q \, \Delta lnFDI_{t-q} + + \lambda_2 ETC_{t-1} + \varepsilon_{2t} \tag{6}$$

$$\Delta lnFER = \gamma + \sum_{i=1}^{\rho-1} \Psi_i \, \Delta lnRGDP_{t-i} + \sum_{j=1}^{\rho-1} \Psi_j \, \Delta lnRER_{t-j} + \sum_{k=1}^{\rho-1} \eth_k \, \Delta lnFER_{t-k}$$
$$+ \sum_{m=1}^{\rho-1} \Omega_m \, \Delta lnEX_{t-m} + \sum_{n=1}^{\rho-1} \Pi_n \, \Delta lnIM_{t-n} + \sum_{q=1}^{\rho-1} \Gamma_q \, \Delta lnFDI_{t-q}$$
$$+ + \lambda_3 ETC_{t-1} + \varepsilon_{3t} \tag{7}$$

$$\Delta lnIM_t = \delta + \sum_{i=1}^{\rho-1} \Phi_i \, \Delta lnRGDP_{t-i} + \sum_{j=1}^{\rho-1} \Psi_j \, \Delta lnRER_{t-j} + \sum_{k=1}^{\rho-1} \eth_k \, \Delta lnFER_{t-k}$$
$$+ \sum_{m=1}^{\rho-1} \Omega_m \, \Delta lnEX_{t-m} + \sum_{n=1}^{\rho-1} \Pi_n \, \Delta lnIM_{t-n} + \sum_{q=1}^{\rho-1} \Gamma_q \, \Delta lnFDI_{t-q}$$
$$+ + \lambda_3 ETC_{t-1} + \varepsilon_{5t} \tag{8}$$

$$\Delta lnEX_t = \delta + \sum_{i=1}^{\rho-1}\Phi_i \Delta lnRGDP_{t-i} + \sum_{j=1}^{\rho-1}\Psi_j \Delta lnRER_{t-j} + \sum_{k=1}^{\rho-1}\eth_k \Delta lnFER_{t-k}$$
$$+ \sum_{m=1}^{\rho-1}\Omega_m \Delta lnEX_{t-m} + \sum_{n=1}^{\rho-1}\Pi_n \Delta lnIM_{t-n} + \sum_{q=1}^{\rho-1}\Gamma_q \Delta lnFDI_{t-q}$$
$$+ +\lambda_4 ETC_{t-1} + \varepsilon_{4t} \qquad (9)$$

$$\Delta lnFDI_t = \delta + \sum_{i=1}^{\rho-1}\Phi_i \Delta lnRGDP_{t-i} + \sum_{j=1}^{\rho-1}\Psi_j \Delta lnRER_{t-j} + \sum_{k=1}^{\rho-1}\eth_k \Delta lnFER_{t-k}$$
$$+ \sum_{m=1}^{\rho-1}\Omega_m \Delta lnEX_{t-m} + \sum_{n=1}^{\rho-1}\Pi_n \Delta lnIM_{t-n} + \sum_{q=1}^{\rho-1}\Gamma_q \Delta lnFDI_{t-q}$$
$$+ +\lambda_6 ETC_{t-1} + \varepsilon_{6t} \qquad (10)$$

where, $lnRGDP_t$ refers to current level of real GDP growth rate as a proxy of economic growth. $lnRGDP_{t-i}$ is lagged value of real GDP growth. $lnRER_t$ and $lnRER_{t-j}$ refers to current and lagged value of real exchange rate. In this analysis the data for real exchange rate is calculated by the product of market exchange by the price ratio of foreign and domestic. $lnINF_t$ and $lnINF_{t-k}$ indicates that current and lagged value of inflation rate. And then, $lnRIR_t$ and $lnRIR_{t-m}$ represents the current and lag value of real interest rate of the country. All the variables in the system are performed in log form. ETC_{t-1} is the error correcting term and also known as the adjustment term of the cointegrating equation in long run model.

3.3 Estimation Technique

For the estimation technique of Model (I), before we employ our analysis by dealing with time-series data, it is essential to establish the stationarity status of the variables in the Model to avoid spurious results (Gujarati, 2005). Therefore, these data would be tested for stationarity using the Augmented Dickey-Fuller (ADF) test proposed by Dickey and Fuller (1981) and Phillips-Perron (1988). Furthermore, to reveal our objective of the analysis, perform the VAR system and to show the impacts of one variable on itself and others, as well as the direction of the relationship over a given time horizon, estimates the Impulse response Function (IRF). Moreover, the forecast error variance decomposition (FEVD)was applied to estimate each variable's relative contributions to the Model's forecast error.

In addition, for Model II, all the VECM system variables are stationary in the first difference level and identify the optimal lag length for the system by lag selection criteria. And then, testing the Johansen cointegration to explore the long-run and short-run dynamic of the relationship between the real exchange rate and economic growth.

4. Empirical Results

Before engaging the regression analysis, the analyzing characteristic of the variables in the series are one of the essential tasks in estimation of time series data. The table 1 and 2 reports the summary statistics and correlations of the variables in the system.

Table 1 Summary Statistics of the Variables in the Models

Variables	Obs	Mean	Sta. Dev	Min	Max	Skewness	Kurtosis
RGDPGR	32	7.664653	5.00171	-11.35244	13.844	-1.686894	7.673831
RER	32	291.1644	397.3698	5.34745	1065.41	1.125879	2.501735
INF	32	18.29214	14.38076	-0.1091655	57.07451	.8844766	3.325997
RIR	32	-2.20151	10.99702	-31.50879	12.48097	-.5844234	2.778606
RGDP	32	33983.88	26208.14	7514.7	86931.31	0.0846	0.1540
FER	32	26979.92	29156.53	706.6	89729.47	.7023004	1.916147
EX	32	5282.25	5312.061	167	18118	.8747843	2.60469
IM	32	5711.813	6456.898	193	19355	1.164959	2.758623
FDI	32	1024.864	1255.332	7.80663	4733.257	1.545937	4.471087

Table 1 illustrates the descriptive statistics of variables in two models. The average growth rate of the country is 7.67% in study period of 1988-2020). The maximum growth rate of real GDP is reached two digits of over 13% and the minimum growth rate is with two digits of over minus 11%. The real GDP, export, import, and FDI are thousand million in US dollar.

Table 2 Correlations of the Variables in Models

Model		RGDP	RER	FER	EX	IM	FDI
II	RGDP	1					
	RER	-0.8051*	1				
	FER	0.8864*	-0.8769*	1			
	EX	0.9906*	-0.7879*	0.8809*	1		
	IM	0.9497*	-0.7335*	0.7919*	0.9474*	1	
	FDI	0.8515*	-0.7146*	0.7607*	0.8176*	0.8943*	1
I		RGDPGR	RER	INF	RIR		
	RGDPGR	1					
	RER	0.2013	1				
	INF	0.0286	0.7194*	1			
	RIR	0.2686	0.3074	-0.6633*	1		

Table 2 shows the correlation between the variables in the system models. In model I, real exchange rate is strongly positive correlated with inflation at 5% significant level. In model II, all variables have strongly correlated each other at 5% significant level. The real exchange rate and growth may have strongly negative relationship at 5% level.

Table 3 Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Test for Unit root for Model I

Model	Variables	At Level				At First Difference			
		ADF Test statistics	Critica value at 5%	Critical value at 10%	p-value	ADF Test statistics	Critical value at 5%	Critical value at 10%	p-value
ADF	lnRGDPGR	5.088	2.983	2.623	0.000	9.010	2.986	2.624	0.000
	lnRER	1.598	3.709	2.623	0.484	5.423	2.986	2.624	0.000
	lnINF	3.357	2.983	2.623	0.013	5.565	2.986	2.624	0.000
	lnRIR	2.797	2.983	2.623	0.059	6.953	2.989	2.625	0.000
PP	lnRGDPGR	4.890	2.983	2.623	0.0000	9.948	2.986	2.624	0.0000
	lnRER	1.321	2.983	2.623	0.6135	5.891	2.986	2.624	0.0000
	lnINF	3.158	2.983	2.623	0.0226	7.620	2.986	2.624	0.0000
	lnRIR	2.473	2.983	2.623	0.1223	8.030	2.989	2.625	0.0000

Note: Estimated results are reported at absolute value

In this study all the variables are tested the unit root with ADF test and Phillips-Perron test. The unit root result presented in Table 3 indicates that, the variables of Model I, apart from FDI other variables in the system are not stationary at the level and all variables are becoming stationary and significant at 5 percent level after taking first difference. Since the variables are integrated I (1) and can continue to next step for testing cointegration and if all variables are cointegrated the model can employ the Cointegrated VAR. Additionally, in the Model II all variables are real GDP growth rate (RGDP), inflation rate (INF) and real interest rate (RIR), in the system are stationary at the level and significant at 5 percent level. Since the variables are found to be stationary at levels and first differencing, the results from the estimation of the models are unlikely to be biased and inconsistent. Therefore, it can proceed the Model II to perform a vector auto-regression (VAR) model.

4.1 Empirical Analysis and Discussion of the Result of Model I (VAR)

4.1.1 Impulse Response Function

The relationship between the exchange rate and economic growth are assessed by using impulse response functions of VAR model. In table 4 present the impulse response of the variables over a three-period horizon. In the first segment of the table, the result indicate that the coefficient of real GDP growth rate is very low; this means that economic growth rate in Myanmar is not flatulate during the study period. The increasing of coefficient as the time

horizon is very low. This reveals that growth rate movement in Myanmar economy is sluggish. The coefficient of exchange rate and interest rate are reported to have positive signs, and this means that these two variables exchange rate and interest have positive impact on economy. However, the coefficient of exchange rate is not significant and only coefficient of inflation is significant to explain the growth of the country. The second segment of the table shows the response of real exchange rate to itself, as well as its response to real growth rate, inflation, and interest rate. In this stage only inflation is significant to response the exchange rate. While the third segment shows the response of inflation to itself as well as response other variables in the system. The coefficient of exchange rate is significant to explain the inflation with negative relationship. The increase in exchange rate means depreciation of Myanmar kyats force to increase inflation. Moreover, in the next segment show the response of real interest itself and other variables. Interest itself and inflation is significant to explain the interest rate of Myanmar and the lag value of interest and inflation is negatively related with interest rate.

Table 4 Impulse Response to one unit Shock in the VAR

lag	Dependent	Explanatory Variables			
	Variable	RGDPGR	RER	INF	RIR
1	RGDPGR	-0.4025*	0.0000	-0.0487*	0.0039*
2	RGDPGR	-0.273	0.0027	-0.0327*	0.0039*
3	RGDPGR	0.1304	0.0036*	0.0048	0.0026
1	RER	8.9546	-0.1702	-17.1601	0.1996
2	RER	51.469	-0.0478	8.273	-0.0510
3	RER	-0.3587	-0.6354	-7.5784	-0.2265
1	INF	-0.2264*	0.0228*	-0.0113	0.01455*
2	INF	1.3161*	-0.0018*	-0.0994	0.0035
3	INF	1.0181*	-0.0113*	-0.2879*	0.00526
1	RIR	-26.7310*	-.0093	-8.1509*	-0.3056*
2	RIR	8.5117	.0937	2.7851	-0.3408*
3	RIR	-6.4471	-.0442	-6.3864*	-0.17083

Note: * is significant at 5 % level

Figures 5 illustrate the impulse response functions of different variables, which are correlated with real exchange rate and growth rate of GDP and inflations rate of the country. As shown in figure, the one standard deviation shock of exchange rate has negative effect on the on economic growth rate of the country. And then, the shock of exchange rate on inflation is

positive in should run period and start decrease in the long run.

Figure 5 Impulse Response Function
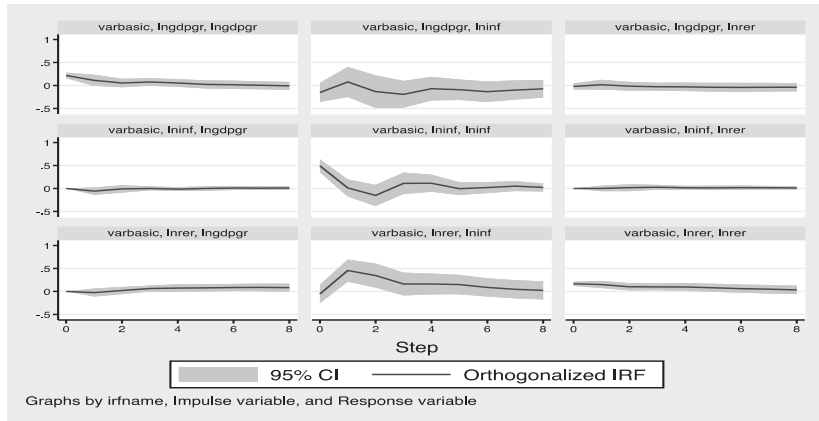
4.1.2 Forecast Error Variance Decomposition

The variance decomposition shows the percentage of the error mad forecasting a variable over time due to a specific shock. This means that, how much of the variability in the dependent variable is explained by its own shocks verses shocks in the other variables in the system. It is also important to determine which of the two variables contributed more to the forecasting power of economic growth. This is done by analyzing the forecast error variance decomposition (FEVD)estimates obtained from the Vector auto-regression as adapted from EDO (2009). The growth rate of Myanmar is more impact by variation in exchange than inflation variation in study period. The inflation of the country suffers by the shock from exchange rate and also its own lag variation The analysis so far establishes that exchange rate as well as inflation rate exerts an impact, but inflation rate influences a higher impact on economic growth rate in Myanmar Economy. It can be observed that the contributions of exchange rate are the smallest in value, which clearly indicates that exchange rate tends to enhance more the forecasting power of economic growth rate model by minimizing forecast errors.

Figure 6 Forecast Error Variance Decomposition
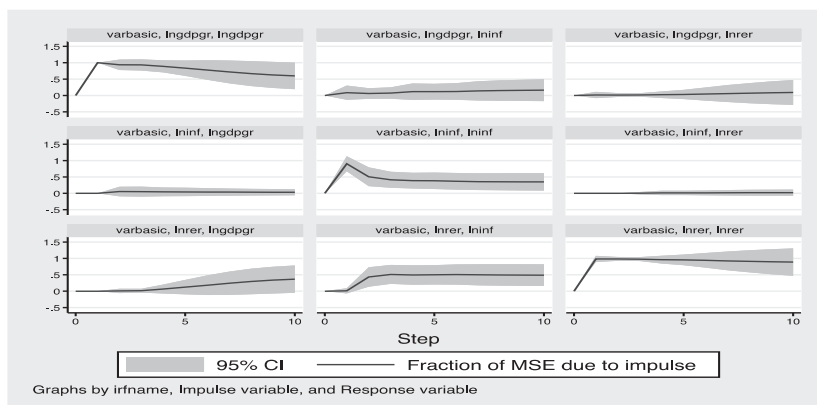
4.2 Empirical Analysis and Discussion of the Result of Model II(VECM)

To investigate the long-run relationship and short-run dynamic of the exchange rate and economic growth of the country employed the Vector Error Correction Model (VECM). According to the Table 5 result, all the variables in the Model I are stationary at first level and the next step of identifying the optimal lag level is require for approaching the VECM. To determine the optimal lag selection Akaike information criterion (AIC) is used for decision criteria in this study. By applying the AIC criteria and most of the other criteria result suggest that the lag length of 2 is the optimal lag level to regress this system analysis.

Table 5 Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Test for Unit root for Model II

Model el	Variables s	At Level				At First Difference			
		ADF Test statistics	Critical value at 5%	Critical value at 10%	p-value	ADF Test statistics	Critical value at 5%	Critical value at 10%	p-value
ADF	lnNGDP	1.013	2.983	2.623	0.7486	3.289	2.986	2.624	0.015
	lnMER	2.465	2.983	2.623	0.1243	4.016	2.986	2.624	0.001
	lnFER	1.678	2.983	2.623	0.4423	4.828	2.986	2.624	0.000
	lnEX	1.971	2.983	2.623	0.2993	4.741	2.989	2.624	0.000
	lnIM	1.252	2.983	2.623	0.6510	5.716	2.986	2.624	0.000
	lnFDI	3.265	2.986	2.624	0.0165	8.669	2.989	2.625	0.000
PP	lnNGDP	0.938	2.983	2.623	0.7753	3.197	2.986	2.624	0.020
	lnMER	2.566	2.983	2.623	0.1003	3.892	2.986	2.624	0.002
	lnFER	1.661	2.983	2.623	0.4514	4.871	2.986	2.624	0.000

lnEX	2.238	2.983	2.623	0.1926	4.691	2.986	2.624	0.000
lnIM	1.274	2.983	2.623	0.6410	5.700	2.989	2.624	0.000
lnFDI	3.177	2.986	2.624	0.0214	10.260	2.989	2.625	0.000

Note: Estimated results are reported at absolute value

The next step is the test for cointegration. According to the optimal lag critiea of AIC the best choice for lag for this analysis system is two. Lag length selection for the system approach really matters the number and stationary of cointegration vectors. After identifying the optimal lag level, to investigate the long run relationship and short run dynamic of the cointegrated series, the Johansen tests for cointegration method is used for analyzing how the variable in the system is cointegrated.

Table 6 Trace Test and Maximum Eigenvalue test for the Cointegration Rank

Maximum Rank of CEs	Trace Test			Maximum Eigenvalue Test		
	Eigenvalue	Trace Statistics	Critical Value 5%	Eigenvalue	Maximum	Critical Value 5%
0	0	90.1930	68.52		39.4826	33.46
1	0.74372	50.7104	47.21	0.74372	22.1828	27.07
2	0.53463	28.5276*	29.68	0.53463	15.4093	20.97
3	0.41219	13.1183	15.41	0.41219	9.4808	14.07
4	0.27886	3.6375	3.76	0.27886	3.6375	3.76
5	0.11788			0.11788		

Note: * is the selected rank

According to the result of trace test statistics and maximum eigenvalue of the cointegration rank, there are two cointegrating vectors in the system. Both trace test and maximum eigenvalue proved two cointegrating vectors in the system. Therefore, the variables in the system have both long run relationship and short run dynamic.

4.2.1 Long-Run Structure of the Analysis

In the VECM model Johansen normalization restriction imposed the long-run cointegration of the system analysis. According to the tested result the long-run relationship of exchange rate policy and economic growth of Myanmar and other variable can be expressed as follows:

$$\Delta \ln RGDP = 81.5154 - 6.3653\, \Delta \ln RER - 5.1983\, \Delta \ln FXR + 6.7769\, \Delta \ln EX - 4.8744\, \Delta \ln IM$$
$$+ 1.6353\, \Delta \ln FDI + 0.97507\, D \tag{11}$$

Equation (11) represents the long run relationship betweenthe real exchange rate and economic growth and the other economic indicators. In Myanmar Economy,the exchange rate and the foreign exchanger exchange reserve have a negative relation. On the other hand, the

export and foreign direct invest boost the economic growth of the country. Moreover, D is represented for the exchange rate policy reforms of Myanmar after 2012 under the transformation democratic government ear. The result of the coefficient of the dummy policy variable represents the exchange rate policy reforms have the positive effect on the economy. All the coefficient of variables in the system are significant at 1 percent level interval. Therefore, the relationship between the independent variables can strongly explain the real GDP growth of the country

The erect correcting terms of the cointegrating equation of the long-run model is as follow:

$$ECT_{t-1} = [1.000 \ \ln RGDP_{t-1} + 6.3653 \ \ln RER_{t-1} + 5.1983 \ \ln FXR_{t-1} - 6.7769 \ \ln EX_{t-1} + 4.8744 \ \ln IM_{t-1}$$
$$- 1.6353 \ \ln FDI_{t-1} - 0.97507 \ D] \tag{12}$$

4.2.2 Short-Run Structure of the Analysis

The short-run model of the relationship between the real exchange rate and economic growth can be extract from the analysis of the VECM system model:

$$\Delta \ln RGDP = 0.0325 + 0.5106 \ \Delta \ln RGDP_{t-1} + 0.0014 \ \Delta \ln RER_{t-1} + 0.0385 \ \Delta \ln FXR_{t-1} - 0.0521 \ \Delta \ln EX_{t-1}$$
$$+ 0.074 \ \Delta \ln IM_{t-1} - 0.0194 \ \Delta \ln FDI_{t-1} + 0.0112 \ D - 0.0137 ECT_{t-1} \tag{13}$$

$$\Delta \ln RER = 0.1681 - 1.5936 \ \Delta \ln RGDP_{t-1} - .19404 \ \Delta \ln RER_{t-1} - 0.3108 \ \Delta \ln FXR_{t-1} - 0.0820 \ \Delta \ln EX_{t-1}$$
$$- 0.36507 \ \Delta \ln IM_{t-1} + 0.1309 \ \Delta \ln FDI_{t-1}.1364 \ D - .03478 \ ECT_{t-1} \tag{14}$$

Form the VECM model system, only two equation of real GDP growth and real exchange rate express in this section to emphasize the relationship between those two variables. According to the estimation result, in the short run, the real exchange rate can have a positive effect on real GDP, but the coefficient of the RER is not significant in the short run. In short-run import, FDI and lag value of GDP only can explain the GDP of the country. In equation 13 and 14, only error correcting terms of equation 13 is significant. It means that, in equation 13, the adjustment term (ECT coefficient) is statistically significant at the 5 percent level and, suggesting that previous year's errors (or deviation for long run equilibrium) are corrected for withing the current year at a convergence speed of 1.4%. On the other words, the error correction terms in equation are significant and has negative value. It means, there is long tern causality running from the real exchange rate, foreign exchange result, export, import, FDI and policy reform to GDP of the country.

Conclusions and Policy Implication

This article investigated the long-run relationship and short-run dynamic of Myanmar's

exchange rate and economic growth from 1988 to 2020. The period of study fragments into two noticeable distinctions of government era- the military government era and the democratic government era. The study reviewed the exchange rate policy reforms of Myanmar in this different government era and examined the impact of these policy reforms on the country's economic growth. Managing the exchange rate is one of Myanmar's primary policy objectives to achieve diverse economic growth objectives, contain inflation, and maintain external competitiveness. In Myanmar, under the military government, before 2012, most sectors were centralized by the government, and the Central Bank of Myanmar (CBM) had no autonomy to conduct the monetary policy. Regulated various administrative controls on foreign trade and exchange rate systems have been one of the significant obstacles to enhancing substantial economic growth. The country faces tremendous economic deterioration, which stuck the country's economy over the decades of the year. After 2012, the new democratic government took over the authority and conducted numerous policy reforms in various fundamental sectors of the country. Among these policy reforms, the most significant economic policy adopted by the new government was the overvalued official fixed exchange rate in effect since 1977, which moved to a managed float in April 2012, known as the exchange rate unification system. According to these reforms, the economy of the country started to convalesce. Therefore, this study retrospects the policy reforms and investigates the significant impact of these reforms on growth. To fulfill the main purpose of the study and to explore the relationship between the targeted variables, this study employed the cointegrated VAR (CVAR) and vector autoregression (VAR) techniques. To specify the effect of policy reforms on the democratic era, the author creates a dummy variable for analyzing the policy effects in this study.

The result indicated that there is a positive association between the real exchange rate and economic growth in the long run, and inflation has a negative pressure on growth. Therefore, the exchange rate policy reforms in 2012 were pivotal in considering the country's development strategy. Still, the possibility of increasing inflationary pressure needs to be considered while adopting this policy option. This study finds that in the long run, the real exchange rate has a positive impact, while inflation debilitates Myanmar's real GDP growth rate. However, the real exchange rate has no short-term dynamic impact on the real GDP growth of Myanmar. In addition, the 2011 CBM policy reform of the exchange rate significantly impacts the country's growth rate. Therefore, the policy reforms have a positive effect on leading to sustainable growth with price stability. The conclusion from this study shows that the liberalization and unification of the exchange rate policy reforms were gainful to Myanmar's economy as they

promoted the economy's steady growth. However, Myanmar, as a developing country, although this exchange rate policy has an expansionary effect on economic growth, it still needs to review and reform other sectors that can accelerate the country's economic growth.

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