The Effect of Goods and Services, and Employment on Purchasing Power Parity: A Case Study of SME in Myanmar

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Abstract— This study is to expose how Small and Medium Enterprises (SMEs) of Myanmar contribute to standard of living. Myanmar SMEs plays as a strategy of Myanmar Sustainable Development Plan, since over 9o percent of business across the country is categorized in SMEs. Thereby, one of the motives of SMEs is to promote the standard of living. The research study undergoes by time series analysis during 1990 -2015. The study indicates how total value of goods and services of SMEs, employment, and income of productive and non-productive sector in SMEs contribute the living standard which matric is Gross Domestic Product per captia based on purchasing power parity in Myanmar. The dataset for analysis is consolidated from Myanmar Business Survey by United Nations Development Programme and World Bank. Employment in SMEs has long-run relationship to GDP per capita (PPP). Besides, total value of products and services in SMEs has short-run relationship to GDP per capita (PPP).

Index Terms— Myanmar SMEs, Living Standard

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1   INTRODUCTION

Following to the Global Firepower (GFP) ranking, Myanmar is ranked 52th out of 136 countries in the list of Purchasing Power Parity. However, does it really mean good to employments of SMEs in Myanmar? Statistically, Myanmar is ranked 127th out of 182 countries by the World Bank in the list of Gross Domestic Product (PPP) per capita. One of the purposes is to discover the relationship between standard of living and SMEs sector in Myanmar.

In line with political transition process since 2011, the aims of reducing poverty and increasing economic growth have been shaped kinetically under wide-ranging implementation. SME sector is one of the key roles of private sectors for economic growth in Myanmar.

As Myanmar is known as an agricultural country, 60 percent of gross domestic product (GDP) is contributed by agriculture, livestock and fishery, and forestry sectors. The rest are 10 percent by processing and manufacturing sector and 30 percent by service sector. If that 100 percent is calculated for SMEs, it estimates that 99 percent are categorized as SMEs. Myanmar SMEs could hire 78 percent of total number of labor force in manufacturing, mining, construction, trade and service.[29] It is a good inertia for Myanmar's living standard as well as social welfare, whether SMEs development can be seen significantly domestically and internationally, following to mentioned statistical fact.
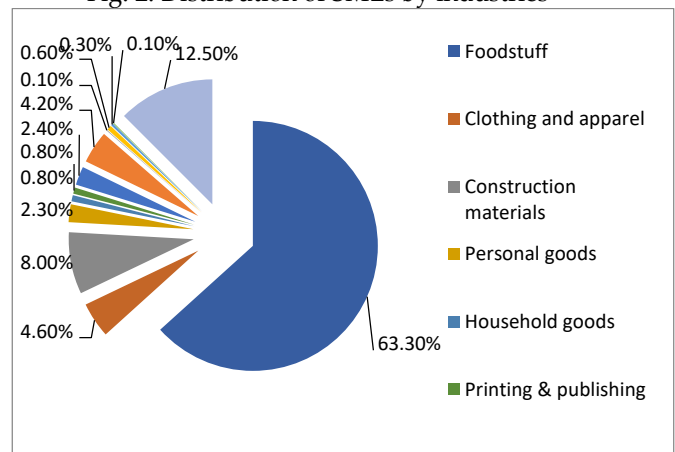
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Fig 1: Composition of Business in formal sector
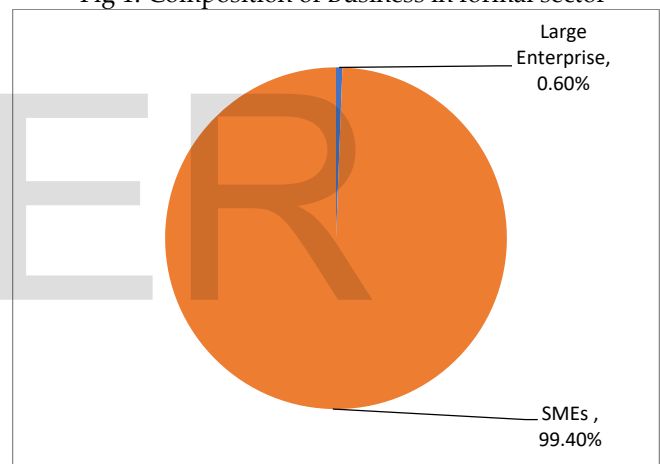
Source: (Bhasin & Venkataramany, 2012)

Fig. 2: Distribution of SMEs by industries

Source: (Bhasin & Venkataramany, 2012)

SMEs are classified by the number of staff employed of an enterprise. Literally, an enterprise hiring less than 10 workers can be called as a micro-enterprise. Likewise, an enterprise with 11 to 50 employees can be considered as a small enterprise. Following to the Industrial Enterprises Law in 1990, SMEs are noted in four criteria which are 1) horse power, 2)the number of employees, 3) the amount of capital invested and 4) the production value per annum.[1]

Following to Small and Medium Enterprise Development Law in 2015, Myanmar SMEs are characterized in six dimensions which are 1) Manufacturing, 2) Labour-intensive or piecework, 3) Wholesale, 4) Retail, 5) Service and 6) Other. 12 definitions in detail of what is "Small" and "Medium" is charted as follows.

countries relies on SMEs to boost countries' economic development. Employments in specific sectors are about 70% in agriculture sector, 23% in service sector and 7% in industrial sector. Hence, SMEs workers are main core for that Myanmar is to reach the economic goals. It is certain that over 95% of labors are employed for Myanmar SMEs [2]. However, it is still questionable that over 95% of SMEs employees have good quality of standard of living.

Furthermore, as a pillar of Myanmar economy, SMEs can produce basic needs, including goods and services, for the people. Myanmar has three reasons for contributing the economy which are 1) boosting exports, 2) creation of purchase power in boosting the middle class and 3) poverty alleviation.[3]

	Manufacturing	Labour-intensive or piecework	Wholesale	Retail	Service	Other
Small	<50 permanent employees or capital investment <500 million MMK	<300 permanent employees or capital investment <500 million MMK	<30 permanent employees or annual income <100 million MMK	<30 permanent employees or annual income <50 million MMK	<30 permanent employees or annual income <100 million MMK	<30 permanent employees or annual income <50 million MMK
Medium	<300 permanent employees or capital >500 million MMK, and <1,000 MMK	<600 permanent employee or capital investment >500 million MMK and <1000 MMK	<60 permanent employees or annual income 100-300 million MMK	<60 permanent employees or annual income 50-100 million MMK	<100 permanent employees or annual income 100-200 million MMK	<60 permanent employees or annual income 50-100 million MMK

Table 1: Small and Medium Enterprises in Myanmar

Always the contribution of SMEs to GDP and national employment is highly significant. 65 % of workforce around the world is hired for nearly 140 million SMEs in 130 countries. A research done by World Bank in 2003 states that SMEs contributes to

1) Over 65% of total employment and 55% of GDP in high-income countries
2) Over 95 % of total employment and 70% of GDP in middle-income countries
3) Over 70% of total employment and 60 % of GDP in low-income countries. [28]

"If every stakeholder reaches to a goal, the country will reach to the goal"

Dr.Nay Win Maung

Evidently, Myanmar as one of the middle-income

2.   LITERATURE REVIEW
2.1   Measure of GDP (PPP) per capita as living standard

To develop Human Development Index (HDI), the Human Development Report (HDR) syndicates three indicators which are life expectancy, adult literacy and standard of living. There is a distortion for the last indicator which is standard of living if it remains based on income such as purchasing power parity adjusted GDP per capita and logarithmic transforms applied to reflect diminishing returns what convert income into standard of living. Nonetheless, there is no direct indicator to achieve and function than measuring of income.[4]

Following to experience of the impact of income and social welfare expenditure of Sri Lank in 1960-78 and 1952-81, Anand and Kambur [5] discovered that GDP per capita over public health spending per person had significant effect to decrease infant mortality: proves that GDP per capita is highly related to standard of living.[5]

There is an argument against GDP growth. GDP of a country is a metric of everything but making life worthwhile. Also, Kuznets showed aware of against comparing the growth with well-being.[6] GDP is to be found the growth of market transactions. GDP is not calculated by the value of social costs, environmental impacts and income inequality, and means only to maximize gross revenue. [7]

However, researchers achieved to estimate the environmental and social effects of GDP and it can be indicated as the effect of inequality.[8]

Per capita income is a good representation for the average standard of living in various levels following to the intuition of neoclassical standard of well-being. It is accurate that raking on GDP per capita can be used to identify countries by degrees of well-off. However, income merely cannot be a matrix unless using other indicators to supplement it.[9]

2.2 Relationship between GDP and Employment in SMEs

Akkemik [10] found that economic growth caused employment growth and impacted significantly on a adjustments in the labor market and GDP growth and persistence of employment growth looked forward to increase in labor demand. [10]

Taymaz [11] concluded that stagnant economic growth and high rate of unemployment caused in European countries. Following to minimum efficient scale and low survival rate of small firms and start-ups, they used to underperform[11]. Fritsch and Mueller [12] also contributed that the effect of firm formation had positively and negatively on regional employment change in different time lags because of consumers' prefer which is technological viable and know-hows to gain necessary resources [12]

Carree and Thurik [13] analyzed the lag structure of impact of changes three steps of economic performance through employment, GDP and labor productivity. First, the hazard of newly entered and incumbent firms was a alleviation of a gain of initial employment. Second, as a result of survival chances of a firm, those firms tried to pursue product quality and to seek a position thereof. At the final stage, the firms became more competitive under the technology innovation, and there was a risk of replacement of machine instead of human employment. Whereas, total employment might not decrease [13]

Audretsch, Carree and Thurik [14] also studied about the proportion of small business which is experienced high level of productivity and GDP: that is considered by the contribution of small business to employment growth and its productivity [14]

2.3 Contribution of SMEs

"Business is a war that has corporate buyouts and land grabs and fists full of patents in place of guns and planes and war ships"

York M.

Fida [15] affirmed that SMEs causes economic development by creating employment opportunities in rural and urban, and providing sustainability and innovation to an economy of a country. Whereby, a lot of employment relied on SMEs directly and indirectly [15].Horn [16] and Pang [17] studies about SMEs in China, Japan, Korea and discovered that SMEs is a nexus between national GDP and welfare of a society: SMEs was a large contribution to GDP, scale of assets, diversification of products and creation of employment and proceeded reducing poverty. [16],[17]

Liedholm and Med [18] and Schmitz [19] exposed income stability, employment and economic growth as a result of SMEs which had advantages to large-scale firms because SMESs can adapt easily to market conditions. SMEs were characterized labor-intensive than large scale firms, and ensured job creation [18],[19]

Kongolo [20] did evidence based study that SMEs produced more than 50% of non-farm output in S.Africa and other developing countries as they created net new employments in most of developing countries [20].

3. MODEL SPECIFICATION

3.1 Augment Dickey Fuller (ADF) test

The statistical test to determine stationary of a series is called unit root test. The Augmented Dickey Fuller (ADF) test and Philip-Peron (PP) test are common for the unit root test Although ADF test is alleged reliable than PP test, the problems of size distortion and low power of rest make these tests less useful [21]. PP test is suggested for the large volume of financial data.

The Augmented Dickey Fuller (ADF) test is the most common method for testing unit root. Suppose, we have a series yt for testing unit root. Then, ADF model tests unit root as follows:

$$\Delta lncgdp = \mu + \delta lngdpy_{t-1} + \sum_{i=1}^{k} \beta_i \Delta lngdp_{t-i} + \varepsilon_t \qquad (1)$$

$$\Delta tvalue = \mu + \delta tvalue_{t-1} + \sum_{i=1}^{k} \beta_i \Delta tvalue_{t-i} + \varepsilon_t \qquad (2)$$

$$\Delta emp = \mu + \delta emp_{t-1} + \sum_{i=1}^{k} \beta_i \Delta emp_{t-i} + \varepsilon_t \qquad (3)$$

where, δ = α − 1

α = coefficient of y_{t-1}

lngdp = logarithm of GDP per capita (PPP)

tvalue = total value of product and service of SMEs

emp = employment of SMEs (accumulation of working

proprietors, fulltime employee, part-time employee and family workers)

The null hypothesis of ADF is δ = 0 against the alternative hypothesis of δ<0. If the null hypothesis is rejected, the series is non-stationary whereas rejection means the series is stationary. [22]

3.2   Autoregressive Distribute Lag (ARDL) test

An autoregressive distributed lag (ARDL) model is an ordinary least square (OLS) based model which is applicable for both non-stationary time series as well as for times series with mixed order of integration. This model takes sufficient numbers of lags to capture the data generating process in a general to specific modeling framework. A dynamic error correction model (ECM) can be derived from ARDL through a simple linear transformation. Likewise, the ECM integrates the short-run dynamics with the long-run equilibrium without losing long-run information and avoids problems such as spurious relationship resulting from non-stationary time series data.

To illustrate the ARDL modeling approach, the following simple model can be considered:

$$\Delta Lngdp_t = \alpha_0 + \sum_{i=1}^{p} \delta_1 \Delta tvalue_{t-i} + \sum_{i=1}^{p} \delta_2 \Delta emp_{t-i} + \lambda_1 tvalue_{t-1} + \lambda_2 emp_{t-1} + \mu_t \qquad (4)$$

where, λ_s = long run relationship

β, δ = short run dynamic of the model

lngdp = logarithm of GDP per capita (PPP)

tvalue = total value of product and service of SMEs

emp = employment of SMEs (accumulation of working proprietors, fulltime employee, part-time employee and family workers)

The null hypothesis in the equation is $\lambda_1 + \lambda_2 = 0$, which means non-existence of long run relationship. [22]

If the cointegration between the variables is exposed, logarithm of GDP (PPP) can be estimated under the ARDL long-run model which equation is as follow:

$$lngdp_t = \alpha_0 + \sum_{i=1}^{p} \delta_1 \Delta tvalue_{t-i} + \sum_{i=1}^{p} \delta_2 \Delta emp_{t-i} + \mu_t \qquad (5)$$

Where, all variables are previously defined.

The final step is to estimate the model for short-relationship. The short-run dynamic parameters by estimating an error correction model associated with the long-run estimates. The specified is mentioned as –

$$lngdp_t = \alpha_0 + \sum_{i=1}^{p} \delta_1 \Delta tvalue_{t-i} + \sum_{i=1}^{p} \delta_2 \Delta emp_{t-i} + \varphi ECM_{t-1} + \mu_t \qquad (6)$$

Where, δ_1, δ_2 = short-run dynamic coefficients of the model's convergence to equilibrium

φ = the speed of adjustment parameter

ECM = error correction term

4.   DATA

In this study, all the data are set yearly by a endogenous variable which is gross domestic product per capita based on purchasing power parity in natural logarithm term and exogenous variables which are total value of service and products of SMEs and employment of SMEs. All SMEs data constructed is of the survey of the Central Statistical Organization (CSO) of the Ministry of Planning and Finance of Myanmar, the United Nations University World Institute for Development Economics Research (UNU-WIDER) and the University of Copenhagen in 2017. That nationally representative survey focuses on manufacturing enterprises and employees thereof, sampling 2,496 enterprises and 6,722 employees which is statistically representative of more than 71,000 manufacturing firms in Myanmar [23]. The GDP per capita (PPP) is one of the variables of Myanmar World Bank Open Data.

5.   METHODOLOGY

Since the variables tested for unit root test are found in different levels which are I(0) and I(1), Bound testing approach which is developed by [24] is proper co-integration approach to analyze the long-run effect total value of products and service of SMEs, total value of income of productive and non-productive sectors and employment of SMEs on GDP per capita (PPP). Advantages of using timeseries ARDL (or) Bound test are as followings. First, it does not require pre-testing for the order of integration of each variable ,and that its approach over Engle and Granger method and Johansen methods of co-integration is robust in capturing long-run relationship with small sample size[25]. Second, Autoregressive Distributed Lag (ARDL Bound Test can be applied to a small sample size study and is appropriate for this research which observation number is 25. Third, by eliminating some frustrations with omitted variables and autocorrelation, the model can estimate short-run relationship as well as long-run relationship. Fourth, whether the variables are stationary at level/I(0), first difference/I(1) or fractionally integrated, standard Wald or F-statistics used in Bound Test has a nonstandard distribution under null hypothesis that has no cointegration relationship between variables used in this research. Fifth, since some regressors are endogenous, the method normally provides unbiased estimates for the long-run model and valid t-statistics. Inder [26] and Pesaran and Pesaran [27] have shown that the inclusion of the dynamics may correct the endogenity bias [26],[27]. Sixth, the model is proper to estimate short-run and long-run parameters simultaneously. Seventh, the Bound testing approach is based on ordinary least square (OLS) estimation of Autoregressive Distributed Lag (ARDL) equation, whether the orders of lags in ARDL model have been selected. In this research, tests are undergone under 26 yearly observations from 1990 to 2015.

6. EMPIRICAL RESULTS

Before ARDL Bound test is proceeded, the stationarity status of the variables are to be tested in order to determine orders of integration which ensure the variables are not stationary at second difference/I(2), since the F-statistics result provide by Pesaran, Shin and Smith (2001) can be shown when the variable are at order of level/I(0) and first different/I(1). In order to distinguish the order of stationary, the result of Augmented Dickey Fuller (ADF) test is presented in Table 2. Total value of product and service of SMEs (denoted as tvalue), is found to be integrated at level/I(0) and employment (denoted as emp) and logarithm of Gross Domestic Product Per Capita (PPP) (denoted as lngdp) are stationary at order of first different/I(1). Then, ARDL Bound Test undergoes to examine the impact of tvalue and emp on lngdp which can be interpreted as standard of living in Myanmar. The cointegrated long-run relationship is tested by ARDL Bound test equation where is shown on equation (4). As variables are found cointegrated, equation (5) leads estimation of long-run relationship, whereby there is a long-run relationship between lngdp and emp, neither on relationship between lngdp and tvalue. In contrast, based on eq (6), the short-run relationship is found between lngdp and tvalue, neither on short-run relationship between lngdp and emp in Myanmar.

6.1 Augmented Dickey Fuller (ADF) test

The passage of methodology is confirmed by results of unit root test which is a prior of a research: the Augmented Dickey Fuller test is undergone to discover that endogenous and exogenous variables are not stochastic, expressing the determination of degree of stationary of variables in table (2).

Table 2: Integrated orders of unit root test

Varia-ble	Lag	Level / I(0)		1st different / I(1)	
		t-statis-tics	Pvalue	t-statis-tics	Pvalue
tvalue	5	-3.800048	0.0084**		
emp	5	-2.981232	0.0511*	-3.895551	0.0073**
lngdp	5	-0.970677	0.7468	-2.997369	0.0494**

** & * indicate the significant level of unit root which Pvalue is less than 5% and 10% respectively.
Source : Author's calculation

All variables are determined that there is no random walk under 5% significant level in align with lag 5 at maximum under the Schwarz Info criterion.

H0   : tvalue has unit root

H1   : tvalue have no unit root

As a result of ADF test, total value of total value of product and service of SMEs (denoted as tvalue) is estimated that P-value is (0.0084) and t-statistics is (-3.800048) ; that can be interpreted significant under 5% significant level at level. Thereby, the null hypothesis is rejected, meaning tvalue has no unit root test at level under ADF test.

H0   : emp has unit root
H1   : emp has no unit root

Employment goes significant at first different with P-value (0.0073) and t-statistics (-3.895551) under ADF test as the variable is not stationary at level with Pvalue (0.0511) and t-statistics (-2.981232) under 5% significant level. As mentioned, the null hypothesis is rejected at first level; means "emp" has no unit root test.

H0   : lngdp has unit root
H1   : lngdp has no unit root

ADF test presents that "lngdp" is stationary at first different by Pvalue (0.0494) and t-statistics (-2.997369) at 5% significant level, since the variable cannot go significant at level with Pvalue (0.7468) and t-statistics (-0.970677).

6.2 Autoregressive Distributive Lag (ARDL) Bound test

Table 3: ARDL Bound Test in Long Run Relationship

H0 : No long-run relation-ships exist			Critical Value Bounds		
Test statis-tics	Value	k	Signif-icant	I(0) bound	I(1) bound
F-sta-tistics	3.873479**	2	10%	2.63	3.35*
			5%	3.1	3.87*
			2.5%	3.55	4.38
			1%	4.13	5

*- indicates absolute value. ****-** indicates critical value.
Source : Author's calculation

Showing that critical value (3.8734) is greater than I(1) bound values which are 3.87 at 5% significant level and 3.35 at 10% significant level, the existence of cointegration between endogenous variable and exogenous variables is found significant for long-run coefficients of ARDL (2,0,4) model based on Akaike Info Criterion (AIC).

6.3 Cointegration and Long-run Form Test

Table 4: Estimated Long-run Coefficient Using ARDL
Endogenous variable: LNGDP

Selected Model   : ARDL (2,0,4)

Variable	Coefficient	Std. Error	t-statistics	Prob.
TVALUE	-0.000000	0.000000	-0.123209	0.9038
EMP	0.000137	0.000056	2.443198	0.0296*
C	6.806500	1.188331	5.727779	0.0001

*- indicates the value under the 5% significant level

Source: Author's calculation

H0 : Lngdp has no long-run relationship with Tvalue
H1 : Lngdp has long run relationship with Tvalue

In accordance with Pvalue which is 0.9038, the null hypothesis is accepted as Pvalue is not significant at 5% significant level as well as 10% significant level: means Lngdp has no cointegrated long-run relationship with Tvalue.

H0: Lngdp has no long-run relationship with Emp
H1: Lngdp has long-run relationship with Emp

Lngdp is highly cointegrated and had strong long-run relationship with Emb under the 5% significant level, since the null hypothesis is rejected by significant Pvalue which is 0.0296. Furthermore, the relationship between Lngdp and Emp has positive coefficient which can reach to equilibrium with 0.000137 speed of adjustment.

6.4   Error Correction Model for Short-run Relationship

Table 5: Short-run Error Correction Representation

D(LNGDP) = C(1)*(LNGDP(-1) - 1.95153503283e-09*TVALUE(-1) - 9.14532030436e-05*EMP(-1) -   5.39497667188) + C(2)*D(LNGDP(-1)) + C(3)*D(LNGDP(-2)) + C(4)*D(TVALUE(-1)) + C(5)*D(TVALUE(-2)) + C(6)*D(EMP(-1)) + C(7)*D(EMP(-2)) + C(8)

Variables	Normalized restriction (=0)	Value	Std. Error	Probability
TVALUE	C(4)	-1.41E-10	5.63E-11	0.0426*
	C(5)	-6.88E-11	5.87E-11	
EMP	C(6)	-1.05E-11	6.77E-07	0.4184
	C(7)	-1.03E-11	8.08E-07	

*- indicates the value under 5% significant level

Source: Author's calculation

H0 : Lngdp has no short-run relationship with Tvalue
[C(4)=C(5)=0]
H1 : Lngdp has short run realtionsip with Tvalue

To contrast long-run relationship, Lngdp has significant short run relationship with Tvalue. The rejection of null hypothesis goes by the calculated Pvalue 0.0426 which is under 5% significant level.

H0 : Lngdp has no short-run relationship with Tvalue
[C(6)=C(7)=0]
H1 : Lngdp has short run relationship with Tvlaue

The short run relationship between Lngdp and Emp has invert selection with long run relationship, as alternative hypothesis is reject with outnumbering Pvalue in comparison to 5 % and 10% significant level. As a result of Pvalue (0.4184), it is found that there is no short rum relationship between Lngdp and Emp.

7.   CONCLUSION

In brief, the model estimations shows GDP per capita (PPP) has integrated long-run relationship with employment of SMEs and also has integrated short-run relationship with total value of products and services of SMEs in Myanmar during the time from 1990 to 2015. This research affirms a study of Ayyagari, Demirguc-Kunt and Bech [28] which analysis is over 95 % of total employment and 70% of GDP in middle-income countries, where status of Myanmar is upgraded to middle-income country.

SMEs employment are main core for that Myanmar is to reach the economic goals, because it is certain that over 95% of labors are employed for Myanmar SMEs. This research reveals that the increase of employment of SMEs can contribute to GDP per capita (PPP) in long-run which means i) the government have to treat employees of SMEs secured under a policy in align to quality of life, 2) under interventionist supply-side policy such as providing better training, and better education or under free market supply-side policy such as increasing labor market flexibility, the employment (meant inclusive of working proprietors, full time and part-time employee, and family workers) have to take advantages for themselves in the flow of supply side policies.

Moreover, this research has an agreement with a study of [2] whose analysis is SMEs, as a pillar of Myanmar economy, can produce basic needs including goods and service. As a result of model estimation for short-run, total value of products and services is a practical focus to be developed as it can up-arrow the standard of living. Following to a chart of distribution of SMEs by industries, top three sectors are 1) foodstuff, 2) construction material and 3) clothing and apparel which of all fragmentations are 63%, 8% and 4.6% to total value of products and services- in accumulation, it is 75.6% occupied in Myanmar SMEs. If there is a upgrade, well-supporting or a spur to economy in those sector by producing quality stuff, serving more clean and healthier food, and providing integrated service for consumers, there will be a surge for the standard of living in Myanmar.

However, a policy maker or a decision maker does not have a chance to make improper policy or decision. It is because the adjustment of speed it not rapid enough to go back to equilibrium with the coefficient value (0.000137): interpreted as

0.0137% whether a situation goes disequilibrium for any motives or for any inappropriate decision or policy.

In conclusion of this research, Myanmar economy and standard of living in Myanmar highly rely on the employment of SMEs in long-run and the total value of products and services of SMEs in short-run, because the SMEs share is 99.4 % to the whole economy. In another interpretation of that, SMEs contributes a quality standard of living in 99.4% of employment in SMEs out of the whole employment of Myanmar economy.

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