

THE IMPACT OF VALUE ADDED TAX ON MANUFACTURING PERFORMANCE IN ASEAN

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ABSTRACT

Over the years, value added tax (VAT) also known as goods and services tax (GST) is widely accepted and implemented. This paper intends to examine the impact of VAT on manufacturing performance using unbalanced panel data of ASEAN countries over the period 1985 – 2014. The result shows VAT is negatively related to the manufacturing performance. Besides, this study also examines the relationship between VAT and export intensity. The finding suggests that VAT is positively and significantly associated with export intensity. The study further investigates the manufacturing performance and exports intensity between countries with VAT and countries without VAT. The result indicates manufacturing firm are perform better in countries with VAT while exports intensity are perform better in countries without VAT. It is crucial for government and policy makers to review the tax incentive and tax rebate policy in order to enhance the manufacturing performance and exports performance.

Keywords: Value added tax; Manufacturing Value Added; Exports Intensity; ASEAN

1 INTRODUCTION

Tax reform not only served as an interest to the academics, politicians and the policy makers but also to the management of the firm. This is because the firm's decision on the allocation of resources is based the after-tax earnings. Tax burden may be transferred to the consumer in terms of higher pricing of goods and services and this will eventually affect the welfare of the economics not only on the firms but also to the society. Therefore, the implementation of goods and services tax (GST) on April 2015 had raised the concern of the firms because it affects their cash flows that consequently affect the performance of the firms. The GST had been abolished by the new government as it is claims as a tax that burden the welfare not only to the society but also affected the performance of the firms in Malaysia. This had put forward the question on how the implementation of the GST in influencing the performance of the first especially in the manufacturing sector. This is because manufacturing sector is the heart for economic growth for the country. Therefore, this study focuses on the impact of GST on firm performance in manufacturing sector. As the implementation of GST in Malaysia is relatively short, the model the impact of GST therefore looks into the ASEAN as a whole. The study is aims to provide some insights on the impact of GST on firm performance in Malaysia that has similar macroeconomic environment with the neighboring countries. Furthermore, by studying the impact of GST on manufacturing sector is important because the disruption in the manufacturing sector will resulted negative impact of the economic growth of a country and hence, its is necessary to identify the influences of GST on manufacturing performance.

GST is also well-known as value added tax (VAT) in the developed economies. This is a type of consumption tax that incurred on each stage of production of goods and services whenever value is added at a stage of production and at final sale. The concept of VAT was first invented in the 1920s with France being the first country to implement VAT back in 1954. To date more than 80% of the countries in the world has successfully adopted VAT despite of it regressivity. The main factor that contribute to the successful implementation of VAT is because of the effectiveness and efficiency of the implementation process that allows initial consultation in order to identify possible problems and improvements as well as adequate preparation for change (James & Alley 2008). In South East Asian, Singapore emerged as one of the successful countries to introduce GST in the region. This is due to the reason of strong political commitment, mass participation from different party, careful planning for initial stage, detailed preparation and extensive education program to the tax payers in Singapore (Jenkins & Khadka 1998). In a nutshell, it is critical to have an adequate preparation and comprehensive education program to the tax payers prior to the implementation of VAT.

On the contrary, countries encounter failures of implementation of VAT that lead to the removal of VAT system are Malta in 1995 and dismantled in 1997, Belize in 1996 and dismantled in 1999 as well as Ghana in March 1995 and later dismantled after 2 months of implementation. Additionally, the failure of VAT implementation in ASEAN region is witnessed in Vietnam that was introduced in 1970 and reintroduced again in 1999. The failure of the implementation was because of poor political commitment, poor planning prior to introduction and inadequate information for the registration threshold in the country (Grandcolas 2005).

The introduction of VAT has raised concern in the manufacturing sector as VAT tax is levied on every stage of the production. Capital assets, raw material and components as well as services and utilities are all subjected to VAT for all manufacturers. In the initial stage, VAT requires businesses to develop a mechanism to meet the requirements of VAT. Hence, additional system and additional compliance cost are required to ensure proper tax system were put in place in order to facilitate the VAT process run smoothly in the firm level. This increases the implementation cost in the firm at the preliminary stage but it will gradually decrease after the business has adapted to meet the VAT requirement. Studies from Invkovic, Poterba and Weisbenner (2004)

and Ironkwe and Peter (2015) found negative impact on manufacturing sector performance after implementation of VAT. This affects the performance of the firms in terms of profitability and allocation of resources.

Nevertheless, VAT can improve tax base and eliminate cascading effects which is avoidance of imposition of tax over tax. It also solved the double taxation issues of sales and services tax for all manufacturers. The VAT tax is payable only whenever value added on the goods or services and it is multi-point tax system. Manufacturers are able to claim back the input tax refund on any purchases under VAT regime and it results to reduce overall cost of production of goods. The successful implementation of VAT claims to reduce the cost of doing business. This is supported by Dhond (2010); Cai and Harrison (2011) and Deshmukh (2012) where they found VAT improved the performance of the manufacturing sector.

Due to the inconclusive results and relatively scant study of the impact of VAT on manufacturing sector, the study of the impact of VAT on manufacturing sector in ASEAN region is necessary. This study thus focuses primarily on value added of the manufacturing sector and exporting status to determine whether existence of VAT affects the performance of the manufacturing sector. The results of this paper are believed to provide some insight on the implementation of VAT towards the manufacturing sector. This is important because the policy makers to evaluate and fully aware on the impact of VAT for the benefits of future economic growth. The rest of the paper is organized as follows. In Section 2, we review the literatures of impact of VAT. Section 3 describes the methodology and data. We present the empirical results in Section 4. The paper concludes with Section 5.

2 LITERATURE REVIEW

2.1 Taxation and firm's performance

The tax policy is known to affect the business competitiveness of a country because higher tax rate lead to higher cost of doing business and subsequently higher prices on consumers goods and services. In this case, tax levies significantly impact the businesses in terms of financing decision and performance. This is supported by Ezejiofor, Adigwe, Echekeoba and Nwaolisa (2015) where tax policies affect the effectiveness and efficiency on manufacturing sector. Among these taxes are income tax, employment tax, corporation tax, capital gain tax, value added tax and sales tax.

Gemmell, Kneller, Sanz and Sann-Sanz (2010) found that the corporation tax is negative correlated with the firm's productivity and investment performance. This is supported by Teraoui, Kaddour, Chichti, and Rejeb (2011) that found higher tax rate negatively affects the firm's financial performance in examining the relationship between taxation and corporate financial performance. They found that net profit of the firm declines by 0.07% and output declines by 0.31% with every increase of 1% of corporate tax rate. This is because higher tax rate increases the tax burden of the firm and ultimately limit the fund for reinvestment and expansion. This supports the study by Vartia (2008) where higher corporate and personal income taxes are negatively impact on the firm's investment activity and results to low productivity. Sebikari (2014) also reveals that taxation reduces capital base of small and medium size business and hinder the performance of the business.

Similarly, a study from Assidi, Aliani and Omri (2016) also conclude negative relationship between corporate tax optimization and firm value. The higher the corporate tax rate will reduce the returns on equity investment and lead to difficulty to raise finance for small entrepreneurial business.

On the other hand, Belotti, Porto and Santoni (2016) found that property taxation is negatively correlated to firm's employment, capital and sales as well as affected total factor productivity significantly of Italian manufacturing firms. This proves that existence of taxes negatively related to the firm's profitability and liquidity (Temimi 2016). Hence, the excessive taxation would jeopardize the performance of the firm in terms of financial and productivity.

A sound fiscal policy on tax is crucial to overcome the negative impact of taxation on manufacturing sector's performance. They advocate that the fiscal policy in a country crucially and require managed carefully in order to attract foreign direct investment. Further literature explains more in depth in regards of VAT as part of the tax structure has significant impact to the manufacturing sector.

2.2 VAT and manufacturing sector's performance

The impact of VAT on the manufacturing sector's performance is different in different countries due to differences in the tax policy and the way it being implemented. In most of the developing countries such as Malaysia and Singapore, VAT was created to replace other tax system like sales tax while VAT serves as an additional tax system in developed country such as United States.

The negative impact of VAT on firm performance was found by Invkovic, Poterba and Weisbenner (2004) when VAT leads to decreasing in sales volume and transaction of the companies. In China, Cai and Harrison (2011) found that tax reform which eliminated VAT on some investment goods in China significantly reduced firm's tax burden. Tax reduction affected employment form both domestic and foreign firms positively. They also found that elimination of VAT has direct impact on the firm's profitability. In a similar vein, Ironkwe and Peter (2015) also found that VAT is negatively correlated to corporate financial performance. The study suggests that the increase in VAT rate will result to 10.5% decline in profit after tax, 15% decline in return on investment and 26.6% decline in return on equity. Business often transferred the burden of VAT to end consumer by increase the price of the goods and services. The increase of cost of goods and services may affect consumer's purchasing power. Theoretically, deterioration of purchasing power affects the sales volume and financial performance of the firm. Thus, the firm's overall performance would be influenced significantly by VAT.

On the other hand, there are opposing views that firms are more profitable under VAT system. empirical study from Dhond (2010) and Deshmukh (2012) revealed that profitability of manufacturing industries in Maharashtra overall are improved under VAT system as compared to sales tax. Manufacturers are able to claim back the input tax from the government under VAT regime and they are paying more under sales tax regime prior to introduction of VAT. Basically, other industries like pharmaceutical, infrastructure and capital goods industries are also beneficial under VAT system. This implies that manufacturing firms and other firms are paying lesser tax to the government and shrink the tax burden under VAT environment. Dhond (2010) and Deshmukh (2012) both suggest that VAT is able to reduce cascading taxation and a uniform VAT will improve economic efficiency.

The burden of VAT is usually shifted to the end consumers. Hence, the end consumers are tightening their belts as they perceive that the prices of the goods and services are unreasonably inflated post-VAT implementation. Perhaps, this is because the end consumers lack of familiarity and opposition to the adoption of VAT. There are superficial arguments on impact of VAT on the firm's performance as there is no consensus on VAT positively or negatively impact on manufacturing performances. Hence, this study intends to compact the manufacturing performance and exports intensity among countries with implementation of VAT and countries without implementation of VAT in ASEAN.

3 METHODOLOGY and DATA

3.1 Methodology

We first study the impact of VAT on manufacturing sector performance in ASEAN using manufacturing value added (MVA). Value added is a common tool to measure of the outputs (Rao & Tesfahunegn 2015). The share of MVA to GDP is one of the indicators to access the performance of manufacturing sector. With this, the estimation is done based on equation:

$$MVA_{it} = \alpha_{it} + \beta_1 VAT_{it} + \beta_2 \ln WR_{it} + \beta_3 \ln EDU_{it} + \beta_4 FDI_{it} + \beta_5 \ln EMP_{it} + \beta_6 \ln RGDPPC_{it} + \beta_7 \ln ICT_{it} \quad (1)$$

Where,

MVA_{it} – Ratio of manufacturing value added over GDP for country i at time t

VAT_{it} – Ratio of VAT over GDP for country i at time t

$\ln WR_{it}$ - Logarithm of wage rate for country i at time t

$\ln EDU_{it}$ - Logarithm of secondary level enrollment for country i at time t

FDI_{it} – Ratio of inflow FDI over GDP for country i at time t

$\ln EMP_{it}$ - Logarithm of total employment for country i at time t

$\ln RGDPPC_{it}$ - Logarithm of Real GDP per capita for country i at time t

$\ln ICT_{it}$ - Logarithm of fixed telephone subscription per 100 people for country i at time t

We then use exports intensity (EI_{it}) to measure export performance of ASEAN countries. The exports intensity is calculated from the ration of export sales to total sales for each country involved. Exports intensity is of one the widely utilized measures of export performance, (Katsikeas, Leonidou & Morgan 2000). The export intensity is constructed with the equation:

$$EI_{it} = \alpha_{it} + \beta_1 VAT_{it} + \beta_2 \ln WR_{it} + \beta_3 \ln EDU_{it} + \beta_4 FDI_{it} + \beta_5 \ln EMP_{it} + \beta_6 \ln RGDPPC_{it} + \beta_7 \ln ICT_{it} \quad (2)$$

Furthermore, we remove ratio of VAT and add dummy variable from equation 1 and 2 to further compare manufacturing performance and exports intensity between countries with VAT implementation and countries without VAT implementation in ASEAN and the estimation is based on equation:

$$MVA_{it} = \alpha_{it} + \beta_1 \ln WR_{it} + \beta_2 \ln EDU_{it} + \beta_3 FDI_{it} + \beta_4 \ln EMP_{it} + \beta_5 \ln RGDPPC_{it} + \beta_6 \ln ICT_{it} + \beta_7 DummyVAT \quad (3)$$

$$EI_{it} = \alpha_{it} + \beta_1 \ln WR + \beta_2 \ln EDU + \beta_3 FDI_{it} + \beta_4 \ln EMP_{it} + \beta_5 \ln RGDPPC_{it} + \beta_6 \ln ICT_{it} + \beta_7 DummyVAT \quad (4)$$

In this case, $DummyVAT$ is the dummy variable that represent country with VAT takes take the value of "1" and "0" for countries without VAT implementation

3.2 Definition of Variables

We use ratio of VAT over GDP to estimate the VAT impact on MVA in this study. Based on the literature in Section 2, we expect the VAT adversely affected manufacturing value added. According to Invkovic, Poterba, Weisbenner (2004) as well as Ironkwe and Peter (2015), VAT lead to poor performance of the firms. This is because the burden of VAT is borne directly by consumers which affects the purchasing power and ultimately the financial performance. This suggests poor financial performance affected firm's investment and consequently the value added of the firm. Apart from that, we expect VAT is negatively related to exports intensity due to difficulties of tax rebate on exports as stated by Desai and Hines (2005). This result is more pronoune in low income countries.

The wage rates are the types of monetary that compensate to the workers at certain rate to perform the job given. Generally, the wage rates are influenced by demand and supply forces. However, the extent of the wage rate can affect the manufacturing value

added and exports intensity in a country. The increase of wage rate will ultimately increase the overhead cost of the manufacturing firms and the cost of inputs to the production. Hence, negative relationship is expected. Nevertheless, positive relationship is also expected if higher wage rate is used to pay for skill workers. Subsequently, the higher wage rate will result in higher manufacturing value added (Bhala 2008). Similarly, according to Girma, Greenaway and Kneller (2002), the higher wage rate is associated with higher export intensity due to more skilled workers are being hired by export firms in order to enhance the total productivity and subsequently result to higher wage rate. Girma, Greenaway and Kneller (2002) stated that firms with higher level of human capital and productivity are more likely to export.

We further use secondary school enrollment as a proxy for human capital development. Adejumo, Olomola, Adejumo (2013) and Anyanwu (2017) found that secondary school enrollment is significant positively related to the manufacturing value added. Skilled workers, intensive knowledge of complicated operation and management knowledge are in the need in sophisticated manufacturing products. With regards to export intensity, higher level of human capital has a negative correlation with the export decision (Gashi 2014). According to Gashi (2014), the demand of high skilled workers is lower in the firm with exports low value high labor intensity goods.

The inward foreign direct investment (FDI) used to measure inflow investment from external or foreign entity investing the goods of a local economy. FDI is known to provide positive spillover effects in terms of advancement in technology, knowledge and also management know-how to the local firms especially in developing countries. Thus, we expect FDI is positively related to the value-added of the manufacturing firms especially in ASEAN. Empirical studies from Chandran (2008) and Sjöholm (2016) conclude that FDI is positively impact manufacturing value added in Malaysia and Indonesia. They explained that foreign entity tends to be larger size with higher output and higher value added than local small firm. Apart from that, study from Kuntluru (2012) show FDI has a negative impact on export performance. Kuntluru (2012) stated that foreign owned firms are more focus on domestic markets and it leads to decrease in exports.

On the other hand, employment is expected to contribute negatively to manufacturing firm performance. Houseman, Bartik and Sturgeon (2014) stated that total employment is negatively related to the manufacturing value added because of substitution of labor and job losses due to automation of production process. Likewise, total employment is negatively correlated with export intensity. Iyer (2010) stated that the size of firm measured by employment and large size of exporting firm may focus on domestic market and pulling down the export intensity.

Real GDP per capita generally used to measure economic development. Study from Anyanwu (2017) found that economic development has a positive impact on manufacturing development. Anyanwu (2017) explain that manufacturing value added tend to increase when growth of economic in developing countries. Similarly, there is positive relationship between export performance and economic growth (Kumari 2012). The growth of economic can stimulate manufacturing activities and firms are more likely to export due to firms have more money to invest. This investment leads to increase of productivity and promote exports.

We use the fixed telephone line subscription as a proxy for accessibility of information and communication technologies (ICT) in this study following the study of Anyanwu (2017). The improvement of accessibility to ICT infrastructure promotes manufacturing value added since it leads to higher productivity by facilitating the reallocation of the inputs (Anyanwu, 2017). With respect to export intensity, Sojoodi (2016) found that ICT infrastructure is positively related to the manufacturing exports through improvement of productivity and innovative performance.

3.3 Sample and Data

The panel dataset used in this study were extracted from secondary sources such as World Development Indicators from World Bank, Oxford Economies, International Financial Statistic (IMF) and various issues of country Economic Report downloaded from Thomson Datastream. The study used unbalanced panel data that consists of 10 ASEAN countries namely Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam from year 1985 to 2014. The total number of observations is 174 country-year data.

3.4 Descriptive statistics

Table 1 presents the descriptive statistics for the full sample. The mean of manufacturing value added ratio for the ASEAN region is 22% which is higher than study by Anyanwu (2017) that reported mean manufacturing value added ratio of 16% that only with 93 observations in North Africa. The mean of exports intensity ratio is at 0.6% with lowest standard deviation at 0.10% while VAT ratio at 0.5% which is the lowest mean in the full sample with 115 observations.

Table 2 presents the average for all the variables employed in this study for each country from year 1985 to 2014. It is observed that Thailand has the highest mean in terms of manufacturing value added that is 28% while Laos has the lowest mean of 8%. This implies that manufacturing sector in Thailand outperformed the manufacturing performance in ASEAN and this is followed by Indonesia with an average of 24%.

Table 2 also showed that Vietnam exhibit the best exports performance among the ASEAN economies with a mean value of 0.7%. Besides the manufacturing performance and exports performance, Singapore is found to have the highest collection of VAT to GDP with a reported average of 0.7% while Cambodia has the lowest mean value of VAT to GDP ratio that is at 0.3%. This implies the collection of VAT is relatively high in developed country as compared to developing countries. This may due to the efficiency of tax collection in Singapore where the implementation of VAT had been taken place for more than a decade that is since 1994.

TABLE 1. Summary statistic of dependent and control variables

Variables	Obs	Mean	Std. Dev	Min	Max
MVA (% of GDP)	174	21.8094	6.0051	7.1600	31.0900
Exports Intensity (% of total sales)	174	0.5959	0.1005	0.3646	0.7825
VAT (% of GDP)	115	0.4951	0.2196	0.2031	1.2109
Log of Real GDP per capita	174	1.9929	0.2428	1.5422	2.4679
Log of Fixed phone subscription	174	0.7713	0.6250	-0.7235	1.6961
Log of Employment	174	3.5381	0.3681	2.5890	4.0316
Log of Secondary level education	174	3.1152	0.3535	2.2710	3.6323
Log of Wage rate	174	0.9489	0.1177	0.5198	1.1169
FDI (% of GDP)	174	4.5452	5.3555	-2.4900	26.6700

Notes: MVA = manufacturing value added, VAT = value added tax, GDP = gross domestic products, FDI = foreign direct investment.

TABLE 2. Mean of variables in the whole period 1985 – 2014 by country.

Country	Variables								
	MVA	EI	VAT	lnRGDPPC	lnEMP	lnEDU	lnICT	lnWR	FDI
Brunei	14.3950	0.4954	ND	2.4577	4.9340	2.3109	1.2978	0.9956	2.6436
Cambodia	17.2038	0.5801	0.2586	1.6446	3.4407	2.9106	-	1.0347	5.9138
Indonesia	24.0925	0.5406	0.5952	1.8984	3.9767	3.5547	0.4974	0.8181	0.9625
Laos	8.1983	0.6860	0.3308	1.8281	3.2469	2.8472	0.6001	1.0189	4.8150
Malaysia	25.6747	0.5788	ND	2.0643	3.4774	3.1407	1.1373	0.9643	3.5510
Myanmar	14.7767	0.5880	ND	1.7114	3.7245	3.2140	-	0.8809	2.5260
Philippines	22.8188	0.6582	0.5150	1.8537	3.7478	3.3980	0.5878	0.9807	1.4024
Singapore	23.8338	0.6565	0.6910	2.3410	3.1897	2.7266	1.6225	0.9788	16.5224
Thailand	28.4557	0.6207	0.3865	2.0118	3.7694	3.2723	0.9190	0.9830	2.8239
Vietnam	14.8675	0.6975	0.4976	1.8439	3.8502	3.4455	1.0373	0.9033	5.8025

Notes: ND = no data, MVA = ratio of manufacturing value added over GDP, EI = ratio of total exports sales over total sales, VAT = ratio of value added tax over GDP, lnRGDPPC = Log of real GDP per capita, lnEMP = Log of total employment, lnEDU = Log of secondary level education enrollment, lnICT = Log of fixed phone subscription over 100 person, lnWR = Log of wage rate, FDI = ratio of inflow foreign direct investment over GDP.

Table 3 shows the correlation matrix among the control variables for countries with VAT and all countries for period 1985 to 2014. The high inter correlations between the control variables denote there is serious multicollinearity.

The correlation matrix result shows VAT is negatively associated with wage rate in countries with VAT implementation, which may suggest increase of VAT rate lead to reduction in wage rate in ASEAN country with VAT implementation. On the other hand, VAT is positively correlated with real GDP per capita and fixed telephone line subscriptions. This indicates that increase of VAT rate is able to promote economic development and infrastructure such as accessibility to telecommunication.

TABLE 3. Correlation matrix for control variables 1985 – 2014 for full sample

Countries with VAT	VAT	lnWR	lnEDU	FDI	lnEMP	lnRGDPPC	lnICT
VAT	1						
lnWR	-0.6406*** (0.0000)	1					
lnEDU	0.0003 (0.9978)	-0.3554*** (0.0001)	1				
FDI	0.1501 (0.1093)	0.2675*** (0.0039)	-0.7275*** (0.0000)	1			
lnEMP	-0.0485 (0.6067)	-0.3719*** (0.0000)	0.9810*** (0.0000)	-0.7406*** (0.0000)	1		
lnRGDPPC	0.3936*** (0.0000)	0.1174 (0.2113)	-0.3582*** (0.0001)	0.6620*** (0.0000)	-0.3912*** (0.0000)	1	
lnICT	0.2154** (0.0208)	0.3292*** (0.0003)	-0.2143** (0.0214)	0.5330*** (0.0000)	-0.2754*** (0.0029)	0.8795*** (0.0000)	1
lnWR		1					
lnEDU		-0.2966*** (0.0001)	1				

FDI	0.2297*** (0.0023)	-0.4408*** (0.0000)	1			
lnEMP	-0.3067*** (0.0000)	0.9774*** (0.0000)	-0.3772*** (0.0000)	1		
lnRGDPPC	0.2635*** (0.0004)	-0.5825*** (0.0000)	0.4236*** (0.0000)	-0.6494*** (0.0000)	1	
lnICT	0.3809*** (0.0000)	-0.3190*** (0.0000)	0.4233*** (0.0000)	-0.4050*** (0.0000)	0.8562*** (0.0000)	1

Notes: VAT = ratio of value added tax over GDP, lnRGDPPC = Log of real GDP per capita, lnEMP = Log of total employment, lnEDU = Log of secondary level education enrollment, lnICT = Log of fixed phone subscription over 100 person, lnWR = Log of wage rate, FDI = ratio of inflow foreign direct investment over GDP. ***, ** denote statistical significance at 1% and 5%, respectively. Calculated p-value is shown in parentheses.

4 EMPIRICAL RESULTS

The estimated results based on Equation (1) to (4) are presented in Table 4. Hausman test for all estimations are significant at 1% significance level and this suggests that the fixed effect model is deemed to appropriate for the analysis. The results suggest that VAT is negatively related to manufacturing performance in ASEAN and it is statistically significant at 5% significance level. This is consistent with the study by Invkovic, Poterba, Weisbenner (2004), Ironkwe and Peter (2015). According to Ironkwe and Peter (2015), burden of VAT is borne directly by the consumers and it affects the purchasing power and ultimately the financial performance. This suggests poor financial performance affected firm's investment and consequently value added. Total employment is statistically significant at 1% significance level and adversely impact on MVA. The finding is consistent with the study of Houseman, Bartik and Sturgeon (2014). Houseman, Bartik and Sturgeon (2014) found the improvement of automation in manufacturing has reduced the demand of workers and ultimately affect the employment in manufacturing industries. With the improvement of the accessibility of telecommunication, the MVA is positively and statistically significant at 1% significance level. This is in line with Anyanwu (2017) that found the higher accessibility to ICT infrastructure leads to higher productivity by facilitating the reallocation of the inputs.

TABLE 4. Impact of VAT on manufacturing sector and exports performance

Variable	Equation			
	Model 1	Model 2	Model 3	Model 4
VAT	-4.1042** (1.6715)	0.1974*** (0.0378)	-	-
lnWR	0.2410 (0.955)	0.1751 (0.0974)	10.8921*** (3.1232)	-0.0151 (0.0604)
lnEDU	-	-	-	-
FDI	-	-	-0.0470 (0.0761)	0.0008 (0.0015)
lnEMP	-50.0258*** (8.4885)	2.3042*** (0.1920)	-46.1658*** (10.2163)	0.9453*** (0.1835)
lnRGDPPC	-	-	25.8467*** (7.7879)	0.7729*** (0.1410)
lnICT	4.6312*** (0.9772)	0.0167 (0.0221)	-	-
DummyVAT	-	-	22.2411 (20.9397)	-0.1158 (0.2349)
Constant	202.8248*** (29.8418)	-8.0510*** (0.6751)	104.681*** (29.5191)	-4.1306*** (0.4845)
Rho (ρ)	0.9901	0.9962	0.9926	0.9758
Breusch-Pagan LM test	102.43***	0.66	212.41***	13.80**
F-test	71.18***	30.86***	36.25***	22.60***
Hausman Test	26.24***	146.48***	40.87***	116***
R-squared	0.1337	0.1134	0.0573	0.0256
Number of Observation	115	115	174	174

Notes: Model 1 = equation (1), Model 2 = equation (2), Model 3 = equation (3), Model 4 = equation (4), Control variables: VAT = ratio of value added tax over GDP, lnRGDPPC = Log of real GDP per capita, lnEMP = Log of total employment, lnEDU = Log of secondary level education enrollment, lnICT = Log of fixed phone subscription over 100 person, lnWR = Log of wage rate, FDI = ratio of inflow foreign direct investment over GDP. ***, ** denote statistical significance at 1% and 5%, respectively. Standard Deviations are shown in parentheses.

On the other hand, the impact of export intensity on VAT is found to be positively related and it is statistically significant at 1% significance level (refer model 2). VAT policy on exportation of goods is exempted from tax while imports are taxed. For instance, VAT zero rated will be incurred on the goods or services that export from Malaysia and this is similar with the VAT

rules that applied in European Union. Taxes that levied on the inputs used to produce the exports are refunded. Hence, the increase of VAT will promote exporting items in manufacturing sector in the host country.

We further examine the differences of the MVA between countries with VAT and countries without VAT by using by using Equation (3) and (4) where the results are shown in Model (3) and (4). The results suggest that ASEAN country with VAT implementation have higher manufacturing performance. This result can be attributed to the majority country with high manufacturing performance have implemented VAT such as Philippines, Thailand and Vietnam. These countries with cost advantage have courage the development of manufacturing sector. On the other hand, exports performance is deteriorated in countries with VAT as compared to countries without VAT and this is consistent with study by Desai and Hines (2005). Desai and Hines (2005) state that traded goods are more likely to have higher VAT tax rate than non-trade goods as well as the inefficiency of the VAT rebates to exporters result to fewer exports in countries with VAT. Nevertheless, the differences are not significant. This may due to the reason that implementation of VAT is relatively new in ASEAN countries which takes time to realize. Therefore, such results cannot be ignored in order to gain some insight on the long-term performance of VAT.

5 CONCLUSION

VAT is accepted and implemented globally nowadays. VAT had become popular in developing countries over the recent years with the long-held belief that VAT is able to contribute to more tax revenue to the government to boost the economic development of the country. The remarkable widely adoption of VAT has attracted empirical attention and this paper intends to study the impact of VAT on the performance manufacturing sector in terms of value-added and export performance in ASEAN countries.

This study empirically found a significant and negative correlation between VAT and manufacturing value added by using cross-sectional time-series panel data in ASEAN countries for period from 1985 to 2014. This finding is consistent with the studies by Invkovic, Poterba, and Weisbenner (2004), as well as Ironkwe, and Peter (2015). The increase of VAT leads to decrease in manufacturing value added. There are few factors contributing on the negative impact of VAT on manufacturing firms. First, consumption tax burden is always borne by consumer. The increase of the VAT rate will affect consumer purchasing power and subsequently the firm's financial performance. This will indirectly affect the investment decision in technology in order to enhance manufacturing productivity. Second, higher working capital is required to accommodate taxes on stock transfer if the stock turnaround time at warehouse is longer, credit cycle to customers is longer and the quantity of the stock transfer is higher. This will lead to cost increase and ultimately price of finished goods. With this, it will deteriorate the manufacturing value added. This study suggests that an efficient tax incentive system in place is relatively important to manufacturers. Mayende (2013) found tax incentives are affected positively on the manufacturing firm's performance in Ugandan. This shows that tax incentives given to the firms play a major role in promoting the manufacturing firm's performance in terms of value added and gross sales. With the advantage of tax incentives, manufacturing firms would be having more funds to reinvest and expand will result to increase in manufacturing value added.

Our empirical result shows VAT is positively related with exports intensity. This suggests that tax exemption on exports encourage exports intensity. VAT policy should maintain this practice and efficiency of tax rebates should be enhancing. This study also reveals that countries with VAT are outperforming the manufacturing sector as compared to countries without VAT in ASEAN though it is insignificant. We find that presence of VAT in ASEAN 10 countries does not have significant impact on the manufacturing performance. This result can be attributed to the country without VAT adoption currently can implement VAT without concern on the manufacturing performance. Results also suggest that countries without VAT performed better than country with VAT in terms of exports intensity. This is consistent with Desai and Hines (2005) that countries with VAT have fewer exports than countries without VAT. This is due to VAT tends to lead to higher tax rate on traded goods and incomplete VAT rebates to exporters.

This study suggests that an efficient tax rebates to the manufacturer can cushion the negative impact of VAT on the manufacturing performance and exports performance. Government support in terms of subsidy given to manufacturer is another alternative to help manufacturing firms to overcome challenges under VAT environment. It is crucial for government and policy makers to review the tax incentive and tax rebate policy in order to boost the manufacturing performance and exports performance.

There are several limitations in this study that can serves as reference for future study. First, the samples of this study are only focus on ASEAN countries rather than global focus. Hence, the results may not be representative of VAT impact on all manufacturing firms globally. Future study could include more regions in the samples to look at the VAT impact holistically. Secondly, manufacturing value added is the only measurement used to estimate the manufacturing performance. Future studies could include total productivity as an additional measurement to estimate the manufacturing performance.

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