Fdi Oriented Exports And Role Of Free Industrial Zones In Malaysia

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Abstract

FDI is crucial in the process of development, and offers wide scope for backward linkages to the broader economy. In expectance of such role and benefits, governments all over the world have engaged in various kinds of productive policy measures including Export Processing Zones (EPZs) or Free Industrial Zones (FIZs). However, the costs of races to the bottom to integrate and accommodate foreign entrepreneurs and potential investors may outweigh the benefits. This study used a vector autoregressive (VAR) model to empirically investigate the creation of linkages from FDI within Malaysia's FIZs, and finds that without a broader supportive policy environmental thrust; such a policy may lead to enclave development rather than provide a foundation for broad-based economic development. Hence countries need to develop strategies that attract firms that seek competitiveness on the basis of factors beyond low costs and tax breaks.

Key words: Malaysia, Free Industrial Zones, FDI, Export.

1. Introduction

Malaysia is strategically located in the heart of South-East Asia – one of the world's fastest growing regions. Due to easy access to the rest of the world, Malaysia has become an attractive center for trade, investment and tourism. The country's current emphasis is on high technology, capital-intensive and skill-oriented industries. Therefore, the government encourages foreign direct investment (FDI) with its advantages on capital inflows, technology and marketing know-how. At the same time, it is promoting the development of an indigenous industrial base for long-term sustainable industrialization.

FDI Oriented Exports

Industrial development of Malaysia has experienced fast dynamic changes to face economic challenges. After launching into manufacturing in the 1960 with a range of import-substitution industries, the government established export-promotion policy as a source of growth particularly for investment good. In the latest development, the government mainly focuses on long-term productivity-driven growth. With the government's emphasis on export-promotion, particularly exports of manufactured goods in the 1970s or during 1973 – 1983, the total of FDI inflows and export activities increased. The growth in Malaysia's FDI inflows was the result of the benefits accruable from the free industrial zones. The benefits are both static and dynamic benefits. For static, it includes economic benefits such as employment generation, export growth, government revenues, and foreign exchange earnings; and the dynamic includes economic benefits such as skills upgrading, technology transfer and innovation economic diversification, productivity and enhancement of local firms (Zeng, 2010)

Table 1 shows the percentage growth of FDI inflows and export for the nine six-year periods. It shows that both FDI inflows and export expansion increases steadily over the selected periods. The growth trends of those are in parallel, except during 1991 – 1995. The highest average growth rate of FDI inflows recorded in the period of 2001 - 2005. Meanwhile, the highest average growth rate of export recorded in the period of 1977 – 1980 is due to a decisive shift in trade and industrial policy. After its independence in 1957, the government's emphasis on export-promotion, particularly exports of manufactured goods in the 1970s, the total of export activities increased. However, Malaysian economy registered moderate growth in its level of exports. For instance, between 2006 and 2010, the economy achieved an average annual export growth of 6.19 percent despite a significant fall of exports by about 20% during 2009 (United Nations, 2013). It is important to note that Malaysia in terms of FDI recipient in ASEAN, inflows increased by 22 percent to $12 billion as a result of rising FDI services as reported by (UNCTAD, 2014). Also, Malaysia announced its National Automotive policy 2014, which grants fiscal incentives with the objective to promote a competitive and sustainable domestic automotive industry.

Table 1
Average Growth of FDI Inflows and Export (%)

Period	Average Growth (%)	
	FDI Inflows	Export
1977 – 1980	26.80	25.83
1981 – 1985	-2.70	7.43
1986 – 1990	39.74	20.39
1991 – 1995	16.12	21.61
1996 – 2000	8.42	5.63
2001 – 2005	88.39	12.31
2006 – 2010	78.48	6.19
2011 – 2014	4.66	3.23

Source: Malaysia Economics Report, various issues.

Malaysia implemented various strategies aimed at encouraging FDI inflows in Malaysia. It is important to accelerate the growth of the manufacturing sector as a basis for improving the performance of export activities. In fact, Malaysia is ranked high among investors as an attractive location for their offshore operations. For instance, The World Economic Forum in Geneva in its World Competitive Report 1995 ranks Malaysia third among non-OECD countries in terms of domestic economic strength, internalization and the government factor. In addition, ASEAN bilateral negotiations are taking place with individual members. They opened with Malaysia in May 2010, Vietnam in June 2012 and Thailand in March 2013. The EU considers the FTAS with individual ASEAN countries as stepping stones towards a region-to-region agreement which remains the long-term objectives (EU, 2014).

Free Industrial Zones

There is a big variation of special economic zones (SEZs). The term 'SEZ' here covers a broad range of zones, such as free trade zones, export-processing zones, industrial parks or free industrial zones, economic and technology development zones, high-tech zones, science and innovation parks, free ports, enterprise zones, and others (Douglas, 2015). As far as this work is concerned, the discussion is based on free industrial zone in Malaysia.

In addition to policies to welcome foreign investors such as liberal policy on equity participation, open expatriate posts, free transfer of funds, interchangeability of currency and tax incentives, Malaysia focused on developing a sound infrastructure such as good road, highly sophisticated airports (KL International Airport, Penang, Senai, Kota Kinabalu and Kuching) and well-equipped seaports (Port Klang, Penang, Johor, Kuantan, Kemaman and Bintulu Port), modern telecommunications and well-developed industrial parks/estates. A sound infrastructure is a prerequisite for sustained economic development and industrial growth. Malaysia believes in investing in infrastructural facilities to provide an enabling environment for investors.

One of the well-developed industrial parks is Free Industrial Zones (FIZ). FIZ is treated as export-processing zone which is developed to cater for the needs of export-oriented industries and to stimulate economic and industrial growth. Export-oriented industries in these zones enjoy minimum customs control and formalities in the import activities Companies in FIZs enjoy duty free import of raw materials, components and parts, and machinery directly required in manufacturing process. The same treatment is also given to the export activities of their finished products. Goods exported abroad from the FIZs are not liable to custom duty. Also, goods exported to FIZs are eligible for duty drawback. Until 1993, the Malaysia government has established 15 FIZs. Industries in Malaysia are predominantly located in over 200 industrial estates and Free Zones developed throughout the country. These zones are categorised as export processing zones, which cater to the requirements of export-oriented industries. There are also specialised parks that have been developed to cater to the needs of specific industries (MITI, 2016).

Table 2
Free Industrial Zones

Area	Area
Padang Besar FZ	Batu Berendam FZ
Prai FZ	Tanjung Kling FZ
Prai Whart FZ	Batu Berendam FZ Extension
Bayan Lepas FZ Phase I, II, III, IV	Johor Port Authority FZ
Jelapang FZ	Muara Tabuan FZ
Kinta FZ	Sejingkat FZ
Sungai Way FZ	Teluk Panglima Garang FZ
Ampang/Ulu Kelang FZ	

Source: Ministry of International Trade and Industry of Malaysia, 1994

Establishing FIZ is a part of developmental strategies for the development of various manufacturing sectors. At the beginning, Malaysia's industrialization is still in its infancy and lacks of external competitiveness. To expand the level of industrialization, Malaysia government decided to establish FIZs in 1976. These FIZs are governed via the Free Zones Act 1990 and The Free Zones Regulations 1991. These free zones provide attractive and conducive investment environment. Due to the establishment of FIZs, more than 3,000 international companies from over 40 countries have invested in Malaysia, which has made Malaysia among the world's top locations for offshore manufacturing operations.

By establishing FIZs, Malaysia has been recognized as one of the world's leading exporters of electronic semiconductor, room air conditioners, audiovisual equipment and product based on the country's natural resources such as rubber products (gloves, threads, catheters), palm oil products (soaps, margarine, oleochemicals) and timber products (plywood, mouldings, furniture). As a result, The World Trade Organization (WTO) has used to rank Malaysia as the world's 13th largest exporter and 12 largest importers in 1994. Further development of FIZs, Malaysian export sector has witnessed significant changes both in terms of growth and composition of commodities. During 1960s, the composition of Malaysian exports is characterized by the dominance of agricultural and mining products. However, during the 1990s, manufacturing sector witnessed tremendous growth to the extent that it accounts for over 80 percent of the total exports of Malaysian economy. The sector maintains this contribution up to date (Bank Negara Malaysia, 2014).

2. Literature Review

FDI: Implications and Reception

Tactics followed by developing countries to attain the level of industrial economies are numerous to be attractive for the flow of investment funds. To Blomstrom and Kokko (2003), host country decides whether incentives are needful like that of tax cut with complementary fiscal measure or to develop intention of developing export processing and free industrial zones. To examine the impacts of targeted subsidies for FDI and their associations with domestically owned and/or foreign invested firms, Du-Harrison, and Jefferson (2011) found increase in productivity outcome of FDI especially those subsidized, contrary to the ones without subsidy. However in this case, (Flamm, 1984) argued that foreign investors are footloose, likely of self-interest motives and are seen at foot marks to leap towards the location of better incentives provisions. Possible afterwards of FDI are worked by MacDougall (1960) and Caves (1971), while suggesting positive fallouts in shape of reduction of monopolies, technical and allocation efficiency. On macroeconomic front also, inward investment is favored in the researches of (Driffield, 2001; Pain, 2001; Chuang & Lin, 1999; Lipsey & Sjoholm, 2001; Dimelis & Louri, 2002). Nevertheless, Nadiri (1991) tested for plant and equipment of manufacturing sector; the impact(s) of US direct investment in Japan, UK, France, and Germany from 1968 to 1988, found inward investment as positive in impacting domestic investment of plants and equipment as well as total factor productivity. However, the evidences

collected from past researches, conducted by Haddad and Harrison (1993) and Blomstrom (1986), do show opposite spillovers, given the technology difference in the operating industries. Therefore, Blomstrom and Kokko (2003) conclude that tracing the spillovers of incentives for favoring FDI is crucial and complicated.

FDI and Empathy of Exports

Locating role of FDI in export promotion, Zhang and Song (2000) contributed on empirical study. The study proceeded for underline objective of FDI and export links in China. Fragment of research depended on province level panel data of China – analyzed by Generalized Least Square (GLS), for regression estimates. Findings of Zhang and Song (2000) support a belief that provincial level manufacturing export performance is positive in relationship with FDI. Before FDI brings any collaborative with export growth, bilateral cooperation between host and parent MNE state plays critical role (Markusen, 1990). To compliment the work of Kaufmann, Kraay, and Zoido-Lobaton (1999) asserted that since export is target outcome of inward FDI, global integration of the said states is appropriate location of investment. However, dimensions of inward FDI, interest rate, existing mechanism of controlling rent-seeking and networks of road and communication is not to be neglected. In extension to that, Omelanczuk (2013) aimed to devote interrelations among FDI and export activities. Nevertheless, from literature review and descriptive statistics, carried out, Omelanczuk (2013) endorsed export platforms as important from both micro and macroeconomic perspective and calls for further concrete effort(s) on politicians to encourage entrepreneurs in their investment drive.

Sensitivity of FDI inflows

In addition to the consequences of inwards FDI, researchers concentrated on location determinants of inward FDI. Which according to them are important before to foresee the outcomes of such bulky foreign investment. It is argued by Coleman and Nixson (1986) that blend of socio-economic indicator are crucial in their role towards foreign investment decisions. To begin with, Wells (1987) as well as Mehmood and Hassan (2015) envisioned gross national and domestic product (GNP) and (GDP). To Austin (1990), foreign linked export oriented investment decisions are highly sensitive to labor cost, thus took wage rate as determinant of business decision. However, being not dissimilar to Reuber (1973), Mehmood and Hassan (2015) emphasized that inflation is considered as price level sensitivity within the state of inward foreign investment. Exchange rate is of significant impact across the border dealings, therefore supplement to Contractor (1990), Wallace (1990) thought out of exchange rate fluctuations against that of FDI activities in any given economy. To Helleiner (1973) and Rolfe and White (1992), cost of transportation, profit repatriation restriction are curators to inward FDI. Complementarily, tax holiday length is also a strong determinant of FDI incentive. Nevertheless, with mixed results of studies carried out by Cable and Persaud (1987) and Grubert and Mutti (1991) are concrete evidence. In recent literature, Mehmood and Faridi (2013) and Mehmood and Hassan (2015) detected political stability and corruption as significant explanatory variables which either motivate or discourage foreign investor's decision to invest in a particular country or region.

Role of Free Industrial Zone

It is important to know that free Industrial zones (FIZs) also known as export processing zones (EPZs). This is seen as centre of excellence for sustainable development. The structure of EPZs involves both local and multinational enterprises (MNEs) and their suppliers, while simultaneously contributing to the implementation of the sustainable Development Goals (SDGs), also known as Global Goals. (Bendell and Doyle (2014; Winiarczyk, 2014)

It is important to note that EPZs can find new grounds for competitiveness through meeting the growing expectations on MNEs and their suppliers to exercise good social and environmental practices. Also, FIZs gains a competitive advantage by not only providing conventional commercial benefits such as modern infrastructure but also providing cost effective support for good environmental and social practices for firms operating within their boundaries. Here, cost effectiveness compliance with international corporate responsibility standards, including provision of training and monitoring, as well as health, safety and waste management services to bring about a circular economy (Wade, 2013).

This process has provided entry into the global production system by allowing those developing countries flexible enough to specialise in the lower rungs of new global value chains; and has shifted policy rhetoric from whether to participate in global trade, and how to do so effectively (Kaplinsky 1998, 2014; Rodriguez-Clare, 1996).

Kaplinsky and Morris (2012) maintained that, countries can maximise so-called spillovers from FDI and embark on a process of broad-based economic development. In order to do so, not only active courtship of MNCs is needed, but also productive policy to maximise synergy between foreign firms and the domestic private sector

Governments and investment promotion strategies, promotes competitiveness through enabling efficient performance on all issues that matter to business success, including economic and social environmental issues. FIZs are expected to promote economic linkages with their wider economies of host countries and it operates as catalytic in helping nations achieve, inter-alia SDGs on employment and decent work on sustainable production and industrialization (UNCTAD, 2015).

Prospect and Policy for FIZs

Developmental role of the state has steadily regained acceptance amongst scholars since the 1990s as asserted by Rodrik (2007), Chang (2008) and Wade (2014). Firstly, the assumption that governmental failure outweighs market failure seems biased, as markets are ultimately a political construct (Chang 2003). Secondly, when it comes to knowledge deficiencies, late developers have the advantage of dynamically growing countries as a policy example, whilst the low-technological content of domestic industries means that coordination requires but limited ability. Indeed, Lu, Xia (2014) argues that even broader or simplistic industrial policies have positive effects as long as the

playing field is tilted towards sectors with positive spillovers. Thirdly, there is space for rent seeking in every type of public policy, yet is the only type that is actively discouraged worldwide.

Importantly, Zhang and Song (2010) opined that an intermediate knowledge gap between domestic and foreign firms in an industry allows for efficient linkage creation, and hence argued for the deliberate intervention by governments to allow those investments that are at a sizeable technological reach of domestic firm. Saxena (2011) corroborates these findings with her study of India.

The basic premise behind the FIZs is the creation of an agglomeration of manufacturing activity (Porter 1985; Enright, 2000, 2003) where foreign firms agree to settle in and export from, in return for exemptions on duty for imports of capital and intermediate goods, a steady supply of low-cost labour, and various other incentives. An FIZs is expected to entice foreign investors, launch local manufacturers into world markets, and become embedded in the creation of an industrial structure capable of developing independently (Basile & Germidis, 1984). Firms within FIZs often function as catalysts for domestic firms to start exporting, as there is a strong rationale for local firms to internalise new superior technology and leapfrog the trial-and-error process involved in average innovation (Johansson, 1997). Indeed, Tetsu's (2006) in his general equilibrium model suggests that FIZs have the greatest positive effect when they foster strong backward linkages. As with FDI, research indicates that countries should aim to attract segments of FDI to EPZs, or risk the possibility of enclave-development when linkages fail to emerge.

Furthermore, the appropriate ministries should be involved in regulating the level of export orientation of foreign (and domestic) firms as simple export orientation is not sufficient for spillovers. In fact, domestic market orientation (DMO) appears to be the most conducive to backward linkages operations (Fatima, 2015; Jenkins, 2006; Girma & Görg, 2002).

Wade (1990), Amsden (2001), Chang (2003), as well as others argued that the most successful developing nations intervened to provide comprehensive subsidization of manufacturing industry in order to shift the center of gravity of their economies away from primary product-based assets toward knowledge-based assets, the essence of economic development (Amsden, 2001). This is followed by methodology, model specification, method of analysis, empirical and interpretation of result and policy implication.

3. Methodology

Conceptual Framework

Interdependence between FDI, FIZ and Export is shown by Figure 1. FDI influences export via the establishment of FIZ and provision of investment incentive by the government. Both FIZ and investment incentives are needed to boost export. Policy reforms such as the Investment of Act introduced in 1968 and Free Trade Zone Act of 1971 have immensely contributed to outstanding export performance as well as FDI attractiveness of Malaysian economy to various FDI exporting

economies. For instance, of the mandatory requirements contained in the FTZA of 1971 is that, for a company to qualify for free trade zone location, it has to export not less than 80 percent of its output. However, many studies theorized that such achievement attained by the Malaysia economy may not be unrelated to the increased inflow of FDI and trade openness the economy maintains since 1980s (Ang, 2008).

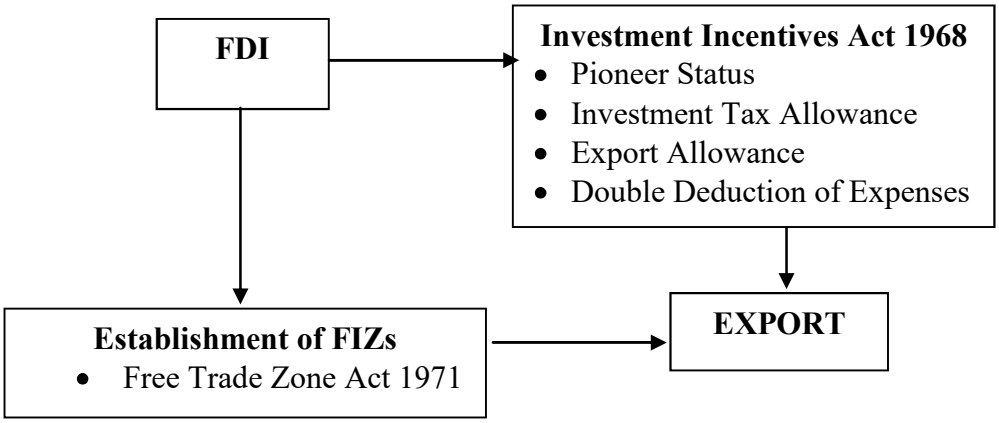

Figure 1
Schematic Diagram of FDI, FIZ and Export

Data

Secondary data are utilized in the study. The short run and long run relationships are measured between exports and independent variables namely inflation, economic growth, employment, foreign direct investment, exchange rate and government expenditure particularly on the trade and industry sectors in Malaysia for a 39 year period i.e. from 1976 to 2014. While the annual data on exports, inflation, foreign direct investment and exchange rate are obtained from the World Bank's website, the annual data on economic growth, employment and government expenditure are collated from the website of Malaysia's Department of Statistics.

Model Specification

In line with the similar works of Shawa and Yaoshen (2014), the simple functional form is given in Equation [1]:

[1] $$EXSP = f(INF, GDP, EMPL, FDI, GEXP, EXCH)$$

where *EXSP* is total exports of goods and services (in USD billion), *INF* is inflation (in annual percentage), GDP is gross domestic product that reflects on economic growth (in RM million), *EMPL* is total employment (in million people), *FDI* is foreign direct investment (in USD billion), *GEXP* is government expenditure (in RM million) and *EXCH* is exchange rate (in RM per USD)

Subsequently, Equation [2] represents the empirical model for the study in which it is derived from the expansion of Equation [1] into the mathematical expression:

[2] $$EXSP_t = \beta_0 + \beta_1 INF_t + \beta_2 GDP_t + \beta_3 EMPL_t + \beta_4 FDI_t + \beta_5 GEXP_t + \beta_6 EXCH_t + \varepsilon_t$$

Where β_0 is the intercept term, β_1 to β_6 are estimated parameters, t is a time series data and ε_t represents a random disturbance term.

Method of Analysis

Unit Root Test

In time series estimation, the first attempt is to check the stationary properties of the variables or the order of integration both at their intercept and intercept plus trend terms. Thus, the tests of Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) are employed in order to determine the stationarity of each variable. In consideration of the ADF test tends to reject a unit root due to its low power, the PP test therefore serves as a complement since it can address serial correlation problems in the unit root testing. With a combination of the two tests, it is expected that the order of integration for all series is robust. This is followed by the empirical results and discussions.

Cointegration, Long Run and Short Run Relationships

A vector autoregressive (VAR) model is used to assess the long run and short run relationships between *EXSP* and independent variables; *INF, GDP, EMPL, FDI, EXCH* and *GEXP*. Alternatively, the variables can be illustrated in the matrix form as shown in Equation [3]:

$$[3] \quad \begin{bmatrix} EXSP_t \\ INF_t \\ GDP_t \\ EMPL_t \\ FDI_t \\ EXCH_t \\ GEXP_t \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \\ \alpha_4 \\ \alpha_5 \\ \alpha_6 \\ \alpha_7 \end{bmatrix} + \begin{bmatrix} \beta_{1,1}(L) & \dots & \beta_{1,7}(L) \\ \dots & \dots & \dots \\ \dots & \dots & \dots \\ \dots & \dots & \dots \\ \dots & \dots & \dots \\ \dots & \dots & \dots \\ \beta_{7,1}(L) & \dots & \beta_{7,7}(L) \end{bmatrix} \begin{bmatrix} EXSP_t \\ INF_t \\ GDP_t \\ EMPL_t \\ FDI_t \\ EXCH_t \\ GEXP_t \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \\ \varepsilon_6 \\ \varepsilon_7 \end{bmatrix}$$

The long run cointegrating relationship between the variables is estimated via two tests developed in Johansen (1988) namely Trace and Maximum Eigenvalue Tests. Once the variables are found cointegrated over the long run, the short run relationship can be proceeded via the vector error correction model (VECM).

On the non-stationary data, a cointegration analysis is performed in a VAR model for the simple form of Johansen's method as can be seen in Equation [4]:

$$[4] \quad \Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + Bx_t + \varepsilon_t$$

where $\Pi = \sum_{i=1}^{p} A_i - I, \Gamma_i = -\sum_{j=i+1}^{p} A_j$. As such, the rank of Π refers to the number of cointegrating equations among the components of the vector y_t of p variables (or $p = 7$ for this study). On the other hand, in the absence of cointegration, Π is a singular matrix i.e. its rank, $r = 0$. Hence, the rank of Π can take any value from zero to seven. When $r = 1$, there is a unique cointegrating vector meaning that there is a stable long run relationship between the variables. However, for $1 < r < 4$, it implies that there are multiple cointegrating vectors. This indicates that the variables in the system, which have r cointegrating vectors, are proven cointegrated in the long run. Stated differently, the variables have a long run equilibrium relationship and they are moving together in the long run. The Π matrix can be factored as per Equation [5]:

[5] $\Pi = \alpha\beta' \quad ; \quad \beta y_t \sim I(0)$

where the α matrix comprises of the adjustment parameters and the β matrix are the cointegrating vectors. With the Johansen's method, the Π matrix based on unrestricted VAR is able to be estimated. Also, the number of non-zero eigenvalues of Π (or equals *r*) that applies the trace and maximum eigenvalue statistics can be tested as well.

According to Granger (1988), if the variables are found cointegrated, the short run Granger causality analysis on the variables has to be performed in a VECM to avoid the misspecification problems. Therefore, the VECM is employed in order to determine the direction of causality between exports and independent variables; inflation, economic growth, employment, foreign direct investment, exchange rate and government expenditure. For this reason, the VECM model that consists of various variables in the system can take the following form as displayed in Equation [6]:

$$[6]\ y_t = \begin{bmatrix} \Delta EXSP_t \\ \Delta INF_t \\ \Delta GDP_t \\ \Delta EMPL_t \\ \Delta FDI_t \\ \Delta EXCH_t \\ \Delta GEXP_t \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \\ \alpha_4 \\ \alpha_5 \\ \alpha_6 \\ \alpha_7 \end{bmatrix} + \begin{bmatrix} \beta_{11}(L) & \dots & \beta_{17}(L) \\ \beta_{21}(L) & \dots & \beta_{27}(L) \\ \dots & & \\ \dots & & \\ \dots & & \\ \dots & & \\ \beta_{71}(L) & \dots & \beta_{77}(L) \end{bmatrix} \begin{bmatrix} \Delta EXSP_t \\ \Delta INF_t \\ \Delta GDP_t \\ \Delta EMPL_t \\ \Delta FDI_t \\ \Delta EXCH_t \\ \Delta GEXP_t \end{bmatrix} + \begin{bmatrix} \gamma_1 z_{1,t-1} \\ \gamma_2 z_{2,t-1} \\ \dots \\ \dots \\ \dots \\ \dots \\ \gamma_7 z_{7,t-1} \end{bmatrix} + \begin{bmatrix} \Phi(L) & 0 & \dots & 0 \\ 0 & \Phi(L) & 0 & \dots & 0 \\ \dots & & & & \\ \dots & & & & \\ \dots & & & & \\ \dots & & & & \\ 0 & \dots & 0 & & \Phi(L) \end{bmatrix} \begin{bmatrix} \varepsilon_{1,t} \\ \varepsilon_{2,t} \\ \varepsilon_{3,t} \\ \dots \\ \dots \\ \dots \\ \varepsilon_{7,t} \end{bmatrix}$$

where y_t is a (7 x 1) vector of the variables in the system, $\alpha's$ denote as a vector of intercept terms, $\beta's$ represent estimated parameters, Δ is a first difference operator and L is a lag operator. Also, $\beta(L)$ and $\Phi(L)$ refer to finite polynomials in the lag operator, $z_{t-1}'s$ represent error correction terms and $\varepsilon_t's$ are random disturbance terms.

4. Empirical Results

Descriptive Statistics

Table 3 reports that the mean values of all variables are positive for a total of 39 observations.

Table 3

Statistical Analysis of Variables

Variable	Mean	Median	Maximum	Minimum	Standard Deviation
GDP	336,253.50	222,473.00	1,106,580.00	28,085.00	318,173.40
EMPL	8,072.90	7,645.00	12,978.94	4,380.00	2,629.79
GEXP	2,543.69	1,291.00	8,364.00	296.00	2,149.59
EXSP	93.97	83.46	254.02	5.75	83.95
FDI	3.91	3.20	15.12	0.12	3.73
INF	3.15	2.96	9.70	0.29	1.89
EXCH	2.95	2.71	3.92	2.18	0.577

Amid *GDP, EMPL* and *GEXP* post with the mean values of over 2,000, *EXSP, FDI, INF* and *EXCH* have the mean values of 93.97, 3.91, 3.15 and 2.95, respectively. On the interval between maximum

and minimum values, *GDP* records the value of 1,078,495 whereas *EXCH* registers with the value of 1.747. While *EXCH* has the lowest standard deviation, *GDP, EMPL* and *GEXP* display high values of standard deviation, respectively, thus pointing to the fact that their dispersions from the mean are indeed larger than the rest of variables.

Correlation Analysis

Correlation matrix underscores the strength of the association between the variables. As shown in Table 4, there are many variables that are positively and negatively related to each other.

Table 4
Estimated Correlation Matrix of Variables

Variable	EXSP	INF	GDP	EMPL	FDI	GEXP	EXC
EXSP	1.000	-0.281	0.986	0.970	0.844	0.877	0.647
INF		1.000	-0.281	-0.373	-0.081	-0.162	-0.395
GDP			1.000	0.957	0.832	0.887	0.597
EMPL				1.000	0.803	0.856	0.733
FDI					1.000	0.743	0.335
GEXP						1.000	0.593
EXCH							1.000

For instance, all independent variables, excluding *INF*, are found positively correlated with *EXSP*. In term of the relationship with *EXSP*, strong correlation linkages of over 60 percent are detected running from *EXC, GEXP, FDI, EMPL* and *GDP*, accordingly. Apart from that, there are strong correlations of over 50 percent among independent variables; *EXC, GEXP, FDI, EMPL* and *GDP*, thereby potentially causing multicollinearity problems. Hence, a vector autoregressive (VAR) model is employed thereafter in consideration of such problems to arise especially in the time series analysis.

Stationarity of Data

In checking the stationary properties of the variables both at their intercept and intercept plus trend terms, it is empirically observed from Table 5 that the variables are found non-stationary at level. Correspondingly, their associated *p*-values are greater than the 10 percent significance level. As a result, there is a failure to reject the null of a series to have a unit root.

Table 5

Results of the Unit Root Test

Variable	Level		First Difference		Conclusion
	Intercept	Intercept Plus Trend	Intercept	Intercept Plus Trend	
EXSP	0.840	-1.899	-5.461	-6.142	I(1)
	(0.993)	(0.635)	(0.000)*	(0.000)*	
EMPL	1.383	-1.941	-4.504	-5.018	I(1)
	(0.999)	(0.613)	(0.001)*	(0.001)*	
FDI	-0.522	-2.139	-5.108	-5.167	I(1)
	(0.875)	(0.508)	(0.000)*	(0.001)*	
GEXP	-0.870	-2.485	-5.355	-5.327	I(1)
	(0.786)	(0.333)	(0.000)*	(0.001)*	
EXCH	-1.408	-2.053	-4.216	-4.189	I(1)
	(0.568)	(0.554)	(0.002)*	(0.011)*	
GDP	5.122	0.775	-4.655	-8.217	I(1)
	(1.000)	(1.000)	(0.001)*	(0.000)*	
INF	-2.317	-2.546	-3.413	-3.359	I(1)
	(0.172)	(0.306)	(0.017)*	(0.074)**	

Note: Figures in the parentheses are *p*-values.
* and ** indicate the null hypothesis of non-stationary being rejected at the five percent and 10 percent levels of significance, respectively.

Nonetheless, the variables are proven to contain stationary properties after transforming all series into first-differenced variables. As such, the variables become statistically significant, thereby inducing the tendency to reject the similar null hypothesis. Altogether, the non-stationary variables at level are successfully converted into stationary series at first order difference and cointegrated of same order one i.e. I(1).

Cointegration and Long Run Relationship

Since the variables are integrated at *I*(1), the next attempt is to verify the presence of a long run relationship between the variables using the Johansen cointegration analysis. In this respect, Table 6 summarizes the results of the Johansen cointegration test.

Table 6
Cointegration Test Based on Johansen's Maximum Likelihood Approach

Null	Eigen value	Trace Statistic	Critical Value 5%	Max-Eigen Statistic	Critical Value 5%
r = 0*	0.921	270.098	125.615	91.593	46.231
r ≤1*	0.837	178.504	95.754	65.377	40.078
r ≤2*	0.755	113.127	69.819	50.621	33.877
r ≤3*	0.569	62.506	47.856	30.258	27.584
r ≤4*	0.481	32.247	29.797	23.620	21.132
r ≤5	0.209	8.628	15.494	8.448	14.265

Note: * denotes rejection of the hypothesis at the 0.05 level

From the study, there are five cointegrating equations being successfully discovered according to the statistics of Johansen trace and maximum eigenvalue. Notwithstanding the successful detection on the total number of cointegrating equations, it implies that there is clear evidence in favour of a long run relationship potentially exists between the variables in the model that is within the multivariate framework. The result of long run estimation is shown in Table 7.

Table 7
Long Run Estimation

Variables	Coefficient	Standard Error	*t*-statistics	*p*-value
C	135.441	56.998	2.376	0.004*
INF	303.531	29.136	10.418	0.002*
GDP	0.002	0.0009	1.979	0.001*
EMPL	1.540	0.143	10.767	0.013*
FDI	441.570	43.314	10.195	0.043*
GEXP	-0.630	0.0615	-10.179	0.006*
EXCH	1633.680	225.254	7.253	0.031*

Note: * denotes rejection of the null hypothesis at the five percent significance level.

Furthermore, it is worth to highlight that the long run estimation between the variables is able to be derived thanks to the Johansen cointegration procedure. All the variables are found statistically significant with the correct signs at the five percent significance level over the long term. Therefore, these variables, particularly FDI, serve as key factors that contribute to explaining the changes in total exports. Ceteris paribus, a RM million hike in FDI would lead to a sizeable boost of RM442 in the total content of exports. Likewise, there is an increase of 1.54 million in the money-equivalent term to be subsequently translated into in the formation

of exports as a result of an escalation in the employment policy. On the contrary, an elevated portion of trade and industry expenses by the government would likely to deter by minus RM0.63 million for the ongoing growth of export variations. To some extent, the long run results are consistent with Miankhel, Thangavelu and Kalirajan (2009), Meerza (2012) and Shibab, Soufan and Khaliq (2014) but contradicts with Sulaiman and Saad (2009) and Haseeb *et al.* (2014)

Short Run Relationship

Pertaining to the short run relationships between the cointegrated variables, such estimation can be sufficiently conducted via some econometric techniques, among others, Granger causality test within VECM. Accordingly, the short run results between the variables are presented in Table 8.

Table 8
Results of the Granger Causality Test within VECM

Variable	Coefficient	Standard Error	*t*-statistic	*p*-value
Dependent Variable: ΔEXSP				
ΔEXSP(-1)	0.643	0.612	1.050	0.306
ΔEXSP(-2)	-1.380	0.553	-2.496	0.021*
ΔINF(-1)	-3.367	1.458	-2.309	0.032*
ΔINF(-2)	-1.423	1.425	-0.999	0.330
ΔGDP(-1)	-0.0006	0.0002	-3.556	0.002*
ΔGDP(-2)	0.0002	0.0002	0.864	0.398
ΔEMPL(-1)	-0.021	0.020	-1.057	0.303
ΔEMPL(-2)	-0.043	0.014	-3.039	0.007*
ΔFDI(-1)	4.923	2.490	1.977	0.062**
ΔFDI(-2)	6.875	2.202	3.122	0.005*
ΔGEXP(-1)	0.008	0.002	3.066	0.006*
ΔGEXP(-2)	0.002	0.002	0.997	0.330
ΔEXCH(-1)	-5.256	10.672	-0.492	0.628
ΔEXCH(-2)	-2.796	10.795	-0.259	0.798
C	33.727	9.700	3.477	0.002*
ECT(-1)	-0.017	0.005	-3.611	0.002*
R^2	0.751	Durbin-Watson statistic		2.184
Adjusted R^2	0.565			

Note: * and ** indicate H_0: $\beta_i = 0$ being rejected at the five percent and 10 percent significance levels.

As illustrated in Table 8, it is observed that the coefficient of ECT_{t-1} term for the $\Delta EXSP$ equation is a negative sign and statistically significant at the five percent significance level. Explicitly, the ECT_{t-1} term implies that the long run causality does exist in the equation. If there is an exogenous shock on the model, the system will automatically correct its disequilibrium by about 1.7 percent speed of adjustment per year towards the long run equilibrium.

As far as the short run estimation is concerned, the intercept and lagging terms of *EXSP, INF, GDP, EMPL, FDI* and *GEXP*, which are either at lag 1, lag 2 or even both, are in positive and negative signs and statistically significant at the five percent and 10 percent significance levels, respectively. Of the coefficients, only *FDI* is proven statistically related with *EXSP* given the importance of both lag 1 and lag 2 terms at the acceptable significance levels. Generally, the results indicate that a rise of USD Billion in foreign direct investment portfolios would spur the development of export business with sizeable stimuli of USD4.92 Billion and USD6.88 Billion at respective lag levels. Therefore, this suggests that foreign direct investment to constitute as a good predictor of export-led strategies, thus heavily weighing the possibility of assuming a key role for the nation to accelerate the export-related activities in the short term. In this accord, the finding is in line with Mahadevan (2007), Anfofum, Gambo and Suleiman (2013), Shawa and Shen (2013) and Akoto (2016).

In addition, there is evidence of potential short run impacts that are partially originated from self-lagged series as well as other lagging indicators namely inflation, economic growth and employment at the five percent significant level. With the exception of $\Delta GEXP$ at lag 1 being a positive sign, the negative externalities are envisaged coming from those variables at varying levels that would eventually affect the performance in export formation over the short run. For instance, the high periods of inflation are associated with the low level of exports. Hence, the findings are in parallel with Gylfason (1998) and Ernst (2005).

5 Policy Implication and Conclusion

To contextualize these findings, it is important to draw on wider scholarship or performance by EPZs. This suggests the need for innovative approaches, incentives and administrative infrastructure to ensure that good environmental, social and governance practices are maintained in EPZs vis-à-vis FIZs. In particular, such approaches should involve local groups, including local civil society and trade unions, working with employers and government to strengthen the role of monitoring compliance with standards.

Also, the potential of a zone to act as a catalyst rather than an enclave of economic development may be supported through the pursuit of good social and environmental practices in a zone. To minimize negative environment impacts and to comply with applicable environmental law, this zone needs to set up an achievement environmental objectives and targets through monitoring, reporting and review. Inclusive, is training of staff, and adopt the environmental management system established by ISO14001.

Given the changing demands of MNEs and their suppliers, a hassle free zone is not one that ignores basic labour rights or environmental standards, but is one that makes the achievement of such standards as simple and cost-effective as possible. This can be done by provision of relevant training, monitoring and improved infrastructure related to health, safety and waste management by the adaptation of eco-efficiencies.

In a nutshell, countries that are making zones central to their industrialization today need to develop a strategy that attracts firms that seek competitiveness on the basis of factors beyond low costs and tax breaks.

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