

## EXPORT CREDIT INSURANCES IN DEVELOPING COUNTRIES: THE CASE OF TURKEY AND IMT COUNTRIES<sup>1</sup>

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### Abstract

*Export credit insurance is one of the substantial tools to promote export in a country. This paper endeavours to find out the effect of Export Credit Insurance covered by Export Credit Agencies on the developing countries' export figures and GDP. The countries subject to the analysis are Turkey and Indonesia, Malaysia, Thailand also known as IMT Countries. The relationship between export value, economic growth and export credit insurances is going to be analysed using Vector Autoregression (VAR) Model.*

**Keywords:** *Eximbank, Export Credit Agency, Export Credit Insurance, Johansen Cointegration Test, Granger Causality Test*

### 1. Introduction

In recent years, goods and services in international trade are becoming increasingly similar. This development has shifted the competition from products itself to price, marketing, payment terms and after-sales services. Costs can be kept in the minimum level and offered to the customer at the most appropriate price, only through the use of proper financing techniques.

For this reason, countries try to provide financing opportunities on favorable conditions to encourage exports. In line with this objective, it implements foreign trade policies to develop various institutions and models to give its entrepreneurs competitive advantage in foreign markets.

With the aim of financing the companies' foreign trade activities Export Credit Agencies (ECA) play a crucial role all over the world. ECAs are supported by their home countries. Their organization and structure change among the countries. They can be established as a bank, financial institution or insurance company. When ECAs are founded as a bank, their model is called export-import bank (Eximbank). When ECAs are established as an insurance company, they are usually privately owned and have responsibilities against their related ministries within the country they operate for. (Salcic, 2014)

ECAs have two main functions. First one is supporting the national export via direct loans given either to the domestic exporter company or foreign buyer (importer). Direct loans provide a crucial source of funding when commercial banks are not able to or does not want to give credits to the foreign buyers. (Salcic, 2014) Export credit insurance allows the exporters to guarantee their receivables up to a certain limit even if the importer fails to pay due to commercial or political reasons. Exporters have the advantage to have export credits when they issue their export credit insurance policies as a security deposit to the banks. This is especially important for companies from the developing countries as they will have the possibility to compete with the companies from all over the world. Other benefits of having such a system are; to encourage the exporter to enter new and unknown markets, widening their market share, avoiding the risk of non-payment for their open account sales and to be able to use the database of the insurance company to be informed about the potential customer's financial situation. Export credit insurance up to one year is classified as short term whilst more than one year is classified as medium-long term export credit insurance.

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In 1934, public and private credit insurers formed “Berne Union” whose objective is to support internationally recognized principles in export credit and investment industry. They have 85 members including state supported ECAs, private credit and political risk insurers which provide insurance products, guarantees and direct loans. (Berne Union, 2018)

Figure 1 drawn below, demonstrates that the total support on short, medium and long term export credit covers from Berne Union members reach 11% of total world export value. World export value experienced a sharp decrease by 22% in the 2008-2009 crisis falling from around 16 trillion USD to 12.5 trillion USD. However export credit insurances fell from 1.45 trillion USD to 1.314 trillion USD which amounts to a 10% decrease.

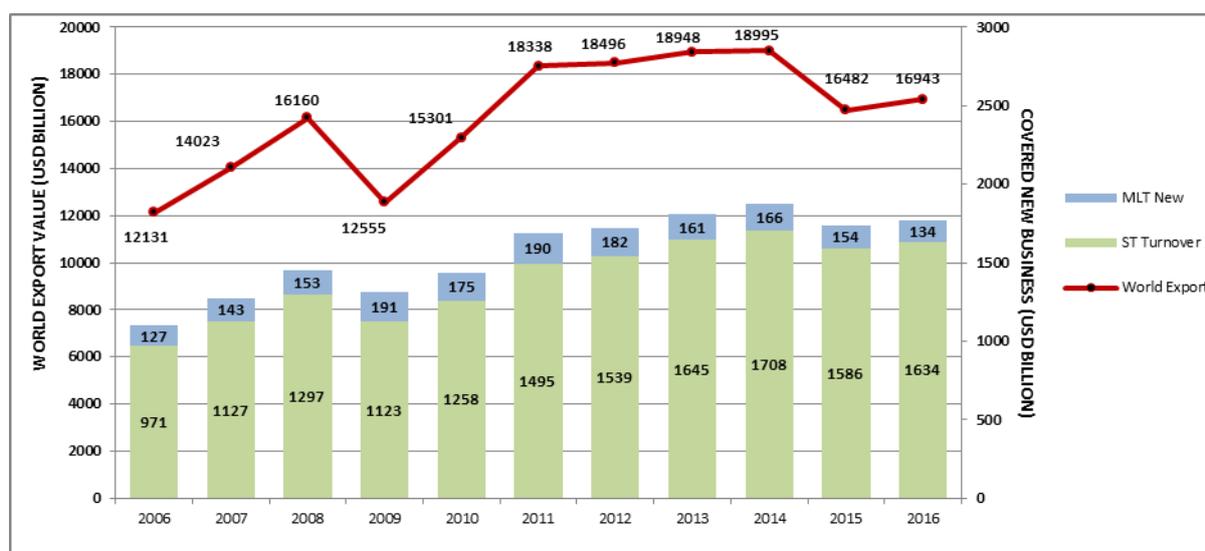


Figure 1: World export and export credit insurances

Source: <https://www.berneunion.org/DataReports> (Berne Union, 2017)

The first trade credit insurance company was founded in London under the name of British Commercial Insurance Company. (Karrer, 1958) Afterwards, many other European and American companies followed it structuring better than before and establishing a more secure system. In 1928, the roof organization called “The International Credit Insurance Association” has been founded in Paris. This organization enabled their members an information network between them so that they could decide whether to provide insurance limits on that company or how much premium amount to be taken from their customers. The developing countries started establishing their state backed ECAs years later such as Turkish Eximbank on 1987, Thai Exim (Thailand) on 1993, Mexim (Malaysia) on 1995 and LPEI (Indonesia) on 1999. The rationale behind this act is the increase in the economic growth rates in developed countries when they support their export industries with direct credits, loans or guarantees.

In this study four selected ECAs from developing countries are going to be analyzed, and then the similarities and differences among them are going to be revealed. Out of these ECAs three of them LPEI (Indonesia), Mexim (Malaysia), Thai Exim (Thailand) are full member institutions of Asian Eximbank Forum while Turkish Eximbank is the only associate member in it. The objective of this forum is to increase the cooperation between the member institutions, sharing expertise, promoting intra-regional trade and making multilateral agreements among each other. Currently there are ten full member ECAs representing their countries. (Asian Eximbanks Forum, 2018)

Indonesia, Malaysia and Thailand share their borders and all are founding members of Association of Southeast Asian Nations (ASEAN) which has economic, social, political and cultural aims. Moreover these countries are

known as IMT Countries and formed a sub-regional economic program called IMT Growth Triangle (IMT-GT) in 1993 to be able to develop some less developed regions within their countries. IMT-GT prepared a vision report 2036 aimed to be reached until that year. The objectives are increasing; the GDP, share of intra trade in total IMT trade, incoming FDI flows, the tourism potential, the number of cross-border projects and implementing green city action plan. (Asian Development Bank, 2018) On the other hand Turkey also has a vision report for her 100th year anniversary on 2023. She has some similar objective topics and some of them are; increasing the GDP, becoming one of the top ten economies in the world and exporting \$500 billion worth of goods and services.

Figure 2 shows the GDP per capita of the selected economies. In 2016, Turkey had the highest GDP per capita (\$10.862) then Malaysia (\$9.508), Thailand (\$5.910) follows her respectively. Indonesia (\$3.570) had the lowest per capita income in that year. GDP per capita of Turkey with Malaysia and Thailand with Indonesia follows a very similar trend during the years from 2005 to 2016. Based on these GDP per capita they have, all of these countries are classified as developing countries. (United Nations, 2014)

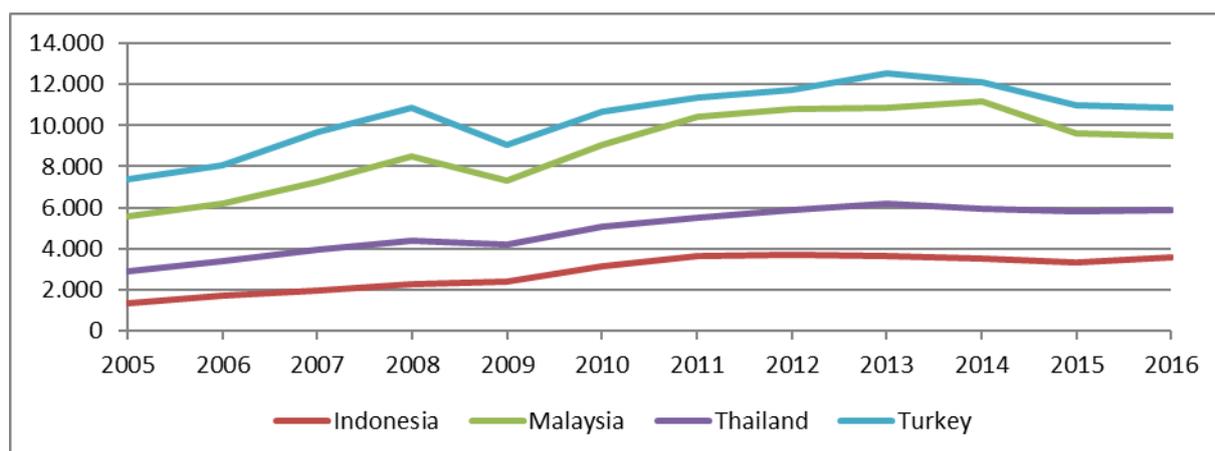


Figure 2: GDP Per Capita (USD)  
Source: World Bank

When we consider the GDP volume in total, the rankings among these countries change significantly as can be seen in Figure 3 below. Indonesia takes the first place in 2016 with a GDP of \$932 Billion ahead of Turkey (\$863 Billion). Thailand (\$407 Billion) and Malaysia (\$296 Billion) follows them respectively.

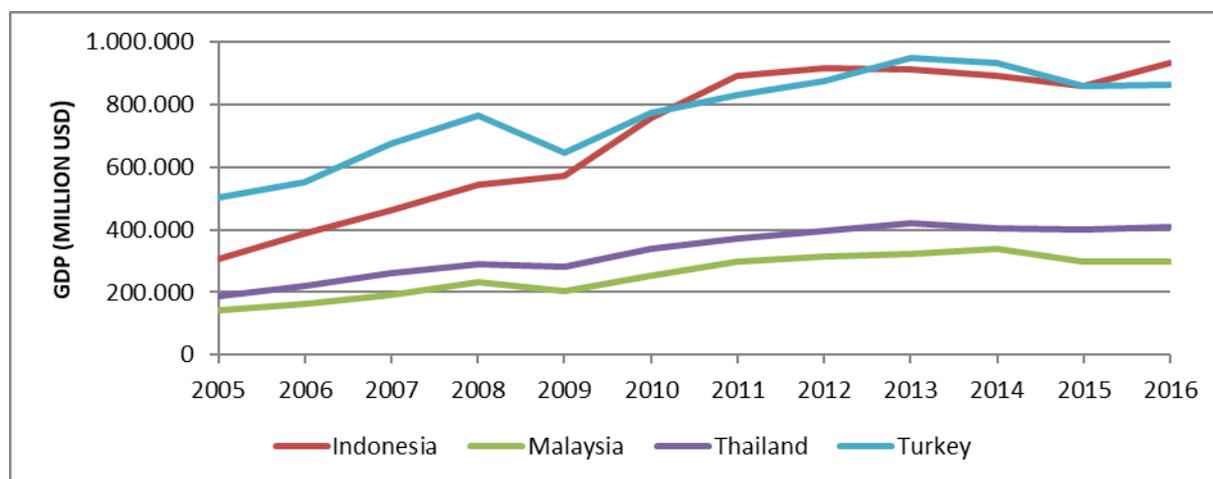


Figure 3: GDP (Million USD)  
Source: World Bank

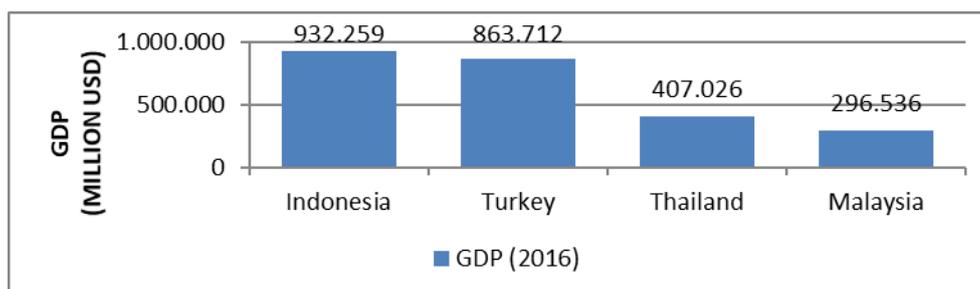


Figure 4: 2016 GDP (Million USD)  
Source: World Bank

The high population of Indonesia with 261 million people in 2016 explains the imbalance between GDP and GDP per capita ranking. The increase of her population is expected to continue in the coming years at a similar ratio as can be seen from the population statistics. Turkey and Malaysia increase their population in a similar ratio while Thailand's population increases in a very low rate in the last 20 years.

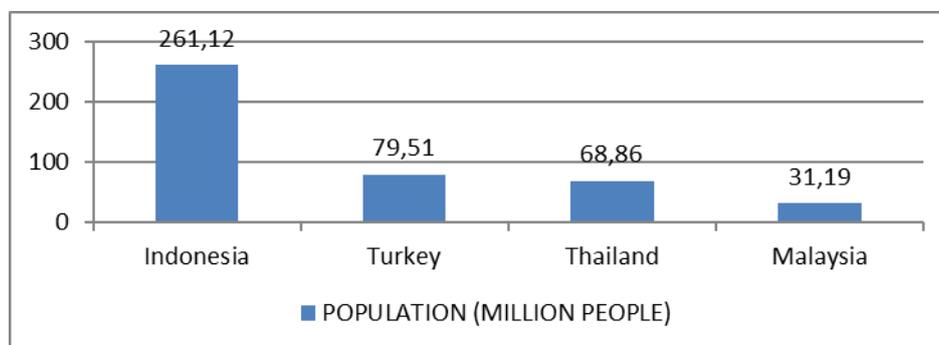


Figure 5: 2016 Population (Million People)  
Source: World Bank

Figure 6 shows the GDP growth rates among these developing countries. In times of crisis Malaysia, Thailand and Turkey experienced a negative growth rate while surprisingly Indonesia achieve to grow 5% and seem to be having the most stable growth rate along these years. Turkey is the most fluctuating country among them having the most negative growth rate of -5% during the crisis however she had the biggest growth rate with 11% in 2011. Thailand's growth rate decreased significantly in the years 2009, 2011 and 2014. Malaysian economy experienced a stable growth rate after the crisis.

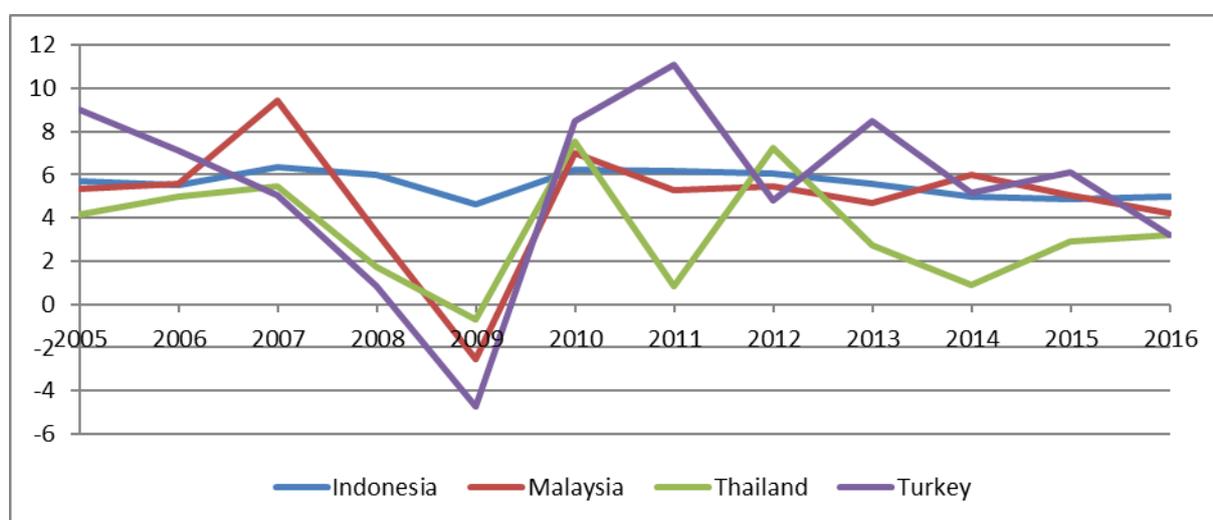


Figure 6: GDP Growth Rates (%)  
Source: World Bank

Figure 7 below shows the exports as percentage of GDP, which is used to define an economy's degree of openness. As the export's share in the economy increases, country is believed to have a more open economy. Theoretically countries with a smaller economy tend to have a higher rate as the domestic market is not big enough to fulfill the demand so the companies have to export their products in the international markets. Malaysia and Thailand economies are smaller than Turkey and Indonesia therefore suits well to the theoretical framework as their exports over GDP ratio are bigger than the two other countries. Malaysian ratio was around 110% in 2005 and gradually fell to 70% in 2016 while the ratio of Thailand is steady around 70% during those years. Ratios of Turkey and Indonesia which are bigger economies show a stable trend at around 20%.

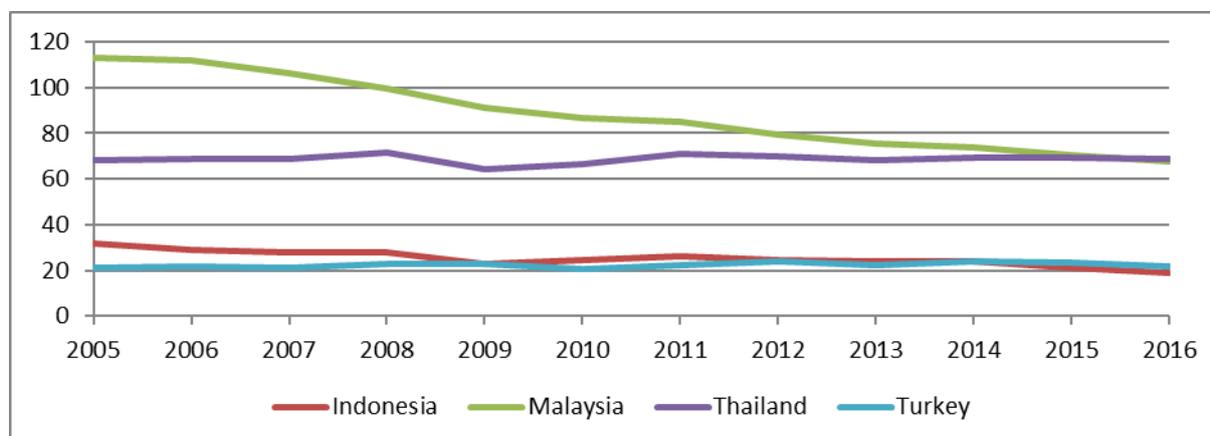


Figure 7: Exports as percentage of GDP (%)  
Source: World Bank

Figure 8 below shows the exports of goods and services of the four countries. There is a breakdown during the crisis until 2009 and then a rapid increase in all of the countries. In 2011 Malaysian and Indonesian exports experienced a decrease until 2016. However Turkish and Thai exports increased until 2014 and then Turkish exports started to decrease while Thai exports showed a steady trend.

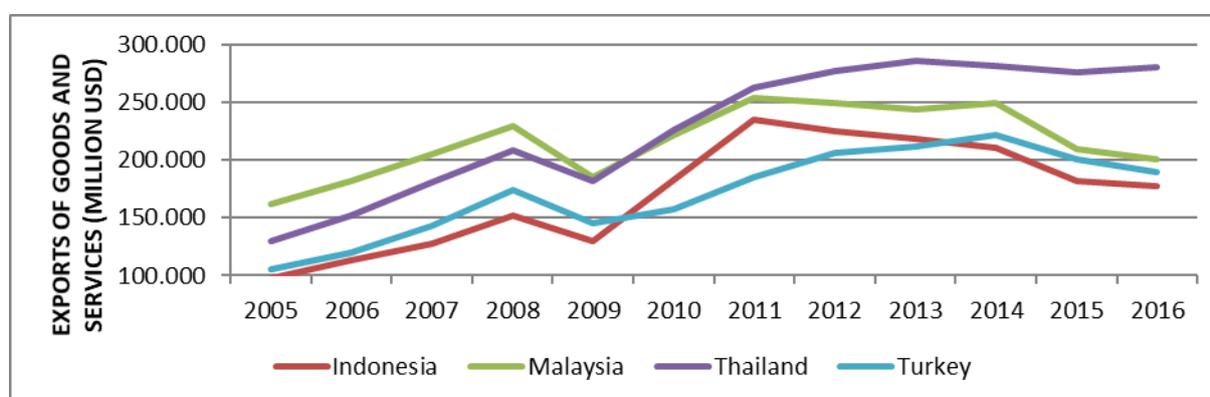


Figure 8: Exports of goods and services (Million USD)  
Source: World Bank

## 2. Literature Review

There have been a number of studies regarding the relationship between export promotion expenditures and exports. The research of Coughlin and Cartwright (1987) is one of the first studies trying to investigate this relationship. In their study, they found out the positive effect of the export promotion expenditures on export in the U.S. by using ordinary least squares (OLS) method. They put emphasis on the diversity of elasticity among states. Also Wilkinson, et al. (2005) studied the U.S. state expenditure on export promotion between the periods of 1994-2000 using regression analysis. They found that there is a positive relationship between the variables as well.

Alvarez and Crespi (2000) found that promotion instruments such as export credit insurances increase the market for export companies in Chile and after a few years they export more with a higher diversification possibility across products and markets.

Egger and Url (2006) analysed the relationship between Austrian exports and export credit guarantees provided by Austrian ECA by using gravity equation model. Their results show that export credit insurances have a significant short-term and also long-term effect on the exports. One per cent covered insurance creates 0.05 per cent of short-term exports and 0.44 per cent of long-term exports.

Mah (2006) studied whether the export insurances have any effect on the Japanese exports. He found that there is no significant effect between the two for Japan however he suggested that export insurance increased the manufacturer's profit.

Baltensperger and Herger (2009) studied the effect of export insurances given by OECD member countries to non OECD member countries by using gravity equation model. Results show that export insurances provided by OECD member ECAs for exports to low-income countries did not increase exports to those countries while exports to middle- and high-income countries increased significantly during 1999-2005 period.

Lederman et al. (2010) studied the effect of export promotion agency (EPA) activities on the exports based on a survey data consisting of 103 developing and developed countries. They found that the presence of export promotion institutions increase the exports around 12%. Also they suggested that the countries with a higher GDP per capita export more.

Martincus and Carballo (2010) studied the export promotion activities of Peru's EPA to analyse through which channels the firms' exports increase. Their results indicate that exports are expanded through extensive margin, both markets and products and no significant effect has been reached on the intensive margins of exports.

Felbermayr and Yalcin (2011) conducted a research to find out the export enhancing effect of Hermes insurances on the exports of Germany. Results indicate that one percent increase in export insurances boosted the exports by 0.012 per cent. Another finding is that insurances have a bigger effect on the lower income countries.

Hayakawa, et al. (2014) examined the role of export credit agencies in promoting exports from South Korea and Japan. Their findings suggest that there is a positive and significant effect on exports and ECA's effect was larger when it comes to exporting to low-income than in to high-income countries.

Auboin and Engemann (2014) used country level data of export credit insurers obtained from Berne Union statistics to analyse its effect over the country's real imports. 1% increase in export credit insurance covered on a country increases its import by 0.4%. Also they suggest that this effect does not change during crisis.

Van der Veer (2015) studied the effect of privately insured exports from 25 countries to 183 destination countries over exports covering periods from 1992 to 2006. He found a trade multiplier of 1.3 implying that EUR 1 insured export generate EUR 1.3 additional exports.

Polat and Yeşilyaprak (2017) investigated the effect of export insurances on the exports of Turkey using gravity equation model during the years of 2000-2015. Theirs results show that one percental increase in export insurance leads to 3% to 17% increase in exports.

According to the export-led growth hypothesis, exports are believed to be the engine for the economic growth. Katircioglu, et al. (2007) and Katircioglu (2012) studied the causality between financial development, international trade and economic growth in India and Sub-Saharan Africa. Their results indicate that there is a unidirectional relation between economic growth and international trade. They also suggest that exports enhance the financial development in India and Sub-Saharan Africa. Hye, et al. (2013) suggested that the export-led growth hypothesis holds for countries Bangladesh, Bhutan, Nepal, India and Sri Lanka.

There are also studies which prove that this hypothesis is valid including the developing countries in this research. Taban and Aktar (2008), Jiranyakul (2010), Keong, et al. (2003) Rahmaddi and Ichihashi (2011) analysed the hypothesis respectively for Turkey, Thailand, Malaysia and Indonesia and tested the relationship empirically which they found that the hypothesis holds for these countries. Also Anatasia (2015) put emphasis on the role of promoting export in Thailand and Malaysia to be able to reach to a higher standard of living and welfare level. Kalaycı and Koksal (2015) pointed out to the relationship between these variables for China.

### 3. Data and Methodology

This study aims to investigate the relationship between GDP, Export Value and Export Credit Insurances for the countries Turkey, Indonesia, Malaysia and Thailand covering the periods 2005 Q1- 2016 Q4. Export Credit Insurance data have been obtained from Berne Union Statistics. GDP and Export Value data have been obtained from IMF Database. GDP series have been converted to US Dollar currency from their local currencies using the quarterly average exchange rates. All series have been transformed to logarithmic values to be able to stabilize the variance. Variables that are used in the analysis are described below:

LOGGDP: Quarterly GDP data are used to describe the economic growth.

LOGEXP: Quarterly Export Value data describe the exports of total goods and services in a given country.

LOGINSST: Quarterly Export Credit Insurance data describe the total insurance coverage of export credits by the analysed country ECAs. ECAs for Turkey, Indonesia, Malaysia, and Thailand are Turkish Eximbank, LPEI, Mexim and Thai Eximbank respectively.

The relationship among the variables is tested by using Johansen Cointegration Test and Granger Causality Test. First of all unit root test is applied to find out the stationarity among the variables. The ones that are stationary in the same level are tested to find out the long run cointegration relationship. Afterwards causality analysis is done to determine the direction of the relationship.

In order to test the variables for Johansen Cointegration, they have to be stationary at the same level. Augmented Dickey Fuller (ADF) unit root test results are shown in Table 1 below.

**Table 1: Unit Root Test Results**

Countries	TURKEY		INDONESIA		MALAYSIA		THAILAND	
	Level Value	First Difference						
<b>GDP</b>	0.4643	0.1848	0.6493	0.2196	0.2192	0.0215	0.2395	0.0000
<b>Export Credit Insurances</b>	0.9093	0.0000	0.5424	0.0000	0.1951	0.0000	0.5093	0.0000
<b>Export Value</b>	0.4096	0.0492	0.2813	0.0006	0.2218	0.0065	0.2054	0.0000

Table 1 shows that all variables have unit root before taking the first difference. After taking the first difference all variables become stable except GDP series of Turkey and Indonesia. So cointegration test can be done with two variables for these countries. Cointegration Test of countries Malaysia and Thailand can be done using all variables including GDP. Afterwards optimum lag length is determined by using lag length criteria test. LM test is applied to find out if there is auto correlation problem. To check the stationarity of the whole model is examined by looking at inverse roots of AR Characteristic Polynomial. White test is applied to see if there is a heteroscedasticity problem. All these tests are done and proceeded to the cointegration tests.

**Table 2: Johansen Cointegration Test Results - Turkey**

Hypothesis		Trace Statistic		Maximum Eigenvalue Statistic	
H <sub>0</sub>	H <sub>1</sub>	Statistic	Critical Value	Statistic	Critical Value
r=0	r≥0	6.425	18.397	4.321	17.147
r=1	r≥2	2.103	3.841	2.103	3.841

According to Table 2, both trace (6.425<18.397) and maximum eigenvalue statistic (4.321<17.147) is less than critical value. This is why null hypothesis r=0 can not be rejected for both test values. In other words export value and export credit insurance variables are not cointegrated for Turkey.

**Table 3: Johansen Cointegration Test Results - Indonesia**

Hypothesis		Trace Statistic		Maximum Eigenvalue Statistic	
H <sub>0</sub>	H <sub>1</sub>	Statistic	Critical Value	Statistic	Critical Value
r=0	r≥0	13.59517	20.26184	8.273956	15.8921
r=1	r≥2	5.321211	9.164546	5.321211	9.164546

According to Table 3, both trace (13.5951<20.2618) and maximum eigenvalue statistic (8.2739 <15.8921) is less than critical value. This is why null hypothesis r=0 can not be rejected for both test values. In other words export value and export credit insurance variables are not cointegrated for Indonesia as well.

**Table 4: Johansen Cointegration Test Results - Malaysia**

Hypothesis		Trace Statistic		Maximum Eigenvalue Statistic	
H <sub>0</sub>	H <sub>1</sub>	Statistic	Critical Value	Statistic	Critical Value
r=0	r≥0	43.77541	42.91525	26.16753	25.82321
r=1	r≥2	17.60788	25.87211	12.85867	19.38704

According to Table 4, both trace (43.7754>42.9152) and maximum eigenvalue statistic (26.1675 >25.8232) is bigger than critical value. This is why null hypothesis r=0 can be rejected for both test values. In other words GDP, export value and export credit insurance variables are cointegrated for Malaysia.

**Table 5: Johansen Cointegration Test Results - Thailand**

Hypothesis		Trace Statistic		Maximum Eigenvalue Statistic	
H <sub>0</sub>	H <sub>1</sub>	Statistic	Critical Value	Statistic	Critical Value
r=0	r≥0	45.56453	35.0109	33.52462	24.25202
r=1	r≥2	12.0399	18.39771	7.254035	17.14769

According to Table 5, both trace ( $45.5645 > 35.0109$ ) and maximum eigenvalue statistic ( $33.5246 > 24.2520$ ) is bigger than critical value. This is why null hypothesis  $r=0$  can be rejected for both test values. In other words GDP, export value and export credit insurance variables are cointegrated for Thailand as well.

Turkey and Indonesia where there is no cointegration among the variables are going to be tested with Granger Causality to see if the variables affect each other in the short term. Malaysia and Thailand where there is a cointegration relationship are going to be tested with VECM Granger Causality.

**Table 6: Granger Causality Test Result – Turkey**

H <sub>0</sub> Hypothesis	Chi-sq	df	Prob.
DLOGGDP is not a Granger cause of DLOGEXP	4.528567	1	0.0333**
DLOGINSST is not a Granger cause of DLOGEXP	0.000704	1	0.9788
DLOGEXP is not a Granger cause of DLOGGDP	23.23611	1	0.0000*
DLOGINSST is not a Granger cause of DLOGGDP	0.611214	1	0.4343
DLOGEXP is not a Granger cause of DLOGINSST	0.007189	1	0.9324
DLOGGDP is not a Granger cause of DLOGINSST	0.677414	1	0.4105

(\*) and (\*\*) signs show that the coefficients are significant at 1% and 5% level respectively.

Table 6 shows the Granger causality test result for Turkey. There is a causality relationship between GDP and export value in both directions.

**Table 7: Granger Causality Test Result – Indonesia**

H <sub>0</sub> Hypothesis	Chi-sq	df	Prob.
DLOGGDP is not a Granger cause of DLOGEXP	1.637682	2	0.4409
DLOGINSST is not a Granger cause of DLOGEXP	0.230639	2	0.8911
DLOGEXP is not a Granger cause of DLOGGDP	4.940501	2	0.0846
DLOGINSST is not a Granger cause of DLOGGDP	0.857569	2	0.6513
DLOGEXP is not a Granger cause of DLOGINSST	1.131868	2	0.5678
DLOGGDP is not a Granger cause of DLOGINSST	4.560947	2	0.1022

Table 7 shows the Granger causality test result for Indonesia. According to the test result no significant causality relationship exists among the variables.

**Table 8: VECM Granger Causality Test Result- Malaysia**

H <sub>0</sub> Hypothesis	Chi-sq	df	Prob.
DLOGGDP is not a Granger cause of DLOGEXP	5.986249	1	0.0144**
DLOGINSST is not a Granger cause of DLOGEXP	2.682409	1	0.1015
DLOGEXP is not a Granger cause of DLOGGDP	7.026798	1	0.0080*
DLOGINSST is not a Granger cause of DLOGGDP	0.562818	1	0.4531
DLOGEXP is not a Granger cause of DLOGINSST	0.086043	1	0.7693
DLOGGDP is not a Granger cause of DLOGINSST	0.052937	1	0.818

Table 8 shows the Granger causality test result for Malaysia. There is a causality relationship between GDP and export value in both directions.

**Table 9: VECM Granger Causality Test Result - Thailand**

H <sub>0</sub> Hypothesis	Chi-sq	df	Prob.
DLOGGDP is not a Granger cause of DLOGEXP	7.697927	3	0.0527**
DLOGINSST is not a Granger cause of DLOGEXP	15.38715	3	0.0015*
DLOGEXP is not a Granger cause of DLOGGDP	5.045282	3	0.16850
DLOGINSST is not a Granger cause of DLOGGDP	0.951864	3	0.8129
DLOGEXP is not a Granger cause of DLOGINSST	11.79337	3	0.0081*
DLOGGDP is not a Granger cause of DLOGINSST	10.97385	3	0.0119**

Table 9 shows the Granger causality test result for Thailand. There is a causality relationship from GDP to export value and export insurance. Another causality relationship is between export value and export insurance in both directions.

#### 4. Conclusion

According to the analysis, there is a cointegration relationship among the variables GDP, export value and export credit insurances for countries Malaysia and Thailand. Data cover the period between the years of 2005-2016. GDP, GDP growth rate and exports as percentage of GDP of these two countries show very similar patterns which might have an effect on the results. However for countries Turkey and Indonesia there is no cointegration relationship. Granger Causality Test was applied to find out the direction of the relationship for all of the countries. GDP and export value of Turkey and Malaysia have bidirectional causality relationship. However export insurance does not have an effect neither on GDP nor on export value. GDP of Thailand has both causality on export value and export insurance. Bidirectional causality relationship is obtained between export value and export insurance. As the export value increases, exporters demand more export credit insurances and as more companies can reach to export credit insurances, the country increases its export value. For Indonesia, no Granger Causality can be found among the variables. The causality relationships can be summarised with the help of figures below.



Figure 9: Granger Causality Relationship for Turkey



Figure 10: VECM Causality Relationship for Malaysia

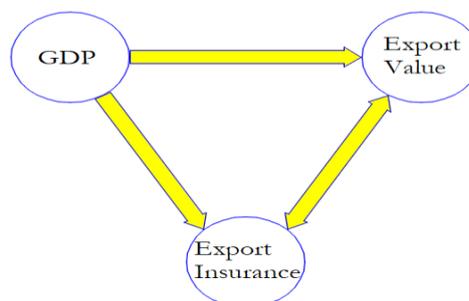


Figure 11: VECM Causality Relationship for Thailand

It can be concluded that the export-led growth hypothesis is valid for Turkey and Malaysia according to this study covering the period 2005-2016. This paper supports the findings of Taban & Aktar (2008) and Rahmaddi & Ichihashi (2011). GDP increase leads to an increase in the export value in countries Turkey, Malaysia and Thailand. The only country that the export credit insurance has a significant effect on the export value is Thailand. It can be seen from figure 8 that the export value has a break in 2011 when Thailand continues to increase her exports while the Malaysia and Indonesia decrease their exports. Second break is in 2014 when Thailand stabilizes her exports while the other three country exports start to diminish.

The literature on the relationship between export credit insurances and exports usually exists for developed countries and the results confirm the export enhancing effect of export credit insurances. This study tries to analyse the four developing countries in a similar income level and export value. It can be inferred from this study that the export promotion policies in these developing countries have to be analysed and used more effectively to be able to create more export value. Özyüksel (2017) in her survey study, found out that the Turkish exporters, both SMEs and large companies, regard export credit insurance as a first level priority that the state should support for the promotion of exports. The operations and the budget of the ECAs should be increased by the governments. Another recommendation would be that export credit insurances and other export promotion tools should be introduced to the SMEs in the developing countries to enhance their exports. More studies are needed to find out how the export promotion policies in the developing countries affect exports and other macroeconomic variables.

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