

Assessment of Impact of Czech Industrial Technologies Export into Indonesia Agricultural Sector

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Abstract: - The goal of this article is to describe options of Czech industry technologies export into Indonesia agricultural and other sectors. The study involves the creation of mathematical model of Indonesian industry technologies market to make it possible to predict the future behavior, consequently also impact on Czech export to Indonesia. The findings in this study can be adopted to strengthen the economic relations between two countries whose potential and opportunities remain very big. Czech's policy makers can adopt recommendations made in this study to improve trade between the country and Indonesia where the country enjoys a large domestic market with a wide range of investment opportunities for local and foreign investors. Based on experimental data, mathematical analysis will be used to describe the behavior of the Indonesian industrial technology market and its importance to Czech imports. Data collected from the market analysis and the mathematical model developed can help boost Czech imports industrial technologies to Indonesia.

Key-Words: - mathematical model; import; international market; prediction; consumer's behavior

1 Introduction

The Czech Republic is eyeing stronger cooperation with Indonesia. The two countries are agreeing to waive visa requirement for diplomatic passport holders as well as attempts to expedite bilateral consultation to increase contact between the two states. Additionally, the countries have MoUs on bilateral consultations (Ministry of Foreign Affairs: Republic of Indonesia 2016) [1]. The findings in this study can be adopted to strengthen the economic relations between two countries whose potential and opportunities remain very big. Czech's policy makers can adopt recommendations made in this paper to improve trade between the country and Indonesia where the country enjoys a large domestic market with a wide range of investment opportunities for local and foreign investors. Ultimately, data from the Indonesian market analysis and the mathematical model created can help boost Czech Industrial technologies export to Indonesia. It can also help as a decision-making tool for government offices both in Indonesia and in the Czech Republic.

Indonesia is the world's fourth most populous country, with current population of over 255 million people and expected 450 million if current economic and political trend remains [2; 3]. Czech (formerly Czechoslovakian) exporters of investment character goods, have good reputation in Indonesia,

and are also supported by references from other Asian countries – India, Pakistan, China, Thailand, Bangladesh, Sri Lanka and Vietnam. Therefore both, current Czech government and non-government scene, are trying to follow up this cooperation established during 1960s with Republic of Indonesia [4]. Until now Indonesia use industry technologies from Czechoslovakia and also many significant experts and university teachers, businessman, government members and significant artist gained their education in former Czechoslovakia. Unfortunately, due to political reasons, this very strong cooperation was suppressed for almost 30 years, but started to improve in 2001. For past 10 years is export from the Czech Republic to this territory based on business realizations of small and medium companies, which shows, that these companies are able to enter on demanding Indonesian market and can succeed there in long-term horizon [5]. In many cases, they are more active and flexible during their business activities, compared to already established big manufacturers and supplier [6; 7].

Indonesia has plays a critical role in the Czech economic and trade relations. Historically, Indonesia has benefited from Czech deliveries in sugar mills, power equipment, machine tools, textile, aircraft, and cement plants. Today, concrete examples of Czech technology exports can be seen

in the field of hydro-power generation in Sumatra, Jawa, and South Sulawesi, projects in transport infrastructure in Yogyakarta, and other projects in environmental protection in North Sulawesi. These relations indicate that Czech investors and companies have a high interest to participate in other industrial projects in areas such as cement, ceramic, petrochemical factories, hydro projects, thermal plans, food processing, and sugar mills. Further, the investors are also interested in the deliveries of transport machines such as diesel or electric locomotives, light rail, airport equipment, environment protection solutions, water purification, medical equipment, machine tools, and communication devices, among others. Also The Czech Republic Ministry of Industry has established CzechTrade, a trade promotion agency that is focused on developing international trade and cooperating between Indonesia and Czech Republic [8]. The organization established an office in Jakarta in 2014 to connect Czech and Indonesia companies across different fields and sectors. For instance, CzechTrade offers individual tailor-made advice to help companies to find Indonesian business partners.

This study aims to describe options of export of Czech industry technologies to Indonesia and examines exports to Indonesia from other parts of the world, EU, and Czech, to create an understanding of the factors influencing trade between the country and other regions. The investigation examined the structure of Czech export of industrial technologies to Indonesia. The data were collected from formal government documents and other business websites. More data were collected through casual and informal interviews.

Thus the aim of this thesis is to describe options of export of Czech industry technologies to Indonesia. The study involves the creation of mathematical model of Indonesian industry technologies market to make it possible to predict the future behaviour, and on that account also impact on Czech export to Indonesia.

2 Methodology

In present chapter, the experimental procedures of the research indicative analysis of the Indonesian industrial technology market were carried out with regard to imports of Czech industrial technologies. There exists significant repository of information on methods that can be adopted for this study. Based on experimental data, mathematical analysis were used to describe the behaviour of the Indonesian

industrial technology market and its importance to Czech imports. Data collected from the market analysis and the mathematical model developed can help boost Czech imports industrial technologies to Indonesia. Further, it can be applied in decision-making for government offices in both Czech Republic and Indonesia. Present chapter focuses on the methodological aspects of the study that lays ground for the data analysis and presentation. The research defined a research problem that helps the researcher to focus on a more narrow research area to be able to study it appropriately. The research design was based on factors such as feasibility, ethics, costs, and measurement problems, among others. Specifically, (a) export of Food and live animals, (b) export of Beverages and tobacco, (c) export of Raw materials inedible excluding fuels, (d) export of Chemicals and related products j., (e) export of Market products sorted mainly by material, (f) export of Machinery and means of transport, (g) export of Industrial consumer goods.

2.1 Sampling and Data Collection

The design of this experiment was critical for the validity of the results. A sound experimental design was followed in this research to generate good statistical data and establish scientific protocols. Since repeating the experiment due to poor control groups and insufficient samples for statistical analysis was not an option, an efficient design phase was developed. Primary data was collected from Ministry of Energy and Mineral Resources (Indonesia), Ministry of Trade (Indonesia), Ministry of Industry(Indonesia), Ministry of International affairs (Indonesia), United Nations Centre for Regional Development (Indonesia), World Bank (Indonesia), CekIndo (Indonesia), Czech Ministry of Foreign Affairs (Czech Republic) in period from 2010 until 2016.

Methods used for the data collection varied according to the target groups, semi structured personal interviews, focus group discussions and analysis of internal documents were the most frequent. Most beginnings and termination parts of the interviews were informal, and many insights were obtained during casual conversations. Secondary data were gained by analysis of published materials of Statistical office of Indonesia (Badan Pusat Statistik Indonesia), analysis of law and regulations of Indonesia (Penelitian Hukum Indonesia) and by analysis of presidential directives.

2.2 Experimental Measurements

Since the introduction of the law of comparative advantages, the development of the international

trade theory has tried to examine the factor endowments or the trade patterns associated with complex trade flow. The trade flows in central-planned systems emanate from historical linkages and political birders rather than comparative advantages. The Gini-Hirschman coefficient is often used in as index of inequality in trade concentrations. However, the index is not suitable in the comparison of disparities between regions because of the bias associated with grouping countries. Therefore, the study relied on multiple regression analysis to analyse the trend of trade flows between the Czech Republic and Indonesia. Present sub-chapter formulated a mathematical model for imports in Indonesia. The experimental research measurements examined the annual data of imports and exports from January 1999 to December 2016. The gathered data is Indonesia data from the Czech Ministry of Foreign Affairs. In this research, technology product consumption in industries in Indonesia is analysed based on the Bayesian linear regression theory TO establish a demand-forecast model of technology. It is introduced into the analytical framework with explanatory variables of urbanization level and per capita GDP. The researcher forecasts the future demand based on the historical data covering from 1999 to 2016.

The framework searched for statistical representation of real export and import data from credible source. In our case, Indonesia data from the Czech Ministry of Foreign Affairs were used to reflect the effects of the latest development in Indonesian economy. In a simple statistical framework and deploying a set of explanatory variables, the paper attempted to demonstrate trade flows of Indonesia adequately. Further, the model assessed the short-term dynamics of the trade flows. A multiple regression to analyse the trend of trade flows between the Czech Republic and Indonesia was used. The measurements formulated a mathematical model for imports in Indonesia. Technology product consumption in industries in Indonesia was analysed based on the Bayesian multiple linear regression theory to establish a demand-forecast model of technology. Mathematical model (see Equation 1) used in the "Multiple regression model" was in the following form:

$$Y = a + b_1 \cdot X_1 + b_2 \cdot X_2 + b_3 \cdot X_3 + b_4 \cdot X_4 + b_5 \cdot X_5 + b_6 \cdot X_6 + b_7 \cdot X_7 \quad (1)$$

where: a - the Y intercept; $b_1, b_2, b_3, b_4, b_5, b_6, b_7$ - coefficients of X variables (export products); X_1 -

export of Food and live animals, X_2 - export of Beverages and tobacco, X_3 - export of Raw materials inedible excluding fuels, X_4 - export of Chemicals and related products j., X_5 - export of Market products sorted mainly by material, X_6 - export of Machinery and means of transport, X_7 - export of Industrial consumer goods.

In general, a several statistical methods have been used for observed data sorting and processing. Namely, a descriptive and inferential statistics methods including multiple regression analysis, ANOVA, Chi-test and Bayesian linear regression were performed, with focus on the rationale, assumptions, strengths and limitations to their application.

3 Results

Descriptive statistics reveal the trend in the exports from Czech Republic to Indonesia. For the observation period, the number of exports across the categories included has been on the rise for the most part. The trends indicate seasonality of demand for products based on economic policies established. Apparently, the import of machinery and chemicals had the highest growth until 2014 from when the trend has been erratic. Nevertheless, the rate of growth in the demand for raw materials has been increasing tremendously, probably because of the growth in the manufacturing industry in the country. Recently, the demand for industrial consumer goods has also been increasing, which could also relate to the growth of the manufacturing industry in the country.

From the above output, the correlation coefficient (multiple R) is 1; therefore, the multiple regression line, all the response variables are strongly correlated to the annual export from Czech to Indonesia. From the above output, the correlation coefficient (R^2) is 1; therefore, the multiple regression models explain all variability of response data around mean (see Table 1). Goodness of fit is greater than 80% therefore over 80% of all data points will fall on the fitted regression line.

Table 1. Detail values of used correlation coefficient

Summary output	Coefficient	Force constant to zero
Regression Statistics		FALSE
Multiple R	1.000	
R Square	1.000	Goodness of Fit >= 0.80
Adjusted R Square	1.000	
Standard Error	1282.353	
Observations	17	

For the observation period, the number of exports across the categories included has been on the rise

Table 2. Import of goods by sector between years 1999-2016 (in CZK thousand) [9]

Year	Food and live animals	Beverages and tobacco	Raw materials inedible excluding fuels	Chemicals and related products j.	Market products sorted mainly by material	Machinery and means of transport	Industrial consumer goods	Total
1999	55430	54	107	29171	73154	81615	22802	262332
2000	13019	86	638	21713	205571	179190	32314	452529
2001	10386	116	231	49354	256252	153129	40981	510448
2002	122206	22	292	30768	227283	98942	49812	529325
2003	47768	42	503	25746	205000	150357	84723	514139
2004	47411	46	3721	221820	225588	279396	48601	826583
2005	34707	12	3282	186934	144866	544263	21147	935211
2006	274413	22	8832	283637	187801	596115	65788	1416610
2007	91843	58	16386	164534	150367	582731	51365	1057292
2008	2379	71	14962	161584	127432	620467	59826	986723
2009	3116	0	40710	217549	130028	699645	60565	1151614
2010	11962	0	170087	264592	224621	813440	92052	1576755
2011	4717	31	814489	356630	318277	1409682	202730	3106587
2012	28681	132	1462216	443039	194867	698554	164080	2991570
2013	67590	157	1652738	364870	267856	1058516	180305	3593771
2014	54839	674	1645862	276890	302678	811931	144140	3247752
2015	5164	1198	1684066	329925	282650	1046175	395888	3745066
2016	55430	54	107	29171	73154	81615	22802	262332

Multiple regression line from the above Table 2 output 2 is predicted to be following, see Equation 2:

$$Y = -984.1960 + 1.0041 \cdot X_1 + 9.407 \cdot X_2 + 1.00385 \cdot X_3 + 0.9939 \cdot X_4 + 1.012 \cdot X_5 + 1.0043 \cdot X_6 + 0.9469 \cdot X_7 \quad (2)$$

Therefore, exports can be predicted using the following regression expressed in Equation 3:

$$Y = -984.191 + 1.004 \cdot \text{Food and live animals} + 9.407 \cdot \text{Beverages and tobacco} + 1.004 \cdot \text{Raw materials}$$

for the most part. The trends indicate seasonality of demand for products based on economic policies established. Apparently, the import of machinery and chemicals had the highest growth until 2014 from when the trend has been erratic. Nevertheless, the rate of growth in the demand for raw materials has been increasing tremendously, probably because of the growth in the manufacturing industry in the country. Recently, the demand for industrial consumer goods has also been increasing, which could also relate to the growth of the manufacturing industry in the country. The Table 2 illustrates the export data used in the computations.

$$\text{inedible excluding fuels} + 0.994 \cdot \text{Chemicals and related products j.} + 1.012 \cdot \text{Market products sorted mainly by material} + 1.004 \cdot \text{Machinery and means of transport} + 0.947 \cdot \text{Industrial consumer goods} \quad (3)$$

Increasing trend in export of machinery and chemicals is noticed. Thereafter, a slight decrease is realized. Specific description and values are noted in Table 3 and Table 4 (see below). Obtained data related to the export of various industrial products are expressed in Fig. 1.

The null hypothesis was that there is NO relationship between annual exports and average

annual exports. The alternative hypothesis was that there is a relationship between annual exports and average annual exports. The following calculations helped in prediction of the assumptions. Panel regression data revealed a growth of Food and Live

animals exports from the Czech Republic had a minimal effect on Indonesian dependence on Czech technology during the observation period. The coefficient of the variable was 0.00421.

Table 3. Description of used regression model

Analysis of Variance (ANOVA)						
Indicator	Df	SS	MS	F	P-value	
Regression	7	2.40572E+13	3.43675E+12	2089933.82	0.000	
Residual	9	14799852.2	1644428.022			
Total	16	2.40572E+13				
Parameter	Coefficients	Standard	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-	1316.054738	-	0.474	-3961.31328	1992.932016
Food and live animals	1.004125833	0.005259152	190.9292238	0.000	0.9922288	1.016022862
Beverages and tobacco	9.40718314	2.195612079	4.284537888	0.002	4.44036356	14.37400272
Raw materials inedible	1.003853271	0.001060894	946.233653	0.000	1.00145336	1.00625318
Chemicals and related	0.993977139	0.005824563	170.6526634	0.000	0.98080106	1.007153215
Market products sorted	1.0120361	0.006438114	157.1944987	0.000	0.99747207	1.026600125
Machinery and means of	1.004389765	0.001869966	537.1164621	0.000	1.00015961	1.008619923
Industrial consumer goods	0.946943032	0.009310716	101.7046364	0.000	0.92588073	0.968005336

Table 4. Detail values of residual output (in CZK thousand)

Residual output					Probability output	
Observations	Predicted Total	Residuals	Stand. Residuals	Sorted Residuals	Percentile	Total
1	261885.16612	446.83388	0.46460	-1350.63043	2.94118	262 332
2	453741.61753	-1212.61753	-1.26083	-1320.67867	8.82353	452 529
3	511768.67867	-1320.67867	-1.37318	-1212.61753	14.70588	510 448
4	529372.84199	-47.84199	-0.04974	-1157.47234	20.58824	514 139
5	512184.15431	1954.84569	2.03256	-600.84069	26.47059	529 325
6	826222.55732	360.44268	0.37477	-589.14233	32.35294	826 583
7	936368.47234	-1157.47234	-1.20349	-47.84199	38.23529	935 211
8	1416653.35991	-43.35991	-0.04508	-43.35991	44.11765	986 723
9	1057881.14233	-589.14233	-0.61256	84.81742	50.00000	1 057 292
10	986511.29180	211.70820	0.22012	211.70820	55.88235	1 151 614
11	1150911.17657	702.82343	0.73076	360.44268	61.76471	1 416 610
12	1576271.32427	483.67573	0.50290	446.83388	67.64706	1 576 755
13	3106105.15519	481.84481	0.50100	481.84481	73.52941	2 991 570
14	2991485.18258	84.81742	0.08819	483.67573	79.41176	3 106 587
15	3595121.63043	-1350.63043	-1.40433	702.82343	85.29412	3 247 752
16	3246156.40796	1595.59204	1.65903	1595.59204	91.17647	3 593 771
17	3745666.84069	-600.84069	-0.62473	1954.84569	97.05882	3 745 066

Therefore, 1% increase in export of “Food and Live Animals” from the Czech Republic to Indonesia would affect Indonesian dependence on the technology by only 0.421%. Essentially, this signals minimal contribution of this part of trade on the dependence on technology in the country. Fundamentally, this shows that the sector is not technology-intensive and does not influence

technology exchange between the two countries. Moreover, the export trade involving the commodities is not a significant factor of production in Indonesia. Similarly, the panel regression data reveals minimal effects of the export of Beverages and Tobacco on technology dependence. Essentially, the growth in the export would have almost zero effects on the total export output from the Czech Republic pertinent to technology.

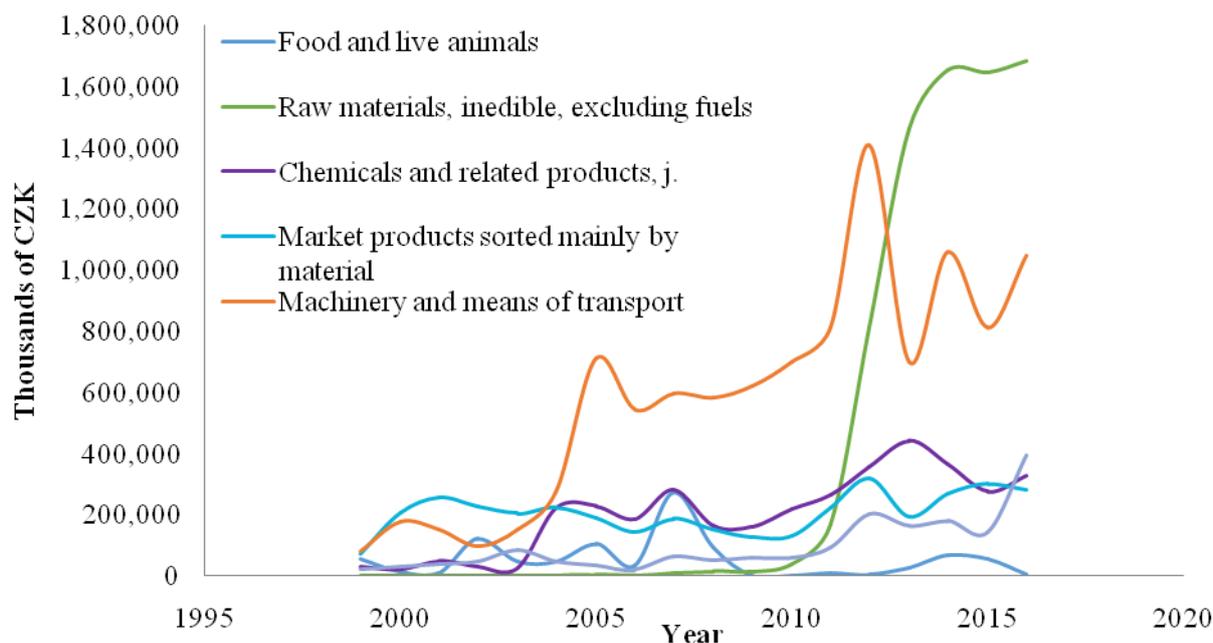


Fig. 1. A time series plot for export of various industrial products from the Czech Republic to Indonesia

Based on the multiple regression model derived, the products would have almost no effect on the total annual exports and average annual exports destined to Indonesia. Essentially, this shows that the export of the products from the Czech Republic does not depend on technological inputs on the Indonesia side. Essentially, most of the products arrive in Indonesia as finished goods, which make the not technology-intensive. Therefore, it can be concluded that the export of Beverages and Tobacco does not affect total export output or technology dependence on Czech. Panel regression data shows a notable influence of the export of “Raw Materials and Inedible Excluding Fuels” on the total export output and the dependence on technology from the Czech on the Indonesian economy. The growth rate variable found was 0.042, which implies a positive effect on the dependent variable. Essentially, this indicates that a 1% increase in the export of “Raw Materials and Inedible Excluding Fuels” towards Indonesia would increase the total export output from the Czech Republic by 4.2%. Therefore, this would mean that Indonesian imports from the Czech Republic would also grow by 4.2% for every 1% increase in the exports. Fundamentally, the growth of the manufacturing industry in Indonesia may be the reason behind the increase in the number of imports pertinent to “Raw Materials and Inedible Excluding Fuels.” As the manufacturing industry grows, the country would require additional technology and raw materials from the Czech Republic. Consequently, this would indicate increased demand for Czech’s technology to

facilitate the use of the raw materials in the manufacturing industry. Indeed, “Raw Materials and Inedible Excluding Fuels” have shown the most significant growth in the number of imports in the recent years surpassing other areas of trade since 2010. The export of “Chemical Products and Related Products” has shown minimal variations since the early 2000s. The total number of products has been fluctuating between 200,000 CZK and 400,000 CZK since 2003. Panel regression data revealed that the effect of “Chemical Products and Related Products” exports from the Czech Republic would have a minimal but significant effect on the total annual exports and total average exports. Similarly, this would imply an increase in the reliance of Czech technology pertinent to these products. The variable coefficient was 0.0173. Therefore, the growth of exports by 1% would increase the annual exports of “Chemical Products and Related Products” by 1.73%. Similarly, this would imply an increase on Indonesia’s imports pertinent to the product by a similar margin. Consequently, sustained increase in the importation of these products would have an overall positive effect on the reliance on Czech’s technology in Indonesia. The trend indicates a demand pull in which demand trends determine the rate at which the exports grow. Similar to “Raw Materials and Inedible Excluding Fuels,” the exportation of “Market Products Sorted mainly by Material” shows relative constant values over the years included in the observation period. The regression panel data shows minimal effect of these products on the total

annual exports and annual average exports from the Czech Republic. The coefficient for the variable was 0.00721. The results indicate that 1% increase in the export of "Market Products Sorted mainly by Material" would influence the total annual exports to Indonesia by 0.721% and a similar margin for the average annual exports. Therefore, the dependence on Indonesia on Czech's technology pertinent to these imports would be minimal considering most of the market products are finished goods that do not require additional conversion. Export of "Machinery and Means of Transport" has also been increasing since 2003 reaching its peak in 2012. However, the trend has been fluctuating since then but has showed signs of improvement in 2016. Regression panel data revealed a significant effect of the products on the total annual exports and average annual exports. The coefficient for "Machinery and Means of Transport" was 0.23. Essentially, this implies that 1% increase in the export of "Machinery and Means of Transport" would increase the total annual exports by 2.3% and a similar margin for the average annual exports. Consequently, this would imply an increase of Indonesian imports pertinent to "Machinery and Means of Transport" by 2.3%. As such, the total dependence of Indonesia on Czech's technology would increase. The trend indicates the increased infrastructural development and manufacturing activities that require appropriate technologies and machinery. The growth of the imports would lead to increased reliance on Czech technology because of the growing trade relationships between the two economies. The export of "Industrial Consumer Goods" has been relatively low over the years. However, increased output started in 2012 and has been improving intermittently since then. Nevertheless, the effect of the exports on the total output remains relatively low as predicted by the regression model developed. The regression panel data revealed a significant positive effect of the exports on the total output, although the margins remain relatively low as compared to several other exports. The coefficient for the "Industrial Consumer Goods" exports was 0.0121. Essentially, this implies that the growth of the total exports by 1% would increase the export of "Industrial Consumer Goods" by 1.21%. Similarly, this would imply an increase in the total imports for "Industrial Consumer Goods" in Indonesia by 1.21% of the total exports received from the Czech Republic [10-18]. The manufacturing industry may have a significant part to play on the increase in the export of the "Industrial Consumer Goods" to Indonesia. Some of the industrial consumer goods may require additional processing to produce

finished products. Therefore, these products require additional technologies that relate to them for final processing. The trade relations between Indonesia and the Czech Republic would mean sourcing for the technologies that allow the conversion of the products to final consumer products. As such, this would increase the reliance on Czech's technology in the conversion of the products. The results reveal a trend in which Indonesia relies heavily on technology-related products from the Czech Republic. Essentially, FDI inflows in Indonesia remain low, especially from the members of the EU (1.6%) of the total FDI to ASEAN member countries). Nevertheless, the growth of the manufacturing industry has provided an avenue for increased FDI. Comparably, the infancy of the sector implies that Indonesia relies largely on imports from other countries in the achievement of its economic goals. However, the ability of the Czech firms to leverage the opportunities depends largely on further improvement of the domestic market conditions in Indonesia. The study has provided several ways through which Indonesia could improve the conditions to attract additional investment by the Czech firms. First, the study shows the requirement for improvements in Indonesia's macroeconomic policies. The policies could target the manufacturing industry. Secondly, the country should pursue pro-competition policies would encourage increased absorption of foreign technologies. Deregulation of the domestic market could improve the local environment significantly and attract foreign investors in the targeted sectors. Third, the country requires improvements in its human resources for appropriate absorption of modern technologies offered by the foreign firms. The study provides several options through which the Czech Republic could leverage the advantages of the increasing economic cooperation. First, increasing FDI by the Czech companies could foster the growth of specific industries that rely on its technologies. Consequently, this would improve the level of exports that target the specific industries. The inflow of FDI could offer a platform for increased technological absorption by the Indonesian firms, which is beneficial to both countries. Second, Czech firms could take advantage of the technical licensing agreements offered in the country. While the agreements have often involved old and mature technologies, Czech firms could introduce new technologies that support the growing manufacturing industry. Consequently, this would raise the demand for its exports in Indonesia leading to additional exports of its technology to the recipient country. The export of

capital goods could also improve the absorption of its technologies in Indonesia. Capital goods introducer new embedded technologies without requiring the capital expenditure on FDI and technical licensing agreements. Lastly, the Czech government could encourage its domestic firms to increase their global competitiveness through joint ventures and M&A with Indonesian firms. The strategy would offer a platform for increased demand for Czech exports in Indonesia as the firms seek to leverage the improved economic relations between the two countries. The study has outlined the ways through which improved economic relations between the Czech Republic and Indonesia are bound to affect the export trade in the former. Based on a mathematical model, the study has provided a way through which exporters can predict future trends in the trade flows for specific technology-related products.

4 Conclusion

From the mathematical model created, it is apparent that the level of exports to Indonesia has been increasing pertinent to several products: raw materials and inedible products, machinery and means of transport, as well as industrial consumer goods and chemicals to a lesser extent. Specifically, increasing exports in “Raw Materials and Inedible Excluding Fuels” would increase the total export output by 4.2%. Similarly, increasing exports in “Chemical Products and Related Products” would increase total export output by 1.73% while increased exportation of “Machinery and Means of Transport” would increase total exports by 2.3%. Therefore, this reflects opportunities for the Czech firms to capitalize on these markets, which have potential for growth in Indonesia. The study has outlined the ways through which improved economic relations between the Czech Republic and Indonesia are bound to affect the export trade in the former. Based on a mathematical model, the study has provided a way through which exporters can predict future trends in the trade flows for specific technology-related products. However, the study does not make an in-depth investigation into the domestic conditions in Indonesia that could favor the flow of Czech products. Therefore, future studies could also investigate the effect of the domestic conditions on the trend of the exports from the Czech Republic.

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