

# Promoting agro-based export as engine of local economy in North-Sumatra, Indonesia

*by* Jongkers Tampubolon

---

**Submission date:** 11-May-2020 07:39AM (UTC+0300)

**Submission ID:** 1321384539

**File name:** xport\_as\_engine\_of\_local\_economy\_in\_North-Sumatra,\_Indonesia.pdf (648.08K)

**Word count:** 4822

**Character count:** 27034

**PAPER • OPEN ACCESS**

## Promoting agro-based export as engine of local economy in North-Sumatra, Indonesia

To cite this article: Jongkers Tampubolon 2018 *IOP Conf. Ser.: Earth Environ. Sci.* **205** 012001

View the [article online](#) for updates and enhancements.

## 11 Promoting agro-based export as engine of local economy in North-Sumatra, Indonesia

Jongkers Tampubolon

16  
Department of Agribusiness, HKBP Nommensen University, Medan-Indonesia

Email: jtampubolon@yahoo.com

**Abstract.** In North Sumatera, Indonesia, exports made a contribution to Regional GDP of up to 40 per cent. Approximately 40 per cent of the export value was gained from agro-based products. In order to figure out the impact of agro-based export on local economy, this study pursued to investigate the contribution of agro-based export to: (i) local economic development, i.e. economic growth, (ii) employment creation, and (iii) poverty reduction, and to find out the causality among these variables. The results revealed that agriculture played a very important role in North Sumatra local economy, not only because it was a basis existence for millions households, but also because it is a strategic sector for economic growth, employment creation and poverty reduction, mainly through export of agro-industry products.

### 1. Introduction

In classical view on economic growth, structural change characterizes the development of a country, which is marked by diminishing role of agricultural sector (measured by its contribution to GDP) and increasing role of industrial sector, subsequently, to be replaced by services sector. Empirical examinations on the history of industrial countries' development provide the evidence. This notion is known as stylized fact or pattern of structural change, as summarized in [1] and further elaborated by [2], [3] and [4]. In this perspective, economic growth is attainable with the reallocation of economic activity away from agriculture. Another author described it as follows, "the role of agriculture in development was thus measured in its support to the acceleration of growth in the rest of the economy, principally industry, with the relative decline of agriculture a symptom of mission successfully accomplished" [5]. 3

Misconception about the perspective on the passive role of agriculture in the development process got its foundation in an analytical approach which views that economic activities are only limited to the site of production on-farm, which will result in marginal productivity of labour that is small or approaching zero when compared to manufacturing industry, thus will not generate return to investment ('unlimited supply of labour'). However, input in agriculture is not restricted just to labour and [6] had doubted that productivity growth was the principal factor responsible for economic growth of US in post war agriculture. Agriculture is a complex system comprising layers of sub-systems, with on-farm sub-systems constituting the core of the system interconnected with off-farm subsystems, which collectively make up the whole economy system. Reduction in the role of agriculture viewed from its contribution to GDP and employment actually only happens in on-farm sub-system. Food industry is closely related to farming as supplier of raw materials to guarantee industrial sustainability. Moreover, services sector, including transportation and finance, also has a close relationship with agriculture, both on-farm and agro-industry. More extensive role of agriculture will be more conspicuous with the use of 'agribusiness system' analysis approaches [7].

With agribusiness system approach, the role of agricultural sector is much more significant in comparison to its contribution to GDP, as evident in the economy of the U.S. as an industrial country. In 2016, on-farm

activities in the agricultural sector only absorbed 1.4% of the total workforce of the United States. On the other hand, agro-based activities created 11.1% employment (21 million workers). About 14% of industrial sector in the United States is comprised of food agro-industry, and in 2016, food account for 12.6% of American households' expenditure [8].

In North Sumatera, Indonesia, 37% of the population run family farmings. However, both agricultural and industrial sectors experienced a decline in terms of share in Regional GDP. On the other hand, there was a 5% annual economic growth. From supply side perspective, exports made a contribution to GDP at up to 40% in average since 2001. Approximately 40% of the export value was gained from agro-based products, 12% of which took the form of primary goods/raw materials and the remaining 28% took the form of processed goods, mainly as intermediate goods (animal and vegetable oils/fats).

The relationship between trade and economic growth had been theoretically described by Adam Smith and David Ricardo. Trading would improve the welfare of the countries involved therein, through the increase of goods combinations resulted from the economy without adding production factor but solely through exchange. Numerous empirical examinations led to the conclusion that there was a positive correlation between export and economic growth. The highly significant correlation between export growth and economic growth as found in those studies brought about a postulate stating that export was an engine of growth (export-led growth hypothesis). The recent abundance studies verified this hypothesis, e.g. [9] for Australia and its regions, [10] for Malaysia and [11] for Nigeria.

In order for export to contribute significantly to the economic growth, the following conditions must be met:

(i) a country requires a certain minimum level of development as a prerequisite to gain a significant correlation between export and economic growth. Numerically, [12] stated that a minimum level of quality of the export basket was required (1,530 US\$) for the impact of the export ratio to be positive, (ii) structural transformation undergone by a country will affect the amount of contribution export to economic growth through the export commodity combination, in the sense that export diversification and per capita income growth have been closely associated with the stage of their development path [13, 14], (iii) there is a non-linear pattern in trade to growth relationship, which in [12] was formulated, "that countries more open to trade and exporting higher quality products experience higher growth and the higher the quality of the export basket of the country, the greater the positive impact of trade on economic growth".

In line with the findings mentioned above, agricultural export in the form of primary goods does not make any significant contribution to economic growth. For this reason, a further domestic step in the form of agro-based industrialization should be taken in order to produce processed goods with an added value [15]. [16] argued that the low effect export has on the economic growth of African countries is rooted in the misleading in the industrial policy, as he stated, "for the past four decades, industrial policy in many African economies has been pursued as an alternative (rather than a complement) to agricultural policy. Industrialization was often pursued within an import-substitution strategy that ignored comparative advantage. In order to be successful, future industrialization strategy needs to be built firmly upon the links between agriculture and industry, exploit comparative advantage, and be conceived of in a systems context to take advantage of the synergies between agricultural and industrial development".

According to Adam Smith, international trade takes place on the basis of absolute advantage, which in international economics textbook, e.g. [17] and [18], was described with two-state and two-commodity models, in which labor efficiency (as the only production factor) was different in the commodity production in both countries. David Ricardo suggested that absolute advantage was merely a special case of comparative advantages and the advantage was viewed from the perspective of the opportunity cost of the commodities produced. With this concept, trade will carry on despite one of the countries bearing absolute disadvantages in both commodities as long as the opportunity costs of the concerned commodity production are different between countries. Furthermore, Heckscher and Ohlin explained that comparative advantages were measured in the lower opportunity cost from different factor endowments between countries, allowing every country to have unique production factors proportion.

By referring to the Heckscher-Ohlin model, Samuelson-Stolper described the following theorem: If a country has relatively higher capital factor compared to the rest of the world, it will have a comparative advantage in capital-intensive commodity trade. Trade will increase global demand for this commodity, thus the country in question will improve its production. Increase in production means increase in demand on production factor (in this case capital and labor), leading to an increase in employment and real wage [19]. On the contrary, this country will import labor-intensive commodity, which will decrease domestic commodity prices in such a way that the industry producing the labor-intensive commodity will reduce its production, which will further decrease production factor demand (capital and labor), thus unemployment will increase and wage rate will

decrease. [20] found this pattern in German manufacturing sector. Therefore, the role of export on employment creation is conditional.

Stolper-Samuelson theorem describes the income distribution from trade in the country with abundance labor as follows: export will increase the price of commodities that are labor-intensive in production and subsequently increase real wages. As a result, export will reduce poverty through market factor and wage rate. As such, the relationship between export and poverty is not automatic in nature, but conditional. International trade improves efficiency through productivity increase. Whether increased productivity will cause reduction in input or raise in output will have an opposite effect on poverty reduction. If higher productivity reflects declining input rather than increasing output, the effect could be to reduce employment and hence exacerbate poverty [21, 22]. In this case, whether trade will improve growth and poverty reduction depends on what is exported and how diversified the exports are rather than how much the trade is [23, 14]. Meanwhile, trade promotes growth, and with increased income owing to rapid economic growth, the government will be able to finance poverty alleviation programs. Thus, growth reduces poverty.

According to the abovementioned, it can be generally predicted that export will improve economic growth. Economic growth will create employment and reduce poverty, but export will not automatically increase employment and reduce poverty.

This study pursued to investigate the contribution of agro-based export to: (i) local economic development, i.e. economic growth, (ii) employment creation, and (iii) poverty reduction, as well as to find out the causality among these variables.

## 2. Methods

In this research, the relationships between exports and economic development variables was examined using double log model. The variables were as follows (Table 1):

**Table 1** Agro-based exports and local economic development variables

Dependent Variable ( $Y_i$ )	Independent Variable ( $X_i$ )
Regional GDP	Total Exports
Regional GDP per capita	Primary Agricultural Exports
Employment	Agro-industry Exports
Poverty	Agro-based Exports

The OLS model to be used in general is formulated as follows:

$$\text{Log}Y_i = \text{Log}\alpha_i + \beta_i \text{Log}X_i + u_i \quad (1)$$

which can be reformulated into:

$$Y_i = \alpha_i X_i^{\beta_i} u_i \quad (2)$$

The parameter  $\beta_i$  is also known as elasticity i.e. if Agro-based Exports as X and Employment as Y, then the value of  $\beta$  indicates the percentage change in Employment due to 1 % change in Agro-based Exports.

However, in the examination of relationship among economics variables such as agricultural exports and Regional GDP, employment and poverty, [24] reminds that “although regression analysis deals with the independence of one variable on other variables, it does not necessarily imply causation. In other words, the existence of a relationship between variables does not prove causality or the direction of influence”. Therefore, in order to figure out whether causality is present in the econometrics model developed, it is deemed necessary to carry out a causality examination. “Causality refers more to the ability of one variable to predict (and therefore cause) the other” [25].

To prove causality relationship among variables mentioned in **Table 1**, Granger causality test will be applied. Granger causality method was introduced by [26] and developed by [27] for the results of non-Granger causality examination. Granger causality approach was employed to look into the relationship between two variables, in the sense (i) bidirectional relationship, (ii) one-directional relationship, or (iii) no relationship at all. The model was formulated by referring to [25]:

$$y_t = a_1 + \sum_{j=1}^n \beta_j x_{t-j} + \sum_{j=1}^m \gamma_j y_{t-j} + e_{1t} \quad (3)$$

$$x_t = a_2 + \sum_{i=1}^n \theta_i x_{t-i} + \sum_{j=1}^m \delta_j y_{t-j} + e_{2t} \quad (4)$$

According to the value of  $\sum_{i=1}^n \beta_i$  in equation (3) and  $\sum_{j=1}^m \delta_j$  in equation (4), the results of the two linear equations above will have four possible interpretations of the coefficient values resulted: (i)  $x_t$  affects  $y_t$ , (ii)  $y_t$  affects  $x_t$ , (iii) there is a bidirectional causality, and (iv) there is no causality in term that is independent of  $x_t$ .

Granger causality demonstrates a short-term relationship, with up to two or three years lag. Thus, despite the absence of a relationship between two variables in a short term, there is a possibility that there will be a relationship between the two variables in a long term (over three years lag). As such, the relationship between two variables which have Granger non-causality can be examined further with co-integration test.

Data for this study were obtained from Biro Pusat Statistik Sumatera Utara (Statistic Agency of North Sumatera Province). The Regional GDP data as well as Regional GDP per capita, employment and head count poverty is available in *Sumatera Utara Dalam Angka* (North Sumatera in Figure), while the export data were obtained from *Statistik Perdagangan Luar Negeri Sumatera Utara* (Foreign Trade Statistics – Exports/Imports of North Sumatera), each of which was published annually.

### 3. Results and Discussion

North Sumatera economy showed a progressive growth trend since 2000 with annual growth of Regional GDP of around 5%. The income per capita measured in US\$ increased by more than a double in a decade from an average of US\$ 689 in 2000–2005 to US\$ 1,539 in 2011–2016 (lower-middle-income economy according to the World Bank's classification). Share of agriculture and that of industry indicated a declining trend, either in its contribution to the Regional GDP or in employment with significant domination of agricultural sector as an employment provider. Share of export to Regional GDP showed an increase and constantly outperformed share of agriculture or industry.

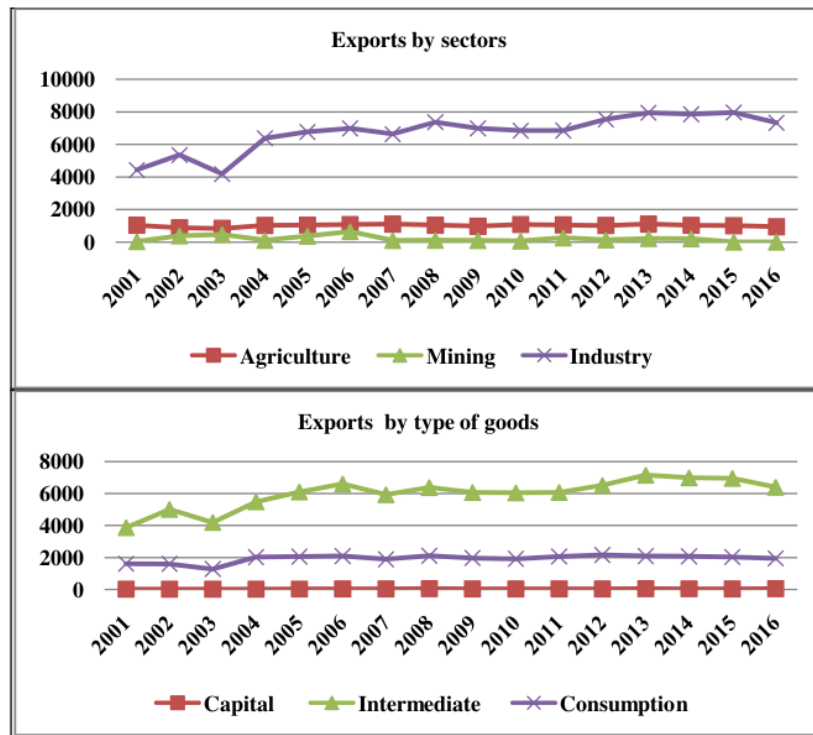
Results of 2013 agricultural census revealed that 1,308,392 households (37.05% population) in North Sumatera were involved in farming. The farming managed was predominantly small (92% of them below one hectare) and was of a mixed nature, with 90% cultivated plantation crops, 74% food crops, 51% livestock and 38% horticulture [28]. The main commodities of smallholder plantation in 2016 consisted of: palm oil (417,728 ha), rubber (394,633 ha), coconut (85,238 ha), coffee (84,308 ha) and cocoa (64,556 ha), while the most popular food crops included irrigated paddy (826,695.8 ha), corn (252,729.2 ha), dry land paddy (58,880.1 ha) and cassava (34,852.3 ha). It is certain that small family farmers used some of their food crops, animal husbandry and horticulture production to secure their family existence and some others to be sold with plantation production, way of life which has been practicing for generations to guarantee the subsistence and existence of household economy.

With the agricultural system dominated by household-smallholders, mixed farming and combination of business goals for food security and then trade, North Sumatera's economy stood at moderate inequality level with GINI index of approximately 0.3. Between 2001 and 2016, the percentage of poor people declined from 17.21% to 10.35%.

The openness of North Sumatera economy measured in trade index by comparing the export and import value with the Regional GDP was high, that of 50 to 78, with an average value of 68.19. International trade recorded surplus, and this surplus showed an increasing trend. The average trade surplus in 2011–2016 was higher by 45% compared to that in 2000–2004.

The export composition in 2000–2016 was dominated by the industrial sector with an average share of 85% with an increasing trend, while the agricultural sector (primary goods) contributed an average of 13% to export with a decreasing trend. Although export was dominated by the industrial sector (processed goods), the products were not final/consumption goods in general, but only raw materials (intermediate goods) for more advanced processing industry. The growth of the export volume of North Sumatera by sector and by type of goods is presented in Figure 1.

In 2016, vegetable oils and fats (code 42 SITC double digit) contributed 41% of the total export value. This commodity group had a considerably high annual growth within the last decade (more than 20% annually). Each of other commodity groups contributed less than 10%. Manufacturing industry which contributed to export was dominated by textile/clothing export with a proportion of 3%, smaller than the export value of fruit and vegetable (primary agricultural goods). Meanwhile, other manufacturing industries with more advanced technologies such as machinery and electronics equipment contributed only less than 1%. Thus, the industries that developed in North Sumatera were agro-based industries.



**Figure 1** Exports by sectors and types of goods, North Sumatra, 2001 – 2016 (in thousand tons).

Export decomposition on four groups revealed that all of them had a positive effect on the economic growth, with an order from the highest elasticity being agricultural primary commodity export, total export, agro-based export and agro-industry export. An increase in the total agro-based export value of 1% will improve the Regional GDP and Regional GDP per capita of 0.70 % and 0.61%, respectively (Table 2).

**Table 2** Results of parameter estimation of the effect of exports on Regional GDP, North Sumatera, 2000–2016

Model: $Y_i = \alpha_i X_i^{\beta_i} u_i$			
<i>Y</i>	<i>X</i>	$\beta$	$R^2$
Regional GDP	Total Exports	0.7353	0.6828
Regional GDP per capita	Total Exports	0.6388	0.6721
Regional GDP	Primary Agricultural Exports	0.8871	0.8390
Regional GDP per capita	Primary Agricultural Exports	0.7734	0.8329
Regional GDP	Agro-industry Exports	0.5978	0.6709
Regional GDP per capita	Agro-industry Exports	0.5188	0.6599
Regional GDP	Agro-based Exports	0.7070	0.7407
Regional GDP per capita	Agro-based Exports	0.6144	0.7304

Note: All coefficient estimation significant at level of confidence 99 % ( $\alpha = 0.01$ ).

The export decomposition effect on employment and poverty had a pattern that was in line with the effect on economic growth (Regional GDP): primary agricultural products export being the highest, followed by agro-based export and agro-industry export. Increased export would increase job opportunities and reduced poverty (Table 3). Elasticity of primary agricultural product export that was higher than the elasticity of agro-industry product export indicated that poverty reduction due to increased export no longer took place through labor market

as stated in Samuelson-Stolper theorem. Increased export would improve demand for raw materials and for this purpose, smallholder family farmers increased production for sale. The increase in the number of sales with or without price rise would increase farmers' income, and thus reduced poverty.

If the world exports demand increased, processing industry would increase production. Therefore, demand for raw materials (agricultural products) and labor (industry) would increase. On farming level, the increase in the demand was addressed by increasing production. The analysis results revealed that in the process of increasing production, the upstream sector (farming) absorbed more labors compared to downstream sector (industry), and consistent with this, the upstream sector (primary agricultural products) contributed more substantially to poverty alleviation than downstream sector (agro-industry).

**Table 3** Results of parameter estimation of the effect of exports on employment and poverty  
North Sumatera, 2000 – 2016

Model: $Y_i = \alpha_i X_i^\beta u_i$			
<i>Y</i>	<i>X</i>	$\beta$	$R^2$
Employment	Total Exports	0.1371	0.6716
Employment	Primary Agricultural Exports	0.1664	0.8361
Employment	Agro-industry Exports	0.1097	0.6397
Employment	Agro-based Export	0.1312	0.7228
Poverty	Total Exports	-0.2103	0.6656
Poverty	Primary Agricultural Exports	-0.2571	0.8408
Poverty	Agro-industry Exports	-0.1706	0.6520
Poverty	Agro-based Exports	-0.2037	0.7335

Note: All coefficient estimation significant at level of confidence 99 % ( $\alpha = 0.01$ ).

The interpretation of the parameter estimation was valid, since the relationship among variables in the Table 1 was Granger causal with 1 year lag. This meant that the effect of independent variable on dependent variable was able to be seen after one year. All causality relations were one direction (Table 4).

**Tabel 4** Granger causality test result

Null Hypotesis	F-statistic	Probability
Total Export does not Granger Cause Regional GDP	5.71148	0.0327**
Total Export does not Granger Cause Regional GDP per capita	5.7606	0.0321**
Total Export does not Granger Cause Employment	5.2955	0.0386**
Total Export does not Granger Cause Poverty	5.3566	0.0376**
Primary Agricultural Export does not Granger Cause Regional GDP	3.7037	0.0765*
Primary Agric. Export does not Granger Cause Regional GDP per capita	3.7661	0.0743*
Primary Agricultural Export does not Granger Cause Employment	6.2806	0.0263**
Primary Agricultural Export does not Granger Cause Poverty	3.6229	0.0794*
Agro-industry Export does not Granger Cause Regional GDP	4.6612	0.0501*
Agro-industry Export does not Granger Cause Regional GDP per capita	5.1306	0.0412**
Agro-industry Export does not Granger Cause Employment	6.1222	0.0279**
Agro-industry Export does not Granger Cause Poverty	4.1081	0.0637*
Agro-based Export does not Granger Cause Regional GDP	5.1569	0.0408**
Agro-based Export does not Granger Cause Regional GDP per capita	5.4968	0.0356**
Agro-based Export does not Granger Cause Employment	7.5801	0.0164**
Agro-based Export does not Granger Cause Poverty	4.7173	0.0490**

Note: All variable in logarithmic (Log10) and lag = 1, thus 16 observations

\*) hypothesis null is rejected significantly at level of confidence 90 % ( $\alpha = 0.10$ )

\*\*) hypothesis null is rejected significantly at level of confidence 95 % ( $\alpha = 0.05$ )

#### 4. Conclusion

Export decomposition into total export, primary agricultural product export, agro-industry export and agro-based export showed that all of these export components had a significant, positive effect on economic growth, employment creation and poverty reduction in North Sumatera. This relationship was causal in nature.

Deviating from the general pattern, the value of primary agricultural product export elasticity was higher than that of agro-industry, either on the economic growth (Regional GDP), employment creation or poverty alleviation. This indicated that export had more significant impact on factor market for raw materials. Increased export improved demand for raw materials, which for the case of North Sumatera was dominated by agriculture-based natural resources in the form of fresh fruit bunch of palm oil and raw latex. Improved demand would increase prices, and subsequently increased farmers' income. In order to encourage production, agricultural wage labour demand would increase, and thus poverty would be reduced. This mechanism would cause poverty reduction through export in rural area to be higher than that in urban area. This meant that for North Sumatera, the economic growth coming from international trade would be largely enjoyed by farmers in rural areas.

Through its export composition, North Sumatera demonstrated the main role of agriculture in the economy. In the upstream sector, the production was firstly used for existencesecurity of farmer households, and then used to serve agro-industry through the supply of raw materials for processing industry. This pattern had been progressing for several generations since the introduction of international trading in the colonial era. With this agricultural system entrenched, the development strategy that was relevant to North Sumatera was regional development, rather than sectoral development, especially single commodity. Regional development would encourage the growth of various sectors simultaneously.

## 5. References

- [1] Staatz J M and Eicher C K 1990 Agricultural Development Ideas in Historical Perspective (*Agricultural Development in the Third World* 2<sup>nd</sup> edition) eds Eicher C K and Staatz J M (Baltimore MD: Johns Hopkins University Press) p 3 – 37
- [2] Mellor J W 2017 *Agricultural Development and Economic Transformation – promoting growth with poverty reduction* (London etc: Palgrave MacMillan) p 17 – 45
- [3] Cruz E 2017 Structural Change and Non-constant Biased Technical Change. *The B E J. of Macroeconomics* **17**(2) 1-23
- [4] Anderson M and Till E R 2018 Between the Engine and the Fifth Wheel – An Analytical Survey of Shifting Roles of Agriculture in Development Theory (*Agricultural Development in the World Periphery: A Global Economic History Approach*) eds Pinilla V and Willebald H (London etc: Palgrave MacMillan) p 29 - 61
- [5] de Janvry A 2010 Agriculture for Development: New Paradigm and Options for Success *Agricultural Economics* **41** (S1) 17-36
- [6] Ball E V, Wang S L, Nehring K and Mosheim R 2016 Productivity and Economic Growth in U S Agriculture: A New Look *Applied Economic Perspective and Policy* **38**(1) 30 - 49
- [7] Zylbersztajn D 2017 Agribusiness Systems Analysis: origin, evolution and research perspectives *Revista de Administração* **52**(2017) 114-117
- [8] USDA (United States Department of Agriculture) 2017 Agriculture and Food Sectors and the Economy (available at <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/ag-and-food-sectors-and-the-economy/>)
- [9] Shafiullah M, Selvanathan S and Naranpanawa A 2017 The Role of Export Composition in Export-led Growth in Australia and its Regions *Ec. Analysis and Policy* **53**(1) 62-76
- [10] Abdullah D N C, Shaari M S and Hussain N E 2017 Investigating the Causal Relationship between Export and Economic Growth: A Malaysian Perspective *Int. J. of Academic Research in Business and Social Sciences* **7**(7) 581-591
- [11] Sertoğlu K, Ugural S and Begun F V 2017 The Contribution of Agricultural Sector on Economic Growth of Nigeria *Intl. J. of Ec. and Financial Issues* **7**(1) 547-552
- [12] Huchet-Bourdon M, Le Mouél C and Viji M 2018 The Relationship Between Trade Openness and Economic Growth: Some New Sights on the Openness Measurement Issue *The World Economy* **41** 59–76
- [13] Vollrath T L and Johnston P V 1991 The Influence of the Commodity Composition of Trade on Economic Growth *J. of Agric. Ec. Res.* **43**(1) 7-14
- [14] Henn C, Papageorgiou C, Romero J M and Spatafora N 2017 Export Quality in Advanced and Developing Economies: Evidence from a New Data Set *World Bank Policy Research Working Papers* **8196**
- [15] Drabo A 2013 Primary agricultural commodity exports and unemployment *African Ec. Conf., Johannesburg, South Africa*, 28-30 October 2013
- [16] Staatz J M 1997 Notes on the Use of Subsector Analysis as a Diagnostic Tool For Linking Industry and Agriculture *Staff Paper No 97-4 Department of Agricultural Economics Michigan State University*
- [17] Salvatore D 2013 *International Economics* 11<sup>th</sup> edition (Hoboken NJ: John Wiley & Sons) p 109-127

- [18]Krugman P R, Obstfeld M and Melitz M J 2012 *International Economics: Theory and Policy* 9<sup>th</sup> edition (Boston etc.: Addison-Wesley) p 80-96
- [19]McCaig B and Pavcnik N 2018 Export Markets and Labor Allocation in a Low-Income Country *American Economic Review***108**(7) 1899-1941
- [20]Wolfgang D, Findeisen S and Sudekum J 2017 Trade and Manufacturing Jobs in Germany *American Economic Review***107**(5) 337-42
- [21]Winters L A, McCulloch N and McKay A 2004 Trade Liberalization and Poverty: The Evidence so far *J. of Ec. Lit.***XLII** 72-115
- [22]Autor D and Salomons A 2017 Robocalypse Now-Does Productivity Growth Threaten Employment? *ECB Forum on Central Banking, Sintra-Portugal*, 26-28 June 2017.
- [23]Vos R 2007 What We Do and Don't Know About Trade Liberalization and Poverty Reduction *United Nations Department of Economic and Social Affairs (UN/DESA) Working Paper No 50*
- [24]Gujarati D N and Porter D C 2009 *Basic Econometrics* fifth edition (Boston etc.: McGraw-Hill Irwin) pp 652-57
- [25]Asteriou D and Hall SG 2016 *Applied Econometrics – A modern approach* third edition (NY: Palgrave Macmillan) pp273 – 411
- [26]Granger CWJ 1969 Investigating Causal Relations by Econometrics Model and Cross-spectral Methods *Econometrica***37**(3) 424 – 438
- [27]Engel R F and Granger C W J 1987 Co-Integration and Error Correction: Representation, Estimation and Testing *Econometrica***55**(2) 251–276
- [28]BPS 2013 Laporan Hasil Sensus Pertanian 2013 (*Report on Agricultural Census 2013*) Medan:Statistic Agency of North Sumatera

# Promoting agro-based export as engine of local economy in North-Sumatra, Indonesia

## ORIGINALITY REPORT

19%

SIMILARITY INDEX

16%

INTERNET SOURCES

11%

PUBLICATIONS

13%

STUDENT PAPERS

## PRIMARY SOURCES

1

Submitted to Universiti Teknologi Petronas

Student Paper

4%

2

[ageconsearch.umn.edu](http://ageconsearch.umn.edu)

Internet Source

2%

3

[onlinelibrary.wiley.com](http://onlinelibrary.wiley.com)

Internet Source

2%

4

Submitted to Multimedia University

Student Paper

1%

5

[inmes.rs](http://inmes.rs)

Internet Source

1%

6

Submitted to International University of Japan

Student Paper

1%

7

Submitted to University of Exeter

Student Paper

1%

8

[pertambangan.fst.uinjkt.ac.id](http://pertambangan.fst.uinjkt.ac.id)

Internet Source

1%

9

Submitted to University of Hull

1 %

10

[nrb.org.np](http://nrb.org.np)

Internet Source

1 %

11

[pubs.aeaweb.org](http://pubs.aeaweb.org)

Internet Source

1 %

12

[journal.unnes.ac.id](http://journal.unnes.ac.id)

Internet Source

<1 %

13

[pdfs.semanticscholar.org](http://pdfs.semanticscholar.org)

Internet Source

<1 %

14

Submitted to University of Nottingham

Student Paper

<1 %

15

[academic.oup.com](http://academic.oup.com)

Internet Source

<1 %

16

Jongkers Tampubolon, HL Nainggolan, A Ginting, J Aritonang. "Mount Sinabung Eruption: Impact on Local Economy and Smallholder Farming in KaroRegency, North Sumatra", IOP Conference Series: Earth and Environmental Science, 2018

Publication

<1 %

17

[dspace.vutbr.cz](http://dspace.vutbr.cz)

Internet Source

<1 %

18

[www.adb.org](http://www.adb.org)

Internet Source

<1 %

19	<a href="http://www.ijsrp.org">www.ijsrp.org</a> Internet Source	<1 %
20	Submitted to University of Durham Student Paper	<1 %
21	<a href="http://mafiadoc.com">mafiadoc.com</a> Internet Source	<1 %
22	John W. Mellor. "Agricultural Development and Economic Transformation", Springer Science and Business Media LLC, 2017 Publication	<1 %
23	<a href="http://link.springer.com">link.springer.com</a> Internet Source	<1 %
24	Submitted to University of Essex Student Paper	<1 %
25	Submitted to Cardiff University Student Paper	<1 %
26	Submitted to University of Bradford Student Paper	<1 %
27	<a href="http://journalofbusiness.org">journalofbusiness.org</a> Internet Source	<1 %
28	Submitted to University of Mauritius Student Paper	<1 %
29	Submitted to University of Wales Swansea Student Paper	<1 %

---

Exclude quotes Off

Exclude matches Off

Exclude bibliography On

# Promoting agro-based export as engine of local economy in North-Sumatra, Indonesia

## GRADEMARK REPORT

FINAL GRADE

/100

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9