INDONESIA'S MANUFACTURED EXPORTS: A CONSTANT MARKET SHARES ANALYSIS

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Abstract

Manufactured exports are believed to be one of the engines of Indonesian economic growth. It is true that Indonesia`s manufactured exports grew rapidly and its share in GDP increased year by year. Even though manufactured exports grew fast but it grew inconstantly, fluctuating year by year. Although there have been many efforts to encourage this sector, many problems still exist. To minimize the problems, government should understand the causes of the problems. Identifying these causes, can help set government on the right track. Using constant market share analysis, it is found that product composition seems to be a main problem of Indonesia's manufactured exports. Indonesia's manufactured exports concentrated in products with relatively low world demand. This is shown by the fact that products under SITC 6 and 8 which constitute more than fifty percent of Indonesia`s manufactured exports have lower world export growth than that of other products. The study also found that Indonesia's manufactured exports tend to concentrat in some specific markets such as Japan, NIEs (Singapore, Rep. of Korea, Taiwan, and Hong Kong), US, ASEAN and China. Those markets absorb more than sixty percent of total manufactured exports of Indonesia. Those markets make a strong impact on the performance of Indonesia`s manufactured export.

I. Background

Manufactured exports are believed to be one of the engines of Indonesian economic growth. It is true that Indonesia`s manufactured exports grew rapidly. Another important indicator is that the share of manufactured exports in GDP increased year by year. One reason for this high growth was due to synchronized relationship between government and private sectors. Government, on one hand, provided some incentives that basically encouraged export-oriented companies to increase their export value. On the other hand, export-oriented companies always try to expand their export value by some innovative business strategies.

Even though manufactured exports grew fast but it grew inconstantly, fluctuating year by year. Although there

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have been many efforts to encourage this sector, many problems still exist. To minimize the problems above, government should under-stand the causes of the problems. Identifying these causes, can help set government on the right track.

II. Objective of the Study

This research tries to investigate Indonesia`s manufactured export growth. More specifically this study strives to answer the following research questions: to what extent do factor determinants affect Indonesia`s manufactured export growth?

By investigating the determinants of Indonesia's manufactured exports, the research hopes to contribute to the better formulation of manufactured export promotion policies. One must consider that the results of this research can detect symptoms of problems only at the level of the sector investigated. However, since this research is conducted at relatively high level of data aggregation, in future further research is required at the more specific or lower levels of data aggregation.

III. Methodology of Research

There are numerous methodologies of research in the field of international trade study. Among those methodologies, to analyze the determinants of manufactured export growth, this research uses a decomposition method called constant market share (CMS) analysis. The CMS analysis is a decomposition method that was applied for the first time to international trade flow by Tyszynski (1951). It is a method to examine a country`s export growth. The method basically was built from the assumption that a country`s exports may succeed (fail) to grow as rapidly as the world average for three reasons: (1) exports may concentrate in commodities in which the demand is growing relatively fast (slowly); (2) exports may be going to relatively growing (stagnant) regions; (3) the country in question may have been able (unable) to compete effectively with other sources of supply (Leamer and Stern 1970)[3]. Another assumption of the method is that a country`s export share in the world market should remain unchanged over time. The differences between the export growth, implied by this constant-share norm, and the actual export growth is assumed to be caused by competitiveness, commodity-composition and market-distribution effects.

The following section will explain the CMS method developed by Leamer and Stern. Following notations are used:

$V_{i.}$: Value of A's exports of commodity i in period 1

$V_{i.}'$: value of A's exports of commodity i in period 2

$V_{.j}$: value of A's exports to country j in period 1

[3] The CMS method has been widely used and developed by many international economists. This research explains and uses the CMS method developed by Leamer and Stern that was published in their influential book "Quantitative International Economics" chapter 7, 1970

$V'_{.j}$: value of A's export to country j in period 2

V_{ij} : value of A's export of commodity i to country j in period 1

r : percentage increase in total world exports from period 1 to period 2

r_i : percentage increase in world export of commodity i from period 1 to period 2

r_{ij} : percentage increase in world export of commodity i to country j from period 1 to period 2

The value of country A's exports in period 1 is:

$$\sum_j V_{ij} = V_{i.} \sum_i V_{ij} = V_{.j} \qquad (3.1)$$

and we can also define A exports in period 1:

$$\sum_i \sum_j V_{ij} = \sum_i V_{i.} = \sum_j V_{.j} = V.. \qquad (3.2)$$

At the first level of analysis, we may view exports only as a single good to a single market. At this level the method argues that if country A maintain its export share in world market then exports would increase by rV.., and therefore the following identity may be written:

$$V'..-V.. \equiv rV.. + (V'..-V..-rV..) \qquad (3.3)$$

Identity 3.3, the first level of analysis, means that the export growth from period 1 to period 2 (V'.. – V..) is divided into part associated with general increase in world exports (rV..) and an unexplained residual, the competitiveness effects (V'.. – V.. – rV..).

In the next step of analysis, two-level analysis, the method expands the arguments that exports are in fact a quite diverse set of commodities and markets for a particular commodity class. For i commodity it may be written an identity analogous to identity 3.3:

$$V'_{i.} - V_{i.} \equiv r_i V_i + (V'_{i.} - V_{i.} - r_i V_{i.}) \qquad (3.4)$$

And be aggregated to

$$\begin{aligned} V'.. - V.. &\equiv \sum_i r_i V_{i.} + \sum_i (V'_{i.} - V_{i.} - r_i V_{i.}) \\ &\equiv \sum_i (r - r + r_i)\, V_{i.} + \sum_i (V'_{i.} - V_{i.} - r_i V_{i.}) \\ &\equiv \sum_i (rV_{i.}) + \sum_i (r_i - r)\, V_{i.} + \sum_i (V'_{i.} - V_{i.} - r_i V_{i.}) \\ &\equiv (rV..) + \sum_i (r_i - r)\, V_{i.} + \sum_i (V'_{i.} - V_{i.} - r_i V_{i.}) \qquad (3.5) \\ &\qquad (1) \qquad (2) \qquad (3) \end{aligned}$$

Identity 3.5 represents two-level analysis in which the growth of country A's export is broken into part attributed to (1) the general rise in world exports, (2) the commodity composition of country A in period 1, and (3) unexplained residual, the competitiveness effects indicating the differences between actual export increase and the hypothetical increase if A had maintained its share of export of each commodity group.

From identity 3.5, the commodity-composition effect is defined as:

$$\sum_i (r_i - r)\, V_{i.} \qquad (3.6)$$

Equation 3.6 means that if world export of commodity i increased by more than total world export, then $(r_i - r)$ will be positive. This positive number will receive a heavy weight when added to other term $V_{i.}$. The result is that 3.5 would be positive if A had concentrated on export of commodities in which the market were growing relatively fast and would be negative if A had concentrated on export of commodities in which the market of that commodity were growing relatively slower than total world export growth.

Finally, in the three-level analysis, the method will observe that exports are differentiated by destination and commodity type. The appropriate norm of this case is constant market share of export of particular commodity class i to a particular region j. The identity analogue to 3.3 and 3.4 is:

$$V'_{ij} - V_{ij} \equiv r_{ij}V_{ij} + (V'_{ij} - V_{ij} - r_{ij}V_{ij}) \qquad (3.7)$$

And it can be aggregated to:

$$V'_{..} - V_{..} \equiv \sum_i\sum_j r_{ij}V_{ij} + \sum_i\sum_j (V'_{ij} - V_{ij} - r_{ij}V_{ij})$$

$$\equiv \sum_i\sum_j (r - r + r_i - r_i + r_{ij})\, V_{ij} + \sum_i\sum_j (V'_{ij} - V_{ij} - r_{ij}V_{ij})$$

$$\equiv \sum_i\sum_j (rV_{ij} - r\,V_{ij} + r_iV_{ij} - r_iV_{ij} + r_{ij}V_{ij}) + \sum_i\sum_j (V'_{ij} - V_{ij} - r_{ij}V_{ij})$$

$$\equiv \sum_i\sum_j rV_{ij} + \sum_i\sum_j (r_i - r)\, V_{ij} + \sum_i\sum_j (r_{ij} - r_i)\, V_{ij} + \sum_i\sum_j (V'_{ij} - V_{ij} - r_{ij}V_{ij})$$

$$\equiv \sum_i r\, V_{i.} + \sum_i (r_i - r\,)\, V_{i.} + \sum_i\sum_j (r_{ij} - r_i)\, V_{ij} + \sum_i\sum_j (V'_{ij} - V_{ij} - r_{ij}V_{ij})$$

$$\equiv (rV_{..}) + \sum_i (r_i - r)\, V_{i.} + \sum_i\sum_j (r_{ij} - r_i)\, V_{ij} + \sum_i\sum_j (V'_{ij} - V_{ij} - r_{ij}V_{ij}) \qquad (3.8)$$

(1) (2) (3) (4)

Identity 3.8 represents three-level analysis in which the growth of country A's export is broken into part attributed to (1) the general rise in world export (2) the commodity composition of country A in period 1 (3) the market distribution of A's export and (4) unexplained residual, the competitiveness effects that indicating the differences between actual export increase and the hypothetical increase if A had maintained its share of export of each commodity group to each country.

From equation 3.8 the market distribution effect is defined as:

$$\sum_i \sum_j (r_{ij} - r_i) V_{ij} \qquad (3.9)$$

Equation 3.9 means that if the world export of commodity i to country j increase by more than total world export of commodity i, then $(r_{ij} - r_i)$ will be positive. This positive number will receive a heavy weight when added to other term V_{ij}. The result is that 3.9 would be positive if A had concentrated its export in the market that were growing relatively fast and would be negative if A had concentrated its export in the more stagnant region.

IV. Data Definitions

International trade consists of trade in goods and trade in services. Basically, the transaction of physical goods is defined as trade in goods, while the measurement of trade in services is inherently more difficult than that of trade in goods. The intangibility of services makes them difficult to define (Lindner, 2001). This research, anyway, focuses only on trade in goods, therefore, the word "trade" in this research means trade in goods.

Among various trade classifications, it utilizes Standard International Trade Classification (SITC) for data analysis. The SITC has a 5 level hierarchical structure. Level 1, that is SITC digit 1, consists of 9 sections. Sections 0 to 4 can be defined as the non-manufacturing sector, while sections 5 to 8 are defined as the manufacturing sector. Section 9 consists of products that cannot be classified into sections 0 – 8. Most of discussion in this research focuses on export products categorized in SITC 5 to SITC 8.

V. Growth Determinants of the Indonesia's Manufactured Exports

Although the Indonesian manufactured exports expanded significantly within 1990-1999, the rate of change declined. Within 1990-1993, manufactured exports grew on an annual average of 27.7 percent, and its growth rate declined to 12.4 percent in 1993-1996. Due to the impact of the financial crises, the rate of growth went down to only 4 percent between 1996 and 1999.

Table 5.1 shows the result of CMS analysis. The whole period observed is divided further into three sub-periods: 1990-1993, 1993-1996 and 1996-1999. According

to the table, Indonesian manufactured exports are affected positively by the world export growth. The growth was also positively affected by increase in its competitiveness, except in 1993-1996. Market distribution also had positive impact on the growth, except in 1996-99. On the other hand, the factor of commodity composition has been negative throughout the period.

Table 5.1
Constant Market Share Analysis of the Indonesia`s Manufactured Exports

	1990-1993		1993-1996		1996-1999	
	Value (000 US$)	**Share** %	**Value** (000 US$)	**Share** %	**Value** (000 US$)	**Share** %
Due to increase in world export	927,792	9.1	8,636,599	133.2	2,686,857	378.7
Due to commodity composition	-314,439	-3.1	-986,871	-15.2	-852,054	-120.1
Due to market distribution	1,261,828	12.3	14,537	0.2	-1,255,094	-176.9
Due to increased competitiveness	8,363,460	81.7	-1,180,671	-18.2	129,768	18.3
Total Change	10,238,642	100.0	6,483,594	100.0	709,477	100.0

Source: calculated by the author

As found out below, the expansion of world export gives a positive impact on the growth of Indonesia`s manufactured exports. This can be explained by the fact that the world average growth rate, although fluctuating, was always positive throughout the period observed.

The factor of commodity com-position seems to be the main problem for the growth of Indonesian manufactured exports. This may be explained because the manufactured exports of Indonesia tend to concentrate in product groups under SITC 6 and 8, as shown in Table 5.2. Unfortunately, as shown in Table 5.3, in 1990-93, the world export growth rate of SITC 6 was lower than that of others. In 1993-96, the world export growths of both SITC 6 and SITC 8 were lower than others. In 1996-99, the world export growth of SITC 6 was not only lower than others but also negative.

Table 5.2
Shares of Each Product Group in Total Export (average, in percentage)

SITC	1990-1993	1993-1996	1996-1999
0-4	54.29	46.97	42.79
5	2.47	2.88	4.02
6	23.99	23.81	20.28
7	3.49	8.01	9.76
8	15.28	18.04	15.12
9	0.49	0.29	8.05

Source: Statistic division, UN (calculated)

Market distribution gave a positive impact to the Indonesian manufactured exports except in 1996-99. Since more than 60 percent of manufactured exports go to five selected countries/regions (**see Table 5.4**), the performance of those markets makes a strong impact on the performance of manufactured exports.

Table 5.3
World Export Growth by Product Group (average, percentage changes)

SITC	1990-1993	1993-1996	1996-1999
5	3.33	10.30	2.73
6	1.73	9.30	-0.25
7	4.50	10.70	4.40
8	4.83	7.78	3.43
Total Export	2.63	9.50	2.45

Source: Statistics division, UN (calculated)

In 1990-1993, market distribution made a strong positive impact on manufactured exports. This can be explained by the fact that import growth rates of the three biggest market destinations, Japan, NIEs, and US, were higher than that of the world growth, especially the rate for NIEs was much higher (see **Table 5.5**). During the period of 1993-1996, the impact of market distribution is still positive but relatively weaker than before. This is because import growth rates of the three biggest markets were not so different from the growth of total world import. Moreover, the import growth rate of NIEs was lower than the previous period.

Table 5.4
Shares of Indonesia's Manufactured Exports by Destination
(average, in percentage)

	1990-1993	1993-1996	1996-1999
Japan	16.08	15.83	13.95
NIE	23.08	23.25	23.15
US	16.75	18.10	17.88
ASEAN 3	3.60	4.70	6.10
China	4.38	2.70	2.90
All other market	36.10	35.40	36.08

Source: Statistics division, UN (calculated)
Note: ASEAN 3 consists of Malaysia, Philippine, and Thailand. NIEs consists of Taiwan, Rep. of Korea, Hong Kong and Singapore.

Furthermore, in 1996-99, negative impact of market distribution was due to the fact that during those periods Japan, NIEs, and ASEAN 3 experienced negative import growth rates. Although those of US and China remained positive, they absorb only about 20 percent of the Indonesian manufactured exports, while Japan, NIEs, and ASEAN 3 absorb more than 40 percent.

Table 5.5

Manufactured Import Growth Rates of Selected Countries/Regions (average, percentage change)

	1990-1993	1993-1996	1996-1999
Japan	7.23	13.68	-1.53
NIE	15.78	11.88	-2.33
US	9.55	10.90	9.53
ASEAN 3	19.70	14.10	-5.93
China	23.25	6.38	7.13
All other market	6.15	10.85	3.30
World	2.10	9.22	2.79

Source: Statistic division, UN (calculated)

VI. Conclusion And Policy Recommendations

Based on the analysis, this research concludes as follows:

1. CMS analysis shows that the commodity composition is a main problem for Indonesia's manufactured exports growth since its impact on growth has been negative throughout the period. This problem may be because Indonesia`s manufactured exports concentrates too much in SITC 6 and 8, which have relatively slow growing world demand. On the other hand, the share of SITC 7, product groups that have relatively fast growing world demand, is relatively small in Indonesia.
2. The markets for the Indonesia's manufactured exports are concentrated in Japan, US, NIE, and ASEAN countries. Al-though the share of those markets declined in total in recent years, they still absorb more than 50 percent of the Indonesian manufactured exports.

Based on the finding of this research, there are some policy recommendations for the Indonesian government in order to boost manufactured exports.

1. The Indonesian government should give first priority to find ways to enhance exports of product groups in SITC 7. First of all, this product group has a relatively high growth world

demand. S*econd,* their share in total exports of Indonesia export is still low.

2. At the same time, the Indonesian government has to, at least, maintain the export performance of product groups in SITC 6 and 8, which are, at this moment, a main engine of manufactured export growth. However, since most of Indonesia's products under these groups are output of resource-based industries and in fact that demand for these resource-based products tends to be low, it is important for the government to consider relatively more the expansion of non-resource based and more advanced end-products.
3. Government could address points 1 and 2 by giving special incentives for some targeted industries. The incentives could be in the form of tax holidays (especially for initial esta-blishment), tax reduction, tariff reduction on some specific supported imported raw materials, intermediate materials, and machinery.
4. Market diversification should also be seriously considered by the govern-ment, since manufactured exports are still concentrated in a few specific markets such as Japan, US, NIEs and other ASEAN countries. Potential market destinations such as the Middle-East countries, some Latin America countries and some Africa countries should be more explored. The demand for low and medium-tech products of those markets is still high.
5. Trade negotiation and promo-tion are strategy options for export expansion of product markets. Government could engage in trade negotiation both at bilateral and multilateral levels. Such negotiation is very important especially to penetrate barriers implemented by the authorities in market destinations. Furthermore, the government could facilitate export product exhibitions as trade promotion. This could be done both by inviting potential buyers to see domestic exhibitions or participating in international exhibitions.

VII. References

APEC Study Centre (1998), Impediments to Trade in APEC: the Case of China, Indonesia, and The Philippines, Institute of Development Economies, Tokyo.

Fagerberg J. and Sollie G. (1987), The Method of Constant Market Shares Analysis Reconsidered, *Applied Economics*, Vol. 19, pp. 1571-1583

Krugmen P. and Obstfeld M, (2000), International Econo-mics Theory and Policy, Fifth Edition, Addison-Wesley Publishing, Co., USA

Leamer, E.E. and R.M. Stern (1970), Quantitative International Economics, Allyn and Bacon, Ch.7

Richardson J.D. (1971a), Constant Market Shares Analysis of Export Growth, *Journal of International Economics*, Vol. 1, pp. 227-239.

_____ (1971b), Some Sensitive Test for a Constant-Market-Shares Analysis of Export Growth, Review

of Economics and Statistics, Vol. 53, pp. 300-3004.

Tyszynski H. (1951), World Trade in Manufactured Commo-dities 1899-1950, *The Machester School of Economic and Social Studies*, Vol. 9, pp. 222-304.

United Nation (Various Editions), Foreign Trade Statistics of Asia and the Pasific, Economic and Social Commission for Asia and The Pasific, New York.

Yasuko Hayase (2002), Statistics for Trade and Foreign Direct Investment in APEC Member Economies 1980-2000, APEC Study Center, Institute of Development Economies, JETRO, Japan

_____ (2002), A study on Trade, Investment and International Labor Migration in the APEC Member Countries, APEC Study Centre, Institute of Development Economies, JETRO, Japan.