UNIVERSITI PUTRA MALAYSIA

TRADE COMPETITIVENESS OF SHRIMP PRODUCTS FROM MALAYSIA AND OTHER SELECTED ASIAN COUNTRIES

NG XIN KHAI

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MASTER OF SCIENCE
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By

NG XIN KHAI

These Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirement for the Degree of Master of Science

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

TRADE COMPETITIVENESS OF SHRIMP PRODUCTS FROM MALAYSIA AND OTHER SELECTED ASIAN COUNTRIES

By

NG XIN KHAI

August 2013

Chair: Shaufique Fahmi Sidique, PhD

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The Malaysian shrimp industry has been facing competition domestically and internationally. Malaysia's export share for shrimp products in the global market has declined in recent years. In fact, the export value for shrimp has also dropped from RM1.3 billion in 2005 to RM1.1 billion in 2009. It is argued that Malaysia cannot be a major player in the world shrimp market because of its relatively small volume of shrimp trade. However, the competitiveness of Malaysian shrimp trade still remains unclear due to the lack of contemporary analyses backed by formal testing procedures.

Research objectives of this study are to measure the trade competitiveness of the Malaysian and selected nations' shrimp products, and to examine competitiveness growth trends of the selected nations. This study provides evidence on trade competitiveness of the Malaysian and selected nations' shrimp products. It is particularly important for Malaysia's shrimp commodity because it has been

identified as the most traded fishery product of the nation, but has yet to identify the competitive food sub-sectors for import substitution and/or export.

There are six individual countries chosen for eleven years of observations. Shrimp products are divided into frozen, non-frozen, and prepared and preserved categories. The reference countries are China, India, Indonesia, Thailand, and the Philippines. This study employs the relative trade advantage (RTA) analysis with secondary data to measure the trade performance in this study. Results from the RTA analysis are then computed using growth trends analysis.

Present research exercise has found that Malaysia has comparative disadvantages on shrimp products. However, the comparative disadvantages on non-frozen and prepared and preserved shrimp products have been improving since 2007 to 2009. In fact, the Malaysian frozen shrimp sector is found to be profitable as compared to other food sectors in Malaysia, and it has some extents of competitiveness in the export market. India has a remarkable performance as it has trade competitiveness for all three shrimp products. Thailand is also competitive in non-frozen and prepared and preserved shrimp trade for the period.

Policy recommendations have been outlined at the end of the section in order to improve trade competitiveness of Malaysia's shrimp products; such as to increase shrimp production for export and domestic markets. This study can be improved by utilizing bilateral trade data and to increase the number of observations. Further analysis on shrimp trade competitiveness by constant market share analysis to be conducted in future study is also worthwhile.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

DAYA SAING PERDAGANGAN PRODUK UDANG DARI MALAYSIA DAN NEGARA-NEGARA ASIA TERPILIH

Oleh

NG XIN KHAI

Ogos 2013

Pengerusi: Shaufique Fahmi Sidique, PhD

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Industri udang Malaysia menghadapi persaingan domestik dan antarabangsa. Syer eksport Malaysia bagi produk udang di pasaran antarabangsa telah semakin merosot. Malah, nilai eksport udang juga telah merosot daripada RM1.3 bilion pada 2005 kepada RM1.1 bilion pada 2009. Dengan ini, industri udang Malaysia dikatakan tidak boleh menjadi pengeksport utama di pasaran dunia. Tetapi, daya saing perdagangan produk udang Malaysia masih kekal tidak jelas kerana kekurangan analisis dan prosedur ujian rasmi.

Objektif kajian ini adalah untuk mengukur daya saing perdagangan produk udang dari Malaysia dan negara-negara yang terpilih, dan juga untuk mengkaji tren pertumbuhan daya saingan perdagangan tersebut. Kajian ini memberikan keterangan kepada daya saing perdagangan produk udang Malaysia dan negara-negara yang terpilih. Hasil kajian ini adalah penting bagi industri udang di Malaysia kerana produk udang telah dikenalpasti sebagai produk perikanan yang paling didagangkan di Malaysia.

Sebanyak enam negara dan sebelas tahun pemerhatian terpilih dalam kajian ini. Produk udang dibahagi kepada kategori beku, tidak beku, dan diproseskan dan diawetkan. Negara-negara rujukan adalah China, India, Indonesia, Thailand, dan Filipina. Kajian ini menggunakan kaedah kelebihan perdagangan perbandingan untuk mengukur daya saing perdagangan dengan menggunakan data perdagangan sekunder. Kemudian, keputusan berkenaan dikaji dengan analisis tren pertumbuhan.

Penyelidikan ini telah mendapati bahawa Malaysia mempunyai kelemahan perbandingan dalam perdagangan produk udang. Tetapi, kelemahan perbandingan produk udang tidak beku dan diproseskan dan diawetkan telah kian bertambah baik sejak tahun 2007 sehingga 2009. Produk udang tidak beku juga didapati berkeuntungan berbanding dengan sektor makanan yang lain di Malaysia. India didapati berdaya saing dalam perdagangan bagi ketiga-tiga produk udang. Thailand juga berdaya saing dalam perdagangan bagi produk udang tidak beku dan diproseskan dan diawetkan.

Cadangan dasar telah digariskan dalam usaha untuk meningkatkan daya saing perdagangan produk udang Malaysia, seperti meningkat pengeluaran produk udang untuk pasaran eksport dan tempatan. Kajian ini boleh diperbaiki dengan menggunakan data perdagangan dua hala dan meningkatkan bilangan pemerhatian. Analisis lanjut mengenai daya saing perdagangan udang oleh diteruskan dengan analisis syer pasaran malar.

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Last, but not least, to my family who I will forever be indebted to. Their continued encouragement, understanding, and constant loving support throughout the period of my study have been vital for the completion of this research project and for me to attain this degree.

I certify that a Thesis Examination Committee has met on 2 August 2013 to conduct the final examination of Ng Xin Khai on his thesis entitled "Trade Competitiveness of Shrimp Products from Malaysia and Other Selected Asian Countries" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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DECLARATION

Declaration by graduate student

I hereby confirm that:

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This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
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Name of Chairman of Supervisory Committee: Dr. Shaufique Fahmi Sidique

Signature: _____
Name of Member of Supervisory Committee: Professor Dr. Mohd Mansor Ismail

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AIZ	Aquaculture Industrial Zone
ASEAN	Association of Southeast Asian Nations
BCG	Boston consulting group
BOT	Balance of trade
CA	Comparative advantage
CBNRM	Community based natural resource management
CE-5	Five selected nations in Central Europe
CEBC-8	Eight selected members under the Consortium of European Building Control
CEP	Comparative export performance
DEA	Data envelopment analysis
DRC	Domestic resource cost
EPI	Export performance index
EU	European Union
FDI	Foreign direct investment
GTIS	Global Trade Information Services
HS	Harmonized system
LDCs	Less developed countries
MOA	Ministry of Agriculture and Agro-Based Industry Malaysia
NACA	Network of Aquaculture Centres in Asia-Pacific
NGO	Non-governmental organization
NI	Net trade intensity index

NPC	Nominal protection coefficient
NRCA	Normalized reveal comparative advantages
PI	Production intensity index
PIE	Potential industry earning
RCA	Reveal comparative advantages
REER	Real effective exchange rate
RMA	Relative import advantages, also known as import specialization index
RTA	Relative trade advantage, also known as the *Vollarth* index
RXA	Relative export advantages, also known as revealed comparative export advantage
SCB	Social cost-benefit
SITC	Standard International Trade Classification
SSQO	Shrimp Seal if Quality Organization
TFP	Total factor production
US	United States

CHAPTER 1

INTRODUCTION

1.1 Introduction

The first chapter covers the introduction of the study and provides the overall background of the study, and followed by the problem statement. It spells out the research objectives in which the study aims to achieve and identifies the significance of the study. A section detailing the organization of the thesis to allow for easy referencing is also included at the end of the chapter.

1.2 Background of the Study

1.2.1 Malaysian Food Trade

Malaysia has always experience food trade deficit (Fatimah *et al*., 2008). The country imports most of its food items, including agricultural inputs. Table 1 shows that the food trade deficit has been growing with time, which increased from RM1.1 billion in 1990 to RM12.1 billion in 2010. To be more specific, food exports increased 233% from RM3.5 billion in 1990 to RM18.2 billion in 2010 while food imports increased 330% from RM4.6 billion in 1990 to RM30.3 billion in 2010 (Department of Statistics, 2011).

Table 1: Exports, Imports, and Balance of Trade (BOT) in the Malaysian Food Sector, 1990 – 2010 (RM million)

Year	Food Export	Food Import	BOT	*Annual Change (%)*
1990	3,453	4,583	-1,130	
1995	4,526	7,885	-3,359	*197.3*
2000	6,470	11,393	-4,923	*46.6*
2005	10,669	17,733	-7,064	*43.5*
2006	11,392	19,950	-8,558	*21.1*
2007	13,760	23,374	-9,614	*12.3*
2008	17,773	27,893	-10,120	*5.3*
2009	15,791	26,732	-10,941	*8.1*
2010	18,168	30,253	-12,085	*10.5*

Source: Department of Statistics (2011)

Furthermore, a clearer perspective on the food trade deficit can be gained by referring to the composition of food exports and imports as shown in Table 1. Table 1 shows that Malaysia's food trade was in deficit between 1995 and 2010 with the notable exceptions of livestock, fish (including crustaceans and molluscs), coffee, tea, cocoa and spices, and some selected processed food. In fact, most of these categories were not stable; therefore Malaysia's balance of trade varied over time.

The cause of the food trade deficit is largely due to political and economic factors. During the last few decades, the import sector has been expanding at a higher rate than exports. A rise in food imports implies that there has been an increase in the demand for food due to population growth and/or higher incomes. An increasing trade deficit, however, indicates that supply lags behind demand in a severe manner. Despite being endowed with rich natural resources, Malaysia's domestic food supply

has been plagued with structural problems and competition from more profitable cash crops and non-agricultural projects with minimal support from the government.

Table 2: Malaysia: Food Exports Composition, 1990-2006, (%)

SITC	Sector (Export)	1990	1995	2000	2005	2010
00	Live Stocks	11.2	12.2	5.6	3.6	3.3
00	Meats and Prepared Meats	1.3	1.6	1.0	0.9	0.6
01	Dairy Products	2.6	3.6	3.5	4.4	4.1
02	Eggs	1.9	1.8	2.8	1.9	1.6
03	Fish, Crustacean, Mollusc etc.	17.7	18.3	20.2	19.7	20.0
04	Cereal and Prepared cereal	4.0	7.9	9.7	8.9	9.2
05	Vegetables	3.6	3.6	4.3	4.4	4.7
05	Fruits	8.9	7.4	7.9	4.0	4.3
06	Sugar and Prepared Sugar and Honey	8.2	4.5	5.5	4.1	4.6
07	Coffee, Tea, Cocoa, Spices	26.2	17.3	17.8	22.9	23.2
08	Animal Feeds	8.1	7.2	5.6	5.5	5.2
09	Other food and Prepared Food	6.3	14.6	16.1	19.7	19.4
	Total	100.0	100.0	100.0	100.0	100.0

Source: Department of Statistics (2010)

Table 2 shows that Section 03 has the highest composition of Malaysia's total food trade surplus across the years. Furthermore, the balance of trade in commodity SITC 0361 (Crustaceans, Frozen) and SITC 0362 (Crustaceans, other than frozen, including flours, meals and pellets of crustaceans, fit for human consumption) had a trade surplus between the years 1995 and 2010. In fact, the trade surplus for SITC 0361 and SITC 0362 increased from RM159 million in 1990 to RM466 million in 2006 and –RM4.6 million in 1990 to RM43 million in 2006, respectively. This was mainly due to the increasing demand for shrimp in the global market, especially in the United States, the European Union, and Japanese markets (Fatima, 2009).

Table 3: Malaysia: Food Imports Composition, 1990-2006, (%)

SITC	Sector (Import)	1990	1995	2000	2005	2010
00	Live Stocks	1.5	1.8	1.5	1.7	1.36
00	Meats and Prepared Meats	5.4	4.8	6.8	5.5	5.16
01	Dairy Products	11.6	11.9	10.2	8.4	8.06
02	Eggs	0.1	0.2	0.1	0.0	0.0
03	Fish, Crustacean, Mollusc etc.	8.1	9.8	9.7	10.5	10.75
04	Cereal and Prepared cereal	28.6	25.9	24.5	19.6	19.85
05	Vegetables	8.0	8.7	9.0	9.0	9.25
05	Fruits	5.7	5.6	4.9	3.8	4.05
06	Sugar and Prepared Sugar and Honey	13.8	10.8	9.5	8.4	8.92
07	Coffee, Tea, Cocoa, Spices	3.1	5.2	7.1	17.3	17.62
08	Animal Feeds	6.6	7.4	8.2	7.0	6.68
09	Other food and Prepared Food	7.5	7.9	8.5	8.7	8.38
	Total	100.0	100.0	100.0	100.0	100.0

Source: Department of Statistics (2010)

1.2.2 Malaysian Shrimp Trade

In 2009, shrimp constituted 43% of the overall fish export value and 23.7% of the overall fish export quantity, and also accounted for about 47% of the total fish trade surplus (Department of Fisheries, 2009). Shrimp, thus, is Malaysia's most important fishery export commodity.

According to Table 4, shrimp products in Malaysia had a trade surplus worth RM633 million per annum, on average, with a standard deviation of RM118 million, between 1999 and 2009. In 2009, the total export value of the Malaysian shrimp commodity was worth RM1,058 million as against the import value of RM467 million; thus giving a trade surplus of RM590 million. It is worth mentioning that a record high of

RM900 million had incurred in 2008. These trade surpluses imply that shrimp trade is important to the Malaysian food bill.

Table 4: Total Exports, Total Imports, and the Balance of Trade (BOT) of Shrimp Products in Malaysia, 1999-2009

Year	Total Export (RM million)	*Growth Rate (%)*	Total Import (RM million)	*Growth Rate (%)*	BOT (RM million)	*Growth Rate (%)*
1999	585.2	*NA*	131.9	*NA*	453.3	*NA*
2000	762.9	*30.4*	144.4	*9.5*	618.5	*36.4*
2001	750.4	*-1.6*	198.5	*37.5*	551.9	*-10.8*
2002	743.1	*-1.0*	177.6	*-10.6*	565.5	*2.5*
2003	889.2	*19.7*	283.6	*59.7*	605.6	*7.1*
2004	1,252.8	*40.9*	670.9	*136.5*	581.8	*-3.9*
2005	1,318.0	*5.2*	560.2	*-16.5*	757.7	*30.2*
2006	1,119.3	*-15.1*	462.9	*-17.4*	656.3	*-13.4*
2007	1,223.7	*9.3*	539.7	*16.6*	683.9	*4.2*
2008	1,217.8	*-0.5*	317.0	*-41.3*	900.8	*31.7*
2009	1,058.5	*-13.1*	467.5	*47.5*	591.0	*-34.4*

Source: Global Trade Information Services (2010)

Even though Malaysia is still a net importer in terms of weight (Department of Fisheries, 2009); Table 4 shows that Malaysia exports high value shrimp to foreign markets, while importing lower value shrimp from several Asian countries, such as Thailand and Indonesia (Global Trade Information System, 2009). Hence, Malaysia is still a net shrimp exporter in terms of value. Its importance has also prompted the government to recognise this sector as a potential sector in reducing the food trade deficit.

1.2.3 Background of the Regional Competitors

There are several major world producers such as Thailand, Indonesia, China, and some South American countries (Global Trade Information Services, 2009). Nevertheless, Asia supplies the majority of shrimp to the world market. This region produces 80% of the world's farmed shrimp; which is mainly produced for export demand (Fatima, 2009, Ling *et al*., 1999; Shang *et al*., 1998).

The top shrimp producers located in South America such as Ecuador and Brazil are assumed to have no direct competition with Malaysian shrimp commodities as the shrimp species produced are different. The major species produced in South American countries are blue shrimp (*Litopenaeus stylirostris*), white-leg shrimp (*Litopenaeus vannamei*), and brown shrimp (*Farfantepenaeus californiensis*) (Dubay *et al*., 2010; FAO, 2008).

In contrast, countries surrounding Malaysia are also the world top exporters for shrimp. These countries include Thailand, Indonesia, the Philippines, India, and China. In fact, the shrimp species produced from these countries are similar to Malaysia's; which are tiger shrimp (*Peneaus monodon*), white shrimp (*Peneaus vanamei*), and giant freshwater prawns (*Macrobrachium rosenbergii*).

In addition, the major global markets for shrimp that these nations are competing in are similar; which includes Japan, the United States, and the European Union. Moreover, the similarities in industrial development, stage of economic development, and level of income amongst these countries are also important factors

which can increase the competitive level amongst these nations (Benavides, 2011). Thus, it is clear that these producers are in direct competition with the Malaysian shrimp trade.

1.3 Problem Statement

At the domestic level, the Malaysian shrimp sector is competing with non-agricultural sectors for resources in particular land and labour due to the rapid industrialisation process. Also, since the mid-1980s, the agricultural sector, including the shrimp sector, has been plagued with a serious labour shortage problem due to the outflow of this resource to the manufacturing and service sectors.

At the international level, Malaysian shrimp exports are competing with major world exporters like Thailand, China, Indonesia, the Philippines, and India. Malaysian shrimp exports consisted of 2.72% of total global shrimp exports, on average, between 1999 and 2009. As compared to the other exporters like Thailand, the Philippines, India, and China, the average market share was in the range of 3% to 24%.

Furthermore, the lack of competitiveness of the Malaysian shrimp products has been evidenced by the relatively small in market share and decline in the export value since 2005 to 2009. Malaysia's shrimp export share decreased from 3.6% in 1999 to 2.7% in 2009. In fact, the Malaysian export value for shrimp also dropped from RM1.3 billion in 2005 to RM1.1 billion in 2009. Thus, it is argued that Malaysia cannot be a major player in the world shrimp market because of its relatively small

volume of shrimp trade. In fact, the Malaysian shrimp export is important in terms of contributing trade surplus to the Malaysian fishery industry; in which a decline in Malaysian shrimp exports might affect the contribution of the fishery industry to the nation's food export performance.

It is vital to look into the trade competitiveness of Malaysia's shrimp commodities in order to ascertain the trade position of Malaysia's shrimp industry in the global market, especially amongst its regional competitors which are the selected ASEAN countries plus India and China. From the trade competitiveness insight obtained from the analysis, the main issue confronting the Malaysian shrimp commodity sectors will be highlighted in the study.

In conclusion, the Malaysian shrimp industry has been facing competition domestically and internationally. The fierce competition in the markets will affect the ability of Malaysian shrimp products to compete in the export market and its comparative advantage, respectively. However, the competitiveness of the Malaysian shrimp trade still remains unclear due to a lack of contemporary analyses backed by formal testing procedures. Therefore, this study intends to examine trade competitiveness of the Malaysian shrimp products among its regional competitors.

1.4 Objectives

The general research objective is to measure the trade position of the Malaysian shrimp products amongst its competitors. The specific research objectives are to 1) measure the trade competitiveness of Malaysian and selected countries' shrimp

products; and 2) measure the competitiveness growth trends of the Malaysian shrimp trade.

1.5 Significance of the Study

This study would provide evidence on trade competitiveness of Malaysian shrimp products. This is due to the competitiveness of the agricultural and agro-based industry which has become an extremely important topic in Malaysia, as far as the food security issue and balance of trade are concerned. It is particularly important for Malaysia's shrimp commodity because it has been identified as the most traded fishery product of the nation, but has yet to identify competitive food sub-sectors for import substitution and/or export.

In view of its positive contribution to the balance of food trade, a trade competitiveness analysis of the shrimp sector would give a clearer picture of the competitiveness position of Malaysia's shrimp sector in the global market as compared to its potential regional competitors like Indonesia, Thailand, and the Philippines, as well as world competitors like China and India. Having a better understanding of shrimp trade in Malaysia and hence trade competitiveness is important to help enhance its status in the global market.

1.6 Organization of Thesis

This section presents the organization of the research study. This thesis contains five (5) chapters:

Chapter one (1) provides the introduction and background of the study. It explains the problem statement and the objectives of the study. The importance of the study is elaborated next. A section of the organization of the research study for easy referencing is also provided. The last section concludes this chapter.

Chapter two (2) reviews all relevant literature. It reveals issues and common discussions on the shrimp industry as well as shrimp trade. It then discusses the literature of relevant economic studies, especially trade competitiveness studies, which are important in understanding the context of this study. Overall, the literature review highlights the importance of trade competitiveness analyses.

Chapter three (3) presents the theoretical and conceptual framework as a guide for the trade competitiveness analysis. It details out components in the conceptual framework of the study. The entire set of variables involved in the framework are identified and discussed further. This chapter also explains the methodology that was adopted in conducting this study. The discussions refer to the research design, sample chosen, and the instrumentation that is used. This chapter also elaborates on the procedures of data collection as well as a brief overview on how the data was analysed.

Chapter four (4) elaborates the data analysis and the results are presented. The analyses and results are in line with the objective of this study, which is to generally investigate the trade competitiveness of Malaysian shrimp products against selected major shrimp exporting countries.

Chapter five (5) is an extension of Chapter 4 where it bridges the data presented in the preceding chapter and contains the interpretation of the results obtained. Discussions are based on relation to the objectives of the study, and conclusions are eventually drawn. Additionally, it is made clear on how each of the findings fit into the existing body of knowledge. This final chapter also summarizes the significance of the study where it highlights both its empirical contributions and policy implications produced from this study. Finally, it also acknowledges the study's limitations and suggests possible further research directions on the topic of shrimp trade competitiveness.

REFERENCES

Abdi, H. (2007). Z-scores. In NJ Salkind (ed.), *Encyclopedia of Measurement and Statistics*: 1057-1058. Sage: Thousand Oaks (CA).

Akgungor, S., Barbaros, F.R., and Kumral, N. (2002). Competitiveness of the Turkish Fruit and Vegetable Processing Industry in the European Union Market. *Russian and East European Finance and Trade*. 38: 34-53.

Amiti Sen. (2009). Shrimp exports to US may jump on duty removal. The Economic Times. Retrieved from http://articles.economictimes.indiatimes.com/

Appleyard, D.R. and Field, A.J.Jr. (2001). *International economics*. Fourth edition, McGraw-Hill, New York.

Balassa, B. (1965). Trade liberalization and 'revealed' comparative advantage. *The Manchester School of Economic of Social Studies*. 33: 99-123.

Bandhu, Y. (2010). Trade competitiveness, subsidies and barriers to trade: Implication for Indian agriculture. *MPRA (22802)*. Retrieved from MPRA website: http://mpra.ub.uni-muenchen.de/22802.

Barbier, B. E., & Cox, M. (2004). An economic analysis of shrimp farm expansion and mangrove conversion in Thailand. *Land Economics*. 80: 389-407.

Benavides, A. (2011). The intra-industry structure of the United States' international trade with selected industrialized and developing nations. *International Journal of Business and Social Science*. 2(22): 1-6.

Benedictis, D.L. (2005). Three decades of italian comparative advantages. *World Economy*. 28: 1679-1709.

Blomo, J.V., Nichols, P.J., Griffin, L.W., and Grant, E.W. (1982). Dynamic modeling of the eastern gulf of Mexico shrimp fishery. *American Journal of Agriculture Economics*. 64: 475-482.

Boisset, K. Shrimp Market Report – February 2008 – Europe. *Globefish, Food and Agriculture Organization of the United Nations*, 2007, pp. 1-3.

Bojnec, S. & Ferto, I. (2009). Agro-food trade competitiveness of Central European and Balkan countries. *Food Policy* 34: 417-425.

Bojnec, S. and Ferto, I. (2011). Complementarities of trade advantage and trade competitiveness measures. *Applied Economics*. 2011(44): 399-408.

Bowen, H.P. (1983). On the theoretical interpretation of indices of trade intensity and revealed comparative advantage. *Weltwirtschaftliches Archiv*. 119: 464-472.

Chen, K. and Duan, Y. (1999). *Competitiveness of Canadian Agri-Food Exports Against its Competitors' In Asia: 1980-97, Joint Series of Competitiveness*, Number 18, Department of Rural Economy, University of Alberta.

Chen, S.C., Chuang, C.T., Hu, S.H., and Nan, F.H. (2006). *Competitiveness and Supply Chain Management Study on Taiwan Grouper Industry* (pp. 79-86). 4th International Conference on Supply Chain Management and Information Systems (SCMIS), 2006.

Cho, D.S., Moon, H.C., and Kim, Mi.Y. (2008). Characterizing international competitiveness in international business research: A MASI approach to national competitiveness. *Research In International Business and Finance.* 22: 175-192.

Clark, P.D., Sawyer, C.W., and Sprinkle, L.R. (2005). Revealed comparative advantage indexes for regions of the United States. *Global Economy Journa*. 5 (Article 2): 1-24.

Department of Commerce, 2010. Shrimp exports to US may jump on duty removal. Press Releases. Government of India.

Department of Fisheries. (various issues). Annual Fisheries Statistics. Vol 2. Putrajaya, Malaysia.

Department of Fisheries. (2007). *Aquaculture Industrial Zone*. Retrieved from www.dof.gov.my

Department of Statistics. (2010). Malaysia Economics Statistics - Time Series 2010. Putrajaya, Malaysia.

Doll, P.J. (1972). An econometric analysis of shrimp ex-vessel prices, 1950-1968. *American Journal of Agriculture Economics.* 54: 431-440.

Dowling, M. and Cheang, C.T. (2000). Shifting comparative advantage in Asia: new tests of the "flying geese" model. *Journal of Asian Economics.* 22: 443-363.

Dubay, K., Tokuoka, S., and Gereffi, G. (2010). *A Value Chain Analysis of the Sinaloa, Mexico Shrimp Fishery*. Report Prepared for Environmental Defence Fund. Centre on Globalization, Governance & Competitiveness, Duke University.

Durand, M. and Giorno, C. (1987). *Indicators of International Competitiveness: Conceptual Aspects and Evaluation*. (OECD Economic Studies No.9, Autumn 1987. Retrieved from OECD website: http://www.oecd.org/.

Duren, E. V., Martin, L., and Westgren, R. (1991). Assessing the competitiveness of Cadana's agrifood industry. *Canadian Journal of Agricultural Economics.* 39(4): 727 -738.

Fatima Ferdous. Shrimp – September 2009, Asia. *FAO Globefish*. 2009, pp. 1-2

Fatimah, M. A., Ahmad, S., Alias, R.,…Zulkornain, Y. (2008) *Penelitian Semula Pelan Tindakan Imbangan Pedagangan untuk Sektor Makanan*. Research Report submitted to Ministry of Agricultural and Agro-based Industry in Malaysia.

FAO. (2008). Global Production Statistics. Retrieved from http://www.fao.org/fishery/topic/16140/en Retrieved January 25, 2011.

Ferto, I. and Hubbard, L.J. (2001). *Regional Comparative Advantage and Competitiveness in Hungarian Agri-Food Sectors*. 77th EAAE Seminar/NJF Seminar No. 325, August 17-18, 2001, Helsinki. Retrieved from Pallervo Economic Research PTT website: http://www.ptt.fi/eaae-njf/papers/ferto.pdf.

Fischer C., and Schornberg, S. (2007). The competitiveness situation of the EU meat processing and beverage manufacturing sectors. *Food Economics-Acta Agriculturae Scandinavica.* Section C. 4: 148-158.

Foreign Office. (2004). *Kitchen of the World*. The Government Public Relations Department. Retrieved from http://thailand.prd.go.th

Global Trade Information System. (2009). Subscribe online database on agricultural and food trading. Retrieved from http://www.gtis.com/gta

Gorton, M., Danilowska, A., Jarka, S., Straszewski, S., Zawojska, A., and Majewski, E. (2001). The international competitiveness of Polish agriculture. *Post-Communists Economies.* 13: 445-457.

Graslund, S. and Bengtsson, B.E. (2001). Chemicals and biological products used in South-East Asian shrimp farming, and their potential impact on the environment. *The Science of the Total Environment.* 280: 93-131.

Hailu, A, and Veeman, T. S. (2001). Non-parametric productivity analysis with undersirable outputs: An application to the Candian pulp and paper industry. *Amer. J. Agr. Econ.* 83(3): 605-616.

Han, X., Wen, Y.l., and Kant, S. (2009). The global competitiveness of the Chinese wooden furniture industry. *Forest Policy and Economics.* 11: 561-569.

Havrila, I. and Gunawardana, P. (2003). Analysing comparative advantage and competitiveness: An application to Australia's textile and clothing industries. *Australian Economics Papers*. March: 103-117.

Hunt, S.D., and Robert, M.M. (1995). The comparative advantage theory of competition. *Journal of Marketing.* 59(April): 701:721

Infoyu. (2007). *FDA Exempts Guolian Shrimp*. (Sept 20, 2007). Infoyu: Fish Info Network. Retrieved from http://www.infoyu.net/NewsCenter/MarketTrade/07-9-20-30.html

Islam, S.M. (2008). From pond to plate: Towards a twin-driven commodity chain in Bangladesh shrimp aquaculture. *Food Policy.* 33: 209-223.

Ismail, M.M., and Radam A. (2004). *Competitiveness of the Malaysian Food Processing Industry.* Universiti Putra Malaysia Press, Malaysia.

Ismail, M.M., Radam A., Zainalabidin, M. (2005). *Trade Performance of Selected Food Sub-sectors in Malaysian.* Universiti Putra Malaysia Press, Malaysia.

Johnston, D., Nguyen, V.T., Truong, T.T., and Tran, T.X. (2000). Shrimp seed recruitment in mixed shrimp and mangrove forestry farms in Ca Mau province, Southern Vietnam. *Aquaculture*. 184: 89-104.

Kagawa, M. *Trade Linkage in Shrimp Exports: Japan, Thailand and Vietnam*. Paper presented at the 2003 Meetings of the Rural Sociological Society. August, 2003, pp. 1-13.

Kunimoto, K. (1977). Typology of trade intensity indices. *Hitotsubashi Journal of Economics.* 17: 15-32.

Lebel, L. Nguyen, H.T., Amnuay, S, Suparb, P., Urasa, B., and Le, K.T. (2002). Industrial transformation and shrimp aquaculture in Thailand and Vietnam: Pathways to ecological, social, and economic sustainability? *Ambio.* 31: 311-323.

Lee, W.C., Chen, Y.H., Lee, T.C., and Liao, I.C. (2003). The competitiveness of the aquaculture in Taiwan, Japan, and China. *Aquaculture.* 221: 115-124.

Leishman, D., Menkhaus, J.D., and Whipple, D.G. (1991). *Revealed Comparative Advantage and the Measurement of International Competitiveness for Agriculture Commodities: An Empirical Analysis of Wool Exporters*. Paper Presented in 1999 Annual Meeting of Western Agriculture Economics Association, July, 11-14, Fargo, ND. (Number: 35691). Retrieved from Agecon Search website: http://ageconsearch.umn.edu/handle/35691.

Li, H.Y., Wei, X.D., and Xie, D.Y. (2009). Competitiveness of the Hong Kong economy. *China Economic Review*. 20: 573-586.

Li, K.W. (2002). *Capitalist development and economism in East Aisa: The rise of Hong Kong, Singapore, Taiwan and South Korea*. London: Routledge.

Liesner, H.H. (1958). The European common market and British industry. *The Economic Journal*. 68: 302-316.

Ling, F.H., Leung, P.S., and Shang, Y.C. (1999). Comparing Asian shrimp farming: The domestic resource cost approach. *Aquaculture.* 175: 31-48.

Liu, Y.H., and Luo, H. (2004). Impact of globalization on international trade between ASEAN-5 and China: Opportunities and challenges. *Global Economy Journal.* 4(Article 6): 1- 18.

Lowinger, T.C. (1971). The neo-factor proportion theory of international trade: An empirical investigation. *The American Economic Review.* 61(4): 675-681.

Ma, L.J. (2009). International comparison of the export competitiveness of Chinese honey. *Asian Agriculture Research.* 1: 17-20.

Manarungsan, S., Naewbanij, J. O., and Rerngjakrabhet, T. (2005). Shrimp, fresh asparagus, and frozen green soybeans in Thailand. *The World Bank*, Agriculture and Rural Development Discussion Paper 16. pp. 1-61.

Martinez-Cordero, J.F., and Leung, P.S. (2004) Sustainable aquaculture and producer performance: Measurement of environmentally adjusted productivity and efficiency of a sample of shrimp farms in Mexico. *Aquaculture.* 241: 249-268.

Mazuki, H. (2008). *Introduction of Whiteleg Pacific Shrimp (Panaeus vannamei) and its Impact on Aquaculture Development in Malaysia*. Fifth National Fisheries Symposium, Terengganu.

Memedovic, (1994). *On Theory and Measurement of Comparative Advantage*. Tinbergen Institute Research Series n.65, Amsterdam, Thesis Publishers.

Ministry of Agriculture and Agro-Based Industry. (2010). *Pelan Tindakan Pembangunan Industri Ikan Hiasan bawah Pelaksanaan Strategi Dasar Agromakanan Negara (DAN,) 2011-2020*. Putrajaya.

Mosoma, K. (2004). Agriculture competitiveness and supply chain integration: South Africa, Argentina and Australia. *Agrekon.* 43: 132-144.

Nadaraja, P. (2013). *Free Trade Areas and its Related Customs Procedures in Malaysia* [Lecture notes]. Malaysia Export Academy.

Neiland, E.A., Soley, N., Varley, B.J., and Whitmarsh, J. D. (2001). Shrimp aquaculture: economic perspectives for policy development. *Marine Policy*. 25: 265-279.

Office of Agricultural Affairs. (2004). *Thailand: Kitchen of the World: Special Report*. Royal Thai Embassy, Washington, D.C. Retrieved from www.thaiproduce.org

Othman, M.F. (2008). Recent report on coastal/marine aquaculture status in Malaysia, In A. Lovatelli, M.J. Philips, J.R. Arthur and K. Yamamoto (eds). FAO/NACA Regional Workshop on the Future of Mariculture: A regional approach for responsible development of marine farming in the Asia pacific region.

Guangzhou, China. 7-11 March 2008. FAO Fisheries Proceedings, 207-224. No. 11 Rome, FAO.

Oosterveer, P. (2006). Globalization and sustainable consumption of shrimp: Consumers and governance in the global space of flows. *International Journal of Consumer Studies.* 30: 465-476.

Parker, M.P. (2005). *The 2006-2011 World Outlook for Canned Shrimp Excluding Stews, and Chowders*. ICON group International Inc.

Pitts, E. and Lagnevik, M. (1998). What Determines Food Industry Competitiveness. Chapter 1 in Traill, W. B. & Pitts, E. (Eds.), *Competitiveness in the Food Industry*. Blackie Academic & Professional, pp. 1-34.

Primavera, J.H. (1998). *Tropical Shrimp Farming and its Sustainability*. In: De Silva S, editor. Tropical Mariculture. London: Academic Press, pp.257-289.

Rachman, H. (2005). *Analyzing the Competitiveness of Indonesian Agriculture Commodities Under WTO Commitment.* Working paper Series. Retrieved from Social Science Research Network website: http://papers.ssrn.com/sol3/papers.cfm?abtract_id=835825.

Rakotoarisa, M. and Gulati, A. (2006). Competitiveness and trade potential of India's dairy industry. *Food Policy.* 31: 216-227.

Ricardo, D. (1817). *On the Principles of Political Economy and Taxation*. John Murray, London.

Sabatini, P. and O'Sullivan Globefish. (2003). Shrimp Commodity Update. *Globefish, Food and Agriculture Organization of the United Nations*. pp. 1-76.

SeafoodSource. U.S. Shrimp Exports up again in August. *SeafoodSource*. 2010, Retrieved from www.seafoodsource.com

Serin, V., and Civan, A. (2008). Revealed comparative advantage and competitiveness: A case study for Turkey towards the EU. *Journal of Economic and Social Research.* 10: 25-41.

Shang, Y.C., Leung, P.S. and Ling, B.H. (1998). Comparative economics of shrimp farming in Asia. *Aquaculture.* 164: 193-200.

Shrimp Media Monitoring. South Korean keen on shrimp farming joint ventures. *Shrimp Farming and the Environment*, October 7-21, 2002. pp. 1.

Siggel, E. (2006). International competitiveness and comparative advantages: A survey and a proposal for measurement. *Journal of Industry Competition and Trade.* 6: 137-159.

Stanley, L.D. (1999). Labour market structure, new export crops, and inequality: The case of mariculture in Honduras. *Economic Development and Culture Change*. 48: 71-99.

Tai Shzee Yew, Kusairi M. N., Nik Mustapha R. A., and Ishak O. (2007). Fisheries Sector Development. Chapter 22 in Fatimah M. A. et al., *50 Years of Malaysian Agriculture: Transformational Issues, Challenges and Direction*. Universiti Putra Malaysia. UPM Press.

Travkina, I and Tvaronaviciene, M. (2010). *An Investigation into Relative Competitiveness of International Trade: The Case of Lithuania*. Papers presented in the 6th International Scientific Conference, May 13-14, 2010, Vilnius, Lithuania. Retrieved from Vilnus Gediminas Technical University website: http://www.vgtu.lt/leidykla/BUS_AND_

MANA_2010/International_Economy/505510_Travkina_Tvaronaviciene.pdf.

USA Today. Malaysia's 2009 exports to shrink amid slowdown. *USA Today*. 2009. Retrieved from www.usatoday.com

Vandergeest, P. (2007). Certification and communities: Alternatives for regulating the environment and social impacts of shrimp farming. *World Development.* 35: 1152-1171.

Viaene, J. and Gellynck, X. (1998). Small Firms, Oil Traditions Equals Low Profit: Pigmeat Processing in Belgium. Chapter 5 in Traill, W. B. & Pitts, E. (Eds.), *Competitiveness in the Food Industry*. Blackie Academic & Professional, pp. 149-178.

Vollrath, L.T. (1991). A theoretical evaluation of alternative trade intensity measures of revealed comparative advantage. *Weltwirtschaftliches Archiv*. 127: pp. 265-280.

Wijnands, J.H.M., Bremmers, J.H., Meulen, B.M.Jvd., and Poppe, K.J. (2008). An economic and legal assessment of the EU food industry's competitiveness. *Agribusiness*. 24(4): 417-439.

Wijnands, J.H.M., Bremmers, J.H., Meulen, B.M.Jvd., and Poppe, K.J. (2010). *Competitiveness and Innovativeness of the EU Dairy Industry*. Paper presented at the 9th Wageningen International Conference on Chain and Netwrok Management, Wageningen, The Netherlands.

Xie, B., Ding, Z.H., and Wang, X.R. (2004). Impact of the intensive shrimp farming on the water quality of the adjacent coastal creeks from Eastern China. *Marine Pollution Bulletin*. 48: 543-553.

Xinhua. (2007). *Mainland's Shrimp to Taiwan Safe, CFNA Says*. (Sept 5, 2007). People's Daily Online.Retrived from http://english.people.com.cn/90001/9077

8/6255829.html.

Yercan, M. and Isikli, E. (2007). International competitiveness of Turkisg agriculture: a case for horticultural products. *Food Economics- Acta Agriculturae Scandinavica, Section C.* 4: 181-191.

Yu, R., Cai, J.N., Matthew Loke, L., and Leung, P.S. (2010). Assessing the comparative advantage of Hawaii's agriculture exports to the US mainland market. *The Annals of Regional Science.* 45: 473-485.

Yu, R., Leung, P.S. and Paul, B.F. (2006). Optimal production schedule in commercial shrimp culture. *Aquaculture.* 254: 426-441.

Zhang, C. (2009). *China Shrimp Exports Soar*. Seafood News Supply & Trade. Retrieved from http://www.seafoodsource.com