

**ÇUKUROVA UNIVERSITY
INSTITUTE OF NATURAL AND APPLIED SCIENCES**

MSc THESIS

An-nur EMPAL

**EXPORT COMPETITIVENESS OF SELECTED
AGRICULTURAL PRODUCTS OF THE PHILIPPINES**

DEPARTMENT OF AGRICULTURAL ECONOMICS

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FACULTY OF AGRICULTURE**

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ÖZ

YÜKSEK LİSANS TEZİ

**FİLİPİNLER’İN SEÇİLMİŞ TARIMSAL ÜRÜNLERDE İHRACAT
REKABETİ**

An-nur EMPAL

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Filipinler uluslararası piyasalarda çeşitli tarımsal ürünlerin ihracatında güçlüklerle karşılaşmakta ve diğer ASEAN üyesi ülkelerle rekabet etmektedir. Bu çalışmanın temel amacı Filipinler tarım sektörünün uluslararası piyasalardaki rekabet edebilirlik düzeyinin genel bir değerlendirmesini yapmaktır. Filipinler ve ASEAN üyesi ülkeler arasında tarımsal ihracat konusunda rekabet gücünü incelemek amacıyla Açıklanmış Karşılaştırmalı Üstünlükler Endeksleri ile Pazar Payı Endekslerinden yararlanılmıştır. Analiz sonuçları, birleştirilmiş tarım ürünleri gruplarında Filipinlerin, diğer ASEAN üyesi ülkeler karşısında güçlü bir karşılaştırmalı rekabet avantajına sahip olmadığını göstermektedir. Öte yandan, Filipinler, Hindistan Cevizi Yağı, Muz ve Ananas ürünlerinde ASEAN ülkesi üyeler arasında en rekabetçi konumda olan ülke olarak bulunmuştur. Genel olarak Filipinler devleti ve özel sektörünün tarım sektörünü güçlendirmek için büyük çaba sarf etmesi ve tarımsal ihraç ürünlerini çeşitlendirmek üzere yüksek düzeyde yatırımlar yapması gerekmektedir. Ayrıca, çalışma ASEAN üyesi ülkelerin çoğunun sebze ürünlerinde güçlü bir karşılaştırmalı üstünlüğe sahip olduğunu ve bazılarının özel ürünlerde karşılaştırmalı üstünlük sağladığını ortaya koymuştur. Uluslararası bir örgütlenme olan ASEAN'a kuruluş amaçlarına uygun bir şekilde fayda sağlayacak ortak tarımsal ticaret politikaları geliştirilmesi tüm üye ülkeler açısından yararlı olacaktır.

Anahtar Kelimeler: Açıklanan Karşılaştırmalı Ticaret Endeksleri, İhracat Rekabet Edebilirliği, Pazar Payı Endeksi, Filipinler Tarımı

ABSTRACT

MSc THESIS

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The Philippines is facing major challenges and competition from ASEAN co-member countries in agricultural exports in the international market. The main objective of this study is to give an overall view and assessment of the level of competitiveness of the Philippines agricultural sector in the international market. To examine the export competitiveness of agricultural products between the Philippines and ASEAN co-member countries, Revealed Comparative Trade Advantage Index and Market Share Index Analyses were used. Analyses found that for the aggregated agricultural products the Philippines does not have a strong revealed comparative trade advantage position against ASEAN co-member countries. Meanwhile, the Philippines had completely dominated Coconut Oil, Banana and Pineapple international market and found to be the most competitive country among ASEAN co-member countries. In general, it is necessary for the Philippine government and the private sector to give a great effort in boosting the agriculture sector and high-level investments need to be strengthened to diversify the agricultural export products. Furthermore, the study has revealed that majority of ASEAN member countries had a strong comparative advantage in vegetable products, and some had revealed comparative advantage in specialized products. Thus, developing common agricultural trade policies would be very beneficial to all ASEAN co-member countries, which is also in line with the objectives of ASEAN.

Keywords: Revealed Comparative Advantage Index, Export Competitiveness, Market Share Index, Philippines Agriculture

GENİŞLETİLMİŞ ÖZET

Filipinler'de tarım sektörü, değer olarak ülke ekonomik üretiminin yaklaşık yüzde yirmisini oluşturmaktadır. Ayrıca sektör toplam 11,2 milyon kişiye istihdam yaratmaktadır. Bu ise ülke istihdamının yaklaşık %29'una karşılık gelmektedir. Tarımsal ve tarıma dayalı sanayileri de kapsayan tarımsal iş (agri-business) sektörü de dikkate alındığında, tarımın Filipinler'de gerek doğrudan gerek dolaylı olarak oldukça önemli bir sektör olduğu ve GSYİH'nın % 40'ının, ekonomide gerçekleştirilen işlerin üçte ikisinin tarımdan kaynaklandığı görülür.

Filipin hükümeti son yirmi yılda ekonomiyi canlandırmaya yönelik ticaret ve yatırımlarla ilgili önemli politik reformları hayata geçirmiştir. Ayrıca, dünya pazarında ihracatı teşvik ederek dışa yönelik bir sanayileşme stratejisi izlemiştir. Ekonomik teori, liberalizasyonun ekonomik faaliyet ve rekabeti teşvik ettiğini, daha iyi kaynak tahsisi yoluyla kaynakların etkin kullanımını artırdığını söylemektedir. Bu teoriye göre; daha fazla ekonomik faaliyet, daha çok iş ve artan gelir anlamına gelmektedir. Etkinlik ve verimliliğin artması, daha düşük maliyetlere, bu ise daha düşük üretim maliyetleri demektir, bu ise tarım ürünlerinin ucuzlamasına yol açacaktır.

Ülkenin tarımsal ihracatının, geleneksel olmayan mamul ürün ihracatının eriştiği düzeyi yakalaması gerçekçi olmasa da, Filipinler açısından uluslararası pazarda bazı tarım ürünlerinin üretim ve rekabet gücünü artırmak için hâlâ çok şey yapılabilir. Ülkenin, hindistancevizi, muz, ananas ürünleri ve ton balığı, ayrıca tropik meyveler ve taze sebzeler için bir rekabet avantajı potansiyeline sahip olduğunu belirtmekte fayda bulunmaktadır.

Öte yandan Filipinler, uluslararası pazarda çeşitli tarımsal ürünlerde büyük zorluklarla karşı karşıyadır ve ASEAN ülkeleri ile de rekabet içerisindedir. Dolayısıyla, Filipinler tarımının rekabet gücünün uluslararası ticaret alanında ASEAN üye ülkeleri ile karşılaştırmalı olarak incelenmesi ve bir karşılaştırmalı üstünlük analizi yapılması dünya pazarında Filipinler ve ASEAN ticaretinin

durumunu ortaya koymak açısından önem taşımaktadır. Filipinler uluslararası piyasalarda rekabet gücünün artırılması açısından önemli bir potansiyele sahiptir. Ancak, uluslararası piyasalarda rakip ülkelerin de bulunması nedeniyle ihracatın rekabet edebilirliğinin araştırılması, zayıf veya geliştirilmesi gereken noktaların belirlenmesinde büyük yarar sağlayacaktır. Bu nedenle, bu araştırmanın temel amacı, Filipinler'in uluslararası tarımsal ticarete rekabet gücünü analiz etmek ve belirlemek için mütevazı bir girişimde bulunmak ve ASEAN ortak ülkeleri arasında karşılaştırmalı üstünlüğe sahip ürünleri ortaya koymak olarak tasarlanmıştır.

Çalışma ikincil verilere dayanmaktadır. Çalışmada kullanılan veriler, Filipin Tarım Bakanlığı, Ticaret ve Sanayi Bakanlığı, Filipinler İstatistik Kurumu vb. gibi ilgili devlet kurumlarından temin edilmiştir. Buna ek olarak, dış ticaret verileri Gıda ve Tarım Örgütü (fao.org), Dünya Bankası (data.worldbank.org), ASEANstats.org'dan ve diğer uluslararası kurumların web sitelerinden edinilmiştir. Bununla birlikte çalışmada tarımsal dış ticaret ve küresel rekabetçilik ile ilgili yerli-yabancı raporlar, makaleler, kitaplar ve dergilerden faydalanılmıştır.

Uluslararası ticarete rekabet konusunda çeşitli kuramlar ileri sürülmüştür.. Bunlar politika yapıcılar tarafından hem mikro hem de makro düzeyde öngörülen kuramlardır. Uluslararası ticarete rekabet teorisi, bir ülkenin bireysel olarak veya bir devlet grubuna bağlı olarak rekabet edebilirliğini ortaya koymaktadır.

Merkantilist yaklaşım korumacılık politikasının, çeşitli açılardan faydalı olabileceğini söylemektedir.. AB ülkeleri gibi bazı devletler bu ekonomik sistemi uygulayıp ekonomik büyüme sağlamıştır. Öte yandan, en yaygın yaklaşım olan ve günümüzde küresel olarak uygulanmakta olan liberalizme ve karşılaştırmalı üstünlükler kuramına göre, serbest ticaret sisteminde belirli bazı mallarda uzmanlaşma ülkelerin verimlilik ve ekonomik büyümelerinde anlamlı bir artış sağlayacaktır. Ancak, bağımlılık teorisi ve yapısalılık, azgelişmiş ülkelerin ekonomik durumuna daha fazla zararlı etki getirebileceğinden, gelişmiş ülkelere

yoğunlaşmış ve onların ihtiyaçlarına göre uzmanlaşmış birincil mal veya ürünlerin serbest ticaretinde dikkatli olunmasını önermektedir.

Bu çalışmada, Balassa'nın RCA endeksi ve Vollrath'ın geliştirdiği ticaret avantaj endeksleri Filipinler'de seçilen ürünlerin karşılaştırmalı ticaret avantajını göstermek amacıyla kullanılmıştır. Ayrıca, pazar payı endeksi, Filipinler ve rakiplerinin olan diğer ASEAN üye ülkelerinin pazar paylarını ortaya koymak amacıyla kullanılmıştır. Maliyetleri, sübvansiyonları, dışsal faktörleri, çeşitli ticaret politikalar ve ticari engelleri dikkat almama gibi birçok kısıtlılıklarının bulunmasına rağmen bu yöntemler basitlikleri, karşılaştırılabilirlikleri ve yaygın kullanımları nedeniyle seçilmiştir.

Açıklanmış Karşılaştırmalı Ticaret Avantaj Endeksleri ve Pazar Payı Endeks hesaplarında kullanılan verileri, Harmonize Sisteme göre sınıflanmış ihracat ve ithalat verilerine dayanmaktadır. 2000'den 2016'ya kadarki dönemi kapsayan veriler UN COMTRADE'den elde edilmiş ve Dünya Bankası'nın Dünya Entegre Ticaret Çözümleri (WITS) sistemi aracılığıyla elde edilmiştir.

Açıklanmış Karşılaştırmalı Ticaret Avantaj Endeksleri ve Pazar Payı Endeksleri analizleri iki bölüm halinde yapılmıştır. İlk bölümde, birleştirilmiş tarımsal ürünlerin Açıklanmış Karşılaştırmalı Ticaret Avantaj endeksleri ve Pazar Payı endeksleri hesaplanmıştır. İkinci kısımda ise aynı işlemler bireysel ürünler için yapılmıştır. Birleştirilmiş ürünler: 1. Hayvansal Ürünler; 2. Sebze Ürünleri; 3. Hazır Gıda Ürünleri ve Seçilen Bireysel ürünler ise; Pirinç; Mısır; Muz; Ananas; Hindistancevizi Yağı ve Kahveden oluşmaktadır.

Analiz sonuçlarına göre, birleştirilmiş tarım ürünleri için Filipinler'in ASEAN ortak üyesi ülkelere karşı güçlü bir açıklanmış karşılaştırmalı ticaret avantajı pozisyonuna sahip olmadığı belirlenmiştir. Bu arada Filipinlerin, Hindistan Cevizi Yağı, Muz ve Ananas ürünlerinde uluslararası pazara tamamen hâkim olduğu ve ASEAN ortak ülkeleri karşısında en rekabetçi ülke olduğu görülmüştür. Ülkenin ticari açıdan dezavantajlı olduğu ürünler ise pirinç, mısır ve kahvedir.

Ancak, ülkenin küresel pazarda muz, ananas ve hindistancevizi yağında karşılaştırmalı üstünlüğe sahip olduğu konusunda dikkat edilmesi gereken bazı hususlar vardır. Bir üründe avantajlı olmak ve bu avantajdan yararlanmak farklı kavramlardır çünkü dünyadaki bazı ürünleri üretmese de önce ithal edip yeniden ihraç ederek üreten ülkelerden bile daha fazla kazanç sağlayan bazı ülkelerin varlığı bilinmektedir.

Genel olarak Filipinler devleti ve özel sektörünün tarım sektörünü güçlendirmek için büyük çaba sarf etmesi ve tarımsal ihraç ürünlerini çeşitlendirmek üzere yüksek düzeyde yatırımlar yapması gerekmektedir. Filipinler, belirli bazı ürünlerin geliştirilmesine daha fazla yoğunlaşmalı ve bunları daha verimli hale getirmelidir. Gerek ürün, gerekse de ihraç edilecek ülke çeşitlendirmesi Filipinler için yararlı olacaktır.

ASEAN bölgesel ticareti, ekonomik büyümeyi ve istikrarı kolaylaştırmak, bölge ülkeleri arasında işbirliğini arttırmak amacıyla kurulmuş bir örgütlenmedir. Çalışma ASEAN üyesi ülkelerin çoğunun sebze ürünlerinde güçlü bir karşılaştırmalı üstünlüğe sahip olduğunu ve bazılarının bazı özel ürünlerde karşılaştırmalı üstünlük sağladığını ortaya koymuştur. Bu nedenle, politika yapıcılar ASEAN'ın kuruluş amaçlarına uygun ve ortak faydayı gözetecek şekilde ortak bir tarımsal ticaret politikası geliştirmelidirler.

Çalışmanın sınırlamaları göz önüne alındığında, gelecekte benzer araştırmaların, çalışmayı maliyet, fiyat, ihracat sübvansiyonları ve çeşitli engel ve dışsalılıkları da dikkate alan analizlere doğru genişletmeleri önerilir.

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CONTENTS	PAGE
ÖZ	I
ABSTRACT.....	II
GENİŞLETİLMİŞ ÖZET	III
ACKNOWLEDGEMENTS.....	VII
CONTENTS.....	VIII
LIST OF TABLES	X
LIST OF FIGURES	XII
ABBREVIATIONS	XIV
1. INTRODUCTION	1
1.1. Agriculture in the Philippines	1
1.2. Agriculture in the Southeast Asian Region.....	3
1.3. International Trade Performance of Philippines Agriculture.....	5
1.3.1. Top Agricultural Exports.....	6
1.3.2. Trade Performance among ASEAN Co-member Countries	7
1.4. Importance and Objectives of the Study	8
2. PREVIOUS STUDIES.....	11
3. MATERIALS AND METHOD	17
3.1. Materials	17
3.2. Theoretical Framework.....	20
3.3. Method	23
3.3.1. Revealed Comparative Advantage Index	24
3.3.2. Vollrath's Trade Indices.....	25
3.3.3. Market Share Index	27
4. RESULTS AND DISCUSSIONS.....	29
4.1. Aggregated Agricultural Products	29
4.1.1. Animal Products	29
4.1.2. Vegetable Products	33

4.1.3. Prepared Foodstuff Products.....	37
4.2. Selected Agricultural Products.....	40
4.2.1. Rice.....	40
4.2.2. Corn	45
4.2.3. Banana	49
4.2.4. Pineapple	53
4.2.5. Coconut Oil	57
4.2.6. Coffee	62
4.3. Summary of Findings.....	66
4.3.1. Summary of Aggregated Agricultural Products	67
4.3.2. Summary of Selected Agricultural Products	69
5. CONCLUSIONS AND RECOMMENDATIONS	73
5.1. Conclusions:	73
5.2. Recommendations:	74
REFERENCES:	79
CURRICULUM VITAE	85
APPENDICES	87

LIST OF TABLES	PAGE
Table 1.1. Philippines Population, Labor Force, Agricultural Employment and Expenditures, 2011-2015.....	1
Table 1.2. Philippines Agricultural Growth Rate versus major ASEAN member Countries, 1961-2015	2
Table 1.3. Agricultural Exports Value (FOB Value), in Million US\$; Percentage Contribution to GDP, 1980-2015	6
Table 1.4. Value and Share of Top Ten Agricultural Exports: Philippines	7
Table 1.5. Value of Agriculture Exports of Major ASEAN countries, (in 1000 USD).....	9
Table 4.1. Revealed Comparative Trade Indices of Animal Products	31
Table 4.2. Market Share Index of Animal Products.....	32
Table 4.3. Revealed Comparative Trade Indices of Vegetable Products.....	35
Table 4.4. Market Share Index of Vegetable Products	36
Table 4.5. Revealed Comparative Trade Indices of Prepared Foodstuff Products .	38
Table 4.6. Market Share Index of Prepared Foodstuff Products.....	39
Table 4.7. Revealed Comparative Trade Indices of Rice.....	43
Table 4.8. Market Share Index of Rice	44
Table 4.9. Revealed Comparative Trade Indices of Corn.....	47
Table 4.10. Market Share Index of Corn	48
Table 4.11. Revealed Comparative Trade Indices of Banana.....	52
Table 4.12. Market Share Index of Banana	53
Table 4.13. Revealed Comparative Trade Indices of Pineapple	56
Table 4.14. Market Share Index of Pineapple.....	57
Table 4.15. Revealed Comparative Trade Indices of Coconut Oil	60
Table 4.16. Market Share Index of Coconut Oil.....	61
Table 4.17. Revealed Comparative Trade Indices of Coffee	65
Table 4.18. Market Share Index of Coffee.....	66

Table 4.19. Summary of Findings in B-index and lnRXA of Aggregated Agricultural Products	68
Table 4.20. Summary of Findings in RTA and RC of Aggregated Agricultural Products	68
Table 4.21. Summary of Findings in B-index and lnRXA of Selected Agricultural Products	70
Table 4.22. Summary of Findings in RTA and RC of Selected Agricultural Products	71



LIST OF FIGURES	PAGE
Figure 1.1. Philippines Gross Value Added in Agriculture, Growth Rate, 1996-2016	3
Figure 1.2. Exports and Imports by ASEAN co-member Countries: Philippines, 2016	8
Figure 1.3. Value of Agriculture Exports of Major ASEAN countries.....	9
Figure 3.1. Map of ASEAN Region.....	18
Figure 4.1. Market Share Index of Animal Products	33
Figure 4.2. Market Share Index of Vegetable Products	37
Figure 4.3. Market Share Index of Prepared Foodstuff Products	39
Figure 4.4. Philippines Rice Area Harvested, Production and Yield.....	40
Figure 4.5. Philippines Rice Export and Import Quantity	41
Figure 4.6. Market Share Index of Rice.....	44
Figure 4.7. Philippines Corn Area Harvested, Production and Yield	45
Figure 4.8. Philippines Corn Export and Import Quantity	46
Figure 4.9. Market Share Index of Corn	48
Figure 4.10. Philippines Banana Area Harvested, Production and Yield	49
Figure 4.11. Philippines Banana Export and Import Quantity.....	50
Figure 4.12. Market Share Index of Banana	53
Figure 4.13. Philippines Pineapple Area Harvested, Production and Yield	54
Figure 4.14. Philippines Pineapple Export and Import Quantity	55
Figure 4.15. Market Share Index Pineapple.....	57
Figure 4.16. Philippines Coconut Area Harvested, Production and Yield.....	58
Figure 4.17. Philippines Coconut Oil Export and Import Quantity	59
Figure 4.18. Market Share Index of Coconut Oil.....	62
Figure 4.19. Philippines Coffee Area Harvested, Production and Yield	63
Figure 4.20. Philippines Coffee Export and Import Quantity	64



ABBREVIATIONS

ASEAN	: Association of Southeast Asian Nations
BRN	: Brunei Darussalam
EU	: European Union
FAO	: Food and Agriculture Organization
GDP	: Gross Domestic Product
GVA	: Gross Value Added
IDN	: Indonesia
KHM	: Cambodia
LAO PDR	: Lao People's Democratic Republic
lnRXA	: Logarithm of Revealed Export Advantage
MMR	: Myanmar
MSI	: Market Share Index
MYS	: Malaysia
PHL	: Philippines
PSA	: Philippine Statistics Authority
RC	: Revealed Competitiveness
RCA	: Revealed Comparative Advantage
RMA	: Revealed Import Advantage
RTA	: Relative Trade Advantage
RXA	: Revealed Export Advantage
SGP	: Singapore
THA	: Thailand
UNCOMTRADE	: United Nation Commodity Trade Statistic Database
UN	: United Nation
USD	: United States Dollar

VNM

: Vietnam



1. INTRODUCTION

1.1. Agriculture in the Philippines

The total agricultural land area of the Philippines in 2015 was approximately 124, 000 sq. km. or 41.72% of the country's total land area. Arable land with temporary crops planted is estimated at 18.75% while the land area under permanent crops planted is estimated at 17.94% and irrigated farmlands are about 9.27% of the total agricultural land area (World Bank, 2016a).

In 2015, the country's total population was approximately 100.98 million persons while labor force was totaled to 41.34 million persons and the agricultural sector allocates direct employment for about 11.29 million persons or 27 percent of the country's workforce (Table 1.1). From the perspective of agribusiness, direct and indirect agriculture has the dominant share of productivity and employment in the Philippines. When taken into account agricultural product distribution, inputs and agro-processing approximately 40 percent of the total Gross Domestic Product of the Philippines or around two-thirds of the workforce in the economy comes from agriculture.

Table 1.1. Philippines Population, Labor Force, Agricultural Employment and Expenditures, 2011-2015 (PSA, 2016a)

Item	2011	2012	2013	2014	2015
Population (million persons)	94.82	96.51	98.20	99.88	100.98
Labor Force (million persons)	40.00	40.43	41.02	41.38	41.34
Agricultural Employment (%)	12.27	12.09	11.84	11.80	11.29

In the 1960s and 1970s, one of the most promising sectors in the Philippines was agriculture (Table 1.2). This was caused by the initiation of the Green Revolution program and the growth in this sector was rapid in that period. The Philippines amongst its neighboring countries in Southeast Asia performed

better or equal with an annual relative growth of at least 4 percent in the agriculture sector. During this period, huge investments in agriculture, improvements in irrigation systems, improved high-yielding varieties of crops increased planted area more than twice to 1.23 million hectares in the 1980s from 541,000 hectares in 1964.

However, during 1980s and 1990s, up until the year 2015, the boost in growth declined rapidly by 1 percent and 2 percent, respectively, probably one of the worst figures in the Southeast Asian region (Table 1.2), this was brought by the bias intrinsic anti-policies against agriculture and the collapse of commodity prices in the world market (David, 2003). Subsequently, markets in rural areas were weak because the poor had low purchasing power for consumer goods.

Table 1.2. Philippines Agricultural Growth Rate versus major ASEAN member Countries, 1961-2015 (World Bank, 2016b)

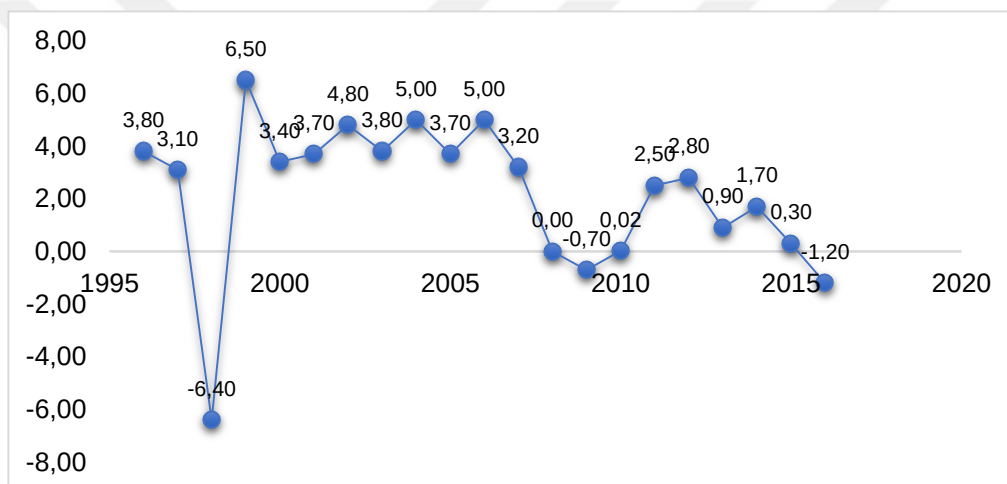
COUNTRY	1961- 1970	1971- 1980	1981- 1990	1991- 2000	2001- 2010	2011- 2015
Indonesia	2.7	4.1	3.6	2.1	3.4	4.1
Malaysia	N/A	5.0	3.4	0.9	3.1	2.6
Philippines	4.3	4.0	1.0	2.0	2.8	1.6
Thailand	5.6	4.4	3.9	2.3	2.2	0.6
Singapore	N/A	2.8	-4.5	-3.5	-2.8	2.9
Vietnam	N/A	N/A	2.8	4.2	3.4	3.1

*N/A = no data available

Unfortunately, the Philippines growth rate for gross value added in agriculture had tended to fluctuate broadly from year to year thus exhibits the most unstable growth rates among the main sectors of the economy. Over the past two decades, the Philippines agriculture sector suffered from various deterrents. Figure 1.1 shows that in 1998, due to the massive El Niño weather phenomenon, agricultural production dropped sharply, and growth was recorded as -6.4 percent. Even so, in 1999 a rapid full recovery at 6.50 percent occurred since it is also due to the abnormally low base of the previous year. From the period 2000-2007 the

growth rate average was more or less 4 percent yearly but did not last until the year 2009 (-0.70) where the world suffered a global financial crisis. Whilst it is initially regaining growth in 2010 a major downfall from 2013 until 2016 was recorded. In 2016, a continuous decline of GVA from the major agricultural crops was noted such as banana by 2.0 percent, coconut by 5.9 percent, sugarcane by 0.7 percent, coffee by 4.9 percent and rice and corn 4.9 and 2.0 percent respectively.

Figure 1.1. Philippines Gross Value Added in Agriculture (annual % growth)
(PSA, 2017a)



1.2. Agriculture in the Southeast Asian Region

ASEAN is one of the most productive agricultural baskets in the world. In 2012, the region produced 129 million tons of rice, 40 million tons of corn, 171 million tons of sugarcane, 1.44 million tons of soybean, and 70.34 million tons of cassava. Rice production in the next years was forecasted to increase by 3% to 132.87 million tons. Rice exports, domestic utilization, and self-sufficiency ratio are all expected to increase in next years. ASEAN is likely to increase exports to 18.28 million tons. While domestic utilization is projected to increase to 114.57 million from 113.04 million tons in 2012, self-sufficiency (production to domestic utilization) ratio is still assured at 116% (asean.org, 2012). Despite being the main staple crop and food producers, most of the ASEAN countries have not yet reached

their production limits. Investors are benefiting from the region's balanced climate, fertile lands and a mix of plains and highlands, forests, rivers and coastline, not only in the production of crops and livestock, but also in the food supply chain, agricultural infrastructure and security, and agribusiness.

There is a high optimism about the growth of the agricultural sector in the region. The ASEAN region is home to about 600 million people, while the main food markets, East Asia and South Asia, have a population of about 1.6 billion and 1 million, respectively. Most of these populations form part of the growing middle class, with increasing purchasing capacity and changing preferences for high-value foods, whether organic or processed from food staples (asean.org, 2012).

In 2015 the agricultural sector is off to reach its target for the ASEAN Economic Community through increased efforts to ease trade between member states, allowing the goods to move more rapidly over long distances. The plan is to improve niche-based agriculture and reduce trade barriers and support the construction of the necessary infrastructure.

Myanmar, Thailand, Laos and Cambodia of the Greater Mekong Sub-region, which has sufficient water supplies and lowland areas for tropical agriculture, have attached great importance to internal transport routes to facilitate the movement of agricultural commodities and food supply. For example, Ital-Thai company looks at the USD 48 billion deep sea port and private economic zone project in Dawei (Tavoy), which will facilitate the purchase and sale of goods directly to the Indian Ocean from the east. Moreover, priority is also given to the ASEAN Highway Network, which includes the completion of the Kunming Railway Connection in Singapore, aimed at upgrading class roads and connecting ASEAN countries (Singapore, Malaysia, Thailand, Cambodia, Vietnam, Myanmar and Lao) to China. In the Brunei-Malaysia-Indonesia-Philippines (BIMP) growth area, physical integration is also important. A Roll-On, Roll-Off vessel started the service between Davao (Philippines) to Bitung (Indonesia) in the middle of 2013. The Philippines, Mindanao in particular, offers perfect agro-economic condition

and several ideal areas for a wide range of crops, while Brunei, Indonesia, and Malaysia stand out as producers of industrial crops.

1.3. International Trade Performance of Philippines Agriculture

Philippine government has implemented substantial trade and investment policy reforms geared toward opening up the economy during the past two decades. It has also pursued an outward-oriented industrialization strategy by promoting exports in the world market. Economic theory says that liberalization stimulates economic activity, fosters competition, promotes efficiency through better allocation of resources, and increases productivity. More economic activity means more jobs and increased income. Increase in efficiency and productivity means lower costs of production that translates to lower prices.

The country's agricultural exports have been an essential driver in the agriculture sector and constantly played a prominent role in the economy by providing foreign exchange earnings and additional economic activities. Its contribution of USD2,166.91 million FOB value to the national Gross Domestic Product (GDP) in 1980 has significantly grown to USD4,101.08 million in 2010. Nonetheless, with the increasing importance of non-traditional manufactured exports and the rapid growth of the service and industrial sectors, the share of agricultural exports to the country's GDP has dramatically slowed down. From a percentage share of 6.03 in 1980, it gradually slipped to 2.05% in 2010 though it bounced back in 2015 to 2.38% (Table 2).

Table 1.3. Agricultural Exports Value (FOB Value), in Million US\$; Percentage Contribution to GDP, 1980-2015 (PSA, 2016b)

Year	1980	1985	1990	1995	2000	2005	2010	2015
Value	2,166	1,285	1,701	2,499	1,982	2,691	4,101	5,157
% share to GDP	6.03	3.78	3.48	2.99	2.45	2.61	2.05	2.38

1.3.1. Top Agricultural Exports

Coconut oil ranked highest in total agricultural exports with a share of 21.8 percent. In 2015, it increased by 2.0 percent to USD 1.15 billion from USD 1.12 billion in 2016. The Netherlands was the largest trade partner for this commodity, accounting for 40.4 percent of total coconut oil exports.

Banana, which accounts for 13.8 percent of total agricultural products, is the second most exported agricultural commodity worth USD 730 million in 2016. The previous figure increased by 11.0 percent compared to USD 657 million in 2015. Japan was the largest buyer (36.4 %) of fresh banana exports.

Pineapple and pineapple products rank third, accounting for 13.5 percent of total agricultural exports. External shipments of this commodity increased by 23.8 percent in 2016. The US was the largest market with a value of USD 272.32 million, 38.3 percent of the total export for this commodity.

Coconut products ranked fourth, with a 5.6 percent share in total agricultural exports. In 2016, it increased by 22.7 percent from USD 242.53 million to USD 297.59 million in 2015. It is seen that the total coconut product traded to Japan constitutes 45.9 percent of the total coconut exports.

Tuna Fish ranked fifth in total agricultural exports worth \$ 277.52 million. In 2016, export value decreased by 5.4 percent from USD 293.34 million in 2015. Japan has become the biggest tuna fish buyer with a share of 16.8 percent in tuna fish exports.

Table 1.4. Value and Share of Top Ten Agricultural Exports: Philippines (PSA, 2017b)

COMMODITY	2016		2015		Growth Rate (%)
	Value	% Share	Value	% Share	Value
Total Value of Agricultural Exports	5,280		5,157		
1. Coconut Oil	1,151	21.81	1,128	21.89	2.03
2. Bananas, Fresh	730	13.83	657	12.76	11.02
3. Pineapple	710	13.46	574	11.13	23.76
4. Coconut Products	297	5.64	242	4.70	22.70
5. Tuna	277	5.26	293	5.69	(5.39)
6. Seaweeds and Carageenan	199	3.77	202	3.93	(1.65)
7. Tobacco Manufactured	161	3.05	207	4.03	(22.37)
8. Centrifugal Sugar	99	1.88	21	0.42	354.83
9. Milk & Cream & related Products	91	1.74	84	1.63	9.09
10. Mango and its Products	83	1.59	103	2.02	(19.43)

1.3.2. Trade Performance among ASEAN Co-member Countries

The country's agricultural exports to ASEAN member countries in 2016 amounted to 6.15 percent of its total export revenue or USD 525.24 million. On the other hand, total agricultural imports from ASEAN member countries reached USD 3.84 billion or 16.5 percent of the country's total imports. Among the ASEAN member countries, the first target for agricultural exports, which accounted for 30.0 percent or USD 168.52 million of total agricultural export revenues, is Malaysia. On the other hand, Indonesia is the country's largest agricultural commodity supplier with a value of USD 995.04 million or 25.9 percent for total agricultural import payments.

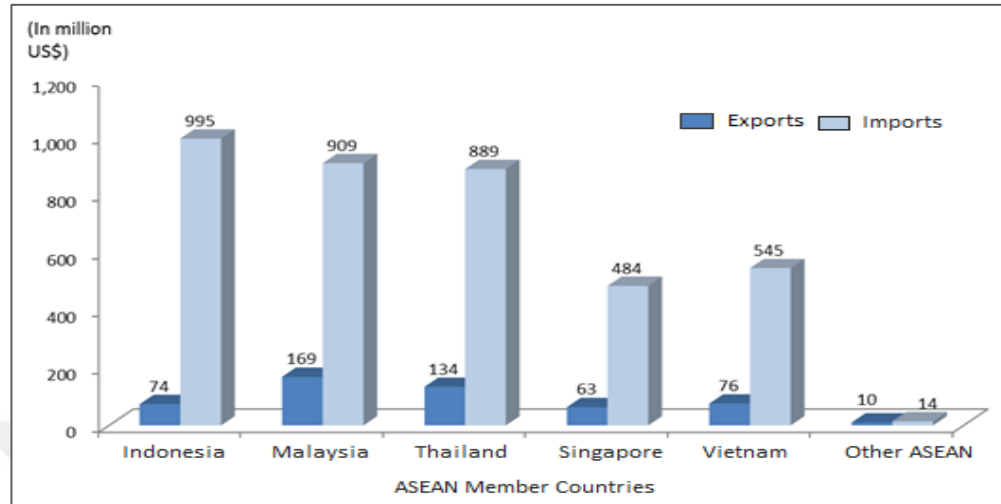


Figure 1.2. Exports and Imports by ASEAN Co-member Countries: Philippines, 2016 (PSA, 2017b)

1.4. Importance and Objectives of the Study

The agricultural exports of ASEAN member countries from the period 2001 until 2016 have seen an increase in value to the international market. Indonesia's export value has greatly increased from 3.7 billion USD in 2001 to 29.7 billion USD in 2016. While Thailand and Vietnam have also made a large jump in their export values, from 6.4 billion USD to 25 billion USD in 2016 for Thailand meanwhile Vietnam from 2.3 billion USD in 2001 to 16.4 billion in 2016 respectively (Table 1.4.). It can be observed that among the major ASEAN countries, the increases in their agricultural exports value have also illustrated an intense competition of trade in the agricultural exports among them in the international market. As shown in Figure 1.3 Indonesia, Malaysia and Thailand export values have been following closely with each other until Malaysia dropped in 2016. On the other hand, Vietnam is following the line with a continuous increasing trend in its agricultural export value. While the Philippines and Singapore though at a slow pace have also shown an increasing trend in their agricultural export value.

Table 1.5. Value of Agriculture Exports of Major ASEAN countries, (in 1000 USD)

Ctry.	2001	2005	2008	2011	2016
IDN	3,761,595	7,479,795	22,447,877	31,060,085	29,738,057
MYS	5,318,455	9,942,231	23,081,273	32,242,624	22,383,488
PHL	1,531,258	2,046,488	3,209,852	4,548,327	4,243,498
SGP	2,597,339	3,466,153	6,122,822	8,854,648	9,721,393
THA	6,493,822	9,113,596	18,029,677	25,456,111	25,098,627
VNM	2,332,948	3,195,399	8,255,956	12,535,540	16,480,080

Source: (UNCOMTRADE, 2017)

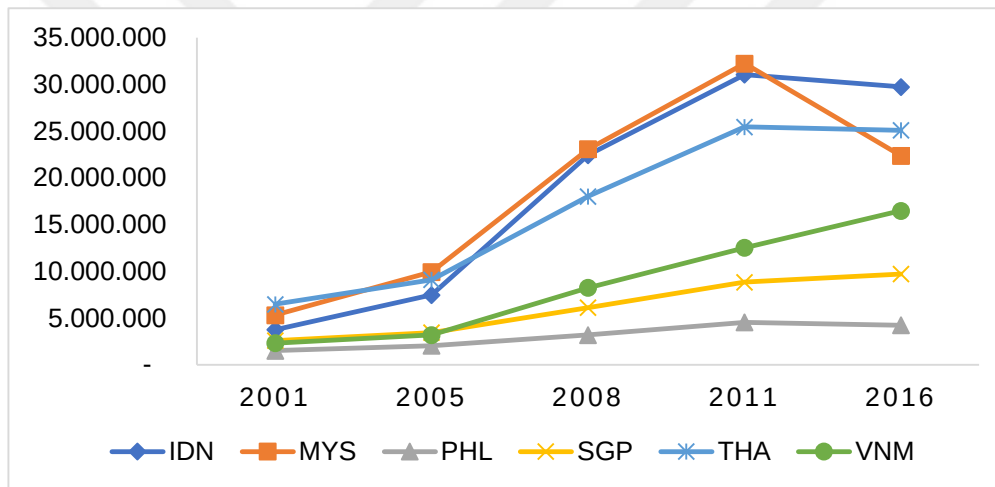


Figure 1.3. Value of Agriculture Exports of Major ASEAN countries (UNCOMTRADE, 2017)

Although the Philippines agricultural exports are far beyond against its major competitors, in order to capture the current trend of non-traditional exports there is still much to do to increase the competitiveness of agricultural products of the Philippines in the international market. It should be noted that the country can have a potential competitive advantage in individual lead export products such as coconut, banana, pineapple and other tropical fruits and fresh vegetables.

For this reason, a comparative advantage analysis is important to provide a better view of the Philippines and the ASEAN trade framework on the world market in order to understand and determine the competitiveness of the Philippines agricultural exports compared to ASEAN co-member countries in the international trade market.

Therefore, the general objective of the study is to give an overall view and assessment of the level of competitiveness of the Philippines agricultural export sector in relation to the ASEAN co-member countries as the strongest competitors in the international market. Moreover, it is also aimed to understand and evaluate the Philippines trade performance and situation of the selected agricultural export products in the comparison among competing ASEAN co-member countries.

The following specific objectives were also expected to be achieved:

- To identify competitors within ASEAN co-member countries in the world market;
- To identify comparative advantages and disadvantages in the Philippines selected export products;
- To give findings for the improvement and enhancement of the agricultural international trade and investment policy reforms and propose some recommendations to address key concerns;
- And to provide useful information which will be beneficial in the creation of a more comprehensive international trade and investment policy reform both locally and globally.

2. PREVIOUS STUDIES

Hamid and Aslam (2017), made a research study entitled “The Competitiveness and Complementarities of Agriculture Trade among ASEAN 5 Countries: An Empirical Analysis”. The study was carried out to analyze the ASEAN 5 regional intra-trade effect in the agricultural sector with the use of Intra Industry Trade (IIT) and Revealed Comparative Trade Advantage (RCA) analyses. According to the results, it was found that Indonesia, Thailand and Vietnam were having the most intense competitions in the regional intra-trade of agricultural products among other ASEAN countries. Moreover, in terms of product categories, the results of the study showed that Thailand and Vietnam were having a head to head export competition in various ASEAN markets for the product category HS100 which comprises of rice, corn and wheat products. It was revealed for this product category that Thailand’s RCA index value had significantly declined while Vietnam’s RCA index value showed an increasing trend over the study period. On the other hand, for product category HS090 which mainly consists of coffee and tea products, Indonesia and Vietnam were both competitive in the exports of this product category to several ASEAN markets. IIT results also showed that two-way trade can be made by both countries without having competition into the same ASEAN markets.

Laosutsana et al. (2016), in their research article titled as “Comparative Advantage and Export Potential of Thai Vegetable Products Following the Integration into the ASEAN Economic Community” had evaluated the export competitiveness of 14 fresh and 9 preserved vegetable products in the international market. With the use of RCA and RSCA analyses, it was found that Thailand had revealed comparative advantage in 4 out of the 14 fresh vegetables and also 4 out of the 9 preserved vegetable products. The study revealed that Thailand’s preserved or processed vegetable products had performed well in the exports to ASEAN market rather than to the rest of the world while the Philippines, Malaysia,

Thailand, China and Australia had also shown a slight potential to export processed vegetable products in the ASEAN market. On the other hand, in the export competitiveness of fresh vegetable products Cambodia, Vietnam, Australia, Lao, Myanmar, China and Malaysia had possessed a strong comparative advantage to the ASEAN market. Overall, the study found that the integration of the ASEAN Economic Community had significant benefits in Thailand's vegetable sector.

Jagdambe (2016), in the research paper entitled as "Analysis of Export Competitiveness of Indian Agricultural Products with ASEAN Countries" made an RSCA analysis. The study found that India's comparative advantage in the export of agricultural products with ASEAN has gradually decreased during the period. In addition, the comparative advantage between 2001 and 2008 has turned into a comparative disadvantage between 2009 and 2011. Comparative advantage has been achieved in ASEAN markets in 2012 and 2013. Furthermore, Trade Intensity Index analysis also revealed that India was an exporter to ASEAN member countries rather than an importer. The study also discovered that Indonesia, Vietnam and Thailand were the main competitors of India among ASEAN member countries in the export of coffee in the global market. Therefore, it was recommended that policy initiatives and promotions should be directed to advantageous products as it would help producers and exporters to appropriately select products that have a comparative advantage in the global market.

Suntharalingam et al. (2011), in their study entitled "Competitiveness of Malaysia's Fruits in the Global Market: Revealed Comparative Advantage Analysis". It was pointed out in the literature that the signing of various free trade agreements in the ASEAN region had brought a greater global competition in the export of tropical fruit products in the international markets. For this reason, the authors of this study had employed RCA and CEP analyses to examine the global competitiveness of Malaysia's tropical fruit products in the world market from the period 2000 to 2014. The results found that Malaysia had a strong revealed comparative position in watermelon and papaya fruit products. However, the

Philippines overtakes Malaysia and lost its competitiveness in the export of papaya for the last 8 years to the world market. Moreover, in this study, it was discovered that the Philippines had a strong revealed comparative advantage for the tropical fruits, banana and pineapple over Malaysia and other competing countries in the international market. It was recommended that the Malaysian government should give the necessary attention in developing the products with revealed comparative advantage to maintain its competitiveness.

Hassanpour and Ismail (2010), examined the “Regional Comparative Advantage and Competitiveness of Malaysian Palm Oil Products”. In this study, the authors had employed RCA and RSCA analyses to determine the competitiveness and comparative advantage of Malaysia’s selected commodities. It was found out based on RCA results that Malaysia had a comparative advantage position in commodities such as palm oil, coconut (copra) oil and palm kernel oil, cocoa butter, cocoa powder, cocoa paste and pepper while a comparative disadvantage was acquired for tea. Moreover, Malaysia’s ranking in terms of competitiveness has also been determined over the competing ASEAN member countries. Malaysia ranked first in commodities such as cocoa butter, cocoa powder and cocoa paste. However, ranked second in palm oil and pepper after Indonesia and behind the Philippines in coconut oil’s export competitiveness in the global market. On the contrary, the study also showed that Singapore and Thailand had a comparative disadvantage for these commodities in the export to the international market. As a whole, it has also been revealed that although Malaysian palm oil ranked first in the area of the plantation, it has failed to acquire the top position in terms of export competitiveness against ASEAN member countries in the world market.

Ilyas et al. (2009), in the article titled as “Competitiveness among Asian Exporters in the World Rice Market” analyzed the competitiveness in rice exports of major Asian rice exporting countries such as Pakistan, India, China, Thailand and Vietnam from the period 1985 to 2005. Based on the results of the analysis it

was concluded that Pakistan had the revealed comparative advantage in rice exports over all other competing countries, while Vietnam and Thailand had a revealed comparative advantage over India and China in the export of rice in the global market. Hence, in terms of ranking Pakistan revealed to be in the first position, Vietnam and Thailand ranked second and third among the top Asian rice exporting countries respectively.

Kılıç (2013), in her thesis study “Analysis of International Competitiveness of Turkish Cotton and Determining the Factors Affecting it” employed Balassa’s RCA and Vollrath’s Trade Indices and showed that Turkey had lost its comparative advantage position in cotton’s international foreign trade, results of the RCA value was found to be negative. On the other hand, the RCA for cotton yarn and weaving have illustrated positive values which indicated to be advantageous for these products. In the results of the survey, it was found that high costs of production, financial insufficiencies, marketing and sales capabilities, inadequate R&D studies, etc. were the main factors and constraints in the competitiveness of Turkish cotton in the international market. Thus, “it is crucial to make a plan and implement further necessary steps and studies to ensure that Turkey’s cotton and cotton-based industry will be brought back into having a competitive position in the international market” as recommended.

Sukati (2016), in the research paper titled as “COMESA’s Revealed Comparative Advantage in Common Agricultural Commodities” found that majority of the COMESA member countries are possessing a strong revealed comparative advantage in raw or semi-processed agricultural commodities while very few were having a comparative advantage in highly processed agricultural commodities. Based on the findings, COMESA member countries still have a wider opportunity for agro-processing sector with the use of abundant raw materials. However, it was highly recommended for the countries to focus on the industries in which it possessed a strong RCA value.

Ishchukova and Smutka (2013), examined the comparative advantages of Russia in agricultural products and foodstuffs in the period 1998-2010. The authors used the Balassa's RCA index, Vollrath's trade indices and the Lafay index. The study showed that in the international market, during the period 1999-2001, Russia had a comparative advantage in by-products such as rice bran while in the period 2002-2010 in primary products such as wheat, cow's milk, sunflower seeds and others and had a comparative advantage position over the EU and Asian countries.

Mensah (2010), in the study titled "An Analysis of the Performance of Ghanaian Canned Tuna Export to EU Market (1999-2009)" found that Ghana had a strong comparative advantage in canned tuna exports in the EU-27 throughout the study. However, Ghana's Canned Tuna market share value had decreased constantly over the study period, which is according to the definition of operational competitiveness. Ghana had become less competitive against major competing countries such as Thailand and Ecuador. The results of the regression analysis showed that the price ratio, level of expertise and trade policy have significantly affected Ghana's quantity market share statistically.

Serin and Civan (2008), correspondingly examined the comparative advantage of selected Turkish commodities such as tomatoes, olive oil and fruit juice to the EU market from 1995 to 20005. RCA and CEP analyses were employed to measure the comparative advantage of Turkey's selected agricultural products to EU being the largest market of tomatoes, olive oil and fruit juice from Turkey. In their research, it has been revealed that Turkey had a very strong comparative advantage in olive oil and fruit juice but yet tomatoes had shown the opposite.

Nesterenko (2006), investigated the competitiveness of Ukrainian products in the international market using the Balassa's RCA index analysis. Based on the result, Ukraine had revealed a comparative advantage position in products like beverages, essential oils and resinoids, perfumery, cosmetics and railway or tramway locomotives while a decline in competitiveness for iron and steel products

was recorded. In this study, factors affecting the competitiveness of Ukrainian products were determined. It was seen that FDI had a negative impact in Ukrainian's competitiveness in the global market.

Çoban ve Kök (2005), used Balassa's RCA index to analyze the comparative advantage of Turkey's textile industry in comparison to EU member countries during the period 1989-2001. It has been found that Turkey had a strong revealed comparative advantage position in the textile industry and its sub-industries when defined in terms of SITC 2-digit and SITC 3-digit classification in the international market. Thus, based on the results of the empirical analysis it has been recommended that the production of high value-added products in Turkey's textile industry should be given emphasis for it to sustain in the international market.

Fertő and Hubbard (2002), in their research paper "Revealed Comparative Advantage and Competitiveness in Hungarian Agri-Food Sectors" where they studied and analyzed 22 aggregated agri-food products. Out of these products Hungary got 11 products with the revealed comparative advantage such as live animals, meat, cereals, vegetables and fruit, sugar, beverages, oilseeds, cork and wood, animal and vegetable materials, oils and fats. Although they have pointed out that despite having a significant improvement in Hungarian's agriculture and food-processing a certain level of competitiveness had also shown declines caused by political distortions in the international market.

3. MATERIALS AND METHOD

3.1. Materials

Data Sources: General data for the presentation of the ASEAN countries International trade development and performance was obtained from different international institution websites: Food and Agriculture Organization (FAO.org), World Bank (data.worldbank.org) and ASEANstats.org. Literature reviews were compiled from different published secondary sources like reports, books, journals, and magazines in relation to agricultural foreign trade and global competitiveness. Philippines statistical data were also obtained from the Philippine Statistics Authority.

Data for the analyses of Revealed Comparative Trade Advantage Indices and Market Share Index were based on the export and import data as per the Harmonized System classification. The entire data were sourced from UN COMTRADE and accessed through World Integrated Trade Solutions (WITS) of the World Bank and covers the period from 2000 to 2016.

Furthermore, for the aggregated product analysis of the agricultural sector, definitions were based on the Uruguay Round of Agreement on Agriculture (URAOA). Agricultural products are defined in Annex 1 of the Agreement on Agriculture. This definition makes reference to the Harmonized System of product classification. In practice, agricultural products are those within Chapters 1 to 24 of the Harmonized System less fish and fish products, as well as some specific products which come from the soil. Forestry products are not included. The definition of agricultural product covers not only basic agricultural products such as wheat, milk and live animals but the products derived from them such as bread, butter, oil, and meat, as well as all processed agricultural products such as chocolate, and sausages.

Research Area: The Philippines is a middle-income ASEAN member state and is one of the founding members who led in the creation of the Association of Southeast Asian Nations (ASEAN) in August 1967. In 2012, the Philippines GDP grew by 7.1% above the economists' estimates and today considered as Asia's tiger due to its strong economic growth. Southeast Asia (Figure 3.1) is consists of several countries at various levels of characteristics and development. In the last decade, the region has made significant progress as a whole. Various developments in infrastructure and structural changes have led to a significant gain in its economy, by these developments the region has experienced strong growth in GDP at an average 5% per year in the majority of its member countries in the period 2000-2016 (OECD-FAO, 2017).

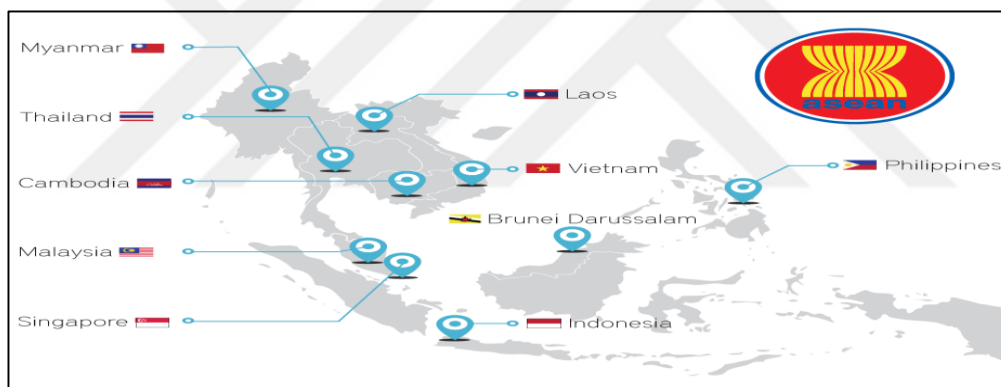


Figure 3.1. Map of ASEAN Region (aseanmarketresearch.com, 2017)

It is said to be that a country can benefit and gain economic growth from the pressures and challenges of strong domestic rivals like the neighboring countries (Porter, 1990). The Philippines since the establishment of the ASEAN Free Trade Area (AFTA) was facing major challenges and competition from the ASEAN member countries for various agricultural export products in the global market. The fast-paced growth in the trade of agricultural products between ASEAN countries have brought a major threat to the Philippines agricultural export

sector in the international market. For these reasons, the Philippines and ASEAN member countries were selected as the research area of this study.

Selected Products: Rice and Corn: The main staple food crop within the ASEAN member countries. These crops are being considered as the most important crops to Southeast Asia; rice remains to be the center of agricultural production while corn as its alternative. Majority of the ASEAN member countries were included in the top producers of rice in the world such as Indonesia, Vietnam, Thailand, Myanmar, Philippines and Cambodia, while Indonesia and the Philippines were also the top producers of corn in the world.

Banana and Pineapple: With the all-year-round tropical weather condition in ASEAN region countries such as the Philippines, Indonesia, Malaysia and Thailand have become the world's top producers of these tropical fruits.

Coconut Oil: Indonesia, Philippines, Thailand, Vietnam and Malaysia are among the top producers of coconut in the world.

Coffee: Coffee had captured a wide range market as global demand and consumption doubled over the past decades. Among ASEAN member countries Indonesia and the Philippines are the highest in coffee consumption. While Vietnam and Indonesia are the ASEAN countries included as top producers in the world.

Besides the analysis in the selected individual products, aggregated agricultural products were also taken into consideration for the purpose of capturing the overall picture of the Philippines agricultural export sector performance in terms of relative trade advantage among the ASEAN co-member countries in the global market. Therefore, the analyses for Revealed Comparative Trade Advantage Indices and Market Share Index were divided into two (2) parts and covers the period from the year 2000-2016.

First part is the calculation of the indices for the aggregated agricultural products of the Philippines and the ASEAN member countries by the three (3) sections of agricultural product groups with pre-defined aggregates created by

World Integrated Trade Solutions (WITS). Wherein; Section 1: Live Animals; Animal Products (HS code 01-05), Section 2: Vegetable Products (HS code 06-15), Section 3: Prepared Foodstuff Products (HS code 16-24). According to the International Convention on the Harmonized Description and Coding System agricultural products are those within Chapters 1 to 24.

And the second part is the calculation of the Revealed Comparative Trade Advantage Indices and Market Share Index of selected agricultural commodities based on the individual importance to the total agricultural export sector of the Philippines and ASEAN member countries as a whole.

3.2. Theoretical Framework

There are still many questions about the definition of international trade competitiveness, its applicability and practical approaches to promoting competitiveness. Nevertheless, in regional or national policy frameworks and strategies, especially when discussing economic growth and designing strategies or comparative analyses in various countries or business firms, competitiveness is one of the most commonly used concepts to determine appropriate economic policies. As a matter of fact, there are different theories about international trade competitiveness and different approaches that were envisioned by policymakers at both micro and macro levels.

There are several theories regarding international trade that has a relative attachment with the factors of production and are openly based on the concept of competitiveness between countries, such theories are mercantilism, liberalism, dependency theory and structuralism.

Mercantilism is a theoretical approach in which a country aims to help build a rich and powerful state at the expense of competing for national powers. It is a doctrine of political economy that has dominated Europe since the 16th century and governing the actions of many states in the mid-19th century until the liberal

revolution in Great Britain. Schmoller as quoted by Reinert (2004) describes the mercantilist system as *“The essence of the system does not lie in some money doctrine or trade balance, not in tariff barriers, protective duties or navigation laws, but something much bigger in the total transformation of society and its organizations, as well as of the state and its institutions, in the replacing of a local and territorial economy by that of the national state”*. Moreover, mercantilists believed that to protect a country's economy from rivals and to protect state industries and various national groups from the competition, protectionist policies should be implemented, this refers to policies designed to restrict imports of goods and services from foreign countries. Protectionism policies can be in the form of tariffs, quotas, subsidies, and administrative regulations (O'Brien and Williams, 2010). The European Union's Common Agricultural Policy which was implemented in 1962 is a good example of a protectionist policy. This policy was developed primarily to address the challenges facing European farmers and aims to raise prices for domestic European farmers to increase their income.

Liberalism is a theoretical economic approach having its roots in 18th and 19th century in which a country organizes its economic activities based on individualist perspective and approach without the interference of political institutions and with the manifestation of free trade (Broome, 2014). Liberalists believed that countries involving free trade and competition can mutually gain benefits and increase their economic stability and efficiency by specializing and producing goods and services with comparative advantages. According to Ricardo (1817), in his “Ricardian Model” the theory of comparative advantage reveals that a country is in an advantageous position when it specializes in the production of goods and services. He added that in a free-trade system the resources of every country will be utilized more efficiently, that even countries with the poor economic condition will eventually benefit from it. However, Ricardo's model of comparative advantage has been criticized for being too general and is expressed in static nature while the true concept of comparative advantage is dynamic and

changes over time together with the changes in technology, governmental policies, demand patterns and business practices.

Heckscher and Ohlin (1991) further step the theory of international trade based on “Ricardian Model” a further step and come up with their own “Heckscher-Ohlin Theory”. According to this theory, a country will specialize in producing and exporting those commodities which require relatively intensive in the utilization of a factor which the country is relatively well endowed. If each country specializes in those commodities where they have a comparative advantage over other countries, total output and economic prosperity can be increased under certain assumptions, such as flawless mobility of production factors, transport costs and other externalities.

Dependency theory and structuralism posed a major challenge to the liberalists orthodox position of free trade system on economic development. Dependency theorists and structuralists, by contrast, claimed that trade relations between core countries and peripheral countries would only strengthen higher levels of development in the core countries, and thus free trade could harm the less developed countries. The main difference between dependency theory and structuralism is that dependency theorist mainly depends on external factors (such as dependency relations) when explaining relations between core and peripheral countries while structuralists depends on internal factors (such as elasticities of several goods) in doing so. Prebisch (1950) who developed the structuralist theory argued that peripheral countries in any trading relationships between core countries will have a natural disadvantage position because industrial products manufactured in core countries will have higher values in relation to the raw materials and agricultural commodities that peripheral countries produced. He added that prices of industrial products made by advanced economies had the tendency to rise faster than of the products made by backward economies, as a result, the terms of trade of these countries will be deteriorated. In the long run, peripheral countries would not benefit on free trade system because they need to export more just to gain the same

amount of imports from core countries. Furtado (1965), a structuralist, believed that economy was shaped by power and politics like that of the Latin American market, which is controlled by elites and oligarchs, thus, he suggested that Latin American countries should look into reforming the structure of their economies. Moreover, Prebisch also suggested that Latin American economy should create more industries and reduce their dependency on producing and exporting primary products.

In general, international trade competitiveness theory reveals that a certain country can be competitive either individually or interdependent into a group of state. Mercantilist approach together with the protectionist policy could be beneficial in various aspects, several states such as EU countries have been practicing this economic system and gained economic growth. On the other hand, liberalism which is the most common approach and is being practiced globally in the current time, with the specialization of commodities in a free trade system together with comparative advantage method will also give relevant increased in productivity and economic prosperity to the country. However, dependency theory and structuralism suggested that peripheral countries should be careful in establishing free trade relations with concentrated and specialized primary goods or products to highly developed countries, as it could give more detrimental effect on the economic situation of the underdeveloped countries.

3.3. Method

Several methods and techniques have emerged to examine the international trade competitiveness of goods and services of a certain country, more especially in the field of agricultural trade. Moreover, competitiveness analysis with respect to the country's trade performance is very essential to determining which agricultural product or group of products are competitive and having a comparative advantage position against its rival countries in the world market.

In this study, the widely used method of Balassa's RCA Index and Vollrath's three Relative Trade Advantage Indices were used to demonstrate how the group or selected individual products for the Philippines and ASEAN co-member countries with competitive export value compared to the products share in world trade.

Market Share Index was also used to reveal the market share pattern of ASEAN member countries and examined the agricultural products with comparative advantage and identifies Philippines export trade competitors over the other ASEAN member countries.

Those methods were chosen for their simplicity, comparability and widespread use despite their well-known limitations, such as their not taking into consideration costs, subsidies, external factors, trade policies and several trade barriers.

3.3.1. Revealed Comparative Advantage Index

RCA corresponds mostly to an index introduced by Balassa (1965). The RCA index is used to analyze different sectors, especially in agriculture. And it is generally used in the international economy to calculate the relative advantage or disadvantage of a particular country in the class of goods or services. The weighting of exports from different product groups like agricultural products is examined with respect to the economies of the relevant export destinations.

With its original definition, the Balassa's index (RCA index) gives the ratio of the share of certain product or industry in the total world exports to the share of the total exports of the country in order to measure the comparative advantage of the country in a particular commodity or industry trade. By this, the B-index (RCA) is defined as follows:

Balassa Export Advantage Index

$$B\text{-index} = (X_{ij}/X_{it}) / (X_{nj}/X_{nt})$$

Where;

X_{ij} = ith country's exports of commodity j;

X_{it} = ith country's total exports (total commodity);

X_{nj} = nth world's total export of commodity j;

X_{nt} = nth world's total exports (total commodity).

In this study, country 'i' refers to Philippines and ASEAN co-member countries, commodity 'j' refers to any of the selected individual agricultural commodity or commodity group and 'n' refers to the total world exports.

Comparative advantage is "revealed" if $RCA > 1$, it is interpreted that the share of the goods in total exports is greater than the share of world trade. If RCA is less than one, the country is said to have a comparative disadvantage in the commodity or industry.

3.3.2. Vollrath's Trade Indices

Balassa's Revealed Comparative Index only takes export as its basis for the measure of a country's competitiveness and disregards the level of import and its effects, for this reason, Vollrath (1991) have proposed and developed three different alternative specifications of Balassa's Revealed Comparative Advantages. The three specifications suggested by Vollrath are the following:

Relative Trade Advantage (RTA)

$$RTA = RXA - RMA$$

$$RXA \text{ or } B\text{-index} = (X_{ij} / X_{it}) / (X_{nj} / X_{nt})$$

$$RMA = (M_{ij} / M_{it}) / (M_{nj} / M_{nt})$$

Where;

M_{ij} = i th country's imports of commodity j ;

M_{it} = i th country's total imports (total commodity);

M_{nj} = n th world's total import of commodity j ;

M_{nt} = n th world's total imports (total commodity).

The first measure is the Relative Trade Advantage Index (RTA), which includes imports as well as exports. The RTA index is calculated as the difference between the Relative Export Advantage (Balassa Index) and the Relative Import Advantage Index (RMA), and the Balassa index is also based on the observed trade models. If $RTA > 0$, a relative comparative advantage arises, that is, the product or commodity of that country is more competitive. $RTA < 0$ sets out all product or commodity that do not have a relative trade advantage.

Logarithm of Revealed Export Advantage Index

$$\text{LnRXA or LnB-index} = \ln(X_{ij}/X_{it}) / (X_{nj}/X_{nt})$$

The second specification by Vollrath is the logarithm of the Revealed Export Advantage Index (Balassa Index).

Relative Competitiveness

$$RC = \ln RXA - \ln RMA$$

The third one is the Index of Revealed Competitiveness (RC), which is calculated as the logarithm of the Relative Export Advantage and the logarithm of its counterpart, the Relative Import Advantage.

Balassa's revealed comparative advantage index has been criticized for not considering another trade factor such as import values while other have concerns about the asymmetric properties of the equation. To address these problems

Vollrath has developed Logarithm of the Revealed Export Advantage Index and Relative Competitiveness.

In this study to easily and well interpret the results of the analysis, lnRXA and RC were divided into three level of classifications:

Level 1, $\ln RXA/RC > 0$ (product with weak advantage position);

Level 2, $1 < \ln RXA/RC \leq 0$ (product with moderate advantage position);

Level 3, $\ln RXA/RC > 1$ (product with strong advantage position).

3.3.3. Market Share Index

The competitiveness and competitive position of a product in the market is amply reflected in the product's market share. This index measures the ability of an exporting country to increase its market share in the target market with respect to countries exporting the same product to the same target market. As defined by Hawkins and Meindertsma (2004) competitiveness is the ability of a country to increase its share in local and export markets by sustaining or increasing its profitability and productivity.

The index is measured by the following formula:

$$MSI = X_{ik} / M_k * 100$$

Where;

MS_{ik} = is the market share of product k by country i in the target market;

X_{ik} = the total export of product k by country i to the target market;

M_k = the total export of product k by area or region constituting the target market.

The main advantage of this index is that it is easy to calculate and perceive. It provides simple but useful information for evaluating the international

competitiveness of a country. Even though changes in the market share are not totally attributable to changes in competitiveness, the index nevertheless provides an accepted indication of the exporting country's or region's competitiveness in relation to the export market (Chen and Duan, 2001).



4. RESULTS AND DISCUSSIONS

This chapter covers the study findings based on the results mainly of the computed Revealed Comparative Trade Indices and Market Share Index that measures the export competitiveness of the aggregated and selected Philippines agricultural products.

4.1. Aggregated Agricultural Products

This section gives the Revealed Comparative Trade Indices and Market Share Index of the Philippines and co-ASEAN member countries from the period 2000 to 2016 of the 3 sections of agricultural product categories according to the International Convention on the Harmonized Description and Coding System; wherein; Section 1: Live Animals; Animal Products (HS code 01-05), Section 2: Vegetable Products (HS code 06-15), Section 3: Prepared Foodstuff Products (HS code 16-24). Moreover, to clearly analyze the data, results were divided into three sub-periods.

4.1.1. Animal Products

Revealed comparative trade indices for animal products in the comparison between the Philippines and co-ASEAN member countries are examined in table 4.1 for the period 2000-2016. Balassa Export Advantage Index (B-Index), Logarithm of Export Advantage Index (lnRXA), Relative Trade Advantage Index (RTA) and the Revealed Competitiveness Index (RC) were employed to determine the revealed trade indices of animal products in the international market. Import Advantage Index (RMA) and Logarithm of Import Advantage Index (lnRMA) were also used in the calculation of RTA and RC.

For this product section, Vietnam got the highest revealed trade indices (B-index, lnRXA, RTA and RC) for the entire period the study covered, which indicates that Vietnam attained a strong comparative advantage position to the said agricultural product section. However, a decreasing trend can be observed on the

trade indices over the three sub-periods. On the other hand, Brunei, Cambodia, Lao PDR, Malaysia, Singapore including the Philippines have shown either low or negative index values for B-index, $\ln RXA$, RTA and RC which indicates a revealed comparative disadvantage position for these countries.

Indonesia and Thailand in the sub-period 2000-2004 got a B-index above one and Relative Trade Index ($RTA > 0$) but dropped in the next successive sub-periods meanwhile other trade indices ($1 < \ln RXA \leq 0$ and $1 < RC \leq 0$) have illustrated either moderate or average revealed comparative advantage position for the said sub-period, which means, in general, these two countries, for the reason of inconsistency, still does not possess a strong revealed comparative advantage over its competitors for the entire analysis period. Meanwhile, Myanmar, who only reported for the sub-period 2010-2016, got a strong significant trade index values, therefore, acquired an advantageous position in product section 1 for the said sub-period (Table 4.1).

Hence, for this aggregated agricultural product the majority of the ASEAN member countries have revealed a comparative trade disadvantage position including the Philippines.

Table 4.1. Revealed Comparative Trade Indices of Animal Products (Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-index	lnRXA	RTA	RC
BRN	0.008	-4.873	-1.946	-5.532
IDN	1.318	0.275	0.598	0.608
KHM	0.241	-1.541	0.05	0.185
LAO	N/A	N/A	N/A	N/A
MMR	N/A	N/A	N/A	N/A
MYS	0.274	-1.297	-0.304	-0.746
PHL	0.481	-0.733	-0.371	-0.566
SGP	0.164	-1.840	-0.266	-0.988
THA	1.714	0.513	0.767	0.570
VNM	5.630	1.722	4.932	2.091
COUNTRY	2005-2009			
	B-index	lnRXA	RTA	RC
BRN	0.025	-3.937	-1.904	-4.583
IDN	0.989	-0.014	0.155	0.176
KHM	0.078	-2.760	-0.05	-0.601
LAO	N/A	N/A	N/A	N/A
MMR	N/A	N/A	N/A	N/A
MYS	0.329	-1.115	-0.309	-0.664
PHL	0.495	-0.709	-0.482	-0.672
SGP	0.084	-2.487	-0.277	-1.463
THA	1.003	0.002	0.087	0.091
VNM	3.982	1.375	3.285	1.741
COUNTRY	2010-2016			
	B-index	lnRXA	RTA	RC
BRN	0.022	-3.520	-1.91	-4.176
IDN	0.898	-0.484	-0.09	-0.172
KHM	0.017	-3.832	-0.142	-1.943
LAO	0.228	-2.153	-0.358	-1.464
MMR	2.739	1.065	2.143	1.649
MYS	0.314	-1.044	-0.428	-0.744
PHL	0.539	-0.572	-0.875	-0.915
SGP	0.103	-1.981	-0.382	-1.256
THA	0.766	-0.257	-0.111	-0.125
VNM	2.230	1.805	1.446	1.053

*N/A = no data available

As shown in table 4.2 in 2000-2004 sub-period, Thailand, Vietnam and Indonesia dominate the agricultural commodity section 1 animal products and got the highest MSI values as 33.28%, 26.93% and 21.35% respectively. However, Thailand also garnered the highest lost in market share value for the entire analyzed period 2000 until 2016. On the contrary, Vietnam acquired the highest MSI improvement over the same period while Indonesia's MSI illustrated an unstable trend though it is also apparent to the other competing countries such as Malaysia and Singapore (Figure 4.1).

In this analyzed period of time, a decreasing trend is noticeable for the Philippines and together with the decreasing trend, the Philippines took the lowest MSI value over that period. But still, the Philippines neither maintained nor improved its MSI which means that the Philippines is losing competitive position against the majority of ASEAN member countries for this particular commodity section. However, the Philippines have performed a little much better against Cambodia in terms of MSI values.

On the average MSI value viewpoint over the analyzed period, Vietnam and Thailand got the first and second position respectively while Cambodia acquired the last position among the competing ASEAN countries.

Table 4.2. Market Share Index of Animal Products (Author's calculation based on COMTRADE data)

YEAR	IDN	KHM	MYS	PHL	SGP	THA	VNM	Other
2000-2004	21.35	0.12	7.41	4.60	6.31	33.28	26.93	0.01
2004-2009	20.11	0.06	10.14	4.14	4.38	26.65	34.49	0.03
2010-2016	20.33	0.02	8.96	3.91	5.22	22.24	35.61	3.71
AVE.	20.60	0.06	8.84	4.21	5.31	27.39	32.34	1.25

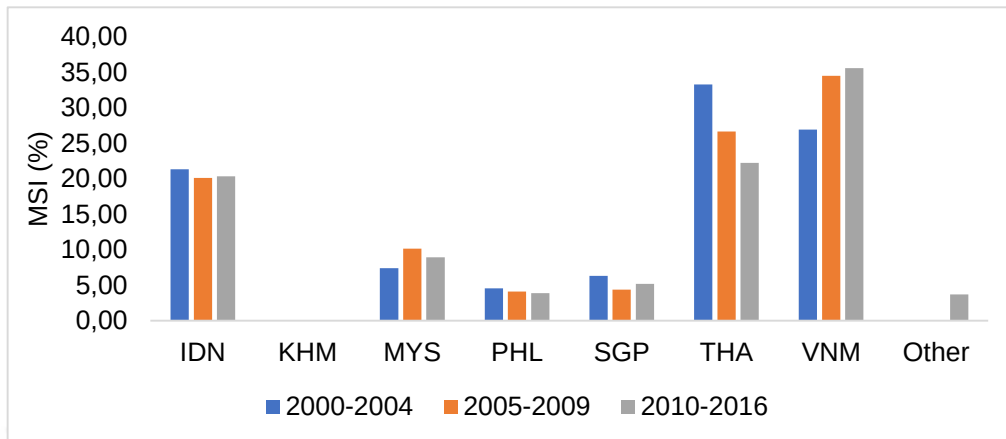


Figure 4.1. Market Share Index of Animal Products (Author's calculation based on COMTRADE data)

4.1.2. Vegetable Products

The results of the revealed trade indices for the vegetable products in the comparison between the Philippines and co-ASEAN member countries are in Table 4.3. B-Index, lnRXA, RTA and RC were used to examine the revealed trade indices of vegetable products in the international market.

In the result analysis, for the 3 sub-periods in terms of Balassa Export Advantage Index the Philippines got above one index value which indicates a comparative export advantage for this certain product section however a moderate or average position can be observed in the Logarithm of Export Advantage Index ($1 < \ln RXA \leq 0$) in the same 3 sub-periods. Meanwhile, Relative Trade Advantage index ($RTA > 0$) values were positive but yet not enough to consider a strong significant advantage position ($1 < RC \leq 0$) against the competing ASEAN co-member countries.

For the entire period the study has covered, Vietnam has enjoyed a strong revealed comparative advantage position based on the results of trade index values (B-index > 1 , $\ln RXA \geq 1$, $RTA > 0$ and $RC \geq 1$). Indonesia has shown a strong revealed export advantage index (B-index > 1 , $\ln RXA \geq 1$) for the 3 sub-periods however after considering imports during the 2000-2004 and 2005-2009 sub-

periods the revealed competitiveness became moderate ($1 < RC \leq 0$). Malaysia and Thailand have both shown strong revealed comparative trade indices for the 2005-2009 sub-period however after considering imports, Malaysia for the 2000-2004 and 2010-2016 sub-periods the revealed competitiveness ($1 < RC \leq 0$) became moderate and Thailand ($1 < RC \leq 0$) also for the 2010-2016 sub-period. Myanmar, as well as Lao PDR, has also enjoyed a strong comparative advantage position with this commodity section although the two countries only reported in the period 2010-2016. On the other hand, Brunei, Cambodia, and Singapore are in the condition of revealed comparative disadvantage.

Thus, the majority of the ASEAN countries are possessing revealed comparative advantage in vegetable products for the entire analyzed period of study.

Table 4.3. Revealed Comparative Trade Indices of Vegetable Products (Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-index	lnRXA	RTA	RC
BRN	0.000	-7.865	-1.333	-8.266
IDN	2.284	1.801	0.276	0.111
KHM	0.106	-2.333	-0.473	-1.779
LAO	N/A	N/A	N/A	N/A
MMR	N/A	N/A	N/A	N/A
MYS	2.041	0.703	1.207	0.888
PHL	1.136	0.126	0.159	0.153
SGP	0.192	-1.665	-0.162	-0.622
THA	1.551	1.035	1.058	1.142
VNM	4.366	1.463	3.489	1.594
COUNTRY	2005-2009			
	B-index	lnRXA	RTA	RC
BRN	0.000	-8.186	-1.493	-8.565
IDN	3.841	1.336	2.352	0.957
KHM	0.158	-1.852	-0.228	-0.891
LAO	N/A	N/A	N/A	N/A
MMR	N/A	N/A	N/A	N/A
MYS	2.501	1.895	1.468	1.868
PHL	1.302	0.259	-0.166	-0.100
SGP	0.116	-2.158	-0.139	-0.788
THA	1.558	1.441	1.072	1.167
VNM	4.036	1.394	3.132	1.495
COUNTRY	2010-2016			
	B-index	lnRXA	RTA	RC
BRN	0.006	-4.941	-1.331	-5.226
IDN	4.337	2.270	2.963	1.971
KHM	0.946	-0.148	0.628	1.017
LAO	1.228	1.616	3.374	2.264
MMR	6.677	3.474	4.826	2.898
MYS	2.738	1.128	1.562	0.982
PHL	1.520	0.402	0.223	0.158
SGP	0.098	-2.030	-0.221	-0.883
THA	1.407	0.351	0.796	0.867
VNM	2.807	1.135	1.632	1.982

*N/A = no data available

The market share index in vegetable products were presented in Table 4.4 for the analyzed period 2000-2016. It can be seen that this agricultural commodity section is dominated by Malaysia and Indonesia with the average market share value of 30.42% and 29.30% respectively. Thailand and Vietnam follow the line with 16.64% and 14.31% MSI values. Meanwhile, with the average MSI value of 5.06% and 2.94% the Philippines and Singapore stay at the bottom respectively. Cambodia still gets the lowest average MSI value of 0.13%.

In general, as shown in Figure 4.2 amongst those dominant countries, Indonesia and Vietnam showed an increasing trend and performed better improvements on their MSI while Malaysia and Thailand displayed a decreasing trend on their MSI which indicates poor competitiveness for this agricultural commodity section. Meantime, between the 3 bottom countries, the Philippines and Singapore continued to show a decreasing trend on MSI values which makes them the least performers among the ASEAN competing countries. While Cambodia displays an increasing trend but despite that MSI values are too low to consider the competitive position. The Philippines may have lost competitive advantage position against Indonesia, Malaysia, Thailand and Vietnam however at the very least it had a slight competitive advantage position over Singapore and Cambodia in the global market of vegetable products.

Table 4.4. Market Share Index of Vegetable Products (Author's calculation based on COMTRADE data)

YEAR	IDN	KHM	MYS	PHL	SGP	THA	VNM	Other
2000-2004	22.64	0.03	33.85	6.79	4.65	19.11	12.93	0.00
2004-2009	31.37	0.05	30.59	4.57	2.48	16.72	14.23	0.00
2010-2016	33.90	0.32	26.81	3.81	1.70	14.08	15.76	3.61
AVE.	29.30	0.13	30.42	5.06	2.94	16.64	14.31	1.20

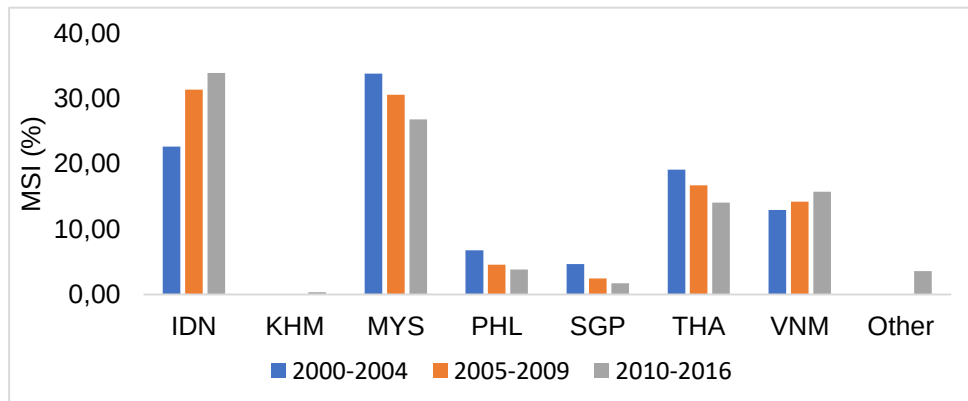


Figure 4.2. Market Share Index of Vegetable Products (Author's calculation based on COMTRADE data)

4.1.3. Prepared Foodstuff Products

The revealed comparative trade indices of agricultural product section 3 prepared foodstuff products in the international market are shown in Table 4.5. Thailand among all the other ASEAN countries had revealed comparative export advantage index values ($B\text{-index} > 1$), although the revealed comparative export advantage position is moderate or average ($1 < \ln RXA \leq 0$) throughout the covered period. Meanwhile, after considering imports, revealed trade index values ($RTA > 0$) and revealed competitiveness index values ($RC > 1$) have illustrated a strong advantage position in this certain product during the entire analysis period. Which means Thailand leads this commodity section in competitiveness over the competing ASEAN member countries. On the other hand, in terms of B-index during the sub-period 2010-2016, countries such as Indonesia, Lao PDR, and the Philippines had arisen and acquired an above one index value which signifies a comparative export advantage for this certain product section although it illustrated a moderate or average position ($1 < \ln RXA \leq 0$) and in consideration of imports for these countries index values ($RTA < 0$ and $RC < 0$) have revealed to be either negative or weak of advantage position for Indonesia and the Philippines while Lao PDR ($1 < RC \leq 0$) had acquired a moderate advantage position.

Table 4.5. Revealed Comparative Trade Indices of Prepared Foodstuff Products
(Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-index	lnRXA	RTA	RC
BRN	0.002	-5.172	-2.309	-6.012
IDN	0.759	-0.282	-0.577	-0.569
KHM	0.759	-2.814	-2.35	-3.681
LAO	N/A	N/A	N/A	N/A
MMR	N/A	N/A	N/A	N/A
MYS	0.476	-0.744	-0.19	-0.333
PHL	0.604	-0.511	-0.383	-0.497
SGP	0.442	-0.823	-0.119	-0.242
THA	2.439	0.891	1.832	1.393
VNM	0.746	-0.312	-0.101	-0.143
COUNTRY	2005-2009			
	B-index	lnRXA	RTA	RC
BRN	0.003	-5.865	-3.008	-6.962
IDN	0.897	-0.111	-0.376	-0.341
KHM	0.897	-2.255	-2.009	-3.004
LAO	N/A	N/A	N/A	N/A
MMR	N/A	N/A	N/A	N/A
MYS	0.603	-0.512	-0.281	-0.381
PHL	0.853	-0.169	-0.252	-0.264
SGP	0.425	-0.858	-0.054	-0.122
THA	2.375	0.864	1.777	1.382
VNM	0.825	-0.193	-0.304	-0.312
COUNTRY	2010-2016			
	B-index	lnRXA	RTA	RC
BRN	0.023	-3.571	-2.585	-4.525
IDN	1.026	0.020	-0.274	-0.236
KHM	0.302	-1.122	-1.659	-1.793
LAO	1.937	0.884	0.436	0.586
MMR	0.571	-1.499	-0.752	-1.489
MYS	0.854	-0.158	-0.256	-0.262
PHL	1.123	0.102	-0.455	-0.353
SGP	0.619	-0.481	0.016	0.033
THA	2.500	1.098	1.806	1.466
VNM	0.914	-0.091	-0.255	-0.240

*N/A = no data available

Table 4.6 illustrates the market share index for prepared foodstuff products for the period 2000-2016. Thailand again showed a total dominance in prepared foodstuff products with an average MSI value of 45.30%, Singapore acquired the second position with an average MSI value of 16.97%. Indonesia and Malaysia had

closer MSI values of 12.93% and 13.37% respectively while the Philippines together with Cambodia occupies the lowermost positions.

Meanwhile, Thailand in 2000-2004 sub-period, got the largest market share values for this agricultural commodity section, it also got a significant decrease in the next sub-periods. On the contrary, Vietnam and Malaysia display a considerable improvement in their MSI over the same period. Indonesia's market share has seen a fluctuating trend. The same can be ascribed to Singapore in its market share position throughout the period, whilst the Philippines is consistently losing a significant market share value at the same time span, therefore became the most uncompetitive ASEAN member in the market share of prepared foodstuff products exported to the international market (Figure 4.3).

Table 4.6. Market Share Index of Prepared Foodstuff Products (Author's calculation based on COMTRADE data)

YEAR	IDN	KHM	MYS	PHL	SGP	THA	VNM	Other
2000-2004	12.31	0.03	12.79	5.75	17.10	48.39	3.63	0.00
2005-2009	13.38	0.06	13.56	5.20	16.27	46.24	5.28	0.00
2010-2016	13.10	0.16	13.77	4.60	17.55	41.28	8.65	0.89
AVE.	12.93	0.08	13.37	5.19	16.97	45.30	5.85	0.30

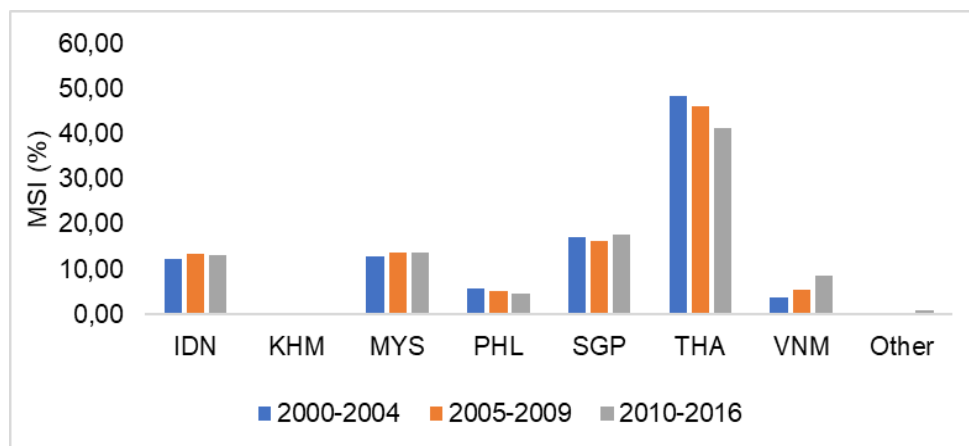


Figure 4.3. Market Share Index of Prepared Foodstuff Products (Author's calculation based on COMTRADE data)

4.2. Selected Agricultural Products

Individual commodities played a great role in export industries in the Philippines and are significantly kept growing as the investments in the country are mounting. The Revealed Comparative Trade Advantage Indices of the selected individual products are presented in the next section for the period 2000 to 2016.

4.2.1. Rice

Philippines is the 8th largest producer of rice in the world (FAO, 2017). Rice area in the Philippines is composed of almost 70 percent irrigated and 30 percent rainfed or upland. Although rice area harvested remained slightly constant at an average over 4 million hectares a year, rice production has increased from over 12 million tons in 2000 to 17 million tons in 2016 and yield at 3 thousand kilograms per hectare to 4 thousand kilograms per hectare respectively in the same period (Figure 4.4). A large portion of the production was brought by the use of high yielding varieties of good-quality seeds or hybrid certified seeds which caused progress in terms of yield (IRRI, 2013).

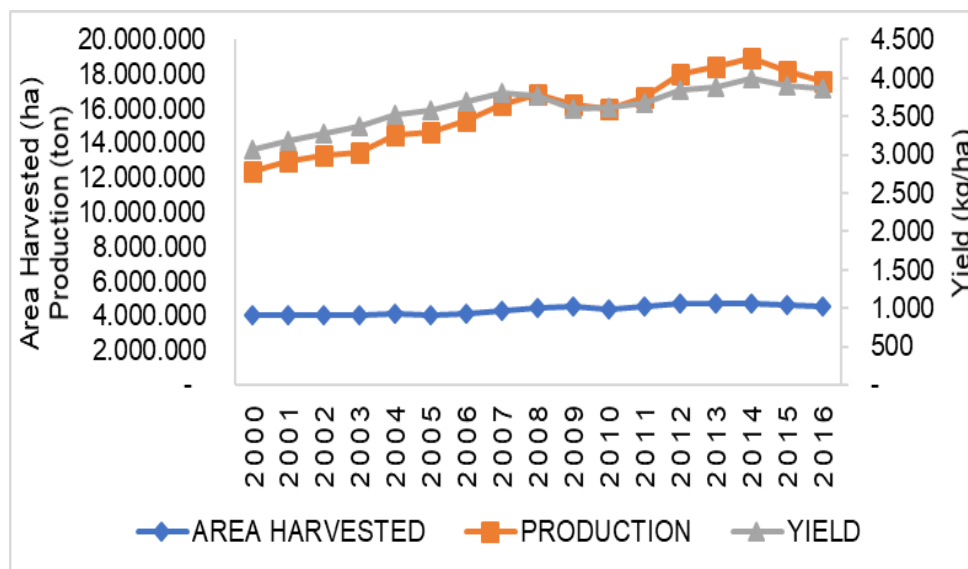


Figure 4.4. Philippines Rice Area Harvested, Production and Yield (FAO, 2017)

As shown in Figure 4.5. In 2008, import quantity has reached over 2 million tons and consequently in 2010 reached over the same quantity where it became one of the largest importers during the period amounted 2.38 million tons (Ricepedia, 2013). Despite being one of the largest producers of rice in the globe, the supply was not able to suffice the demand domestically. Rice is the main staple food in the Philippines where it is eaten 3 times a day by almost all of the Filipinos and it was found out that rice production is significantly lesser than the consumption within the last 15 years (Exconde, 2016). The Philippines import's rice to meet approximately 10 percent of the annual rice consumption requirements of the country, where the rice annual per capita consumption rose drastically over the same period (Appendix 1).

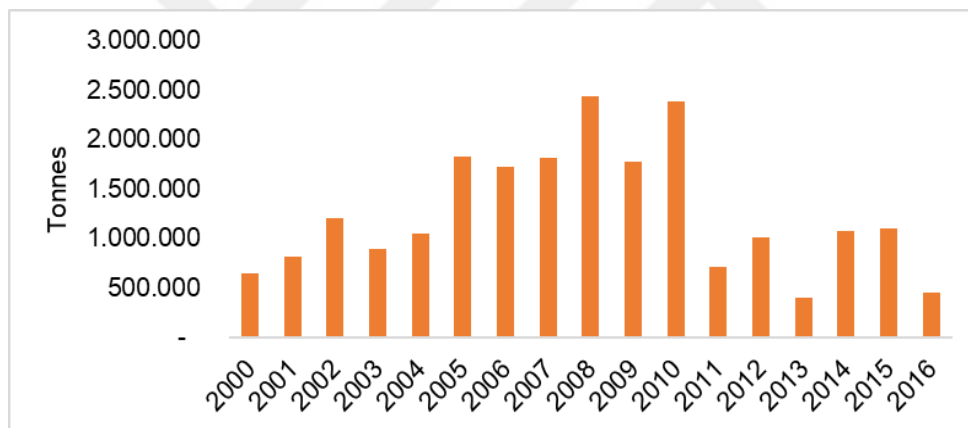


Figure 4.5. Philippines Rice Import Quantity (FAO, 2017)

Table 4.7 represents the results of the revealed trade indices for the rice in the comparison between the Philippines and co-ASEAN member countries.

Balassa Export Advantage Index (B-Index), Logarithm of Export Advantage Index (lnRXA), Relative Trade Advantage Index (RTA) and the Revealed Competitiveness Index (RC) were used to examine the revealed trade indices of rice in the international market. In addition, for calculation purposes, Import Advantage Index (RMA) and Logarithm of Import Advantage Index

(lnRMA) were also used. Results were divided into three sub-periods due to the large volume of the dataset and to clearly analyze the average values of these periods.

According to the results, for the entire period 2000 to 2016 Vietnam and Thailand are the only countries with a strong revealed comparative export advantage for the rice ($B\text{-index} > 1$ and $\ln RXA > 1$), same results were also obtained for Relative Trade Advantage ($RTA > 0$) and a strong Revealed Competitiveness ($RC > 1$) index values. In the period 2010-2016, Cambodia together with Myanmar are also advantageous among competing ASEAN member countries although Myanmar had only reported during this sub-period. On the other hand, the Philippines has revealed comparative trade disadvantage index values in rice for the entire analysis period due to the larger portion of import quantity over the export quantity caused by an increase in annual domestic per capita consumption for rice in the same period. Indonesia, Malaysia and Singapore have also illustrated a revealed comparative trade disadvantage for this specific product in the international market (Table 4.7).

Hence, the Philippines international trade for rice does not show any revealed comparative trade advantage position during the study period. However, if it is able to solve the high import quantity brought by the increase in per capita consumption and maintain the increments in yield and production over the next few years as one the largest producer of rice, the Philippines could gain potential trade advantages for this product.

Table 4.7. Revealed Comparative Trade Indices of Rice (Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-Index	lnRXA	RTA	RC
IDN	0.009	-4.842	-7.298	-6.609
KHM	0.996	-0.225	-2.956	-1.556
MMR	N/A	N/A	N/A	N/A
MYS	0.007	-5.664	-1.763	-6.213
PHL	0.002	-7.664	-4.922	-9.241
SGP	0.065	-3.509	-0.898	-3.465
THA	22.683	3.117	22.675	8.430
VNM	37.330	3.616	36.472	3.819
COUNTRY	2005-2009			
	B-Index	lnRXA	RTA	RC
IDN	0.025	-4.605	-2.422	-5.108
KHM	0.778	-0.357	-0.501	-0.507
MMR	N/A	N/A	N/A	N/A
MYS	0.004	-5.915	-2.887	-6.938
PHL	0.014	-5.072	-16.011	-7.797
SGP	0.070	-2.908	-0.569	-2.459
THA	21.959	3.085	21.934	7.169
VNM	33.997	3.514	33.397	4.052
COUNTRY	2010-2016			
	B-Index	lnRXA	RTA	RC
IDN	0.003	-5.700	-3.150	-6.683
KHM	18.349	2.777	17.525	3.070
MMR	28.339	3.310	25.988	2.464
MYS	0.038	-4.440	-2.314	-5.286
PHL	0.026	-4.010	-6.929	-5.649
SGP	0.097	-2.396	-0.575	-1.995
THA	16.343	2.784	16.318	6.667
VNM	18.945	2.847	18.612	4.011

*N/A = no data available

Market share in rice was dominated by Thailand and Vietnam. Over 90 percent of combined market share was accounted from these countries, with an average MSI value at 64.79% and 32.13% respectively (Table 4.8). Between the two, Vietnam demonstrates improvements in its market share while Thailand is losing due to a continuous decrease of MSI value over the duration of the entire study period (Figure 4.6). Cambodia showed a good performance by increasing its

MSI from 0.08% in 2000-2004 sub-period to 2.30% percent in 2010-2016 sub-period. Meanwhile, Myanmar who only reported in 2010-2016 sub-period got a significant MSI share of 4.90%. Behind are Singapore, Malaysia and Indonesia with an average MSI value of 0.48% 0.06% and 0.03% respectively.

On the other hand, the Philippines got the last position based on the average MSI value of 0.01% percent. As mentioned in the previous section 4.2.1, the Philippines although excels in rice production due to the continuous increases in domestic per capita consumption, rice importation exceeds exportation. For this reason, the Philippines became the least competitive country among ASEAN co-member countries in the global rice trade market.

Table 4.8. Market Share Index of Rice (Author's calculation based on COMTRADE data)

YEAR	IDN	KHM	MMR	MYS	PHL	SGP	THA	VNM	Other
2000-2004	0.02	0.08	N/A	0.03	0.00	0.39	71.11	28.36	0.00
2005-2009	0.06	0.07	N/A	0.02	0.01	0.43	66.09	33.33	0.00
2010-2016	0.01	2.30	4.90	0.14	0.02	0.61	57.16	34.70	0.17
AVE.	0.03	0.82	1.63	0.06	0.01	0.48	64.79	32.13	0.06

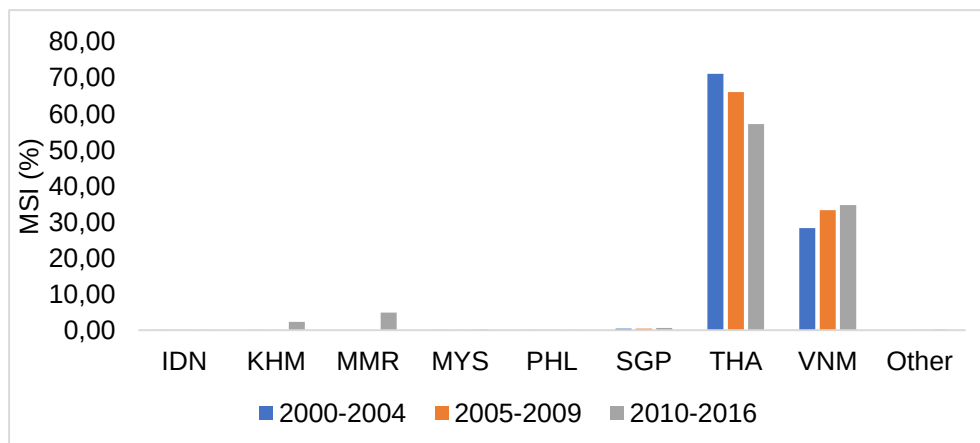


Figure 4.6. Market Share Index of Rice (Author's calculation based on COMTRADE data)

4.2.2. Corn

Corn has been the closest alternative staple food to rice in the Philippines. In Figure 4.7 numbers have shown that production and yield were constantly increasing from 2000-2016. Though from 2014 a slight decline was illustrated at approximately 7.7 million tons against 7.2 million tons in 2016 carried by the dry spell and drought in which it had unfavorably affected the production and yield in corn. Similarly, cut-back in the area harvested during the same period brought by several typhoons was also reported. That is an annual average rate of 1.1 percent reduction from 2014 to 2016 at approximately 2.5 million hectares to 2.4 million hectares respectively (PSA, 2018).

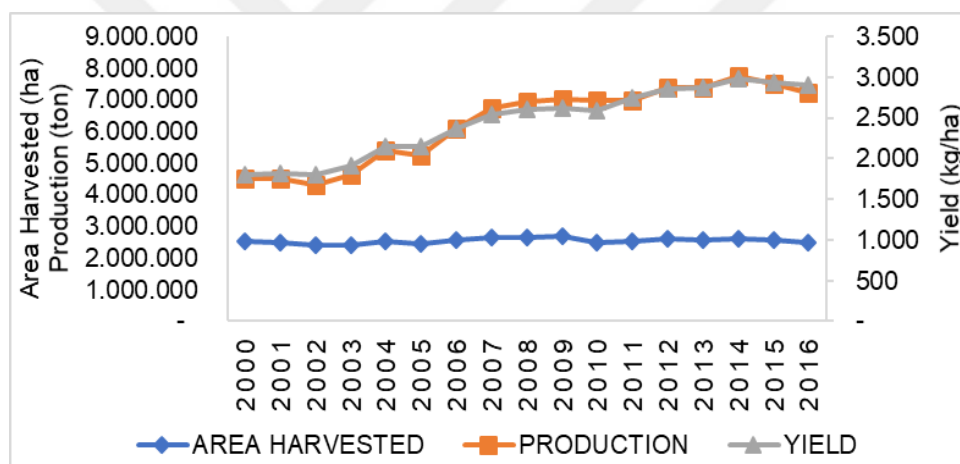


Figure 4.7. Philippines Corn Area Harvested, Production and Yield (FAO, 2017)

Import volumes in corn are depicted in Figure 4.8. It can be observed that the average volume of corn imports is much lesser between 2001 up until 2012 than of the import volume in rice in the same period. Meanwhile, in 2011 the Philippines Department of Agriculture had been promoting corn as an alternative to fill the gaps of significantly increasing rice consumption and ease the dependence on the imported rice (Inquirer.net, 2011). As a result, rapid growth in import volume from 2012 until 2016 was recorded from 136 thousand tons to over 780

thousand tons respectively. That is also due to the high growth rate percentage increased in corn consumption from 2013 to 2016 (Appendix 1).

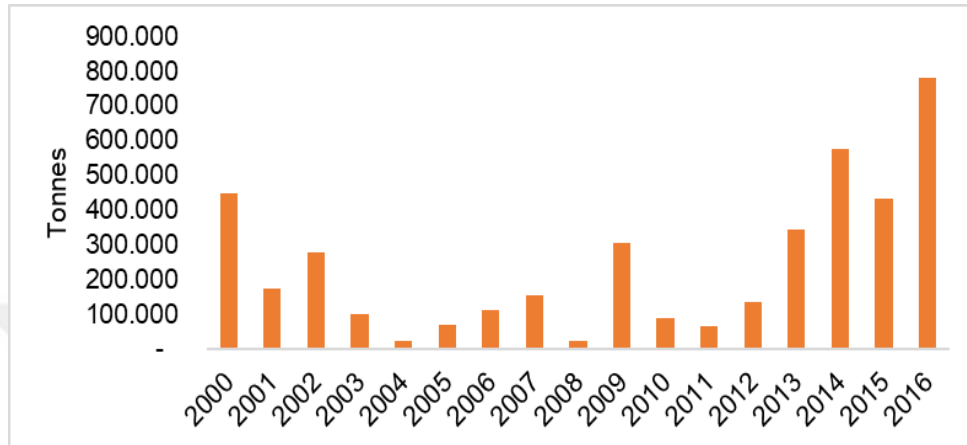


Figure 4.8. Philippines Corn Import Quantity (FAO, 2017)

Revealed trade indices for corn in the comparison between the Philippines and co-ASEAN member countries are examined in Table 4.9 for the period 2000-2016. Results have shown that Myanmar for the sub-period 2010-2016 is the only ASEAN member country with high trade index values ($B\text{-index} > 1$, $\ln R_X A > 1$, $RTA > 0$ and $RC > 1$) which means a strong revealed comparative trade advantage position of Myanmar in corn product. On the other hand, Thailand has shown positive index value for the Relative Trade Index ($RTA > 0$) and Revealed Competitiveness Index ($RC \geq 1$) for the entire analyzed period which means after considering imports it gained significant trade competitiveness in corn to the international market. Meanwhile, the rest of the countries are in a disadvantageous position in corn product including the Philippines.

Being an alternative food to rice for the Philippines, corn does not show any revealed comparative trade advantage position over the study period. Although in terms of production and yield where it performed well, the Philippines could see this as a potential crop product as there are fewer competitors from ASEAN co-member countries.

Table 4.9. Revealed Comparative Trade Indices of Corn (Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-Index	lnRXA	RTA	RC
IDN	0.073	-2.705	-2.667	-3.707
KHM	0.204	-2.770	0.116	-0.673
MMR	N/A	N/A	N/A	N/A
MYS	0.020	-3.995	-1.907	-4.648
PHL	0.006	-5.154	-0.579	-4.418
SGP	0.003	-5.838	-0.016	-1.843
THA	0.452	-1.121	0.338	1.671
VNM	0.122	-2.467	-0.654	-1.931
COUNTRY	2005-2009			
	B-Index	lnRXA	RTA	RC
IDN	0.085	-2.540	-1.137	-2.306
KHM	0.307	-1.375	-0.046	-0.314
MMR	N/A	N/A	N/A	N/A
MYS	0.004	-6.043	-2.460	-6.944
PHL	0.009	-4.909	-0.652	-4.314
SGP	0.000	-8.240	-0.006	-3.184
THA	0.545	-0.721	0.428	1.497
VNM	0.028	-3.730	-1.419	-4.003
COUNTRY	2010-2016			
	B-Index	lnRXA	RTA	RC
IDN	0.058	-3.183	-1.938	-3.800
KHM	0.090	-2.742	-0.034	-0.527
MMR	10.199	2.046	7.804	1.175
MYS	0.009	-5.153	-2.386	-6.024
PHL	0.013	-5.407	-0.975	-5.306
SGP	0.003	-7.629	-0.011	-3.330
THA	0.394	-1.006	0.312	1.591
VNM	0.040	-3.474	-3.339	-4.609

*N/A – no data available

Thailand once again overtops in grains product in terms of MSI, at 1st position based on the average corn MSI value of 62.71% Thailand outperforms the rest of ASEAN competing countries however in the course of the study it continued losing MSI from its highest share 83.12% in sub-period 2005-2009 to 34.07% in sub-period 2010-2016 (Table 4.10 and Figure 4.9) which indicates that Thailand is also losing its competitiveness over the other competing ASEAN

member countries. The Philippines, Indonesia and Malaysia are also having the same losing situation, while the other countries such as Vietnam, Cambodia and Singapore are experiencing unstable MSI values. On the contrary, Myanmar who only reported in the sub-period 2010-2016 got the MSI share of 41.29% which could mean that it gained the majority of MSI share loss from the other ASEAN member countries in that same sub-period.

In terms of the average corn MSI value the Philippines got the last position again with 0.15% share, combined with the decreasing trend in its MSI values, the Philippines became the least competitive among competing ASEAN member countries.

Table 4.10. Market Share Index of Corn (Author's calculation based on COMTRADE data)

YEAR	IDN	LAO	KHM	MMR	MYS	PHL	SGP	THA	VNM
2000-2004	13.14	N/A	1.73	N/A	7.71	0.85	1.68	70.94	5.18
2005-2009	11.89	N/A	1.89	N/A	1.20	0.43	0.21	83.12	1.70
2010-2016	3.83	17.07	0.18	41.29	0.81	0.24	0.40	34.07	2.05
AVE.	9.62	5.69	1.27	13.76	3.24	0.51	0.76	62.71	2.97

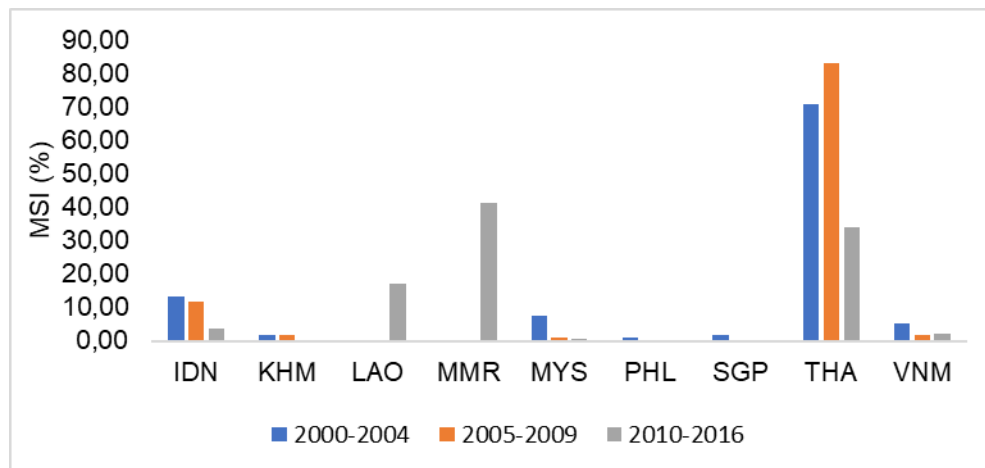


Figure 4.9. Market Share Index of Corn (Author's calculation based on COMTRADE data)

4.2.3. Banana

Behind India and China, the Philippines is the 3rd largest banana producing country in the world (FAO, 2017). In the scope of study period 2000-2016 banana production for the Philippines is at its peak in the year 2012 where it produced over 9.2 million tons of fresh or dried banana in a stable area of harvest approximately over 400 hectares a year with an average yield of around 16 thousand kilograms per hectare annually. Banana production and yield are in their lowest point in 2014 amounting to over 5.7 million tons and 12.8 kilograms per hectare respectively (Figure 4.10). Between 2013 and 2014 besides climate constraints like El Niño phenomenon, the outbreak of Panama disease during these years have caused about 5.9 thousand hectares of aggregate banana plantation infected and abandoned which resulted into about 30 percent of the decline in the volume of production in banana (Anonymous, 2014).

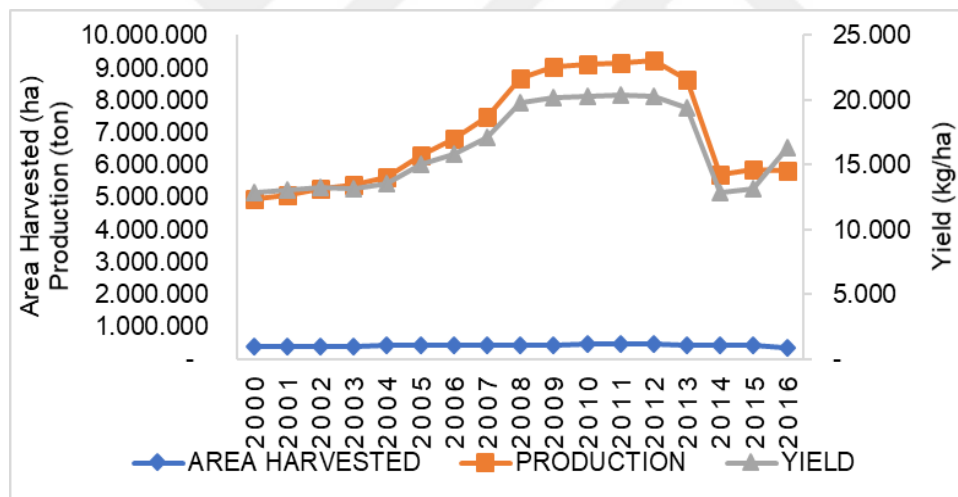


Figure 4.10. Philippines Banana Area Harvested, Production and Yield (FAO, 2017)

Amongst Asian suppliers of banana, the Philippines is accounted for around 98 percent of the export trade from the Asian market which majority goes to China, Japan and South Korea (Prowse, 2013). Figure 4.11 banana export quantity of the Philippines for the period 2000 until 2016. It can be observed that

the proportion between export and import is large however contrasting the rice, export quantity is much dominant. Nonetheless, in 2015, due to a long period of drought coupled with plant disease outbreak which heavily affected the quality and volume of production and followed by the export ban to China, export volume recorded its lowest at 1.2 million tons from its highest in 2013 amounting to over 3.2 million tons.

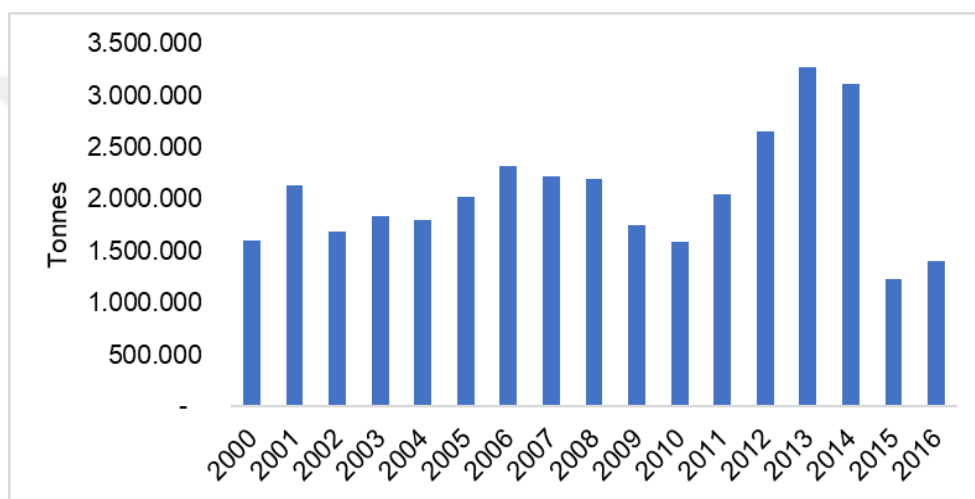


Figure 4.11. Philippines Banana Export Quantity (FAO, 2017)

Table 4.11 gives the revealed trade indices of banana for the study period (2000-2016) in a comparison between the Philippines and co-ASEAN member countries. Balassa Export Advantage Index (B-Index), Logarithm of Export Advantage Index (lnRXA), Relative Trade Advantage Index (RTA) and the Revealed Competitiveness Index (RC) were used to examine the revealed trade indices of banana in the international market. In addition, for calculation purposes, Import Advantage Index (RMA) and Logarithm of Import Advantage Index (lnRMA) were also used. Results were divided into three sub-periods due to the large volume of the dataset and to clearly analyze the results in average values.

Depicted in the results of the analysis that the Philippines have obtained a strong revealed comparative trade advantage position in banana products for the whole study period. Index values of the Philippines (B-index > 0 , $\ln RXA > 1$, $RTA > 0$ and $RC > 1$) are the highest among ASEAN member countries. Meanwhile, Indonesia, Malaysia, and Thailand obtained a positive Relative Trade Advantage index values ($RTA > 0$) and Revealed Competitiveness index values ($RC > 1$) which indicated that after considering imports, these countries gained a strong potential revealed competitiveness advantage position for the international banana trade.

The Philippines have displayed a strong revealed comparative trade advantage position for the banana against ASEAN co-member countries in the international market for the period 2000-2016. However, threats may have occurred from ASEAN co-member countries such as Indonesia, Malaysia, and Thailand and competition among ASEAN member countries for banana may rise for the next few years. Therefore, the Philippines, to be able to sustain its competitiveness, should do a better job and be mindful in alleviating production constraints to further increase yields in banana for the next 5-10 years.

Table 4.11. Revealed Comparative Trade Indices of Banana (Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-Index	lnRXA	RTA	RC
IDN	0.015	-4.467	0.010	1.221
MYS	0.096	-1.704	0.095	3.936
PHL	13.252	2.581	8.067	6.791
SGP	0.001	-5.879	-0.083	-4.075
THA	0.052	-2.192	0.051	1.314
COUNTRY	2005-2009			
	B-Index	lnRXA	RTA	RC
IDN	0.017	-4.330	0.014	1.783
MYS	0.066	-2.733	0.064	3.994
PHL	15.672	2.750	6.643	5.083
SGP	0.001	-7.584	-0.070	-4.927
THA	0.100	-2.301	0.090	2.416
COUNTRY	2010-2016			
	B-Index	lnRXA	RTA	RC
IDN	0.065	-3.744	0.054	1.234
MYS	0.063	-2.765	0.028	1.044
PHL	21.394	2.986	8.458	4.313
SGP	0.001	-7.177	-0.096	-4.822
THA	0.150	-2.024	0.133	2.067

In banana MSI, total domination is being displayed by the Philippines with a 92.81% average MSI value and clearly claims 1st position over the other competing ASEAN member countries. Thailand and Malaysia followed with average MSI values 2.01% and 1.63% respectively, while Indonesia (0.40%) and Singapore (0.03%) were at the bottom among the ASEAN competing countries (Table 4.12 and Figure 4.12).

However, in sub-period 2010-2016, the Philippines got a decreased in MSI value of 86.55% which means competing ASEAN countries have emerged and increased their MSI values from the previous sub-periods. Such countries are Thailand (2.82%) and Indonesia (0.77%). Hence, the Philippines although holds the largest share in banana MSI value should not remain calm because further threats may emerge in the international banana market from the competing ASEAN countries in the coming years.

Table 4.12. Market Share Index of Banana (Author's calculation based on COMRADE data)

YEAR	IDN	MYS	PHL	SGP	THA	Other
2000-2004	0.18	2.27	95.87	0.03	1.25	0.40
2005-2009	0.23	1.47	96.00	0.02	1.97	0.31
2010-2016	0.77	1.16	86.55	0.02	2.82	7.19
AVE.	0.40	1.63	92.81	0.03	2.01	2.63

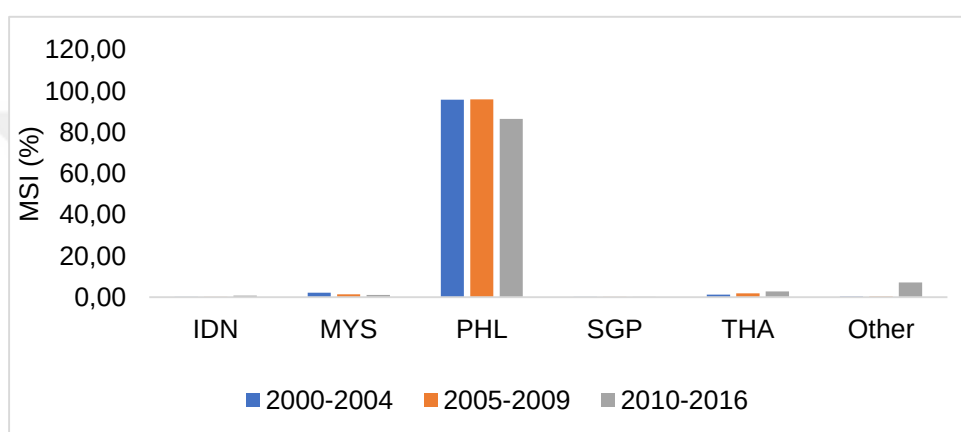


Figure 4.12. Market Share Index of Banana (Author's calculation based on COMTRADE data)

4.2.4. Pineapple

Production, yield and area harvested in pineapple for the Philippines are shown in Figure 4.13. From 2000-2016, the production is steadily increasing which have reached to over 2.6 million tons although the same trend has also been displayed in yield, the volume has slightly declined between 2014 and 2015. El Nino phenomenon or long drought was experienced until the second quarter of 2016 in the Philippines which caused 1.48 million tons lost in high-value crops (FAO, 2017). Nevertheless, pineapple yield had barely dropped to 40 thousand kilograms per hectare in 2015 from 41 thousand kilograms in 2013.

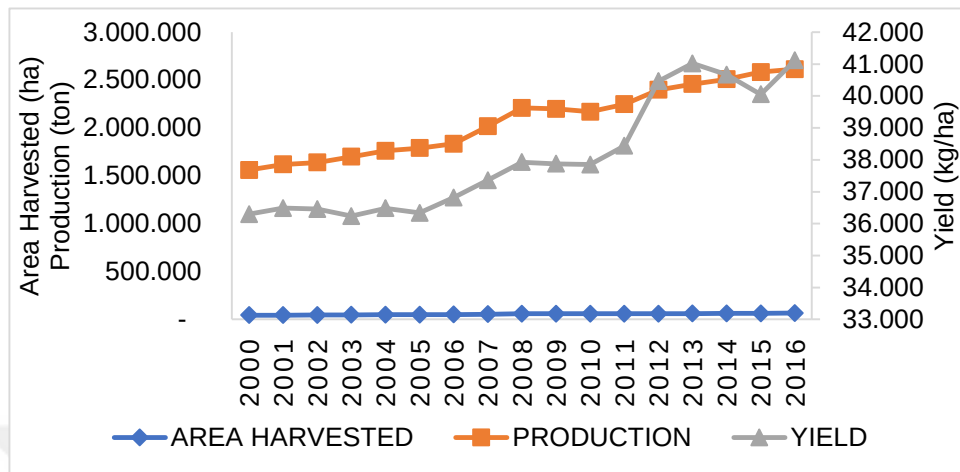


Figure 4.13. Philippines Pineapple Area Harvested, Production and Yield (FAO, 2017)

Figure 4.14 shows the volume of pineapple in terms of export trade by the Philippines from 2000 until 2016. Just like in banana, a similar situation can be seen in pineapple export trade volume wherein due to a decrease in yield, volume in export has also slightly fallen down in 2015. However, it bounced back in the following year where it gained its highest volume at around 566 thousand tons. In 2016, the Philippines became the second largest supplier of pineapple globally at about 16 percent of the world's total export volume behind Costa Rica which accounted for 56 percent of the world's total export volume (Anonymous, 2018).

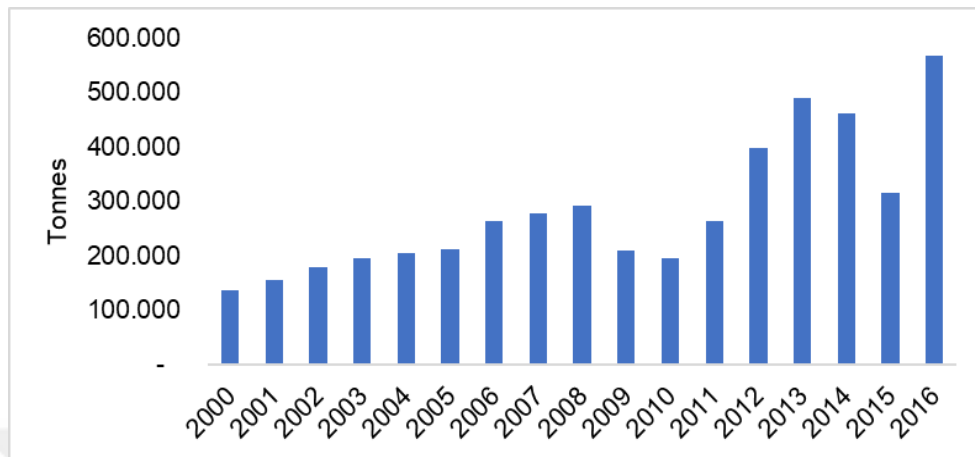


Figure 4.14. Philippines Pineapple Export Quantity (FAO, 2017)

Revealed comparative trade indices (B-index, lnRXA, RTA and RC) for pineapple in the comparison between the Philippines and co-ASEAN member countries are examined in Table 4.13. For the entire study period 2000-2016, in terms of Balassa Export Advantage Index ($B\text{-index} > 1$) and Logarithm of Export Advantage Index ($\ln RXA > 1$) the Philippines garnered the very strong advantageous position among ASEAN co-member countries. Likewise, in terms of Relative Trade Advantage Index ($RTA > 0$) and Revealed Competitiveness Index ($RC > 1$), the Philippines gained the highest index values among the other competing ASEAN member countries which makes it the most competitive in the export of pineapple product in the global market. Meanwhile, in consideration of imports, Indonesia, Malaysia and Thailand have acquired positive index values for Relative Trade Advantage ($RTA > 0$) and Revealed Competitiveness ($RC > 1$) and obtained strong significant competitiveness in pineapple product for the entire analysis period. However, Indonesia ($RTA > 0$) barely lost its strong relative trade advantage position during the sub-period 2010-2016 despite having strong advantage index values during the 2000-2004 and 2005-2009 sub-periods. Accordingly, the Philippines have enjoyed a very strong revealed comparative trade advantage position in pineapple product amongst the competing ASEAN

member countries, however, after considering import into the equation these countries have emerged and exhibited significant competitiveness against the Philippines.

Table 4.13. Revealed Comparative Trade Indices of Pineapple (Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-Index	lnRXA	RTA	RC
IDN	0.285	-1.451	0.285	8.523
MYS	0.297	-1.262	0.267	2.502
PHL	9.854	2.287	7.757	8.791
SGP	0.005	-5.317	-0.217	-3.784
THA	0.376	-0.994	0.294	7.251
COUNTRY	2005-2009			
	B-Index	lnRXA	RTA	RC
IDN	0.014	-4.685	0.010	1.686
MYS	0.238	-1.456	0.226	2.974
PHL	11.503	2.435	8.902	7.625
SGP	0.002	-6.913	-0.121	-4.806
THA	0.245	-1.495	0.244	8.034
COUNTRY	2010-2016			
	B-Index	lnRXA	RTA	RC
IDN	0.021	-5.158	0.005	0.099
MYS	0.310	-1.180	0.276	2.267
PHL	21.617	2.990	12.585	5.157
SGP	0.001	-7.324	-0.143	-5.370
THA	0.107	-2.277	0.105	5.412

Market share in pineapple product among ASEAN member countries is shown in Table 4.14 and Figure 4.15. It can be observed that the Philippines in terms of average MSI got the 1st rank among ASEAN member countries at 84.35%, followed by Malaysia (6.32%), Thailand (4.69%), Indonesia (1.43%) and Singapore (0.02%) respectively. As it can be seen the Philippines have performed well in gaining market share over the study period 2000-2016. Thus, it clearly claimed significant competitive advantage position in global pineapple market against its competitors from ASEAN member countries.

Table 4.14. Market Share Index of Pineapple (Author's calculation based on COMTRADE data)

YEAR	IDN	MYS	PHL	SGP	THA	Other
2000-2004	3.85	6.60	80.09	0.17	6.27	3.03
2005-2009	0.24	6.38	83.47	0.10	5.56	4.25
2010-2016	0.21	5.98	89.48	0.02	2.26	2.04
AVE.	1.43	6.32	84.35	0.10	4.69	3.11

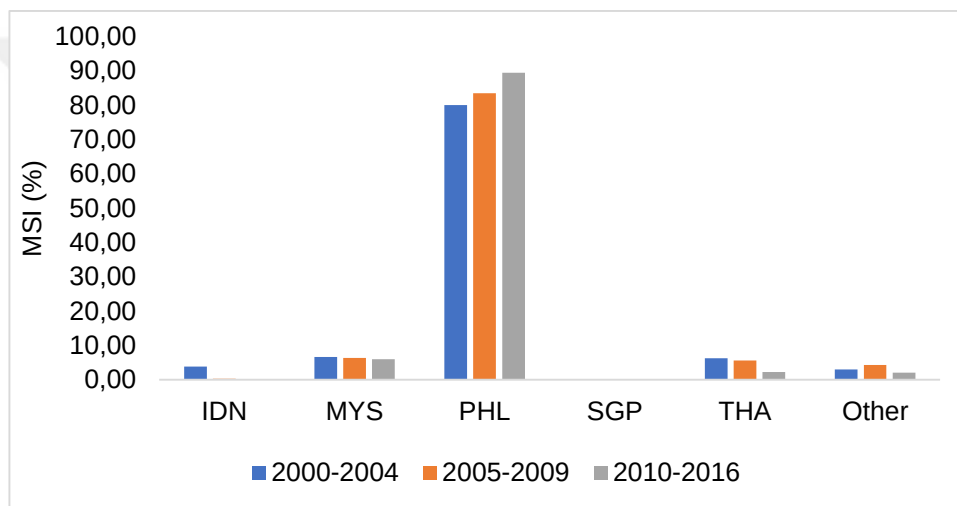


Figure 4.15. Market Share Index Pineapple (Author's calculation based on COMTRADE data)

4.2.5. Coconut Oil

Philippines is the world's second coconut producer, one spot behind its neighbor Indonesia, as the top global coconut producing country (FAO, 2017). Coconut production illustrated a steady increment from 2000-2012 but fell down in the following periods from 2013 until 2016 while maintaining an average of over 3 million hectares of the area harvested (Figure 4.16). However, a fluctuating trend has been displayed in terms of yield for coconut, between 2012 and 2016 higher decrements were exhibited due to the decreasing performance in area planted and fruit-bearing trees brought by drought. Lowest performing area is in the southern

part of the Philippines such as Davao, Sarangani and Sultan Kudarat, lesser harvest in nuts brought by dry spell has resulted in low production in coconuts during this period (PSA, 2018).

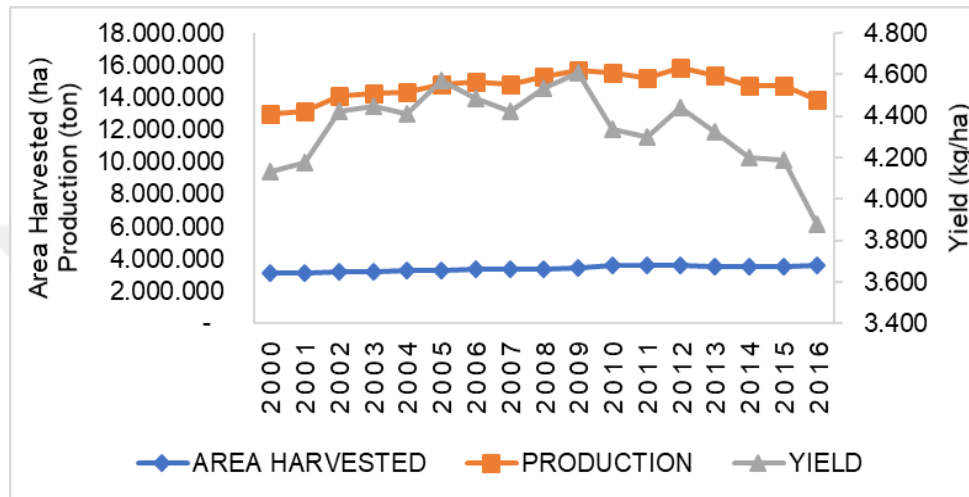


Figure 4.16. Philippines Coconut Area Harvested, Production and Yield (FAO, 2017)

Although ranked second in coconut in terms of production, the Philippines overtakes Indonesia as the leading coconut oil exporter in the world (FAO, 2017). Figure 4.17 shows export volumes of the Philippines in coconut oil. For the entire analysis period 2000-2016, it is noticeable that the ratio of export quantity is much greater than import quantity, though a decline in coconut productivity and low export volume was depicted in 2016, coconut oil was reported as the top exported product in the total agricultural exports of the Philippines garnering a 28.6 percent share growth rate from the previous year (PSA, 2018).

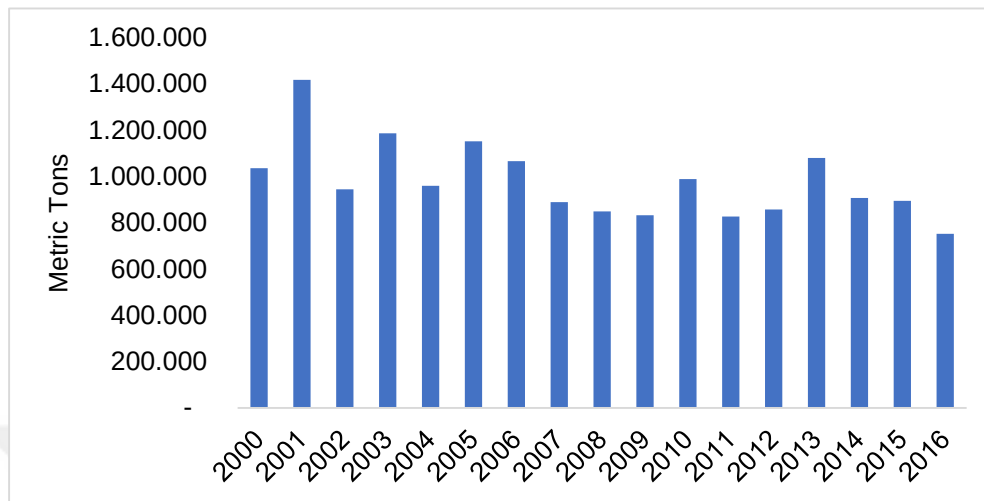


Figure 4.17. Philippines Coconut Oil Export Quantity (FAO, 2017)

Balassa Export Advantage Index (B-Index), Logarithm of Export Advantage Index (lnRXA), Relative Trade Advantage Index (RTA) and the Revealed Competitiveness Index (RC) were employed to determine the revealed trade indices of coconut oil in the international market.

According to the results of the analyses reflected in Table 4.15. The Philippines, Indonesia, and Malaysia got strong revealed comparative trade index values ($B\text{-index} > 1$, $RTA > 0$, $\ln RXA > 1$, and $RC > 1$) in coconut oil for the entire analyzed period 2000-2016. Meanwhile, Singapore got positive revealed comparative trade advantage index values ($B\text{-index} > 1$ and $RTA > 0$) during 2000-2004 sub-period however illustrated a moderate or average advantage position ($1 \leq \ln RXA > 0$ and $1 \leq RC > 0$) in the same sub-period. On the other hand, Thailand, and Vietnam have acquired revealed comparative trade disadvantage during the entire analysis period.

In ordinal terms, the Philippines had the highest index values which suggested that the Philippines had a very strong revealed comparative trade advantage position over Indonesia, Malaysia and the rest of ASEAN co-member countries. But then a significant increasing trend in the indices of Indonesia is

notable, therefore the Philippines needs to be watchful of its competitors for the following years in the global coconut oil market.

Table 4.15. Revealed Comparative Trade Indices of Coconut Oil (Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-Index	lnRXA	RTA	RC
IDN	12.642	2.505	12.451	5.148
MYS	7.741	1.900	5.773	2.013
PHL	65.216	4.163	65.199	8.813
SGP	1.010	0.050	0.294	0.302
THA	0.095	-2.660	0.088	2.656
VNM	0.938	-0.487	0.292	0.216
COUNTRY	2005-2009			
	B-Index	lnRXA	RTA	RC
IDN	19.606	2.968	19.437	6.143
MYS	11.091	2.400	5.415	0.762
PHL	98.631	4.585	98.618	9.589
SGP	0.463	-0.787	-0.269	-0.452
THA	0.076	-2.629	-0.140	-0.445
VNM	0.182	-4.055	-0.138	-2.599
COUNTRY	2010-2016			
	B-Index	lnRXA	RTA	RC
IDN	23.748	3.156	23.703	6.440
MYS	9.105	2.202	6.015	1.179
PHL	95.721	4.547	95.593	8.497
SGP	0.270	-1.375	-0.904	-1.482
THA	0.250	-1.698	-0.313	0.446
VNM	0.454	-2.996	0.259	-1.297

Table 4.16 and Figure 4.18 represented the MSI results in coconut oil among ASEAN member countries. According to these results, the share of the Philippines has an average of 51.69% of the total MSI among ASEAN member countries in coconut oil international market, while Indonesia and Malaysia covered the 26.43% and 19.0% market share respectively. On the other hand, Singapore (2.13%), Vietnam (0.41) and Thailand (0.26%) are at bottom rank based on the average coconut oil MSI values.

Despite having the highest market share in coconut oil, the Philippines over the 3 sub-periods is losing its share significantly to other competing ASEAN member countries. From 57.92% in sub-period 2000-2004 to 45.49% in 2010-2016 sub-period. Indonesia became the highest share earner from 18.87% in 2000-2004 to 35.34% in 2010-2016 sub-period. Although Malaysia improved its MSI in 2005-2009 at 21.52% it got a decline in the next sub-period 2010-2016 to 17.05% respectively. Meanwhile, Vietnam and Thailand have also slightly improved its share but Singapore showed otherwise.

Therefore, the Philippines has no complete significant competitive advantage in coconut oil product in the international market against its competitors from ASEAN member countries except Singapore.

Table 4.16. Market Share Index of Coconut Oil (Author's calculation based on COMTRADE data)

YEAR	IDN	MYS	PHL	SGP	THA	VNM
2000-2004	18.87	18.64	57.92	3.96	0.17	0.43
2005-2009	25.08	21.52	51.65	1.52	0.13	0.09
2010-2016	35.34	17.05	45.49	0.91	0.48	0.73
AVE.	26.43	19.07	51.69	2.13	0.26	0.41

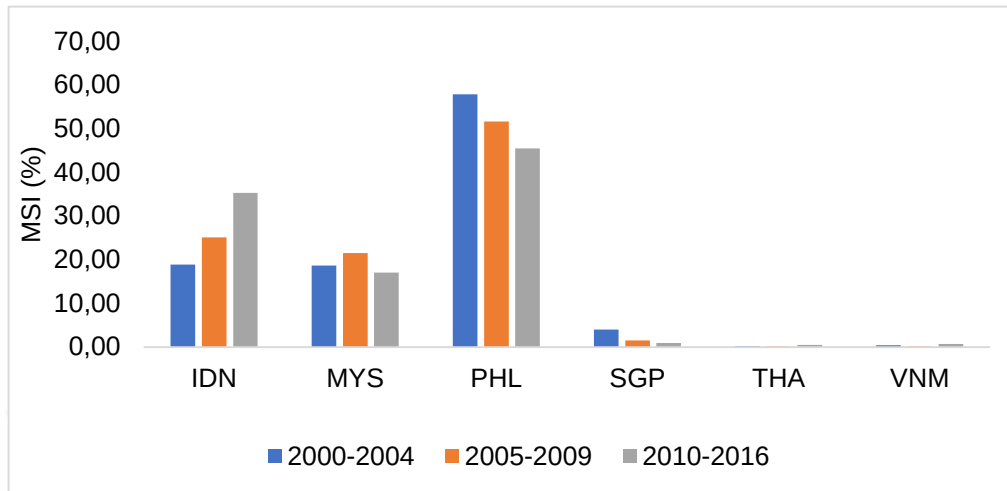


Figure 4.18. Market Share Index of Coconut Oil (Author's calculation based on COMTRADE data)

4.2.6. Coffee

Over decades ago, the Philippines was one of the world's largest producer of coffee, geographically the country was suitable for producing all four main varieties of coffee but even with these advantages, supply was not able to meet the large demand. Figure 4.19 shows the continuous decreasing trend of production and yield in coffee as well as the area of harvest for the whole period 2000-2016. For the past ten years, planted area for coffee decreased by 1.02 percent due to constant urbanization and conversion of farmlands to real estates, so much more as the increasing numbers of coffee farmers shifted to other high-value crops. In addition, production and yield have also declined by 3.51 percent and 2.53 percent annually. This drop is attributed to poor farm management and inadequate knowledge of coffee technology of farmers (DA-BPI, 2017).

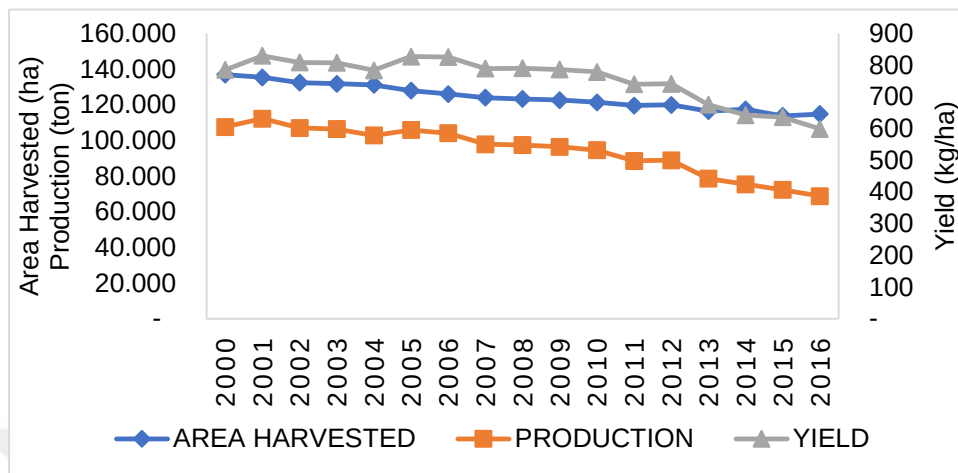


Figure 4.19. Philippines Coffee Area Harvested, Production and Yield (FAO, 2017)

Coffee is like a staple product in the Philippines and instant coffee is easily accessible to every socio-economic class. Recently local demand had been steadily on the rise especially of younger generations. This vast local demand had brought the Philippines into one of the largest consumers of coffee globally (PNA, 2018). Figure 4.20 shows that over the period 2000-2016 the Philippines is a net importer of coffee. Domestic per capita consumption in coffee is continuously increasing, in 2016 a 46.81 percent growth in coffee per capita consumption from the previous year was recorded (Appendix 1).

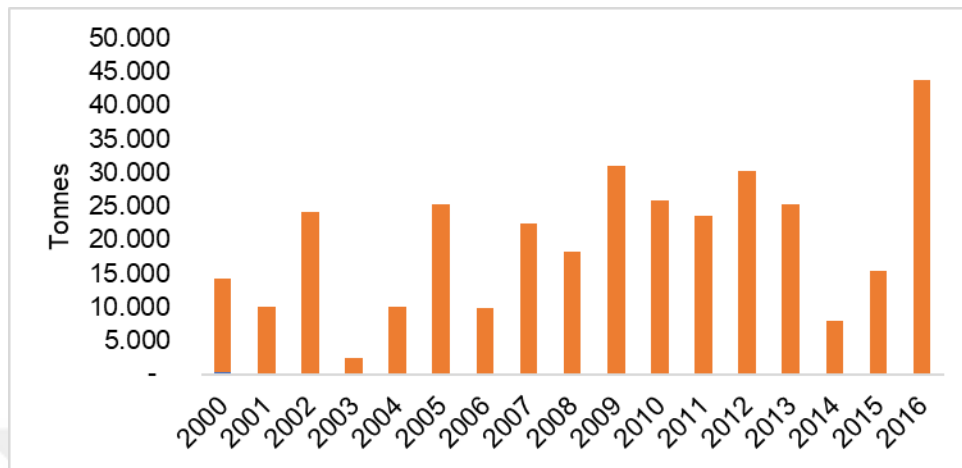


Figure 4.20. Philippines Coffee Import Quantity (FAO, 2017)

Revealed trade indices for coffee in the comparison between the Philippines and co-ASEAN member countries are examined in Table 4.17 for the period 2000-2016. B-Index, lnRXA, RTA and RC were employed to determine the revealed trade indices of the international coffee market.

Results revealed that Vietnam and Indonesia got a very strong comparative trade advantage ($B\text{-index} > 1$, $RTA > 0$, $\ln RXA > 1$ and $RC > 1$) position among competing ASEAN member countries in the international coffee market. The trade index values of Vietnam are the highest among the competing ASEAN countries followed by Indonesia. Meanwhile, Thailand after considering imports ($RTA > 0$ and $RC > 1$) have illustrated strong revealed competitiveness in the global coffee market during 2000-2004 and 2005-2009 sub-periods however lost it during 2010-2016 sub-period. The Philippines together with the remaining ASEAN member countries have shown a revealed comparative trade disadvantage position in world coffee market as these countries got low or negative trade index values ($B\text{-index} < 1$, $RTA < 0$, $\ln RXA < 0$, and $RC < 0$).

Table 4.17. Revealed Comparative Trade Indices of Coffee (Author's calculation based on COMTRADE data)

COUNTRY	2000-2004			
	B-Index	lnRXA	RTA	RC
IDN	4.760	1.551	4.625	3.587
MYS	0.009	-4.725	-0.193	-3.122
PHL	0.006	-5.249	-0.336	-4.062
SGP	0.073	-2.618	-0.007	-0.011
THA	0.260	-1.661	0.259	6.033
VNM	30.092	3.400	29.883	5.215
COUNTRY	2005-2009			
	B-Index	lnRXA	RTA	RC
IDN	6.408	1.855	6.118	3.763
MYS	0.012	-4.473	-0.452	-3.646
PHL	0.002	-7.589	-0.615	-7.030
SGP	0.069	-2.700	-0.045	-0.480
THA	0.100	-3.037	0.052	1.890
VNM	31.918	3.447	31.820	5.968
COUNTRY	2010-2016			
	B-Index	lnRXA	RTA	RC
IDN	5.229	1.633	5.007	3.214
MYS	0.013	-4.382	-0.736	-4.073
PHL	0.001	-7.763	-0.573	-7.109
SGP	0.039	-3.275	-0.039	-0.667
THA	0.009	-4.842	-0.278	-3.510
VNM	18.339	2.883	18.111	4.448

In coffee MSI results, Vietnam holds the highest market share in coffee product world market among ASEAN member countries at an average value of 66.39%. While Indonesia in the 2nd position acquired 31.09% average MSI value which means over 96% share were accounted from the two countries alone, the remaining shares were divided for Thailand (1.02%), Singapore (0.88%), Malaysia (0.09%) and the Philippines (0.01%) respectively (Table 4.18).

Overall, the Philippines based on MSI illustrates the most disadvantageous in terms of competitiveness among ASEAN member countries in the international coffee market while Vietnam with the highest increasing market share index had the most significant competitive advantage position against all the competitors.

Table 4.18. Market Share Index of Coffee (Author's calculation based on COMTRADE data)

YEAR	IDN	MYS	PHL	SGP	THA	VNM	Other
2000-2004	33.61	0.10	0.02	1.24	2.34	62.68	0.00
2005-2009	31.88	0.09	0.00	0.90	0.66	66.47	0.00
2010-2016	27.78	0.09	0.00	0.49	0.06	70.01	1.57
AVE.	31.09	0.09	0.01	0.88	1.02	66.39	0.52

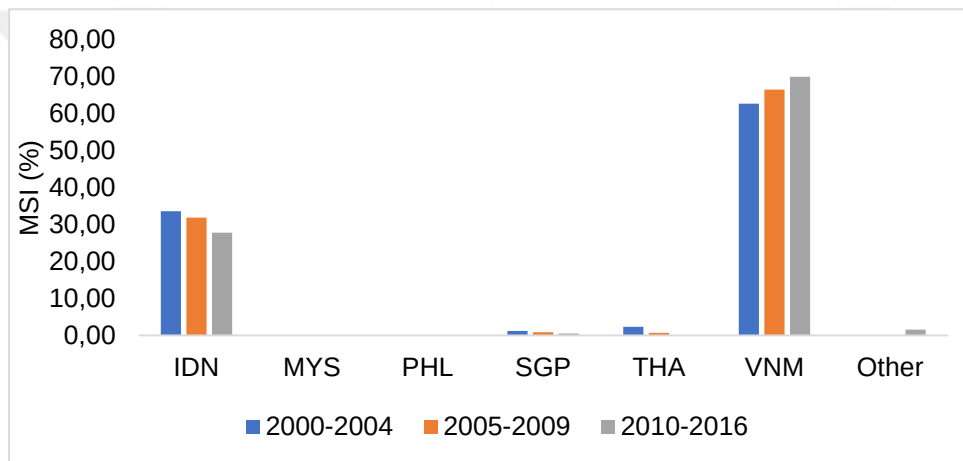


Figure 4.21. Market Share Index of Coffee (Author's calculation based on COMTRADE data)

4.3. Summary of Findings

This final section of the chapter gives the overall summary of the agricultural products with revealed comparative trade advantage or disadvantage to the international market according to the analysis results of Trade Indices and Market Share Index. Moreover, in this section, the strength of revealed comparative trade advantage position is being demonstrated according to three levels: 1. Weak or low revealed comparative trade advantage position; 2. Moderate or normal revealed comparative trade advantage position; 3. Strong revealed comparative trade advantage position.

4.3.1. Summary of Aggregated Agricultural Products

The summary of revealed comparative export advantage in aggregated agricultural products is shown in Table 4.20. For the animal products, Indonesia, Myanmar, Thailand and Vietnam are advantageous among the competing ASEAN countries. Among these countries, Vietnam and Myanmar illustrated a strong advantage position. Thailand had a moderate advantage position and Indonesia had a weak or low comparative advantage position in animal products. Coincided to export market share result in section 4.1.1, Vietnam had improved the most among the competing ASEAN member countries while Indonesia and Thailand had shown unstable MSI in spite of having a large percentage of export market share than the other competing ASEAN member countries.

In vegetable products, countries such as Indonesia, Lao PDR, Myanmar, Malaysia, Philippines, Thailand and Vietnam are advantageous in the global vegetable product market. Indonesia, Vietnam, Lao PDR and Myanmar had a strong advantage position while Malaysia and Thailand had a moderate advantage position and the Philippines had a weak advantage position. In section 4.1.2, export market share analysis had also revealed strong improvements for Indonesia and Vietnam while the Philippines, Singapore, Malaysia, Thailand were not performing well in maintaining or increasing their export market share in global vegetable trade. Meanwhile, Lao PDR and Thailand are the only two advantageous countries over the other competing ASEAN member countries in prepared foodstuff products with a moderate advantage position.

Table 4.19. Summary of Findings in B-index and lnRXA of Aggregated Agricultural Products

Country	Animal Products	Vegetable Products	Prepared Foodstuff Products
BRN	X	X	X
IDN	✓*	✓***	X
KHM	X	X	X
LAO	X	✓***	✓**
MMR	✓***	✓***	X
MYS	X	✓**	X
PHL	X	✓*	X
SGP	X	X	X
THA	✓**	✓***	✓**
VNM	✓***	✓***	X

Where: ✓ = advantage; x = disadvantage; * = weak; ** = moderate; *** = strong

Furthermore, taking into account imports for revealed comparative trade advantage position, in animal products Indonesia had gained a moderate advantage position while the rest remained the same. For vegetable products, the Philippines had improved to moderate advantage position and Thailand to strong advantage position. Also, Thailand had improved in prepared foodstuff products from moderate to strong advantage position among competing ASEAN member countries (Table 4.21).

Table 4.20. Summary of Findings in RTA and RC of Aggregated Agricultural Products

Country	Animal Products	Vegetable Products	Prepared Foodstuff Products
BRN	X	X	X
IDN	✓**	✓***	X
KHM	X	X	X
LAO	X	✓***	✓**
MMR	✓***	✓***	X
MYS	X	✓**	X
PHL	X	✓**	X
SGP	X	X	X
THA	✓**	✓***	✓***
VNM	✓***	✓***	X

Where: ✓ = advantage; x = disadvantage; * = weak; ** = moderate; *** = strong

4.3.2. Summary of Selected Agricultural Products

The summary of revealed comparative export advantage in selected agricultural products is shown in Table 4.22. For rice, Cambodia, Myanmar, Thailand and Vietnam are the advantageous countries. Cambodia had acquired a moderate advantage position while Myanmar, Thailand and Vietnam had revealed a strong advantage position among the competing ASEAN countries. In terms of export market share in rice, Vietnam is appearing to have performed well in increasing its market share while Thailand failed to maintain or increase its export market share over the competing ASEAN countries (Section 4.2.1). In corn, Myanmar is the only country with strong revealed comparative export advantage position, the same can be seen in the export market share where it acquired the highest share during 2010-2016 sub-period (Section 4.2.2). In global banana and pineapple export market, the Philippines has been advantageous and possessing a strong revealed comparative export advantage over the rest of ASEAN member countries and the same can be said in terms of export market share as shown in section 4.2.3.

Indonesia, Malaysia and the Philippines are the advantageous countries in world coconut oil market with a strong revealed comparative export advantage position among the other ASEAN member countries while export market share for these countries were higher among the rest of the ASEAN countries although the Philippines had failed to maintain its export market share and Malaysia with the fluctuating performance. On the other hand, Indonesia has performed well by increasing its coconut oil export market share during the entire period (Section 4.2.5). Indonesia and Vietnam are the only two advantageous countries over the other competing ASEAN member countries in coffee product with strong revealed export advantage position.

Table 4.21. Summary of Findings in B-index and lnRXA of Selected Agricultural Products

Country	Rice	Corn	Banana	Pineapple	Coconut Oil	Coffee
BRN	x	x	x	x	x	x
IDN	x	x	x	x	✓***	✓***
KHM	✓**	x	x	x	x	x
LAO	x	x	x	x	x	x
MMR	✓***	✓***	✓***	x	x	x
MYS	x	x	x	x	✓***	x
PHL	x	x	✓***	✓***	✓***	x
SGP	x	x	x	x	x	x
THA	✓***	x	x	x	x	x
VNM	✓***	x	x	x	x	✓***

Where: ✓ = advantage; x = disadvantage; * = weak; ** = moderate; *** = strong

Taking into consideration the imports for the revealed comparative trade advantage positions between the ASEAN member countries, in rice revealed comparative advantage, the level of positions remained the same for all the advantageous countries. For corn, Cambodia and Thailand had emerged to become advantageous countries although a weak advantage position for Cambodia while Thailand gained a strong advantage position. For banana, Thailand once again gained a strong advantage position while the Philippines was able to maintain a strong advantage position. Thailand together with Malaysia continued to gain strong advantage position this time in global pineapple market and the Philippines also maintained a strong advantage position for this certain product. Indonesia, Malaysia and the Philippines sustained a strong advantage position in global coconut oil market while Vietnam became advantageous but with weak advantage position. Advantageous countries for coffee remained the same with Indonesia and Vietnam having a strong advantage position (Table 4.23).

Table 4.22. Summary of Findings in RTA and RC of Selected Agricultural Products

Country	Rice	Corn	Banana	Pineapple	Coconut Oil	Coffee
BRN	x	x	x	x	x	x
IDN	x	x	x	x	✓***	✓***
KHM	✓**	✓*	x	x	x	x
LAO	x	x	x	x	x	x
MMR	✓***	✓***	✓***	x	x	x
MYS	x	x	x	✓***	✓***	x
PHL	x	x	✓***	✓***	✓***	x
SGP	x	x	x	x	x	x
THA	✓***	✓***	✓***	✓***	x	x
VNM	✓***	x	x	x	✓*	✓***

Where: ✓ = advantage; x = disadvantage; * = weak; ** = moderate; *** = strong



5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions:

Based on the general findings of the study, the following conclusions were formulated:

Overall, the result of the analyses has shown that the Philippines does not possess a strong revealed comparative trade advantage position against ASEAN co-member countries for aggregated agricultural products. However, trade indices (B-index, RTA, lnRXA and RC) had signified a moderate revealed comparative trade advantage position in vegetable products. Strongest competitors for Section 1: Live Animals; Animal Products: Vietnam and Myanmar, Section 2: Vegetable Products: Indonesia, Lao PDR, Myanmar, Thailand and Vietnam and Section 3: Prepared Foodstuff Products: Thailand and Lao PDR.

For selected individual agricultural products, the value of the Revealed Comparative Trade Indices and Market Share Index showed that the Philippines, out of the six selected individual products, three have illustrated a strong revealed comparative trade advantage position over ASEAN co-member countries in the international trade market, these products were banana, pineapple and coconut oil. The Philippines had completely dominated the international banana and pineapple market and found to be the most competitive country among ASEAN co-member countries although potential competitors for these products were Malaysia, Myanmar and Thailand. However, in coconut oil, it is important to note that competitors from ASEAN co-member countries such as Indonesia and Malaysia have emerged to compete for this individual product in the global markets.

Meanwhile, products with revealed trade disadvantage position were rice, corn and coffee. Strong competitors for rice were Thailand, Vietnam, Cambodia and Myanmar. For corn, Myanmar and Thailand appeared to be the strong competitors while for coffee were Vietnam and Indonesia.

Finally, it is important to note that every other research paper has encountered various limitations and this study is no exemption. In spite of the thoroughly detailed examination of the results of the analyses, this study has its own limitations, specifically, the features of the method that was employed in this study. For this reason, different approaches and views of the history of economic thought were discussed to also point out the importance of these theories within economic policymaking. While recognizing these limitations, the researcher firmly believed that the objectives of the study were largely achieved based on the theories and relevant literature discussed in this research study.

5.2. Recommendations:

Based on the findings of analyses it is apparent that the Philippines had generally lost its agricultural trade competitiveness position in the comparison among ASEAN co-member countries, especially for agricultural aggregated products Section 1: Live Animals; Animal Products (HS code 01-05), Section 2: Vegetable Products (HS code 06-15), Section 3: Prepared Foodstuff Products (HS code 16-24). But actually, the general competitive advantage theory has suggested that every country varies in patterns of their competitiveness, basically, every nation prosper because of its particular industries and environment, hence no country can be globally competitive in all industries (Porter, 1990). While based on the findings of the study individual products have proved that the Philippines can be competitive in a certain industry or product.

Based on major findings and conclusions the following were hereby recommended:

- The Philippines could continue concentrating and specializing a certain product, make it more efficient, give efforts, resources and high investment to increase productivity to enhance more the potential

and performance in terms of competitiveness in the international market. However, it is also vital for the government to be mindful in establishing if the country has really succeeded in attaining comparative advantage in banana, pineapple and coconut oil in the global market. In other words, being advantageous in one product and benefiting from this advantage are different concepts. If a country does not have its own marketing and distribution channels some other actors may benefit more. There are several countries in the world getting more benefits through re-exporting some products despite they are not producing them.

- The Philippines should be watchful as threats in coconut oil product of which competitors are increasing. Thus, the Philippines should either maintain or increase its productivity in order to improve its competitiveness for this product. To do so, agricultural forecasting and planning should be done to mitigate the impact of weather phenomenon such as long drought and typhoons on coconut production. Coconut is an erect palm fruit tree plant that can be easily damaged by calamities. In addition, the Philippines should also protect and regulate the rapid conversion of coconut farmlands into real estate purposes.
- There is a need to address the high volume of importation of products such as rice and corn as it hinders the competitiveness of these products. First, as domestic per capita consumption for these products are continuously increasing due to over-population, therefore the implementation of effective and efficient food sufficiency programs should be a priority to decrease the gap between the local supply and demand, to attain this, careful planning and measures that comprises strengthening the capabilities of rice and corn farmers to increase

productivity and output. Second, the adoption of high-yielding and pest-resistant varieties of rice and corn should continue for sustainable supply. Finally, strategic areas over the country for agricultural food storage should be identified with easy access in the case of calamities and food shortage.

- In general, with the Philippines backlogged in agricultural exports competitiveness in the comparison among ASEAN co-member countries in the international market, it is necessary from the Philippine government and the private sector to give a great effort in boosting the agriculture sector and high-level of investment needs to be strengthened to diversify the agricultural exports product. Food and Agriculture Organization stated that one of the most effective ways to stimulate economic growth is through investing in agriculture.
- In the light of different theoretical perspectives about international trade competitiveness, the ASEAN member states policymakers, in pursuit of the ASEAN cooperation's basic objectives and in order to respond to the agricultural trade globalization should come up with mutual policies that will strengthen and enhance the international trade competitiveness of every ASEAN member state especially in the agriculture sector. This study has revealed that the majority of ASEAN member countries had a strong comparative advantage in vegetable products, and some had revealed comparative advantage in specialized products such as rice, banana, coconut oil and coffee. Thus, policymakers could come up with a common agricultural market policy such as free intra-trade and common extra-trade policies, common price and income policies and macro-economic policies these will be beneficial to the economic growth of ASEAN as a state.

- Considering the limitations of this study, it is recommended for the future similar research studies to integrate methods and analyses that address revealed comparative advantage externalities such as cost, price, export subsidies and other kind of barriers. The researcher was also motivated to further extend and perform the same study in the future to dig deeper with respect to the agricultural policy implications of this study.





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APPENDICES



Appendix 1. Philippines Domestic Food per Capita Consumption

Year	Corn (1000 MT)	Rice (1000 MT)	Coffee (1000 60KG BAGS)
2000	4900	8750	865
2001	4700	9040	900
2002	4650	9550	950
2003	4950	10250	1315
2004	5150	10400	1165
2005	5800	10722	1385
2006	6550	12000	1210
2007	7150	13499	1410
2008	7300	13100	1315
2009	6500	13125	1735
2010	7200	12900	2249
2011	7400	12860	2825
2012	7400	12850	3660
2013	8000	12850	4405
2014	8500	13000	3590
2015	8100	12900	4230
2016	8500	12900	6210

Source: US-DA, 2018

Appendix 2.

Country	HS Code	Philippines Animal Products Export Value	Philippines Total Export Value	World Animal Products Export Value	World Total Export Value
2000	01-05	345,302	38,078,250	116,735,044	6,000,111,121
2001	01-05	323,615	32,150,203	121,907,065	5,788,769,284
2002	01-05	357,768	35,208,159	124,646,671	6,108,735,652
2003	01-05	354,796	36,231,205	142,194,729	7,138,113,734
2004	01-05	355,090	39,680,520	164,582,133	8,629,638,895
2005	01-05	333,881	41,254,683	181,309,395	9,712,911,577
2006	01-05	359,296	47,410,117	194,153,717	11,380,690,713
2007	01-05	446,119	50,465,711	224,786,913	13,031,642,510
2008	01-05	492,609	49,077,540	261,346,456	15,046,205,655
2009	01-05	389,271	38,435,802	234,326,184	11,690,398,196
2010	01-05	506,161	51,497,515	267,118,714	14,371,480,442
2011	01-05	591,882	48,042,129	319,012,323	17,240,370,853
2012	01-05	558,226	51,995,224	317,657,507	17,124,031,945
2013	01-05	583,135	56,697,803	345,724,259	17,792,589,263
2014	01-05	663,661	61,809,755	365,332,120	17,647,329,901
2015	01-05	580,454	58,648,083	309,453,937	15,270,005,422
2016	01-05	552,590	56,312,748	314,002,648	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 3.

Country	HS Code	Philippines Vegetable Products Export Value	Philippines Total Export Value	World Vegetable Products Export Value	World Total Export Value
2000	06-15	1,020,545	38,078,250	147,843,670	6,000,111,121
2001	06-15	964,931	32,150,203	151,781,173	5,788,769,284
2002	06-15	990,729	35,208,159	165,231,630	6,108,735,652
2003	06-15	1,201,353	36,231,205	197,011,860	7,138,113,734
2004	06-15	1,231,521	39,680,520	222,169,038	8,629,638,895
2005	06-15	1,353,302	41,254,683	236,738,685	9,712,911,577
2006	06-15	1,571,717	47,410,117	264,292,279	11,380,690,713
2007	06-15	1,623,362	50,465,711	339,356,384	13,031,642,510
2008	06-15	2,050,473	49,077,540	445,945,500	15,046,205,655
2009	06-15	1,358,906	38,435,802	378,759,696	11,690,398,196
2010	06-15	2,083,782	51,497,515	436,232,421	14,371,480,442
2011	06-15	2,717,547	48,042,129	553,030,475	17,240,370,853
2012	06-15	2,479,106	51,995,224	561,896,329	17,124,031,945
2013	06-15	3,073,629	56,697,803	578,099,275	17,792,589,263
2014	06-15	3,983,055	61,809,755	582,874,719	17,647,329,901
2015	06-15	2,331,947	58,648,083	527,961,216	15,270,005,422
2016	06-15	2,611,084	56,312,748	536,551,427	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 4.

Country	HS Code	Philippines Prepared Foodstuff Products Export Value	Philippines Total Export Value	World Prepared Foodstuff Products Export Value	World Total Export Value
2000	16-24	530,645	38,078,250	164,046,837	6,000,111,121
2001	16-24	576,336	32,150,203	174,285,914	5,788,769,284
2002	16-24	595,215	35,208,159	188,487,434	6,108,735,652
2003	16-24	734,609	36,231,205	218,781,976	7,138,113,734
2004	16-24	809,180	39,680,520	249,737,891	8,629,638,895
2005	16-24	868,075	41,254,683	271,678,320	9,712,911,577
2006	16-24	945,895	47,410,117	306,003,984	11,380,690,713
2007	16-24	1,066,724	50,465,711	356,175,602	13,031,642,510
2008	16-24	1,308,525	49,077,540	414,657,753	15,046,205,655
2009	16-24	1,327,159	38,435,802	391,750,934	11,690,398,196
2010	16-24	1,374,342	51,497,515	429,796,884	14,371,480,442
2011	16-24	1,884,297	48,042,129	507,609,003	17,240,370,853
2012	16-24	1,841,445	51,995,224	523,214,975	17,124,031,945
2013	16-24	2,516,551	56,697,803	558,720,762	17,792,589,263
2014	16-24	2,382,650	61,809,755	563,715,932	17,647,329,901
2015	16-24	1,897,423	58,648,083	513,160,868	15,270,005,422
2016	16-24	1,797,599	56,312,748	526,379,345	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 5.

Country	HS Code	Philippines Rice Export Value	Philippines Total Export Value	World Rice Export Value	World Total Export Value
2000	1006	114.858	38,078,250	6,503,233	6,000,111,121
2001	1006	22.960	32,150,203	7,013,419	5,788,769,284
2002	1006	0.916	35,208,159	6,691,081	6,108,735,652
2003	1006	2.726	36,231,205	7,164,534	7,138,113,734
2004	1006	321.160	39,680,520	8,954,455	8,629,638,895
2005	1006	28.872	41,254,683	9,612,789	9,712,911,577
2006	1006	134.249	47,410,117	10,593,462	11,380,690,713
2007	1006	535.020	50,465,711	13,748,857	13,031,642,510
2008	1006	3,084.134	49,077,540	20,236,398	15,046,205,655
2009	1006	607.925	38,435,802	19,306,929	11,690,398,196
2010	1006	851.095	51,497,515	20,143,661	14,371,480,442
2011	1006	2,161.993	48,042,129	23,985,454	17,240,370,853
2012	1006	1,267.701	51,995,224	23,680,443	17,124,034,065
2013	1006	5,388.545	56,697,803	24,060,336	17,792,589,263
2014	1006	3,317.514	61,809,755	25,988,017	17,647,329,901
2015	1006	801.834	58,648,083	22,719,056	15,270,005,422
2016	1006	318.225	56,312,748	20,510,311	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 6.

Country	HS Code	Philippines Corn Export Value	Philippines Total Export Value	World Corn Export Value	World Total Export Value
2000	1005	421.336	38,078,250	8,735,974	6,000,111,121
2001	1005	520.828	32,150,203	8,851,594	5,788,769,284
2002	1005	322.669	35,208,159	9,883,519	6,108,735,652
2003	1005	186.167	36,231,205	11,001,819	7,138,113,734
2004	1005	226.277	39,680,520	11,640,670	8,629,638,895
2005	1005	101.477	41,254,683	11,254,176	9,712,911,577
2006	1005	613.428	47,410,117	13,174,960	11,380,690,713
2007	1005	538.809	50,465,711	20,469,453	13,031,642,510
2008	1005	939.082	49,077,540	27,048,996	15,046,205,655
2009	1005	829.262	38,435,802	19,751,750	11,690,398,196
2010	1005	73.987	51,497,515	23,295,687	14,371,480,442
2011	1005	43.403	48,042,129	33,802,856	17,240,370,853
2012	1005	89.451	51,995,224	35,766,885	17,124,034,065
2013	1005	1,190.982	56,697,803	35,250,871	17,792,589,263
2014	1005	2,820.445	61,809,755	33,045,422	17,647,329,901
2015	1005	4,799.440	58,648,083	28,644,052	15,270,005,422
2016	1005	1,062.350	56,312,748	29,073,248	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 7.

Year	HS Code	Philippines Banana Export Value	Philippines Total Export Value	World Banana Export Value	World Total Export Value
2000	80300	291,651	38,078,250	3,955,115	6,000,111,121
2001	80300	297,371	32,150,203	4,059,859	5,788,769,284
2002	80300	308,889	35,208,159	4,214,512	6,108,735,652
2003	80300	333,000	36,231,205	4,586,831	7,138,113,734
2004	80300	324,031	39,680,520	4,882,892	8,629,638,895
2005	80300	362,590	41,254,683	5,501,345	9,712,911,577
2006	80300	405,444	47,410,117	6,003,590	11,380,690,713
2007	80300	401,446	50,465,711	6,775,121	13,031,642,510
2008	80300	405,673	49,077,540	7,314,097	15,046,205,655
2009	80300	360,289	38,435,802	7,649,881	11,690,398,196
2010	80300	319,296	51,497,515	7,702,206	14,371,480,442
2011	80300	471,152	48,042,129	8,507,023	17,240,370,853
2012	80300	647,880	51,995,224	8,126,847	17,124,034,065
2013	80300	963,412	56,697,803	9,203,430	17,792,589,263
2014	80300	1,137,316	61,809,755	10,434,437	17,647,329,901
2015	80300	439,902	58,648,083	9,361,221	15,270,005,422
2016	80300	618,830	56,312,748	10,273,753	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 8.

Country	HS Code	Philippines Pineapple Export Value	Philippines Total Export Value	World Pineapple Export Value	World Total Export Value
2000	80430	24,793.63	38,078,250	388,013	6,000,111,121
2001	80430	27,406.70	32,150,203	470,720	5,788,769,284
2002	80430	29,537.28	35,208,159	561,556	6,108,735,652
2003	80430	38,096.40	36,231,205	766,054	7,138,113,734
2004	80430	41,146.29	39,680,520	913,864	8,629,638,895
2005	80430	43,359.41	41,254,683	1,075,126	9,712,911,577
2006	80430	54,793.95	47,410,117	1,249,355	11,380,690,713
2007	80430	58,848.97	50,465,711	1,341,973	13,031,642,510
2008	80430	61,652.98	49,077,540	1,434,724	15,046,205,655
2009	80430	53,114.85	38,435,802	1,243,153	11,690,398,196
2010	80430	42,358.60	51,497,515	1,424,793	14,371,480,442
2011	80430	67,491.09	48,042,129	1,590,681	17,240,370,853
2012	80430	101,361.93	51,995,224	1,557,494	17,124,034,065
2013	80430	153,687.93	56,697,803	1,618,014	17,792,589,263
2014	80430	147,704.74	61,809,755	1,674,373	17,647,329,901
2015	80430	105,374.06	58,648,083	1,501,930	15,270,005,422
2016	80430	228,412.34	56,312,748	1,816,395	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 9.

Country	HS Code	Philippines Coconut Oil Export Value	Philippines Total Export Value	World Coconut Oil Export Value	World Total Export Value
2000	151319	113,440	38,078,250	255,830	6,000,111,121
2001	151319	76,696	32,150,203	197,360	5,788,769,284
2002	151319	72,953	35,208,159	259,964	6,108,735,652
2003	151319	105,424	36,231,205	359,184	7,138,113,734
2004	151319	161,062	39,680,520	439,358	8,629,638,895
2005	151319	174,462	41,254,683	486,022	9,712,911,577
2006	151319	176,657	47,410,117	459,563	11,380,690,713
2007	151319	225,653	50,465,711	571,942	13,031,642,510
2008	151319	374,549	49,077,540	967,527	15,046,205,655
2009	151319	186,717	38,435,802	592,771	11,690,398,196
2010	151319	286,916	51,497,515	873,718	14,371,480,442
2011	151319	462,990	48,042,129	1,529,479	17,240,370,853
2012	151319	372,219	51,995,224	1,237,261	17,124,034,065
2013	151319	434,597	56,697,803	1,163,672	17,792,589,263
2014	151319	581,707	61,809,755	1,599,389	17,647,329,901
2015	151319	438,084	58,648,083	1,409,263	15,270,005,422
2016	151319	381,814	56,312,748	1,462,770	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 10.

Country	HS Code	Philippines Coffee Export Value	Philippines Total Export Value	World Coffee Export Value	World Total Export Value
2000	90111	392.425	38,078,250	6,925,035	6,000,111,121
2001	90111	118.912	32,150,203	5,025,792	5,788,769,284
2002	90111	58.758	35,208,159	4,638,696	6,108,735,652
2003	90111	235.113	36,231,205	5,321,882	7,138,113,734
2004	90111	166.453	39,680,520	6,572,512	8,629,638,895
2005	90111	105.545	41,254,683	8,653,627	9,712,911,577
2006	90111	155.827	47,410,117	10,329,864	11,380,690,713
2007	90111	56.426	50,465,711	12,615,916	13,031,642,510
2008	90111	39.577	49,077,540	14,937,026	15,046,205,655
2009	90111	0.150	38,435,802	13,440,887	11,690,398,196
2010	90111	35.087	51,497,515	16,838,078	14,371,480,442
2011	90111	26.074	48,042,129	25,483,444	17,240,370,853
2012	90111	131.472	51,995,224	22,537,610	17,124,034,065
2013	90111	130.709	56,697,803	16,857,229	17,792,589,263
2014	90111	3.613	61,809,755	20,155,065	17,647,329,901
2015	90111	6.954	58,648,083	19,137,203	15,270,005,422
2016	90111	36.206	56,312,748	18,294,927	14,824,701,669

Source: UNCOMTRADE, 2017

Appendix 11. Rice

YEAR	AREA HARVESTED (ha)	PRODUCTION (ton)	YIELD (kg/ha)	EXPORT QUANTITY (tonnes)	IMPORT QUANTITY (tonnes)
2000	4,038,085	12,389,412	3,068	224	642,272
2001	4,065,441	12,954,870	3,187	13	810,903
2002	4,046,318	13,270,653	3,280	2	1,196,159
2003	4,006,421	13,499,884	3,370	131	886,620
2004	4,126,645	14,496,784	3,513	113	1,049,165
2005	4,070,421	14,603,005	3,588	196	1,821,641
2006	4,159,930	15,326,706	3,684	71	1,716,315
2007	4,272,889	16,240,194	3,801	606	1,805,616
2008	4,459,977	16,815,548	3,770	820	2,432,001
2009	4,532,310	16,266,417	3,589	163	1,775,113
2010	4,354,161	15,972,319	3,622	172	2,378,045
2011	4,536,642	16,684,062	3,678	395	706,471
2012	4,690,061	18,032,525	3,845	228	1,008,273
2013	4,746,091	18,439,420	3,885	2,014	399,137
2014	4,739,672	18,967,826	4,002	857	1,077,404
2015	4,656,227	18,149,838	3,898	202	1,095,007
2016	4,556,043	17,627,245	3,869	193	446,268

Source: FAO, 2017

Appendix 12. Corn

YEAR	AREA HARVESTED (ha)	PRODUCTION (ton)	YIELD (kg/ha)	EXPORT QUANTITY (tonnes)	IMPORT QUANTITY (tonnes)
2000	2,510,342	4,511,104	1,797	339	447,938
2001	2,486,588	4,525,012	1,820	511	172,729
2002	2,395,456	4,319,262	1,803	367	278,246
2003	2,409,828	4,615,625	1,915	159	99,797
2004	2,527,135	5,413,386	2,142	145	22,911
2005	2,441,788	5,253,160	2,151	82	70,972
2006	2,570,673	6,082,109	2,366	607	109,246
2007	2,648,317	6,736,940	2,544	361	152,307
2008	2,661,021	6,928,225	2,604	1,587	22,966
2009	2,683,890	7,034,033	2,621	545	303,149
2010	2,499,040	6,976,796	2,592	38	88,470
2011	2,544,612	6,971,221	2,740	12	66,193
2012	2,593,924	7,407,068	2,856	21	136,269
2013	2,563,718	7,377,293	2,878	311	341,605
2014	2,611,432	7,770,603	2,976	840	575,706
2015	2,561,934	7,518,756	2,935	545	432,414
2016	2,484,465	7,218,817	2,906	380	780,374

Source: FAO, 2017

Appendix 13. Banana

YEAR	AREA HARVESTED (ha)	PRODUCTION (ton)	YIELD (kg/ha)	EXPORT QUANTITY (tonnes)	IMPORT QUANTITY (tonnes)
2000	382,491	4,929,570	12,888	1,599,920	-
2001	386,703	5,059,360	13,083	2,129,309	6
2002	398,005	5,274,826	13,253	1,684,986	-
2003	408,000	5,368,977	13,159	1,829,384	35
2004	414,510	5,631,250	13,585	1,797,343	-
2005	417,755	6,298,225	15,076	2,024,322	36
2006	428,804	6,794,564	15,845	2,311,540	16
2007	436,762	7,484,073	17,135	2,218,051	34
2008	438,593	8,687,624	19,808	2,192,624	1
2009	446,371	9,013,186	20,192	1,743,891	-
2010	449,443	9,101,341	20,250	1,590,066	-
2011	450,125	9,165,046	20,361	2,046,743	-
2012	454,262	9,226,768	20,312	2,646,380	-
2013	446,017	8,646,417	19,386	3,267,562	-
2014	442,571	5,707,074	12,895	3,114,785	6
2015	443,370	5,840,124	13,172	1,223,133	44
2016	356,197	5,829,142	16,365	1,397,451	21

Source: FAO, 2017

Appendix 14. Pineapple

YEAR	AREA HARVESTED (ha)	PRODUCTION (ton)	YIELD (kg/ha)	EXPORT QUANTITY (tonnes)	IMPORT QUANTITY (tonnes)
2000	42,968	1,559,563	36,296	135,484	1
2001	44,340	1,617,906	36,489	154,412	-
2002	44,961	1,639,161	36,457	178,657	-
2003	47,663	1,697,952	36,234	194,684	-
2004	48,238	1,759,813	36,482	204,087	3
2005	49,215	1,788,218	36,335	210,761	4
2006	49,813	1,833,908	36,816	262,216	126
2007	53,978	2,016,462	37,357	276,931	-
2008	58,251	2,209,336	37,928	291,825	-
2009	58,823	2,198,497	37,875	209,532	7
2010	58,547	2,169,233	37,851	194,650	-
2011	58,457	2,246,806	38,435	263,019	-
2012	58,450	2,397,745	40,464	397,282	-
2013	60,759	2,458,528	41,022	489,906	-
2014	61,643	2,507,098	40,671	461,856	-
2015	62,812	2,582,699	40,054	315,829	-
2016	65,224	2,612,474	41,118	566,928	68

Source: FAO, 2017

Appendix 15. Coconut Oil

YEAR	AREA HARVESTED (ha)	PRODUCTION (ton)	YIELD (kg/ha)	EXPORT QUANTITY (tonnes)	IMPORT QUANTITY (tonnes)
2000	3,143,909	12,994,654	4,133	1,036,454	412
2001	3,148,651	13,146,052	4,175	1,418,158	23
2002	3,181,670	14,068,495	4,422	944,661	22
2003	3,216,528	14,294,203	4,444	1,186,355	68
2004	3,258,576	14,366,184	4,409	959,400	15
2005	3,243,278	14,824,585	4,571	1,152,316	14
2006	3,337,378	14,957,910	4,482	1,066,829	3
2007	3,359,777	14,852,927	4,421	889,802	3,064
2008	3,379,740	15,319,527	4,533	850,076	6
2009	3,401,500	15,667,565	4,606	832,938	124
2010	3,575,944	15,510,283	4,337	989,000	11
2011	3,561,981	15,244,609	4,298	826,721	239
2012	3,574,614	15,863,801	4,438	857,495	1
2013	3,551,299	15,354,334	4,324	1,080,836	49
2014	3,502,011	14,696,298	4,197	907,606	2,024
2015	3,517,743	14,735,189	4,189	894,824	4,021
2016	3,565,059	13,825,080	3,878	753,258	848

Source: FAO, 2017

Appendix 16. Coffee

YEAR	AREA HARVESTED (ha)	PRODUCTION (ton)	YIELD (kg/ha)	EXPORT QUANTITY (tonnes)	IMPORT QUANTITY (tonnes)
2000	136,921	107,557	786	295	13,926
2001	135,354	112,271	830	163	9,777
2002	132,408	107,080	809	41	24,029
2003	131,790	106,388	807	172	2,159
2004	131,206	102,865	784	163	9,842
2005	127,975	105,847	827	56	25,222
2006	126,063	104,093	826	136	9,630
2007	123,975	97,877	790	16	22,284
2008	123,269	97,428	790	18	18,170
2009	122,645	96,433	786	-	30,971
2010	121,399	94,536	779	20	25,849
2011	119,637	88,526	740	7	23,508
2012	120,000	88,943	741	45	30,118
2013	116,460	78,634	675	99	25,161
2014	117,451	75,454	642	1	7,966
2015	113,738	72,342	636	1	15,273
2016	114,839	68,823	599	6	43,610

Source: FAO, 2017