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**Sri Lanka Journal of Agrarian Studies**

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**CONTENTS**

# PRESENT SITUATION AND CONSTRAINTS IN THE ORGANIC FOOD EXPORT SECTOR

**Ruvini Vidanapathirana**

***Abstract***

*Global trade in organic foods has grown tremendously over the past years. Organic production has considerable potential in the agriculture sector in Sri Lanka. The major market channel for organic produce in Sri Lanka is the export market and major certified organic products exported at present are value added tea, spice based products, coconut based products, fruit based products and herbs. The future of organic farming is promising in Sri Lanka primarily as an export specialized commodity enterprise rather than a general agricultural programme. In future, the agricultural exports essentially need to be organic as the global demand for organic products is increasing. Therefore, this paper shows the opportunities and constraints in the organic food export sector. The study found that there is a growing market for products that are jointly fair-trade and organically certified. Farmers who deal with organic food exporters receive benefits from the exporting companies such as receiving premium prices, benefits through fair-trade premium, training related to farming, extension services, receiving organic fertilizer and provision of technical advice to enhance knowledge. The study shows that the major constraints faced by the exporters were insufficiency of raw materials, high cost of certification, lack of research and development and high cost of production. This paper further explains that the exporters are not able to meet the export demand required by the importers due to non-availability of raw materials to match the demand from foreign markets, inadequacy of organic farmers to cater to the demand, shortage of affordable raw material, lack of modern technology, high investments in food packaging (ex: tetra packing, freeze drying, vacuum drying), and limitations of packing materials.*

***Key Words:*** *Organic production, Organic food exports, Certified organic products, Premium price, Constraints*

## 1. Introduction

Organic agriculture is an environmentally friendly, culturally sensitive, socially just and economically viable sustainable agricultural system that maintains an efficient management system. According to the International Federation of Organic Agriculture Movement's (IFOAM), "organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions rather than use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationship and a good quality of life for all involved".

Organic food is safer, healthier and as a result the demand for organic food is ever growing. Global trade in organic food has grown tremendously over the past years. The organic sector is now one of the most rapidly growing segments of the global food market and the global demand for organic products is increasing by 15-20 percent per annum. The organic agriculture industry finds itself with enormous market opportunities worldwide to supply a range of certified organic products. In Sri Lanka, there is a growing interest and demand for producing organically grown food products for export. The major market channel for organic production in Sri Lanka is the export market. Bulk of the volume of organic agricultural products is exported. Major export destinations include European countries, the USA, Japan and Australia. The market in the Middle East is also a growing one. The main certified organic products are value added tea, spice based products, coconut based products, fruit based products and herbs.

Modern organic agriculture is practised based on standards and certification. Organic certification (external certification) is required in order to access distant and international organic markets. This is practised on the basis of organic standards. For meeting the requirements of the organic export sector in Sri Lanka, certification is carried out by foreign certification agencies. There are two such certifying organizations (Control Union and Institute for Market Ecology-IMO) involved in organic certification in the country.

With the increased usage of inorganic agro chemicals and fertilizer in agriculture, acute environmental hazards have been created especially in developing countries. Loss of bio diversity, water pollution and soil degradation are the major issues arising from it. This situation has become a threat to a healthy supply of food for humans. The government's agricultural policy has identified the importance of expanding the organic agriculture sector in the country to

ensure a higher price for organic products. The National Agricultural Policy of the Ministry of Agriculture stated;

- Doubling export agricultural crops by 2020 providing an additional boost to the export agricultural sector
- Exploring and promoting foreign markets for crops with high export potential
- Facilitating promotion of all forms of agro-based exports
- Establishing food safety and quality assurance mechanisms for crops with export potential that meet international food safety standards.

The future of organic farming is promising in Sri Lanka primarily as an export or specialized commodity enterprise rather than a general agricultural programme. Vegetables, fruits and spices grown without fertilizer and pesticides bring premium prices, thereby enhancing the economic viability of these product units. According to the policy in agriculture, the extent of export agricultural crops will double by 2020 providing an additional boost to the export agricultural sector. Therefore, it is important to know whether the organic food sector has a potential to meet the demand of the niche markets within the country or globally. In future, the exports need to be essentially organic as the global demand for organic products is increasing. Similarly, the local demand will be high in future as now people are more health conscious and the demand will increase with the development of the tourism industry in the country. Hence, the organic food production and marketing could be greatly expanded in Sri Lanka and it is important to identify global trends as well as local trends in demand and supply of these products. Therefore, this paper attempts to find out the opportunities and constraints of organic food sector and the policies influencing the adoption of organic food production. The target group was the exporters involved in developing supply chains that serve certified organic export markets.

## 1.1 Objectives

1. To review the present status of export market for organic food
2. To identify challenges and constraints of organic food processors and exporters

## 1.2 Methodology

The existing literature on research outputs and personal experience in the area of organic food industry (export market) in the country was utilized and the review of published information was carried out.

A structured questionnaire survey was conducted on all the exporters who presently export organic food products from Sri Lanka. The list of exporters registered under Inspection and Certification Bodies (Control Union and IMO) was used to understand the present export performance of the organic food products and to identify challenges, constraints and barriers and their suggestions for the development of the industry. Further, focus group discussions were conducted with the NGOs dealing with producing certified organic food products for the exporting companies and with four farmer organizations dealing with exporters.

The Likert-scale was used to analyze the responses of views of constraints and entry barriers in the organic food export market in rank scale as Low (Disagree) = 0, Moderate (Partially agree) = 1, High (Agree) = 2, Very high (Fully agree) = 3. Descriptive statistical tools were employed to present the data. Average grading was calculated as follows;

$$\bar{X} = \frac{\sum_{i=1}^{n} x_i}{n}$$

$x_i$ = Score for the given criteria by $i^{th}$ respondent
$n$ = Number of respondents/sample size

## 2. Results and Discussion

### 2.1 Global Market for Organic Products

According to the latest FiBL-IFOAM survey on certified organic agriculture worldwide (data as of end of 2011), data on organic agriculture are available from 162 countries. There are 37.2 million hectares of organic agricultural land (including in-conversion areas). The regions with the largest areas of organic agricultural land are Oceania (12.2 million hectares, 33 percent of the world's organic agricultural land) and Europe (10.6 million hectares, 29 percent). Latin America has 6.9 million hectares (18.4 percent) followed by Asia (3.7 million hectares, 10 percent), North America (2.8 million hectares, 7.5 percent) and Africa (1.1 million hectares, 3 percent).

About one third of the world's agricultural land (12 million hectares) and more than 80 percent (1.5 million) of the producers are in developing countries and in emerging markets (FiBL-IFOAM, 2013).

In 2012, organic food dominated the global market and accounted for 80.6 percent share of the overall demand. Organic fruits and vegetables are the leading food segment.

Countries with the largest market for organic food are the United States, followed by Germany and France. The highest per capita consumption in 2012 was in Switzerland (189 Euros per capita), followed by Denmark (159 Euros per capita) and Luxembourg (143 Euros per capita).

## 2.2 Present Status of Organic Food Industry in Sri Lanka

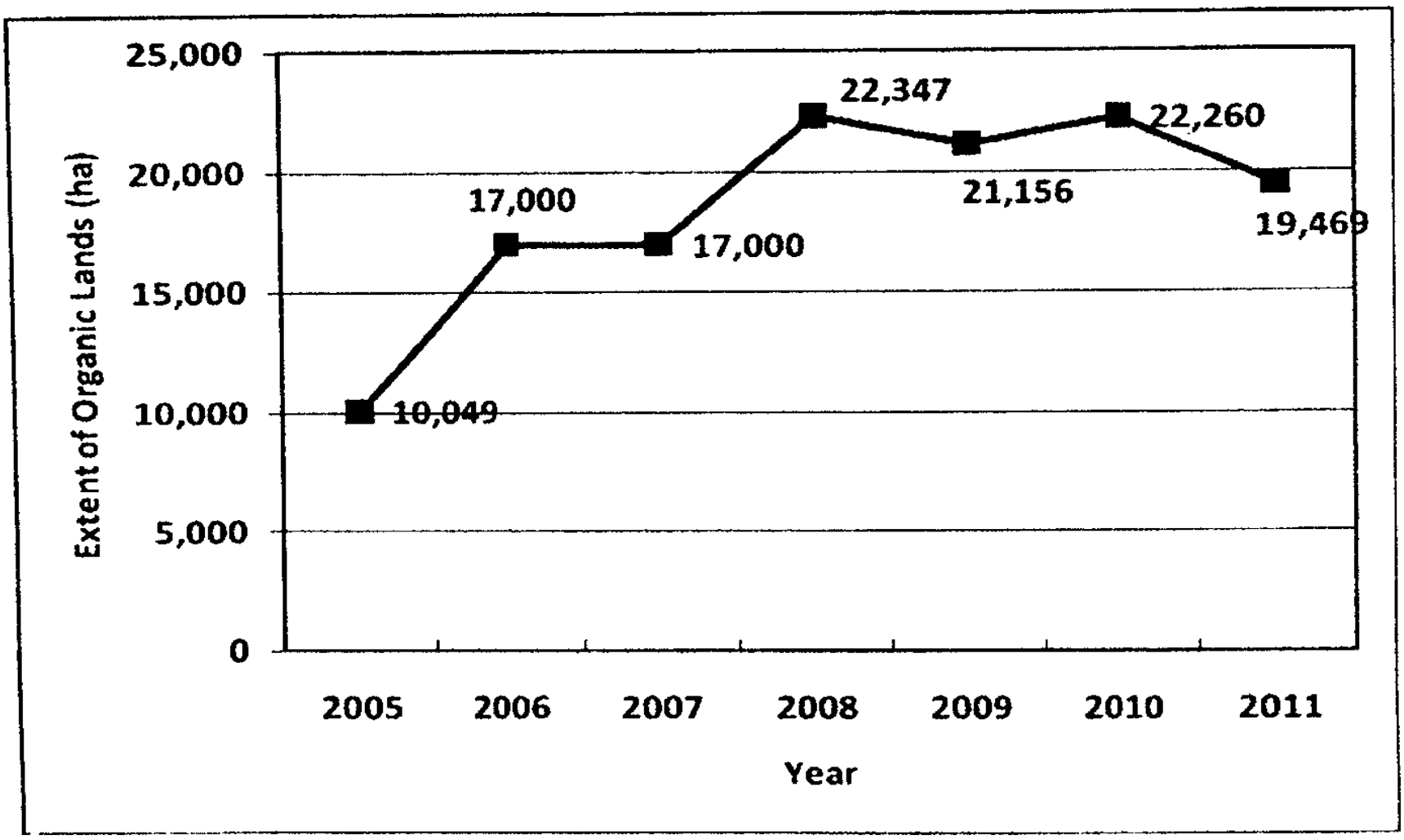
Organic agriculture, in the traditional context, is subsistence farming or non-chemical agriculture. Conservation farming used indigenous knowledge and traditional agricultural equipment and tools, whereas modern organic agriculture is market oriented and the production has to adhere to certain standards or at least accepted norms in cultivation methods and practices. Modern organic agriculture is practised based on standards and certification. It differs from IPM/conventional agriculture, particularly on the level of fertilizer and agrochemicals used. Further, it differs from subsistence agriculture as it produces for the market, including export markets.

Organic production has a considerable potential in the agriculture sector in Sri Lanka. However, the term organic has been widely misused in Sri Lanka for having no clear understanding about it. Ecological farming systems, applying compost on crops, natural home garden practices, neglecting lands without applying natural and artificial inputs cannot be defined or termed as organic. Organic is a kind of labeling system that is granted for ecological production when the whole process is certified by an accredited third party organization. Without a third party guarantee on the compliance of set international standards on organic production methods, a product cannot be labeled, termed or called organic (Ranaweera, 2008).

Sri Lanka as a country full of natural resources has a huge potential to considerably fulfill the needs of ever-growing market demand for organic products in the world. Our capacity to supply various products already grown under ecological systems for years after conversion has improved within a shorter period of time.

Amongst the producer countries, Sri Lanka maintains a reputation in organic crop production and exports as defined and specified by the International Federation for Organic Agriculture Movement (IFOAM). According to IFOAM and

FiBL statistics, the total area under organic agriculture in Sri Lanka in 2011 was 19,469 ha. Figure 01 shows how the extent of organic agriculture lands had changed between 2005 and 2011. It had increased by 122 percent from 2005 (10,049 ha) to 2010 (22,260 ha) and shown a decrease in 2011.




Source: FiBL-IFOAM Survey 2013

**Figure 1: Growth of Organic Agricultural Lands in Sri Lanka (2005-2011)**

### 2.2.1 Export of Organic Food Products

When designing export promotion programs, the special nature of the organic markets needs to be understood. The outlets or programs designed for conventional products may not be the right ones for organic; exporters used to selling bulk commodities are often less inclined to understand the more demanding and quality conscious organic markets. Handling practices and treatments need to be adopted. Personal contacts between the seller and buyer important in all business are even more important for organic exports. Organic exporters need to cooperate in their export marketing activities.

Sri Lanka's organic producers and exporters are well aware of the demand for organic products in developed countries. Products available for the export markets are listed in the Appendix table 01. The channels adopted for the export

of organic products are mainly through export companies. There are about 38 exporting companies dealing with exporting certified organic food products in the country. Organic products are mainly exported to the following countries;

| | | |
|---|---|---|
| Europe | : | Germany, United Kingdom, Netherlands, France, Austria, Switzerland, Spain |
| America | : | USA, Canada |
| Asia | : | Japan, Singapore |
| Australia | | |

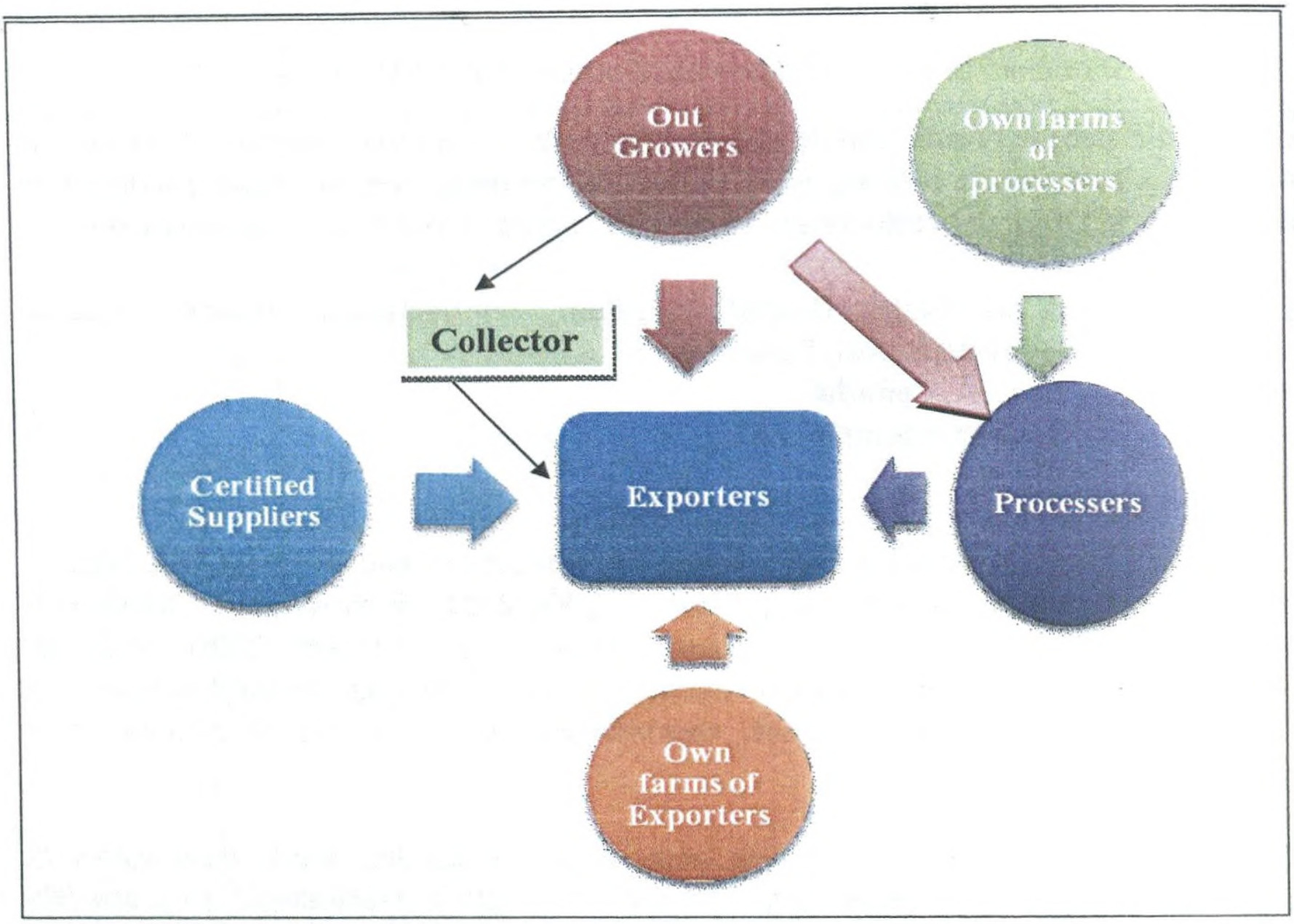
Out of the total companies (38), about 18 companies had entered the organic food export market during the period of 2006-2012. It shows that there is a growing trend in entering the organic food export market 2000 onwards. However, many companies which recently entered the organic food market are smaller in size and market share, compared to the pioneers of organic food industry in the country.

Out of all the exporters, there are only seven companies which deal solely in organic farm products (exporting 100percent organic products). They are Bio Foods, EOAS Organics, Pripa organic, PODIE, Tropical Health Food, Serendipol (Pvt) Ltd and Pristine Kokos. The rest deals partially in organic product exports, exporting both organic and non-agricultural products. Out of those companies about 13 companies export less than 10percent of organic products out of the total exports.

### 2.2.2 The Structure and Business Models of the Production Systems for Export Market

Supply chain management is one of the key issues for the success of developing export market. Efficiency and quality management are determining factors that need particular attention. The key issue in quality development is the establishment of a quality assurance system throughout the supply chain. This involves quality of raw materials, procurement control system, processing quality, packaging and stock management.

Exporting companies have different business models for the production and supply of organic food for exports as illustrated in the Figure 02. Exporters have their own estates or farms, out-growers (groups/individual farmers), certified suppliers and certified processors to obtain organic food requirement.




Source: HARTI Survey Data, 2012

**Figure 2: Marketing Channels for Organic Food Exporters**

***Own production:***

The company manages and controls production. The company usually has a long term rental contract for the land, hires local farmers to work on the farm and employs its own local management and supervisory staff. Fifteen out of the 38 exporters followed this model.

***Contract Out-grower System:***

The company contracts all of its production to local farmers, on individual basis or through the farmer groups. Farmers' land is certified as organic in the same way as 'own production'. Farmers can sell directly to an exporting company as an individually contracted farmer or as an out-grower and when farmers are organised in their own organisation they deliver to their organisation which takes care of collection, bulking, grading and sorting the product and quality control. These contractual arrangements often include the provision of inputs e.g. bio-pesticides and organic fertilizer, and technical and managerial assistance.

There are no written agreements between the farmers/farmer groups with the company. In this system, the exporting company will be the certificate holder (i.e. the organic certificate will be in the exporter's name) and the company will take responsibility in running the Internal Control System. Out of the exporters interviewed, 16 companies follow this model.

***Certified Suppliers and Processors:***

Sometimes the exporting companies of organic products (eg: Lanka Organics, Greenfield Bio Plantations (Pvt) Ltd, Bio Foods (Pvt) Ltd, Mackwoods (Pvt) Ltd, Pripa Organic (Pvt) Ltd supply certified products for other exporters to fulfill their organic food export requirement. Most of the organic tea exporting companies (11 companies) practise this system by paying higher prices for the suppliers. In this situation, the companies do not certify the lands of suppliers. They only need to obtain the certification for processing and the transaction certificate. Out of the total exporting companies interviewed, 17 companies follow this model.

Further, some of the NGOs act as certified suppliers for exporters and in this situation the exporting companies have to certify the lands of these organizations. In addition to above production systems, there are independent farmer organizations (eg: SOFA supply to Bio-food company) which maintain certified smallholder groups. In such cases the independent farmers' organisation is usually the certificate holder responsible for running the ICS and providing training to the farmers.

Farmers in an organic chain can sell their products in one of the two ways; either directly to an exporter or to their organisation. Selling to middle men is not allowed as an organic chain needs to be transparent with long-term contracts and investments, neither of which can be provided by middle men.

### 2.2.3 Standards, Certification and Accreditation in Organic Food Industry

Consumers seek assurance that products labeled 'organic' are authentic organic products and producers also need assurance that other organic producers also are competing fairly. The organic level of a product cannot be determined only by looking at the harvested product or by testing it. Rather, it is ascertained through documentation and inspection of the whole production process.

Certification of organic products serves three functions. Firstly, it assures consumers that a product was grown, processed and packaged according to rules that limit or ban synthetic inputs and which protect the environment.

Secondly, it assures producers that unethical use of the term organic does not defraud them of price premiums and market share that can be earned from certified foods. Thirdly, it makes the market more efficient by reducing information asymmetry along the marketing channel from producer to consumer (Lohr, 1998).

Organic certification is a process through which an independent third party called the 'accredited' agency verifies and issues certification for a unit of production and carries out production based on the set of organic standards and guidelines. The certification covers the whole chain of activities starting from production to processing. The minimum requirement for export is that it must meet the legal standards of the country of import. Certification leads to consumers trust in organic production system and products. Certification offers organic farming a distinct identity and credibility and makes market access easier (Prakash, 2003).

The Sri Lanka Standard Institute has developed the National Standard; SLS 1324: Sri Lanka Standard for Organic Agriculture Production and Processing, in conformity with the EU requirements. These standards have been formulated based on guidelines or basic standards provided by International Federation of Organic Agriculture Movement (IFOAM), Codex Alimentarious, National Association for Sustainable Agriculture Australia Limited and LOAM (Lanka Organic Agriculture Movement). These standards prescribe the methods of production, processing, handling, storage and transportation of organically produced agricultural products. A standard for organic agriculture defines how a production system must be managed, covering all aspects of soil fertility, pest control with an emphasis on proper recording and labeling.

As organic certification requires compliance with standards, training of farmers and control of all the steps in the chain, organic certification provides a reasonable guarantee of good quality. Certified organic food processors often have quality and food safety assurance systems as well.

According to the country of import, the exporting companies have to follow different organic standards and the certification bodies operating in the particular country do inspection and certification according to those standards. Certification services are available globally. For export purposes, the simplest solution is to buy the services from international certification bodies. However, there are advantages in a domestic certification body. There are two certification services available in the country. i.e. Control Union and IMO. Control Union has a

local office and local trained inspectors operating in the country whereas IMO has one representative and inspections are done by foreign inspectors.

Farmers who wish to engage in organic exporting need to go through a conversion period in order to achieve organic certification. When production is already 'organic by default' (i.e. no agro-chemicals have been used in the last 3 years), conversion can usually be achieved only in one year. In places where agrochemicals have been or are being used or practices which are not allowed in organic farming occur, the conversion period will be three years.

**Cost of Inspection and Certification**

Most certifiers charge inspection and certification fees based on the number of man- days involved plus fees for the issue of certificates. The company must pay a fee based on the number of inspection days needed (including travel days) and the certification costs (eg: administration, certificates etc). The cost for inspection fee is only Euro 400-600/day. Other costs (eg: travel and accommodation costs, costs for analyses and cost for sending certificates by registered mail) will be invoiced directly based on real made costs.

**Maintenance of Quality and Safety Standards by the Exporting Companies**

For the export market, the quality of the organic food products needs to be assured from the production to marketing. Hence, the exporters have to monitor the entire supply chain in order to assure whether the required standards for certified products have been met. Different companies use different procedures to assess the quality of products.

Procedures followed to assure whether farmers practise organic farming in a proper manner are as follows;

- Internal control systems practised by the company
- Extension services provided by the company via field level extension officers
- Random inspections by the field staff
- Improved and well equipped laboratories for quality control
- Samples are sent to other countries for testing

## 2.3 Implication of the Production Systems Adopted by the Organic Food Exporters for Farmers

Organic food exporters use different production and marketing models to meet the export requirement. Out of the total organic food exporting companies, 16 are collaborating with farmers to meet the requirement of organic food exports. The farmers linked with the contract out-grower system of organic food production with the exporting companies receive benefits from the exporting companies.

### 2.3.1 Benefits given by the Exporters to Farmers

Success of organic farming depends on the good relationship with the farmers. Farmers who link with organic food exporting companies receive benefits from the exporters such as

- High market rate prices for their crop (premium price)
- Benefits through Fair Trade Premium (Social and environmental development related)
- Training related to farming
- Extension services
- Providing organic fertilizer
- Enhancing knowledge and educate them on market potential for organic cultivation
- Technical advice

In addition to above benefits the farmers linked with some of the exporters were able to acquire the following benefits as well.

- Collective bargaining power through farmer organizations
- Health insurance for growers and workers
- Support farmers in the conversion period to sell their products by linking other buyers to farmers
- Farmers are given agricultural equipment
- Provide scholarships and present awards to the best farmers
- Support to develop their infrastructure facilities

### 2.3.2 Training Programmes offered by the Exporters

For the success of organic food production to meet the standards of exporting countries, the companies have to conduct training programmes for farmers. Some of these programmes are as follows;

- Organic and bio-dynamic farming

- Raw material processing - Composting and liquid fertilizer preparation
- Training on processing
- Post-harvest handling
- Cultivation practices and organic regulations
- Organic certification procedures via certification bodies
- Fair Trade via FLO

Out of the total companies dealing with famers (16), 12 (75 percent exporters) reported that they conduct training programmes to farmers who supply organic food products for them.

### 2.3.3 Organic Premiums

Organic products fetch a higher price than conventional products. Price premium recognizes the fact that the organic production process generally costs more than the conventional production process. It also recognizes that well-proven social, environmental and health benefits inherent in organic production are worth paying for. It assumes that farmers and their workers are paid above the cost of production, including a fair return for their investment.

Generally the exporters are uncertain about the conventional or the organic export price at the time of buying from the farmers. Normally, the exporter offers the farmer a premium of 10 to 25 percent over the conventional price. In some cases the organic quality is also linked to higher quality requirements (e.g., better drying or selection). Then the premium normally needs to be even higher to motivate farmers to produce the higher quality. But there are substantial variations and sometimes local prices experience an increase.

The organic premium is defined as the price difference between an organic and a conventional product of the same quality. A buyer may have the aim of paying an organic premium of not more than 20 per cent on any of his commodities. In practice, the organic premium shows a much wider range, often between 10 to 50 per cent (at import level), depending on the commodity and the market. In certain products the organic premium can be much higher, especially on rare or technically complicated products.

The export market price of an organic product is determined partly by the organic market in the importing country and partly by the buyer, the influence of fair trade, price premium etc. In the domestic market, though there is no formal premium price system, organic produce (not certified) *is usually sold at higher*

prices in Colombo. This is due to the difference in quality between organic and conventional produce and consumer demand for chemical-free produce.

According to exporters, the premium is not paid as a percentage from the actual product value. It is calculated based on the market price, value addition for certifications (both organic and fair-trade) and a certain price is decided. This price always stays above the prevailing market price for conventional products.

## 2.4 Challenges in the Organic Food Export Sector

The exporters have highlighted the challenges they encountered in exporting organic food. There are challenges faced both in terms of production and marketing aspects.

As given in the Table 2, most of the exporters highlighted that limited availability of raw material for export, competition from other countries due to high cost of production, price competitiveness with conventional products, to find suppliers to meet expanding demand and to keep the supply chain and the frequent fluctuations of local market price of raw material are the major challenges faced by organic food exporters in the country.

**Table 2: Challenges for Exporters**

| Challenges | Percentage of Responses (N=38) |
|---|---|
| Competition from other countries (due to high cost of production) | 79 |
| Premium decrease due to high competition | 42 |
| Limited availability of raw materials for export | 92 |
| Price competitiveness with conventional products | 79 |
| To find suppliers to meet expanding demand and to keep the supply chain | 53 |
| Limited marketing initiatives compared to strong marketing channels for non-organic foods | 26 |
| Fertilizer subsidy programme | 42 |
| Strong promotional campaigns from private sector for chemicals and fertilizer | 39 |
| Limited organic inputs for food production (stabilizers, preservatives etc.) | 31 |
| No special tax concessions or any other support for the organic agriculture and organic product exports | 45 |
| Need to find markets for innovative products | 26 |
| Frequent fluctuations of local market prices of raw materials | 53 |

Note: Column totals do not equal to 100 due to multiple responses
Source: Survey Data, 2012

Most of the other Asian countries produce similar products and it creates competition in the international trade. Table 03 explains the competitive countries for the major organic products export from Sri Lanka. As the cost of production in the country is higher compared to most of the other exporting countries in the region, we are unable to compete though our products are of better quality. Therefore, reducing the cost of production is challenging to the country and government support is essential through incentives to maintain low cost of production.

**Table 3: Competitive Countries for Organic Food Products**

| Organic Food Product | Competitive Countries |
|---|---|
| Tea | India, Vietnam, China |
| Coconut value added products | Thailand |
| DC Coconuts | Indonesia, Philippines |
| Fruit based products | India, Thailand |
| Spices | India, Vietnam |

*Source: Survey Data, 2012*

General agricultural policies in the country still favour conventional farming with subsidized inputs. An important means of promoting organic production is to eliminate existing disincentives for organic food such as distorting subsidies for chemical fertilizer.

## 2.5 Constraints Faced by the Exporters

Agriculture constitutes a major livelihood activity employing most of small-scale smallholder farmers. Organic agriculture offers opportunities to small scale farmers to practise sustainable production improving productivity, outputs and access to markets. However, low awareness on organic agriculture; lack of trust on the integrity of organic products; market demand in excess of supply; and limitations associated with foreign certification systems greatly hinder the progress in the sector.

The Table 04 presents the ranking results of the constraints faced by the organic food exporters. Many exporters rated insufficient raw materials for export, high cost of certification, lack of research and development and high cost of production as the major constraints in exporting organic food products.

**Table 4: Constraints Faced by the Exporters**

| Constraints | Average Grading |
|---|---|
| Insufficient raw materials for exports | **2.20** |
| Product damage or contamination during transport, storage or processing | 0.60 |
| Lack of trained labour | 0.77 |
| High incidence of pest and disease attacks | 1.71 |
| Product loss due to weather | 1.11 |
| High cost of certification | **2.46** |
| Long conversion period | 1.94 |
| Lack of research and development | **2.51** |
| High cost of production | **2.03** |
| Lack of essential organically permitted inputs | 1.66 |
| Finding buyers | 1.09 |
| Collecting of products from farmers | 1.49 |

Note: Average grading was calculated based on a number of responses on different levels; (Low (Disagree) = 0, Moderate (Partially agree) = 1, High (Agree) = 2, Very High (Fully agree) = 3)
Source: Survey Data, 2012

Organic production takes place under different conditions and norms (private standards as well as regulations). Due to lack of recognition by both government and non-governmental institutions, certification of international organic product chains has become a complicated and costly service. The demanding nature of regulatory requirements makes certification more difficult as well as expensive, for export certification.

Labor is important in the production process and can impede the adoption of organic agriculture. Compared to large-scale mechanized agricultural systems, organic farming appears more labor intensive. Many techniques used in organic farming require significant labor(e.g., strip farming, non-chemical weeding, composting). Buying organic products from many farmers and maintaining multiple certifications is a complex enterprise that requires a lot of administration.

Some exporters face difficulties obtaining supply of certain ingredients and processing aids. Certain ingredients and processing aids are not currently

organically produced or their supply is so limited that few processors can purchase them.

### 2.5.1 Constraints faced by the Producers linked with Exporters

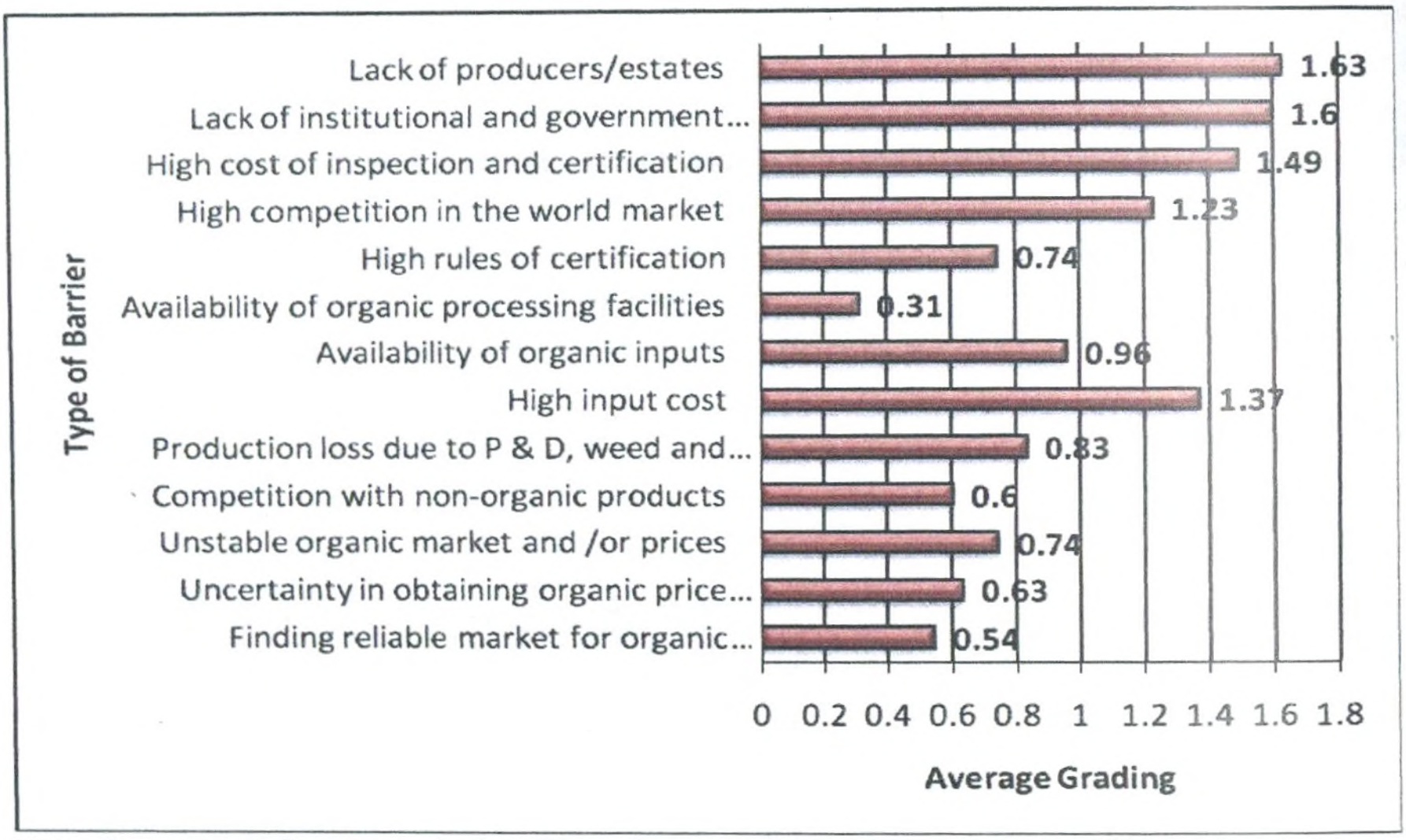
According to the focus group discussions made with the farmer groups linked with some of the exporters, the following constraints in production and marketing of organic food products were noticed.

- Lack of awareness in organic cultivation practices and certified organic production
- Long conversion periods
- High labour cost
- Lack of skills in managing complex problems in the farmland
- Lack of proper marketing ventures
- Lack of proper inputs
- Lack of sufficient organic technology to support production
- The companies do not purchase the total produce
- No certification and labeling
- Poor investment capacity
- Smallholding
- Less risk bearing capacity

## 2.6 Barriers of Entry to Organic Food Export Market

The organic market targets consumers who attach more value to the quality, origin, health and other ethics around the production, processing, and marketing of products. It is a market with high entry barriers, as it requires time and investment in order to acquire the necessary certifications, and needs on-going compliance and expenses to maintain the certification. It is a market quite different from the commodity markets in which most other exporters are operating in the country.

The Figure 03 presents the ranking results for the barriers for entry into organic food export market. More exporters rank lack of producers/estates, lack of institutional and government support, high cost of inspection and certification, high competition in the world market and high input cost as severe barriers for organic food exports.




Note: Average grading was calculated based on a number of responses at different levels (Not a barrier = 0, Moderate barrier = 1 and Major barrier = 2)

Source: Survey Data, 2012

**Figure 3: Barriers of Entry to Organic Food Export Market**

For organic products export, the supply is insufficient to meet the export demand. There are a number of barriers to conversion, both real and perceived that must be overcome for rapid expansion of the grower base.

In addition to the constraints and barriers highlighted by the organic food exporters, most of the companies were not able to meet the export demand due to following reasons;

- Unavailability of raw materials to match the demand from foreign markets
- Inadequate number of organic farmers to cater to the demand
- Lack of availability of raw material at an affordable price
- Lack of modern technologies and high investments in food packaging (ex: tetra packing, freeze drying, vacuum drying)
- Limitations in packing materials

## 2.7 Suggestions to Improve the Organic Food Sector

In order to expand the export market for organic food sector, the following suggestions were made by them. Most of the exporters highlighted that there should be more support from government institutions for farmers, processors and exporters on organic food production, farmers' education and possible assistance for cultivation, more research and development on value addition.

**Table 5: Suggestions made by the Exporters**

| Suggestions | Percentage of Exporters (N=38) |
|---|---|
| Need more support from government institutions for farmers, processors and exporters on organic food production | 79 |
| Farmers' education and possible assistance for cultivation. | 66 |
| More research and development on value addition | 66 |
| Tax concessions for organic food export sector | 51 |
| Need of product specific market promotion for organic food (trade fairs) | 39 |
| Educate exporters with new regulations | 39 |
| Need of separate HS codes for organic product exports | 32 |
| Establish model farms and conduct training programmes for farmers | 32 |
| Development of awareness programmes to educate on values and importance of organic concepts | 26 |
| Introduce low cost certification schemes for farmers | 26 |
| To develop the domestic market for organic food, pure organic food chains should be opened in major cities | 21 |

Note: Column totals do not equal to 100 due to multiple responses
Source: Survey Data, 2013

## 3. Conclusion

At present, there are 38 certified organic food exporters in the country exporting spice based, fruit based, coconut based, tea and herbal extracts. These exporters are certified by the Control Union and IMO certification agencies operated in the country. About 18 exporters (48 percent) had entered the organic food export market during the period 2006-2012. This shows that there is a growing trend in

entering the organic food export market. However, many companies which recently entered the organic food market are smaller in size and market share, compared to the pioneers of organic food industry in the country. There are only seven companies which deal solely in organic food exports in Sri Lanka.

Export companies have different business models for the production and supply of organic food requirement for exports such as maintaining own estates/farms, out-grower systems, certified suppliers and certified processors. In addition, some companies have independent farmer organizations maintaining certified smallholder groups. Some of the NGOs act as certified suppliers for exporters. As the cost of certification is high, the farmers cannot afford the certification cost and as a result the exporting companies have to bear that.

Out of the total organic food exporting companies, 16 companies are working with farmers (maintaining out-grower system) to meet the requirement of organic food exports. Those farmers receive benefits from the exporting companies such as receiving a premium price, benefits through fair-trade premium, training related to farming, extension services, provision of organic fertilizer, enhancement of knowledge and provision of technical advice.

Companies follow different procedures such as Internal Control System (ICS), extension services by field level officers, random inspection by field staff, and existence of laboratory facilities etc to assure whether farmers practice the required quality standards for certified products.

India, China, Vietnam, Thailand and the Philippines are the major competitors for organic food exports. There is a growing demand and potential for organic coconut water, virgin coconut oil, herbal plant extracts, vegetables, fruits and rice for Europe, USA, Canada and Middle Eastern countries.

Limited availability of raw material for export, competition from other countries due to high cost of production, cost competitiveness with conventional products, difficulty of finding suppliers to meet expanding demand and to keep the supply chain and the frequent fluctuations of local market price of raw material are the major challenges faced by the organic food exporters in the country.

The major constraints faced by the exporters were insufficient raw materials for export, high cost of certification, lack of research and development and high cost of production in exporting organic food products. In addition, major constraints faced by the farmers linked with exporters were high conversion period, high

labour cost, lack of awareness, lack of proper marketing ventures and lack of proper inputs.

Lack of producers/estates, lack of institutional and government support, high cost of inspection and certification, high competition in the world market and high input cost are the major barriers encountered by organic food exports in the country.

## 4. Recommendations

- Developing national policies for organic food production to export market is important.
  - Producers specially smallholders should be supported to comply with standards, certification procedures and regulations through training programmes, need to assist farmers in converting to organic agriculture by providing incentives and facilitating a market for products during the conversion period (eg: Eco-products).
  - Improving the research and development for value added products. In order to compete in the international market value addition of organic food products is important. Hence, promoting research and development of value addition in local organic production systems is essential and need to introduce locally adapted, high-quality, disease-resistant seeds and planting materials, bio-control agents and fertilizer.
  - Facilitate farmer linkages with the exporters and promoting Sri Lanka's organic products at international fairs.
  - Policy measures such as providing incentives in the form of subsidies and tax concession for production and distribution of organic inputs can be implemented. At present, only a few firms are manufacturing bio-fertilizer and bio-pesticides and most of them have to be imported. The government could support the organic sector by working with and supporting certified export companies in developing organically permitted inputs and disseminating them among organic farmers.

The government has to play a regulatory role in this regard for long term sustainability of the system. This includes improving private sector participation in the agri-business sector through various incentive schemes, export promotion, trade agreements and legislative governance.

- Farmers/farmer organizations are unable to enter export market directly due to high cost of certification. There should be a locally established certification

scheme which is internationally recognized. Foreign certification body is rarely engaged in local development and they have little interest in developing the local market. Further, the local consumption of organic/ecological food can be promoted at competitive prices for a healthy living. Availability of a national standard and a national certification body could reduce the costs associated with the certification which will improve the sector development. Producers, especially smallholders, should be supported to comply with standards, certification procedures and regulations. Special considerations should be given to certification of smallholders. Training programmes for farmer groups to set up internal control systems should be supported.

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**Appendix Table 1: Organic Food Export from Sri Lanka**

| Category | Type of Products |
|---|---|
| **Spice Based Products** | Essential Oils<br>Black pepper oil, White pepper oil, Cardamom oil, Cinnamon bark oil, Cinnamon leaf oil, Citronella oil, Clove bud oil, Clove leaf oil, Clove stem oil, Gingelly oil, Lemongrass oil, Mace oil, Nutmeg oil, Vativer oil, Turmeric oil, Lime oil<br><br>Powdered Spice<br>Black pepper powder, White pepper powder, Cardamom powder, Clove bud powder, Ginger powder, Cinnamon powder, Cinnamon tea cut, Lemongrass powder, Nutmeg powder<br><br>Oleoresins<br>Black pepper oleoresin, White pepper oleoresin, Cardamom oleoresin, Clove Oleoresin, Cinnamon oleoresin, Ginger oleoresin, Nutmeg oleoresin, Turmeric oleoresin<br><br>Sterilized Spices<br>Black pepper, White pepper, Cardamom, Cinnamon quills, Clove bud, Clove stem, Ginger, Gotukola, Lemongrass, Mace, Nutmeg |
| **Coconut based Products** | Organic desiccated coconut, Coconut chips (raw, toasted), Organic coconut milk, Organic cream coconut, Coconut oil, Coconut water, Coconut milk powder |
| **Tea Products** | Green tea, Black tea, Flavoured tea |
| **Fruit based Products** | Dehydrated fruits (Pineapple rings, tidbits and dices, Mango halves, strips, tidbits, papaya strips, dices and spears, banana whole and chips and fruit cocktail)<br><br>Fruit juices (pineapple juice, papaya juice, mixed fruit juice, passion fruit juice)<br><br>Fruit pieces in natural juices (Mango, papaya, pineapple, fruit cocktail) |
| **Other Products** | Nuts (Cashew), Garcenia, Tamarind, Coconut treacle, Ginger, Herbal Extracts |

Source: HARTI Survey Data, 2012

# NATURE OF PRICE FLUCTUATION IN FRESH VEGETABLE MARKET IN SRI LANKA

**Champika, P. A. J.**

***Abstract***

*The vegetable sub-sector, which is regarded as a key segment of the other food sector, currently experiences high price instability, a characteristic of most of the agricultural commodities in developing countries. Thus, this study focuses on comparing the performance of various smoothing techniques in explaining the wholesale price behaviour of vegetables, grown in Sri Lanka. The smoothing techniques suggested that Double Exponential Smoothing as the best fitted technique in describing the wholesale prices of tomato and brinjal, whilst Single Exponential Smoothing was more appropriate in describing the wholesale prices of cabbage, pumpkin and long beans. Further, it was found that the calculated annualized volatility indices of the selected vegetables were considerably higher than the price volatility indices of the tropical food items in the international market. As it was revealed by the pattern of the extent vs. production relationship, productivity has increased over time and the rate of increase seemed to have accelerated after 2004. Price fluctuations also followed the same pattern, reporting the highest intra-year variation in either 2011 or 2012 for most of the vegetables. Therefore, it was concluded that price fluctuations seemed to have intensified with the productivity increases over time.*

Key words: *Smoothing technique, Vegetables, Volatility indices*

## 1. Introduction

Vegetable sub-sector is a key segment of Sri Lanka's economy, which makes a significant contribution in terms of earning of foreign exchange and providing employment for the rural poor. The total area under vegetable cultivation in Sri Lanka in 2013 was 113,259 ha, contributing to the total production of 1, 003,562 mt (Data and Information Unit of the Presidential Secretariat, 2014). Despite diverse attempts of improving the sector, statistics for the last five years show

that the growth of the vegetable sub-sector remained stagnant at 2.44percent share of the national GDP (Department of Census and Statistics, 2008 -2012).

Vegetables grown in Sri Lanka are broadly divided into two groups, as up-country vegetables and low-country vegetables, based on the agro-ecological adaptability. The up-country types (the vegetables, which are preferably grown in [1]agro-ecological zones such as up-country wet zone, up-country intermediate zone and mid-country wet and intermediate zones) comprise vegetables such as beans (*Phaseolus vulgaris)*, carrot (*Daucus carota*), leeks (*Allium ampeloprasum var.* porrum), cabbage *(Brassica oleracea)*, beetroot (*Beta vulgaris*), raddish (*Raphanus sativus var. longipinnatus*), knolkhol (*Brassica caulorapa*) and tomato (*Lycopersicon esculentum)*. The other group comprises low country vegetables, which are preferably grown in agro-ecological zones such as low country wet, intermediate and dry zones, and mid-country dry and intermediate zones), which include capsicum (*Capsicum annum)*, ladies fingers, (*Hibiscus esculentus)*, brinjal (*Solanum melongina)*, pumpkin (*Cucurbita maxima)*, cucumber (*Cucumis sativus)*, bitter gourd (*Mormodica charantia)*, snake gourd (*Trichosanthes cucumerina)*, drumsticks (*Moringa oleifera*), luffa (*Luffa acutangula)*, long beans (*Vigna unguiculata ssp. sesquipedalis)*, winged beans (*Psophocarpus tetragonolobus)*, and Ash plantain (*Musa paradisiaca)*. Growing of low-country vegetables mostly depends upon availability of water, either in the form of rain or groundwater. Yet, in the central highlands, up-country vegetables are grown with high cropping intensity all year-round, as up- country wet and intermediate zones receive ample amount of rainfall from both north-eastern and south-western monsoons.

Similar to other seasonal crops in Sri Lanka, vegetable cultivation is largely practised in two seasons, called *Maha* and *Yala.* However, in cultivation of vegetables, demarcation of the seasons is not as clear as paddy or other field crops. Because, much shorter crop durations always allow the cultivation of 1-4 rotations within the same field during one season, under favourable weather conditions.

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[1] The Dry Zone (D) is the area which receives a mean annual rainfall of less than 1,750 mm with a distinct dry season from May to September. The Intermediate Zone (I) demarcates the area, which receives a mean annual rainfall between 1,750 to 2,500 mm with a short and less prominent dry season and the Wet zone (W) receives a mean annual rainfall of more than 2,500 mm with no distinct dry season. Further, a sub-division based on the altitude takes into account the temperature variation in these climatic regions. In this delineation, the Low-country (L) is demarcated as the land below 300 m in elevation and the Mid-country with elevation between 300-900 m and the Up-country is demarcated as the area where elevation is more than 900m. Three major climatic zones are indicated as W-Wet, I-Intermediate and D-Dry (Punyawardena. 2004).

In Sri Lanka, monthly wholesale price movements of vegetables are characterized by a cycle of two price hikes followed by two price falls, during a year. E.g. Figure 1.1 depicts the variation in total extent in each month vs. monthly average wholesale price and annual average wholesale price of tomato for the period of 2012-2013.

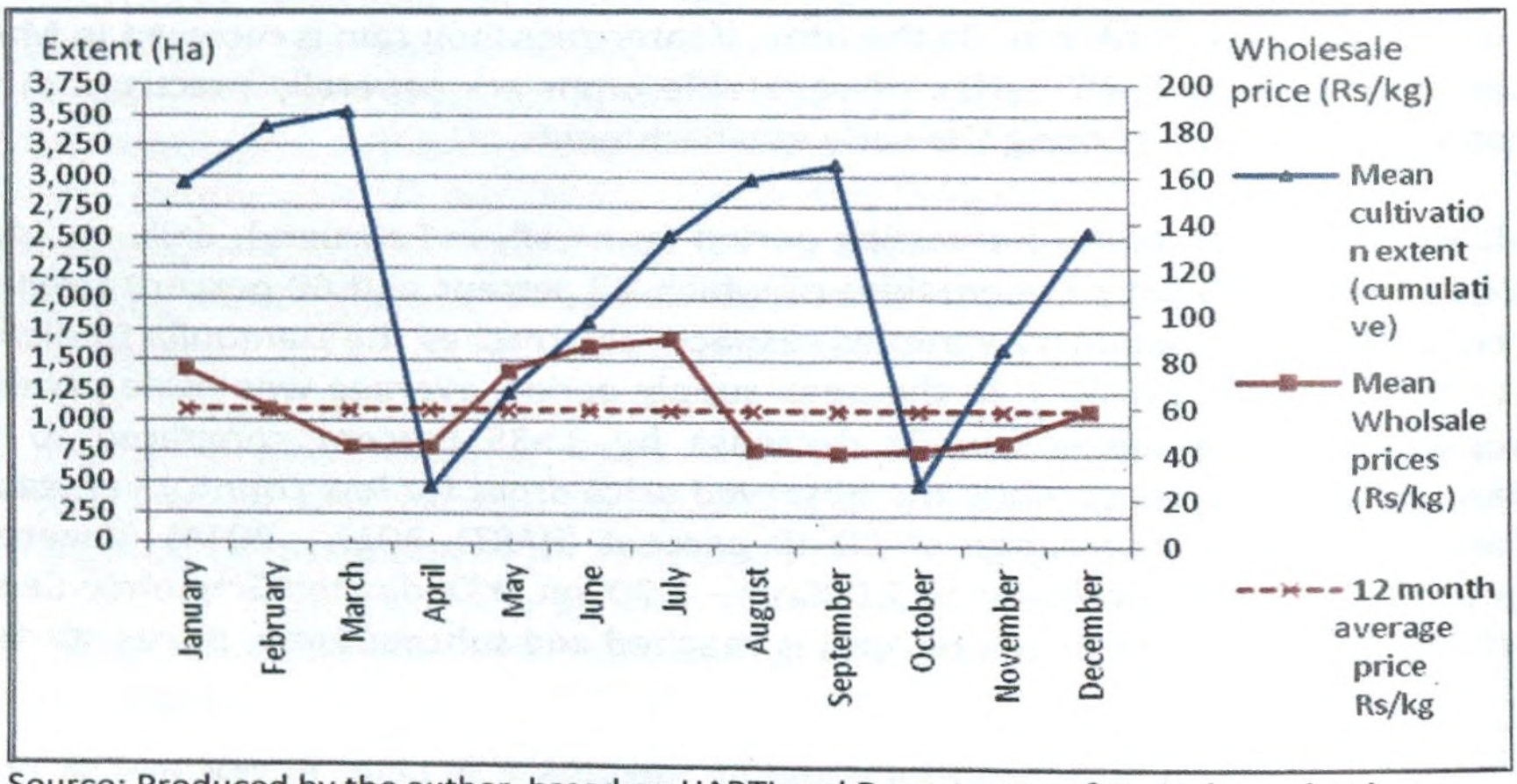
If a normal weather condition prevails, *Maha* cultivation of both up and low-country vegetables commences in early October to mid-November period, with the north-eastern monsoon rain. In up-country and mid-country areas, *Maha* vegetable cultivation is mainly practised in highlands hence; this season is called *'kandukannaya'*. As the supply of irrigation is difficult in hilly areas, land preparation and establishment of seedlings is generally practised after receiving the monsoon rains. Therefore, in highlands, if the rain is delayed, commencement of the season is also delayed accordingly. However, in certain parts of the low-country, e.g. Anuradhapura, Kalpitiya and Hambantota, there is a possibility of commencing the cultivation without waiting for the rain, by using groundwater as the main water source. Under normal circumstances, supply of *Maha* cultivation started to reach the market from mid-January and it continued up to last week of March. By the time, if inter-monsoon rain is received in March and April, $3^{rd}$ and $4^{th}$ cycles of vegetable crops are generally practised in the same fields by up-rooting the early establishments.

During the peak *Maha* harvesting period (generally in February), daily supply of 2,500mt – 3,500mt of vegetables of which 40 percent and 60 percent from up-country and low-country varieties respectively, reaches the Dambulla Dedicated Economic Centre (DEC[2]). In the peak supply period, average wholesale prices of up-country vegetables usually decrease by 30-35 percent compared to the annual average price, while the observed price drops for low country vegetables are generally in the range of 30-40 percent (HARTI, 2012 - 2014). Vegetable supply gradually decreases to 1,000mt – 1,200mt at Dedicated Economic Center (DEC), when the last week of April is reached and subsequently, prices starts to

[2] Dambulla DEC is the major wholesale market for vegetables in Sri Lanka. Its geographically central location in the country and better transportation linkages to the producing areas have allowed it to become the main wholesale market in the country. Nearly LKR 500 million (approximately USD 4.5 million) of the produce is traded every day in the peak harvesting season and it attracts farmers and buyers from all over the country to its 144 stalls (Sri Lanka Ministry of Trade, Marketing Development, Cooperatives and Consumer Services, 2009, cited in Lokanathan *et al.* 2010). Wholesale prices realized at this market serve as the benchmark for the rest of the country. It is estimated that DEC handles 80percent of the wholesale trade in the country. Unlike markets in other countries such as India, wholesale prices in Sri Lankan markets are not determined by applying an auction mechanism. Prices for the produce are determined via individual negotiations between farmers, middlemen and buyers.

show an upward trend. Establishment of *Yala* crops begins with southwestern monsoon rain in May, while the wholesale prices of vegetables reach its peak in mid-June to mid-July, just before the *Yala* harvest reaches the market. As the lean season for vegetables reach its peak, supply drops, hence average prices increase by around 35 percent and 25-35 percent for up-country and low-country vegetables respectively, compared to annual average. The price increase observed in the lean period confined to 25-35 percent margin due to inters-seasonal cultivation in mid-March to mid-April period. If an extreme weather condition, such as drought or flood prevents the inter-seasonal cultivation of vegetables, average monthly prices would generally increase by more than 50percent of the annual average (HARTI, 2012-2014).

With the receiving of peak *Yala* supply to the market in August-September, prices drop by around 20-30 percent for both up-country and low- country varieties. The peak of the second lean season is observed in mid-November to mid-January in which the margin of price increases is determined by the intensity of the inter-seasonal cultivation which is generally practised during mid-September to mid-October.




Source: Produced by the author, based on HARTI and Department of Agriculture database

**Figure 2.1: Tomato - Cultivated Extent vs. Price Behaviour (mean value for 2012-2013)**

If farmers are producing vegetables for the local or international market, price fluctuation becomes a significant risk that they have to cope with. In the point of

view of the farmers, the principal difficulty is to anticipate the prices that will prevail at the time of sale, and at the time of planting. The consequences of incorrect anticipation can be potentially detrimental for the farmers' income. The result has created farmer indebtedness among small scale vegetable farmers. Then, farmers are unable to invest in their next seasons' production and further entangled in the vicious cycle of indebtedness. It is clearly identified that, agricultural price fluctuations have negative effects on welfare, food security, and economic growth (Myers, 2006 cited in Mitra, 2011) for the farmer community especially, in developing countries. From a more macro-perspective, these price volatilities can give rise to multiple negative consequences to a country's economic stability especially for the countries which are dependent upon agricultural produce as the major segment of domestic economy. High price fluctuations or volatilities can have negative impacts on the government's fiscal revenue, public expenditure, foreign reserves and its creditworthiness, which are regarded as important sectors of domestic economy. Therefore, some economists argue that, there are links between price volatility and crisis, higher volatility leading to an economic crisis.

Thus, this paper attempted to identify the nature of price fluctuation, its magnitude and recent trends in the fresh-vegetable sector-Sri Lanka, which is a prerequisite for any policy intervention aiming for less variable prices in the Sri Lankan vegetable market.

### 2.1 Research Objectives:

1. To examine the nature of price fluctuation and its recent trends in the vegetable sector of Sri Lanka.
2. To measure the degree of price fluctuations in selected up- country and low- country vegetables.
3. To select the best forecasting method to predict future prices of each selected vegetable variety.

## 2. Literature Survey

### Estimation of Price Fluctuation

It is defined that seasonality as month-to-month (or season-to-season) price fluctuations which represent normal seasonal cycles, (harvest and lean season) is determined by the seasonal calendar (WFP, 2010). However, if the seasonal price fluctuations are moving beyond the seasonality effect, it is identified as price volatility. Volatility is described as excessive month-to-month (or season-to-season) changes that are not explained by seasonality or normal trend. Volatility

is determined by the speed, magnitude, and change in direction of the rate of variation in prices (ECLAC/FAO/IICA. 2011). Further, Moledina *et al.* (2003) proposed that, the predictable and seasonal components of the price process should not be considered part of price volatility. Once the predictable components have been removed, only the unpredictable component remains. According to Moledina *et al.* (2003), the unpredictable component of the price process is the most appropriate measure of volatility.

Besides the seasonal nature of production, researchers have identified other causes of price fluctuations observed in the agriculture sector as;

- Long-term changes, resulting from changing character of supply and demand
- Fluctuations resulting from general economic cycle
- Unpredictable, coincidental fluctuations due to weather, spreading of pest and diseases etc.
- As a result of long term character of production cycle e.g. production decision is made far in advance to the determination of price (Grega, 2002).

All these factors can be broadly divided into two categories, such as exogenous and endogenous factors. Exogenous variations are, weather shocks, pest and disease incidence, war situations or any other factors outside the economic environment, which give rise to supply variations. On the other hand, long-term changes of supply and demand, fluctuations due to general economic cycle and erroneous expectations of future prices are considered as the endogenous factors which affect the supply variations (Mitra, 2011). Therefore, it is assumed that, combination of both endogenous and exogenous factors influence the price fluctuation, which is observed in the agriculture sector. In the endogenous explanation, fluctuations are endogenous to agricultural markets and result from the behavior of agents or characteristics of the market. The cobweb model, proposed by Ezekiel (1938), is often used to illustrate this explanation of fluctuations, arising primarily due to erroneous expectations that lead to over or under supply.

Moreover, low price elasticity of demand for food commodities is believed to have magnified the price fluctuations. It is identified that demand for agricultural commodities, especially for food commodities is characterized by low price elasticity (typically less than 1). Low price elasticity subsequently magnifies the impact of supply shocks on prices. For instance, Ramaswami, Ravi and Chopra (2003) have indicated that, if the price elasticity is reported as 0.3 for agricultural

commodities in a particular area, it will give rise to 5percent increase in supply which would ultimately result in a nearly 16percent drop in price.

Sekhar (2004) has compared the volatility of agricultural prices in International and Indian markets by applying the ratio method. In this study, he has calculated the variability of prices by measuring the standard deviation of log ($P_t/P_{t-1}$) over a period, where, $P_t$ is the price in period '*t*' and $P_{t-1}$ is the price in period *t*-1. Sekhar (2004) has found that inter-year variability in domestic market was lower than in international market.

However, only few studies related to price volatility analysis in perishables have been conducted. Alboiu (2011) has evaluated the vegetable price volatility in Romania by calculating the coefficient of variation (CV) for each and every type of considered vegetable. He further found that, Tomato and Cabbage had the highest price volatilities among considered vegetables (56 percent and 42 percent respectively). Further, Kumar *et al* (2005) who studied the behaviour of market arrivals and prices of selected vegetable crops in the case of metropolitan markets in India analyzed the price volatility by calculating the coefficient of variation (CV). They have found that, the extent of variability in the market arrivals of tomato across different months was very high in all the considered markets. They have further confirmed that, there was a negative relationship between market arrivals and prices over the years in all the considered metropolitan markets. Kumar *et al.* (2005) explained that the variations in the output of horticultural crops have led to wild fluctuations in their prices, exposing the vegetable growers to more risk as compared to the growers of other crops. Therefore, researchers have suggested that vegetable farmers should be assisted in adjusting their cropping pattern, in a way that they could sell their produce at a time, when the prices are reasonably high in the market.

An analysis of price behaviour of selected up-country vegetables namely beetroot, cabbage, carrot, leeks and tomato in Sri Lanka, by applying Box-Jenkins methodology revealed that the annual island wide rainfall has not impacted directly on vegetable prices. Rather, price prevailed during the establishment stage and during the same time period of the previous year has influenced the vegetable prices to a considerable level (Wickramasinghe, 2012).

## 3. Methodology and Data

Monthly wholesale price data published by the Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI)-Sri Lanka, in monthly price bulletins, from 2002 to 2012 were used for this analysis.

CV is considered one of the primary measures of price fluctuation (Kumar *et al.* 2005). CV is defined as the ratio of a population's standard deviation to its mean. Therefore, CV values of the wholesale prices are considered the basis in this research. Both up and low-country vegetables with the highest recorded CV percentage were selected for the analysis.

Next, different patterns existing in the data set were identified by applying different time series techniques. Further, moving average followed by single and double exponential smoothing was carried out in order to find out the best fitted method to describe the nature of price behaviour in selected vegetables. Exponential smoothing is a weighted average technique of past time series values as a forecast, hence higher weight for the most recent observation is applied in this method. Therefore, the weights for the other data values are computed automatically and become smaller as the observations move farther into the past.

Single exponential smoothing = $A_{t+1} = \alpha Yt_{-1} + (1 - \alpha) A_t$

$A_{t+1}$ = forecast of the time series for period $t + 1$
$\alpha Yt_{-1}$ = actual value of the time series in period $t$
$F_t$ = forecast of the time series for period $t$
$\alpha$ = smoothing constant ($0 \leq \alpha \leq 1$)

Double Exponential Smoothing

Current level estimate = $A_t = \alpha Y_t + (1- \alpha) (A_{t-1} + T_{t-1})$

The trend estimate = $T_t = \beta(A_t - A_{t-1}) + (1- \beta)T_{t-1}$

Forecast $p$ periods into the future = $Y'_{t+p} = A_t + pT_t$

Where,

$A_t$ = new smoothed value (estimate of current level)
$Y_t$ = new actual value at time $t$.
$T_t$ = trend estimate
$Y'_{t+p}$ = forecast for $p$ periods into the future.
$\alpha$ = smoothing constant for the level ($0 \leq \alpha \leq 1$)
$\beta$ = smoothing constant for trend estimate ($0 \leq \alpha \leq 1$)

Next, forecast accuracy measurements were applied to determine how well a particular forecasting method is able to reproduce the observed time series data. By selecting the method that has the best accuracy, likelihood can be increased in obtaining better forecasts for future time periods.

Forecast Error = Actual Value – Forecast Value

MAPE (Mean Absolute Percentage Error) measures the accuracy of fitted time series values. It expresses accuracy as a percentage.

$$MAPE = \frac{\sum [(y_t - y_t')/ y_t]}{n} \times 100\%$$

Where, $y_t$ is the actual value, $y_t'$ is the fitted value and $n$ is the number of observations

MAD (Mean Absolute Deviation) expresses accuracy in the same units as the data, which help conceptualize the amount of error.

$$MAD = \frac{\sum [y_t - y_t']}{n}$$

Where $y_t$ is the actual value, $y_t'$ is the fitted value and $n$ is the number of observations.

MSD (Mean Squared Deviation) is a more sensitive measure of an unusually large forecast error than MAD.

$$MSD = \frac{\sum [y_t - y_t']^2}{n}$$

Where $y_t$ is the actual value, $y_t'$ is the fitted value and $n$ is the number of observations.

Calculation of historical volatility and monthly volatility indices was extensively applied and widely adopted in measuring food price volatility (von Ledebur and Schmitz, 2012; Jack *et al.* 2009 and Dvir and Rogoff. 2009; cited in ECLAC/FAO/IICA, 2011). Therefore, this research also followed the method of calculation of annualized volatility as the standard deviation of the logarithms of the price ratio between pairs of successive periods (Months) for a given period of time (Year).

Price returns (R) correspond to the difference of the logarithms of prices and reflect the percentage deviation of prices for a time '*t*' at the price of the previous period *t*-1. (von Ledebur and Schmitz.2012).

$$R_t = \ln\left(\frac{P_t}{P_t - 1}\right) = \ln(P_t) - \ln(P_t - 1)$$

$P_t$ =Monthly average price of month t

$P_t - 1$ = Monthly average price of month t-1

## 4. Results and Discussion

### 4.1 Descriptive Analysis

Comparing CVs of wholesale prices of up-country vegetables (Table 1.1), it is noted that tomato marked the highest CV value for five times out of considered eleven year time period, followed by cabbage which marked the highest value for four times. Further, beans had the lowest CV value for six times out of the particular eleven year times period. Therefore, in this research, of all the selected upcountry vegetables, more focus was on analysis of price fluctuation in tomato and cabbage, which marked the highest CV values. Next, the same method was followed and CVs were calculated in wholesale prices of selected ten varieties of low-country vegetables and the results are depicted in Table 1.2. As shown, both brinjal and pumpkin recorded the highest CV value for three times out of considered eleven year time period. Further, wholesale price variation of long beans has recorded the highest CV value twice, during the considered period.

**Table 1.1: Coefficients of Variations (%) of the Monthly Wholesale Prices of Up-country Vegetables**

| Year / Type | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Beans | 17.0 | 20.1 | 20.2 | 22.5 | 28.6 | 23.4 | 12.9 | 24.4 | 13.1 | 33.2 | 43.0 |
| Carrot | 36.7 | 37.9 | 38.8 | 30.2 | 31.2 | 32.9 | 48.1 | 22.5 | *40.5 | 45.8 | 48.6 |
| Leeks | 30.9 | 16.7 | 30.0 | 25.1 | 20.9 | 26.0 | 16.9 | 33.8 | 23.4 | 65.4 | 33.4 |
| Beetroot | 37.7 | 28.3 | 38.1 | *45.3 | 30.3 | 61.0 | 31.9 | 32.5 | 38.7 | 57.6 | 28.0 |
| Knolkhol | 26.9 | 28.2 | 35.2 | 30.6 | 44.6 | 46.5 | 31.5 | 21.9 | 22.6 | 44.4 | 39.0 |
| Raddish | 37.5 | 29.6 | 40.4 | 16.3 | 45.6 | 30.5 | 43.8 | 18.3 | 15.9 | 44.5 | 52.4 |
| Cabbage | *40.3 | *44.7 | 39.9 | 25.9 | 34.8 | *65.7 | *55.7 | 28.3 | 18.1 | 54.0 | 49.7 |
| Tomato | 32.2 | 23.4 | *46.2 | 40.9 | *69.7 | 42.4 | 50.7 | *46.8 | 28.3 | *76.4 | *62.3 |

Note : * denote the highest value for each year

Source: Calculated by the author based on HARTI database

**Table 1.2: Coefficients of Variations (%) of the Monthly Wholesale Prices of Low country Vegetables**

| Year / Type | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ladies fingers | 36.49 | 31.87 | 29.49 | 24.05 | 29.30 | 31.30 | 26.19 | 18.31 | 8.61 | 49.10 | 44.03 |
| Brinjal | *37.90 | 21.56 | *53.15 | 25.29 | 37.92 | 32.29 | 33.07 | 38.40 | 30.83 | *59.56 | 43.68 |
| Capsicum | 24.19 | 25.88 | 23.61 | 14.76 | 39.71 | *38.68 | 40.77 | 33.22 | *41.13 | 50.11 | 33.49 |
| Pumpkin | 15.41 | *32.67 | 16.17 | *30.02 | 39.35 | 25.46 | *48.50 | 36.12 | 17.99 | 48.11 | 35.43 |
| Cucumber | 27.94 | 20.39 | 28.61 | 25.71 | 49.49 | 22.59 | 37.48 | *43.22 | 19.81 | 48.38 | 29.32 |
| Bitter gourd | 29.17 | 12.65 | 29.30 | 20.93 | 34.97 | 29.63 | 17.65 | 13.46 | 15.17 | 28.92 | 32.33 |
| Snake gourd | 28.41 | 28.43 | 23.46 | 19.63 | 31.28 | 36.18 | 30.74 | 22.88 | 16.39 | 52.19 | 36.36 |
| Luffa | 20.20 | 15.23 | 18.97 | 15.20 | 22.88 | 22.36 | 18.24 | 18.86 | 15.93 | 48.30 | 20.33 |
| Long beans | 28.08 | 19.14 | 26.63 | 17.77 | *52.57 | 23.21 | 18.33 | 36.90 | 21.90 | 41.94 | *47.92 |
| Ash plantain | 10.08 | 27.84 | 30.93 | 22.26 | 18.23 | 16.91 | 17.21 | 26.23 | 7.18 | 33.78 | 34.27 |

Note :* denote the highest value for each year

Source: Calculated by the author based on HARTI database

## 4.2 Trend Analysis

Linear regression analysis was applied for trend forecasting of the time series data. The behavior of monthly wholesale prices of tomato, cabbage, brinjal, pumpkin and long beans from year 2000 to year 2012 was calculated and the linear trend line equations were estimated. Next, the forecast values were obtained by applying the trend line equation and the forecast error was determined by subtracting each forecast value from observed value. Accuracy of the selected forecasting methods was evaluated based on Mean absolute percentage error (MAPE), Mean absolute deviation (MAD) and Mean standard deviation (MSD) and the best fitted method was selected. For all three measures, the smaller the value, the better the fit of the model is. The obtained MAPE, MAD and MSD values for the fitted linear trend lines of observed monthly wholesale prices of tomato, cabbage, brinjal, pumpkin and long beans prices were described in Table 1.1. As it was revealed in the trend line equations, except for the wholesale sale prices of pumpkin, less than 50 percent of the price variation was explained by the linear upward trend line equations ($R^2$ <0.5) in relation to wholesale prices of other vegetables. Therefore, it was necessary to select alternative methods which can capture more variation in order to increase the predictability.

## 4.3 Application of Smoothing Techniques

Smoothing of time series data was carried out in order to eliminate some of the short-term fluctuations as well as to understand the general pattern of variation of the data over the considered time period. Generally, moving averages are used for reducing the variability of the observed series and to forecast the future values. Single moving average is the simplest of moving average techniques. Three year single moving average of wholesale prices of tomato, cabbage, brinjal, pumpkin and long beans were calculated and the error term was evaluated by calculating MAPE, MAD and MSD values (Table 3.1). Compared to upward linear trend line estimation, three year moving average method has given smaller values for MAPE and MSD in all the considered events, except in the case of wholesale prices of tomato. Therefore, it was concluded that, three years moving average method is the best out of two considered methods in predicting wholesale prices of considered vegetables.

However, the single moving average method is generally regarded as best suited for a data set, which does not exhibit trend. As *ANOVA* is significant for the estimated upward trend lines of the wholesale prices of tomato, cabbage, brinjal, pumpkin and long beans, it can be concluded that original data exhibits a statistically significant upward trend. Therefore, as the next step, accuracy of prediction is improved by employing single exponential smoothing method. The results were optimized for single exponential smoothing function by calculating the optimum alpha level for wholesale price of each selected vegetables, which gives minimum MAPE, MAD and MSD values (Table 3.1).

Single exponential smoothing is further developed by incorporating trend effects and developing the double exponential smoothing technique. As the considered wholesale prices exhibited upward trend, double exponential smoothing method was applied as the next step of forecasting. Therefore, predicted values for the existing wholesale prices of considered vegetables, tomato, cabbage, brinjal, pumpkin and long beans were calculated by applying double exponential smoothing method and the error term was evaluated calculating MAPE, MAD and MSD values (Table 3.1). The results were optimized for double exponential smoothing function by calculating the optimum alpha level for wholesale prices of each selected vegetable, which gives minimum MAPE, MAD and MSD values.

Likewise, starting from the trend analysis, three years moving average, single exponential smoothing, followed by double exponential smoothing techniques were applied to select the best fitted method of forecasting the wholesale price (Table 3.1).

**Table 3.1: Summary Table of Application of Time Series Analysis Techniques in Selecting the Best Fitted Method in Forecasting Wholesale Prices of Vegetables**

| | Trend Analysis | Three Year Moving Average | Single Exponential Smoothing | Double Exponential Smoothing |
|---|---|---|---|---|
| **Tomato Prices** | | | | |
| MAPE | 62.60 | 70.51 | 59.5 | 53.8* |
| MAD | 20.95 | 25.18 | 21.41 | 20.81 |
| MSD | 750.61 | 1169.56 | 821.4 | 795.8 |
| **Cabbage Prices** | | | | |
| MAPE | 47.543 | 36.99 | 26.04* | 27.0 |
| MAD | 11.447 | 9.89 | 7.93 | 8.19 |
| MSD | 212.941 | 182.26 | 124.39 | 128.71 |
| **Brinjal Prices** | | | | |
| MAPE | 36.62 | 34.61 | 56.5 | 36.8* |
| MAD | 10.29 | 10.46 | 9.36 | 10.50 |
| MSD | 220.65 | 206.51 | 177.75 | 211.37 |
| **Pumpkin Prices** | | | | |
| MAPE | 36.78 | 31.84 | 24.3* | 26.0 |
| MAD | 6.95 | 6.84 | 5.34 | 5.68 |
| MSD | 84.04 | 96.62 | 68.37 | 74.12 |
| **Long beans Prices** | | | | |
| MAPE | 31.18 | 29.06 | 26.4* | 30.6 |
| MAD | 10.72 | 10.63 | 9.5 | 10.48 |
| MSD | 236.83 | 226.76 | 176.45 | 203.24 |

Note:* denote the lowest MAPE value for each considered type

Source: Calculated by the author

Before selecting a method to ***accurately measure*** the model prediction error, inherent advantages and disadvantages of each accuracy measurement need to be considered. The MSD, as its name implies squares and subsequently averages various errors. Such squaring gives considerably more weight to larger errors than smaller ones. Therefore, some researchers (Chatfield, 1988) argued that, MSD alone cannot be considered appropriate in forecasting accuracy measurements as a few large observations can dominate the measurement.

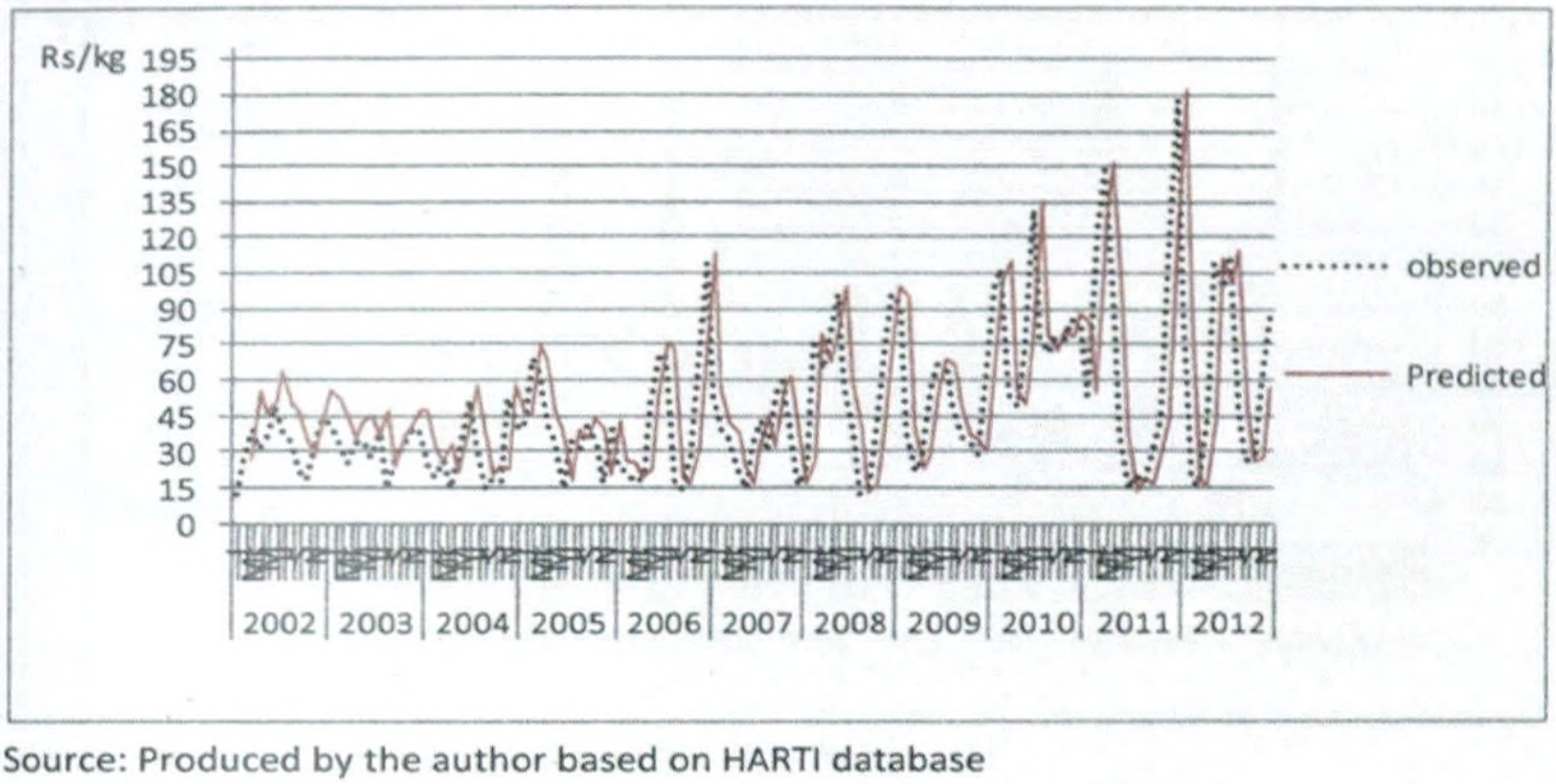
On the other hand, MAD is regarded as one of the conceptually easier to understand measurement of goodness of fit. The MAD is the mean of the absolute value of the deviation between each model prediction and its

corresponding data point. One advantage of this measure is that it provides a value that is easy to understand, for example, a model fit with a MAD of 10.5 units means that the model's predictions were off from the data on average by 10.5 units. Unlike MSD, both MAD and MAPE places equal weighting on all deviations. Since these measures are not of quadratic nature, like the MSD, these are influenced less by outliers. However, MAPE has the advantage of being scale-independent and so is frequently used to compare forecast performance between different data sets. Another advantage of this measure is it provides a value that is very easy to understand. A disadvantage of the MAPE is it is relevant only for ratio-scaled data (e.g. data should have a meaningful zero) (Makridakis and Hibon. 1995). In this research, only ratio scale data is compared (prices are considered as ratio scale) across different models. Therefore, MAPE was selected over other methods, as the main device in selecting best fitted method in predicting the behaviour of wholesale prices.

As the Table 3.1 explains, all the other instances, except in the case of wholesale prices of brinjal, a combination of smallest values for all accuracy measures namely MAPE, MAD and MSD were observed related to a single technique. However, regarding wholesale prices of brinjal, the lowest value for MAPE (36.8) was reported for Double Exponential Smoothing while the lowest values for MAD and MSD (9.36, 177.75) were reported for Single Exponential Smoothing technique. This happened due to higher deviation of predicted prices from observed values in earlier years (in 2002 and 2003), in Double Exponential Smoothing technique than Single Exponential Smoothing technique. Nevertheless, in Double Exponential Smoothing technique, the observed deviations became smaller in later years and it has given the lowest value for MAPE. Therefore, Double Exponential Smoothing technique was selected over Single Exponential Smoothing Technique in predicting wholesale prices of brinjal.

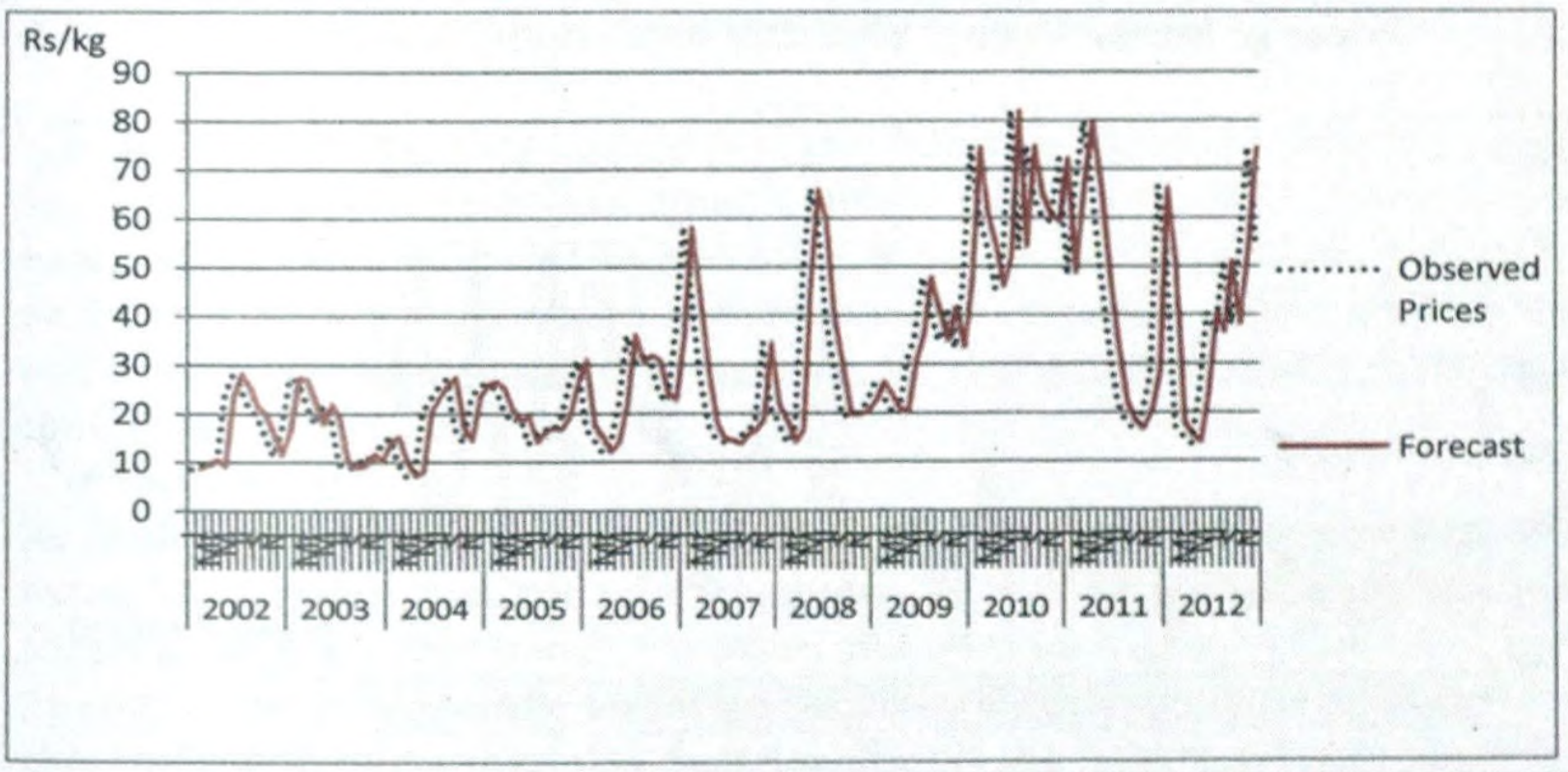
Based on those findings, it was concluded that Double Exponential Smoothing as the best fitted technique in forecasting the wholesale prices of Tomato and Brinjal, whilst Single Exponential Smoothing was more appropriate in forecasting the wholesale prices of cabbage, pumpkin and long beans.

Graphical presentation of the observed and predicted values related to selected best fitted method of forecasting wholesale prices of each vegetable is given below.



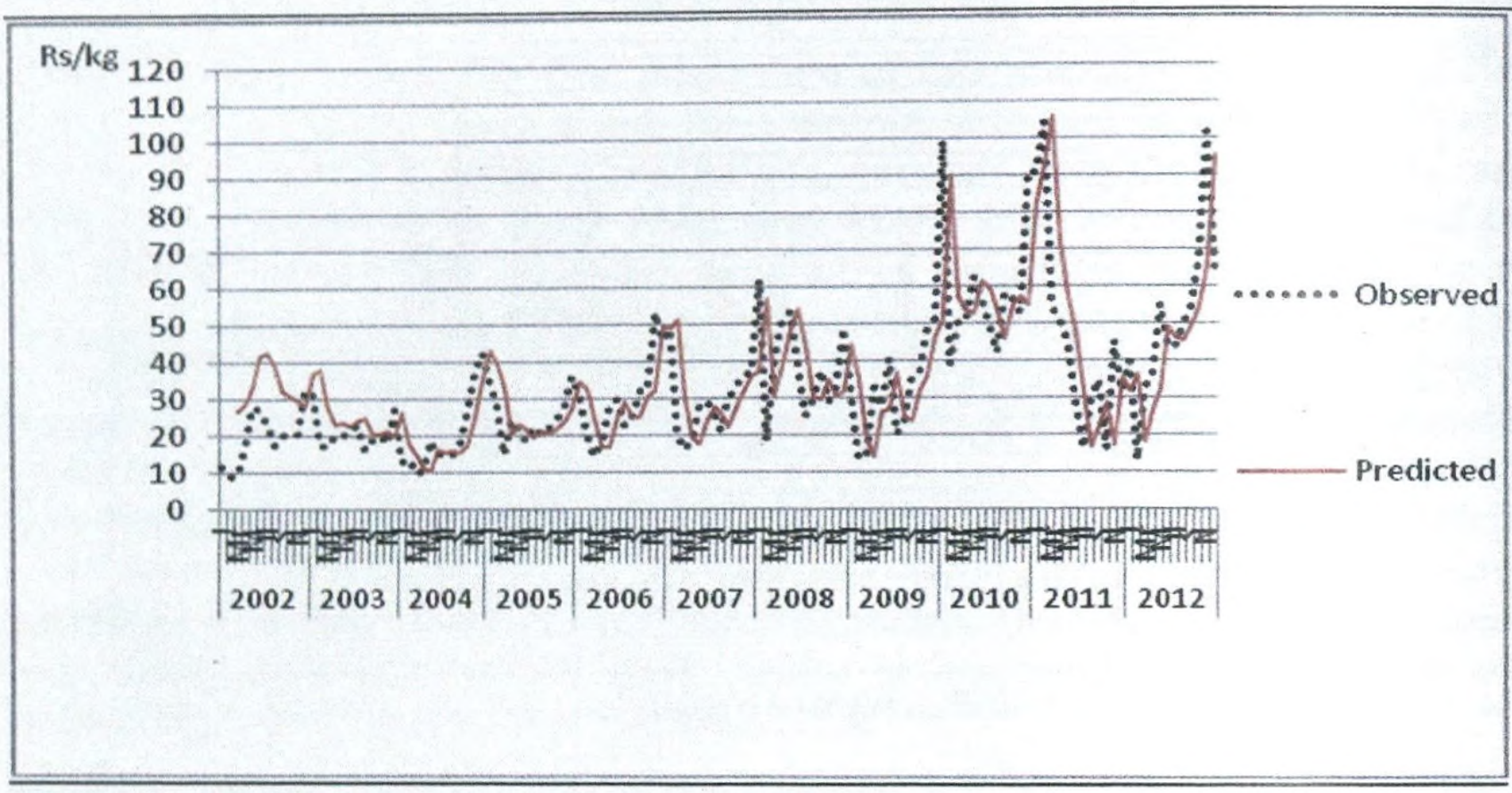

Source: Produced by the author based on HARTI database

**Figure 3.1: Predicted vs. Observed Values by Applying the Double Exponential Smoothing Method (alpha at 0.99 and beta at 0.033) for Wholesale Prices of Tomato**



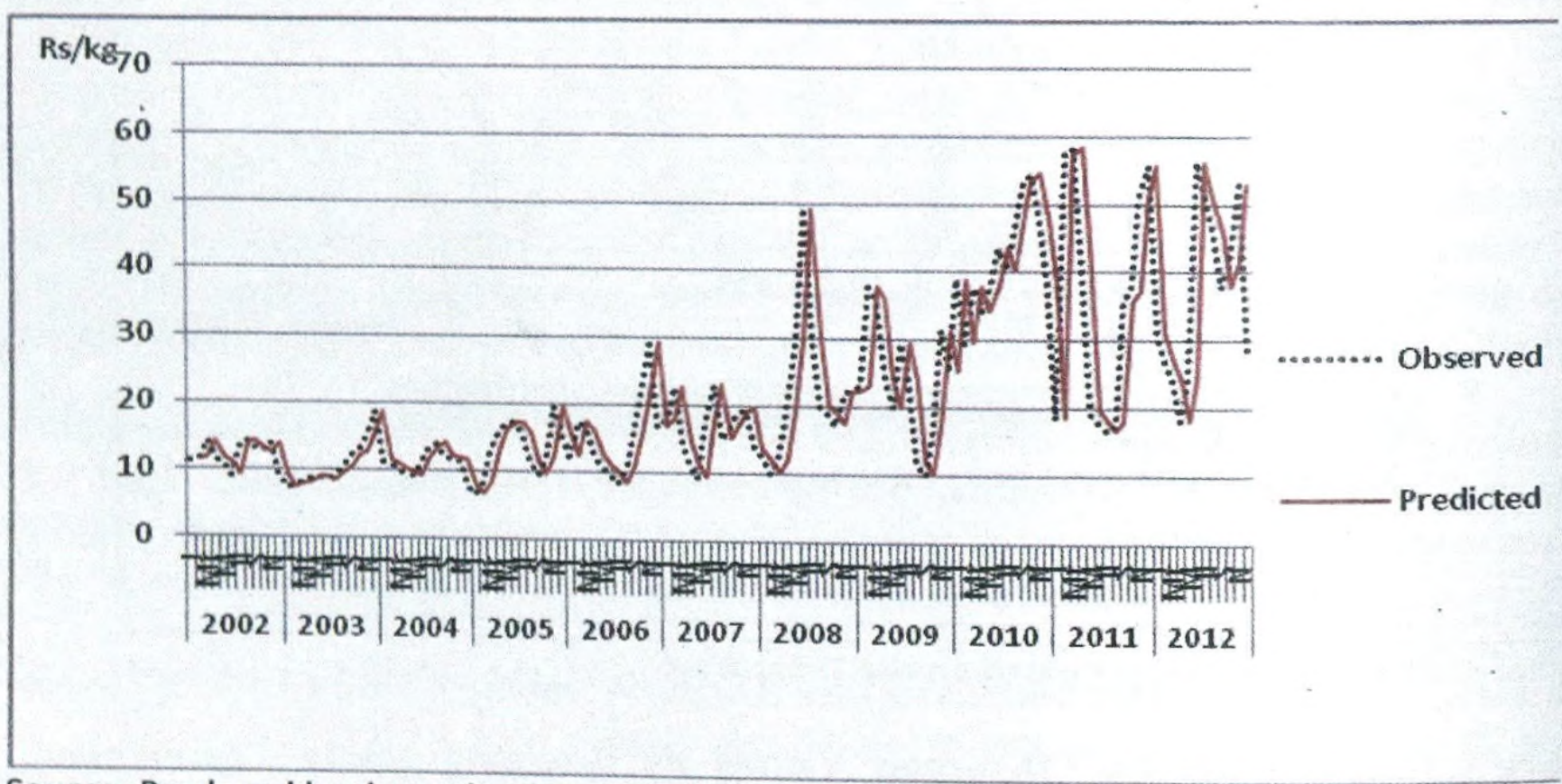

Source: Produced by the author based on HARTI database

**Figure 3.2: Predicted Vs. Observed Values by Applying Single Exponential Smoothing Method (at alpha level 0.99) for Wholesale Prices of Cabbage.**



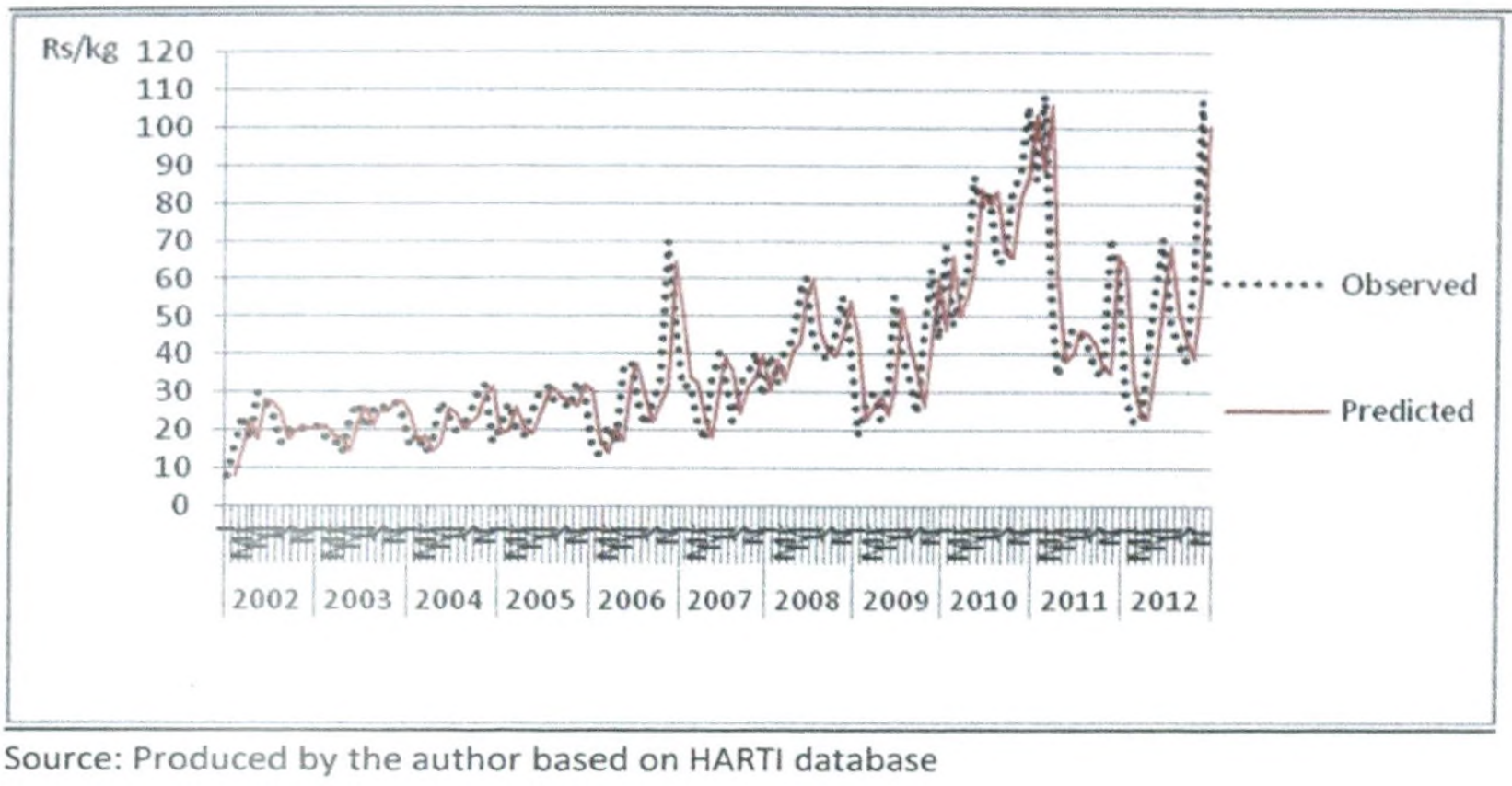

Source: Produced by the author based on HARTI database

**Figure 3.3: Predicted Vs. Observed Values by Applying Double Exponential Smoothing Method (alpha at 0.67 and beta at 0.12) for Wholesale Prices of Brinjal**




Source: Produced by the author based on HARTI database

**Figure 3.4: Predicted vs. Observed Values by Applying Single Exponential Smoothing Method (at alpha level 0.98) for Wholesale Prices of Pumpkin.**



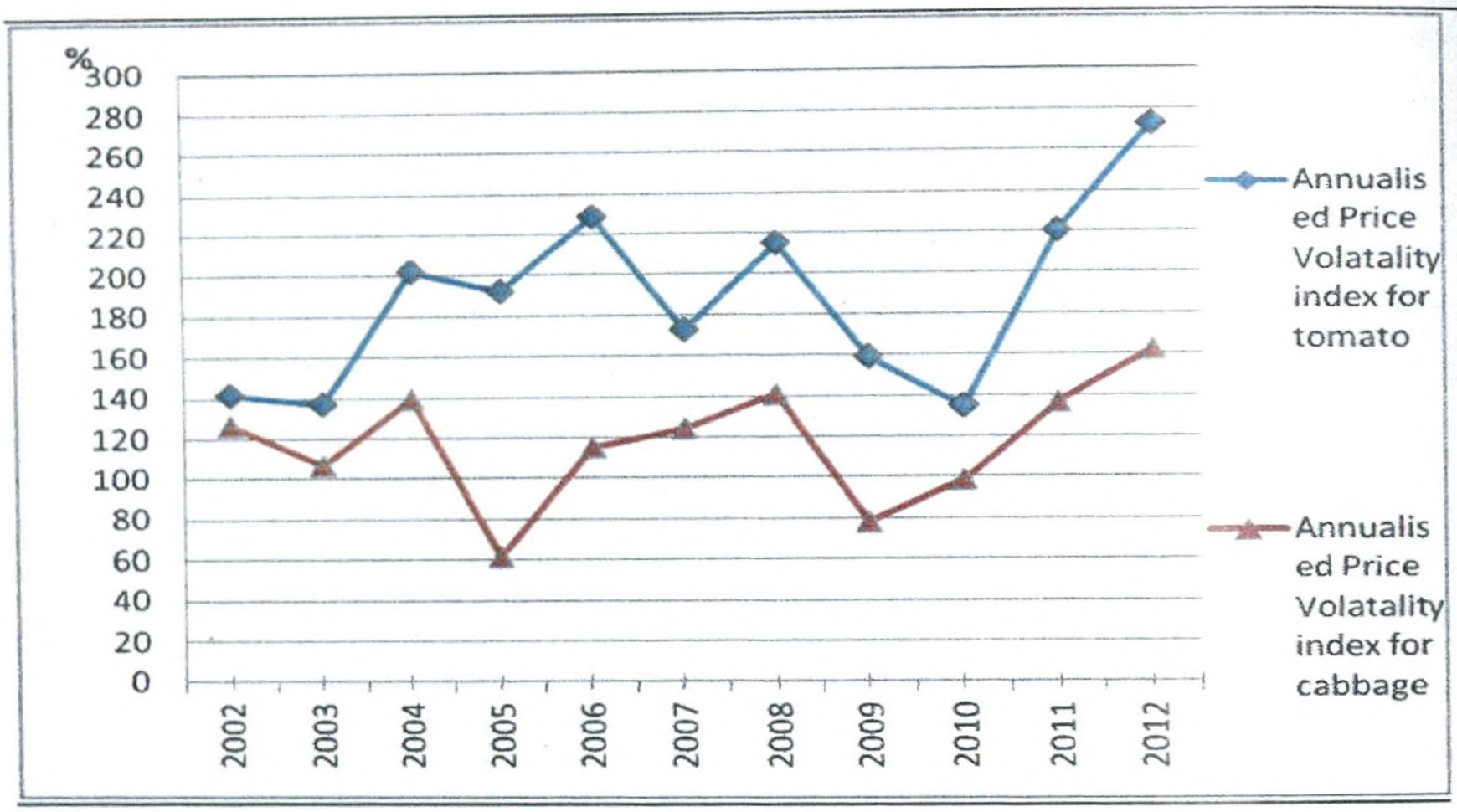

Source: Produced by the author based on HARTI database

**Figure 3.5: Predicted vs. Observed Values by Applying Single Exponential Smoothing Method (at alpha level 0.86) for Wholesale Prices of Long Beans**

## 4.4 Calculation of Annualized Volatility Indices

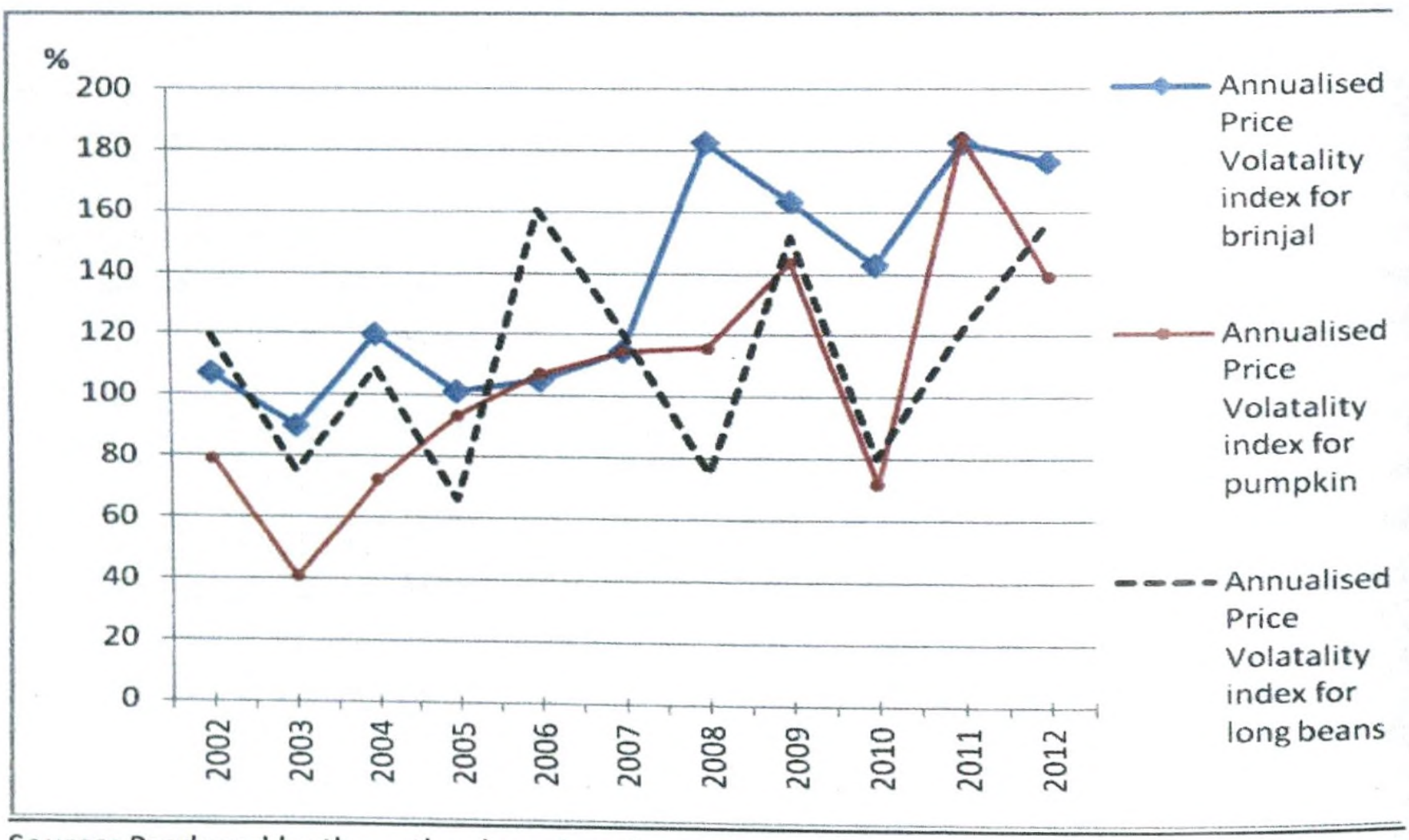
The annualized volatility indices of the wholesale prices of selected up-country and low-country vegetables namely tomato, cabbage, brinjal, pumpkin and long beans were calculated as the first step. Next, historical volatility indices for the each incident were calculated as the standard deviation of the logarithms of the price ratio between pairs of successive periods (Months) for a given period of time (Year).

As depicted in figure 3.6, among up-country vegetables, the highest volatility index throughout the considered eleven year time period was recorded for tomato. On the other hand, it marked the all-time highest value of 272 percent in 2012. Interestingly, the volatility indices for cabbage were always lower than the corresponding values for tomato, during the whole period. Regarding the wholesale prices of cabbage, the highest value was reported as 162 percent. Even though price volatility indices were lower, wholesale prices of cabbage also followed the same pattern by marking the highest ever value in 2012. Therefore, it was evident that price volatility or in other words excessive price fluctuations have followed an increasing trend, from 2002 to 2012 time period in up-country vegetables.




Source: Produced by the author based on HARTI database

**Figure 3.6: Annualized Volatility Indices for Selected Up-country Vegetables**




Source: Produced by the author based on the Department of census and statistics database

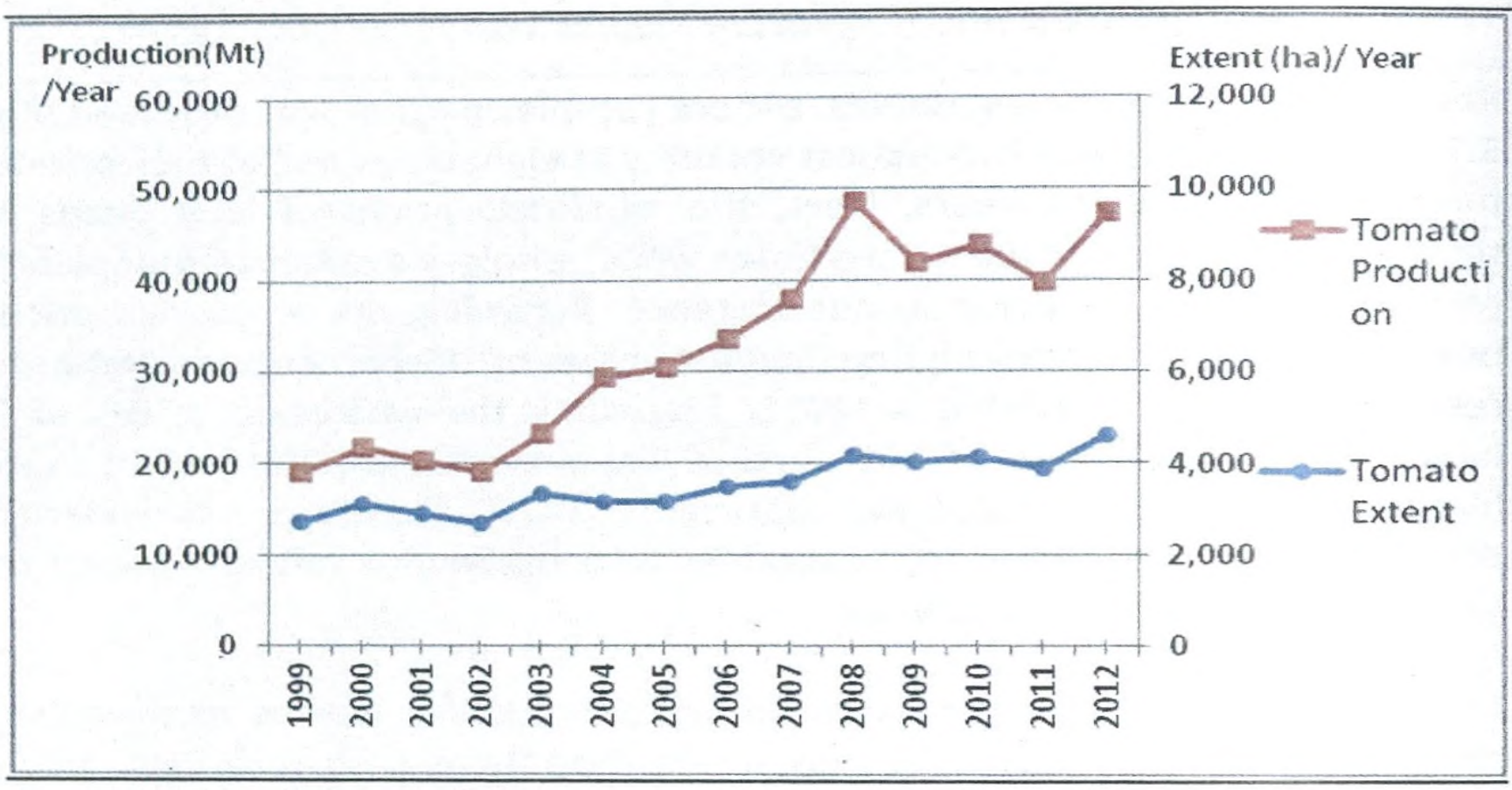
**Figure 3.7: Annualized Volatility Indices for Selected Low-country Vegetables**

Regarding low-country vegetables, a more complex pattern was observed (Figure 3.7). Brinjal has marked the highest volatility in eight times out of the considered time period of eleven years. Next, the wholesale prices of long beans have recorded the highest value in two times while, wholesale prices of pumpkin have recorded the highest value in one instance. Regarding the wholesale prices of both brinjal and pumpkin, all time highest values of 183 percent and 184 percent respectively were recorded in 2011. Regarding the wholesale prices of long beans, the highest value of 160 percent was reported in 2008 and the second highest value of 157 percent was reported in 2012. Therefore, it is evident that price volatility in low-country vegetables also followed a similar upward trend same as in up-country vegetables.

Many researchers have calculated annualized volatility indices to describe the price movement in relation to the staple food items such as wheat, rice and maize and the obtained values were considerably lower than these values. As described in ECLAC/FAO/IICA. 2011, the recorded price volatility indices in cereal such as wheat, rice and maize in the international market was in a range of 4 – 17 percent, during the period of 1999-2010. However, the volatility of tropical food items such as coffee, banana and sugar reported much higher volatility indices than cereals, ranged between 10- 23 percent during the period of 1999-2010.

### 4.5 The Relationship between Productivity and Price Fluctuation

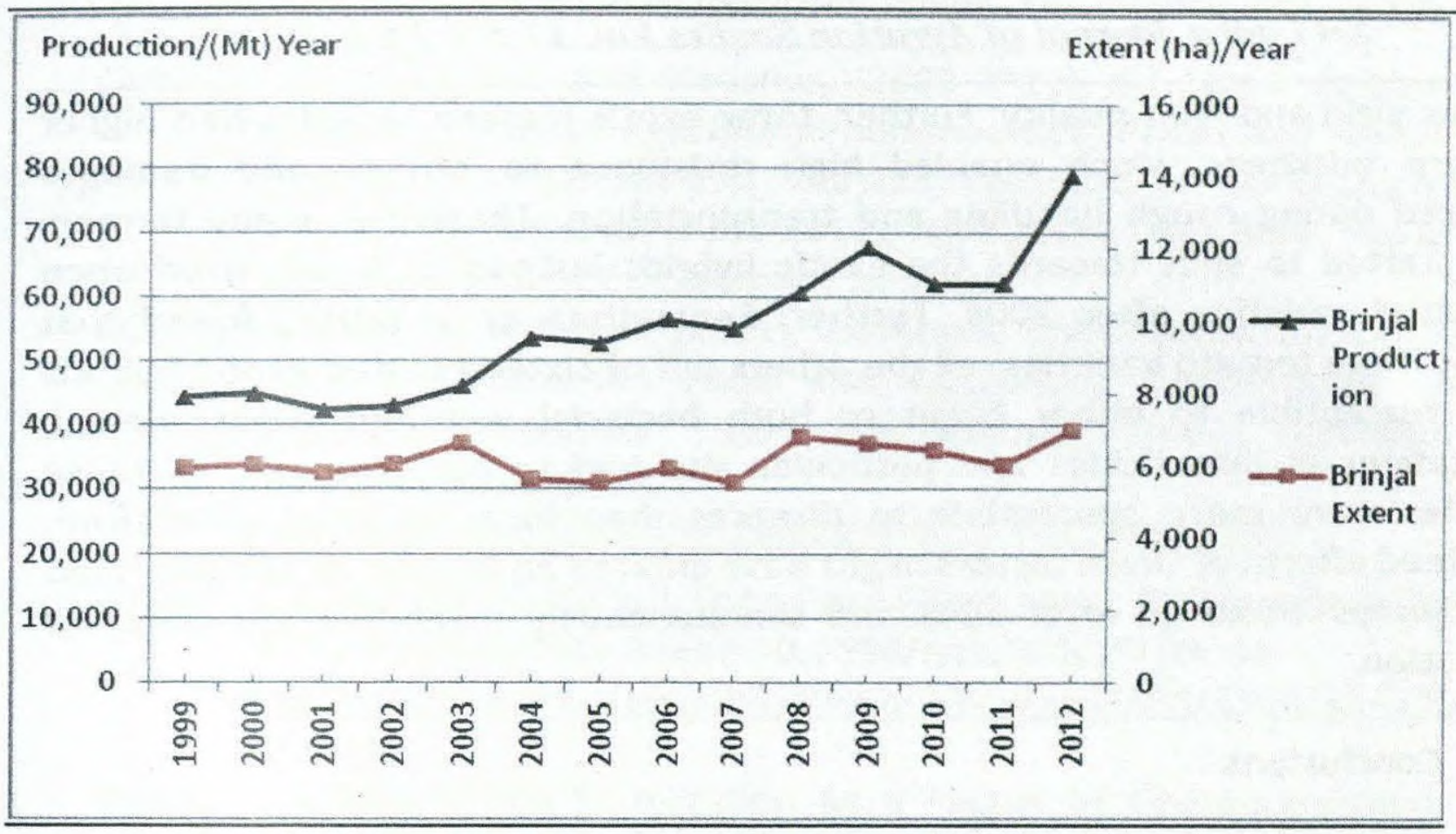
To explore the relationship between productivity and price fluctuation, two vegetables which showed the highest price volatility in the two categories of up-country and low-country were selected and the variation of extent and production in *Maha* seasons over time was examined (Figure 3.8 and 3.9).




Source: Produced by the author based on department of census and statistics database

**Figure 3.8: The Variation in Extent and Production for Tomato**

As explained (Figure 3.9 and 3.10) brinjal has shown a slight extent wise increase within the period of 1999 to 2012. In 1999, the total area under brinjal cultivation was 5,930 ha, which had increased up to 6,945 ha, in 2012, by 17 percent. However, the total area under tomato cultivation had increased up to 68percent, from 2,738 ha to 4,612 ha during the period of 1999 to 2012.




Source: Produced by the author based on the Department of census and statistics database

**Figure 3.9: The Variation of Extent and Production of Brinjal**

However, regarding both vegetables, the rate of growth in production had well exceeded the rate of growth in extent, which signified the obvious improvement in productivity. In 2012, the total production (mt) of tomato has improved by 147percent compared to the total production recorded in 1999, and the same measure has showed a 78percent increase for brinjal. The productivity of tomato has been increasing at the rate of $y = 0.3x + 6.72$ ($R^2$ =77%) every year, while the productivity of brinjal has been increasing at the rate of $y = 0.36x + 6.38$ ($R^2$ =76 %) every year.

However, Figure 3.8 and 3.9 indicate the existence of two phases in variation of the productivity over time. The period from year 1999 to 2002 can be identified as the first phase whilst the period from year 2003 to 2012 can be identified as the second phase, based on the nature of the extent – production relationship. Within the first phase, the variation of production was more or less parallel to the extent increase and the 'production increase jumps' were not evident. The first production increase 'jump' was evident in 2003-2004 period for both vegetables. During this period imported hybrid varieties began to popularise throughout the country.

As Senarathna *et al* (2012) pointed out, nine tomato varieties out of sixteen tested exotic hybrid varieties were superior in relation to agronomical characters

such as yield and fruit quality. Further, three exotic tomato varieties had higher pericarp thickness which enabled high resistance to bruises and damages occurred during rough handling and transportation. Therefore, many farmers have started to shift towards the exotic hybrids instead of locally bred open pollinated varieties after 2004. Further, Senarathna *et al* (2012) found that except three tomato varieties, all the others out of sixteen tested exotic hybrids were susceptible to either blight or both bacterial wilt and blight. Hence, applications of insecticides and pesticides also had to be increased, as these varieties were more susceptible to diseases than local varieties. Therefore, combined effects of these factors might have created an impact on the observed 'yield jumps' occurred after 2003 and simultaneously magnified the effect of fluctuation.

## 5. Conclusions

Even though the vegetable sub-sector is a key segment of the other food sector, its contribution to the national GDP stagnated over the recent five years, despite the increased extent and productivity. It was apparent that prices of the fresh vegetables in Sri Lanka were highly fluctuating and its speed and magnitude was on the increase over time. It can be concluded that, Double Exponential Smoothing as the best fitted technique in forecasting the wholesale prices of tomato and brinjal, whilst Single Exponential Smoothing was more appropriate in forecasting the wholesale prices of cabbage, pumpkin and long beans. Among all the vegetables, tomato marked the highest volatility index as well as the highest rate of price fluctuation. Further, price fluctuations seemed to have intensified with the productivity increases over time.

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# ECONOMIC IMPLICATIONS OF FOREIGN WORKERS' REMITTANCES IN SRI LANKA

Rev. Wijitapure Wimalaratana[3]
A.A.I.N.Wickramasinghe[4]

***Abstract***

*Since early 1970s the number of migrant workers in Sri Lanka have gradually increased and their remittances have also become an important source in replenishing the much needed external resources of the country. The importance of the workers' remittances has increased due to resilient nature of the workers' remittances even in turbulent times such as during civil unrests and political uncertainty prevailed in the country, conflicts in the Middle East, fluctuation of oil prices and world economic crises. This article analyzes the economic implications of foreign workers' remittances particularly on national savings and investments and in turn in economic growth, BOP performance, exchange rate movements and debt service payments of Sri Lanka. The data for the study was collected from the secondary sources and the mixed method was used to data analysis. Even though there are positive relationships between the workers' remittances and certain macroeconomic variables such as some accounts of the balance of payments, external reserves and national savings, it is difficult to identify a clear relationship, when it comes to growth, inflation, and exchange rate determinants. It seems that the workers' remittances cushion the external debt servicing burden and also improve the creditworthiness of the country.*

***Key Words:*** *Remittances, Savings, Investments, Growth, Balance of Payments, Exchange Rate and Debt Service Payments*

## 1. Introduction

International migration and remittances have a long history in the world economy even though these two forces have become vigorous along with the

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new waves of globalization. Remittances have become a main source of foreign exchange earnings for some of the developing countries, especially since late 1970s along with distinctive changes in the world economy. A number of countries have received considerable benefits from their migrant workers at different levels. At macroeconomic level, remittances have had a substantial impact on easing the balance of payments problems as a sustainable source of foreign exchange earnings. Similarly, remittances have made a significant contribution in reshaping economic, political and social landscapes of home as well as host countries. Thus, migration and remittances could be considered as major contributors to the overall macroeconomic performance such as contributing to economic growth, external sector performance, employment generation, poverty reduction, money supply and human capital development.

International migration is facilitated all over the world by the low cost transportation, modern communication facilities and signing of treaties for free movement of labour among countries (Rosen, 2007). There were over 232 million of migrants around the world by year 2013 (UN-DESA, 2013). It is pointed out that global remittances surpass the size of the Official Development Assistance (ODA) to the developing countries during the period between 1996 to 2003 (Ratha, 2003). Similarly, remittance flows are large and resilient even though there are economic downturns in host countries effecting financial flows such as FDI, and private debt and portfolio equity (World Bank, 2011).

Sri Lanka is one of the leading countries in the South Asia with a rapid growth in foreign workers' remittances. The inflows of remittances from foreign workers through official channels amounted to USD 7,018 million in year 2014, when compared to corresponding flows of USD 6,407 million in 2013 (CBSL, 2015). It appears that labour migration and remittances have contributed to the economy of Sri Lanka in a number of ways such as addressing the unemployment problem, alleviating the Balance of Payments (BOP) issues, providing much needed savings, anchoring to external reserve difficulties and accelerating the growth. Even though the workers' remittance influences the economy of Sri Lanka in many ways, this article mainly focuses on the relationship between foreign workers' remittances and such major macro-economic variables as; (i) Savings, investment and economic growth, (ii) Balance of Payments (BOP) and Exchange rate, and (iii) Debt service payments. The article is organized on the theories and concepts related to migration and remittances, presenting an overview of migration and remittance patterns of Sri Lanka, impact of foreign workers remittances on major economic variables of Sri Lanka and conclusions based on the secondary information on migration and remittances.

## 2. International Migration Theories and Concepts

One of the oldest and well known theories of international migration is found in the neo-classical literature. The neo-classical approaches explain the role of labour migration in the economic development (Arango, 2000; Harris & Todaro, 1970; Lewis, 1954; Massey et al., 1993; Ranis & Fei, 1961; Todaro, 1976; van Naerssen, Spaan, & Zoomers, 2008). Migration is mainly due to geographical imbalance of the demand for and supply of labour. Therefore, regions with large labour endowments, low market wages and low marginal productivity cause workers to migrate from the low-wage country to high-wage country (Massey et al., 1993). As a result of the labour migration trend, remittance generation has become a powerful economic variable in labour exporting countries.

New Economics of Labour Migration (NELM) has been developed with the purpose of challenging the assumptions and conclusions of neo-classical theory lately. NELM shifts the focus of migration from individual to larger units such as families/ households and even communities. Migration decisions, according to them, are not made by inward looking individual but by larger units of families/ households in which people act collectively and not only to maximize the expected income but also to minimize risk. Such decisions are also involved with constraints associated with a variety of market failures, apart from those in the labour market (Stark, 1984, 1991; Stark & Levhari, 1982; Taylor, 1999). Therefore, migration is viewed as a family, household or community strategy in which people act collectively not only to maximize the expected income but also to minimize risks associated with a variety of market failures (Massey et al., 1993; Stark, 1984).

Both neo-classical and NELM approaches are essentially micro-level decision models. In 1979, Michael J. Piore introduced the dual labour market theory and it differs from micro-level models. The model sights away from decisions made by individuals and argues that international migration stems from the intrinsic labour demands of modern industrialized societies (Massey et al., 1993). Michael (1979) pointed out that international migration is caused by the permanent demand generated from modern industrialized and developed nations to facilitate their development structures. In other words, international migration is not due to push factors at sending countries but due to pull factors in receiving countries. According to Michael, push factors are low wages, or high unemployment while pull factors are essential and unavoidable need for foreign labour requirements generated in recipient counties.

Migration network is a contemporary concept linked to the social capital theory. Arango (2000) defines migration network as a set of interpersonal ties that connect migrants with relatives, friends or fellow countrymen at home who convey information, provide financial back-ups, facilitate employment opportunities and accommodation in various supportive ways. These social networks are beneficial in reducing the costs and risks of movement and increase the expected net returns of the migration (Massey et al, 1993). As a result of these migration networks, subsequent migration has enhanced positively since it expands the path to migrate.

Migration System Theory is also an important element in dealing with international labour migration. The fundamental assumption of the migration system theory is that migration supports to alter social, cultural, economic and institutional conditions of both receiving and sending countries. De Haas (2010) has identified that the Network theory is much closely affiliated to the migration systems theory. Further, the focuses of system approach are on both macro and micro linkages of places linked in the global migration (Fawcett & Arnold, 1987; Kritz, Lim, & Zlotnik, 1992). Micro level factors include kinship and friendship systems while macro level relations focuses on economic, dominance, political systems, national policies of immigration/emigration and cultural and social systems. Unlike other models; the migration systems theory draws a two-way reciprocal and dynamic link between migration and development (De Haas, 2010). Therefore, this theory is much relevant for elaborating the theoretical framework that considers migration in a broader development perspective.

At the beginning of international migration, a number of institutions/ organizations emerged to satisfy the imbalance between employers of labour receiving countries and potentials of migrant workers of sending countries, for there is a considerable level of inconsistency between the large number of people who seek job opportunities in capital rich countries and the limited number of immigrant visa that these countries offer (Massey et al., 1993). As a result of this mismatch, both profit making and voluntary institutions emerge to address the needs of migrant and employers, while most voluntary organizations enforce the humanitarian rights of migrants; and profit organizations and private entrepreneurs provide a range of services to migrants in exchange of fees set in the underground market; smuggling across borders, counterfeit documents and visas, arranged marriages between migrants and legal residents or citizens of destination country and high rate credit facilities (Massey et al., 1993). In contrast to above illegal actions of profit making organizations, humanitarian groups help migrants by providing counseling, social services, shelter, legal advice on legitimate papers, immigration law reforms etc. Therefore, the

recognition of institutional theory is more important in today's context in order to create a more suitable and strong policy framework for both labour sending and receiving countries.

Theories of Motives for Migrant to Remit are also important in international migration. Theories that explain the motives of workers' remittances fall into several categories. According to Solimano (2003), such theories include altruistic motive, self-interest motive, implicit family contract arising from loan repayments and co-insurance. Apart from the above motives which have concentrated on the individual expectations, there are some macroeconomic factors affecting the flow of the remittances. Portfolio Management decision is a motive linked to the macroeconomic factors. However, Stark (1991) points out that there is no general theory of remittance. Further, he states that most of the studies provide only descriptive evidence affecting remittances decisions of individuals.

The altruism or livelihoods school of thought considers remitting to migrants' own family is an obligation to the household (Addison, 2004). Further, migrants would remit due to the affection and responsibility towards the family which means migrant's concern for family members left back at home due to sociological theories. Under this theory, migrants derive satisfaction from the well-being of their relatives at home country (Brown, 1997; Stark, 1991). Basic hypotheses attached to the altruistic model are; the amount of remittances should increase with the increase of migrant's income, when the migrant's family income increases domestically the amount of remittances should decline and finally the remittances should decrease as the migrant's attachment with the relatives weakens over time (Stark, 1991).

Self-interest motive is opposite of the altruistic motivation theory, assuming that the migrant is mainly motivated by an economic and financial gains. In other words, migrants remit funds to relatives driven by the aspiration to own assets both physically and financially. The argument behind the self-interest motive is that a successful migrant in the foreign country saves at every possible time with a motive to accumulate wealth on his/her own desire (Addison, 2004).

According to implicit loan repayment family contract, families tend to develop an implicit contract with the migrant. Lucas and Stark (1985) explain that the implicit contractual arrangement between the migrant and the home country household is based on investment and risk. In the case of implicit loan agreement, the migrant repays the family's human capital investment either in cash or by financing other migrant family members (Poirine, 1997). These

contracts could last for several years or even decades as a time horizon (Addison, 2004). According to Addison (2004), the contract consists of elements, namely investment and repayment. The investment element of the theory is the financing cost of migration such as travel and subsistence cost in the host country. The repayment part incurs after the migrant settles in the host country and starts generating income. When the income level of the migrant tends to increase, he/she starts to repay the loan in the form of remittances. Implicitly, family has invested in higher yield assets to derive long term benefits for the family members via the migrant. However, the amount of remittances will depend on the income portfolio of the migrant according to the theory.

The Implicit Co-Insurance Family Contract theory depends on the assumption of economic risk between labour sending and receiving country and is not positively correlated. Under this scenario, it becomes more convenient for family members to send some of its members abroad in order to diversify the economic risks (Addison, 2004). Then the migrant would be in a position to support his family members at bad times of home country while family members are in a position to help the migrant when bad times occur in the foreign country. As a result, migration has become a co-insurance for both parties where remittances play the role of an insurance claim. However, it could be expected to have enforcement problems as the contracts are generated informally within the family members.

Portfolio Management Decision concept is also important in international migration literature. Migrants' earnings that are not utilized for the purpose of personal and family consumption could be remitted to home country with a purpose of profitability, which could be explained within the framework of portfolio management (Prakash, 2009). In contrast to consumption purpose, the decision of investment would depend on macroeconomic factors of both host and home countries such as interest rates, exchange rates, inflation and other rates of return on different financial and real assets (OECD, 2006). Therefore, macroeconomic factors are also more significant in determining remittance flows in the long run, according to the portfolio management theory.

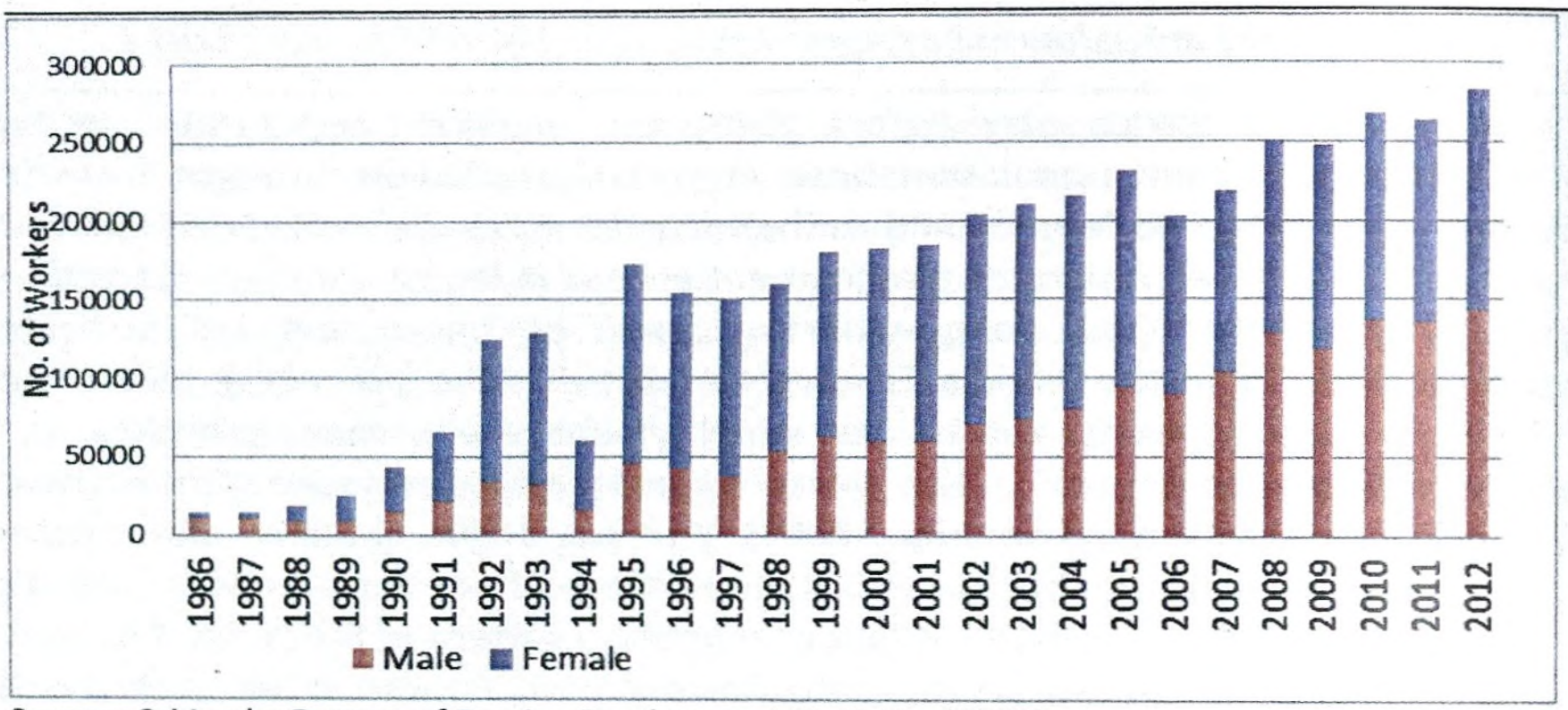
## 3. Migration and Remittances of Sri Lanka

### 3.1 Migration Pattern of Sri Lanka

Labour mobility between Sri Lanka and the rest of the world has been an important economic element during the colonial periods, especially during the

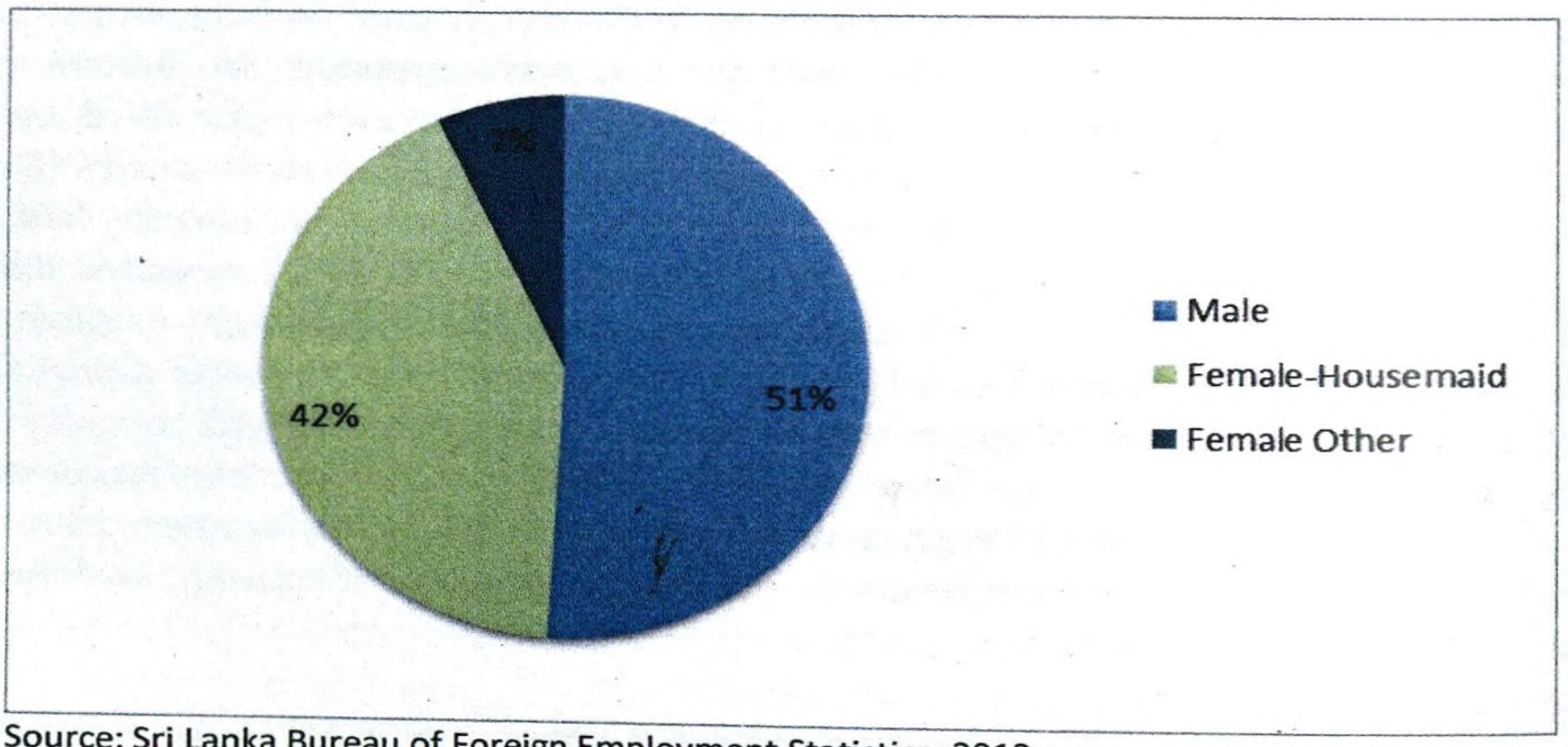
British rule in the country. Before 1940s, the immigrant population was higher than the emigrant population since more labourers were brought from South India to work in coffee, tea and rubber plantations as well as in road and railway construction. Migration for employment abroad in larger numbers started in the later part of 1970s along with the crude oil boom and creation of job opportunities in the Middle Eastern countries. In the preceding period only a small number went abroad for employment every year, primarily in the developed economies in the West, especially in developed Commonwealth countries (Jayasena & Rodrigo, 2003). The late 1970s onwards along with the sustained crude oil boom and liberalization of the economy, a significant increase could be observed in labour migration pattern of Sri Lanka. The massive economic development in the oil exporting OPEC Countries had a tremendous impact on the labour market, especially in developing countries. Migration from Sri Lanka enhanced further with the second oil boom in 1979 and a conducive domestic policy environment such as relaxation of travel and foreign exchange restrictions was created. Socio-economic environment in oil exporting Arab countries changed along with the rising per capita income and accumulation of external reserves, paving the way for sustained demand for labour from developing countries including Sri Lanka. Skilled vacancies were filled by the Western countries while Asian countries filled the unskilled job vacancies (OECD, 2008). Further, the demand for experienced female factory workers from Sri Lanka and other developing countries increased in mid 1980s onwards due to industrialization thrust in a few Arabic countries. Thus the foreign employment prospects for Sri Lanka female workers increased rapidly. This was a promising offer for Sri Lankan migrant workers who were squeezed with poverty and related problems at their home country. As a result of the urbanization of Sri Lankan society, even though it was a slow process, urban women from low income families with low levels of education opted for migrating, seeking job opportunities abroad.

When the gender- wise migration pattern is considered in Sri Lanka, it is salient that the female migration for employment abroad is higher than that of their male counterparts. (Figure 3.1).




Source: Sri Lanka Bureau of Foreign Employment Statistics (2012)

**Figure 3.1: Departure for Foreign Employment by Sex 1986 – 2012**



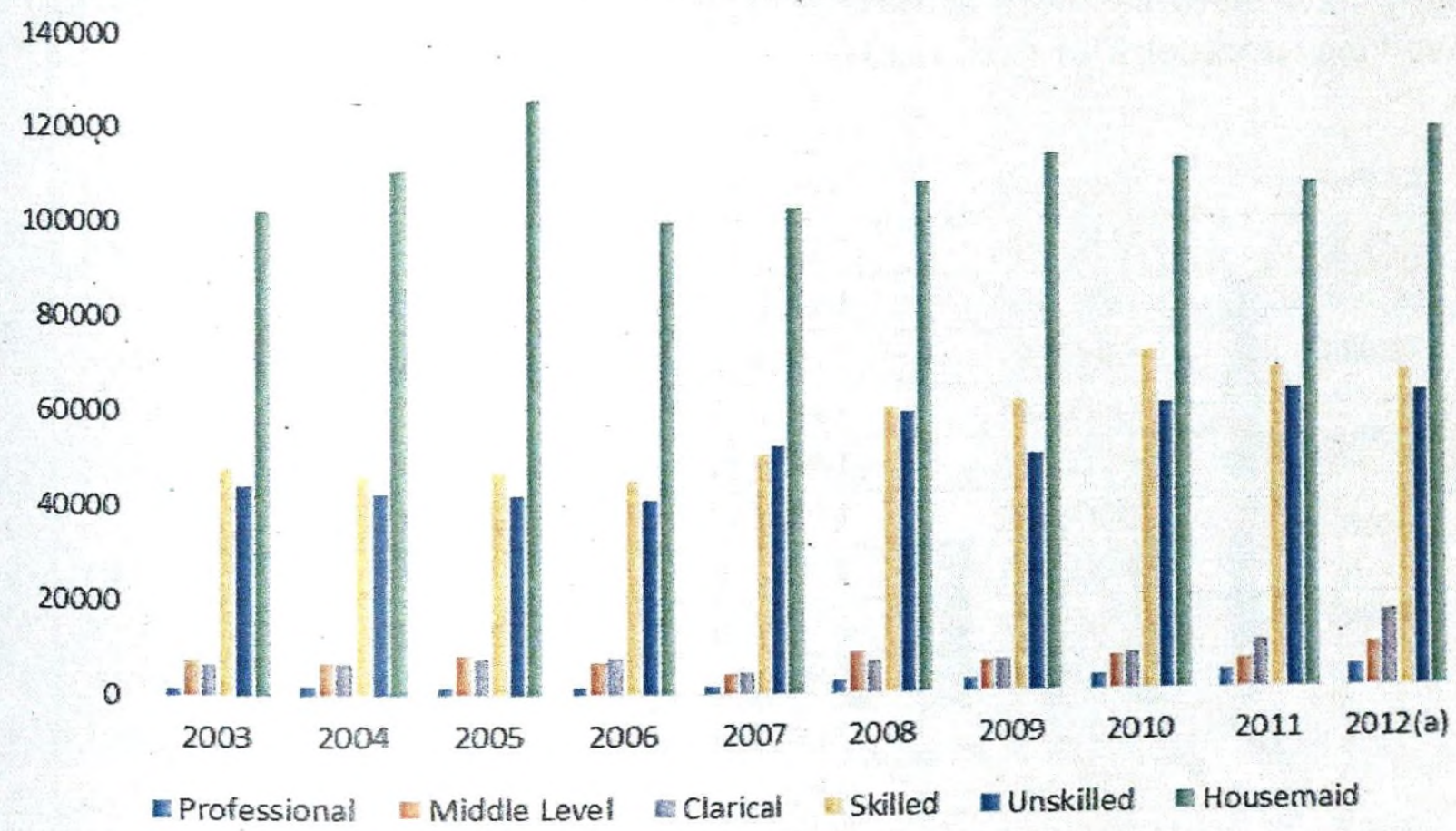

Source: Sri Lanka Bureau of Foreign Employment Statistics, 2012

**Figure 3.2: Comparison of Male Migrant Workers with Housemaids and Other Female Migrant Workers (2012)**

The foreign employment market for Sri Lankan workers is dominated by females, especially housemaids in Middle East countries. In 2012, 42 percent of the total migrant population have left as female housemaids. This trend is explained in Figure 3.2.

Sri Lankan housemaids possess a higher level of educational attainment compared to many other countries who send housemaids (OECD, 2008). Therefore, the demand for Sri Lankan housemaids in Arabian countries is comparatively high. A steady growth in male departures could also be noticed during the last few years to countries such as Qatar, Saudi Arabia, UAE and Jordan mainly in the fields of construction and manufacturing. On the other hand, the growth in the female departure has slowed down in recent years mainly due to the increase in the availability of job opportunities within Sri Lanka and also with the government discouraging mothers with children under 5 years leaving for employment abroad (Jayasena & Rodrigo, 2003). Further, the directives issued by the Presidential Task Force in 2002 demanding compulsory registration for foreign employment also affected the migration flow.

Although, there is an increasing trend in the total number of migrants from Sri Lanka, it is mainly driven by the increase in the unskilled category and the housemaid sector. The number of professional, middle level educated, clerical and related migrants constituted only a very few percentage of the total manpower departures (Figure 3.3).

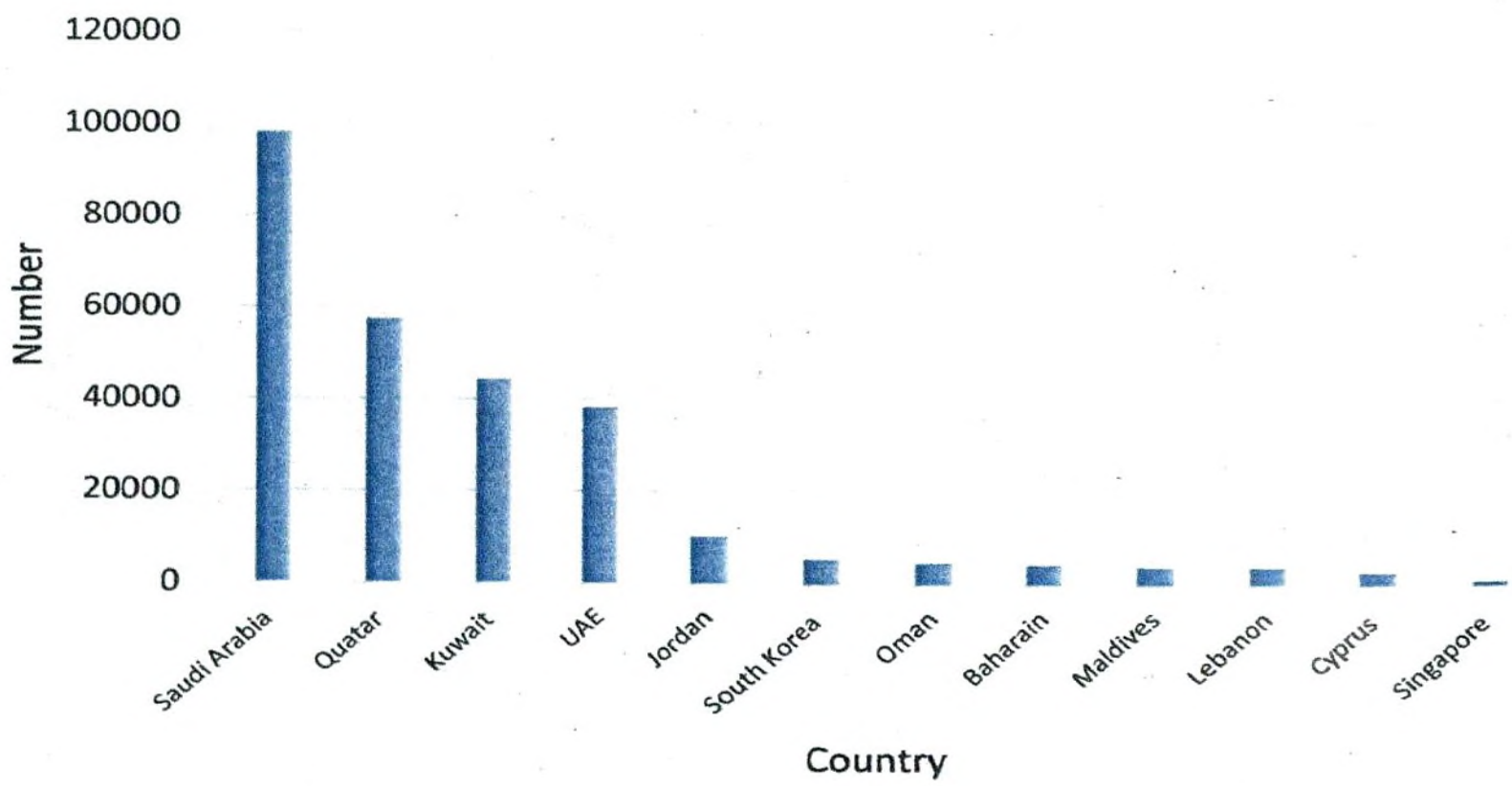



Source: Sri Lanka Bureau of Foreign Employment Statistics, 2012

**Figure 3.3: Departure for Foreign Employment by Manpower Level, 2003-2012**

The declining trend in skilled categories was mainly due to restrictive migrant laws and regulations which were imposed in the wake of the global economic crisis (OECD, 2008). At the same time, it should be noted that the data available with regard to professionals, middle level and skilled categories does not reflect the full picture as most migrants in these groups tend to migrate directly without being registered with Sri Lanka Bureau of Foreign Employment (SLBFE). Therefore, data pertaining to the skilled categories will be much higher if the direct migrant numbers are added. Considering the professional migrant category, most of the professional migrants with family tend to depart alone initially and then after a few months, their family would follow. In this case, the possibility of remitting funds by such professionals to the home country is low. However, unskilled workers and the housemaids remit 80 percent of their income back home, in contrast to the skilled categories whose remittance contribution is very low as most of the time, they tend to consume abroad and save or invest in foreign countries to gain better returns (Jayasena & Rodrigo, 2003).

Top destinations for Sri Lankan migrant workers are always concentrated in Middle East countries and it is clearly demonstrated in Figure 3.4. It is also important to note that the new entrants such as South Korea, Maldives and Malaysia have become more attractive destinations with regard to better pay and working conditions for such workers.




Source: Sri Lanka Bureau of Foreign Employment Statistics, 2012

**Figure 3.4: Top Destinations for Sri Lankan Workers, 2012**

Although the Sri Lankan departures for foreign employment is prevailing at a high rate, Sri Lanka still suffers from a huge mismatch between the international demand for jobs and its supply capabilities (see Table 3.1). The main reason for such imbalance of demand and supply of jobs is the less focus on the demand of skilled and professional categories of workers, which require internationally recognized qualifications to enter these markets (OECD, 2008).

**Table 3.1: Supply Gap of Sri Lankan Labour for Foreign Jobs (1990 – 2012)**

| Year | Job Orders Received | Departures | Supply Gap | Unutilized % |
|---|---|---|---|---|
| 1990 | 183,175 | 42,625 | 140,550 | 76.73 |
| 1991 | 521,615 | 64,985 | 456,630 | 87.54 |
| 1992 | 334,789 | 33,025 | 301,764 | 90.14 |
| 1993 | 242,000 | 48,753 | 193,247 | 79.85 |
| 1994 | 236,590 | 60,168 | 176,422 | 74.57 |
| 1995 | 553,450 | 118,720 | 434,730 | 78.55 |
| 1996 | 505,682 | 155,446 | 390,236 | 77.17 |
| 1997 | 588,574 | 115,050 | 473,524 | 80.45 |
| 1998 | 780,628 | 112,565 | 668,063 | 85.58 |
| 1999 | 667,889 | 120,627 | 547,262 | 81.94 |
| 2000 | 779,716 | 127,615 | 652,101 | 83.63 |
| 2001 | 739,324 | 132,467 | 606,857 | 82.08 |
| 2002 | 309,577 | 152,974 | 156,603 | 50.59 |
| 2003 | 348,079 | 154,697 | 193,382 | 55.56 |
| 2004 | 366,226 | 156,146 | 210,080 | 57.36 |
| 2005 | 418,032 | 165,707 | 252,325 | 60.36 |
| 2006 | 722,267 | 141,177 | 581,090 | 80.45 |
| 2007 | 901,682 | 146,031 | 755,651 | 83.80 |
| 2008 | 1,014,610 | 160,973 | 853,637 | 84.13 |
| 2009 | 797,168 | 156,567 | 640601 | 80.36 |
| 2010 | 753,382 | 160,498 | 592,884 | 78.70 |
| 2011 | 660,844 | 146,293 | 514,551 | 77.86 |
| 2012 | 658,547 | 175,266 | 483,281 | 73.39 |

Source: IOM – Sri Lanka, 2008 (Data for the period from 1990-2007) and Annual Statistical Report of Foreign Employment 2012, Sri Lanka Bureau of Foreign Employment (Data for the period from 2008-2012)

### 3.2 Foreign Workers' Remittances Pattern of Sri Lanka

Migrant workers use both formal and informal money transfer systems to transmit their hard earned money. According to the CBSL (2015), the total remittances received through such formal channels to Sri Lanka is USD 7,018 mn in year 2014. However, the true value of the remittance is likely to be much higher than this amount as only a fraction of total remittances flows through official channels. Remittances sent through informal channels such as hawala, hundi, self-carry, by hand or in-kind remittances by way of jewellery, electronic items etc are not taken into account when determining official flows.

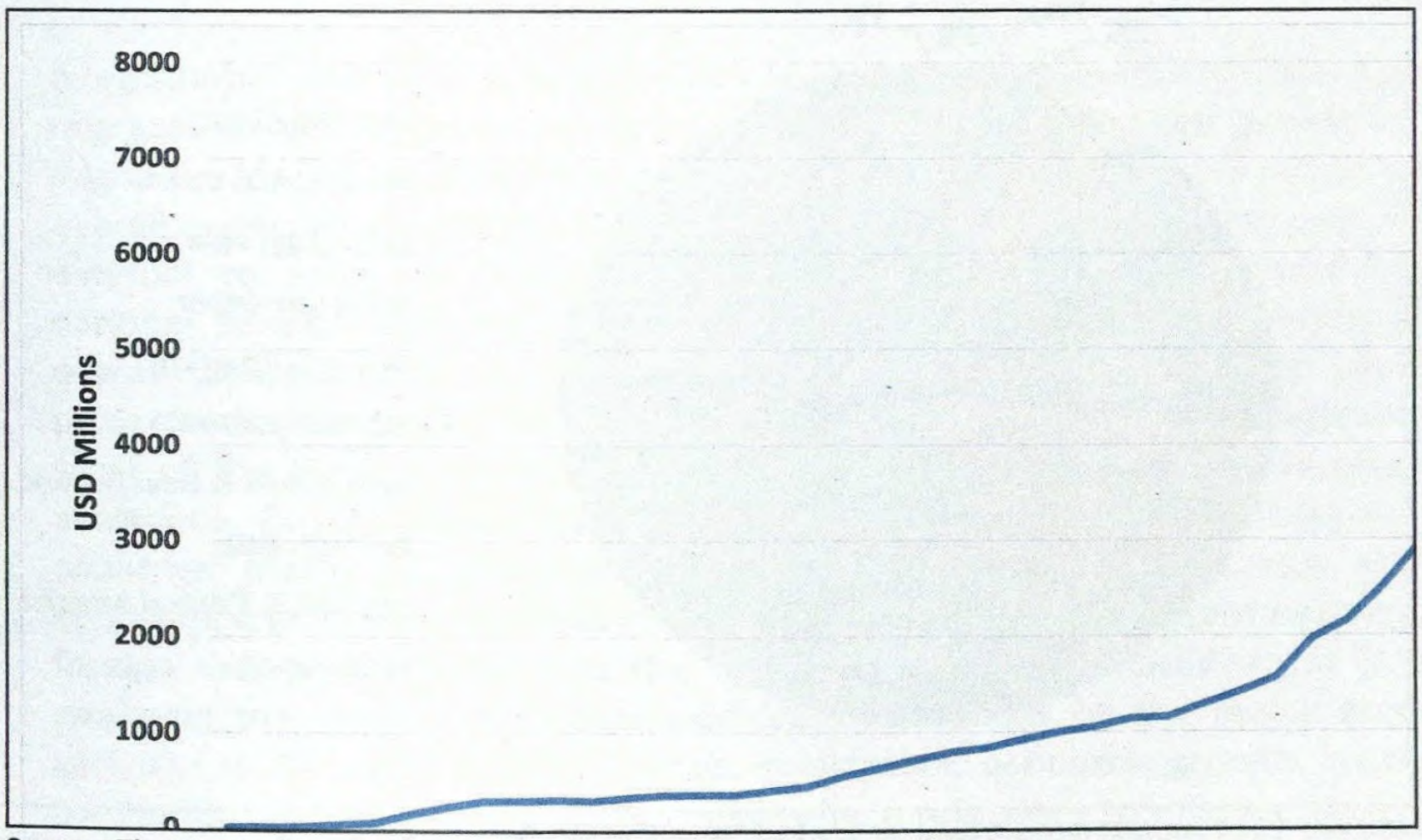
In the case of Sri Lanka, only few institutions have been permitted to involve in foreign exchange transactions including workers' remittances. The reason is the Exchange Control regulations of the country imposed by Exchange Control Act No. 24 of 1953. Therefore, some of the cross border transactions are not liberalized in Sri Lanka. However, being a signatory to the IMF Article VIII Agreement, Sri Lanka had to liberalize all current international transactions with effect from 1994. Even though all current international transactions are freely permitted, every person is not permitted to involve in money transferring. Only a few institutions such as Licensed Commercial Banks (LCB), two Licensed Specialized Banks, Sri Lanka Post and institutions specially authorized by the Controller of Exchange are permitted to engage in money transfer business in Sri Lanka (Section 5 of the Exchange Control Act). These institutions play a vital role in attracting foreign workers' remittance to Sri Lanka.

Licensed Commercial Banks introduce different forms of products as well as services to attract foreign workers' remittances. The products introduced by Licensed Commercial Banks are basically foreign currency accounts such as Non Resident Foreign Currency Account (NRFC), Resident Foreign Currency Account (RFC), Special Foreign Investment Deposit Accounts (SFIDA), Rupee Account, Non – resident Sri Lankan Investment (RANSI), and Securities Investment Accounts (SIA). These foreign currency accounts are maintained by LCBs with the directions of the Central Bank of Sri Lanka. At present, all LCBs are conducting vigorous marketing programmes to attract more inward remittances to their accounts.

Out of 08 Licensed Specialized Banks in Sri Lanka, only National Savings Bank (NSB) and Lankaputhra Development Bank have been permitted to engage in business of foreign exchange remittance in Sri Lanka. These two banks have obtained special permission from the Central Bank to maintain NRFC, RFC and SFIDA accounts.

Sri Lanka Post has experience in providing the cross-border remittance instruments since 1798. There is a widespread post office network comprising 4,738 post offices and sub post offices. However, its market share with regard to attracting foreign workers' remittance is minimal due to deficient and slow services.

As the agent of the Government, CBSL always takes measures to attract more foreign exchange of the migrant workers through official channels since the country's import bills mainly depend on such foreign exchange sources. Therefore, a few companies have been granted permission to engage in remittance business in Sri Lanka. MMBL Money Transfer (Pvt) Ltd is permitted to engage in inward remittance business in collaboration with Western Union which has been in the global money transferring business for over 150 years. Western Union has over 400,000 agent locations in 200 countries. Lanka Orix Finance PLC (LOFP) has also been permitted to enter the remittance market recently. LOFP is the first finance company registered with CBSL for this purpose. It was also granted permission to maintain NRFC, RFC and SFIDA.



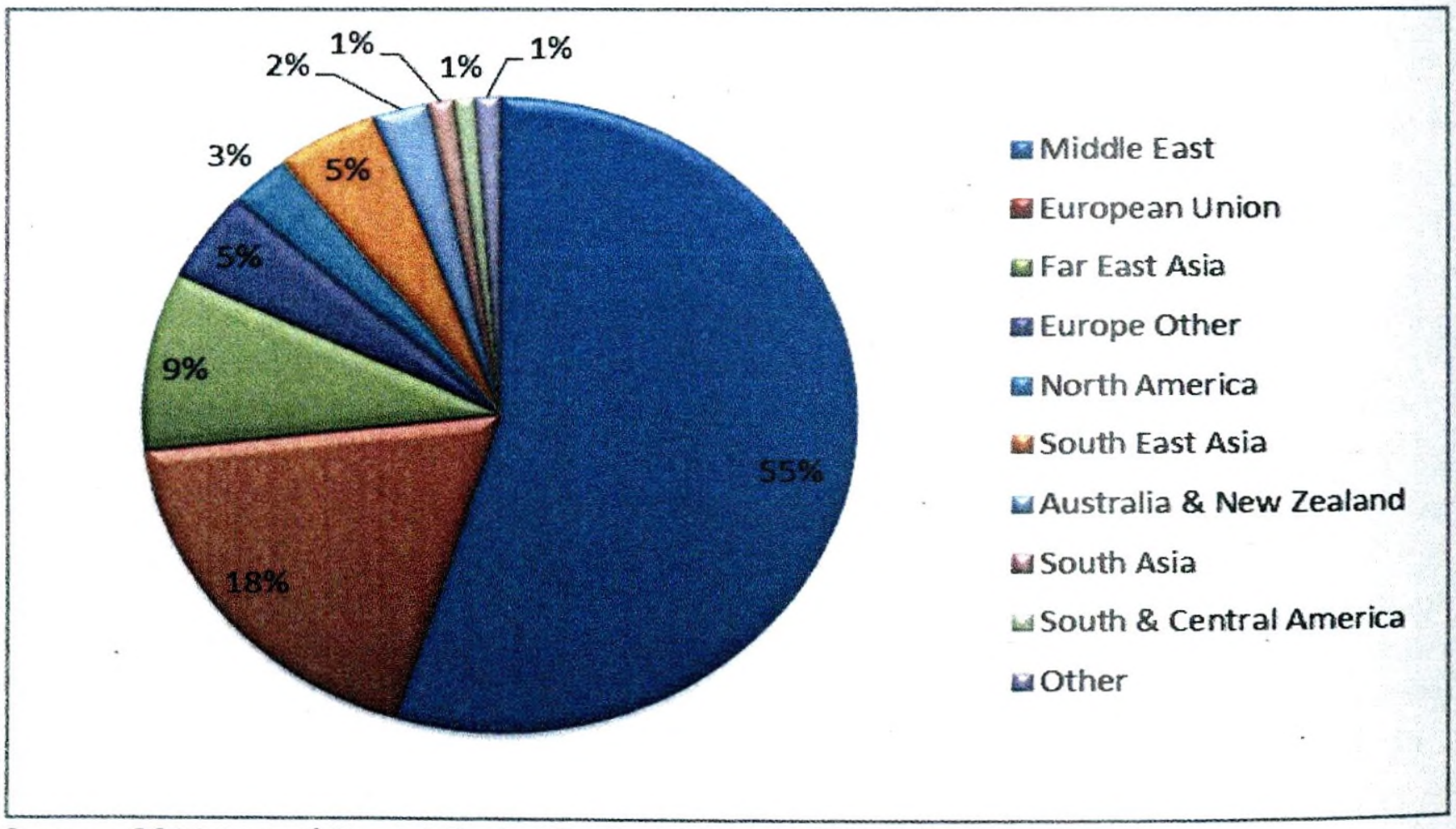

Source: The Central Bank of Sri Lanka, Various issues of Annual Reports

**Figure 3.5: Inflows of Remittances to Sri Lanka in USD millions (1975-2014)**

Reported foreign workers' remittances increased at an average annual rate of 10 percent over the last 30 years in Sri Lanka (OECD, 2008). In 2014, the total

receipt of foreign worker remittances has amounted to USD 7018mn (Central Bank, 2015). It is nearly 9.37 percent of GDP and 63.05 percent of the total export earnings in 2014. From USD 230 mn in 1981 remittances have continuously increased to USD 442 mn in 1991, USD 1,155 mn in 2001 and USD 5145 mn in 2011. The inflows of foreign workers' remittances since 1975 are depicted in Figure 3.5.

Foreign workers' remittances have been one of the more stable forms of foreign exchange inflows in Sri Lanka. As explained, a bulk of the remittances is generated by Middle Eastern housemaids and the unskilled workers working in the same region. Though the foreign aid and FDI show a declining trend mainly due to the global economic crisis, remittances have proved to be a more stable source of foreign exchange income for the last few years, irrespective of its inconsiderable levels of fluctuations. In 2014, 54.9 percent of the remittances came from the Middle East while another 18.2 percent was from the European Union and 9.1 percent from the far East Asian countries (Figure 3.6).




Source: 2014 Annual Report Central Bank of Sri Lanka, 2015

**Figure 3.6: Origin of Destination of Foreign Remittances flowing into Sri Lanka, 2014**

However, it should be emphasized that the presented data of Figure 3.6 captures only the formal remittances. Nonetheless, economic downturns such as sub-

prime mortgage issue in the USA, economic and financial crisis in other European countries, natural disasters or political conflicts have not affected the Sri Lankan remittance flows severely. Remittance flows would have been more powerful, if such adverse impacts were absent in the global economy.

Although there was a civil conflict in the northern part of Sri Lanka for more than three decades, evidence shows that there has been a continuous growth in the international remittances flowing into Sri Lanka. This can be further substantiated with the instance of the Tsunami catastrophe where there was a huge inflow of remittances to the country. This implied that migrants tend to send more and more funds during difficult times at home to help their dependents and that in turn helps smoothen consumption and stabilize the recipient families' economic condition irrespective of the economic shocks of the country (OECD, 2008).

## 4. Economic Implications of Foreign Workers' Remittances

International migration is in a position to generate substantial welfare gains for migrants as well as home countries and destinations. The major benefit of such migration for the origin/labour sending country is the remittances which benefit overall economic conditions of the country such as easing the pressure of BOP, external resource of finance, stabilizing the exchange rate, improving the national savings and export competitiveness, and finally contributing to the overall development process of the country. The remittances could be recognized as an important source of foreign income for developing countries. Most of the time, a portion of remittance is larger than official development assistance, foreign direct investment and portfolio investment flows in many countries (Ratha & Mohapatra, 2007). In the case of Sri Lanka also the importance of remittances has gradually increased due to resilient nature of the foreign exchange inflows into the country. Against this backdrop, it is worth analyzing the impact of foreign workers' remittances on the major economic variables in Sri Lanka such as savings, investment, economic growth, balance of payments, exchange rate and debt resilience in reference to existing literature of the same.

### 4.1 Savings, Investments, Economic Growth and Foreign Workers' Remittances

The role of foreign worker remittances in the economic growth is vital to be discussed from the perspective of remittance recipient country. By elaborating the contribution of remittances to the long-term economic growth, Wagh and

Pattillo (2007) state that the remittances lead to an increase in the level of income in the recipient country and plausibly helping reduce the poverty. The effect of remittances on economic growth is likely to be larger for countries where the financial system is relatively underdeveloped (R. Singh, Haacker, & Lee, 2009). By analyzing the economic implications of remittances towards the economic growth, Ratha (2003) points out that the workers' remittances increase the foreign exchange reserve of recipient countries. He further argues that if such remittances are invested, it could be contributed to output growth, and if those are consumed, then also it generates positive multiplier effects on the country through the expanding aggregate demand.

There are positive as well as negative effects of remittances in terms of economic growth. Migrant workers' remittances received as a component of foreign savings could influence the national savings by increasing the total pool of resources available to investment purpose. Thus it could be argued that the portion of remittance sent by foreign workers will contribute to improve the investments of the receiving country while escalating the development impact. This has been revealed in prior research that there are positive effects of remittances on investment in receiving countries such as Mexico, Egypt, and Sub-Saharan Africa (Ratha, 2003). From the investment perspective, these countries have utilized the remittance to finance school buildings, clinics and other basic infrastructure facilities. Thus, the fresh capital brought by migrant workers in the form of remittances plays an important role in financing investment projects of the country. Brown (1994) found that remittances have contributed to savings and investments of the receiving country, while providing positive effects on economic growth of island economies in his study based in Tonga and Samoa. Similarly Mesnard (2004) has examined the remittances' impact on Tunisia using life-cycle model and concludes that workers who are not exposed to an efficient financial market system tend to invest their remittances. Faini (2002) has found that remittances have a positive impact on economic growth. He further argues that remittances overcome capital market imperfection and allow migrant household to accumulate positive assets. Further, Solimano (2003) indicates a positive correlation between remittances and economic growth in his empirical analysis of selected Andean countries. The WorldBank (2006) in a research covering 67 countries to identify the interrelationship of remittance and economic growth found that remittance has positive and significant effects on economic growth.

Ang (2007)who investigated the relationship between workers' remittances and economic growth at the national and regional levels in the Philippines, found that the remittances have a significant influence on economic growth at the

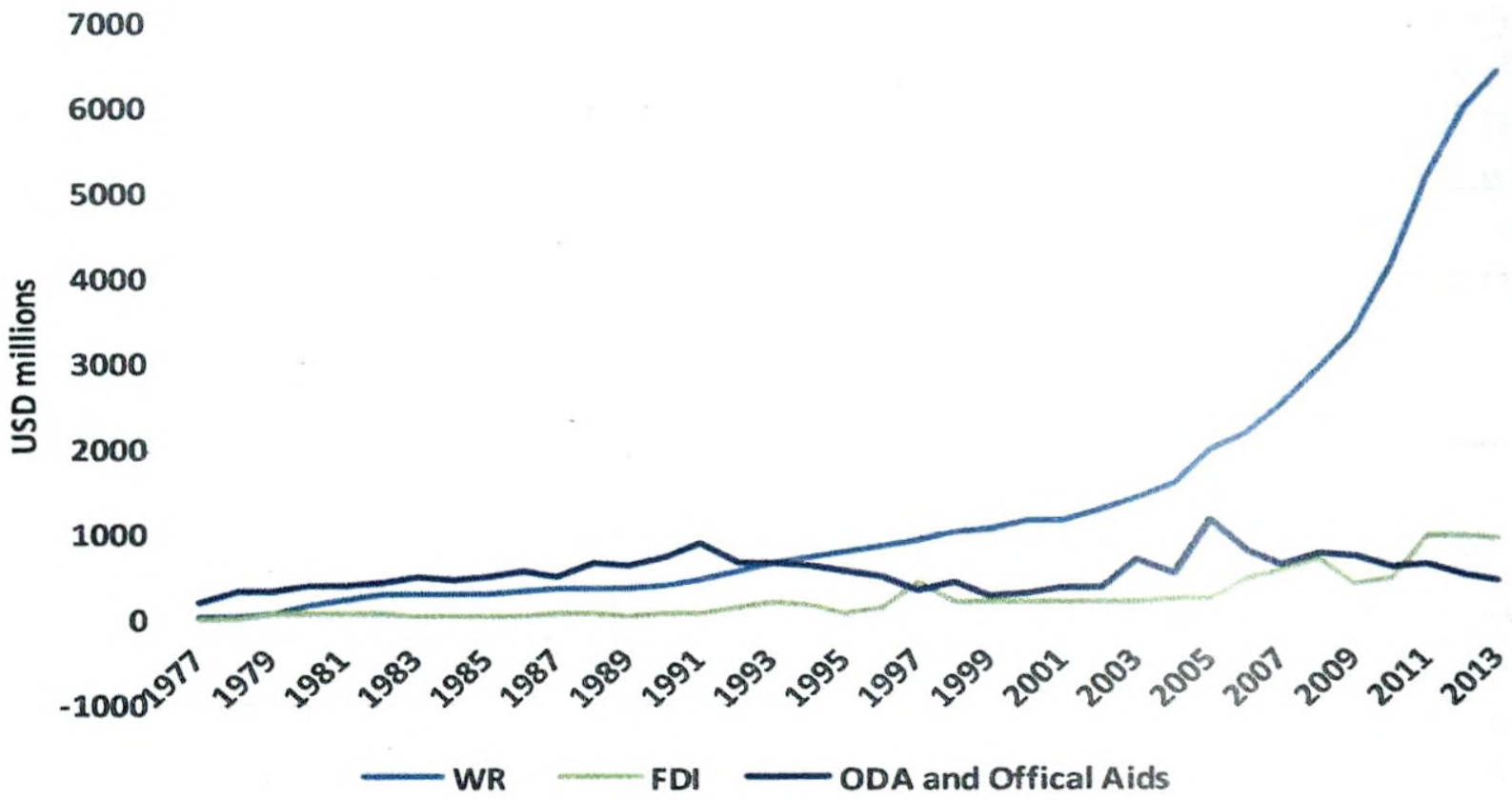
national level. When he broke down his analysis at the regional level to confirm the national results, he found mixed results and remittances had not positively influenced the economic growth. Ang concludes that remittances have to be translated to value-added activities and investments which are more foundational sources of development and growth. Ramirez and Sharma (2008) examine the impact of remittances on the economic growth of selected upper and lower income Latin and American Caribbean Countries. The findings suggest that worker remittances have a positive and significant effect on economic growth in both groups of countries.

There are negative implications of foreign workers' remittances on the growth as well, according to some findings. From a different perspective, remittances could indirectly affect labour supply. That is, when remittances flow into a particular household, those remittances recipient households tend to work less and reduce labour supply while affecting the labour supply of the country in a more negative way (Jongwanich, 2007). Chami, Fullenkamp, and Jahjah (2003) found that remittances have negative impacts on economic growth based on aggregate data on remittances of 113 countries over 29 years. They state that moral hazard problem has been created due to remittances. This study concluded that income from remittances allows receiving families to decrease their own work and productivity, which in turn translates into a reduction in the labour supply of developing countries. Similarly, IMF (2005) finds in a study of 101 developing countries over the period 1970-2003, that there is no significant relationship between remittances and growth in GDP per capita. Using data for the period from 1969-1998 of Egypt, Greece, Jordan, Morocco and Portugal, Glytsos (2002) examined the impact of remittances on output varies over the time and across the countries. He found that the growth-generating capacity of rising remittances characteristic is smaller than the growth-destroying capacity of falling remittances in Egypt, Jordan and Morocco. On the basis of these facts, Karagöz (2009) argues that the large fluctuation in the real value of remittances contributes to a large fluctuation of output growth and causes instability in the economies concerned.

In view of the above empirical studies, it is observed that there are both negative and positive relationships between the workers' remittances and its impact towards the economic growth.

When analyzing the contribution of workers' remittance towards the economic growth of Sri Lanka, it is vital to identify the nature and pattern of such remittances. There is a steady increase in the remittance inflows over the last three decades. When compared to other foreign exchange inflows into Sri Lanka,

foreign workers' remittances could be observed as the most stable and resilient source of foreign capital inflows (Figure 4.1).

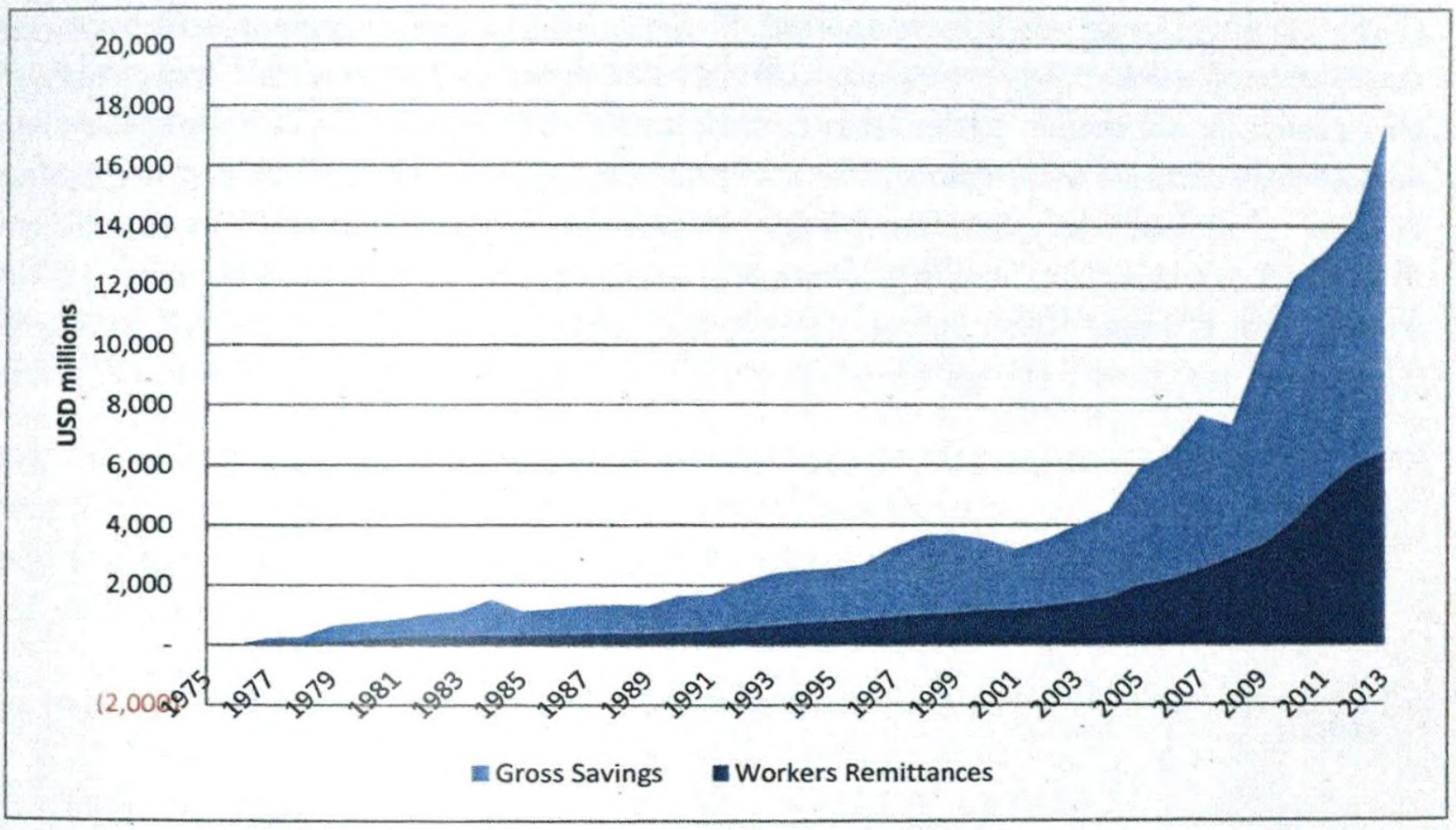



Source: World Bank data (http://data.worldbank.org/country/sri-lanka)

**Figure 4.1: Sources of Foreign Capital Flows into Sri Lanka (USD millions), Period 1977-2013**

Remittances are less volatile than the other capital inflows and official flows. For example, FDI and ODA to Sri Lanka have fluctuated considerably from year to year when compared to remittances. There was a civil conflict in Sri Lanka since the early 1980s up to year 2009. Further to above, there was an economic downturn due to the world economic crisis. This economic downturn was initiated with the sub-prime mortgage issue in the USA and it spread all over the world. Such types of economic downturns in developed countries where migrants are hosted may cause a decrease in the amount of remittances. However, it could be observed in the figure 4.1 that inflows of foreign workers' remittances were resilient even in the situation of world economic crisis and the civil conflict in Sri Lanka. Therefore, it could be argued that remittance inflows are more stable in contrast to foreign investment which always depends on the economic condition of the host country. Sri Lanka recorded high inflows of remittances in 2005, peaking at 8 percent of the GDP after the Tsunami disaster in December 2004.

Foreign workers' Remittances being a stable source of foreign exchange may impact the economic condition of Sri Lanka through various channels. Remittance could facilitate economic growth of Sri Lanka by raising national savings and thereby raising the total investment of the country.

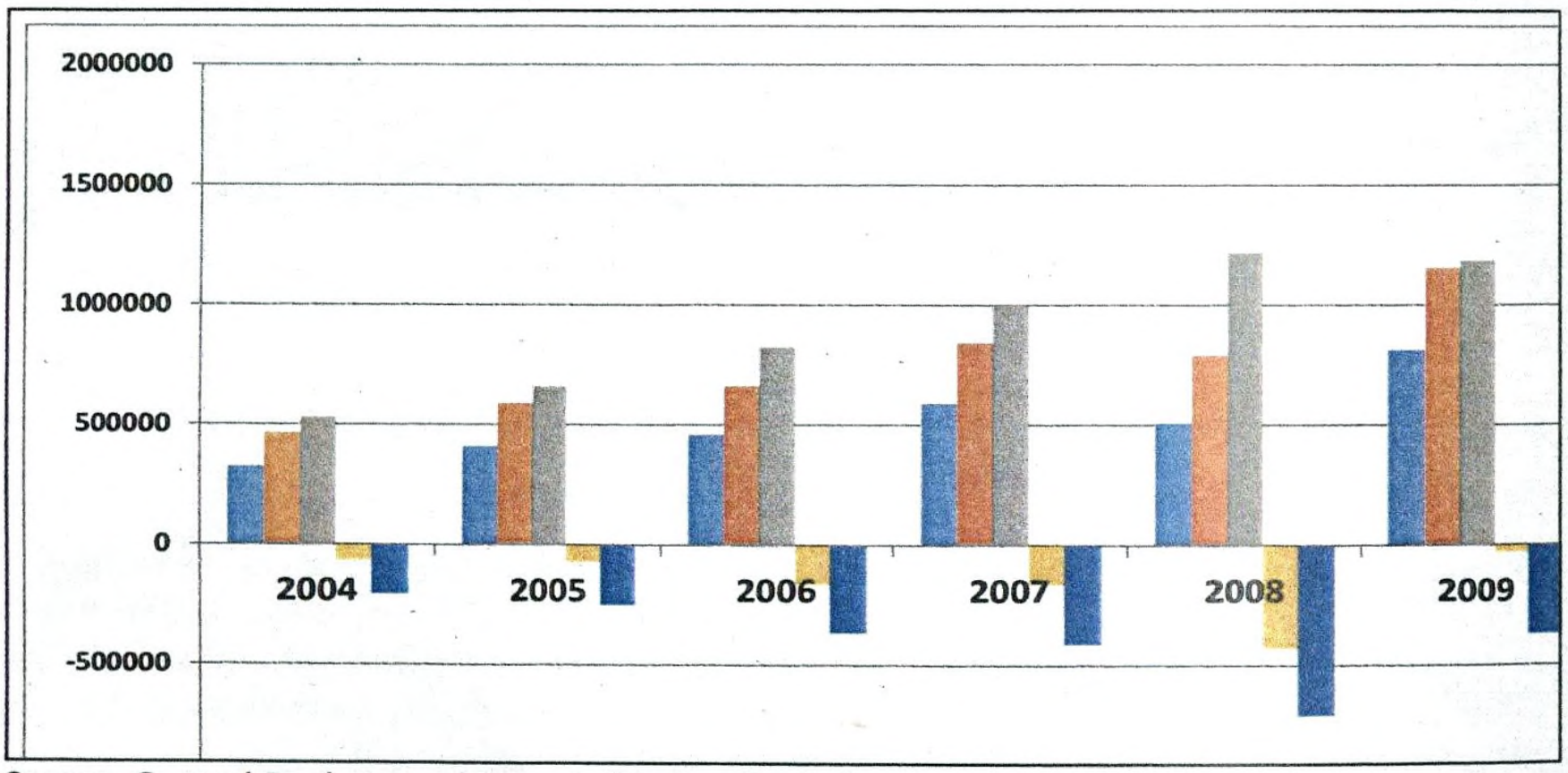



Source: Annual Reports of Central Bank of Sri Lanka, Various Issues; World Bank data (http://data.worldbank.org/country/sri-lanka )

**Figure 4.2: Foreign Workers' Remittances as a Component of Gross Savings**

In year 1975, the gross savings were negative and amounted to USD -34 mn. Even though the economy of Sri Lanka was not opened in year 1975, there were inflows of foreign workers' remittances amounting to USD 8.6 mn. Foreign workers' remittances gradually increased to USD 7,018mn while the gross savings were USD 17,361mn in year 2013. As a percentage, a total inflow of foreign workers' remittances in the same year was 40.42 percent of the gross savings. In these circumstances, it is evident that the remittances considerably contribute to the savings of the country even though part of that is used for consumption purposes. With regard to the use of remittances for investment and consumption, Ratha (2003) has pointed out that if such remittances are invested, it could be contributed to output growth, and if those are consumed , then also it generates positive multiplier effects on the economic growth of the country. In the Sri Lankan scenario, it is clearly evident that remittances account for approximately over 1/3 of the gross savings during the last three and half decades (Figure 4.2).

The contribution of foreign workers' remittances towards the economic growth of Sri Lanka by way of savings and investments could be explained further by using the Figure 4.3. National savings (NS) are calculated by adding net factor income from abroad and workers' remittances into domestic savings. Basically domestic savings are based on private sector savings (households plus corporate sector savings). Government savings in Sri Lanka always appear to be negative since government revenue is not sufficient to finance the current expenditure of the country. In these circumstances, it could be argued that foreign workers' remittances play a vital role in the national savings. Foreign workers' remittances always contribute to maintain a high amount of national savings in the country. In year 2010, domestic savings were Rs. 1.04 mn when compared to Rs. 1.38 mn of national savings. On average, domestic savings amounted to 18.7 percent of GDP while national savings amounted to 24.7 percent of the GDP in year 2010.




Source: Central Bank Annual Reports (Various issues)

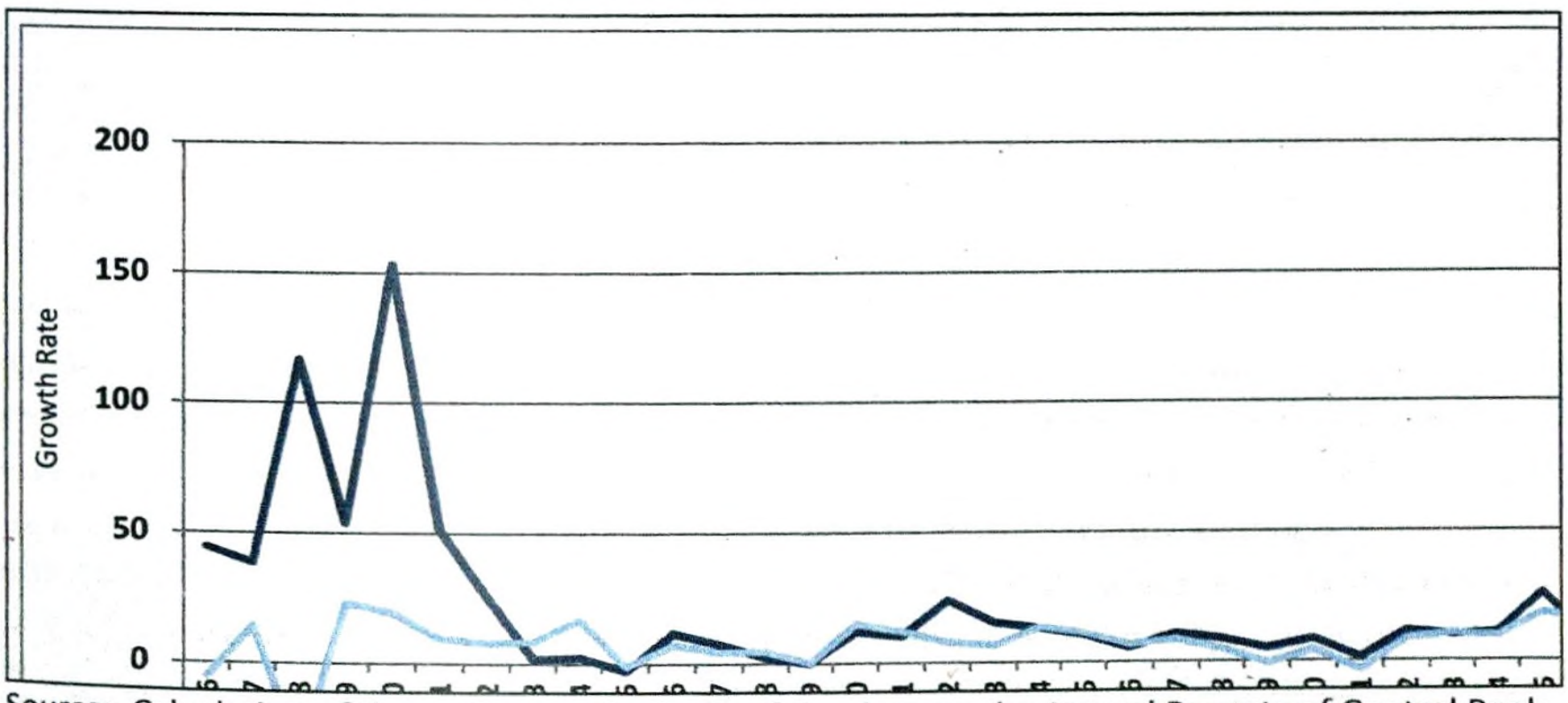
**Figure 4.3: Implications of Remittances on Savings and Investments (Rs. millions)**

The importance of foreign workers' remittances could be seen when the savings-investment gap (S-I Gap) with and without workers' remittances are compared. Savings-investment gap is always low when the workers' remittances are included. The best example is year 2009 (Fgure 4.3). This year foreign workers' remittances caused a decrease in the savings-investment gap up to Rs. -175687 mn. If the foreign workers' remittances were not there, savings-investment gap would have widened to Rs. -369,721 mn. In these circumstances, it is clear that

the workers' remittances cushion the savings-investment gap and thereby improve the economic growth of the country.

When the growth rates of foreign workers' remittances and GDP are considered, any positive relationship of these two variables during the period from 1976 to 1983 could not be observed (Figure 4.4). In that period, the growth rate of GDP had an upward trend while the growth rate of foreign workers' remittances had a downward trend. That might take place due to the policy changes of the country. Up to mid 1977, the economy of Sri Lanka was not a liberalized one and the foreign exchange control regulations were in place at that time. In that scenario, free movement of foreign exchange was not permitted. It took a few more years to witness the impact of liberalization on economy after 1977. This could have been the reason for the downward trend of the growth rate of foreign workers' remittances while the growth rate of GDP having an upward trend. However, it could be observed that there was a positive relationship between the growth rates of foreign workers' remittances and GDP after 1983. When the growth rate of foreign WR moved upward, the growth rate of GDP also moved upwards.

In general, GDP growth rate was high during the years with high growth rate of foreign workers' remittance, and *vice versa* unless there is a specific reason which could directly affect these variables. Therefore, it could be argued that in the case of Sri Lanka, there is a positive relationship between the growth rates of foreign WR and GDP under normal circumstances.




Source: Calculation of the author on the basis of the data on the Annual Reports of Central Bank of Sri Lanka (Various issues) and World Bank data

**Figure 4.4: Growth Rates of Foreign Workers' Remittances and GDP**

## 4.2 Balance of Payment, Exchange Rate and Foreign Workers' Remittances

Foreign workers' remittances ease the crucial restraint imposed on the economic development of the migrants' home countries by offsetting the chronic BOP deficits (OECD, 2006). Remittances have more positive implications on BOP than other monetary flows such as FDI, ODA and portfolio investments since the use of such funds bears no interest and does not have to repay the same (Buch & Kuckulenz, 2004; Nayyar, 1994; Straubhaar, 1988). In a study based on remittances of Turkish and Yugoslav workers to their home countries for the period from 1970 to 1981, Körner and Kazi (1987) found that such remittances contributed a lot to the growth of their economies by improving BOP, financing current transaction deficits or imports. It was found that workers' remittances increase financial stability in emerging markets and developing economies by reducing the probability of current account reversals (Bugamelli & Paternò, 2005). S. K. Singh and Hari (2011) state that more or less, the evidence shows that the remittances associated with international migration from India are indeed significant in the context of cushioning the BOP difficulties. They highlighted the fact that the remittance inflow made a contribution to macroeconomic stability by financing a large part of balance of trade deficit thus reducing the current account deficit and related issues at a satisfactory level.

There are arguments that remittance may cause negative effect on current account which is called the "boomerang effect". This takes place when remittances induce an increase of imports and a subsequent trade balance deficit in the remittance receiving country. However, most of the scholars disagree with this argument since import may increase due to other factors such as general development of the country, structural changes of the production of the goods.

In the context of Sri Lanka, Jayasena and Rodrigo (2003) state that in an environment where export earnings and other receipts of foreign exchange were not sufficient to meet all types of foreign payments, workers' remittances have contributed significantly for the maintenance of a viable BOP situation, thereby preventing a larger depreciation of the local currency. Colombage, Gunathilake, and Perera (2010) states that the adverse impact of the widening deficit on the current account balance was nullified to a larger extent by the steady increase in workers' remittances. He further elaborates that workers' remittances have become even more significant in financing the current account deficit in the backdrop of dwindling official transfers received in the form of outright grants from donor countries and multilateral agencies. His final conclusion is that the

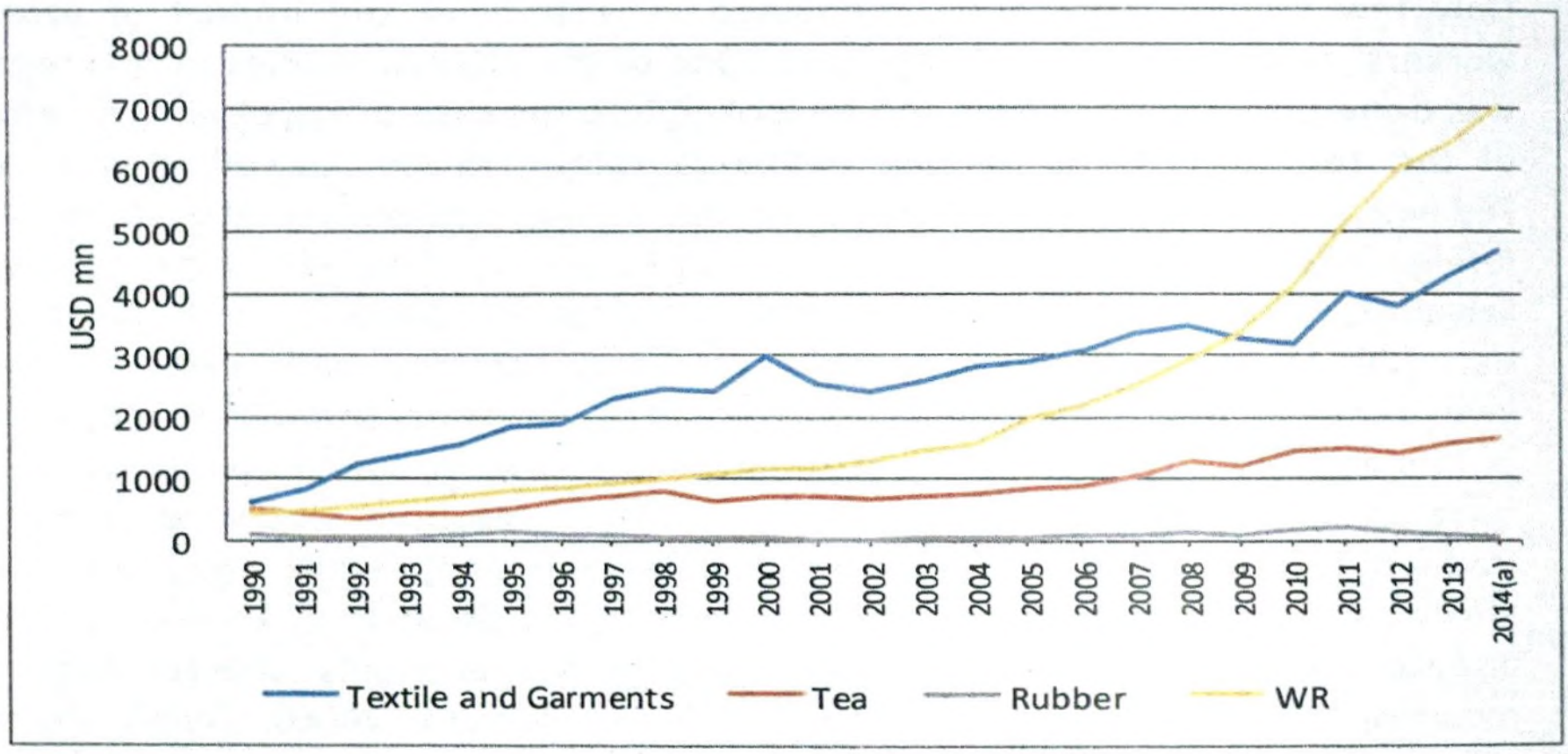
workers' remittances ease the pressure on BOP and thereby arrest the depletion of foreign reserves.

Only few studies have been conducted in relation to the impact of foreign workers' remittance of exchange rate. One of the original studies in this regard was done by McNabb (1999) and he looked into the case of Egypt and the effect of the remittances on parallel exchange rates. Orozco, Lowell, Bump, and Fedewa (2005) found that remittance do, in fact respond to the changes in foreign exchange rates or inflationary pressures in their study based on El Salvador, Mexico, Colombia, Guatamala, Ecuador and Jamaica. S. K. Singh and Hari (2011) found that depreciation of local currency will result in more investment by migrants in their home country. However, there is also opposite of this as well. A large amount of remittance inflows could cause the domestic currency appreciation and therefore generate a resource allocation from the tradable to non-tradable (particularly housing and land) sector which adversely affect the competitiveness of tradable sector. This situation is known as Dutch disease and may affect the sustainability of the economy characterized by recurring trade deficit (Acosta, Lartey, & Mandelman, 2009). Dutch disease effects will result in appreciation of real exchange rate, rendering export less competitive. Given that the real exchange rate is defined as the relative price of tradable goods to that of non-tradable goods, a rise in the price of the latter would result in a decline (appreciation) in the real exchange rate. However, there are different views in relation to the workers' remittances and Dutch disease. Elbadawi (1999), Lartey (2007), Rajan et al. (2009) and Combes, Plane, and Kinda (2010) have found results in favour of Dutch disease in their studies while Athukorala and Rajapatirana (2003), Ouattara and Strobl (2003), Munemo, Bandyopadhyay, and Basistha (2007) and Nwachukwu (2008) could not find any Dutch disease effect with respect to their country samples.

Amuedo-Dorantes and Pozo (2004) found that remittances can cause an appreciation in the real exchange rate. It is mentioned in the World Bank report on Latin America that remittances are likely to contribute to significant real exchange rate appreciation (Fajnzylber & Lopez, 2006). However, they argue that it may be possible to reduce the appreciation of exchange rate through policies such as fiscal restraint.

In the case of Sri Lanka, significance of the foreign workers' remittances in relation to the selected component of the BOP is vital to discuss since there are various effects. When the major sources of foreign exchange earnings are considered, tea, rubber, garment and textiles and foreign workers' remittances could be observed as the leading sectors of exports in Sri Lanka (Figure 4.5). The

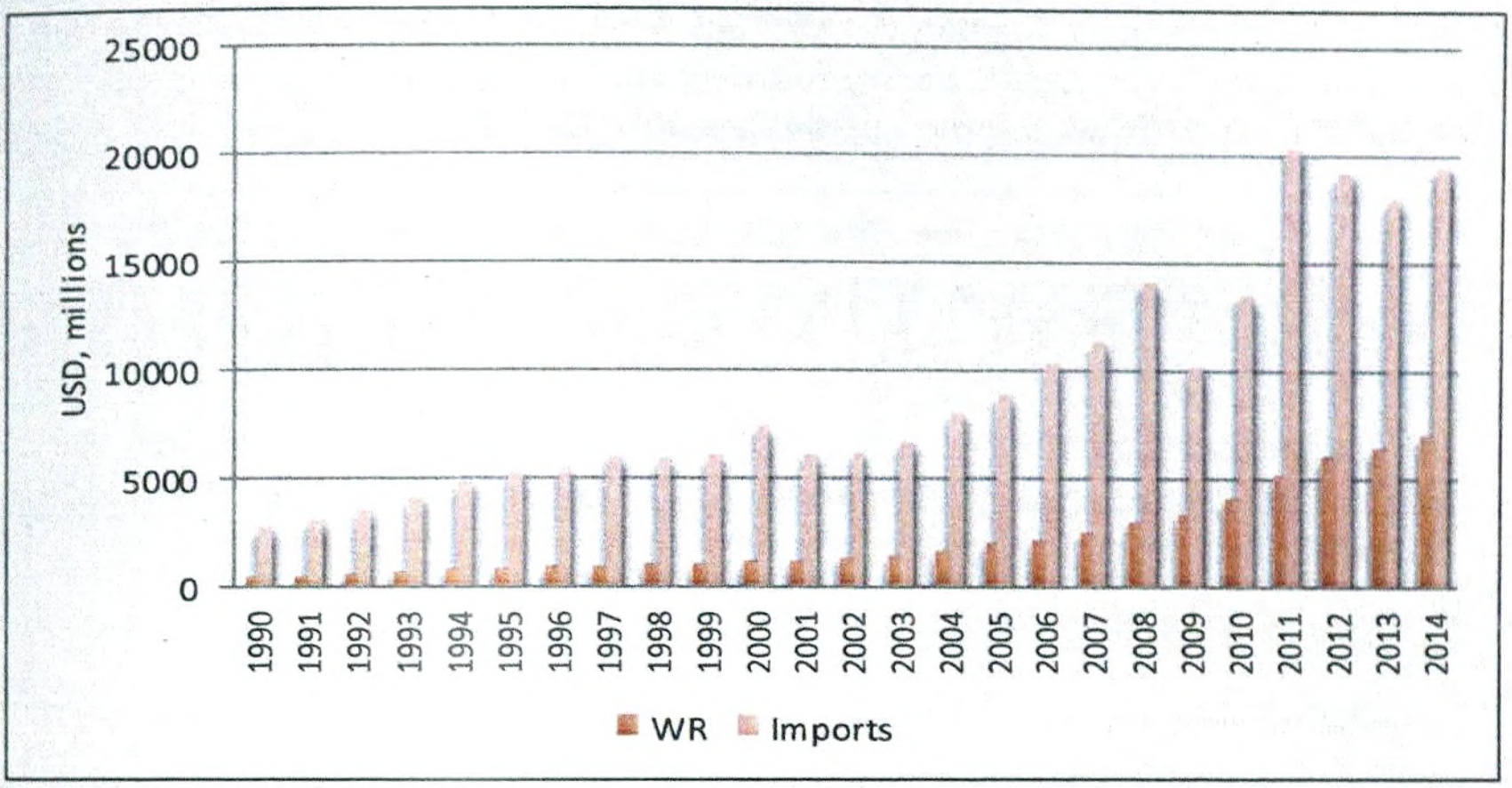
contribution of the export earning of rubber was minimum when compared to the export earnings of textiles and garments, foreign workers' remittance and tea. The foreign exchange earnings of rubber for the period from 1990 to 2014 are at a negligible level.




Source: Central Bank Annual Reports; various issues

**Figure 4.5: Major Source of Foreign Exchange Earnings 1990-2014**

Under these circumstances, it is evident that the workers' remittance being a stable source of foreign exchange earnings in Sri Lanka helped offset the deficit in the trade account. This could be further elaborated by considering the contribution of foreign workers 'remittance on import bill. When analyzing the import bill of Sri Lanka for the past twenty four years of period, it could be observed that there were fluctuations. The import bill reached its highest in year 2008 marking USD 14091 while decreasing to USD 10207 in year 2009. This basically depends on the economic policies of the ruling party of the country as well as the world economic conditions including political turmoil, tariffs and trade agreements entered into with them. The import bill mainly comprises consumer goods (mainly wheat, rice and sugar), intermediate goods (petroleum, textiles and fertilizer) and investment goods (machinery, transport equipment and building materials). However, the bigger portion of the import bill is responsible for importation of petroleum. In year 2010, 22 percent of the total import bill expends to import petroleum products (CBSL, 2010). In such a situation, foreign workers' remittances play a vital role in minimizing the pressure of the import bill.



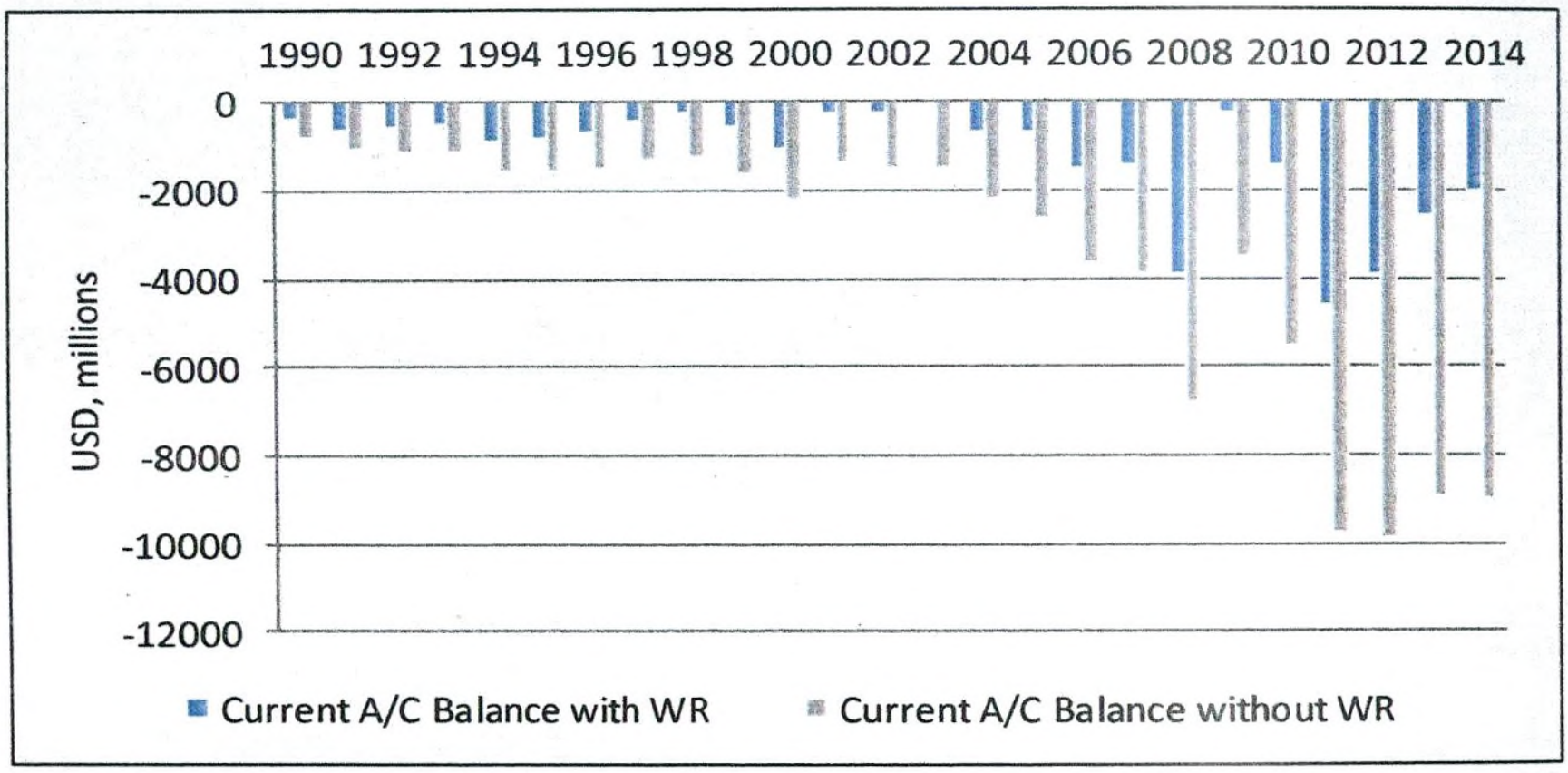

Source: Central Bank Annual Reports, various issues

**Figure 4.6: Contribution of Foreign Workers' Remittances on Import Bill**

As per the figure 4.6, the contribution of workers' remittances towards the import bill was at least 15 percent during the period from 1990 to 2000. With the steady growth of the workers' remittance, contribution of workers' remittances toward the import bill gradually increased and it was between 20 - 25 percent for the period from 2002 to 2008. In years 2009 and 2010, foreign workers' remittances as percentages of import bill were 33 and 30 percent respectively. In year 2014, it was 36 percent. In these circumstances, it is hard to argue that there was no effect of workers' remittances on import bill. Being a major source of foreign exchange earning in Sri Lanka, workers' remittances could minimize the pressure on import bill and thereby adversely affect trade account and subsequently on current account.

Workers' remittances (WR) have become a very important source of foreign exchange earnings against the decline of other sources of foreign exchange earnings such as textiles and garments. WR used to ease the pressure on current account and help cushion the adverse impact of the widening deficit of current account to a large extent. As shown in the figure 4.7, in year 1990, Foreign WR amounting to USD 401 mn helped cushion the current account deficit to USD 377mn. The current account deficit in year 2003 was minimum and it was just USD 71 mn. If the foreign WR was not there current account deficient would have been USD 1485mn in year 2003. Even in year 2009, foreign WR amounting

to USD 3330 mn helped contain the current account deficient to USD 214 mn. In these circumstances it could be argued that the remittances have even become more significant in financing the current account deficit.

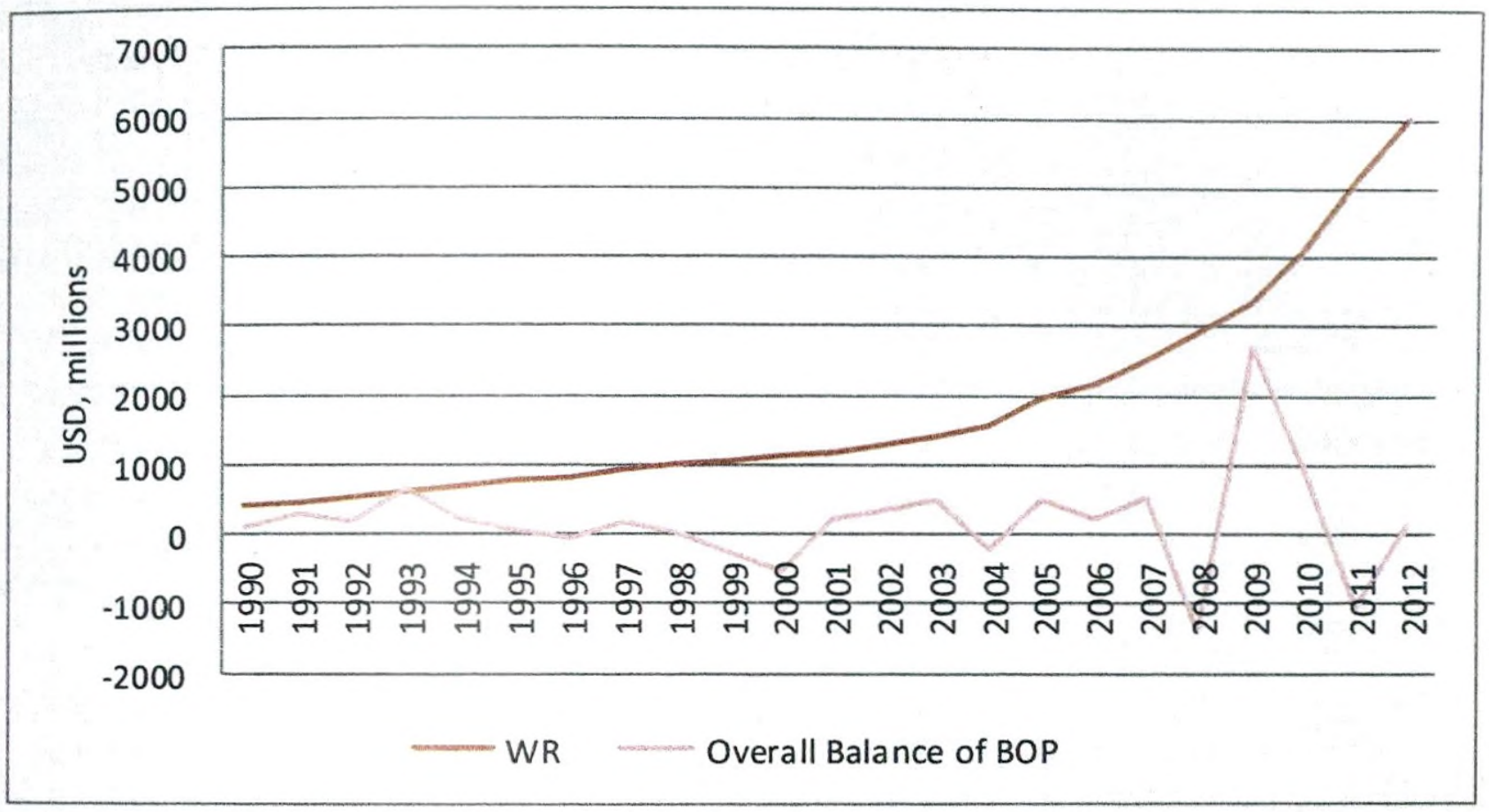



Source: Annual Reports Central Bank of Sri Lanka, various issues

**Figure 4.7: Foreign Workers' Remittances and Current Account Deficit (Period 1990-2014)**

However, it is even possible to argue that the "boomerang effect" can take place due to remittances induce in the increase of imports and trade balance in the country. However, most of the scholars disagree with this argument since import may increase due to other factors such as general development of the country, structural changes of the production of the goods. This is further supported by Glytsos (1993) and Straubhaar (1988) in their studies based on Spain, Italy, Greece and Portugal. Further, Colombage et al. (2010) found that the adverse impact of the widening deficit on the current account balance was rectified to a larger extent by the steady increase in foreign workers' remittances.

In these circumstances, it could be pointed out that the foreign exchange inflows to Sri Lanka by way of workers' remittance help cushion the adverse impact of current account deficit. Even though the workers' remittance cushions the adverse impact of current account, the performance of workers' remittance is not reflected in the performance of overall balance of BOP in Sri Lanka (Figure 4.8).




Sources: Annual Reports of the Central Bank of Sri Lanka, various issues

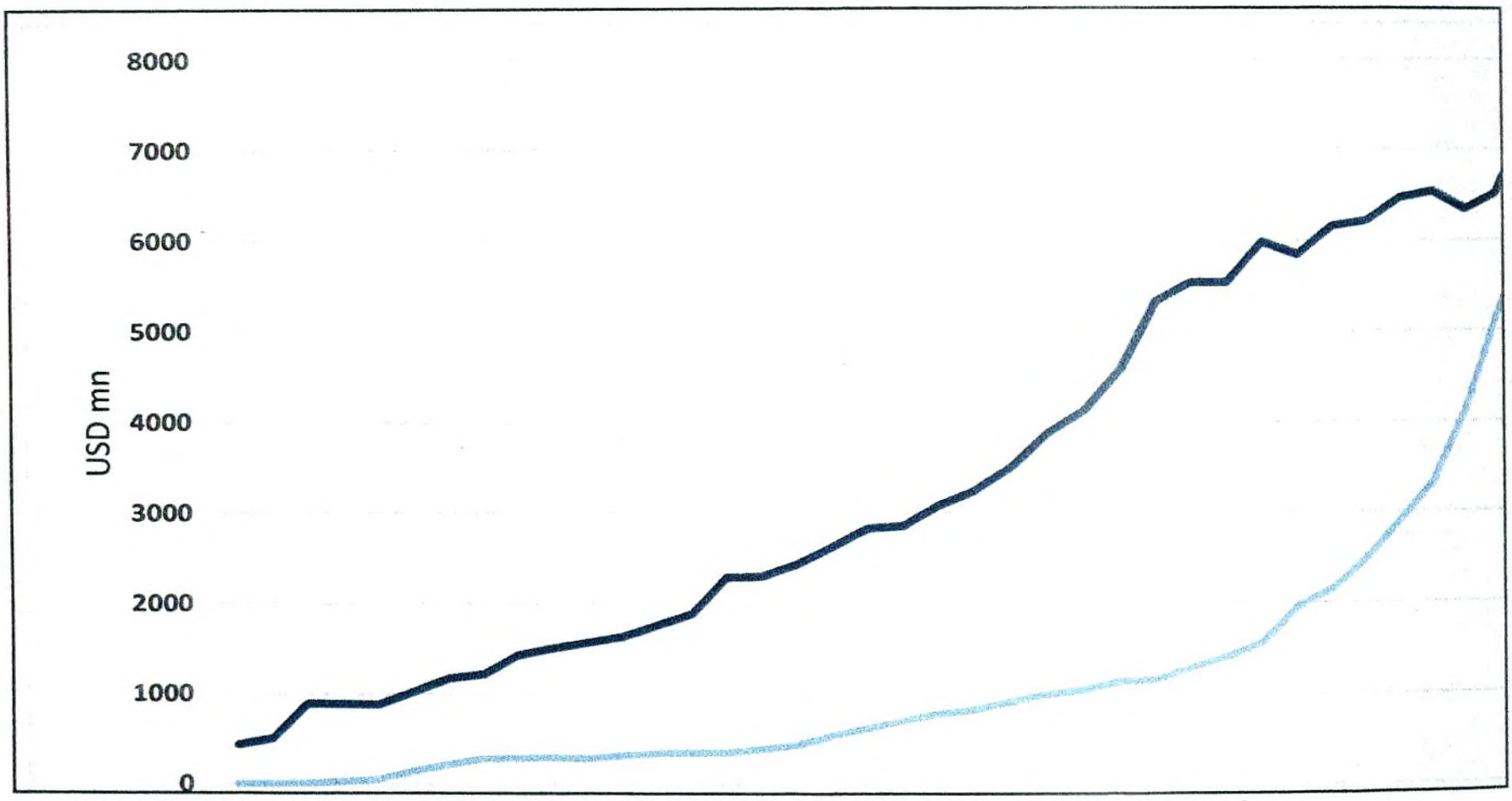
**Figure 4.8: Balance of Payments and Foreign Workers' Remittances (Period 1990 -2012)**

It could be noted that the overall balance of the BOP highly fluctuated during the period from 1990 to 2010. In the years 1996, 1999, 2000, 2004 and 2008, the overall balances of BOP were negative amounting to USD -68, -263, -522, -205 and -1385 respectively. The highest negative balance was recorded in the year 2008 and that might be due to the government expenses on the civil war of Sri Lanka being at its peak. The civil war was concluded by May, 2009 and there was a positive balance of BOP in year 2009 amounting to USD 2725 mn. In these circumstances, it is evident that there are other factors that affect the performance of the BOP and therefore a relationship between the workers' remittance and overall balance of BOP could not be observed.

After discussing the relationship between workers' remittance and BOP, it is useful to discuss the interaction between the workers' remittance and the exchange rate. From 15th November 1977 Sri Lanka rupee was allowed to float and daily buying and selling rates of major currencies for telegraphic transfers by commercial banks were announced by the Central Bank thereafter.

In the case of Sri Lanka, it could be observed that the exchange rate of the local currency has depreciated continuously from 1975 (Figure 4.9). It could be

argued that the depreciation of Sri Lanka rupee would have been further aggravated, if sufficient workers' remittances were not received. Anyway, local currency depreciation is an incentive to the migrant worker to send his income to the home country, as he gets higher value in terms of local currency. This was proved in the study conducted by S. K. Singh and Hari (2011) in India. They found that the depreciation of local currency would result in more investment by migrants in their home country.




Source: Central Bank Annual Reports, various issues

**Figure 4.9: End of Period Exchange Rate Vs. Foreign Workers' Remittances**

On the other hand, a large amount of inflows of workers' remittance may cause the domestic currency appreciation and therefore generate a resource allocation from the tradable to non-tradable sector which adversely affect competitiveness of tradable sector. This situation is known as Dutch disease and discussed previously. Acosta et al. (2009) argues that it may affect the sustainability of economy characterized by recurring trade deficit. Some scholars argue that Dutch disease will result in appreciation of real exchange rate, rendering export less competitiveness. Amuedo-Dorantes and Pozo (2004) found that remittances can cause an appreciation of the real exchange rate; as a result of this loss of price of competitiveness, export flows might decrease (Lopez Cordova & Olmedo, 2005). In the case of Sri Lanka for the period from 1975 to 2010, exchange rate was appreciated only three times. In 1979, exchange rate was appreciated by decimal points (i.e. exchange rate in 1978 was 15.5 while 15.44 in

1979). In 2005, a significant appreciation of exchange rate determined in terms of USD could be observed (i.e. from 104.6 in 2004 to 102.12 in 2005) mainly due to the inflows of foreign exchange including workers' remittances to the tsunami affected people. Again the exchange rate was appreciated in 2010 when compared to the 2009 moving to Rs.110.95 from Rs.114.38 in 2009. This improvement was due to the end of the civil conflict in Sri Lanka. The salient feature observed here is that every time the exchange rate appreciated, the amounts of the inflows of workers' remittances also significantly increased when compared to previous years (refer figure 4.9). In 2005, the total amount of receipt of workers' remittances was USD 1968 mn when compared to USD 1564 mn in 2004.

When the receipt of foreign exchange is increased, the exchange rate should be appreciated. Even though there is a continuous growth of receipt of the foreign exchange by way of workers' remittance to Sri Lanka, a significant improvement in the exchange rate cannot be observed since it is continuously depreciated. Under these circumstances, it could be argued that the other factors including government economic policy may affect the determination of exchange rate. For example, with effect from 23rd January 2001, the Central Bank of Sri Lanka refrained from announcing the exchange rates and allowed the market forces of supply and demand to determine the market rate. As a result, the exchange rate determined in terms of USD of 80.06 in year 2000 was depreciated to 93.16 in 2001 (see Figure 4.9).

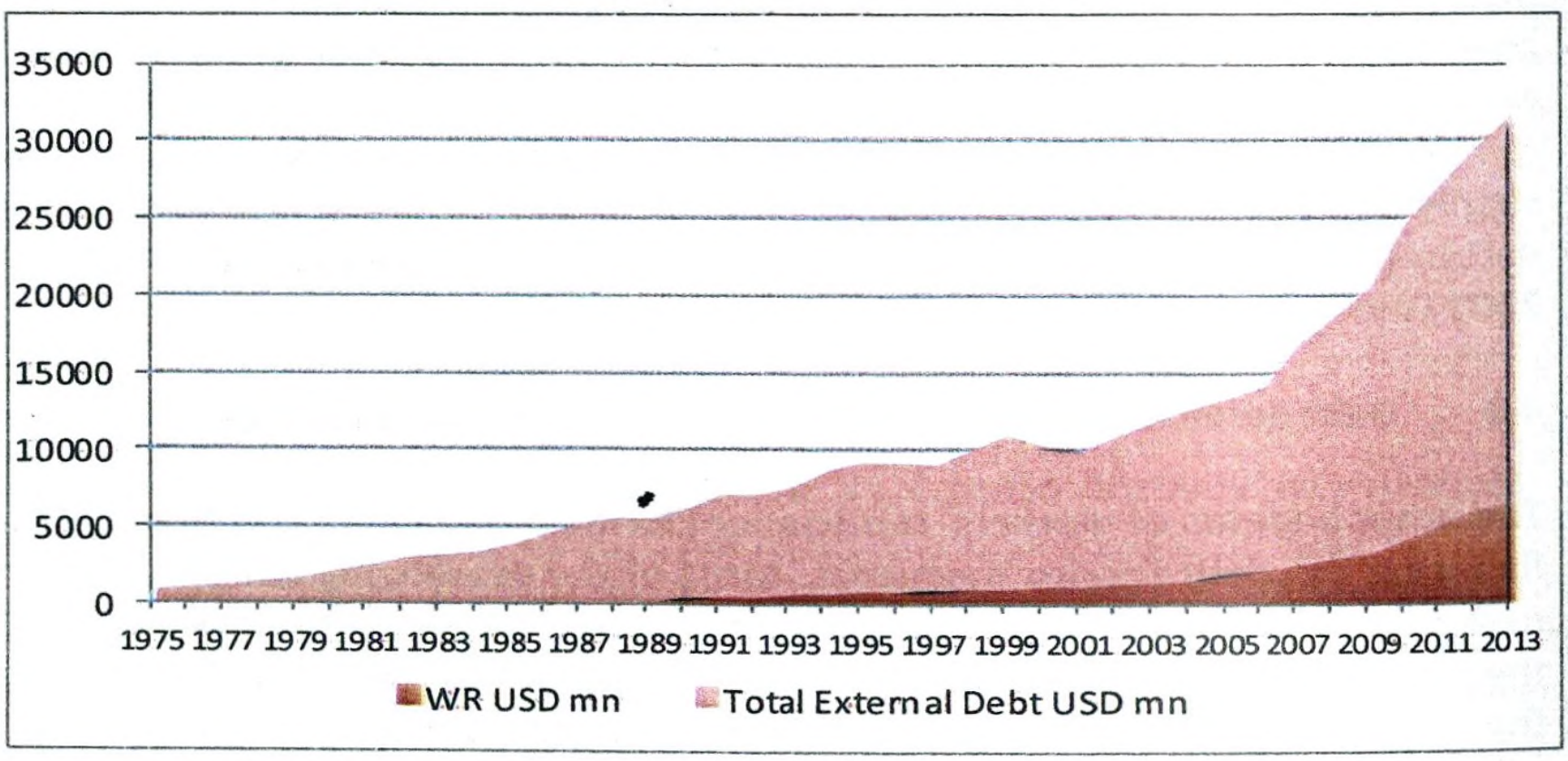
## 4.3 Debt Service Payments and Foreign Workers' Remittances

The other benefits of workers' remittances to the home country is that it helps in financing the debt service payments. Most of the developing countries seek the reliefs from external finance by way foreign borrowings to the development of the country. In these circumstances, the burden of the external borrowings of the developing countries is high. Therefore, some studies have focused on the effects of foreign workers' remittances on reducing the burden of external debts. In this regard, Ratha and Mohapatra (2007) state that remittances can improve a country's creditworthiness and thereby enhance its access to international capital markets for financing infrastructure and other development projects. They further elaborated that taking the remittances for the calculations of credit ratings will improve the sovereign ratings of the country and it will further improve the easy access to the world capital market at a comparatively low cost.

Patra and Kapur (2003) found that workers' remittances are equivalent to debt service payments. According to them, workers' remittances/ Debt service

payments are 102.0 and 103.1 percent for the period from 2001-02 and 2002-03 respectively.

Workers' remittances are important especially for developing countries which are saddled by fiscal deficits, external debts, trade imbalances and limited foreign direct investments (Pernia, 2006). In a study based on the Somalia, Maimbo (2006) found that the remittances cushion the financial difficulties faced by Somalia without having international borrowings. Somalia's financial relations with international creditors were frozen in late 1980s when financial policies slipped out of control. Due to significant arrears on past debt-servicing obligations, absence of a fully functional national government, and the unstable security situation, Somalia neither borrowed nor serviced its public debt for the period from 1990 to 2006. After 2004, Somalia's external debt was estimated at USD 3.2 bn, of which USD 2.5 bn was the dues. Maimbo pointed out that Somalia has been rising steadily even without new lending and the ODA due to the receipt of remittances from Somalis themselves.



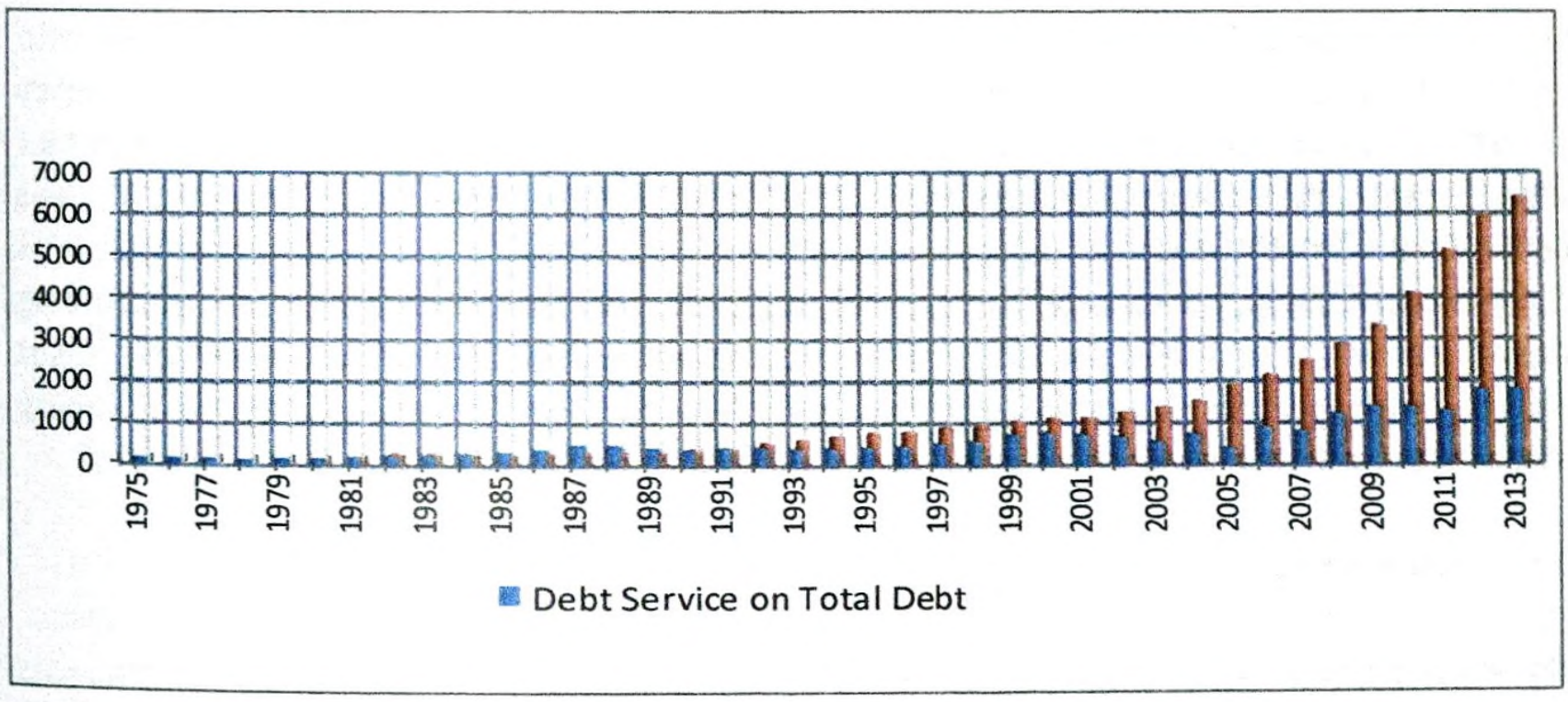

Source: World Bank data (http://data.worldbank.org/country/sri-lanka)

**Figure 4.10: Foreign Workers' Remittances Vs. Total External Debt**

In the case of Sri Lanka, most of the development projects depend on the foreign borrowings. With the increase of such borrowings, the external debt liability of the country has increased. In 1975, total external debt liability of Sri Lanka was USD 815 mn while the total inflow of foreign workers' remittance was USD 9 mn. As a percentage, workers' remittances were 1.1 percent of the total external

debt in the same year. It could be observed that the total stocks of external debt increased gradually while the workers' remittances also gradually increased by a significant amount (figure 4.10). In year 2010, workers' remittances as a percentage of total external liability were 20.12 percent. In these circumstances, it could be noted that such improvements in workers' remittances were useful in financing the total external debts in Sri Lanka.

Sri Lanka's total debt service payment includes the sum of principal repayments and interest actually paid in foreign currency, goods, or services on long-term debt, interest paid on short-term debt and repayments (repurchases and charges) to the IMF. These obligations increased from USD 169 mn in year 1975 to USD 1445 mn in year 2010. For the period from 1975 to 1980, external debt service payment on total debt was higher than the total receipt of workers' remittances (Figure 4.11). This pattern has changed upward for the period from 1981 to 1984 with the improvements of workers' remittance. In that period receipt of workers' remittance was higher than the debt service on total debt. Again, debt service was higher than the workers' remittance for the period from 1985 to 1989. Workers' remittance was higher than the debt service payment from 1990 to date, with the steady growth of workers' remittance (Figure 4.11).




Source: World Bank data (http://data.worldbank.org/country/sri-lanka)

**Figure 4.11: External Debt Service Payments and Foreign Workers Remittances**

In these circumstances, it could be noted that workers' remittance plays a key role by helping finance the debt service payments in Sri Lanka. Jayasena and

Rodrigo (2003) stated that in the absence of the remittances; meeting the external debt service obligations would have been a formidable task. They further stated that in absence of cash flows from remittances, the country's borrowing capacity would have been adversely affected on account of the heightened risk payment. No foreign loan has been defaulted by Sri Lanka so far. Therefore, it appears that workers' remittance cushions the repayment of external debts. Debt service payments as a percentage of workers' remittance for the years 2009 and 2010 stood at 42.55 and 35.1 respectively (Figure 4.11). Smooth repayment capacity of a country has improved the credit worthiness of the country and in turn the sovereign rating of the country. In this regard, Ratha and Mohapatra (2007) stated that remittances can improve a country's creditworthiness and thereby enhance its access to international capital markets for financing infrastructure and other development projects. They further elaborated that taking the remittances for the calculations of credit ratings would improve the sovereign ratings of the country and it would further improve the easy access to the world capital market. This is true even in the scenario of Sri Lanka. International rating agencies Fitch Ratings and Moody's Investors Service have both upgraded Sri Lanka's ratings in the mid of 2011. According to the Central Bank sources, Fitch upgraded Sri Lanka's Long-Term Foreign and Local Currency Issuer Default Ratings (IDRs) to 'BB-' from 'B+' and also the Country Ceiling to 'BB-' from 'B+' and affirmed the Short-Term Foreign-Currency IDR at 'B'. Moody's Investors Service upgraded the outlook of Sri Lanka's B1 foreign currency sovereign rating from 'Stable' to 'Positive'. Further, it was mentioned that the rating upgrade decision of the Moody's Investor services was driven by the improvements of external payments position in Sri Lanka among other factors (CBSL, 2013). In these circumstances, it is evident that the debt service payments are cushioned by workers' remittance in addition to improving the credit worthiness of the country.

## 6. Conclusion

It is evident that the large and sustained receipts of the workers' remittances over the years contributed to the development process of Sri Lanka in many ways while helping maintain the macroeconomic stability of the country. Such remittances have had a tremendous impact on the socio-economic development of the country. This study focuses on the economic implications of foreign workers' remittances and priority has been given to analyze the implications of workers' remittance on macro-economic variables.

Even though this paper focuses on the economic implications of workers' remittance, considerable attention was also paid to identify the theories and

empirical evidence on international migration. Further, such facts as global remittance flows, directions of such remittances, and remittance patterns of Sri Lanka including remittance channels and financial infrastructure were also discussed.

Remittances provide a safety net for the Sri Lankan economy and its households in times of crisis and economic shocks. The mode of remittance transmission is an important factor that determines the volume of foreign workers' remittances received by Sri Lanka. The widespread use of informal channels is mainly due to the cost structures in the financial systems and lack of awareness of formal money transmitting channels. Further, remittances through informal systems are not captured in the official statistics. However, as a stable source of foreign exchange, remittances are a crucial source of finance for development in Sri Lanka given the unstable nature of FDI, ODA and export earnings.

This paper paid special attention to the implications of foreign workers' remittances on economic variables such as economic growth, BOP, exchange rate and debt service payments. The first analytical part of this paper focused on the implications of foreign WR on economic growth. It was found that the workers' remittances are less volatile than the other capital inflows and official flows. Workers' remittances being a stable source of foreign exchange may improve the national saving of the country and thereby improve the total investment and subsequently the growth of the country. It was found that the GDP growth rate was high during the years with high growth rates of workers' remittance, and *vice versa* unless there is a specific reason which could directly affect these variables. Therefore, it could be concluded that in the case of Sri Lanka, there is a positive relationship between the growth rates of workers' remittance and GDP under normal circumstances.

The second analytical aspect focused on the economic implications of workers' remittance on the BOP. There are implications of workers' remittance on the import bill as well as current account being a major source of foreign exchange. Workers' remittance has the ability of minimizing the pressure on import bill and thereby an adverse effect on the trade account and subsequently on current account. Even though workers' remittance cushions the adverse implications of current account, the performance of workers' remittance is not reflected in the performance of the overall balance of the BOP in Sri Lanka since there are other factors which affect the performance of BOP such as political conditions, government policies and regulation, global economic conditions.

Thirdly, the relationship between the workers' remittance and exchange rate has been discussed. In the case of Sri Lanka, the exchange rate has depreciated most of time. Such depreciation of Sri Lanka rupee itself may become a reason for the increase of the foreign WR since the depreciation of local currency will motivate the migrants to send more earnings to their home country with a view to obtaining more benefits. When the receipts of foreign exchange are increased, the exchange rate is appreciated. Even though there is a continuous growth of receipt of the foreign exchange by way of workers' remittance to Sri Lanka, a significant improvement in the exchange rate cannot be observed. Therefore, it is evident that workers' remittance itself does not trigger appreciation or depreciation of the exchange rate and there are other factors which could lead to determine the exchange rate.

Finally, economic implications of workers' remittance on minimizing the pressure of external debt liability of Sri Lanka were considered. As elaborated, most of the development projects of Sri Lanka depend on foreign borrowings. When the foreign borrowings increased, the total debt liability also followed. To maintain the debt sustainability, it is required to make the payments on time. Therefore, more foreign exchange is required to finance the debt service payments. The considerable inflows of workers' remittances have cushioned the burden of external debts services of Sri Lanka. Further, the smooth repayment capacity has improved the credit worthiness and thereby sovereign rating of the country. This has helped Sri Lanka to maintain the credibility in the world capital market and to have an easy access to the said market at any time without any encumbrances. Therefore, it is evident that the workers' remittance plays a vital role by servicing the external debts of Sri Lanka.

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# ISSUES OF MARKETING DEFICIENCY AND SOLUTIONS FOR IMPROVEMENT OF FOOD MARKETING SYSTEM IN SRI LANKA

**S.M.P. Senanayake**[5]

***Abstract***

*For a long time the agricultural marketing system in Sri Lanka has suffered from various deficiencies. There was a huge disparity in price received by farmers and the price paid by consumers due to considerable wastage of products in handling, storage and transportation and substantive margins kept by intermediaries in the supply chain and price manipulations by cartels of some wholesalers since the entire wholesale operation has been confined to Colombo and Kandy. The government of Sri Lanka has established several Dedicated Economic Centers (DEC) to solve these problems without much success. Hence this paper aims to identify the root causes of these persistent problems and suggest remedies. The problems were critically analyzed by reviewing existing empirical studies along with the author's over 40 years of experience in marketing research. It was found that there are many middlemen resulting in low profits to producers, lack of feedback on consumer needs to producers, lack of awareness of quality control among suppliers involved in marketing and there is a huge time loss in the marketing process. There is a need to strengthen the functions of these centers through improvement of awareness in quality control among persons concerned, capacity building of agricultural instructors for formulation of production plans by producers, analysis of price information and feedback, development of marketing channels linking DECs in production/ consumption areas and producers and review of transport routes and means from production areas to consumption areas.*

***Key Words:*** *Agricultural Marketing System, Dedicated Economic Centers, Issues in the conventional marketing system, Measures adopted by the modern marketing system, Sri Lanka*

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## 1. Introduction

Agricultural marketing covers all the services involved in moving of an agricultural product from the farm to the consumer. Numerous interconnected activities are involved in doing this, such as planning production, growing and harvesting, grading, packing, transport, storage, agro and food processing, distribution and advertising and sale (Kohls and Downey, 1972). Such activities cannot take place without the exchange of information and are often heavily dependent on the availability of suitable finance. Marketing systems are dynamic, competitive and involve continuous change and improvement. Businesses that have lower costs, more efficiency and can deliver quality products are the ones that are successful. Those that have high costs fail to adapt to changes in market demand and poorer quality products are therefore often forced out of business. Marketing has to be customer-oriented and has to provide the farmer, transporter, trader, processor, etc. with profit. This requires those involved in marketing chains to understand buyer requirements, both in terms of product and business conditions. In Sri Lanka, considerable agricultural marketing support to farmers is often provided. For example, the Hector Kobbekaduwa Agrarian Research & Training Institute (HARTI) has a Marketing and Food Policy Division which disseminates pricing and marketing information on a regular weekly basis. Activities include market information development, marketing information dissemination and training in marketing (Hathurusinghe et. al, 2012; Vidanapathirana et. al, 2011).

In addition the Department of Census and Statistics (2012), the Central Bank of Sri Lanka [5-6] the Department of Customs and also certain print media (Newspapers) publish pricing and marketing information in large scale.

Agricultural marketing covers all the services involved in moving an agricultural product from the farm to the consumer. Such activities cannot take place without the exchange of information and are often heavily dependent on the availability of suitable finance. The agricultural marketing system in Sri Lanka has been suffering from various deficiencies. It was identified that the main reasons for the huge disparity in price received by farmers and the price paid by the consumers were due to considerable wastage of products in handling, storage and transportation, substantive margins kept by intermediaries in the supply chain, and alleged price manipulations by cartels of some wholesalers since the entire wholesale operation was confined to Colombo. The government of Sri Lanka established several Dedicated Economic Centers (DEC) to solve these problems without much success. Still the consumers are paying very high prices for the products they purchase while producers are earning very low prices. This

paper attempts to review the issues that are prevailing in the existing marketing system in Sri Lanka, and examine why marketing problems are still acute despite many efforts and suggest solutions.

The paper is based mostly on the secondary sources of information, key informant interviews and focus group discussions held with the producers, traders, supermarkets and agri-business companies.

## 2. Issues in the Food Marketing System

The Government of Sri Lanka (GOSL) initiated the establishment of Dedicated Economic Centers (DECs) in late nineties as a solution to the problems faced by farmers to obtain a reasonable price for their produce and to allow the consumers to buy those products at a reasonable and affordable price. It was found that the main reasons for the huge disparity in price received by farmers and the price paid by consumers were due to considerable wastage of those products in handling, storage and transportation; substantive margins kept by intermediaries in the supply chain, price manipulations by cartels of some wholesalers since the entire wholesale operation had been confined to Colombo and Kandy before the establishment of the DECs (ARTI; 1987; JICA and SSC; 2013). Therefore the GOSL upon evaluating the prevailing system implemented a scheme to provide the required infrastructure and improve the process involved to decentralize the wholesale operations. This scheme consisted of the establishment of Dedicated Economic Centers with related facilities at places where such wholesale activities have been established for years and streamlining of the marketing process by ensuring availability of market information. DECs are trading centers of agricultural products, which are established and supervised by the Ministry of Food Security (MoFS). DECs mainly function as wholesale markets, but in some DECs' particularly in consumption areas, retail function assumes a greater role. After the opening of the first DEC at Dambulla in 1999 other DECs were consequently constructed. As of October 2012, there were 13 DECs in total and the Government had plans to establish additional three DECs in the country. These are being constructed at present and no trading activities have begun so far. After the establishment of DECs in the country, Colombo based centralized marketing system has changed considerably. At present with the establishment of Dambulla, Keppetipola and Nuwara-Eliye DECs the marketing system is now decentralized. As a result the number of lorries carrying vegetables to the Colombo market has declined substantially. It is also shown that the competition in the DECs is strong and there are no cartels manipulating prices (Senanayake and Somaratne, 2015). However, still the allegation that consumers are compelled to pay very high prices for the vegetables they

purchased and producers receive very low prices for the produce they sell, still prevails (Rupasena, 1997; Menegay et al, 1998; MADAS, 2009) . In the foregoing section the issues that prevailed in the marketing system at the time of establishing the DECs in the country are discussed.

A well-functioning marketing system necessitates a strong private sector backed by appropriate policy and legislative frameworks and effective government support services. The Government has provided for the improvement of market infrastructure, HARTI supplies market information, and the Provincial Department of Agriculture provides agricultural extension services. However, the agricultural extension workers are unable to advise farmers on marketing. Training programmes in marketing being conducted at present need to be improved considerably. One of many problems faced in agricultural marketing in Sri Lanka, like in many other developing countries is the latent hostility to the private sector and the lack of understanding of the role of the intermediary.

Efficient marketing infrastructure such as wholesale, retail and assembly markets and storage facilities is essential for cost-effective marketing such as to minimize post-harvest losses and to reduce health risks. Markets play an important role in rural development, income generation, food security, developing rural-market linkages and gender issues.

The country's post-harvest losses of fruits and vegetables is estimated to be more than Rs. nine billion per year due to the absence of proper value-added methods and a stagnant food development technology (Senanayake; 2015). It is well known that the present system of post-harvest activities from the producer to the consumer of fruits and vegetables, etc. causes very high post-harvest losses due to poor handling, packing, poor storage, transport, etc. Many in the agriculture sector have statistically cited the level of losses at around 20percent to 50percent. The Institute of Post-Harvest Technology (2001) has estimated wastage rates for some economically important crops in Sri Lanka. Accordingly wastage rates have ranged from 10 to 36 percent. However, farms such as IFCO and CIC Agri-businesses have indicated that their losses are in the range of 5percent to 7percent due to proper handling practices from pre-harvest to post harvest, and due to the use of plastic crates, etc. (JICA&SSC; 2013). In the case of vegetable, wastage always comes to open at the retail stage ranging from 1 to 14 percent on the price basis. As causes of wastage, the following have been observed: damage caused during transportation, rotten products intentionally hidden in the sacks at farm-gate, immature or over-mature products, and diseased/insect-attacked products. In addition, water evaporation during transportation caused 1-2percent of weight loss, although it is not considered as

wastage (JICA & SSC, 2013). High percentages of wastage are also caused due to human errors during the harvesting stage. This is generally due to the poor practices of farmers who are not aware that the low quality affects the prices, and also because of the improper timing of harvesting.

According to the estimate of around 35 percent of wastage, about 270,000 mt/year of the total fruit and vegetable output in the country is being wasted.

Efficient market information can be shown to have positive benefits for producers and traders. Up-to-date information on prices and other market factors enables farmers to negotiate with traders and also facilitates spatial distribution of products from rural areas to towns and between markets. In Sri Lanka, Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI) provides market information services to farmers, but the service provided is often inadequate to reach at commercial decisions.

Agricultural marketing needs to be conducted within a supportive policy, legal, institutional, macro-economic, infrastructural and bureaucratic environment. Traders and others cannot make investments in a climate of arbitrary government policy changes, such as those that restrict imports and exports or internal produce movement. Those in business cannot function if their trading activities are hampered by excessive bureaucracy. Inappropriate laws can distort and reduce the efficiency of the market, increase the costs of doing business and retard the development of a competitive private sector.

Poor support institutions, such as agricultural extension services, municipalities that operate markets inefficiently and export promotion bodies can be particularly damaging. Poor roads increase the cost of doing business, reduce payments to farmers and increase prices to consumers. Finally, the ever-present problem of corruption can seriously affect agricultural marketing efficiency in Sri Lanka as well as the increase of transaction costs faced by those in the marketing chain.

New marketing linkages between agribusiness, large retailers and farmers are gradually being developed, e.g. through contract farming, group marketing and other forms of collective action (Senanayake, 2015).

Donors and NGOs are paying much attention to ways of promoting direct linkages between farmers and buyers. The growth of supermarkets is having a significant impact on marketing channels for horticultural, dairy and livestock products. Nevertheless, "spot" markets will continue to be important for many

years, necessitating attention to infrastructure improvement such as for retail and wholesale markets.

Building more efficient and lower cost rural marketing systems is an essential step towards agricultural modernization and food security. The aggregate efficiency of agricultural marketing is the consumer surplus plus the agricultural producer surplus minus marketing costs. This implies that total surplus is largest when the consumer price is equal to the producer price plus marketing costs and when unit marketing costs are minimized for the marketing chain as a whole. Marketing rents are likely to arise when traders collude or occupy a monopoly or monopsony position.

With expanding urbanization and increasing incomes, consumer food preferences for agricultural products are shifting and the demand is growing for a diversity of high quality products in Sri Lanka (JICA and SSC, 2013). Along with this shift, imports of agricultural products are rising and the competition with domestic products is expected to intensify in the future.

### 2.1 Difference between the "Conventional Marketing System" and the "Modern Marketing System"

The agricultural marketing systems prevailing in Sri Lanka can be categorized into two systems. Those are the conventional marketing system and the modern marketing system. About 90 percent of the agricultural commodities marketed in Sri Lanka pass through the conventional marketing system while only about 10percent is marketed through the modern marketing system. There are numerous problems in the conventional marketing system of the agricultural products which are mainly marketed through the Dedicated Economic Centers (DECs) or other wholesale markets such as the Manning Market in Colombo. However, it is the most common marketing channel for the transaction of agricultural products in Sri Lanka. It is compared with the "modern marketing system", which is a streamlined supply chain run by the supermarket chains and agri-business companies. First, it can be said that the supply chain of "conventional marketing system" is long and there are five intermediaries between the farmers and consumers. They are collectors, transporters, wholesalers / commission agents, retailers and institutions. On the contrary, the "modern marketing system" contains only three facilities namely, collection center, distribution center and supermarket outlet.

The supply chain of "conventional marketing system" is a modeling pattern based on the Marketing Flow survey. The supply chain of "modern marketing

system" is drawn based on the interviews held with Cargills (the largest supermarket chain) and the CIC (the largest agri-business company).

## 2.2 Mechanism of Quality Control by the Modern Marketing System

The crucial factors of the difference between the "modern marketing system" and the "conventional marketing system" are "with/without a quality control system" and "with/without a mechanism to get a feedback of consumer needs". In the "modern marketing system", the collection centers where farmers bring their products are functioning as a base of quality control and feedback of consumer needs. The collection centers announce their needs of items and their quantities on a daily basis to the farmers who have business relationships with the supermarket. At the collection centers, agricultural products brought by farmers are selected based on the quality parameters specified by the headquarters. Farmers should take back the products which do not meet standards. Through this selection process, farmers bring about a better understanding of "quality requirement by the consumers". At each collection center, agricultural officers are assigned and they provide training for the quality improvement of products in response to the requests of farmers. Farmers are obliged to use plastic crates to bring their products to the collection centers. The selection criteria specified by the supermarket chains are relatively strict but farmers are able to obtain a higher price from them than collectors because supermarket chains pay the same amount as the wholesale price of the day, in cash.

Also, in the "modern marketing system", plastic crates or cardboard boxes are used for the transportation of commodities to maintain the quality of agricultural products from the collection centers to the distribution centers.

The "modern marketing system" controls the quality of commodities at collection centers and they have a mechanism to communicate the consumer needs to producers. On the contrary, "conventional marketing system" does not have a system to control the quality of products or to inform the consumer needs to producers because there is no mechanism to convey the information through the entire chain. This is the crucial factor that makes the difference of the quality of the commodities between the conventional system and the modern system.

## 2.3 Bottlenecks in Marketing of Food Products and Resulting Issues

It can be said that, while supermarkets and agribusiness companies with a "modernized marketing system" are boosting their efforts toward quality control and increasing their presence in marketing based on changes in the demand side for agricultural products, under the "conventional marketing system" through DECs and wholesale markets, awareness of quality control and consumer needs is low and there is a failure to respond adequately to market changes.

This paper, therefore, is focused on the "conventional marketing system" which accounts for much of the agricultural marketing in Sri Lanka, and hopes to identify the bottlenecks when considering revitalization of the system.

## 2.4 Bottlenecks in the Conventional Marketing System

Under the conventional marketing system, sometimes as many as five players stand between the producer and the consumer forming a long supply chain. The result is problems arising due to major time loss in the marketing process, many middlemen and little profit for the producers. In addition, a system in which each player's role in the supply chain ends by "passing the agricultural products on to the next player," has been created so no responsibility is borne for the quality of the products further along the supply chain. With regard to the quantity and varieties of agricultural products, the producers produce without any grasp of the needs of the consumers so sometimes profits fall below production costs when prices collapse as a result of excess supply.

Based on the situation described above, in this paper the bottlenecks in the conventional marketing system and the resulting issues and present status are summarized below.

Under the conventional marketing system, many players intervene but none bears responsibility for the quality of the agricultural products and there is no player to monitor quality controlling in the production process.

For this reason, low quality agricultural products are in wide circulation under the conventional marketing system and producer prices are accordingly low. This results in stagnant incomes for the producers.

As there are no mechanisms for grasping the quantities or varieties required on the demand side or providing feedback to the producers, the producers cannot engage in planned production. For this reason, excess supply occurs during peak

periods, causing prices to collapse and resulting in stagnation of producer incomes.

Time loss arises in the marketing process due to the long supply chain and intervention by many players, bringing post-harvest losses. As a result, this leads to higher retail prices.

Middlemen margins are generated at each stage by the intervention of many players, depressing the profits of the producers while retail prices are relatively high.

## 3. Measures to Solve Marketing Deficiencies

To solve these issues, "strengthening of DEC functions as marketing hubs" is proposed in this paper. Concrete measures include assignment of marketing advisors at divisional level, review of transportation routes and means from production areas to consumption areas and development of marketing channels linking the DECs in the production areas and consumption areas. Lack of awareness of quality control among players involved in marketing is another issue. As mentioned earlier the producers and the intermediaries involved in the marketing chain are not aware of the importance of quality control.

A marketing advisor therefore needs to be assigned at divisional level for the improvement of awareness of quality control among the persons concerned. Donor assistance can be requested to meet the costs involved and seminars need to be held for producers, traders and DEC managers. The roles expected to play by the Marketing Advisor will include, a) improvement of awareness of quality control among persons concerned b) capacity building of agricultural instructors for formulation of production plans by producers c) analysis of price information and feedback and d) facilitation of meetings among persons concerned.

Agricultural Instructors of the Provincial Department of Agriculture (DOA) are the extension workers closest to the producers and a personal relationship with the producers has already been built through regular meetings. Although the instructors provide instruction in agricultural skills, they lack knowledge related to production plans or marketing and instruction for producers in these fields is inadequate.

Marketing advisors need to be assigned at divisional level for capacity building of agricultural instructors for formulation of production plans by producers and the

marketing skills of the agricultural instructors who are the extension workers closest to the farmers are reinforced and instructions have to be provided to farmers in drawing up production plans based on market trends.

DECs gather price information for each crop daily and this information is provided through mobile phone services, but no analysis is carried out of seasonal price fluctuations or long-term price trends for each crop. In addition, similar price information is collected and provided by HARTI, but temporal and spatial variation of prices has not been analyzed.

The wholesale price information collected by each DEC has to be analyzed using time series data. Information on seasonal fluctuations of each crop has to be organized, and is needed to provide feedback to producers and traders.

MoFS calls DEC managers to irregular meetings, but discussions mainly focus on facility management duties, and marketing is not discussed. In addition, traders in the production and consumption areas trade by individual routes and no introduction of DECs is attempted.

Opportunity has to be provided for regular meetings between stakeholders in the DECs in the consumption areas and DECs in the production areas and feedback on consumer needs has to be provided to the producers and traders.
The previous government had plans to increase the number of DECs from 13 - 16 in 2013, including establishing a DEC for the first time in the North and one in the East. These new ones are now under construction. For efficient use of the DECs, the entire marketing system including the new DECs needs to be reviewed but MoFS has not yet started this task.

There is need to review transportation routes and means from production areas to consumption areas. Distribution of functions from Dambulla DEC to other DECs needs to be promoted and transportation routes need to be made more efficient.

Transportation centered on small vehicles has to be reviewed and the efficient use of large vehicles has to be promoted.

The marketing channels consist of many middlemen resulting in low profit for producers. No support for development of marketing channels by producers is provided by the DECs.

Development of marketing channels linking DECs in production areas, consumption areas and producers has to be considered seriously.

Producers need to be organized into groups to ensure shipping lots of a certain size and direct trading have to be promoted with DEC traders in the production and consumption areas instead of going through middlemen.

## 4. Conclusions

In this paper various deficiencies existing in the agricultural marketing system in Sri Lanka were reviewed. The main reasons for the huge disparity in price received by farmers and the price paid by consumers were due to considerable wastage of products in handling, storage and transportation; substantive margins kept by intermediaries in the supply chain. Although it was alleged that, price manipulations by cartels of some wholesalers since the entire wholesale operation was confined to Colombo, according to the study the claims are unfounded. The government of Sri Lanka established several Dedicated Economic Centers to solve these problems without much success. Still the agricultural marketing systems in Sri Lanka suffer from more or less the same deficiencies prevalied at the time of establishing dedicated Economic Centers in the country.

Under the conventional marketing system, many players intervene, but none bears responsibility for the quality of the agricultural products and there is no player who serves as a base for quality control. For this reason, low quality agricultural products are in wide circulation under the conventional marketing system and prices are relatively low. This results in stagnant incomes for the producers. As there are no mechanisms for grasping the quantities or varieties required on the demand side or for feedback to the producers, the producers cannot engage in planned production. For this reason, excess supply occurs during peak periods causing prices to collapse and resulting in stagnation of producer incomes. Huge time loss occurs in the marketing process due to the long supply chain and intervention by many players, causing post-harvest losses. This leads to higher retail prices as a result. Middlemen's margins are generated at each stage by the intervention of many players, depressing the profits of the producers while retail prices are relatively high.

There is need to strengthen the functions of the DECS through the improvement of awareness of quality control among stakeholders, capacity building of agricultural instructors for formulation of production plans by producers, analysis of price information and feedback, development of marketing channels

linking DECs in production/consumption areas and producers and review of transportation routes and means from production to consumption areas.

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