

# Kenya’s Export of Cut Flowers to the European Union: A Constant Market Share Analysis

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**Abstract:** - Kenya is one of the leading exporters of cut flower export products to the European Union market. It is the most important market for Kenya’s horticultural produce. This paper explores at length the market shares and lack of export growth of Kenya’s cut flower exports to the European Union market using a Constant Market Share Analysis methodology. This study used annual time series data from 2001 to 2014 of cut flower exports to the 28 member countries of the EU market. The growth in exports of cut flower products from Kenya to the European Union during the period under study was chiefly due to market share effect. The absence of export growth in cut flower products was attributed to commodity composition effect since the market distribution effect revealed that export products from the country did not attain much with respect to the expanding global markets.

**Key words:** Constant Market Shares, Market share, commodity composition, Market distribution, Competitiveness

## I. INTRODUCTION

The agriculture sector is the mainstay in the Kenyan economy contributing 30 percent of the GDP and accounts for 80 percent of the employment (Kenya Economic Survey, 2014). As per the Kenya Economic Survey report of 2014, the leading subsectors in 2014 were Dairy, Tea, and Horticulture in that order. Horticulture is one of the major farming activities in Kenya, providing food, income, and employment for the rural population while feeding the ever-growing urban population. Furthermore, horticulture plays a key role in small-farm development.

Floriculture is one of the fastest growing subsectors in the agriculture sector and is key in achieving the Kenya vision 2030. In 2014, the subsector contributed KES 59.9 billion accounting for 30 percent of the domestic value of horticulture (HCDA, 2014). This was a 7 percent increase in value as compared to KES 55.95 billion realized in the year 2013. Kenya’s export volume has recorded the highest growth in volume and value of cut flowers exported every year from 2010 to 2017 as shown in fig 1. Exports has exhibited an upward trend in value from 35.5 billion shillings in 2010 to 54.6 billion shillings in 2014 while volumes increased from 120,221 metric tons in 2010 to 136,601 metric tons in 2014 (fig 1).

Kenya became a key exporter of floricultural products into the EU markets for the first time in 1999. The EU is the major market for Kenya horticulture exports. Non-EU exporters of horticultural products are facing minimal profit margins due to the highly competitive and the already saturated market. There is also the progressive introduction of regulations and other measures to the non-EU exporters that have made the previous easy access to the market more difficult and resulted in new costs being imposed on the suppliers. These measures cover areas such as traceability and non-tariff barriers (sanitary and phyto-sanitary standards). The objective of this paper is to investigate Kenya’s market share of cut flower exports to the EU-28 using Constant Market Share Analysis approach.

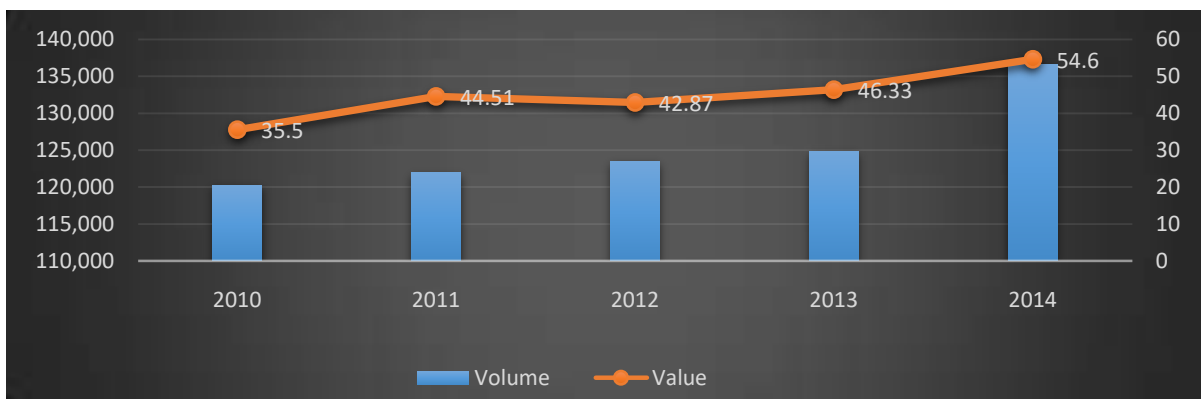


Figure 1: Cut flower export volumes in metric tons and value in billion Kenya shillings

Source: Author’s computation using data from ITC statistics database

## II. LITERATURE REVIEW

### *Theoretical background*

To deduce competitiveness from deviations in exports, the CMS model is applied. The CMS analysis, also called the “*shift-share*” analysis, is used to decompose the changes in export value. The model was first applied to the study of international trade by Tyszynski (1951). The model is used to ascertain components that could create variations in a country’s export share overtime. Ahmadi-Esfahani (2006) asserts that CMS analysis can also be used as a descriptive or diagnostic tool for preliminary analysis. Its analysis is based on the hypothesis that “*a country’s share in world markets should remain constant over time*”. It is an approach that disaggregates trade data of a focus nation and contrasts it with the trade flows of the rest of the world. The CMS methodology is based on the postulation that a country’s share in global markets should be invariable. Tyszynski gave the following framework of the viewpoint underlying much of his work:

*“Over the last hundred years, or so, the steady industrialization of different areas of the world has led to significant changes in the nature of the demand for exports of manufactured commodities. It is a well-established proposition that industrial equipment and modern means of transport considerably gained in relative importance at the expense of a number of consumer goods, notably textiles. It is also well known that, in the course of time, the old manufacturing nations exhibited greatly varying degrees of adaptability to this process. It was the purpose of this investigation to give a clearer picture of these changes in world demand for exports and in the competitive position of the leading manufacturing nations of the world”.*

### *Weaknesses of CMSA*

Although subsequent statements solve some problems related to the calculation and the interpretation of the residual component, the CMSA remains an instrument characterized with some weaknesses:

- a) Richardson identifies various questions regarding the theoretical foundations, implementation and interpretation of CMSA. According to the author, the choice of the reference area is critical since it should correspond to all the competitors of any exporting country;
- b) Regarding geographical aggregation, some authors highlight the choice of the aggregation industry level as arbitrary and this could lead to potential bias in the components values, (Amador, 2008);
- c) The decomposition of identity in mathematical continuous sense has multiple possible versions in discrete sense, therefore it implies an approximation error

### *Empirical Literature*

The study by Amador and Cabral in 2008 regarding the progression of Portugal’s market shares in world exports in contrast with other Southern European countries and Ireland by looking at the impact of product and geographical composition gave a negative market share effect over the period 1968-2006. The negative market share effect was due to the Portuguese low-technology export products in the global market. The impact of geographical composition effect of Portugal’s exports negatively affected its market share.

Gilbert (2010) analysed the export growth of ASEAN 6 economies over the period 2000-2009, based on four different components: *world trade effect, product composition effect, market share effect and the residual component*. Four (Indonesia, Singapore, Thailand, and Vietnam) of the economies displayed a higher export growth than that of the world export. Indonesia’s and Vietnam’s contributions had been sourced by commodity effect. Except for the Philippines, the market share effect was positive for the other countries. The residual effect was only positive in Singapore, Thailand and Vietnam.

According to Juswanto and Mulyanti 2003, Indonesian manufacturing industries’ exports concluded that could not achieve the same success in commodity diversification while increasing its market share.

Other studies to have used CMS analysis include Ahmadi-Esfahani (2006), Batista (2008), Nilsson, F.O.L., Lindberg E. and Surry Y. (2007), Skriner (2009), Rahmaddi and Masaru (2012), Tatarer (2004), Klasra and Fidan (2005), Aytemiz (2011) and Şahan (2012)

In light of the reviewed literature the current study uses a Constant Market Share analysis approach to investigate the competitiveness and export growth of cut flower exports from Kenya to the European Union market.

## III. MATERIALS AND METHODS

### *Data types and sources*

The study is based on annual time series data from 2001 to 2013 of value of export (US \$ 1000) as per 4-digit Harmonised System (HS) classification of Kenyan cut flower exports to the European Union (EU- 28) market. The source of the data was from ITC Trade map statistics.

### *Model specification*

This study adopted the method used by Fredrick et al (2006), a version previously used by Lerner and Stern (1970) while supporting the hypothetical underpinning of the CMS analysis method. The CMS method of analysis is founded on the postulation that a country’s share in the global markets should be constant over time. The effect of competitiveness is what brings out the difference between the export growth implied by the constant share principle and the real export performance. The actual export growth is divided into; the

general rise in world exports (market share effect), commodity composition, market distribution and the residual effects. The following variables are necessary to describe Kenya's cut flower export decomposition:

- $W_i$  Value of Kenya's cut flower exports in period 1
- $W'_{i}$  value of Kenya's cut flower exports in period 2
- $W_{.j}$  Value of Kenya's total exports to the EU-28 in period 1
- $W'_{.j}$  Value of Kenya's total exports to the EU-28 in period 2
- $W_{ij}$  value of Kenya's cut flower exports to the EU in period 1
- $W'_{ij}$  value of Kenya's cut flower exports to the EU in period 2
- $V$  percentage increase in total world exports from period 1 to 2
- $V_i$  percentage increase in world exports of cut flower exports from period 1 to period 2
- $V_{ij}$  percentage increase in world cut flower exports to the EU from period 1 to 2
- $\Delta Y$  Absolute change in Kenya's exports between periods 1 to period 2

From the above it follows that the value of Kenya's exports in period 1 is given as:

$$\sum_j W_{ij} = W_i \tag{3.1}$$

$$\sum_i W_{ij} = W_{.j} \tag{3.2}$$

Equations (3.1) and (3.2) are the total cut flower exports and total exports to the EU in period 1,

Where:

- a)  $W_{ij}$  is the value of Kenya's cut flower exports to the EU in period 1
- b)  $W_i$  is the summation of value of Kenya's cut flower exports to the EU in period 1 which can also be written as  $\sum_j W_{ij}$
- c)  $W_{.j}$  is the value of Kenya's total exports to the EU in period 1

Similarly, the values of Kenya's exports to the EU can be given as

$$\sum_j W'_{ij} = W'_{i} \tag{3.3}$$

$$\sum_i W'_{ij} = W'_{.j} \tag{3.4}$$

Equations (3.3) and (3.4) above are the total exports of cut flowers and total exports to the EU in period 2 respectively where:

- a)  $W'_{ij}$  is the value of Kenya's exports of cut flowers to the EU in period 2

- b)  $W'_{i}$  is the summation of the value of Kenya's cut flower exports to the EU in period 2 which can be written as  $\sum_j W'_{ij}$  and
- c)  $W'_{.j}$  is the value of Kenya's cut flower exports to the EU in period 2.

The value of Kenya's exports in period 1 is given by:

$$\sum_i \sum_j W_{ij} = \sum_i W_i = \sum_j W_{.j} = W_{..} \tag{3.5}$$

Where  $W_{..}$  is total value of exports of Kenya which is arrived at by summation of value of Kenya's cut flower exports in period 1 or it is equal to the summation of value of Kenya's exports to the EU in period 1. This can be written also as  $\sum_i \sum_j W_{ij}$ . Similarly, it can be written for period 2.

$$\sum_i \sum_j W'_{ij} = \sum_i W'_{i} = \sum_j W'_{.j} = W'_{..} \tag{3.6}$$

Where  $W'_{..}$  is total value of Kenya's exports which is arrived by the summation of the value of Kenya's cut flower exports in period 2 or it is equal to the value of Kenya's exports to the EU in period 2. It can also be written as  $\sum_i \sum_j W'_{ij}$ . If we assume that exports are completely undifferentiated with respect to commodity and region of destination while applying the constant share norm we get equation (3.7)

$$W'_{..} - W_{..} \equiv \Delta Y \equiv V W_{..} + (W'_{..} - W_{..} - V W_{..}) \tag{3.7}$$

Where;

$W'_{..} - W_{..}$  is the difference in the total value of exports from Kenya between period 2 and 1. This difference is approximately equal to  $\Delta Y$ , which in turn is equal to  $V W_{..} + (W'_{..} - W_{..} - V W_{..})$ . That is if Kenya maintains its market share, then exports will increase by  $V W_{..}$  and export growth could be divided into two components, one part associated with the general increase ( $V W_{..}$ ) in world exports and an unexplained residual (competitiveness effect). A positive competitiveness could be attributed to a decrease in Kenya's relative export price and vice versa in the case of negative competitiveness.

Exports may differ not only by commodity but also by destination. The reason behind this is that Kenya might be having easy access to the rapidly growing regional and country markets due to trade agreements, historical and cultural ties, close proximity and similar operational business environments. Therefore, the appropriate norm for this study is a constant share of exports for a particular commodity class to a particular region.

The identity equivalent to (3.5) can be presented in the following form:

$$W'_{ij} - W_{ij} \equiv V_{ij} W_{ij} + (W'_{ij} - W_{ij} - V_{ij} W_{ij}) \tag{3.8}$$

Where,  $(W'_{ij} - W_{ij} - V_{ij} W_{ij})$  is the unexplained residual.

From equation (3.8), the difference between the value of Kenya's cut flower exports to the EU in period 2 and period 1 is almost equal to percentage increase in world exports of cut flowers to the EU from period 1 to period 2 multiplied by the value of Kenya's exports of cut flowers to the EU in period 1.

Kenya's export growth rate divided into the part of a general increase in world exports and the competitiveness effect (unexplained residual), then becomes;

$$\begin{aligned} \sum_i \sum_j (\mathbb{W}'_{ij} - \mathbb{W}_{ij}) &\equiv \Delta Y \equiv V_{ij} \mathbb{W}_{ij} + (\mathbb{W}'_{ij} - \mathbb{W}_{ij} - V_{ij} \mathbb{W}_{ij}) \quad (3.9) \\ \Delta Y &\equiv \sum_i \sum_j (\mathbb{W}'_{ij} - \mathbb{W}_{ij}) \equiv \sum_i \sum_j V_{ij} \mathbb{W}_{ij} + \sum_i \sum_j (\mathbb{W}'_{ij} - \mathbb{W}_{ij} - V_{ij} \mathbb{W}_{ij}) \\ &\equiv \sum_i \sum_j (V - V + V_i - V_i + V_{ij}) \mathbb{W}_{ij} + \sum_i \sum_j (\mathbb{W}'_{ij} - \mathbb{W}_{ij} - V_{ij} \mathbb{W}_{ij}) \\ &\equiv \sum_i \sum_j (V \mathbb{W}_{ij} - V \mathbb{W}_{ij} + V_i \mathbb{W}_{ij} - V_i \mathbb{W}_{ij} + V_i \mathbb{W}_{ij}) + \sum_i \sum_j (\mathbb{W}'_{ij} - \mathbb{W}_{ij} - V_{ij} \mathbb{W}_{ij}) \\ &\equiv \sum_i \sum_j V \mathbb{W}_{ij} + \sum_i \sum_j (V_i - V) \mathbb{W}_{ij} + \sum_i \sum_j (V_{ij} - V_i) \mathbb{W}_{ij} + \sum_i \sum_j (\mathbb{W}'_{ij} - \mathbb{W}_{ij} - V_{ij} \mathbb{W}_{ij}) \quad (3.10) \end{aligned}$$

$V \mathbb{W}_{ij}$  is the general rise in world exports or the Market Share effect

$\sum_i (V_i - V) \mathbb{W}_{ij}$  is the commodity composition of Kenya's exports in period 1

$\sum_i \sum_j (V_{ij} - V_i) \mathbb{W}_{ij}$  is the market distribution effect of Kenya's exports and

$\sum_i \sum_j (\mathbb{W}'_{ij} - \mathbb{W}_{ij} - V_{ij} \mathbb{W}_{ij})$  is the residual showing the distinction between real export growth and the growth that would have occurred if Kenya would have retained its share of exports of each commodity to each market.

#### IV RESULTS and DISCUSSIONS

Cut flower export products are one of the most important foreign exchange earners amongst the horticultural commodities. The absolute values of change in export in Figure 1 shows that Kenya's cut flower exports have increased for most of the years except the poor performance in five periods 2001-2002, 2008-2009, 2009-2010, 2011-2012 and 2012-2013. For these five years, there was a decline in the export value. The negative values indicate that there was a decline in the export value and Kenya lost its shares at the international market.

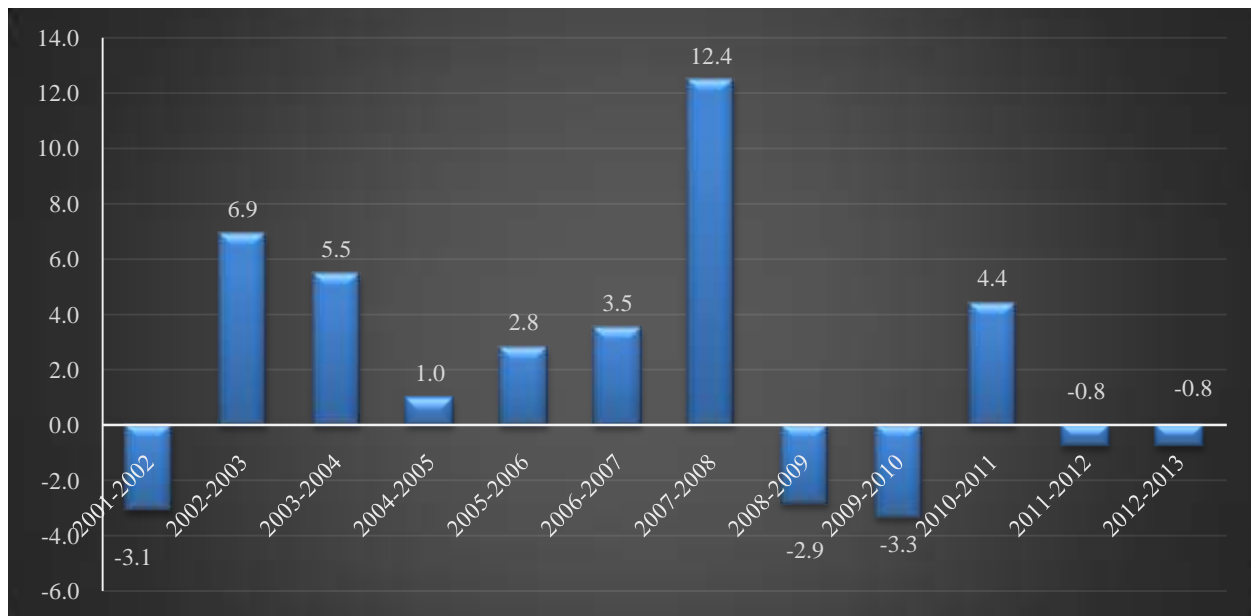


Figure 1: Change in Kenya's exports of Cut flowers (value in Thousand USD)

Further results of MS, CC, MD and CE are presented in Table 1. Competitiveness effect reveals that only for the 2008-2009 it was positive. The rest of the years when CE is negative, indicates that there has been a reduction in the competitiveness of Kenyan cut flowers. Thus, we may conclude that despite being an important horticultural export product, its growth have not kept pace with the growth rate experienced by the world export of cut flowers. Out of the 13 years under study, there is a positive market share effect for

12 years. In the periods 2001-2002, 2012-2013 and 2013-2014 the values for the market share, commodity composition and market distribution were positive for cut flower export products from Kenya depicting that export growth in these periods is due to increasing market share with more focus on faster growing markets as well as commodities. Similar results were found by Thomas and Sheikh (2012) in their study of the exports of cereal and cereal preparations of India using CMS analysis.

Table 1: Constant Market Share Analysis for cut flower export products

Year	$\Delta Y$	MS	CC	MD	CE
2001-2002	-31072	636605.3685	728152.6116	454938.5134	-1765595
2002-2003	69135	1647499.356	324364.9104	-913365.0487	-901972
2003-2004	54534	3830325.476	-2937450.512	1427225.878	-2206008
2004-2005	9848	3201774.204	-1293324.541	-1113339	-677590
2005-2006	28191	3775534.283	1361220.72	-3753433.03	-1060641
2006-2007	34940	4191888.24	-2920996.289	1228066.139	-2380354
2007-2008	124404	5003869.5	-2474406.847	-3610.683473	-2226910
2008-2009	-28533	-10217994.33	8065109.779	-9717547.252	11698021
2009-2010	-33300	9411878.734	-7926144.771	9447801.858	-10847595
2010-2011	44103	7928861.188	-105004.3108	-4474544.119	-2478237
2011-2012	-7829.5	720280.6215	-1391502.515	-3001445.322	3582271
2012-2013	-7829.5	1062433.661	1654895.321	301515.3976	-3026670
2013-2014		5762.216143	1126893.942	2569206.912	-3855307

Note:  $\Delta Y$ - Absolute values of change in exports, MS- Market Share Effect, CC- commodity composition effect, MD- market distribution effect, CE – competitiveness effect

Source: author's computation based on data collected from ITC Trade map based on statistics from the Commodity Trade Statistics (COMTRADE).

## V. CONCLUSIONS

The export growth of cut flower export products from Kenya to the EU is largely due to market share effect. The inadequacy of export growth is due to the commodity composition effect as the market distribution effect reveals that the cut flower export products from Kenya did not gain much with respect to the growing world markets. The values of the competitiveness effect were negative for most of the years under study and this lack of competitiveness is mainly due to both the commodity composition and the market distribution effects. It is fundamental that Kenya focuses on exports of cut flower products and the compliance of Non-tariff barriers such as the sanitary and phyto-sanitary standards. From a policy perspective, Kenya needs to focus on streamlining production and market (export) oriented policies that are favourable to both producers and exporters.

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APPENDICES

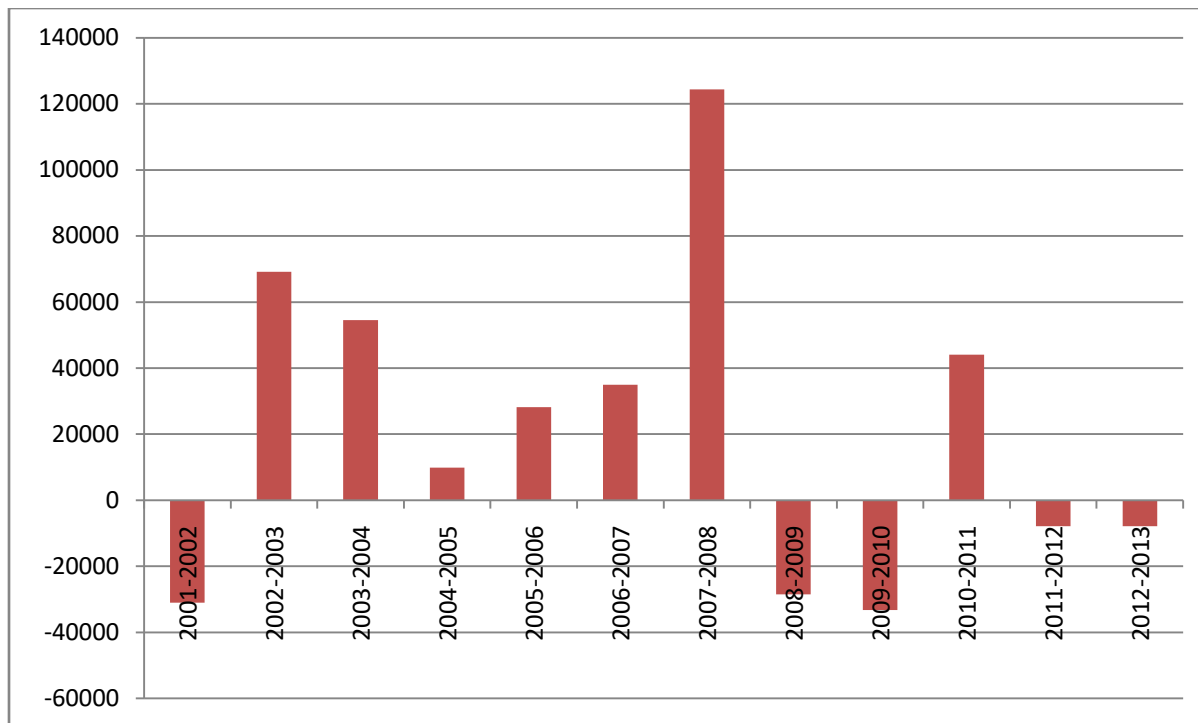


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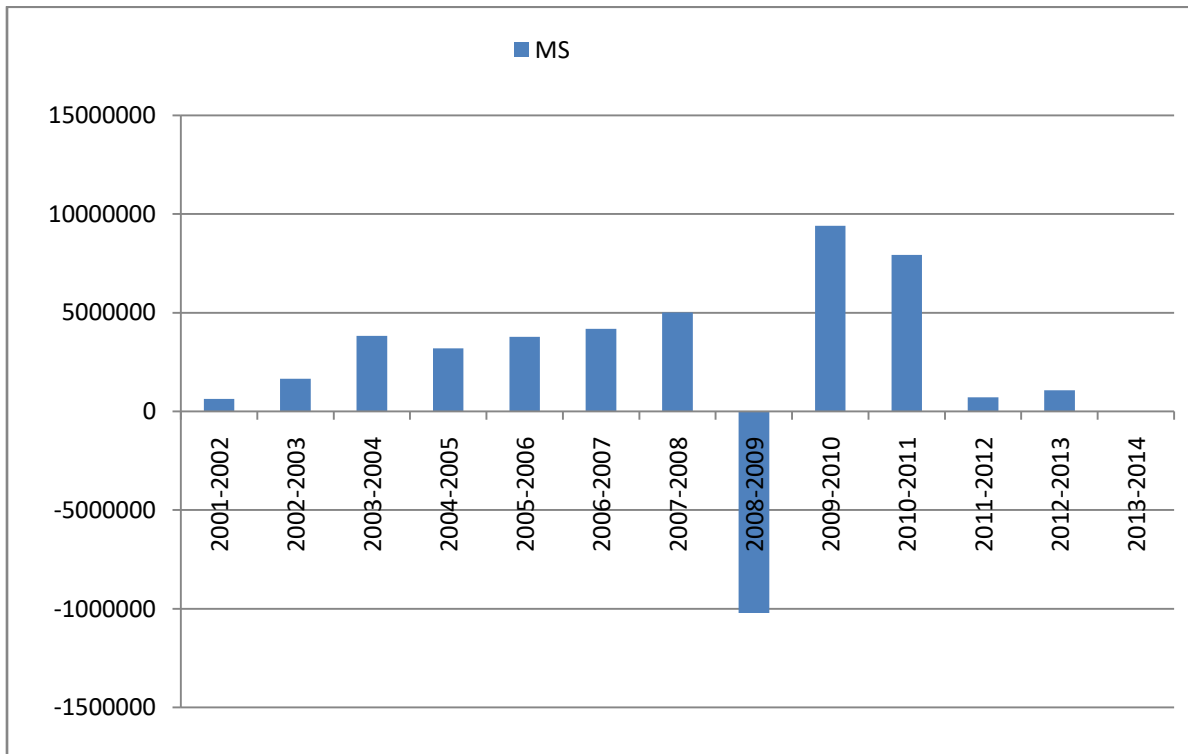


Figure 1: Market share effect for cut flower export products

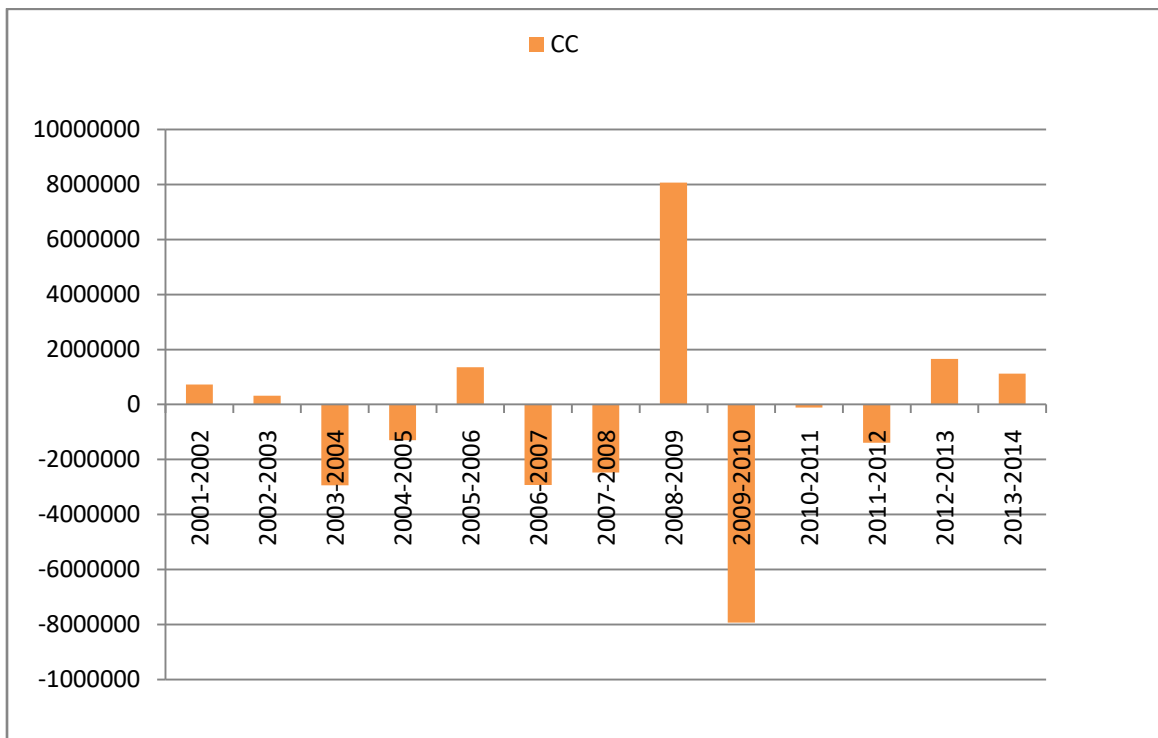


Figure 2: Commodity Composition effect for cut flower export products

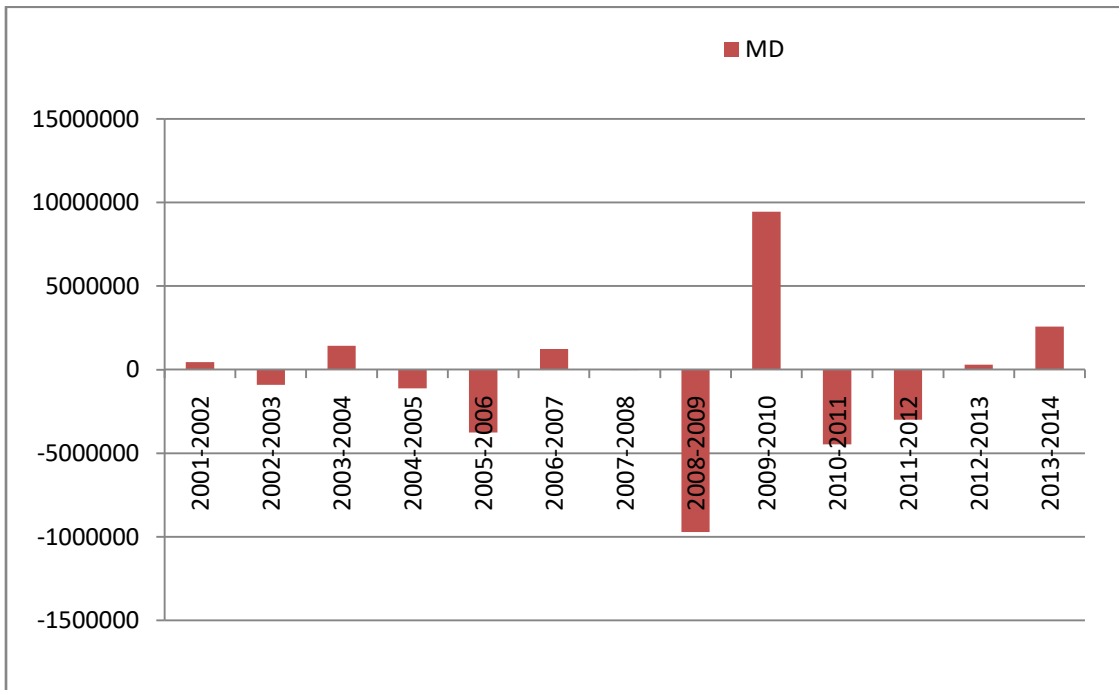


Figure 3:Market Distribution effect for cut flower export products

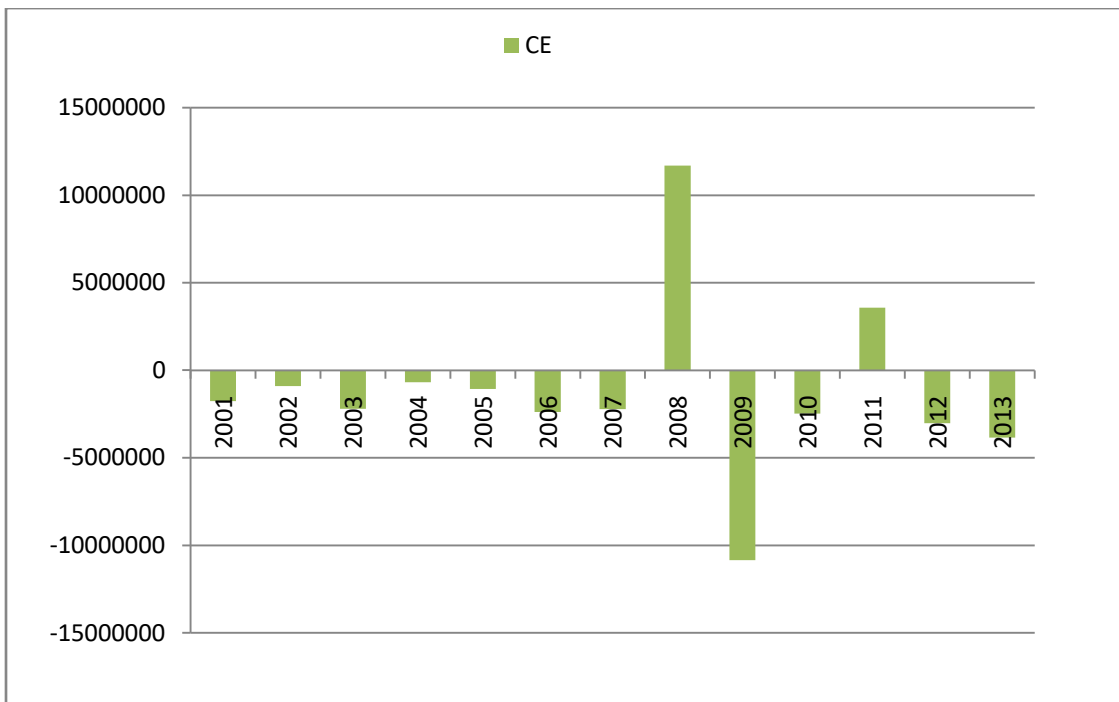


Figure 4:Competitiveness effect for cut flower export products