
Evaluation of Afghanistan Export Performance: A Constant-Market-Share Analysis Approach

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Abstract

This study uses Constant-Market-Share (CMS) analysis technique to examine Afghanistan's export performance focusing on dynamic aspects of the pattern of the trade specialization, feasibility and relevance of export market share in improving Afghanistan's export competitiveness and the role of structural factors that lead to concentrating exports on commodities and markets. The recently developed UNIDO method has been applied to Afghanistan's merchandise exports during the 2005-2017 periods. WITS database has been utilized, covering 5 countries (Pakistan, China, India, Iran and United Arab Emirates) and 10 products defined at the SITC Rev 3 -digit level. The results show that the increase in Afghanistan's world export market share was partially caused by the relatively favorable competitiveness effect. The remaining effects of almost all structural static and dynamic factors were positive but some had only a limited influence. Afghanistan was less successful in directing its geographic specialization pattern toward those regions with fast growing demand, in comparison with those commodities. Although Afghanistan has enjoyed some flexibility and was somewhat dynamically efficient in changing its international specialization pattern in accordance with world import demand, its exports remained concentrated in low and medium sectors.

Key words: Export Performance, Constant-Market-Shares (CMS) Analysis, Competitiveness, Afghanistan.

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Introduction

The globalization process across economies has led to major trends in economic growth and thus crisscrossed different economic establishments over the past decades. Arguing against globalization is like arguing against the law of gravity as none of the economies in the world is left untouched. The instituting of World Trade Organization (WTO) and increasing reputation of Regional Trading Agreements (RTAs) has provided the podium for the free movement of goods and services among countries based on the free trade principle and altered the world into a global village. The increasing Asian international production networks (IPNs) have a noteworthy influence on merchandise trade patterns and regional integration among Asian economies. Among the Asian economies, Afghanistan is no exception to rule now as the economy has transformed as it became the 164th member of WTO on 29th July, 2016. In order to further deepen the presence and be present on world economic radar, Afghanistan became the 8th member of SAARC in 2008 at the 14th summit of SAARC held in New Delhi, India. By becoming member of SAARC, Afghanistan enjoys the Free Trade Agreement namely SAFTA. Afghanistan's active involvement in multilateral and regional trading agreements and altering pattern of international production linkages has provided many prospects as well as challenges for Afghanistan's external sector in general and for export sector in particular.

Over the past two decades, exporting has been one of the fastest growing economic activities, consistently exceeding the rate of growth in world economic output. Growing liberalization, integration and competition in world economies since the post-war period have been responsible for the increasing engagement of firms in foreign exporting activities. In fact, exporting is a crucial business activity for nations' economic health, as it significantly contributes to employment, trade balance, economic growth, and higher standard of living (Czinkota & Ronkainen, 1998).

In the economic literature, exports have special importance as they are considered building block for an economy contributing to its stability in economic aspect, coupled with long term growth and development. The starring role of exports has been furthermore amplified in the modern perspective of ever amassed global competition. The export latency or export performance is fundamental to have positive economic effects on any economy. Export performance reflects an economy's specific behaviour in leveraging its resources and capabilities in an international context at a given point of time. Export performance is regarded as one of the key indicators of the success of an economy's export operations, and as such, it

has been an extensively studied phenomenon. A country's export performance is influenced by variety of domestic (internal supply) as well as international (external demand) factors. These factors are: (1) Growth of world demand; (2) Changes in the commodity composition of exports; (3) Changes in market distribution of exports; (4) Changes in competitiveness of exports which further depend on a number of factors such as export price, prices of related commodities, trade policies of country, non-price factors such as quality of products, non-chemical elements, etc; and (5) The level of foreign incomes and income elasticity of foreigner's demand for goods entering the export trade of the country (Nayyar, 1976).

According to European Commission (2017) the competitiveness of a country's exports depends on a number of factors including relative prices, the dynamism of export markets and non-price. The factors are divided into two categories namely Price Competitiveness including (Relative prices and costs, share of export into dynamic markets in terms of geography and products) and Non-Price Competitiveness including (quality and quality improvement, taste, product specialization and diversification, infrastructure, linkage to global value chains and institutional factors e.g. EMU membership). Afghanistan's merchandise export witnessed an exponential increase in export earnings in 2008 from 3021.14 Mn \$ to 3277.90 Mn \$ in 2016, and share in global exports also increased from 0.003 per cent in 2008 to 0.004 per cent in 2016. While Afghanistan's exports of goods and services (per cent of GDP) in 2008 decreased from 10 per cent to 7 per cent in 2016 but in case of imports the gap increased from 45 per cent in 2008 to 49 per cent in 2016 as per estimates from WITS Report, 2016.

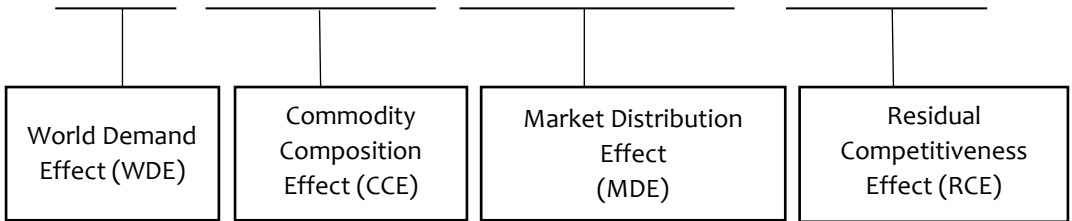
Afghanistan's export performance has never been studied as there is scanty literature in this context. Since 2008, exports exhibited a distinct improvement and the pattern of exports realized a steady, albeit slow shift from agricultural products, low technology intensive exports to medium-low technology intensive exports in Afghanistan. Although this slight export performance from 2008 stresses on the evaluation of its various faces such as diversification, instability, elasticity, competitiveness, etc. Therefore, in the light of improvement in export growth and changing internal and external economic environment, this article investigates the major sources of Afghanistan's exports performance during period (2008–2016) by using constant market share (CMS) model. The article is organized into six sections beginning with an introduction in the first section followed by description of CMS model, Afghanistan scenario and research objectives. The second section presents a brief review of literature; the third section deals with the methodology and data used in the analysis and the fourth

section presents the results and discussions. Lastly, concluding remarks and policy implications are presented in the fifth section.

1.1 Constant Market Share Model (CMS) of Export Performance

The CMS model is very popular method of measuring the export performance of a particular country. This model has been firstly used by Tyszynsky (1951) and then by Baldwin (1958), Spiegeeglas (1959) and Nayar (1967). The model has been improved by Leamer and Stern (1970, 2006). The CMS model allows us to decompose the export growth of a country between any two points of time into four effects. These effects are the World Demand Effect (WDE), the Commodity Composition Effect (CCE), the Market Distribution Effect (MDE) and the Residual Competitiveness Effect (RDE) which encompass both price and non-price competitiveness. It explains the divergence between actual export growth and export growth computed on the assumption that each export flow grows in accordance with the import market, that is, the focus country's share of each commodity in each market remains constant. Exports are differentiated on the basis of the commodities and markets. Export flows, both commodity-wise and market-wise are treated as independent from each other. The following is the main equation of the CMS model in terms of actual export growth.

$$\Delta X = \sum_{i=1}^n r X_i + \sum_{i=1}^n r_i X_i - \sum_{i=1}^n r X_i + \sum_{i=1}^n \sum_{j=1}^n r_{ij} X_{ij} - \sum_{i=1}^n r_i X_i + \Delta X - \sum_{i=1}^n \sum_{j=1}^n r_{ij} X_{ij}$$



Where,

ΔX = actual change in country's exports,

r = percentage increase in total world (excluding Afghanistan) exports from period 1 to period 2,

r_i = percentage increase in world (excluding Afghanistan) exports of commodity i from period 1 to period 2,

r_{ij} = percentage increase in world (excluding Afghanistan) exports of commodity i to region j from period 1 to period 2,

X_i = Afghanistan's exports of commodity i to the rest of the world in period 1,

X_{ij} = Afghanistan's exports of commodity i to region j in period 1.

World Demand Effect: The overall growth in the world exports is termed as 'World Demand Effect (WDE)'. If stated in other words, WDE

estimates the level of change in the exports that the concerned country maintained its share in the world market.

Commodity Composition Effect: CCE captures the effect of the differential export growth of the products in the export basket of the world in relation to the export of the focus country. A positive value for this term indicates that focus country's exports during the specific period were concentrated in commodities for which the growth rates of world exports (r_i) were higher than the world average for all commodities (r). A negative value indicates just the opposite.

Market Distribution Effect: MDE is interpreted in the same manner as the CCE: a positive value indicates that focus country's exports during the specific period were directed to the markets (i.e. regions), which were growing faster than the world average and a negative value indicates vice versa.

Residual Competitiveness Effect: RCE reflects the difference between the actual export growth of focus country (DX) and the growth that would have occurred if the country maintained its export share of each commodity to each market ($\sum_i \sum_j r_{ij} X_{ij}$). A positive residual reflects the general improvement in the competitiveness of the exporting country due to the various price and non-price factors.

The CMS model suffers from certain lacunae as it cannot institute any cause and effect relationship on its own. It cannot decompose the competitiveness effect into price and non-price components. Thus, the model helps us in analyzing the pattern and structure of a country's exports as compared to world pattern and structure of trade. It throws light on the adaptability of a country's production structure according to the changed world markets.

1.2 Afghanistan's Scenario

Afghanistan's economy has experienced increasing openness during the last two decades as a result of the adoption of several structural adjustment programs, concluding trade agreements and the accession to the WTO in 2016. Two main consequences have been emerged; the substantial changes in export growth, which were positively reflected on its economic growth and world export market share, and the spectacular increases in imports. But, in spite of the huge improvement in exports it was not sufficient to reduce the problem of Afghanistan's chronic trade deficit. Hence, policy-makers are facing this serious problem as well as the challenge of enhancing economic growth.

Economic growth is determined by both the supply-side factors and effective demand. It is argued that trade liberalization raises the propensity to import, and in the existence of productivity gaps, the economy may face low-growth traps. On the other hand, export expansion is necessary to induce economic growth, but it may be unable to generate adequate growth and stimulate the structural changes that sustain this growth; as it sometimes fails to spread innovations from export sectors to traditional ones. So, structural changes in the international specialization pattern may facilitate the diffusion of knowledge among different sectors of the economy, and participate in breaking the growth traps.

Although trade performance of countries is often analyzed in a macroeconomic framework, in many cases macroeconomic models are insufficient to explain all the aspects and factors of trade performance, particularly the structural factors defining foreign trade distribution by product or by country (UNIDO, 2010). Since export performance is an important determinant of demand and supply in the short and the long-run, respectively, factors influencing this performance should be quantified and analyzed. Accordingly, the in-depth analysis of Afghanistan's major determinants of export performance and the identification of economic potentials for the next steps are the main objectives of this research. We will investigate whether the expansion in export market shares is due to improvement in Afghanistan's competitiveness, or to the favorable changes in the structural factors that lead to concentrating exports on commodities and markets, which have the fastest growing demand.

1.3 Research Objectives

The study aims at exploring the answers to the following research objectives.

1. To analyse the dynamic aspects of the pattern of the trade specialization.
2. To evaluate the feasibility and relevance of export market share in improving Afghanistan's export competitiveness.
3. To evaluate the role of structural factors that lead to concentrating exports on commodities and markets, which have the fastest growing demand in escalating Afghanistan's export competitiveness.

2 Review of Literature

The export performance of Afghanistan by employing CMS model has not been analyzed by any researcher till date. However, in other country contexts there have been so many studies done and for the same they have been used as the foundation of this study. In international trade, export

growth analysis has been performed by many social scientists through various methodologies. The technique of constant market share analysis was first invented and used by H. Tyszynski in his article “World Trade in Manufactured Commodities, 1899-1950” (1951). According to him due to industrialization the demand for manufactured exports increases. After that many studies have been conducted to develop this methodology. In 1970 Leamer and Stern developed and modified this technique, Jepma (1986) modified it further. Finicelli, A. et al. (2012) examined the evolution of export shares of industrial and emerging market economies at disaggregated level for 1985-2003. The study quantified the contribution of the geographical and sectoral specialization through the constant market share analysis approach. In comparison to emerging countries with the industrial countries, the study found out that emerging economies have strong export growth as compared to the industrial countries. The study also shows that the among the emerging economies, China has a strong export growth, increasing its market shares across sectors and destinations due to its competitiveness, while industrial countries benefited from specialization in fast-growing sectors (high-tech) or destinations (Asia). Cheptea. et al. (2012) used Constant Market Share Analysis by incorporating the econometric shift-share decomposition of export growth. They broke the export growth of the European countries into geographical composition, a sectoral composition and competitiveness. The study shows that European countries have lost less market share in high-technology products in developing countries as compared with the developed countries. The study also revealed that in 1995 to 2009 the EU-27 survived the competition from emerging countries better than the US and Japan. Jiménez, N. and Martín, E. (2010) argued that the change in the country’s export market share is influenced by the actual movement in price and non-price-competitiveness and composition of exports (both geographically and by products). They used Constant Market Share Analysis (CMS) to investigate the changes in the market shares of the euro area and its member countries for the period of 1994-2007. The author identified that the geographical composition neutralized the negative effects due to loss of competitiveness, and euro countries were badly affected by the lower relative specialization in high-technology products. Also the high intra-euro trade positively supports exports of the euro area. Skriner. E (2009) studied Competitiveness and Specialization of the Austrian Export Sector by using the transform version of the Constant market share analysis methodology from the static approach to a dynamic system through time series modeling. According to the study, “even if a country maintains its share of every product in every market, it still can have a decrease in its aggregate market share if it exports

to markets that grow more slowly than the world average and/or if it exports products for which demand is growing more slowly than average.” The study also shows that for high export growth, the country should focus (to export) on most dynamic markets and products in world trade. Amador, J. *Et al* (2008) analyzed the evolution of Portuguese market shares in world exports over the 1968-2006 period, using the constant market share methodology. The study compared Portuguese market shares with other South European countries and Ireland and explores the impact of product and geographical composition on export growth. The author argues that changes in a country (say Portugal) market share in world exports depend on the fourth major factor, described as (i) Domestic and external macroeconomic developments (impact on relative price/cost competitiveness of exports), (ii) Long term structural factors (productive factors, technology etc.) (iii) Geography and cultural linkages with different trade partners, (iv) dynamics of international trade flows. Fredrik *et. al* (2007) investigate the competitiveness of ten Mediterranean countries with respect to fresh fruit and vegetables by using constant market share analysis (Leamer and Stern;1970) for the period 1993-2003. The study used the constant market share analysis with two bases (world exports and European exports). The authors stated that in general there is no major difference between using of world or the European Union as the base in the Constant Market Share Analysis, but the results are affected by the choice of destination markets. The study also compared revealed comparative advantage results with CMS analysis results (world base) and concludes that high and positive RCA values do not necessarily correspond to a positive competitiveness effect. The results generally show that many of the Mediterranean countries did not perform up to their potential, while the competitiveness of the investigated countries has deteriorated over the period, and the positive impact of market distribution effect increases export growth.

Bhagwati and Srinivasan (1976) have applied this method to assess the export performance of India during the period 1951–1960. They concluded that the loss of export earnings occurred due to the failure of the country to maintain export share. Biswas (1983), using this method, has found that India’s share in world exports declined due to negative structural and competitiveness effects during the period 1959–1968. Tiwari (1986) concluded that exports from India exhibited positive competitiveness effects during 1970–1977. Improved domestic supply position was primarily responsible for this. Roy (1991) examined some of the striking trends in Bangladesh exports with respect to its composition and destinations. It then analyses Bangladesh export performance by Constant Market Share

(CMS) model attributable to commodity composition effect, market distribution effect, competitiveness effect and world trade effect. The paper underlines that the competitiveness effect of Bangladesh exports substantially improves in the period 1980-87 as compared with the period 1976-81 although this could not turn the negative market effect into positive. Over the whole period 1976-87, the signs of the competitiveness effects are positive for both manufactures and agricultural products exports. The commodity composition effect due to exports of manufactures over the three periods are positive while that for the agricultural products is negative in all the periods considered. In the area of market distribution effect, the exports of agricultural products have shown relatively better performance compared with manufactured goods exports. Overall, Bangladesh exports are competitive vis-a-vis the rest of the world.

3 Methodology and Data

Afghanistan's export performance has been examined by using the CMS model. Particularly, the present study is based on the methodology and scheme of analysis used by Veeramani (2007). Potential increase in exports is calculated by driving the formula from its definition that 'an increase in value of exports during a specified period, given focus country's constant share in world exports' (see appendix Table A1 for details). The analysis is made for the period, of 13 years from 2005 to 2017. Data taken from Uncomtrade-WITS, United Nations and Direction of trade statistics has been used for the analysis. The analysis is undertaken at aggregate level (i.e., at digit 1) of SITC Revision-3 and further extended to the level of commodities and 5 major export destinations of Afghanistan, which constitute more than 74 per cent share of Afghanistan's exports.

3.1 Constant-Market-Shares (CMS) Analysis: Methodology and Data Considerations

Constant-Market-Shares Analysis, which is a frequently used technique in examining export performance, is a statistical method that enables the ex-post breakdown of changes in total exports or aggregate market share of a certain country over time. This method was applied for the first time to international trade flows by Tyszynski (1951), and was reviewed by Leamer and Stern (1970). In its traditional formulation, actual export growth is separated into a world growth, in addition to commodity composition, market distribution and competitive effects. The world growth effect is assumed to equal what a country's export growth would have been if it had just maintained its share of total world exports. The commodity (market) effect accounts for any additional growth which occurred because

the export structure of the country in question was concentrated on commodities (importing region) with relatively rapidly growing demand. The competitive effect (the residual) accounts for the growth which arises from changing export shares.

Despite the conceptual simplicity of this method, its traditional version has been criticized on theoretical and empirical grounds; hence, it has been progressively refined and reformed. Richardson (1971_a, 1971_b) could make an important contribution towards its accounting nature, and Milana (1988) developed an index number theory in his reformulation of this method. Merkies and Van der Meer (1988) found a theoretical foundation for this method, by relating it to a two-stage homothetic Armington (1969) demand model. Some recent influential studies that consider most of the empirical improvements proposed in the literature include the work of Simonis (2000), Foresti (2004) and ECB (2005).

3.2 Components of CMS Equations

The CMS equations of the UNIDO method are presented in the following sections where the total effect of the increase in export market share is decomposed into seven components grouped as follows:

The *World Demand Effect* (WDE) which is the weighted average of the changes of an exporting country's market shares in all the product/country segments into which the import market is subdivided. This effect is an ex-post indicator of the competitive strength of a country's products, which considers price and non-price factors.

The *Commodity structure effect* (CSE) which measures how an exporting country's aggregate market share is influenced by the product composition of the destination market import demand.

The *Geographic structure effect* (GSE) is a measure of the aggregate market share effect resulting from the correlation between a country's geographic pattern of specialization and changes in the world import demand's distribution by country.

The *structural interaction effect* (SIE) shows how changes in the geographic and commodity structure of destination market imports are related to each other. It is constituted of five components, which are mainly caused by the interaction among different weights used in the formula.

The last three elements, taken as a whole, are the *adaptation effects* (AE), which are of a dynamic nature. The *commodity adaptation effect* (CAE) and the *geographic adaptation effect* (GAE) measure the flexibility of the country's "commodity" and "geographic distribution" specialization patterns according to the trends of world demand. Similar to SIE, the

residual adaptation effect (RAE), with its five interaction elements, captures the correlation among the changes of disaggregated market shares, structural diversification indexes and a combination of geographic and product weights.

3.3 The Data Set

The data set used in this study is mainly based on the World Bank specialized trade database named as World Integrated Trade Solution (WITS), which was developed by the World Bank, in close collaboration and consultation with several international organizations; specifically, external trade data have been sourced from the UN COMTRADE database.

The data used in this study cover 5 countries which basically mean that each and every country that is a major destination for Afghanistan's exports is included namely Pakistan, China, India, Iran and United Arab Emirates. While trade flows data are detailed at the two-digit SITC Revision 3 classification level constituting 10 sectors; such detailed data provide us with the required information to analyze the different effects of the change in Afghanistan's export market share.

The time span for the data selected is from 2005 up to 2017; the year 2017 being the last year for which international data were available, in addition to other four sub-periods, specifically (2005- 2008), (2009-2011), (2012-2014) and (2015- 2017). These periods are suitable because some important trade facilitating effects took place between periods. Afghanistan became a member of SAARC in 2008, joined the WTO in 2016, and signed the SAFTA with the SAARC in 2014, while the impact of the global financial crises that started in 2008 had a negative impact on Afghanistan's exports (as appeared in 2009).

Due to the lack of certain information, import figures that are used in this study are expressed as mirrored exports; i.e. imports of a certain country from the world are expressed as exports of the world to that specific country. This, indeed, has added an advantage for the calculation in this study; since the base for all numbers is the same, and the problem of differences between exports which are normally given as F.O.B and imports which are normally given as C.I.F, doesn't exist at all. Exports used are gross merchandise exports, expressed in US dollars, at current prices. These prices are preferred to constant prices in such studies, because data in constant prices at the disaggregated level are often unavailable or unreliable. Also, data in constant prices may be required when the aim is to assess the effect of price competitiveness on the volume of exports. But in the studies utilizing CMS technique, the competitiveness effect captures-

addition to price- other qualitative elements that are reflected on current prices (UNIDO, 2003).

4 Data Analysis and Interpretation

4.1 Overall Assessment

The results for the entire period and sub-periods are presented in Table 1. Effects are expressed in relative terms as a percentage of the market share in the initial year. During the entire period 2005-2017, Afghanistan's global absolute export market share has increased from 0.0259 percent in 1995 to 0.0521 percent in 2017. This performance was a reflection of the growth rate of Afghanistan's exports (measured in current US dollars), which increased at an average annual rate of 20.34 percent. In real terms the average annual growth rate of exports during 2005-2017 was 4 percent, against 2 percent in current prices (Exports in current US dollars were converted to real terms using US\$ - based price index of exports, computed by the researcher on the basis of data presented in Central Bank of Afghanistan, Monthly Statistical Bulletin, different issues). This indicates that the high increase in the nominal value of exports is due to the rise in both quantities and prices. Indeed, the average rise in the price index of exports reached 93 percentage points, in comparison with 108 percentage points for the quantity index. Analysis of market share changes expressed in relative terms indicates that Afghanistan's market share during the entire period has increased at 10.5 percent; this has been the result of the pronounced increases during the second and third periods (i.e. 2005-2008 and 2012-2014) which were more than enough to compensate for the negative growth in the first and third periods.

Table 1: Effects of Relative Constant-Market-Shares Analysis of Afghanistan's Merchandise exports: 2005-2017 (expressed as a percentage of initial market share)

Period	WDE		Average Relative Change (%)	CCE			MDE			RCE		
	Initial Year (%)	Final Year (%)		(CE)	(CSE)	(GSE)	(SIE)	(CAE)	(GAE)	(RAE)		
2005 -2008	0.0259	0.0186	-9.84	-1.50	-5.47	1.18	18.17	1.50	15.16	-38.88		
2009 -2011	0.0186	0.0445	25.44	32.25	1.10	7.52	23.20	0.37	4.35	-43.35		
2012 -2014	0.0445	0.0543	7.29	14.65	2.30	1.90	13.42	-1.09	-4.29	-19.60		
2015-2017	0.0259	0.0521	10.49	16.21	0.06	4.83	20.88	0.18	3.35	-35.02		

Source: Own calculations based on WITS database.

Note: WDE is World Demand Effect, CCE refers to Commodity Composition Effect, MDE denotes Market Distribution Effect, RCE refers to Residual Competitiveness

Effect, CE refers to Competitiveness Effect, CSE is Commodity Structure Effect, GSE is Geographic Structure Effect, SIE is Structural Interaction Effect, CAE is Commodity Adaptation Effect, GAE is Geographic Adaptation Effect and RAE is Residual Adaptation Effect

The average rise in this share during the second period was high and reached 25.4 percent. It was mainly pushed by the remarkable increase in this share in 2009-2011, owing to the considerable expansion in Afghanistan's exports value compared to the rest trading region. Although the change of this share was also good in the third period (2012-2014), it was less important than the second one. Nevertheless, the year 2008 in particular witnessed a higher rise in Afghanistan's exports value reaching 12 percent compared to just 33 percent for the SAARC as Afghanistan became the full-fledged member in 2008. As for the first and the fourth periods, the change was negative. The drop in the market share in the first period has resulted from the unfavorable performance in 2005. However, in the last period the deterioration in this share was limited (-1.8 percent) and was attributed to the year 2010. The global financial and economic crisis, which started around 2008, had a negative impact on both Afghanistan and world exports growth in 2009 (-18 percent for the former and -23 percent for the latter); thus, Afghanistan's share increased. But, in 2010, Afghanistan's exports expanded at a rate of 10 percent, while world's exports grew at a higher rate (22 percent). Hence, Afghanistan's market share dropped by 9.5 percentage points.

Afghanistan's good export performance in most years of the last decade, especially in 2010, 2013, 2016 and 2017 is due to both the favorable international import demand and Afghanistan's relatively open economic and trade strategy adopted. However, in the last few years, the global and economic crisis has a negative impact on international demand and on Afghanistan as well. Afghanistan's economic activities witnessed a decline in their performance. GDP growth rate became 2.3 percent and 3.1 percent in 2009 and 2010 respectively against an average of 8 percent during 2006-2008.

4.2 Analysis of CMS by Factor

The changes in Afghanistan's aggregate export market share (total effect) are decomposed into competitiveness and composition effects. The competitiveness effect in addition to the six elements constituting the composition effect was positive except the structural adaptation effect (SAE).

It is evident that the competitiveness effect for the entire period was favorable, but not as high as the structure effect, owing to the negative

signs of the first and the last periods. As for the structure commodity, geographic and interaction effects combined, they were positive for each period, particularly during the last one. This was mainly caused by the high role played by the interaction effect, and to some extent the geographic factors.

The adaptation effects combined (commodity, geographic and residual) for the entire period and also sub-periods were negative and large. The small positive signs of the commodity and geographic adaptation effects could not overcome the high negative residual effect. An important feature of these results, which is similar to some applications of CMS analysis, is that the largest composition effects are those related to the interaction between the commodity and geographic distribution of the world trade, namely; the structural interaction effect (SIE), and the residual adaptation effect (RAE). In this study they happen to be larger than the corresponding “non-mixed” commodity and geographic effects. The large size of these effects may be caused by the extremely high disaggregation level of the analysis, in addition to the very small share of Afghanistan in world’s exports.

To highlight the usefulness of CMS analysis in understanding export performance, the “true” competitive performance has been computed for Afghanistan and compared with the yearly evolution of its aggregate market share. CE has been added cumulatively to the aggregate market share in the starting year 1998. Hence, it can determine what could have been Afghanistan’s aggregate export market share, assuming that world import distribution by commodity and destination market had remained unchanged. The general trend for both aggregate export market shares and competitiveness performance was rising, but competitive performance was better than the average export market share. The gap is because of the negative composition effects. Against this problem, Afghanistan’s share of world exports would have been even larger, reaching around 0.09 per cent. However, this gap has disappeared in 2005 because the composition effects were neutral, so that aggregate market share and competitive performance reached the same level. Afterwards, aggregate market share sustained its level until 2008, but competitive performance has been rising steadily until 2011, when both of them declined after that. The relatively strong upward trend of Afghanistan’s competitive performance has been slightly diminished by the negative composition effects (specifically the RAE). The positive structural factors combined with the positive commodity and geographic adaptation effects were not enough to compensate for the negative high residual adaptation effect.

a) Competitiveness Effect

As mentioned earlier, Afghanistan's remarkable export performance in the period under review was mainly caused by the improvement in both competitiveness and geographic factors. Generally speaking, there is an obvious relation between market shares and competitiveness. In fact, export market share itself is one of the measures used to assess export competitiveness of countries. The results of this study confirm that the change in Afghanistan's export market share was strongly influenced by competitiveness factors, as their sign go in line with each other. Indeed, the signs for both the competitiveness effect and the change in the market share were negative in the first and the fourth periods, while they were positive for each of the other periods. For the entire period the overall competitiveness effect was positive and relatively high, indicating the important role of this factor in expanding Afghanistan's exports and export market shares. For sub-periods, competitiveness highest favorable effect was recorded during 2005-2008, followed by that of 2009-2011; and particularly in 2014-2016, the negative effects were registered before 2005 and in the period 2012-2014. Hence, the changes in market shares are a reflection of more than changes in structural factors and price competitiveness. The results are confirmed by those of World Competitiveness Reports (WCRs) published by World Economic Forum. According to WCRs, Afghanistan's rank was ranked 89 out of 134 countries, 69 out of 133, 65 out of 179 and 58 out of 140 for the years 2010 through 2016 in the same order. The improvement in Afghanistan's position during 2010 and 2009 coincides with the movement in the REER and the results of this study. The unfavorable competitiveness effect in 2010 matches the rise in REER and the large drop in Afghanistan competitiveness rank (by 23 ranks).

b) Commodity Structure Effect (CSE)

The commodity structure effect (CSE) shows to what degree the behavior of a country's market share is influenced by the change in product composition of the destination market import demand. The CSE for Afghanistan, computed by the CMS analysis method was positive, but very small, during the entire observed period (see Table 1). The effect in the sub-period 2005-2008 was somewhat high to more than offset the negative effects of the first and last periods. To interpret this result, the evolution of world import structure by commodity must be looked at. The trend of the relative importance of "mineral fuels", "crude materials, except fuels", "chemicals" and to a lesser extent "food and live animals" is rising. The most obvious change is in the mining sector, particularly mineral fuels, as their share in world's trade has dramatically expanded.

In order to thoroughly examine the role of Afghanistan’s commodity structure in expanding its export market share, we calculated the *Revealed Comparative Advantage* (RCA) for main groups of Afghanistan’s exports as presented in table 2. The highest comparative advantages are in the groups of “chemical products”, “miscellaneous manufactures”, “food and live animal” and “crude materials except fuel”. More details are presented in Table 2.

Table 2: Afghanistan’s Main Export Revealed Comparative Advantages (RCA)

Name	2005	2008	2010	2013	2015	2016	2017
Crude fertilizers	35.8	15.2	18.5	42.0	38.2	38.6	43.9
Crude fertilizer/mineral	100.7	43.4	54.2	20.1	29.1	31.4	27.5
Vegetables and fruits	2.9	7.5	5.6	7.1	5.9	5.9	6.7
Inorganic chemicals	5.5	4.9	8.4	5.9	8.7	6.2	6.7
Apparel/clothing/access	1.0	2.9	8.8	8.0	5.7	5.1	5.3
Live animals except fish	20.7	1.3	2.9	0.3	1.0	3.6	4.5
Misc. food products	0.8	1.8	2.7	2.8	3.0	2.8	3.8
Low Pharmaceutical products	5.8	5.1	2.6	2.9	2.6	2.3	3.1

Source: Own calculations based on WITS Database.

Note: Export Revealed Comparative Advantage (RCA) for a particular country = (The country’s share in world exports for industry A / The country’s share in world exports for all industries).

The computed RCAs at the commodity level show that the highest comparative advantages are in resource-based commodities (manufactured fertilizers and crude fertilizers). Also Afghanistan enjoys a comparative advantage in “inorganic chemicals”, “vegetables and fruits”, “clothing” and “pharmaceuticals”. Now interpretation is possible from the result obtained from this study regarding SCE through analyzing the interaction between Afghanistan’s specialization pattern and changes in the commodity structure of world demand. The positive sign of the CSE means that: Afghanistan enjoys comparative advantages in commodities whose world import demand had steadily grown during the concerned period such as pharmaceuticals, or world demand has been stable but increased in the last few years such as “manufactured fertilizers”, “inorganic chemicals” and “minerals”. However, Afghanistan’s comparative advantages in clothes and, to some extent, vegetables were in commodities whose world demand is decreasing over the last decade, or declining in most years except the last few years. It is clear from this analysis that chemicals group had the most important role in expanding Afghanistan’s market share, especially during 2005-2011 and 2012-2017. It should be noted that destination countries for Afghanistan raw materials and intermediate goods are mainly Asian and

Arab countries (particularly Asian countries). However, some manufacturing hubs are also important, such as India and China in the case of fertilizers. Pakistan, Iran and UAE are absorbing a relatively large share of other intermediate goods.

However, the smallness of the positive effect for Afghanistan's export commodity structure may be explained as follows: first, only some commodities enjoy a specialization pattern that corresponds to the world's commodity structure trends. Second, the computed structural interaction effect SIE was high. This effect considers the correlation between commodity and geographic structure of certain commodities to certain destinations, such as exports of manufactured fertilizers to India. This means that the effects of such products are excluded from this specific non-mixed commodity structure effect, and included in the SIE.

c) Commodity Structure Effect by Technology Level

We can also interpret the commodity structure effect using another classification criterion based on the technological intensity of each product. The evolution of world import structure by this criterion is displayed in Figure 5.

The world's relative importance of high-tech products had a downward trend reaching its lowest level in 2008 after its rise in the beginning of the last decade. But during the last two years their share increased reaching the same level of 1998. Also the trend for low-tech products was falling. These changes were to the advantage of med-low tech products, as their shares increased. The shares of med-high tech products and unclassified products were nearly stable. Hence, the dynamic technology level products are those of med-low tech.

Table 3 on Afghanistan's RCA based on technological intensity shows that Afghanistan's highest comparative advantage was in low-tech products. As we have mentioned before, Afghanistan enjoys export comparative advantages in clothes, paper and tobacco products which belong to this category. Hence, Afghanistan's exports do not correspond to the trends in the market structure of world demand.

Table 3: Afghanistan's Revealed Comparative Advantage Based on Technology Level

Year	2005	2008	2010	2012	2014	2016	2017
Low-Tech	0.96	2.49	2.47	2.13	1.73	1.69	1.75
Med-High	0.66	0.71	0.67	0.85	1.23	1.08	1.07
Med-Low	0.45	0.42	0.75	0.48	0.49	0.76	0.70
High-Tech	0.63	0.53	0.55	0.88	0.66	0.54	0.61
Not Classified	2.66	1.25	1.05	0.86	0.86	0.98	0.95

Source: Own calculations based on WITS database.

But, some flexibility has been observed in Afghanistan’s specialization pattern during the last few years. RCA for low-tech products has declined (although it is still the highest) to the advantage of med-high-tech products (such as “chemicals excluding pharmaceuticals”), med-low (“gold non-monetary excluding ore”) and high-tech products (low pharmaceuticals). This means that Afghanistan has slightly directed its specialization pattern toward those commodities in which world demand grows more rapidly.

d) Geographic Structure Effect (GSE)

The geographic structure effect (GSE) can be interpreted similarly to the CSE. The results of breaking down the total effect into its components as calculated by the CMS analysis method, show that the change in export market share attributed to the geographic factor is relatively important, particularly when it is compared to that of the small commodity structure effect. The sign of the GSE was positive for all periods and almost all years. The second period 2005-2008 and the fourth one 2015-2017 have the most favorable effects. To gauge the role played by geographic structure in expanding exports, it is possible by calculating Afghanistan’s “geographic specialization pattern”. Table 4 presents this pattern.

Table 4: Afghanistan’s Geographic Specialization Pattern for Selected Destinations, (2005-2017)

Country	2005	2007	2009	2011	2013	2015	2017
Pakistan	418.1	61.7	136.2	117.3	114.4	95.3	70.1
China	23.9	39.0	45.0	47.3	26.8	26.4	28.1
India	16.1	20.8	10.5	11.5	10.1	12.2	13.6
UAE	13.9	19.9	12.7	12.1	10.7	11.0	11.6
Iran	11.3	19.4	6.9	8.4	6.4	6.5	7.8

Source: Own calculations based on WITS database.

Note: *geographic specialization pattern for a particular country = (The country’s share in world exports for a destination country / the country’s share in world exports for all destination countries).*

It is obvious that the above mentioned countries belong to the most dynamic import markets in the world, particularly, during the last few years. Afghanistan’s favorable pattern of specialization is strongly influenced by factors such as geographical proximity. Also, the same language and culture have created preferential trade linkages. Afghanistan’s GSE is still positive and somewhat high. This means that Afghanistan has oriented a large proportion of its exports toward the most dynamic destination markets. In other words, Afghanistan’s total export market share effect resulting from the correlation between its “geographic pattern of specialization” and changes in world import demand’s distribution by country was favorable.

4.3 Structural Interaction Effect (SIE)

The structural interaction effect (SIE) depends on how the changes in the geographic and commodity structure of distribution market imports are related. The SIE tends to favor those countries with best competitive performances in specific product/ market segments whose importance in world trade tends to rise more than what would be expected based on the product growth in all markets and the market growth for all products. The SIE for Afghanistan was positive and high during the entire period, as well as all sub-periods, especially, the second and the last ones. It is worth mentioning that this effect is more difficult to interpret, and its economic importance is not intuitive.

4.3.1 Affects defined

a) Adaptation Effect (AE)

Adaptation effect, which is of a dynamic nature, consists of: commodity adaptation effect (CAE), geographic adaptation effect (GAE) and residual adaptation effect (RAE).

The Commodity Adaptation Effect (CAE): The sign of this factor in Afghanistan's case was positive for the entire period, but very small. This means that there is only some flexibility in Afghanistan's specialization pattern, as this pattern has slightly changed in ways conforming to the tendencies of market demand. The following two examples can be used to illustrate this effect. The first; Afghanistan has changed its exports concentration from crude fertilizers to manufactured fertilizers. These changes correspond to the rise in the share of manufactured fertilizers and the fall in that of crude fertilizers in the same period. The second; Afghanistan has slowly changed its specialization pattern in accordance with the increase in world demand of intermediate goods and raw materials, owing to the rise in the economic activity of some countries in the world as the emerging countries.

The Geographic Adaptation Effect (GAE): The sign of this effect was positive during the considered period, and its larger size (compared to CAE) has resulted from the large effects in 2008 and 2016. The rise in oil export revenues during these years, owing to the high increases in world oil prices, has considerably increased the import demand from the oil producing countries. Afghanistan's geographic pattern of specialization has become more oriented to the Asian countries in these years. This, however, coincides with the increase in the relative importance of these countries in world trade, particularly in 2009. Also, the dynamic markets of economically active emerging countries such as Asian economies have absorbed an

increasing share of world's imports during the last three years. Afghanistan's geographic pattern of specialization for this group has remarkably increased during these years. Hence, we can say that Afghanistan's gains in export market share tend to be relatively concentrated in the most dynamic countries in terms of import demand.

The residual adaptation effect (RAE): It is interpreted in a similar way as the SIE. The sign of this effect for Afghanistan was negative and large for the entire period, as well as for all sub-periods. This may be caused –as the case of SIE- by the extremely high disaggregation level of the analysis and the small share of Afghanistan in world's exports.

5 Conclusion and Policy Implications

The analysis established that Afghanistan's exports registered a quite satisfactory and accelerated performance, having influenced by combination of internal and external factors during 2005–2017. Export growth (4.91 per cent) was considerably higher as compared to world exports as well as exports of developed and developing countries. Further, actual growth was significantly higher than that of expected growth. Export performance was mainly attributed to their competitive strengths in global export market, however world demand for exports also proved as its important source. Analysis emphasized that competitiveness of Afghanistan's export remained prone to high inconsistency arising out of changing external environment.

Further, analysis also reveals that export competitiveness lies in case of all commodity groups, though it was considerably higher in case of low manufactured commodities to Pakistan. Similarly, market-wise analysis reveals that the Afghanistan's exports competitiveness in the markets of developing countries was slightly lesser than that of the developing countries and helped them to improve their shares in respective markets and also in world export market. The consistently negative composition effects up to 2008 indicates towards country's inability to diversify its exports and having specialization in the slowly growing commodities in global export market. Thus, it came out as the most disturbing aspect of Afghanistan's export performance, however recorded signs of improvement in later period. On the other hand, market distribution has also laid positive impact on export performance.

Given the export promotion outward orientation as strategy of development, inconsistent competitiveness, quickly responding to external environment, as well as wrong speculation pattern of exports could adversely influence their performance in particular and also have wider implications for the external sector in general as there is nothing to control

and regulate external factors within the domestic policy framework. Even, effective exchange rate management could able to save the economy from vicissitudes of contemporary unregulated liberalization-led-globalization of trade and finance up to limited extent. Furthermore, proactive and conscious approach to the WTO negotiations and participation in regional trade agreements (RTAs) would help Afghanistan for optimizing market distribution of exports. For elimination of negative CCE, export diversification towards the rapidly growing commodities in the global export market, especially high-technology exports, is highly required and demands special attention at the policy level. It would enable the country for further improvement in its export performance and positively influence growth dynamics of the economy in the long run.

5.1 Recommendations and Policy Implications

A lot of studies on other economies, which are outside oriented to a large extent, have concentrated on its international trade issues, particularly exports and their role in enhancing GDP growth. But, in this study, emphasis has been put on examining export performance in order to better understand the structure transformation of the economy. The recently developed version of Constant-Market-Shares (CMS) analysis technique by the UNIDO has been applied to Afghanistan's merchandize exports during the 2005-2017 periods, depending on WITS database.

Afghanistan's more integration into the world economy through the adoption of the structural adjustment programs, the liberalization strategy in its international trade regime and its accession to the WTO, in addition to the conclusion of several trade agreements has been reflected positively on its exports and export market share. The results of applying CMS analysis to Afghanistan's exports show that the remarkable growth of aggregate export market share, which doubled in 12 years, was attributed to the favorable effects of almost all the factors determining these changes. The decomposition of the CMS formula into its seven terms shows that the competitiveness effect (CE) has a relatively important role in explaining these changes particularly during 2000-2008. As for the composition effects, the three static structure commodity, geographic and interaction effects, and two of the three dynamic adaptation effects, which constitute this factor, were positive, but the combined composition effect was negative owing to the high negative residual adaptation effect (RAE). Accordingly, this unfavorable effect has somewhat lessened the favorable role of competitiveness.

Afghanistan's commodity structure effect (CSE) was favorable but small, as it has concentrated its comparative advantages on some products

(such as mining and chemicals) whose world import demand grows more rapidly than the average. But regarding the technological intensity level, its concentration on exporting low-tech products was not corresponding to the trends of world demand. However, better performance has recently been achieved with respect to high-tech products, such as pharmaceuticals.

The geographic structure effect (GSE) was higher than that of the commodity effect. This means that Afghanistan was more successful in directing its geographic specialization pattern toward countries with faster growing import demand. Countries with dynamic demand as the GCC and some emerging countries like India and Indonesia have absorbed an increasing proportion of Afghanistan's exports. However, the structural interaction effect (SIE), which shows the interaction between commodity and geographic effects, was positive and high for Afghanistan. It seems that Afghanistan was successful in exporting specific goods to specific markets, in which import demand grew more rapidly than in other products / markets such as exports of fertilizers to Asian Countries.

Afghanistan has a slight flexibility in its structural specialization pattern and proved to be dynamically efficient to some extent only. As indicated by the positive, but small, commodity adaptation effect, Afghanistan has been somewhat able to concentrate its pattern of specialization on exports that correspond to the changes in the structure of world import demand. The rise in the share of exports of mining products and fertilizers in total Afghanistan exports in the last few years coincides with the increasing relative importance of these products in world trade, owing to the rise in their relative prices. But in general, no salient changes have been witnessed in Afghanistan's exports commodity structure, and its specialization pattern is nearly the same since decades, except for clothes. Nevertheless, Afghanistan was abler to change its geographic specialization pattern along directions similar to the trends of world demand.

Economic policy measures are recommended to improve the recent deterioration in Afghanistan's competitiveness position, and to enhance its role in expanding exports values and shares. Also, more emphasis should be put on concentrating the export specialization patterns, particularly with respect to commodities, on those patterns that have more rapid import demand, and to change these patterns to coincide with the structural changes in this demand.

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