

# The Creation and Increase of Value Added in the Value Chain and Its Impact on the Price

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**Abstract:** - In order to characterize the process of the value chain scientifically and empirically, both at the international and regional, and local levels, and the sequence of its rings, it is first necessary to clarify the interconnected stages (rings of the chain) of reproduction. By studying the chain connection of the stages of reproduction, the sequence of formation and expansion of the value chain can be clarified.

The article examines a series of links from the acquisition of primary raw materials, their processing, storage, distribution, supply, and sale, depending on the scale of the value chain in the direction of achieving the result of economic activity. It is proposed that this chain is formed based on common principles in individual countries and regions of the world, and even at the international level. The type of economic activity performed in each ring of the chain faces certain costs, the process of conversion of costs takes place, and because of the activity of each ring in the chain, the product gains added value. The process of value creation and increase in value in such a logistical movement has been clarified and a scientific conclusion has been drawn out.

**Key-Words:** - value chain, national value-added, foreign value-added, value creation, value increase, logistics movement, Gross Domestic Product (GDP), Cotton lint, Azerbaijan.

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## 1 Introduction

The modern international economic system has been formed as a natural-historical process and is gradually developing into a global economic complex. Such a system is formed as a union of all stages, sectors, and industries of the dynamically interconnected international process of reproduction, creating a living economic mechanism of the international economy, [1], [2], [3], [4], [5].

Of course, international markets are of exceptional importance as the construction of such an economic mechanism.

The chain of reproduction, which is the theoretical basis of the problem of the expansion of the value chain, and the factors influencing the interaction of the rings of this chain with each other must be identified.

This clarifies the whole sequence of how the value of the rings in the chain arises and increases, as well as the question of the creation of value-added, the exact definition of value-added as the product passes from one ring to another, and how to become a constant quantity.

By revealing the current state and prospects of the interconnection of value chain rings, it is possible to specify the increase and expansion of value added

of national origin, along with the creation of value-added of external origin along the rings of the chain. This allows us to determine which ring in the overall value chain is most important to invest in.

### 1.1 The Sequence of Value Formation in the Movement of the Product along the Rings of the Value Chain

In general, the interconnection that reflects the unity of the whole process related to the production, supply, processing, sale, and consumption of Gross Domestic Product (GDP), but separately to any product group and intra-group product type, itself corresponds to the stages or rings of the process (chain) of reproduction.

Such a process has similar features at the international level, as well as within every country or region of the world, investigated by general methodological research methods.

In this sense, all firms and companies engaged in the production, processing, distribution, and sale of GDP at all levels establish mutual logistics relations based on agreements concluded with each other.

In modern times, the establishment of such relations involves a chain of reproduction that unites

economic entities engaged in the production, processing, distribution, and sale of raw materials, equipment, and suppliers of finished products and creates the value chain at the basis of this process.

A value chain is a chain of syllogism that complements the value of one of the costs involved in the formation, quantification of value in the production, processing, distribution, and sale of any product, product group, or GDP as a whole.

Although the Gross Domestic Product (GDP) and Gross National Product (GNP) of each country are different, if the calculation of the costs of both value chain rings is based on the final product, then the double (repeat) calculation should be clarified.

In double accounting, recalculation of the cost of products in the movement of national products from production to final consumption occurs, in this case, the value of intermediate products is included in the final value for the second time and thus leads to artificially inflating the final value of the product.

To clarify all such cases and make concrete conclusions, the initial product (raw materials, products) formed in the movement of the product on the rings of the value chain, intermediate product (re-manufactured or re-sold), final product - products that go to the consumption of a specific consumer (production and personal consumption), and finally, the process of creating and increasing the value of the finished product only for sale and supply (to the population and public needs) must be accurately recorded [6].

Depending on the method of use, the method of approach can be both an intermediate and a final product of the same name.

In this sense, a realistic and correct approach to calculating the final value that is consistently formed in the movement of the product in the rings of the value chain can be considered a reliable way to calculate the incremental value of each ring in the chain.

This approach should be used not only for the accurate calculation of individual product groups and intra-group products but also for the amount of the country's GDP, the value of imports, and exports in foreign trade, which helps to avoid double counting.

The production of primary, intermediate, and final products in different rings of the value chain of products produced in the petrochemical, as well as in light and food sub-sectors of the processing industry of Azerbaijan must go through the logistical stages of several countries.

The experience of recent years shows that the increase in world market prices for finished products of Azerbaijan's light and petrochemical industries,

such as clothing, is influenced by the increase in production costs of intermediate products such as raw cotton, wool, silk, linen, naphtha (polyethylene, propylene), which are the primary rings in the value chain and increase of production costs of intermediate products such as cotton lint, yarn, fabric, and the added value in those productions (see Fig.1).

By reducing the production costs of primary raw materials and intermediate products, which are the basis of the final market price of products produced by the petrochemical, light, and food industries, the added value created by these costs can also be reduced.



Fig. 1: National value-added tariffs on exports in the year 2019

Source: World Bank Country and Lending Groups – World Bank Data Help Desk.

As long as Azerbaijan belongs to the group of developing countries, the country's companies and firms should move from the increasing added value rings to the value-added rings in the global value chain, expand the participation rate in those rings, and activate technological and socio-economic factors that affect participation growth. Such a development trend reveals itself in the modern international economy, high value-added industries are gradually shifting from industrialized to developing countries through global economic change.

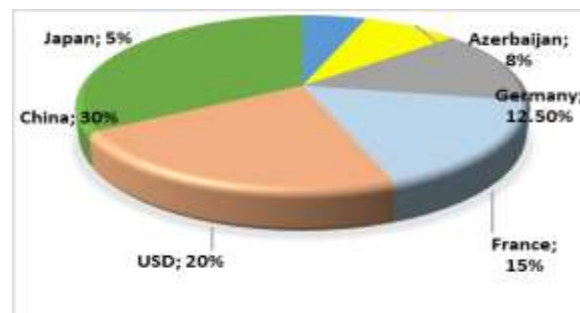


Fig. 2: Agricultural

Source: World Bank Country and Lending Groups – World Bank Data Help Desk.

The names of the indicators mentioned in Figure 2 are factual. As global and local statistics are not provided, in order to carry out the calculation in a logical sequence, the numbers representing those indicators are given approximately.

Among the non-oil sectors, agriculture and animal husbandry, light and food sub-sectors of the industry have almost enough production in the first rings of the global value chain, while in traditional foreign markets the prices of these products sometimes remain stable and sometimes increase.

In our opinion, the production of new brands of these products, their processing by international standards, storage, packaging, transportation, large-scale investment in modern technology, and innovation of value-added stages should be divided into optimal proportions for the main value-added rings.

The focus should be on the optimal distribution of investment resources between the created value and rising value rings in the global value chain. Investments should focus not only on the value and price of the products to be created in the production process but also on utility, design, and adaptation to consumer tastes, and desires so that products can enter the domestic and foreign markets without hindrance.

This allows not only to compete in the market but also to outperform competitors in highly profitable markets and gain more market share. In this sense, the last stages of product development in the global value chain, value-added operations such as transport, sorting, packaging, evaluation, design, and advertising, in turn, require more investment in information and communication technologies (ICT), [6].

The experience of many production units engaged in the creation of all components of the light industry in Azerbaijan (due to the current state of expenditures on value chains) shows that the increase in the final cost of clothing among the rings of the value chain completed in the country is primarily raw materials (raw cotton, wool, silk and linen farms) and then the impact of spinning and weaving farms (spinning and weaving mills) is very large (see the Fig. 1).

In this vein, it is necessary to reduce the added value created by the above-mentioned components of raw materials and intermediate products, which are the basis of the final cost of clothing, and to increase labor productivity through modernization of the modern technological base of production in these rings.

Although yarns and fabrics made from natural raw materials and cotton lint are the leading intermediate products in the production of clothing, modern technology enables the use of synthetic yarns and fabrics woven from these yarns, along with natural yarns. In the case of value rings, their use as an intermediate product can have a direct impact on cost savings (even up to 50% in some cases). It can directly affect the reduction of the cost of manufactured clothing.

## 2 Literature Review

The direction of a global scientific and experimental approach to the process of creating and increasing value for specific product groups was achieved by a researcher who focused on the research of Azerbaijani economist Anar Rzayev [6].

There is a need to elucidate the components of each of the import and export values included in the global value chain by dividing them into national and foreign value-added, and to elaborate an econometric model of cross-country, intersectoral balance, which includes these components, [11].

American economist Robert Koopman and his colleagues defined the mechanism of division of exports into components and set forward an appropriate calculation methodology, [11].

According to the methodology, the value of the country's total exports is divided into two components: "domestic value added (DVA)" and "foreign value added (FVA)".

It is also considered that the national value added is re-exported into direct value-added exports and indirect value-added exports.

The relationship between the value of exports and imports of individual countries in the global value chain and the assessment of their impact on the development of the international economy has led to various studies.

Researchers in Western countries, for example, professor M. Timmer used a new approach, the category of "global import intensity", that characterizes the import capacity of the product, [18].

According to the researcher, this category is calculated not based on the division of imports into production, but based on "costs-output" schedules.

That is, along with the import of goods and services included in the final consumption, the import of intermediate goods and services is also taken into consideration.

The importance of research in the field of evaluation of foreign trade in terms of value-added involves the acquisition of new knowledge,

understanding of some processes that are difficult to detect by traditional methods of foreign trade, and providing additional information for analysis.

With the deepening of the international specialization, the cooperation between countries and regions becomes stronger, industrialized countries have more capital-intensive, high-value-added activities, and developing countries have more labor-intensive, high-value-added industries, [7]. Some other relevant studies can be found in [14], [15], [16], [20], [21].

### **3 Methodology and Evaluation**

The purpose of the article is to determine the possibility of the participation of economic subjects of Azerbaijan in the regional and global value chain.

The advanced experience of the modern textile industry has shown that consumers highly appreciate the quality, consumer value, and usefulness of garments made from fabrics based on a mixture of natural and artificial fibers on new and progressive technological machines, [8].

The correct choice of technology to produce intermediate products is one of the factors that strongly affect the cost of cotton lint, yarn, and fabric, which are intermediate products of natural and artificial origin.

Cotton lint and yarns made of synthetic materials based on the technological achievements of the modern petrochemical industry, along with natural cotton lint and yarns, have a superior position in this selection.

Synthetic materials are obtained from a very efficient intermediate product called naphtha. Although naphtha is not produced in the petrochemical industry of Azerbaijan, at all accounts, the final products produced from this intermediate product play a very important role in the domestic and foreign trade turnover of the country. Because the mentioned raw material is produced in the "Star" processing zone of the "Patkin" petrochemical complex in Turkey, with the participation of SOCAR's \$ 5.7 billion capital. "Star" processes 10 million tons of crude oil annually and produces 1.6 million tons of naphtha in a year.

At present, Azerbaijan exports more than 30% of its domestic demand with this raw material. This raw material is used by the textile industry of Azerbaijan to produce synthetic yarns, fabrics, various textiles and clothing products, and many other intermediate and final industrial products.

Table 1. Production of clothing products in the textile industry of Azerbaijan in 2005-2020

№	Products	2005	2010	2015	2017	2018	2019	2020
1	Raw Cotton (thousand tons)	196,6	38,2	35,2	207,5	233,6	295,3	356,7
2	Cotton lint (thousand tons)	56,0	11,4	6,6	37,9	61,0	85,0	97,8
3	Ready-made cotton fabrics (thousand sq. m.)	3099	1104	9596	16830,2	19314,4	21098,0	21723
4	Finished silk fabrics (thousand sq. m.)	437,2	735,8	272,4	274,5	40,7	103,2	135,7
5	Cotton bed- linen (thousand pieces)	562	125	228	372,6	580,7	610,5	637,5
6	Knitted socks (thousand pairs)	2969	2004	3739	1991	2367,8	3248,9	4025,3
7	Polyethylene and Propylene (thousand tons)	54,5	54,3	103,7	141,6	93	95,5	97,2

Source: author's work.

Table 2. Comparison of Raw Cotton with other three products

№	Products	2005	2010	2015	2017	2018	2019	2020
1	Raw Cotton (thousand tons)	196,6	38,2	35,2	207,5	233,6	295,3	356,7
2	Cotton lint (thousand tons)	56,0	11,4	6,6	37,9	61,0	85,0	97,8
3	Ready-made cotton fabrics (thousand sq. m.)	3099	1104	9596	16830,2	19314,4	21098,0	21723
4	Cotton bed- linen (thousand pieces)	562	125	228	372,6	580,7	610,5	637,5

Source: author's work.

Let's consider the description of the comparison according to the table:

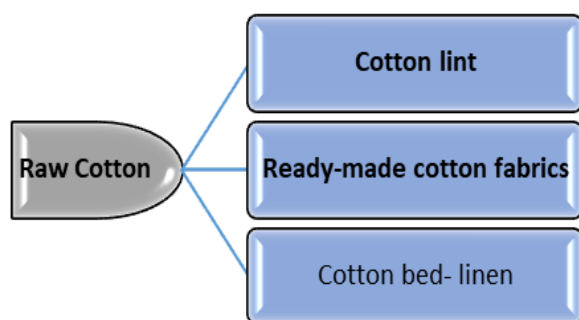


Fig. 3: Comparison of Raw Cotton with other three products..

Source: author's work

In the research work, a multidimensional regression model was built to compare the production of raw cotton with the production of cotton wool, ready-made cotton fabrics, and cotton bed linen for the period 2005-2020 in the production of clothing products in the textile industry.

As can be seen from Table 3 and 4, the results of the analysis are fulfilled.

Table 3. Regression statistics

<b>Regression statistics</b>	
Multiple R	0,984091479
R- the square	0,968436039
Normalized R- square	0,936872078
standard error	30,4243259
Observations	7
Analysis of variance	

Source: author's work.

Table 4. Dispersion statistics

<b>Dispersion statistics</b>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Значимость F</i>
<i>Regression</i>	3	85200,59547	28400,19849	30,68170192	0,00942932
<i>Remainder</i>	3	2776,918819	925,6396065		
<i>Total</i>	6	87977,51429			

Source: author's work.

Table 5. Regression model

<b>Factor</b>	<b>Regression equation</b>	<b>Coeff. client of determination</b>	<b>R</b>	<b>Normalized R square</b>	<b>Durbin-Watson coefficient</b>	<b>Std. Error of the Estimate</b>
Cotton	$Y = 3,23 + 2,71X_1 + 0,002X_2 + 0,04X_3$	$R^2 = 0,96$	R=0,98	R=0,93	DW= 2,85	36,95

Source: author's work.

In the study, a multivariate regression model was built based on the results of a comparative analysis of the production of raw cotton with the production of cotton wool, ready-made cotton fabrics, and cotton bed linen.

The regression equation shows that a linear correlation dependence has been determined between the considered indicators of the economic system.

Based on the data in table 1 in the MS Excel program, we performed a forecast analysis for the next years.

Table 6. Tendency 2023-2029

	Product/ Year	Raw Cotton (thousand tons)	Cotton lint (thousand tons)	Ready- made cotton fabrics (thousand sq. m.)	Finished silk fabrics (thousand sq. m.)	Cotton bed- linen (thousand pieces)	Knitted socks (thousand pairs)	Polyethylene and Propylene (thousand tons)
	2005	196,6	56	3099	437,2	562	2969	54,5
	2010	38,2	11,4	1104	735,8	125	2004	54,3
	2015	35,2	6,6	9596	272,4	228	3739	103,7
	2017	207,5	37,9	16830,2	274,5	372,6	1991	141,6
	2018	233,6	61	19314,4	40,7	580,7	2367,8	93
	2019	295,3	85	21098	103,2	610,5	3248,9	95,5
	2020	356,7	97,8	21723	135,7	637,5	4025,3	97,2
<b>Tendency</b>	2023	291,1655	77,68328	18001,69	166,7661	519,9663	3019,717	91,47034
	2024	303,0086	80,98298	18584,98	152,1672	529,1499	3033,63	91,47898
	2025	314,8518	84,28268	19168,27	137,5683	538,3335	3047,543	91,48762
	2026	326,6949	87,58238	19751,55	122,9694	547,5171	3061,455	91,49626
	2027	338,538	90,88209	20334,84	108,3706	556,7007	3075,368	91,5049
	2028	350,3812	94,18179	20918,12	93,77166	565,8843	3089,281	91,51354
	2029	362,2243	97,48149	21501,41	79,17276	575,0679	3103,193	91,52217

Source: author's work.

Based on the data for 2005-2020, the forecast for 2023-2029 was calculated.

Table 7. Rost 2023-2029

	Product/ Year	Raw Cotton (thousand tons)	Cotton lint (thousand tons)	Ready-made cotton fabrics (thousand sq. m.)	Finished silk fabrics (thousand sq. m.)	Cotton bed- linen (thousand pieces)	Knitted socks (thousand pairs)	Polyethylene and Propylene (thousand tons)
	2005	196,6	56	3099	437,2	562	2969	54,5
	2010	38,2	11,4	1104	735,8	125	2004	54,3
	2015	35,2	6,6	9596	272,4	228	3739	103,7
	2017	207,5	37,9	16830,2	274,5	372,6	1991	141,6
	2018	233,6	61	19314,4	40,7	580,7	2367,8	93
	2019	295,3	85	21098	103,2	610,5	3248,9	95,5
	2020	356,7	97,8	21723	135,7	637,5	4025,3	97,2
<b>ROST</b>	2023	263,5405	69,98648	16641,14	200,8192	498,5449	2987,265	91,45019
	2024	283,5969	75,57454	17628,93	176,0959	514,0974	3010,826	91,46482
	2025	305,1797	81,58787	18691,91	149,491	530,8334	3036,18	91,48057
	2026	328,405	88,05884	19835,77	120,8615	548,8432	3063,464	91,49751
	2027	353,3978	95,02227	21066,69	90,05308	568,2235	3092,824	91,51574
	2028	380,2927	102,5157	22391,29	56,90007	589,0787	3124,419	91,53535
	2029	409,2343	110,5793	23816,7	21,224	611,5211	3158,418	91,55646

Source: author's work.

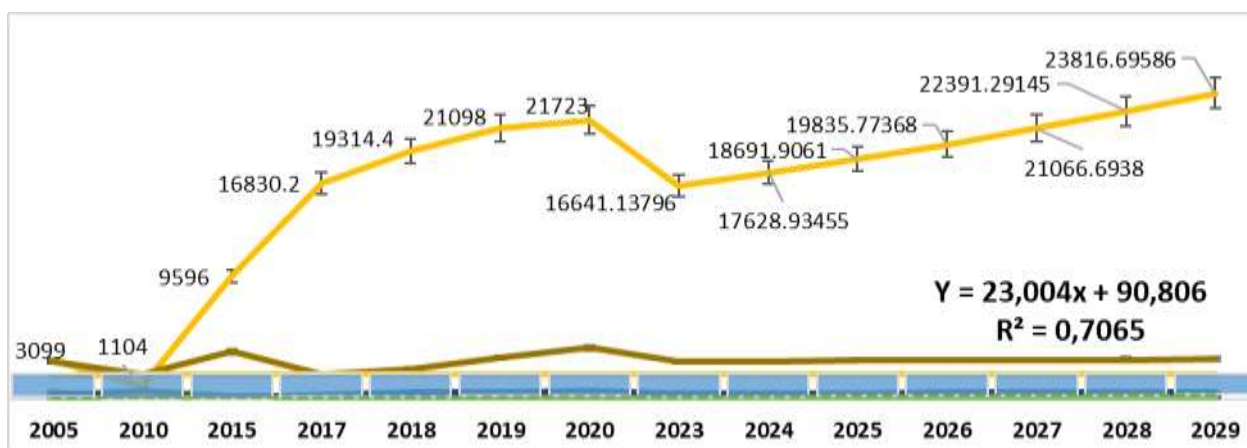


Fig. 4: 2005-2029 growth by years.

Source: author's work.

Due to the current level of development of the chemical and light industry in Azerbaijan, the export of components necessary for the production of clothing products outside the country, the globalization of the movement of products through the rings of the value chain, in its turn, has strengthened the dependence of the textile industry on external factors.

First, with the deepening of the international division of labor and the formation of the international system of production, the value chain based on the internal relations of the process of reproduction is also globalizing. Certain regions and countries of the world are specialized in the preparation of raw materials, intermediate products, components, and the final product to produce a final product that will be ready for consumption.

**The value-added consistency and price increase in the rings of the value chain for a particular product group or intra-group product types.**

As any product group or intra-group product released by Azerbaijan's light and food industries progresses along the rings of the value chain, the process of increasing value added of national origin takes place along with the increase in value added of foreign origin depending on the nature of each ring and it is very important to keep this process accurate.

First, it is possible to correctly determine the amount of value added by the national capital of the country, along with the value added by the foreign capital involved in the value rings chain for each product group, [12],[13].

More importantly, it is possible to clarify the difference in the amount of any product group produced in Azerbaijan by distinguishing between a product of foreign origin increased by foreign

capital and a product of national origin increased by national capital.

To carry out the research in a scientific article to a greater or lesser degree and at the same time to simplify it, it is necessary to take a group of products so it could be possible to observe how and to what extent the value-added increases in each ring by moving through the initial production chain of that product, passing through all the rings of the value chain.

In our opinion, the clothing product group can be a more visual example, and this product can collectively include light industry sub-sectors such as the production of cotton lint, spinning, weaving, and sewing products. The process of quantifying the total cost of clothing, and thus the formation of its price, ends when the value chain of food products passes through the rings of the value chain as the final and finished product of the light industry, [17].

In this process, in addition to the producers necessary for the organization of clothing production, there are participating economic entities engaged in procurement, supply, distribution, warehousing, trade, and commerce. It can be considered worthy to give the process expressed in terms of flexibility and experience, as well as relative figures, with the schematic description given below (See Fig. 1).

As can be seen from Fig. 1, the location and position of all economic structures (chainrings) of the light industry clothing group operating in connection with the production, procurement, supply, distribution warehouses, sales, and consumption are described.

In general, it is clear that the formation of the final price of a group of garments or any type of clothing within the group, which is included in the consumption of the population, is formed by the



cost of each ring in the value chain and the quantity of the final value spent on all the rings.

Although the process of formation looks like economically isolated rings, in all cases it is inseparable from each other, the member resembles a chain completed in unity.

Though the combination of 21 rings in a chain of 7 spheres of activity is reminding of a more complex networked system, in any case, the whole value chain is connected in two large semi-networks for simplicity: value-creating and value-increasing rings and spheres of activity (see Fig. 1).

The purpose of classifying with such a grouping is to determine the location and role of the rings of the value chain in the formation of the market price of a group of clothing goods.

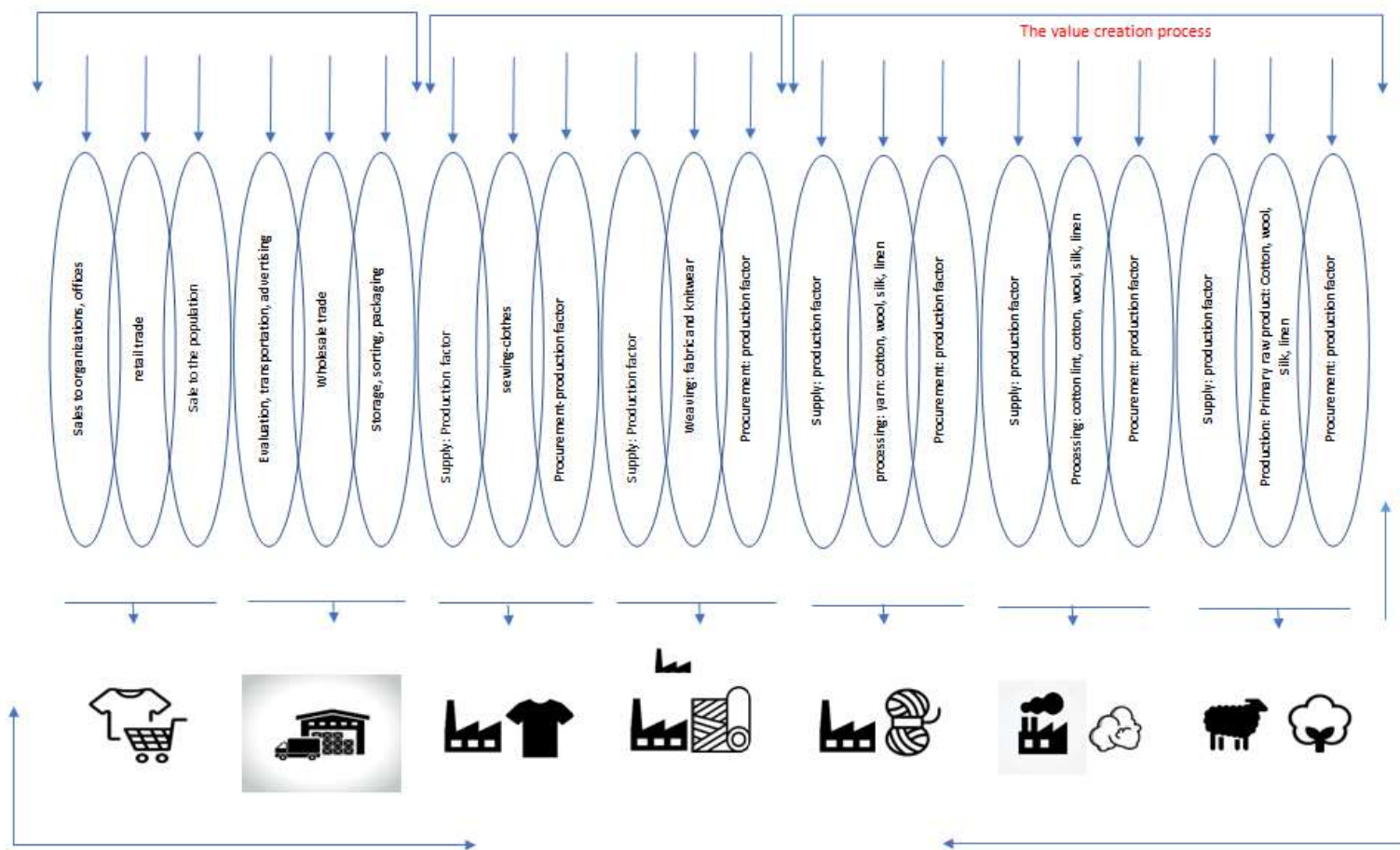


Fig. 5: Formation of the price of clothing components in connection with the emergence and increase of contact value on the rings of the value chain of the garment product group.

Source: author's work.

It can be considered a very important scientific and practical approach to clarify in which ring or union of rings the value is created, and in which the process of value increases.

The 5 main semi-networks connecting 15 rings, such as procurement, supply, production, and processing, which create value in the value chain in connection with the formation of the final market price of clothing, are the primary movement of the light industry, starting with agriculture and animal husbandry and continuing in the cotton lint, spinning, weaving, and sewing farms, enters the second large semi-network, which increase value.

Although the network is not a single production process, in all cases it undertakes to ensure that the garment is suitable for final consumption, operations necessary to complete the production process, i.e., carrying out works that make it necessary for the production process to continue in circulation. These are transportation, warehousing, sorting, packaging, advertising, evaluation, preparation of clothes for sale, and other production operations.

Farming units, that represent the unity of each ring in the value chain and the corresponding rings, engaged in one or another type of labor, for example, producers of cotton lint, wool, silk, linen, fabric, and sewing respectively spend the required amount of working time and a certain amount of costs in the formation of the final cost of clothing. These costs are shown in Fig. 1 with approximate figures. However, the progress of the value chain on the increasing dynamics of value added in the rings can be expressed in both relative (%) and absolute (amount) indicators.

If we take 1 as a unit of measurement for the initial cost of expenses, incurred by the procurement agency, supplier, and farmer related to the production of raw cotton, wool, silk, or linen, which are the primary rings in the formation of the quantity of cost based on the final market price of garments, the additional cost of subsequent operations related to the production of the next cost will be 1.5 units, the value added of the yarn production will be 2.5 units and thus 3.5 units for weavers, 4.0 units for garment workers, and respectively for the distribution warehouse and trade will be 4.5 and 4.7 units.

## 4 Discussion

One of the main features of the added value in the last rings of the value chain is to make a distinction between farms that create value-added and increase value-added along the rings of the value chain in

the movement of clothing from production to consumption and thus it is possible to specify the farms that are reflected in the union of rings, which can affect the increase or decrease in the value and price of clothing, [9].

This allows us to find ways to influence price fluctuations by reducing costs and increasing productivity in any ring in the value chain, both creating and increasing value.

Procurement and supply chains associated with a single production process and its chain should be considered as a joint activity of the components of a single process, when calculating value-added, costs should be accounted for separately for each ring and thus the produced product and the costs associated with the movement of the subsequent rings in the value chain must be clarified and accounted for [11].

According to the substantiation of the government of Azerbaijan, the transition period ended in Azerbaijan since the middle of 2000, and Azerbaijan is developing via a market economy, [10].

It is true that every country in the South Caucasus has its own property, but in any case, the volume of GDP and foreign exchange reserves of Azerbaijan's natural and economic potential is much higher than the combined indicators of Georgia and Armenia.

Currently, Azerbaijan has foreign exchange reserves in the amount of 55 billion US dollars. In this sense, it is very attractive for international credit organizations in the country, [10].

## 5 Conclusion and Recommendation

The favorable geographical location of the territory of Azerbaijan in terms of natural-climatic, fertile soil, underground resources, and so on has allowed the formation of not only national and regional but also global value chains of products and services that create national value added. In particular, production services related to light, petrochemical products, pharmaceuticals, agriculture, organization of furniture production, warehousing, sorting, packaging, pricing, and advertising of export-import goods tend to become more active.

The formation of such important rings in the global value chain in the territory of Azerbaijan envisages the international service of the South Caucasus, Central Asia, Turkey, the Gulf countries, China, Pakistan, and India, where more than a billion people live. Thus, the rings in the global value chain have the opportunity to serve as the main logistics hub of the Caspian Basin and the

region around the Zangazur Corridor, being part of a large international transport trade network connecting Europe and Asia, serving the European and Asian markets [19].

It is necessary to specify and evaluate the rings (rings of the chain that the countries participate in) that create and increase value by the rings of the global value chain. In this sense, the value-added rings in the global value chain are the procurement and supply chains that stand alongside the international production chain and the activities of various firms and companies that are the subjects of these rings.

These firms and companies enter global exports and imports and participate in the creation of global value added by producing certain parts and components of the finished product that will be included in the final consumption by the international division of the production process.

The rapid growth of value added takes place in the value rings of light and food semi-finished products, which are one of the most important areas of Azerbaijan's non-oil industry, [6].

Although such a situation can be seen in the dynamics of value-added growth in the value chain rings of products produced by the light industry, such as cotton lint, spinning, weaving, and sewing, it does not in all cases reflect the full value of the product in all rings in the chain and the costs incurred in each ring [6].

Costs should be studied not only in the light and food industries but at the macro level, taking into account the total costs incurred in all sectors of the value chain of products released in all sectors and industries of the economy in general. The supply chain should be considered in the production process not only as a primary ring in the chain but also as an intrinsic ring between the procurement and supply chain.

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