

## HOW ECONOMIC CLUSTERS COULD ADDRESS THE LOW RESILIENCE UNDER PANDEMIC DISRUPTIONS OF THE INWARD PROCESSING INDUSTRIES OF THE REPUBLIC OF MOLDOVA

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### Abstract

*The paper aims at examining how economic clusters could address the low resilience of the Moldovan industries relying on inward processing. The authors conceptualize the notion of economic resilience under pandemic disruptions. They justify economic clusters contribute to building the resilience of their companies-members, particularly in the Republic Moldova. The analysis reveals despite some opportunities, Moldovan inward processing exports have turned out especially sensitive to the crisis. The dependence on lohn limits the ability of Moldovan enterprises to recover from disruptions. The research suggests that Moldovan companies capitalize on the experience of companies in the European Union, by forming or joining economic clusters. The authors hold the case of Republic Moldova reconfirms the direct correlation between the weak clusterization and the low level of economic resilience, thereby pointing to a vicious circle. To break this circle, authors conclude, Moldovan companies need to connect to the European Union's economic clustering process.*

**Key words:** *disruption; economic cluster; inward processing; resilience; value chain.*

**JEL Classification:** *O12; O25; O38; L14; R12; R58.*

### I. INTRODUCTION

In today's globalized world, manufacturing is increasingly managed through complex global value chains and characterized by delocalization of various stages of production in factories around the world in the search for production advantages. Therefore, many countries have become important processors for multinational brands engaging actively in "lohn" contracts. The inward processing trade is also characteristic for the Republic of Moldova's economy since a significant share of domestic firms pursues predefined processing for external contractors. In this regard, the advantages and attractiveness of the country mostly derive from the geographical proximity with contractors, labor force and liberalized trade regime. Nevertheless, in the current context of the pandemics, structural economic changes, and increased competition, countries specialized in inward processing trade become exposed to risk and vulnerable to the world market fluctuations.

To mitigate these risks and to ensure a sustainable integration into global value chains, not only the strategies of firms but also the policies and strategies of countries should be adjusted and reoriented toward a more resilient way of economic development, primarily via forming and developing economic clusters. In this context, we aimed at estimating the extent of Moldova's dependence on inward processing trade, identifying risks that may arise in the long run and suggesting the opportunities of clusterization to address low resilience of the Moldovan enterprises.

The paper begins with a theoretical background elaborating on the concept of resilience and how economic clusters could become efficient in achieving resilience. The correlation between the clustering of enterprises and the strengthening of their resilience is analyzed, mainly based on the research carried out on the practice of the European Union companies, in this regard. Next, it is presented a set of statistics that illustrates the basic characteristics of inward processing exports of the Republic of Moldova. The paper continues with a SWOT analysis outlining positive and negative aspects that may arise when operating under lohn contracts. Next part critically assesses the ways and measures that could help in building more resilient sectors and economy, by focusing notably on clusterization as a sustainable solution in this regard.

### II. LITERATURE BACKGROUND

The advantages of economic clusters have been proven by multiple researches. Clusters offer a favourable eco-system, which encourages co-opetition that is competition and cooperation, among firms with different industrial settings, technological and business expertise (European Cluster Observatory, 2012, p. 9). Prominent

researches emphasize the crucial role that clusters play for regional economic performance (Delgado et.al., 2012). These findings show that industries belonging to a strong cluster register higher growth in the number of enterprises, employment, wages, and patenting, they have positive spillovers across complementary economic activities.

There is growing evidence of the development of economic clusters in the ex-socialist countries of Eastern Europe, including the Republic of Moldova. Analyses point the benefits of functional economic clusters and the impediments to a more advanced clustering of a transition economy (Benea-Popușoi and Rusu, 2020).

Overall, research shows that there is a direct relationship between the level of economic clustering of the branch/region/country and the corresponding level of economic performance. At the same time, the beneficial effects of the clusters are manifested both under normal economic conditions and especially under abnormal or “new normal” economic circumstances, such as those of the pandemic that has emerged in 2020.

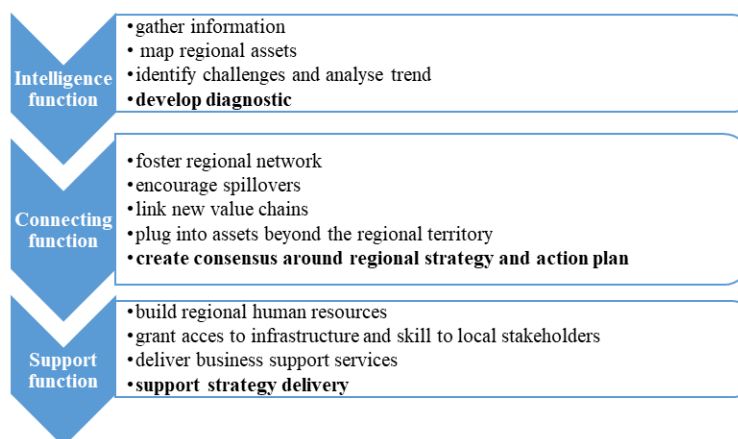
In the economic context of the pandemic, both the term of disruption in the value chain/supply chain and that of economic resilience are being increasingly used and analyzed at various levels of aggregation. OECD defines resilience as “the ability of households, communities and nations to absorb and recover from shocks, whilst positively adapting and transforming their structures and means for living in the face of long-term stresses, change and uncertainty” (Mitchell, 2013). Likewise, the concept of resilience boosting is described as “managing the impact of shocks and future issues of risk, change and uncertainty, by strengthening the capacity to absorb shocks, or adapting to reduce exposure to shocks, or transforming so that the shock no longer has an impact on the system” (OECD, 2014). Researchers found that resilience can be boosted by strengthening three different types of capacities (Béné, et al., 2012; OECD, 2014, p. 6-7):

- Absorptive capacity that is the ability of a system to prepare for, alleviate or avert negative impacts, using predetermined coping responses to preserve and restore essential basic structures and functions.
- Adaptive capacity, namely the ability of a system to adjust or modify its characteristics and actions to soften potential future damage and to take advantage of opportunities, so that it can continue to function without major qualitative changes in function or structural identity.
- Transformative capacity, meaning the ability to create a fundamentally new system so that the shock will no longer have any impact.

Hence, we believe the economic resilience may be concisely defined as the ability of the economic agents to absorb and recover from shocks that is from disruptions in their economic activity. Recent studies show that in the disruptive context of pandemics, companies are likely to adopt one or more of the following types of responses (Kamp, et.al, 2020):

- At the initial stage, usually, a reactive attitude, trying to maintain existing value/supply chains up.
- A second stage typically deals with an evaluation approach when companies re-assess the current state and vulnerabilities of their value/supply chains, whilst also considering opportunities for transformation.
- A third stage would imply that companies enter the process of reconceiving their value/supply chain practices by radical changes and/or reinforcing those practices they had until early 2020, somewhat adjusting them.

Next, we examine how can clusters help to address the challenges of the disruptions implicitly contributing to strengthening the economic resilience of their members. Basically, the activities that clusters can undertake in this regard may be grouped based on three functions reflected in Figure 1.



**Figure 1 – Clusters as a catalyst for the emergence and delivery of an industrial transition strategy**

Source: Authors’ own elaboration based on European Observatory for Clusters and Industrial Change (2019)

Naturally, the functions that cluster exercise may be seen in the light of the above-mentioned types of responses of the companies under the pandemic conditions. Thus, latest researches (Kamp, et.al, 2020, p. 8-9) suggest the two categories can be interconnected, implicitly delineating the areas of clusters' support, that we believe directly contribute to building economic resilience of the clusters' members:

- On a short to long-term basis, clusters can gather intelligence on potential new partners in the value/supply chains and other necessary inputs for enhancing the contingency and continuity plans of their companies-members (reinforcing approach).
- On a medium to long-term basis, clusters can connect companies to new partners and help to (re)build ecosystems (reconceiving approach).
- On a short to long-term basis, clusters can support companies in the development of new supplies and contribute to the building of necessary capabilities (reinforcing approach).
- On a medium to long-term basis, clusters can provide sustainable guidance, as for example strategies for the digital economy, circular economy, enabling companies to build sustained economic activities/value chains in the future (reconceiving approach).

Overall, various trans-disciplinary studies suggest that resilience is an intrinsic property of the network. Scholars indicate (Konstandopoulos, 2020; European Clusters Alliance, 2020, p. 41) that economic clusters are networks that essentially represent "the backbone of the industrial ecosystems and can act as catalysts because they bring together various actors from different ecosystems". Moreover, by serving as "sensors, catalysts, and reactors" clusters represent the "keystone species supporting critical functions of the industrial ecosystem". "Opportunistic approaches disrupt value chains, which lead to the conclusion that actors cannot be resilient unless they work together. The cluster approach is collective, working on holistic strategies for behavioral, social, economic, and environmental impacts" (European Clusters Alliance, 2020, p. 41).

The role of clusters in building economic resilience has been remarkable at the level of the European Union, since the outbreak of the pandemic. Countless examples gathered and published by the European Clusters Alliance in its Report for the European Commission (2020) prove the crucial role of clusters in identifying the needs of European industries and directions for investments. Clusters are expected to play a key role in supporting the recovery plan for Europe. Clusters can lead the transformation and the recovery "by improving resilience, identifying bottlenecks, collecting needs, sharing solutions and best practices, enabling green and digital solutions" (idem, p. 43). Clusters are seen as the most productive framework of supporting the progress of the small and medium enterprises since they are physically close to them and present in their daily activities. "They represent all sectors of the European economy, but they are not strictly sectoral. Due to their network nature, they run many cross-sectoral projects at the same time, between multiple companies and researchers from different EU Member States" (idem, p. 43). Clusters are supposed to be "the best tool for integrating science with the economy, operating not only at the interface of these two environments but "incorporating" these environments inside the movement" (idem, p. 43)

### III.METHODOLOGY FRAMEWORK

The authors have explored both theoretical sources and empirical evidence in their attempt to clarify the role of clusters in building economic resilience and providing sustainable economic development. For this purpose, we capitalized on theoretical-structural approaches such as the analysis, synthesis, comparison, and on the theoretical-logical approaches including the inference method, the method of analogy, scientific induction and deduction.

Furthermore, the paper presents an evaluative research on the composition and evolution of the commodities' exports of the Republic of Moldova, including those resulting from inward processing/lohn contracts. Primarily, we have sought to comprehend the causal relationship between the volatile performance that is relatively low resilience of the Moldovan industries relying on inward processing exports, and the low level of clustering of these industries and of the country's economy as a whole. To this end, we have also employed the systemic approach to developing a SWOT analysis of the inward processing trade from the perspective of the Republic of Moldova.

Specifically, for the case study on the exports of the Republic of Moldova, we have conducted both qualitative and quantitative analysis, including longitudinal analysis. Considering the lack of official statistics data on the amount of export contingent to lohn contracts, the authors estimated these data using two informational sources on external trade: the trade statistics produced by the National Bureau of Statistics (NBS) and the Balance of Payments (BOP) elaborated by the National Bank of Moldova (NBM). The trade statistics compiled by the NBS represents the totality of goods exchanged between the Republic of Moldova and other countries. The trade in goods presented in the BOP covers goods for which a change in ownership occurs

between a resident and a non-resident. However, under the BOP, the goods for and after processing are not included in general merchandise, because there is no change in ownership and the value of processing services is included in the corresponding items within manufacturing services. Typically, the manufacturing services on physical inputs owned by others cover the processing, assembly, labelling, packaging of goods by an entity that does not own those goods. The manufacturing is undertaken by an entity that receives a fee from the owner and because the ownership of the goods does not change, no merchandise transaction is recorded by NBM (2019). Therefore, by extracting from the amount of export presented by the National Bureau of Statistics the amount of export under the Balance of Payments, we have estimated the amount of goods produced under inward processing/lohn contracts.

#### IV. CASE STUDIES FINDINGS AND RESULT INTERPRETATION

The structure of export of the Republic of Moldova is relatively diversified. The export specialization and competitiveness derive both from endowment with natural resources, particularly for agri-food products, and the economical labor force. Consequently, the foreign trade of the Republic of Moldova also includes the inward processing trade. Across the latter, domestic companies are supplied by foreign partners with intermediate inputs for the purpose of processing or assembling them to deliver final consumption goods in the third markets. This type of activity has always been deemed to play an important role in the country's export performance. Our calculations suggest that, overall, the inward processing accounts for about 30% of the country's exports, while its share in some categories of manufactured exports is even higher (Table 1). Apparently, the relatively low levels of wages and logistical costs have determined large multinational corporations to contract local companies to run some of their operations in R. Moldova.

**Table 1. Composition of commodities' exports of the Republic of Moldova**

Categories	Amount of export, US\$ mil			Share of inward processing exports		
	2017	2018	2019	2017	2018	2019
Agri-food products	1084,0	1108,1	1157,9	4%	5%	4%
Machinery, appliances, equipment	389,7	564,5	622,0	54%	58%	50%
Textiles and textile articles	346,7	368,8	325,4	76%	80%	82%
Furniture	143,7	165,6	153,1	16%	15%	13%
Products of the chemical industry	98,7	101,8	119,8	6%	8%	6%
Articles of stone, ceramic, glass	42,1	56,3	55,6	-	-	-
Plastics, rubber, articles thereof	33,4	41,4	48,6	4%	4%	3%
Base metals and articles thereof	48,3	47,1	44,7	9%	16%	17%
Optical instruments	30,8	31,0	37,1	12%	11%	10%
<b>Total</b>	<b>2425,0</b>	<b>2706,2</b>	<b>2779,2</b>	<b>25%</b>	<b>29%</b>	<b>27%</b>

Source: Authors' own calculations based on the data of National Bureau of Statistics and of the Balance of Payments (National Bank of Moldova)

As shown in Table 1, the composition of R. Moldova' exports did not vary considerably during the analysis period, with the first 5 categories of exported products remaining the same. This indicates a relatively static international specialization, which is with a low degree of dynamism. For the most part, it is about deductive specialization, based on persistent economic activities, based on traditional, low-cost resources.

However, the share of inward processing exports differs significantly in the first categories of exports, the highest share in 2019 being recorded in the apparel industry (82%) and in the machinery, appliances, equipment (50%). It is worth mentioning that the other 3 categories in the first 5 exports of the country register much lower shares of inward processing - from 4% in agri-food products to 13% in furniture.

The *agri-food products* hold the biggest share (of over 40%.) in total exports, this sector representing a substantial driver of the country's foreign trade. The sector comprises both large-scale farmers that apparently possess the scale to compete in international markets, but also a large share of small farmers that have insufficient capacity to cope with competition, facing a lot of barriers in accessing high-value markets. The main barriers in increasing the competitiveness of this sector arise from the weak ability of the majority of producers to detect and quickly respond to market trends, poor transfer of knowledge and innovation in the production process. These factors translate into a vicious circle of widespread subsistence agriculture with low export orientation. Nevertheless, Moldovan agriculture possesses an untapped potential that, being properly exploited, can ensure the resilience and competitiveness of this sector (World Bank, 2016).

*Machinery, appliances and equipment* represent the second most exported category of products, which share accounts for roughly 22% in the total export. The export of this industry experiences continuous growth since it has doubled compared to five years ago. The sector comprises the foreign branches of multinationals that have extended their operations in R. Moldova and domestic companies that are sub-contracted by foreign companies. However, the main products exported under this category (almost 75%) include automotive cables and wire harnesses. Almost half of the production is processed under the lohn contracts. The companies are specialized in producing inputs with a low degree of sophistication and complexity which determines the low value-added for local producers (Rusu, 2020). In order to escape the low value-added trap and move forward to a more advanced level of production, domestic companies need to review and reorient their strategic priorities. In order to ensure the transition from comparative advantages in low-cost services to innovation-based competitive advantages, the deployment of appropriate investments and resources is necessary, in research, re-skilling and up-skilling of human resources. With increasing competition from other countries, the cost advantage alone will not be sufficient. Companies have to innovate to quickly adjust their capacities to market demand.

*The apparel industry* is another of the Republic of Moldova’s largest exporter, accounting for about 14% in 2019 exports. However, the industry is dominated by manufacturers that fill orders using patterns, fabrics, and accessories provided by foreign partners, mostly European ones. Thus, more than 80% of sector’s export is represented by the final products manufactured under “Cut and Make” (CM) or “Cut Make and Trim” (CMT) contracts, that is lohn contracts. The main concern of this kind of production is the low value-added that remains to domestic producers. This simplest and lowest value segment of the industry threatens the competitiveness of the entire Moldovan fashion manufacturing industry, placing enterprises at risk of losing orders (USAID, 2015). To move up in the apparel value chain from CM and CMT to full-package or private label is not an easy way, requiring considerable time, capacities and resources. Only through mobilizing enterprises to move from low to high value-added manufacturing, can the resilience of the sector be ensured.

Moldova’s *furniture industry* is also an important contributor to the country’s export (6%) and the sector is rapidly developing in recent years. This industry plays an important role in self-employment and development of micro-enterprises. For the time being, in the context of the low purchasing power of the domestic population, Moldovan furniture producers are able to compete with imports. The inward-processing represents a relatively small share of only 13% in the total export of this industry whilst the export under the own brand has got a dominant share. This fact indicates the potential of local manufacturers to compete in foreign markets (USAID, 2015).

Obviously, the COVID-19 pandemic has brought new challenges to the industry of R. Moldova. Some of the industrial branches proved to be highly vulnerable, being severely affected by the crisis. In the second quarter of y. 2020, the volume of export has decreased by 21% compared to the same period of the previous year, the highest contribution to this negative evolution being brought by the decline of export in machinery, appliances and equipment, textile and furniture (Table 2). Our analysis clearly shows that the exports linked to inward processing services have proved to be particularly sensitive to the crisis, thereby less resilient in facing the challenges imposed by the pandemic.

**Table 2. Evolution of main exported commodities under the COVID-19 pandemic**

Categories	Total export			of which, excluding lohn-contracts			of which, under lohn-contracts		
	Q2 2019	Q2 2020	Δ	Q2 2019	Q2 2020	Δ	Q2 2019	Q2 2020	Δ
	mil. US\$		%	mil. US\$		%	mil. US\$		%
Agrifood products	223,3	238,7	7%	208,2	234,7	13%	15,1	4,0	-74%
Machinery, appliances, equipment	163,7	93,2	-43%	79,5	47,5	-40%	84,3	45,7	-46%
Textiles and textile articles	88,0	53,4	-39%	14,8	12,4	-16%	73,2	41,0	-44%
Furniture	37,4	20,9	-44%	31,9	17,4	-45%	5,5	3,4	-38%
Products of the chemical industry	26,9	26,8	-1%	25,0	26,4	6%	1,9	0,3	-83%
Plastics, rubber, articles thereof	12,0	8,1	-32%	11,7	8,0	-32%	0,3	0,2	-51%
Base metals, articles thereof	12,1	9,4	-22%	9,9	7,5	-24%	2,2	1,9	-13%
Optical instruments	8,3	5,6	-33%	7,4	5,3	-29%	0,9	0,4	-62%
<b>Total</b>	<b>628,3</b>	<b>495,2</b>	<b>-21%</b>	<b>427,3</b>	<b>388,2</b>	<b>-9%</b>	<b>201,0</b>	<b>107,0</b>	<b>-47%</b>

Source: Authors’ own calculations based on the data of National Bureau of Statistics and of the National Bank of Moldova

For instance, according to our calculation, the export of textile products contingent to lohn contracts had decreased by 44% in Q2 2020, while textile companies operating on their own, have experienced a reduction in export by only 16%. The same development is common for the export of machinery, appliance and equipment, since the export under inward processing experienced a higher decrease (-46%) as compared to the rest of the export (-40%). An opposite dynamic was recorded only by export of furniture (-38%) for inward processing and (-38%) for the rest of export.

**V.FURTHER DISCUSSION AND RECOMMENDATION**

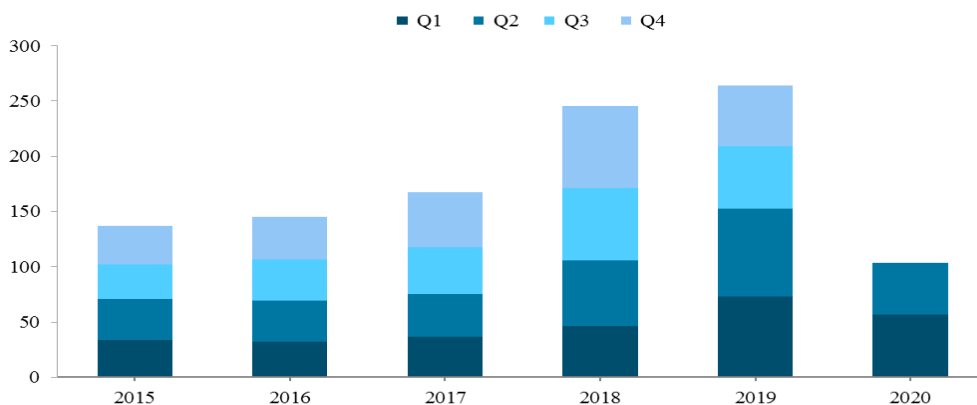
Over the last decades, the fragmentation of production has determined the expansion of the inward processing trade, thereby opening new opportunities for companies from the countries in development. Many Moldovan enterprises have engaged in subcontracting relations with foreign companies. However, the inward processing trade requires a thorough investigation to see whether it could provide for an economic resilience and competitiveness in the long run. We believe the SWOT analysis of the inward processing trade from the perspective of the Republic of Moldova, would be part of such investigation.

**STRENGTHS**

- The main strength the domestic subcontractors or subsidiaries of multinational companies acquire from engaging in inward processing services, refers to better connectivity and integration in the global value chains. It is a valuable initial way to establish contacts and partners and also to understand the trends in the international markets.
- Additionally, subcontractors may enjoy benefits in the form of technology and knowledge transfers that otherwise would have been too costly to be accomplished. Hence, operating under lohn contracts can serve as a bridge to more innovative production process.
- Involving in subcontracting agreements could also secure a higher level of income for the employees, thereby increasing the standards of living in a country.

**WEAKNESSES**

- Usually, subcontractors are more sensitive to changes on foreign markets, since they are regularly export oriented and very dependent on the contractors (Szanyi, 2002). Therefore, companies operating under inward-processing become more exposed to possible disruption of the global value chains. The current evolution under the COVID-19 pandemics has confirmed this statement in the case of R. Moldova too. A suggestive evidence in this regard is provided by the data on the export on manufacturing services on foreign-owned physical input, presented in the BOP. Thus, the volume of export of this type of services has significantly decreased in Q2 2020 (by 41% compared to Q2:2019), illustrating how seriously both foreign partners and local subcontractors were hit by the pandemic crisis.
- Another weak point related to inward processing trade refers to relatively low value added, and effective revenues received by the local subcontractors. To illustrate the income obtained from lohn contracts, we have analysed the amount of export of manufacturing services on foreign-owned physical inputs, which are presented in BOP (Figure 2). Thus, in 2019 resident entities involved in this kind of operations received about 250 million US\$, this representing a relatively modest revenue considering that about 740 million US\$ of export was contingent to inward processing services (see Table 1).



**Figure 2. Export of manufacturing services on foreign-owned physical inputs, in the Republic of Moldova, million US\$**

Source: Elaborated by authors based on the data of the Balance of Payments

- The development of Moldovan companies operating under inward processing trade is mainly explained by the relatively low labour cost that makes them attractive for foreign contractors. Having this advantage, companies are usually ignoring other strategic objectives such as investing in innovation. However only relying on the cost of labour does not provide for economic resilience. Thus, the lack of innovation, low sophistication of production process, insufficient R&D investments place local companies at risk (WEF, 2019).

**OPPORTUNITIES**

- Once a country or a region within a country has specialized subcontractors, it becomes more attractive for other foreign companies who decide to decentralize their operation there. This may lead to formation of an economic cluster, encouraging other suppliers and processors to locate there.

- Moreover, empirical evidence on trade models based on fragmentation of production shows that splitting up of the production process may give to the subcontractor country a comparative advantage in production of a good that it had not before (Deardorff, 1998). So, countries specializing in a single production stage could obtain a comparative advantage that allows them to integrate into global value chains.

- One of the main opportunities that arise from operating under Lohn contracts refers to the possibility to acquire knowledge and production capacities that may enable local processing companies to develop quality and competitive products and subsequently, gradually penetrate new markets with their own products and labels.

**THREATS**

- Operating under Lohn contracts means low awareness/popularity of the Moldovan processing companies on the international markets, since the brand name of the products is what matters. So in case those contracts with current partner are not prolonged, it could be difficult for the domestic processors to find other contractors.

- Usually, companies that are involved in processing services have a cost advantage that makes them attractive for contractors over a period of time. Yet there is a permanent high competition related to cost pressure from other international processors. Therefore, if Moldovan processors are no more available to offer attractive costs for processing services they could be easily substituted by other companies. Thus, the comparative advantage that the Republic of Moldova currently has in terms of the labour cost will erode with the increase of these costs including due to labour migration, unless measures are taken to increase productivity based on new technologies.

The threats and weaknesses that may arise when companies operate under Lohn contracts call for concrete measures in order to build value/supply chains that are resilient to disruption and flexible enough to capitalize on the new sources of competitive advantages. To become more resilient and overcome the dependence on simple processing services, companies have to orient their activity toward more sophisticated, complex and innovative manufacturing exports. However, this could be very difficult to be done at the individual level, as the majority of firms do not have enough internal capacities to sustain and generate these changes for keeping competitive. Thus, economic/industrial clusters could become strategic instruments in providing important steady conditions for enhancing the resilience of the companies.

Evidently the clusterization of the Moldovan enterprises would provide conditions for improving their economic resilience via:

**Collaboration and co-information**

This also implies taking actions to identify and formalize clusters and promote among its members the benefits that could be capitalized via collaboration and improved communications within clusters. R. Moldova is currently characterized by an under-developed culture of collaboration, expressed in low trust and atomistic approach toward business. However, the relational capital is imperative for the knowledge and innovation to be transferred more readily. Therefore, via cluster formation the spirit of social embeddedness could be cultivated and facilitative social networks be developed, necessary to change the current attitudes and encourage more systematic inter-firm collaboration (Benea-Popușoi and Rusu, 2019).

**Transfer of innovation**

Lack of innovation and low sophisticated production processes places the Republic of Moldova on the niche of the economical labour force. This emphasizes the insufficient R&D investments and the lack of collaboration in research and technological developments between universities, research centres and industries.

Meanwhile clusters could offer the appropriate environment for stimulating knowledge diffusion due to the multiple links between cluster members that ensure rapid spread of innovative ideas, technologies, and know-how (Maticiuc, 2005; Hervas-Oliver, et. al 2018). Moreover, it could create productive networks with universities necessary to push forward stronger science-business links that are imperative for promoting innovation, digitalization and increasing the quality of labour force.

**Moving forward to a higher level in the value chain**

In order to lift up to a higher level in the value chain, a well-developed infrastructure is necessary (laboratories, technologies), implementation of quality standards and qualified labour force. In order to achieve such objectives an integrated approach to development should be followed. Since clusters regularly integrate a

range of different actors (business, government, research, and also civil society) they could generate solutions to increase strategic autonomy of enterprises that currently rely on inward processing.

**Developing and extending local vertical partnerships**

Since a cluster implies the presence of large number of firms producing the same types of goods or requiring similar types of inputs, this stimulates the location of specialized suppliers within the clusters. Thus, the presence of local suppliers of physical inputs or specific services leads to creation of new local vertical partnership and respectively gradual substitution of foreign suppliers (Wolman and Hincapie, 2015).

**Increase awareness on international markets**

Clusters could help in improving visibility through a common marketing campaign and promoting regional brand identity at international exhibitions (Bettiol, et. al 2019). Therefore, joint advertising under the cluster umbrella could diminish the cost of participating at different exhibitions that would be difficult to cover individually by firms.

**Attraction of financial funds**

The absence of well-defined clusters in the Republic of Moldova represents a missed opportunity in obtaining the financial assistance from the EU sources, since via its projects (Horizon 2020, ClusterPoliSEE, etc.) the European Union is an active supporter of clusters, including those located in its Eastern Neighbourhood Countries. The benefits of such projects are essential in addressing specific resilience challenges (Wilson, 2019). Therefore, via formalization of clusters within and across economic sectors, financial funds may be attracted that are imperative for modernization of the Moldovan enterprises.

In the light of the previously mentioned types of responses of the European companies to the disruptions triggered by pandemics (Kamp, et.al, 2020), it can be inferred that the dependence of the Moldovan enterprises on the loan contracts, constrains their ability to absorb and recover from the pandemic shock, since their reliance on loan, means they do not have control over a substantial part of their value/supply chain. Likewise, they do not fully manage relations with either input providers or final consumers.

Therefore, at the initial stage of the pandemic, Moldovan enterprises relying on inward processing displayed a reactive attitude, somehow trying to maintain the existing orders within the value/supply chains for which they work. Then these companies, with the exception of those that have since closed down, have reached the stage of evaluating their position in the value/supply chains, including assessing vulnerabilities and opportunities for transformation. Whilst a third stage would imply that Moldovan companies have to choose between either to continue working under loan (of course provided the orders are resumed), implicitly reinforcing those practices they had until early 2020. Or to enter the process of reconceiving their production management and strategy by radical changes in their value/supply chain practices.

In this context, it would be reasonable for Moldovan companies to capitalize on the experience of companies in the European Union, by forming economic clusters or possibly joining the existing ones. Thus, they would gain access to that cluster's support that directly contributes to building economic resilience of their cluster members: (i) clusters could gather intelligence on potential new partners in the value/supply chains of the Moldovan enterprises; (ii) clusters might connect domestic companies to new partners and help to build ecosystems; (iii) clusters could support Moldovan companies in the development of new supplies and contribute to the building of necessary capabilities. Finally, clusters could provide long-term guidance, as for example strategies for the digital economy, circular economy, enabling companies to gradually reconceive and make their economic activities / value chains resilient and sustainable.

Of course, in this respect, the choice of Moldovan enterprises is limited by the low level of clustering in the economy of the Republic of Moldova. For example, there is only one relatively formalized cluster in the apparel industry and one similar in the industry of machinery, appliances, equipment. Many other industries in the Republic of Moldova generally do not testify clustering initiatives.

This situation precisely matches the principle of the direct correlation between the level of economic clustering in a branch/region/country and the corresponding level of their economic performance. It also points to a vicious circle between the low level of economic clustering and the low performance/development level of the Republic of Moldova economy.

We believe such a vicious circle can be solved by connecting Moldovan companies to the European Union's economic clustering process, which has been very advanced, as has also proved the context of the current pandemic. EU clusters do not know the borders of countries. Most of them are cross-sectoral. In the short term, they have shown a very prompt response to the challenges of the pandemic. Clusters are included in the Recovery Plans elaborated recently by the EU Member States and therefore, much of the EU recovery funding is expected to be harnessed in the long term through clusters (European Clusters Alliance, 2020).

**VI.CONCLUSIONS**

Our research has revealed that in the context of economic globalization, the inward processing trade represents an opportunity, including for the Moldovan companies, to join the global value chains. However, we



concluded that the volatility of inward processing contracts exposes domestic enterprises at risk. Hence, the strategy of the Republic of Moldova should focus on supporting companies operating under Lohn contracts to become more resilient, primarily via building value/supply chains that are resilient to disruptions and capable to adapt to reap new sources of competitive advantage for the post-period of inward processing trade.

In line with our exploration, building economic clusters can become a strategic solution to improve the resilience of Moldovan companies. The multiple advantages of economic clusters have been proven also by the growing evidence of the economic clusters' development in the ex-socialist countries of Eastern Europe, including the Republic of Moldova.

Pursuant to our investigation, there is a direct relationship between the level of economic clustering of the branch/region/country and the corresponding level of economic performance. The beneficial effects of the clusters are manifested both under normal economic conditions and especially under abnormal or "new normal" economic circumstances, such as those of the pandemic, that has stressed both the issue of disruption in the value/supply chains of the companies and that of their economic resilience. Drawing on various approaches, we have conceptualized the economic resilience as the ability of the economic agents to absorb and recover from shocks that is from disruptions in their economic activity.

Based on recent studies, we found that in the disruptive context of pandemics, companies are likely to adopt several types of responses such as initial reactive attitudes, or further evaluative approaches, assessing vulnerabilities and opportunities for transformation of their value/supply chains, eventually entering the process of reconceiving or reinforcing the production practices they had until early 2020.

Primarily we have scrutinized how can clusters help to address the challenges of the disruptions implicitly contributing to strengthening the economic resilience of their members. To clarify it, we have examined the functions of clusters in the light of the companies' types of responses under the pandemic conditions. Thus, we have delineated the areas of clusters' support that directly contribute to building economic resilience of the clusters' members. Inter alia we concluded, on a short to long-term basis clusters can gather intelligence on potential new partners in the value/supply chains and support companies in the development of new supplies for enhancing their contingency and continuity plans. Whereas, on a medium to long-term basis, clusters can connect companies to new partners, helping to build ecosystems and provide sustainable guidance, including strategies for the digital economy, circular economy.

Based on growing evidence, inter alia from the European Commission, we have reconfirmed the remarkable role of clusters in building economic resilience at the level of the European Union, since the outbreak of the pandemic.

In another line, our research has revealed the inward processing trade of the Republic of Moldova has been important so far, accounting for about 30% of the country's exports. However, the share of inward processing exports differs significantly in the first categories of exports, the highest share being typically recorded in the apparel industry and in the machinery, appliances, equipment, whilst the other categories register much lower ratios.

Under the pandemic conditions, the exports of R. Moldova proved to be highly vulnerable, the highest negative contribution to their evolution being brought by the export decline in machinery, appliances and equipment, textile and furniture. Our analysis has clearly revealed that the exports linked to inward processing services have turned out particularly sensitive to the crisis, thereby less resilient in facing the pandemic challenges.

Thus, we have found that the dependence of the Moldovan enterprises on the Lohn contracts, constrains their ability to absorb and recover from the pandemic shock, meaning they do not have control over a substantial part of their value/supply chain and do not fully manage relations with either input providers or final consumers.

We have seen that at the initial stage of the pandemic, Moldovan enterprises relying on inward processing displayed a reactive attitude, somehow trying to maintain the existing orders within the value/supply chains for which they work. Then these companies, with the exception of those that have since closed down, have reached the stage of evaluating their position in the production chains. Whilst a third stage would imply that Moldovan companies have to choose between either to continue working under Lohn (provided the orders are resumed), implicitly reinforcing those practices they had until early 2020. Or to enter the process of reconceiving their production management and strategy by radical changes in their value/supply chain practices.

In this context, we have suggested it would be reasonable for Moldovan companies to capitalize on the experience of companies in the European Union, by forming economic clusters or possibly joining the existing ones. Thus, they would gain access to that cluster's support that directly contributes to building economic resilience of their cluster members.

For the time being, our research has revealed the choice of Moldovan enterprises is limited by the low level of clustering in the economy of the Republic of Moldova. There is only one relatively formalized cluster in the apparel industry and one similar in the industry of machinery, appliances, equipment. Many other industries

in the Republic of Moldova do not testify clustering initiatives.

In line with our exploration, the case of R. Moldova reconfirms the direct correlation between the level of economic clustering and the corresponding level of economic performance. It also points to a vicious circle between the low level of economic clustering and the low performance/development level of the Republic of Moldova' economy. To overcome such vicious circle, we have concluded, Moldovan companies need to connect to the European Union's economic clustering process, which has been very advanced, as has also proven the context of the current pandemic.

## VII. REFERENCES

1. Bén , C., Wood, R. G., Newsham, A., and Davies, M. (2012), Resilience: new utopia or new tyranny? Reflection about the potentials and limits of the concept of resilience in relation to vulnerability reduction programmes. Institute for Development Studies Working Papers, 2012 (405), 1-61.
2. Benea-Popu oi, E. and Rusu, E. (2020), Clusters as an Environment of Competitive Collaboration. A case study on the emerging apparel economic cluster in the Republic of Moldova. In International Conference on Management Science and Engineering Management (pp. 742-754). Springer, Cham.
3. Bettiol, M., Chiarvesio, M., Di Maria E., and Gottardello D. (2019), "Local or global? Does internationalization drive innovation in clusters?" European Planning Studies, 1-20.
4. Deardorff, A. (1998), Determinants of bilateral trade: does gravity work in a neoclassical world? In The regionalization of the world economy (pp. 7-32). University of Chicago Press.
5. Delgado, M., Porter, M. E., and Stern, S. (2014), Clusters, convergence, and economic performance. Research policy, 43(10), 1785-1799.
6. European Cluster Observatory (2012), Emerging industries: report on the methodology for their classification and on the most active, significant and relevant new emerging industrial sectors, p. 9.
7. European Clusters Alliance and ReIndustria Innovazione (2020), Report on disruptions in the European value chains and industrial ecosystems, solutions and setting up of EU Rapid Alert Function, Report prepared for the European Commission, October 2020 (retrieved from <https://op.europa.eu/en/publication-detail/-/publication/b0d3bf9a-3061-11eb-b27b-01aa75ed71a1/language-en/format-PDF/source-177929645>)
8. European Observatory for Clusters and Industrial Change (2019), Summary Report on lessons learnt from fostering modern Cluster Policy in regions in industrial transition. p. 26 (retrieved from <https://op.europa.eu/en/publication-detail/-/publication/7d8a976c-8b2b-11e9-9369-01aa75ed71a1/language-en/format-PDF/source-177817074>)
9. Hervas-Oliver, J.L, Sempere-Ripoll F., Alvarado R. and Estelles-Miguel S. (2018), "Agglomerations and firm performance: who benefits and how much?", Regional Studies, 52:3, 338-349.
10. Kamp, B., Porsch,L., Wilson, J., Hausemer, P. (2020), Responding to COVID19: The role of clusters in supply chain adjustments. European Cluster Collaboration Platform Discussion Paper 2, November 2020, p. 5, retrieved from [https://www.clustercollaboration.eu/sites/default/files/news\\_attachment/dp2\\_supply\\_chains\\_final.pdf](https://www.clustercollaboration.eu/sites/default/files/news_attachment/dp2_supply_chains_final.pdf)
11. Konstandopoulos, A. (2020), Aerosol & Particle Technology Laboratory, CERTH, cited in "Report on disruptions in the European value chains and industrial ecosystems, solutions and setting up of EU Rapid Alert Function" prepared for the European Commission by European Clusters Alliance and ReIndustria Innovazione, October 2020, pag. 41 (retrieved from <https://op.europa.eu/en/publication-detail/-/publication/b0d3bf9a-3061-11eb-b27b-01aa75ed71a1/language-en/format-PDF/source-177929645>).
12. Maticiu, M. (2015), The complex relation between clusters and innovation in European Union. Ecoforum Journal, 4(2).
13. Mitchell, A. (2013), Risk and Resilience: From Good Idea to Good Practice, OECD Development Assistance Committee Working Paper 13/2013, OECD Publishing.
14. National Bank of Moldova (BNM) (2018), Statistical yearbook International accounts of the Republic of Moldova, Chi in u 2019 (retrieved from <https://www.bnm.md/en/content/statistical-yearbook-international-accounts-republic-moldova-2018>).
15. OECD (2014), Guidelines for resilience systems analysis, OECD Publishing.
16. Rusu, E. (2020), Methodological benchmarks for identifying the industrial branches with clustering potential of the Moldovan economy, Journal "Economica" nr.2 (112) 2020, pp. 38-50.
17. Szanyi, M. (2002), Subcontracting and outward processing trade as a form of networking in Hungary, Working Paper no 124, Institute for World Economics, Hungarian Academy of Science.
18. USAID Moldova (2015), Moldova Competitiveness Enhancement and Enterprise Development II. Final Report.
19. Waits, M. J. (2000), The added value of the industry cluster approach to economic analysis, strategy development, and service delivery. Economic development quarterly, 14(1), 35-50.
20. Wilson, J. R. (2019). Cluster policy resilience: new challenges for a mature policy. International Journal of Business Environment, 10(4), 371-382.
21. Wolman, H., and Hincapie, D. (2015), Clusters and cluster-based development policy. Economic Development Quarterly, 29(2), 135-149.
22. World Bank (2016), Moldova Trade Study: Note 3. Competitiveness in Moldova's Agricultural Sector. Washington, DC. (retrieved from <https://openknowledge.worldbank.org/handle/10986/24007>)
23. World Economic Forum (WEF) (2019), The global competitiveness report.