Economic Warfare and Supply Chain Management: Impacts and Solutions.

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Abstract— In a sharp competition, the global SCM (Supply Chain Management) is based on the globalization of free trade following a liberal principle, which is appropriate to "let the market go" motto and to the removal of government interference. But, the upheavals of the world economy, the hybridization between economic and political sectors, and protectionist ambition. Impact repositories, rationalities, and the forms at management and control of transnational flows. Speaking thus of the economic warfare (EW) "long accepted badly at the ideological level" [1] like mutation or reality already concrete of the international market. In direct opposition with several theories presenting free trade as the most profitable system, among others: The theory of absolute advantage, and the theory of the comparative advantage.

The purpose of our article is to propose a Supply Chain Economic Management (SCEM) which takes into account the internal and external environment of the SCM, as well as the forms of the EW, while outlining the possible outcomes of SCM to deal with the impacts of this war.

Keywords— Global SCM, free trade, economic warfare (EW), Supply Chain Economic Management (SCEM), environment.

1. Introduction

Moving from globalization and free trade in quest for a perfect competition of the logistic chains towards a dependency of the supports of the States where "all the blows are allowed" [2]. The EW is a reality [3], already quantified in the case of the French economy by [4] during the study conducted between 2006 and 2008 on 2,963 companies and laboratories; and which has taken several forms of delivering aid to national companies, at differential customs duties, solidarity protectionism, towards an embargo.

So, the supply chain (SC) may have to pay the price of nationalism, from the origin, of the location, or exchange that it can have with the geopolitical or the geo-economics’ actors. In an internal economic and social interest of the protectionism favoring the internal competitor and ensuring through a "Schumpeterian economy" [5] the maintenance of workstations.

In clear refutation of the development of the supply chain towards an SCM, successful thanks are due to the increased awareness of the importance of setting up a chain with objectives serving the group, translated by a logistic maturity of the companies. This maturity is enabled by the strengthening of coordination partnerships towards collaborations converted to full integration, in an interest to take advantage of the economic benefits [6], technical [7], and economic positioning [8], thanks to the parallel development of IT solutions [9]-[10]. This allows global enrichment. Even the economic studies such as [11] show that "greater economic freedom favors economic growth, the level of economic freedom is not, however, linked to growth”.

This opposition of ideas and facts also presented by [12] which suggests that the market is considered by many specialists as a mediator of peace and not a factor of warfare. While [13] study of a diverse group of dyadic relations for the period 1870-1938, involving 270 militarized conflicts between states and 14 wars, has demonstrated a "low to moderate interdependence reduces the likelihood of dyadic disputes and that extended economic ties increase the likelihood of militarized disputes. Extreme interdependence, whether symmetrical or asymmetrical, has the greatest potential for
increasing the risk of conflict”. This opposition is a reality even in the daily practices of managers.

Thus, the competitive advantage is limited by an EW that takes several definitions, among others: “The EW is the major expression of non-military power relations. The survival of a country or people, as well as research, preservation, and growth of power, are the main triggers” [14].

As a result, "everything changes and nothing changes" [15] is a reality that more and more becomes concretized by a change and an "optimization of supply chain management techniques" [16] and international trade, but still with the introduction of new models of protectionism.

In order to propose the actions envisaged by the SCEM opposite the EW, it was important for us after a historical review to present the objectives, forms and impacts of these wars on the SCM thus allowing a bilateral interactivity between the SC and its environment, for succeed this SCM as fair target of international competition.

2. Historical review

[15] has shown that the economic cause often explains the great conflicts between empires, implicitly showing the ancient existence of this war. Approved by the British military historian [17], who recognizes the interdependence between the economy and the conflicts in the British maritime tradition, whereas for [2] this notion of EW is carried by the systemic crisis, who has been affecting the economy since the 1970s.

If, according to [18] and [14], this concept of EW was created by Esambert in 1971, popularized later by [14] in the early 1990s, however, this notion of EW is already present in 1942 by [19] under the title "Our Economic Warfare". For [20], the 1980s, called "happy globalization", are a triumph of trade liberalization, but have already experienced, "the single act". And after 1986, "transatlantic misunderstandings" [21] have risen since 1971: "a blow to Europe" [22] because Washington denounces the "Fortress Europe" [23].

Thus, in 1982, Washington imposed a self-limitation on European steel, followed in 1988 by the "Trade Bill" [24], which included an article dubbed "super 301" [25] allowing sanctions to be imposed on partners deemed "unfair", and without forget the banana warfare of the 90s [26]. While [14] estimates, the existence even already of an "omerta on the clashes economic between Western countries not to give arguments to the Soviet propaganda".

If, for [27] the economic warfare preventing the USSR to follow the United States in the arms race, so North Korea and Iran [28]. It is also used as a means of geopolitical pressure². For other countries, EW is also presented "to ensure control of the" scarce resources "necessary for their economy" [29].

The EW also serves to create geopolitical alliances, seen as a triumph of the patience of the systematic "containment", and the building of a strong alliance with Western states and Japan [30]. Further research, [31] presented the methods of control and economic domination developed by colonial empires.

Thus, according to [32], the United States has imposed this practice of silent EW in peacetime to the industrialized countries of the Western bloc. This form, which [33][34] has dubbed "soft power", consists of exporting legal systems outside its borders (extraterritoriality). A dominant position in international organizations or an influence on the law-making process of other states [35], which are real "regulatory Trojan horses", of which [36] gave several examples.

So, for SCM, EW has taken many forms and names, as we will see in the next section. But the fact that the SCM makes sense, instead of being subject to the constraints of its environment, can move from a counter-effective solution to its prosperity with real selectivity, to positive interactivity between the SC and its environment for the successful positioning of both parties.

3. The aims and forms of EW for SCM

In order to conceive of possibilities in front of the SCM, it is important for us to describe the aims and forms of the EW that affect this chain. To achieve this, we hulled, the basics of SCM (Figure 1).

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² The example of the law of 01/06/2018 to double customs duties on steel and Turkish aluminum causing a 14% drop in the Turkish lira [61].
3.2 Factors of EW with external impact on SCM

The external impact of EW on SCM includes three key factors:

- **Environment**: in the sense of analysis PESTEL (Political, Economic, Sociological, Technological, Ecological, Legal) of the SCM environment. The manager must identify the levels of influence of the macro-environment exerted on his organism, and to classify them in factors having negative impacts and positive impacts, presented by decisions of blocking (barriers) or supports (subsidies), towards partnerships that mitigate the impact of this warfare, or a resilient SC strategy [37]-[38]. In this sense, we can cite the study by [39] that deals with determinants for a Successful Interstate Ro-Ro Operations in Indonesia-Malaysia-Thailand;

- **Customer**: Between a quality realized, perceived, and expected, the SCM directs all functions and offers towards the customer who is more and more at the heart of his visions. But, instead of filling a need related to normal use in a "Pure and Perfect Competition" 

  

  

  

- **Regulation**: securing [41] or facilitation [42] of the SC to ensure the growth of sensitive economies against predators tamed by: anti-dumping laws, "social dumping", regulatory restrictions, ..., is a protectionist reality that does not mean self-sufficiency, but that would provide answers to the dysfunctions of the liberal globalization. However, poorly planned long-term regulation can pose enormous challenges to the economy by disadvantaging the competitiveness of domestic firms.

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3 External Impact: The objective is to have an impact on the supply chain directly from the outside.

4 Internal Impact: By weakening of the critical links in the supply chain.

5 Mixed Impact: Of quick or slow effect, depending on the intensity of this warfare, the existence of this impact is camouflaged by the diversity of causes.

6 [62] adopted 7 hypotheses for "Pure and Perfect Competition". Note that according to this "theory of pure and perfect competition", a company like "Apple" would be impossible to exist, because its phones are more expensive.
3.3 Factors of EW with internal impact on SCM

The internal impact of EW on SCM includes two key factors:

- **Logistics links**: The global SC is named after its ability to expand its geographical reach and to be present in new markets, in a new economic environment, thanks to technological development, and "digital transformation" [43], which have contributed to the mediatization of the SCM concept and the globalization of activity in a world that seems to be shrinking, to leave the restricted geographical circle towards a new approach to the management of operational flows, taking into account the functions mobilized with visions to practice, faced with the pressures of strong opportunities[7]. Thus logistic chains become longer and more complex [44], sometimes with a question of survival. But, the number and geopolitical dispersal of links in the SC are aggravated or diminished by the impact of the EG, which discovers the sensitive points of the SCM that crosses its borders;

- **Coordination**: between full integration [45]of links in the SC, market transparency [46], and confidentiality [47], companies are confronted with these dilemmas in favor of a market presented not only by competing companies, but also by States or groupings of States.

3.4 Factors of EW with a mixed impact on SCM

The mixed impact of EW on SCM includes three key factors:

- **Product**: Product modularity and SC [48], depending on product characteristics. The impact and effects of EW are changing. Thus, the SCM is simultaneously confronted with an external obligation to satisfy the needs of the customer in the face of other rather needs than those of the traditional part (quality, price, duration, and location) to other requirements of its environment, and the internal constraints of choosing or undergoing the imposition of "logistical links", in a persistent dilemma: "external expectations and internal constraints", to better adapt the product to market expectations;

- **Innovation**: is critical to the success of SCM in a competitive environment characterized by a more demanding and better-informed market. This idea is confirmed by the empirical study of [49], which shows "the interdependence of the orientation towards innovation, the integration of the SC, the combined capacities of the competition and business performance ". Thus, following the progression policy: "Horizontal progress" (example of the China) or "Vertical progress" [50], the costs of scientific research [51], and the technical jumps that may have the product and the logistics process, can disrupt the market even in a competition between the countries which favors certain SCM in an apparent selectivity;

- **Resources**: Beyond the economic capital [52] and the availability of raw materials and components [53], the survival of SCM depends on a qualified human capital [54], with better access to technical skills[9] [55], which favors SCs closely linked to its environmental context. Thus, EW for the SC can take many forms (Erreur ! Source du renvoi introuvable.).

![Figure 3. The forms of the anti-SCM economic warfare.](image)

4. Impacts of the EW

After determining the objectives and forms of EW in the SC, we can summarize that the impacts of this warfare (Erreur ! Source du renvoi introuvable.) affect both the SC and its environment, in the reciprocity of failure or success, not only for the targeted SC but can also have an unexpected impact on other chains.

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7 [63] presented the SCM challenges and opportunities for the oil industry.

8 [64] presented the power of innovation, distribution, and supervision to improve the performance of SCM.

9 For [65], the resource-based enterprise vision can be reconceptualized as a knowledge-based enterprise vision.
For the SC, EW impacts:

- The real integration of the SC for a more mature logistic management, allowing: the exchange, transparency, collaboration and alignment in the same strategy, opposite a classic operation. This integration will allow reactive management of the SC in a very dynamic market. But, faced with a wave of constraints of the EW, which impacts the principles of SCM. This SCM is leading to adopt new management approaches for operational flows that are not always successful;
- The adaptation of the SC’s offer and structure, in order to achieve both a variety of supply and agility of the SC, is a finality confronted with the blockades of the EW by imposing non-optimal structures;
- The efficiency of SCM requires the success of its objectives in addition to the constraints imposed by EW while optimizing costs. Is a three-variable equation (objectives, constraints, and costs) whose center of gravity depends on the "SCM-EW" pair. In this sense, [56] quantified the effects of energy sanctions between 1938-2017, which impose, the triggering of non-energy counter-sanctions, and present the chain segment effect of the distribution, of the chain supply associated with these sanctions.

For the environment, the EW has:

- Economic consequences\textsuperscript{10}: The prosperity of Western countries that do not have natural wealth in the face of poverty on the other side of the low-value-added raw material exporting countries, followed by a costly return after a transformation, illustrates a geographic concentration of wealth reflecting this "soft power", which favors economies baptized around economic interests against naturally rich but economically dispersed countries, unable to play the game of the GE to defend the interests of their economy;
- Human consequences: Since we cannot conceive human evolution apart from the evolution of human activities [57] that work ensures by a solid economy. We are confronted with a correlation between the economy and social development, but traditional management blocks creativity, by limiting itself to a mechanized execution, which impacts the educational model, thus entering into a vicious cycle of convection of the inability to evolve, and the consolidation of poverty as an unavoidable reality. While [58] presented the impacts of international economic sanctions on health care against cancer in Iran;
- Security consequences\textsuperscript{11}: the crime rate is more concentrated in geographical areas facing economic or humanitarian weakness, aggravated by resources that are ready to produce, but not or counter-productive, thus a poor performance in an already weakened economy [59]. show in the case of Russia how energy policy can be considered as a form of economic war.

5. Possible actions by the SCM in front of the EW

In the face of the devastating consequences of EW, the reactions of the SCM to overcome the constraints of the EW are crucial. We chose to group them (Figure 5) in nine domains. Enabling to offer SCEM, which goes beyond the internal aspect of the SCM to a harmonization of the latter with its environment.

- Product: The rationalization of the design of a range of products is a permanent choice between three solutions, the first consists of a continuous adaptation to the peculiarities of each market, it is thus a question of the personalization of the offer not only in as a marketing concept but in terms of utility against competitors' offers. The second is the design of technically close products (commonality), with a wide range of exploitation. And the third solution is a general standardization of products. These three possibilities require economic adaptation studies of the product that

\textsuperscript{10} [66] in his book presented the economic consequences and survival solutions of the economic state in America between 1933 and 1991.

\textsuperscript{11} [67] have defined the dimensions of national security, financial security and the food SC in Ukraine.
will allow agile competitiveness to the constraints of the market;

- **Services**: Imposes a marketing-logistics coalition, which exploits the benefits of digitalization to a digital transformation of customer behavior, in order to take steps in a potential market. So, the SCM has to adapt its service according to the product, the customers, and the means of service available;

- **Diversification**: As a trend and not a starting point. Is a parallel diversification of products, customers, resources and logistics links. For ensuring a varied choice of SCM products, and relative independence of resources, supports, and accompaniments. Without exaggeration, which will have negative repercussions;

- **Economic Intelligence (EI)**: mastering the collection, storage and dissemination of information is the nerve of warfare in a rapidly changing environment. EI is a means by which the State or a group of SC Member States are involved, by offering white or gray information to a market by legal means, which allows its SC to be pushed in relation to others;

- **Environment**: instead of talking about the SC, we are talking about a logistics network with horizontal and vertical relationships that influence the interactivity of the SCM with its environment. EI is a means by which the SC, to meet the external expectations expressed by the needs of the customer while meeting the constraints of the market. While, towards a softening of these constraints, the SCEM is presented as a strategic collaboration of the visions of both the SCM, and its environment (decision-makers and the forces of power), in positive interactivity expressed by an exchange of information in an environment of Economic Intelligence allowing to lighten the constraints imposed on the SC by fluidification and aids granted, thus allowing the success of this economic and competitive prosperity of SCs.

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12 [68] talk about Uberisation.
13 [69] presented "the effect of SC integration on the relationship between diversification and performance". While [70] insist on the diversification of suppliers.
14 [71] presented the challenges in front of the SC facing China’s monopoly of natural resources that far exceed Washington.
15 For [69] the performance of the SC imposes a social innovation in the context of strategic knowledge management processes.
countries, moving from relationships of subjugation to partnerships.

This implication of the macroscopic environment in SCM establishes the foundations of an EW not always in opposition with the expectations of the SC, but imposes a fusion of the assets of the SCM in permanent interaction with its environment, which we have chosen to call Supply Chain Economic Management (SCEM), which takes into account the internal and external environment of the SCM, as well as then the forms of EW. Towards a multidimensional management, which offers new opportunities (strategic, structural, competitive, steering and agility) before the SCM to cope with the impacts of the EW that must play its game.

6. Conclusion

Starting from a liberal economy which stipulates the limitation of the intervention of the State, towards a "pure and perfect competition", in which only an internal optimization of the management of the SC implies the success of its positioning on the market. It's an academic illusion too simplified, far from being marketed even in the founding countries. Marking the obsolescence of the liberal economy as too idealistic vision. Towards a soft colonization, and the realities of "Petrodollar", "financial bubbles", imposing the balances of political or military forces, and passing from an EW to a "technological warfare" towards the computer attacks and the cybernetic attacks.17

Thus, the strategic vision, the will and the real support of the environment of the SC, in the presence of the assets (human, natural, cultural and geopolitical) long time, poorly exploited, pushed the Asian economies to submerge the western fortress, because of:

- The competitiveness of its SCM, more agile, more reactive, more innovative and more efficient;
- The Continued economic exploitation of the potential of environmental resources;
- The exploitation of Western scientific advancement, development of Economic Intelligence and intellectual theft techniques;
- The evolution of strategic relations with other

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16 The 15/05/2019: Trump declares the technological war against China by prohibiting the Chinese giant Huawei [72].
17 [73] tries to answer the question: "To what extent are developed states vulnerable to cyber-economic war?"

Reference


