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**The military budget, a less and less significant indicator of the useful  
national defense effort**

**Pax Economica**

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The military budget is often presented as the main indicator of a country's national security effort. However, this line of the national budget is homogeneous neither in time nor in space. Its content depends on immediate circumstances of peace or conflict, strategic perspectives of defence and national security, budgetary artifices in the fields in particular of research and development or domestic security and maintenance expenses. In times of total war, the national economy is at the service of military or civilian defence strategies, each citizen potentially becoming a servant of the State and an actor in military tactics. In peacetime, political conflicts between states sometimes lead to economic or diplomatic wars, the costs of which are generally not included in military expenditure. The military budget alone would not account for a country's resilience to economic or armed conflict. Of course, the production, intelligence and training of the citizens and the heritage of a country participate in the power of a state and can be partially reallocated to the military sector. There is therefore a defence “potential” which is not limited to actions sponsored by the military budget, materialized both by a technical and scientific base capable of producing sophisticated weapon systems, by a programmed autarky concerning essential products (energy, raw materials, etc.), and by a physical and moral infrastructure adapted to the collective response to potential conflicts. The security of a country can benefit from the dissuasive contribution of the military forces, but this role is today insufficient in view of the risks and dangers that threaten the overall security of a country<sup>1</sup>.

Military spending does not often correspond to military budgets, but NATO has established a relatively clear classification, even if it cannot correspond to the heterogeneity of its members' military budgets. The military budget concerns the State's financial commitments in the tactical and strategic organization of the military force. It includes the employment of civilian or military personnel, the

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<sup>1</sup> Fontanel, J., Corvaisier-Drouart, B. (2014), For a general concept of economic and human security, in Bellais, R. The evolving boundaries of defence: an assessment of recent shifts in defence activities, Emerald, Bingley, U.K., 2014.

purchase of weapons materials, organization and maintenance costs, the construction of military installations and research and development resources specialized in the development of new weapons. . The national defence budget adds to military budgets civil defence, paramilitary forces and military training for civilians, military aid to allies or in support of UN peace operations and the storage of strategic products. Finally, the economic potential of national defence includes the budget of the Ministry of National Defence, the industrial and scientific capacity for building armaments, and the capacity to develop national mobilization. In this context, the quantification of each position is particularly difficult to count, despite, like the weight of national consensus in the conflict. Finally, national security capacity determines the weight and power of Alliances, which are the product of agreements negotiated by the state. In a concept of power, military agreements between partners allow, on the one hand, to reduce potential threats and add the strength of its allies to that which the State has put in place. Many countries benefit from a military umbrella, with a weak national financial commitment, while having a security comparable to that of the great nation<sup>2</sup>.

The questions that arise relate to the content of military budgets, intertemporal and international comparisons and finally the ability of these figures to provide a satisfactory estimate of the potential quality of a country's national security.

### **The content and comparison of state military spending**

International information on countries' military spending is often provided by NATO, SIPRI and the World Bank, both in national currencies, in euros or in dollars<sup>3</sup>. The annual publication of NATO concerns the disaggregated military expenditure of its members, namely the current and capital costs of the armed forces, the costs relating to the Ministry of Defence and to public agencies responsible for defence projects, the paramilitary forces intended to provide military operations, retirement pensions, costs of civilian personnel attached to defence activities, related social services, operation and maintenance of materials and equipment, storage of strategic products, military aid to countries foreigners (including UN peacekeepers) and military research and development<sup>4</sup>.

SIPRI uses a definition similar to that of NATO<sup>5</sup> and modifies its history data in 2017<sup>6</sup>. It neglects the cost of the destruction of weapons, the cost of

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<sup>2</sup> Olson, M. and Zeckhauser, R., (1966) 'An economic theory of alliances', *Review of Economics and Statistics*, 48(3), 266-279.

<sup>3</sup> Malizard, J. (2015), *Aperçu critique des sources actuellement disponibles en matière de dépenses de défense et de sécurité*, PSEI, Numéro 1, 25 août 2015, <http://revel.unice.fr/psei/index.html?id=398>.

<sup>4</sup> Malizard, J., Fontanel, J. (2017), *Les dépenses militaires, un indicatif polysémique, évolutif et concurrencé de la sécurité nationale*, AFRI, *Annuaire Français des Relations Internationales*, Vol. XVIII. Paris.

<sup>5</sup> SIPRI (2016) *Frequently asked questions*, SIPRI Military expenditure database, <https://www.sipri.org/databases/milex/frequently-asked-questions#1-definition>

demobilization, civil defence, expenditure on the conversion of military equipment or the specific benefits intended for veterans. The actual destination of dual civil public spending then applied to the defence of a country as well as the cost of government debt are not estimated, which is equivalent to giving them a zero value. While a lot of parliamentary information from developed countries provides a solid basis for the calculations, the same is not true for countries in Africa or the Middle East<sup>7</sup>. The International Institute for Strategic Studies (IISS) Military Balance document<sup>8</sup> primarily uses NATO estimates and official national sources.

The information given by the Ministries of Defence is not always clearly established in the national military budget and it is heterogeneous as to its content (such as taking into account, or not, pensions and pensions). Thus, the nuclear forces of the United States are included in the Budget of the Ministry of Energy. What importance should be given to civil defence, which has weapons, but also protective equipment financed by the state or by citizens, such as atomic shelters? There are also questions concerning the specific status of certain forces (gendarmerie in France, paramilitary forces) or the existence or not of compulsory conscription. All these questions deserve specific reflection, State by State most often<sup>9</sup>.

The figures provided by NATO are frequently used as an information base, notably in the SIPRI (Stockholm International Peace Research Institute) database, but it is not recognized by major powers, such as Russia, China or Brazil. No rigorous verification is undertaken, due to lack of means and by virtue of the application of military secrecy. However, new information is often camouflaged, so as to provide no information to potential adversaries or enemies. For example, SIPRI at the United States Arms Control Disarmament Agency (USACDA), which itself underestimated actual spending, particularly in terms of opportunity costs<sup>10</sup>.

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<sup>6</sup> Fontanel, J. (2018), De nouvelles séries des dépenses militaires mondiales et nationales développées par le SIPRI : leur objet, leur signification et leurs approximations, PSEI, Paix et Sécurité Européenne et Internationale, <http://revel.unice.fr/psei/>

<sup>7</sup> Freeman, S-P., Ferguson, N. (2015), Mind the Gaps : Explaining missing and poor quality millex data, 19th International Conference on Economics & Security, Grenoble, [http://www.defense-realms.com/wp-content/uploads/2015/07/perlo\\_freeman\\_explaining\\_missing\\_poor\\_quality\\_millex\\_data\\_ices\\_2015\\_grenoble.pdf](http://www.defense-realms.com/wp-content/uploads/2015/07/perlo_freeman_explaining_missing_poor_quality_millex_data_ices_2015_grenoble.pdf)

<sup>8</sup> Il donne aussi des informations intéressantes sur les types d'armes utilisées par chaque pays

<sup>9</sup> Aben, J., Malizard, J. (2016), Defence budget, in "The Sage Encyclopedia of War. Social Science Perspectives", Sage Publication Inc.. J.F. Guilhaudis et J. Malizard (2016), Dépenses de défense et de sécurité 2015, PSEI, Numéro 4, URL : <http://revel.unice.fr/psei/index.html?id=1137>.

<sup>10</sup> Les calculs économiques fondés sur les prix calculés par le plan en fonction des priorités nationales et ceux qui auraient été obtenus par la loi de l'offre et la demande conduisait normalement à établir une estimation des dépenses militaires fondée plutôt sur une forme de coût d'opportunité. Cf. Cars, H-C, Fontanel, J. (1985), Military Expenditure Comparisons, in Peace, Defence and Economic Analysis, Ed. C. Schmidt, F. Blackaby, SIPRI, Mac Millan Press, London.

Table 1 – The United Nations Standardized Instrument for Reporting Military Expenditures

<b>Resources</b>	<b>Forces (1-8)</b>	<b>Military aid and others (9 à 12)</b>	<b>Military Expenditure (13)</b>	<b>Civil Defence (14)</b>
<b>1. Operating costs</b>				
<b>1.1. Personnel</b>				
Conscripts				
Other military personnel & reserve				
Civilian personnel				
<b>1.2. Operations and maintenance</b>				
Materials for current use				
Maintenance and repair				
Purchase services				
Rent costs				
Other				
<b>2. Procurement &amp; construction</b>				
<b>2.1. Procurement</b>				
Aircrafts and engines				
Missiles, including warheads				
Nuclear warheads and bombs				
Ships, and boats				
Armoured vehicles				
Artillery				
Other ordnance and ground force weapons				
Ammunitions				
Electronics, communications				
Non-armoured vehicles				
Other				
<b>2.2. Construction</b>				
Airbases, airfields				
Missiles sites				
Naval bases and facilities				
Electronics, etc.				
Personnel facilities				
Medical facilities				
Training facilities				
Warehouses, depots, etc.				
Command and administration facilities,				
Fortifications				
Shelters				
Land				
Other				
<b>3. Research and development</b>				
<b>3.1. Basic and applied research</b>				
<b>3.2. Development, testing, evaluation</b>				
<b>4. Total (1+2+3)</b>				

Within the framework of a proposal by France on the creation of an International Disarmament Fund for Development and a proposal by the Soviet Union to devote 10% of military expenditure to development aid, a The United Nations Standardized Instrument for Reporting Military Expenditures was proposed by the United Nations to provide precise information on international comparisons of military spending. The matrix has 14 columns and 42 rows, including subtotals<sup>11</sup>.

The columns represent respectively:

1. Strategic forces,
2. Land forces,
3. Naval forces,
4. Air forces,
5. Other combat forces,
6. Central support,
7. Administration and central control,
8. Paramilitary forces (PM),
9. Military assistance in the territory (Home MA),
10. Military assistance abroad,
11. Peacekeeping,
12. Undistributed
13. Total military expenditure
14. Civil defence.

However, there was no agreement on the procedures for verifying the information provided. Since 2000, only 97 countries have completed the UN matrix, at least one year. France and the United States, very present for the construction of the matrix, have not filled it for a few years, unlike Russia that, within the framework of the USSR, was opposed to it. More disappointingly, the column "Strategic Forces" has never been filled by the great powers.

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<sup>11</sup> United Nations Organisation (1975) Réduction de 10% des budgets militaires des Etats membres permanents du Conseil de Sécurité et utilisation d'une partie des fonds ainsi libérés pour l'aide aux pays en voie de développement. Rapport du secrétaire général. New York. Fontanel, J., Smith, R. (1987) The creation of an International Disarmament Fund for Development, in "Defence, Security and Development" (DEGER S. et WEST R., Ed.), Francis Pinter, London, June 1987, 10 pages

Military spending is an interesting indicator of the power of a state. However, the power of the economy, of research and development, of technologies, such as the quality of military strategies or the choice of instruments, equipment and weapons and the support of citizens are essential in the strength of a country<sup>12</sup>. France's nuclear deterrent "from weak to strong" has been the subject of significant military funding for half a century, but today its effectiveness is sometimes criticized, even if its influence in diplomatic ties is not negligible.

International comparisons assume the choice of a common currency, which is always the dollar, whether current, constant or international. Exchange rates cannot be used because they vary randomly from day to day, in the context of intense speculative tensions. The construction of monetary indicators involves numerous calculation hypotheses, the choice of which modifies the results considerably<sup>13</sup>.

International comparisons depend on the choice of converter for the reciprocal value of currencies. Statisticians propose the calculation on the basis of a constant dollar, which reduces the vagaries of the erratic evolution of exchange rates, but this statistical procedure of comparative calculations of military expenditure remains nonetheless random, especially in the choice of base year. United Nations experts have proposed the use of the purchasing power parity (PPP) method<sup>14</sup>, which has already been well applied in international statistical publications. This method calculates the cost of a basket of military goods and services in a country relative to its cost in the United States, expressed in US dollars (equivalent to international dollars). Complex calculations must then be undertaken to homogenize the sometimes-deep divergences between the characteristics of the armaments (speed, manoeuvrability, robustness, for example) available. However, purchasing power parity poses multiple problems concerning its interest in measuring the strength and reliability of a country's

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<sup>12</sup> Malizard, J., Fontanel, J. (2017), Les dépenses militaires, un indicatif polysémique, évolutif et concurrencé de la sécurité nationale, AFRI, Annuaire Français des Relations Internationales, Vol. XVIII. Paris.

<sup>13</sup> Most of the time, the general price index is used. This conception highlights the nation's effort devoted to the military sector, but rather emphasizes the importance of the burden which weighs on the citizens. Cf. Cars, Fontanel (1985), Op. Cit. Augustine, N. (1997), "Unhappy Birthday: America's Aerospace Industry at 100", *Aerospace America*, February. Hartley, K, Solomon, B. (2015), Special Issue ; Defence Inflation, *Defence dans Peace Economics*, Vol.27, n°2, <http://www.tandfonline.com/doi/full/10.1080/10242694.2015.1123464>. Malizard, J. (2013), Opportunity costs of Defence : an Evaluation in the case of France, *Defence and Peace Economics* 26(3), pp. 247-259.

<sup>14</sup> UNODA, Reduction of Military Budget: Construction of Military Price Indexes and Purchasing-power Parities for Comparison of Military Expenditures, Disarmament Study Series, n° 15, United Nations Office for Disarmament Affairs, New York, 1986 ([www.un.org/disarmament/publications/studyseries/15](http://www.un.org/disarmament/publications/studyseries/15)). Fontanel, J. (1987) « A Note on the International Comparison of Military Expenditures », in Christian Schmidt (dir.), *The Economics of Military Expenditures*, Macmillan, Londres. Fontanel, J. (2015), La base des données des dépenses militaires recueillie par l'Organisation des Nations Unies : origine et évolution. United Nations Standardized Instrument for Reporting Military Expenditure (2015) In Paix et sécurité européenne et internationale, <http://revel.unice.fr/psei/>

military weight<sup>15</sup>, since countries with a low cost of living cannot afford to prepare for the future in a competitive world dominated by financial powers.

Without verification, the value of the information provided by non-democratic states remains limited. It underlines the financing capacity of States to meet the challenge of their security. It is a deterrent that should not be overlooked. The question of the appropriateness of the homogenized instrument of UN military spending is being asked today. The concept of disarmament for development has been discredited, mainly because it is not always coherent, relevant and effective<sup>16</sup>. Any disarmament process involves a cost, such as the destruction of weapons and the obsolescence of national capital for arms producers. In addition, the conversion of the activities of military enterprises is costly and involves a real investment in peace (and not in dividends)<sup>17</sup>. Banning certain weapons changes state strategies, but not their financial commitments. Finally, poorly controlled disarmament can favour the appearance of perverse effects, especially in the absence of an audit that could be the subject of new conflicts.

### **Military spending, a necessary but insufficient means of national defence**

An excessive effort of military spending reduces the efficiency of the economic apparatus. The famous dilemma between butter and barrel exists, unless the barrel is used to take butter from other states. However, moderate defence spending is necessary to avoid international power struggles and predatory attempts by public and private actors in the context of economic globalization. The excessive importance of a military-industrial complex in industry and the national economy can encourage the development of national research and development, but the question then of the flow of new innovations can be held back by military secrecy. In addition, the spontaneous or organized reduction in military expenditure of large arms-producing countries almost does not cause "dividends" of peace", because the military industrial structures, turned towards technological excellence at high costs, do not lend themselves well to economic competition which supposes the realization of a commercial exchange at

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<sup>15</sup> Donsimoni, M., Fontanel, J. (2019), *Les ambiguïtés de la mesure de la puissance économique par les parités de pouvoir d'achat*, AFRI, Annuaire Français des Relations Internationales, Paris.

<sup>16</sup> Colard, D., Guilhaudis, J. F., & Fontanel, J. (1981). *Le désarmement pour le développement. Un pari difficile*. Les Sept Epées, Paris. Fontanel, J. (1995), *Les dépenses militaires et le désarmement*, Publisud, Paris. Coulomb, F., Fontanel, J. (2003), *Disarmament: A century of Economic Thought*, Defence and Peace Economics, Routledge. Fontanel, J., & Smith, R. (1985). *L'effort économique de défense*. ARES, n Spécial, Grenoble, Lyon

<sup>17</sup> UNIDIR (1992), *Economic Aspects of Disarmament: Disarmament as an Investment Process*, 27 August, A/47/346. United Nations Organization (2004), *The relationship between disarmament and development in the current international context*, Disarmament, Study Series 31, New York., Geneva. Document A/59/119. Fontanel, J. (1995), *La conversion économique du secteur militaire*, Economie Poche, Economica n° 12, Paris, 1995. Intriligator, M.D. (1996), *The economics of disarmament as an investment process*, in *Arms Spending development and security*, Chatterji, M., Fontanel, J., Hattori, A., APH Publishing Corporation, New Dehli. Hartley, K. (1993), *Aspects économiques du désarmement*, in « Economistes de la paix », Collection ECO+, Presses Universitaires de Grenoble. Shkaratan O., Fontanel, J. (1998), *Conversion and personnel in the Russian Military-Industrial Complex*, Defence and Peace Economics, Vol. 9. 1998.



competitive prices<sup>18</sup>. Generally, according to econometric analyses, which, however, suffer from the quality of the statistics available<sup>19</sup>, over the long term, spending on the defence and security of a country has a rather negative effect on economic growth in peacetime, unless they apply mainly in collective investments, the production of national goods and in research and development<sup>20</sup>.

In a potential conflict situation, military spending can have a positive effect on the national economy if it provides "better protection" by deterrence<sup>21</sup>. The private sector needs state security support to engage in activities by reducing the risk of military conflict. In arms-producing countries, companies producing dual goods (military and civilian) can take advantage of military research and development investments to apply them to their civilian output, thereby improving the national propensity for innovation. Fundamental research and the development of new technologies are often funded by the military<sup>22</sup>.

Defence spending in the United States is clearly linked to a hegemonic will<sup>23</sup>. They do not depend solely on the national product, grievances or military spending of other countries. They are often determined from the inside, by the power struggle between the military-industrial complex, the parliamentarians and the citizens<sup>24</sup>. With the rise of international terrorism and the rise of new dual digital technologies, new military strategies have been devised, taking into account new threats and civil wars.

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<sup>18</sup> Fontanel, J. (2002). Disarmament: A century of economic thought. *Defence and Peace Economics*, 28.

<sup>19</sup> It should be noted that the variable "military expenditure" in the macroeconomic models obviously depends on the statistical data used. Martin, S., Smith, R., Fontanel, J., & de Haan, H. (1987). Time-series Estimates of the Macroeconomic Impact of Defence Spending in France and the UK. In *Peace, defence and economic analysis* (pp. 342-362). Palgrave Macmillan UK. Smith, R., Humm, A., & Fontanel, J. (1987). Capital labour substitution in defence provision. *Defence, Security and Development*. Fontanel, J., & Smith, R. (1990). The impact of strategy and measurement on models of French military expenditure. *Defence and Peace Economics*, 1(4), 261-273.

<sup>20</sup> Economic and econometric studies have been undertaken by the UN on this point, in particular with the Leontiev world model, which produced results which were discussed a priori at the time of its publication and which are highly questionable a posteriori with the real evolution of the role of expenditure. soldiers on the world economy. Leontiev W., Duchin, F. (1980), *Worldwide implications of a limitation on military spending*. Rapport pour le Groupe d'Experts des Nations Unies sur la Désarmement pour le Développement, ONU, New York. Leontiev W., Duchin, F. (1983), *Military spending : Facts and Arms Production*. Worldwide implications and Future Outlook. Oxford University Press. Oxford. Fontanel, J. (1982), *Military expenditures and economic growth (France, Morocco)*, United Nations Copyright, 1982 (160 pages). Smith, R., Humm, A., & Fontanel, J. (1987). Capital labour substitution in defence provision. *Defence, Security and Development*.

<sup>21</sup> Aizenman J., Glick, R. (2006), *Military expenditures, threats and growth*, *Journal of International Trade and Economic Development*, 15(2), 129-155

<sup>22</sup> Mazzucato M. (2013), *The Entrepreneurial State : Debunking Public vs. Private Sector Myths*, Anthem Press

<sup>23</sup> Fontanel, J. (2017), *Les Etats-Unis, sanctuaire du capitalisme. Un siècle de leadership américain en question*, PSEI. Paix et Sécurité Européenne et Internationale, n° 7.

<sup>24</sup> Fontanel, J., Samson, I. (2008), *The determinants of Military Expenditures*, in Fontanel, J., Chatterji, M., « War, Peace and Security », Emerald, London. Fontanel, J. (1982), *Military expenditures and economic growth (France, Morocco)*, United Nations Copyright, 1982

The data system transmitted by the UNODA remains interesting, but it is only interested in the military sector, while the security of a country also involves measures of protection against the ambitions of sprawling multinational companies, cyber attacks and domestic and international terrorism. UNODA does not transcribe any information regarding the potential of cyber weapons or drones. Solely the establishment of strategies in terms of military power relations, internal civil security activities against acts of terrorism, espionage, industrial domination or malicious acts can no longer ensure the security of a country. It is about defending the territory and national interests. This concept is not yet well taken into account by the European Union<sup>25</sup>.

Finally, economic weapons (boycott, embargo, freezing of assets, etc.) are civil weapons whose expected effect is close to that of a military action to destroy the economic and military forces of a country. These actions increase the real costs of a conflict and increase international insecurity. They are costly for belligerents and appear when the use of arms is made politically, diplomatically or militarily difficult, or even impossible in view of the retaliatory measures invoked.

With regard to national defence, the search for the economic optimum depends on the variables considered and the instruments applicable to potential dangers. Thus, the participation of military spending in the debt of states is rarely mentioned, as well as the links between European and American spending in the framework of a formal or informal alliance<sup>26</sup>. Alliances constitute, from an economic point of view, a public good of collective defence and security that is supposed to reduce the risk of conflict by increasing the collective means of deterrence<sup>27</sup>. Within the framework of NATO, Washington directly or indirectly controls the weapons of its allies in the event of common conflicts.

In the context of economic globalization, non-military factors are playing an increasingly important role, such as ecology, climate, energy sources, financial fraud and the management of social networks<sup>28</sup>. Economic intelligence, computer viruses or manipulations are all threats that do not always fall within the competence of the military sector, but their strategic power is indisputable, by the ability to provide decisive information on economic strategies, by their potential for destruction of civil and military programs and by the power to

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<sup>25</sup> Sherpherd, A.J.K. (2015), The European Security Continuum and the EU as an International Security Provider, *Global Society*, 29(2), 156-174

<sup>26</sup> Caruso, R. et M. Di Domizio (2015), "Interdependence between US and European military spending: a panel cointegration analysis (1988-2013)", *Applied Economics Letters*, 23(4), 302-305. R. Caruso et M. Di Domizio (2016), Military spending and budget deficits: the impact of US military spending on public debt in Europe (1988-2013), *Defence and Peace Economics*, disponible en ligne, DOI: 10.1080/10242694.2016.1228259

<sup>27</sup> Olson, M. and Zeckhauser, R., (1966), An economic theory of alliances, *Review of Economics and Statistics*, 48(3), 266-279

<sup>28</sup> Fontanel, J., Henriques, A. (2010), *A Globalização em Análise: Geoeconomia e Estratégia dos Actores* Instituto Piaget, Lisboa. 2007, 2<sup>nd</sup>. Ed. 2010

create perverse effects (such as disinformation campaigns or sabotage of economic structures), on operations undertaken by enemies. "Cyber attacks" on military networks can lead to the effective disarmament of a country's deterrent forces. This is the case of pollution (and its exchanges between countries), ethnic conflicts or religious, political or ideological fundamentalism.

The ability to wage an "economic war", with the support of the Allies, is also an all the more powerful weapon since globalization has created trade and reciprocal needs<sup>29</sup>. The use of oblique weapons developed a lot during the Cold War, but also, in different forms, in today's global economy, between the United States, China and Europe<sup>30</sup>.

National security is not innate, nor is it free. However, the economic analysis of a country's security and relative power remains incomplete. The economist is not in a position to define an optimal level of security, since this depends mainly on the supposed moral economic, political, economic, psychological threat of possible enemies, internal or external. It is therefore not limited to the military and public sectors (police and justice) of national security<sup>31</sup>. The security of a country depends on the ontological, philosophical or religious perceptions of the collective systems in place, and on a more or less justified need for security expressed by the citizens (in the case of democracy) or by the powers in place<sup>32</sup>.

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<sup>29</sup> Fontanel, J., Corvaisier-Drouart, B. (2014), For a general concept of economic and human security, in Bellais, R. *The evolving boundaries of defence : an assessment of recent shifts in defence activities*, Emerald, Bingley, U.K., Fontanel, J. (2010), *Le concept élargi de la sécurité économique*, in J. Fontanel (Ed.), *Economie politique de la sécurité internationale*, La Librairie des Humanités, L'Harmattan, Paris. Fontanel, J., Bensahel, L. (1992), *La guerre économique*, Arès, Défense et Sécurité, Grenoble.

<sup>30</sup> Saby, B., Saby, D. (2016), *Compétitivité, mercantilisme et guerre économique*, Questions contemporaines, L'Harmattan, Paris

<sup>31</sup> Fisher, D. (1993). *Nonmilitary aspects of security. A systems approach*. Geneva: United Nation, Institute for Disarmament Research, UNIDIR. OECD. (2004). *L'économie de la sécurité*. Paris: OECD. Fontanel, J. (2003), *Civilisations, globalisation et guerre*, (en collaboration avec Arrow, Klein et Sen), Collection Débats, Presses Universitaires de Grenoble, Grenoble.

<sup>32</sup> Malizard, J., Fontanel, J. (2017), *Op. Cit.* p. 809.

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