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ACCOUNTING FOR MILITARY ACTIVITIES IN PEACE-TIME AND WAR-TIME  
IS WAR A PROCESS OF ECONOMIC PRODUCTION ?

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## **ACCOUNTING FOR MILITARY ACTIVITIES IN PEACE-TIME AND WAR-TIME IS WAR A PROCESS OF ECONOMIC PRODUCTION ?**

At the emergence of national accounting, at the end of the thirties/beginning of the forties, national accountants decide to treat all acquisitions of goods and services for military purposes as current transactions. In this context, no gross fixed capital formation (GFCF) is recorded when military durables are acquired, no addition to inventories is recorded when military consumables are acquired. As a consequence, neither any consumption of fixed capital nor any decrease in inventories are recorded when these durables or consumables are actually utilized. Much later on, a change is introduced by the 1993 SNA/ESA 1995. Civilian-like durables acquired as part of military/defence expenditures then enter fixed capital formation and consumption of fixed capital. Only destructive military durables are still excluded from GFCF and military consumables from changes in inventories. In the process of updating the 1993 SNA, at the beginning of the twenty-first century, the international Advisory Expert Group (AEG) makes the recommendation to treat the acquisition of destructive military durables as GFCF and the acquisition of ammunitions as addition to inventories, with the subsequent usual accounting consequences.

Just before this recommendation was made, I intervened from outside in the debate by sending a letter, dated 4 february 2004, to the International Secretariat Working Group on National Accounts (ISWGNA). In this letter, I strongly opposed the proposed change.

The purpose of the present paper is to investigate a bit more the main aspects of this issue. As other points are left aside, it may be useful for readers to start with having a look to the february 2004 letter that is reproduced as appendix 1.

The paper starts (section I) with a brief review of the moral and welfare reflections around the treatment of military expenditures as final. In this perspective, most attention is drawn to Simon Kuznets analyses that are the most acute effort made by a national income expert in order to investigate the issue of war and peace as such in relation with military expenditures and the definition and measurement of national income.

The paper then proceeds (section II) with a reminder on some SNA concepts, stressing the difference between the concept of output and the concept of outcome. It also reminds briefly (section III) the history of the SNA in relation with the treatment of military expenditures.

The main body of the paper is devoted, after a short review of the arguments given by the supporters of the proposed change (section IV), to the fundamental issue to be investigated "Is war a process of economic production ?" (section V). This is followed by some considerations on peace-time recording issues (section VI). Finally, a last section (VII) summarizes the conclusions of the paper and introduces satellite accounting.

The approach followed in the paper seems quite original as compared to the ways this issue is usually discussed. Inquiries on the legitimacy and the usefulness of military expenditures and activities are not taken as relevant questions here. They are out of the picture in a national accounting context. On the other hand, the fact that there exist people employed as well as durables and consumables utilized in military activities is not taken as an evidence that these activities are economic production activities. An economic production implies some means used (inputs), a process of activity operated and an output appearing at the end of the activity process.

The attention is focussed here on the concept of output and its measurement. It is shown that the output should be confused neither with the goals pursued nor with the outcome obtained. An output is a product or a set of products (goods or services) that must be identifiable at the end of a possible process of production and may subsequently be utilized for various purposes.

In the specific case of military activities, the analysis is then concentrated on the nature of the possible, if any, "output" of military activities if they were treated as economic production activities. The usual answers are in terms of objectives or outcome (security, insurance, deterrence, etc...., etc...) and, for this reason, are not relevant to the question raised. The possible "output" of military activities must be concretely investigated, firstly in war-time. This is not an arbitrary starting point, because it is the time when military means are used according to their specificities.

The paper tries to show that the "output" of war operations mostly consists of killing, wounding and destroying in accordance with their very nature. It is actually the unique feature of war in social activities. Is war to be treated as a process of economic production ? That is the basic choice to be made. It cannot be hidden. If war is judged to be a process of economic production, then destructive military durables are to be treated as fixed assets and ammunitions as inventories. Their accumulation both in war-time or in peace-time is then a process of accumulation of economic assets. Conversely, if destructive military durables are treated as fixed assets and ammunitions as inventories, as a consequence war inevitably must be treated as a process of economic production, with the full set of implications analysed in the paper. On the contrary, if war is not judged to be a process of

economic production, then destructive military durables and ammunitions, being not used in a process of production, cannot be treated as economic fixed assets or inventories respectively. They are utilized in a process of consumption that takes place out of the realm of economic activities, together with other military goods and services. The acquisition of all goods and services for military purposes is to be treated as directly entering final consumption expenditures.

## **I - The traditional SNA treatment of military expenditures as final, and moral and welfare considerations<sup>1</sup>**

Among the many criticisms addressed to the SNA's GDP as a measure of welfare (a goal that actually it does not pursue) is most often the treatment of military expenditures as final expenditures. Usually, in modern times, this criticism is not based as frequently in the remote past, or at least not directly, on the position that military expenditures are unproductive in nature. The issue however may be somewhat ambiguously stated.

### MORAL PHILOSOPHERS

There is a long tradition of debates among moral philosophers about the nature of war (especially the concepts of just and unjust wars) and the law of war. Being not at all an expert in this field, I only refreshed my poor knowledge by reading last year a synthesis written in French by Monique Canto-Sperber "Le bien, la guerre et la terreur. Pour une morale internationale" (2005). Of course the literature on this topic is huge in English (for instance Michael Walzer, "Just and Unjust wars", 1977). This moral literature does not deal directly with the issue of military expenditures and, not surprisingly, is of little use, if not of no use at all in the context of conceptual discussions on national economic accounting (I am not sure that Simon Kuznets would have fully agreed with the above statement ...).

### ECONOMISTS

There has been also a long tradition of debates among economists about the issue of war and peace, much more of course among those thinkers interested in "political economy" or "economic thought" than those engaged in "economic analysis", in Schumpeter's words, or in "economic theory", though in the past the works of a number of economists combined various approaches. These discussions are presented in a 242 pages book published in 1957 by Edmund Silberner "La guerre et la paix dans l'histoire des doctrines économiques. Sirey, 1957". ["The problem of war and peace in the history of economic thought"]. Prepared in 1940-1943, a first less developed version was translated

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<sup>1</sup> - The purpose of this review of the literature is basically to illustrate the frequent confusion between various concepts, service and aim/purpose, output and outcome. The reader can jump directly to section II, if preferred.

into English and published in the United States ("The problem of war and peace in Nineteenth Century Economic Thought. Princeton University Press, 1946").

In fact, many arguments used by economists are similar to those used by moral philosophers. However their views on war are usually connected with their position on the economic and social organisation of society. Silberner analyses the views of the three main streams of economic thought during the nineteenth century and before.

Liberal economists, who stress the material welfare of people, are very critical towards war as being economically, and socially harmful. Except Malthus, they trust free trade as the main force capable of promoting peace in the long run and do not think, with some exceptions, that any international organisation is necessary in this respect. Silberner's opinion is that they are too much optimistic "because they give too much importance to the role of the economic factor in the life of nations" (p. 228) and that the liberal school neglects the problem of national defence.

Protectionist economists, and before them the mercantilists who were warmongers, adopt a more realistic position. War can be beneficial to certain countries, among those that gain the victory (territorial expansion, acquisition of new markets, commercial or industrial domination). Wars are generally unavoidable. Powerful military forces are the only factor able to avoid wars from time to time. Militarism is economically useful. It can be a means of industrial development.

The socialists, who are against militarism, see wars as consequences of a wrong social organisation based on private property. Changing drastically the organisation of society is, for most of them, the only way to eliminate the occurrence of wars.

#### THE GERMAN HISTORIC SCHOOL

Apart from the three main streams briefly outlined above, but close to the general orientation of the protectionists and the nationalists, the German historic school, founded by the middle of the nineteenth century, discusses more deeply the issue of war as being productive or unproductive. Their viewpoint is broader than the traditional distinction between productive/unproductive labour. It is based on the discussion of the outcome of wars and military expenditures. I briefly summarize their views, following Silberner (p. 137-151).

Generally speaking, these authors (Wilhelm Roscher, 1817-1894 ; Karl Knies, 1821-1898 ; Lorenz von Stein, 1815-1890 ; Albert Schäffle, 1831-1903 ; Gustav Schmoller, 1838-1917) also stress the losses due to wars. However, apart from considering that wars are unavoidable, they insist on the possible benefits derived from them and from the military expenditures in general. Large armaments are the best way to keep peace (Roscher). It cannot be maintained that military expenditures are unproductive, even if the soldiers do not create material goods ; other socially important activities are in the same position (scientists, teachers, expenditures against natural

hazards, etc...) as are internal security expenditures ; the world being as it is, military expenditures are unavoidable and of the highest usefulness (Schäffle). From a national point of view, war expenditures are productive when war is just and victorious ; from an international perspective, they are productive only if, in both enemy sides, war promotes certain virtues ; if reasonably and parcimoniously conducted, any preparation to war is productive, essentially because it keeps peace (Roscher). The productive service of the military forces, in peace-time, consists of preventing any possible aggression and so keeping peace ; in war-time, they defend the country and its wealth <sup>2</sup> ; as national defence is necessary, military expenditures - if not heavier than necessary - should be considered as the most productive of all government expenditures (Knies). The cost of the military forces should be considered as an insurance premium for the nation ; the army is a rational economic institution as it prevents the destruction of amounts of wealth that are greater than its own cost (Stein). Finally, it is interesting to note two more points on the German historic school. The military power of the states is the basis of international harmony (Schäffle). War effects are bad things, especially when wars are long lasting ; however technical progress tends to shorten wars and so renders an enormous service to human civilization (Schmoller). The last two points were made a few decades before World War I ...

*Obviously, these views from the German historic school tend to confuse the concept of service (when used, it is in a very general sense) with the concept of aim/purpose <sup>3</sup>, and also to confuse the concept of output with the concept of outcome, if I may use an anachronistic terminology. This type of confusion is still frequent nowadays.*

Let's come back to the opening paragraph of this section. Critics to GDP from the point of view of welfare do not argue that military expenditures, or more generally expenditures devoted to "regrettable necessities" are unproductive in the broad sense sketched in the above paragraphs, that is, not useful. What is in dispute is the treatment of such expenditures as final. They are, it is generally said, intermediary or instrumental in nature. The meaning of such terms is clearly expressed by Nordhaus and Tobin (1972) : "The only judgment we make is that these expenditures yield no direct satisfactions" (p. 8). And above in the same page : "... defense expenditures are input rather than output data".

#### SIMON KUZNETS

At this point, Simon Kuznets' works have to be looked at. Most authors trying to measure welfare (or more precisely economic welfare) refer to Simon Kuznets. In effect, Kuznets conceives national income as an indicator of welfare, though he never placed himself in the rigorous framework of welfare economics. He argues principally on the basis of the end goals of economic activity, which in general consist of satisfying the needs of individual consumers. Concerning the activity of

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<sup>2</sup> - For Knees, preventive wars are legitimate ; even purely aggressive wars can sometimes bring benefits to the national economy (Silberner, p. 142).

<sup>3</sup> - Intentionally, I do not use at this stage the word function, which is used in the SNA with a more limited meaning.

government, he so excludes normally not only government activities serving market producers but also activities that correspond to the preservation and extension of the social framework (defence, justice, etc...).

However, in the context of pre-war and war-time, such a restricted view of national income was a little troublesome, when war expenditures were obviously crucial in the United States and elsewhere at the time of World War II. As a consequence, in "National product in Wartime" (1945), the issue is put in a wider perspective<sup>4</sup>. Part I of this book is devoted to the "Treatment of war output", beginning with the following statement : "A major war alters the emphasis on the ends to which the productive system of a country is geared in peacetime. Different interpretations of this shift in emphasis lead to different treatments of war output, and estimates of national product will vary accordingly" (p. 3).

Kuznets considers **three hypotheses**. In **the first one**, there is only one end purpose, consumer satisfaction. Then "war production may be treated as an item similar to capital formation in that it serves either to maintain or increase the flow of consumer goods in the future" (p. 7). This is a very special concept of capital formation indeed, that one must keep in mind when reading the title of his section 2 : "War output as capital formation" (p. 7). This is made more complex again, as *two assumptions* are used as regards net war output as part of net national product (gross war output is simply the total output every year of military goods and services, goods in short). Net war output is the difference between gross war output in a given year and the annual consumption of war goods. The calculations are made on the period 1939 to 1968 considered as a major war cycle<sup>5</sup>. Following the *first assumption*, the total war output is apportioned equally by years (constant annual consumption). Thus, net war output ("the net addition to the inventory of war goods", p. 8, again a very special concept) is negative in all years following the assumed cessation of hostilities and the pre-war years, positive during the period of hostilities when war output becomes very big. Following the *second assumption*, the estimate of the current consumption of war goods" is based on assigning different life periods to the various categories of war goods" (p. 10)<sup>6</sup>. Perishable war goods (including the services of the armed forces) are consumed during the year in which they are produced. Durable goods are given a ten-year life during the war years (1939-1946) and a twenty-year life after 1946. This second assumption is closer of course to the usual idea of "net addition to the inventory of war goods", though it may look a bit strange in relation with what the notion of "war output as capital formation" means in the context of Kuznets first hypothesis (i.e. a way of maintaining or increasing the flow of consumer goods in the future).

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<sup>4</sup> - Kuznets specifies (note 1, page VII) that the term product is used here synonymously with national income

<sup>5</sup> - As Kuznets defines a major war cycle "the period between one major war and the next" the choice of the period 1939 to 1968 is obviously a matter of convention. However, this does not matter as the estimates are illustrative.

<sup>6</sup> - Kuznets comments (p. 10, note 3) : "This basis ["similar to the practice followed in private business" as he says in the next sentence] is much less appropriate for allocating the consumption of the total investment by a nation in peace or in aggressive ambition".

The **second hypothesis** is then looked at by Kuznets. There is still only one end purpose in this case, but the provision of war goods is assumed to be the sole purpose. "When the nation is in danger, military demands are paramount and can hardly be treated as capital formation for the sake of consumers .... In these periods, short as they may be, the military conflict itself dominates economic activity and war output is properly treated as a final product" (p. 13). As a consequence, logically, "consumer goods not needed to maintain, either directly or indirectly, resources embodied in war goods should be viewed as unproductive and hence eliminated ..." (p. 13). As a kind of exercise, Kuznets makes estimates corresponding to this second hypothesis (net national product is of course significantly lower than with the first one). Finally however, for Kuznets, the NNP concept in this context "has too little validity to warrant discussion" (p. 27). Which leads him to study the **third hypothesis**, that is, two end purposes : provision of goods to consumers and for war use.

In the context of these two end purposes, NNP is the sum of the flow of goods to consumers, net nonwar capital formation and war output <sup>7</sup>. It is greater than when only one goal is assumed. One can note that, insofar as only goods to consumers and for war use are concerned, NNP as it is defined in this third hypothesis is basically identical to NNP as defined in the emerging national accounts systems. It follows that the difference between NNP and GNP in this case is the depreciation on nonwar capital formation.

Section 5 of Kuznets 1945, Part I, then includes a discussion, a bit complex, of the issue of "netness" (difference between gross and net concepts). The several variants corresponding to the first and third hypotheses that Kuznets has studied are presented in a synoptic table (p. 23) with NNP and GNP estimates. Finally, in his summary, a little complex also, Kuznets looks at the uses of net or/and gross figures for short term studies or longer term studies respectively. The assumption of two end purposes is selected as *wartime concept*. In war-time, NNP and GNP differ very little as both include the final consumption of war goods (equal to gross war output).

According to the *peacetime concept*, in the long run, the purpose of economic activity is to provide goods to consumers. NNP alone is relevant. War output is treated as a species of capital formation, according to the first hypothesis analysed by Kuznets. The difficulty in this respect is that on one hand this species of capital formation is designed "to maintain or increase the flow [of goods to consumers] within an institutional framework that does not preclude war as an instrument of national policy" (p. 25), whereas on the other hand it is measured as the net additions to the inventory of war goods. The latter, as shown above, are estimated in two ways. In the second of them only, they are equivalent to the net accumulation of military durables. However, according to Kuznets himself (see his comment quoted in note 5), this method is much less appropriate for a nation in peace. In any case, whatever method of estimation is preferred, it is difficult to see a clear relation between the net

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<sup>7</sup> - War output here is gross war output, less the depreciation on government - financed war construction ("munitions plants and construction units not in the theater of operations"). Military durables are not depreciated.



additions to the inventory of war goods and the "species of capital formation" they are supposed to measure. In order to avoid perhaps a misunderstanding on Kuznets views, it should be stressed that, in the peace-time long run perspective so designed, these net additions to the inventory of war goods are not connected with the provision of any kind of final defence services. In a kind of following to his 1945 analysis, Kuznets maintains in "Government Product and National Income" (1951) : "There is no inconsistency in including in the final product of government changes in the stock of armament, and yet excluding from final product such government activities as carried on by the country's armed services" (p. 197-198). Additions to stock of armaments "contribute to future welfare by reducing future costs of maintaining a country's position in the world" (note 1, p. 198).

Concern about the distinction between peace-time and war-time situations is marginally present in the work of other authors around the war period. For instance John Hicks, though accepting as a makeshift the British statisticians treatment of the whole of the public services as "direct services, ministering to consumers' wants"... considers "that the solution is unsatisfactory" and that "the most notable awkwardness concerns the calculation of the national income in time of war". If war expenditures were considered as additional costs to the production of goods at home, "if we calculated the national income in war-time on this basis, we should find that the nation is much poorer in war than it is in peace, which surely corresponds much better with the facts" (The Social Framework, p. 152-153 of the third edition, 1960).

Nevertheless, Kuznets attempt to stress the distinction between peace-time and war-time national income or product estimates remains isolated. Kuznets himself tends to stress the point that "most government activities are designed to preserve and maintain the basic social framework and are thus a species of repair and maintenance which cannot in and of itself produce net economic returns" (1951, p. 184). He gives a rather restricted interpretation of the exception to be made "in times of a crucial war"<sup>8</sup>. In "National Income and Economic Welfare" (1949), his position was expressed more radically (1949, p. 198), and no exception for certain types of wars was presented, in a different context however : "Only those parts of government activities of direct welfare to individuals as individuals (education, health services and the like), can be considered as yielding net product" (1949, p. 199).

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<sup>8</sup> - "The elevation of success in war to a position in the hierarchy of social goals equal to the provision of welfare to individuals is warranted only if it can seriously be conceived that failure in the war is likely to result in a complete breakdown of the national economy" (1951, p. 185). In fact, Kuznets is aware of the difficulty to draw a clear distinction between the two types of situations he advocates. Thus he adds a little below "This is not to deny that if a chronic state of crucial struggles ever arrives, there would be need for asserting two end purposes to economic activity : welfare of individuals, and preservation of the social framework" (same page).

This radical Kuznets' orientation is generally followed and referred to by the various attempts to building up indicators of welfare (for instance Nordaus and Tobin' Measure of economic welfare, 1972 ; Eisner' Extended Accounts for National Income and Product, 1988 ; Cobb and Daly' Index of Sustainable Economic Welfare, 1989 ; Redefining Progress' Genuine Progress Indicator, 1995).

## **II - Distinguishing output from outcome is essential**

On the other hand, Kuznets views were followed neither by the emerging national accounts in the forties, nor by the international standardization of national accounts systems since the beginning of the fifties. In national accounting, no reference is made to the end-goals of social life for defining production and income. Economic production activities are defined in a rather neutral way. They are social activities that use inputs in order to get outputs that can be supplied to other units. Outputs consist of objects, tangible or intangible, that are useful to the units to which they are supplied, whatever the needs and wants they are supposed to satisfy. Outputs can be supplied to other units and used by these units either individually or collectively.

In the above definition, which is an elaboration upon the 1993 SNA (chapter VI. B.), the reference to individual or collective use of products (outputs) should be emphasized. It results from a rather long evolution concerning services rendered by government. At the beginning (Meade and Stone 1941, Stone 1945, 1947 NIPA), government current expenditures on goods and services, including compensation of government employees, are directly recorded as final expenditures, without any explicit recognition of an output of government services resulting from a process of production <sup>9</sup>. Later on, the 1968 SNA/ESA 1970, which integrates input-output analysis, describes the process of production of government, especially the non-market one. The ESA goes a step farther by including explicitly a concept of collective consumption of general government covering the whole of non-market government services.

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<sup>9</sup> - In the famous discussion between Kuznets and the BEA staff (The Review of Economics and Statistics, august 1948), the argument opposed by the BEA to Kuznets' criticism is that "individuals, non-profit institutions serving individuals, and general government are ultimate buyers in the sense that they do not buy for resale in the market" (p. 183).

Such a coverage was too large however and open to misunderstanding. The 1993 SNA/ESA 1995 then introduces the distinction between government individual consumption and government collective consumption <sup>10</sup> <sup>11</sup>. Even if this collective final consumption is included in the accounts of government, it is made on behalf of society ; so its meaning actually is "collective final consumption by society".

#### INTERMEDIATE VS FINAL

After this brief summary of the national accounts concepts, as they are involved in the SNA/ESA, it is useful to stress the main difference between the concepts of intermediate uses and final uses of goods and services as they are conceived of by most researchers in welfare measurement and by national accountants respectively. For Kuznets and his followers, intermediate (the terminology used is diverse, but the basic idea is the same) means "what is not used directly for the satisfaction of individual consumers, or possibly other end goals too". In national accounting, it means "what is used to produce other goods and services". The national accounts approach thus implies a delimitation between the set of goods and services, - that are the products (outputs) of economic production activities -, and other things, that appear later on in final use processes, and are not themselves products. Though the borderline between these two sets of "things" can be made reasonably clear once precise classifications of goods and services have been designed, in concept the issue is more complex, were it only because of the ambiguities in the various meanings of the word "services" (an issue that I do not want to fully develop here).

Fundamentally, though not always explicitly perhaps, national accounts make a distinction between the acquisition of goods and services by final consumers and the result of the actual use by them of the goods and services acquired. Producers are intermediate users. They use goods and services in order to produce other goods and services that can be supplied to other units. This process of production is recorded in the input-output tables of the SNA/ESA. On the other hand, the actual utilization of goods and services by final consumers is not shown in input-output/supply and use tables <sup>12</sup>. Once acquired by final consumers, goods and services -unless exceptionally resold- leave the sphere of economic activities. After being possibly stored for a while (some are lost), they are actually utilized. The goods and services thus utilized are means to obtain something else. What is obtained is *the outcome of the utilization of goods and services*. The outcome depends not only on the

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<sup>10</sup> - After redistribution of income in kind, only collective consumption remains in the actual consumption of government, whereas government individual consumption has been transferred to households as social transfers in kind.

<sup>11</sup> - There remain though two problems not yet satisfactorily solved. On one hand, individual consumption is still incomplete, as the free use of public infrastructures, like roads, is not individualized for the time being and remains in collective consumption. On the other hand, government non-market services provided to market producers are not separated out from collective consumption. On this issue, see Vanoli 2002 (p. 321-323), 2005 (p. 256-257).

<sup>12</sup> - One needs to be careful in interpreting the SNA/ESA terminology. "Final uses" do not mean "actual final utilizations", but only "acquisitions by final users".

volume of goods and services that are utilized, but also on the full body of individual, social and environmental conditions associated with them.

#### OUTPUT VS OUTCOME : PRODUCTION PROCESS VS FINAL CONSUMPTION PROCESS

*The distinction between output, what goes out of a process of production, and outcome, what results from the actual utilization of products by final consumers, is fundamental.* Thus food products have to be distinguished from the direct satisfaction associated with eating or drinking them as well as from their influence on health state, for instance through obesity. Similarly health products (drugs, services, etc...) have to be distinguished from their immediate effect (for instance mitigating pain) and from the changes in health state they may induce. Or the use of military goods and services must be distinguished from the level of external security attained, which also depends on other factors, like a wise external policy, etc... Seen that way, final consumers goods and services in the SNA sense, after leaving the economic production sphere, are always inputs into a final consumption process that is not an input-output relation, but a much more complex input-outcome relation<sup>13 14</sup>, in which goods and services are not the only relevant inputs.

However, to state that the concept of output is to be distinguished from the concept of outcome does not mean either that there is no relation whatsoever between the nature and magnitude of a given output and the nature and magnitude of the outcome that is aimed at by using this output. Health products (goods and services), if wisely used, generally contribute to improve health states, or avoid or limit their deterioration. However the health state of a person depends on many factors, including genetic ones. That makes the relation between the utilization of health products and the possible change in the health state of the consumer (the outcome) a complex one. Most often outcomes may be defined in terms of changes in states (of individual persons, or groups, or nations or society as a whole). There are various levels or degrees for trying to define and, possibly, measure the outcomes in a given domain. For instance, in war-time, the outcome of a battle - to be distinguished from the possible "output" involved (see section V), is different from the outcome of a campaign, and even more from the outcome of a war. The greater the distance - both in terms of the nature of the related phenomena, space and time - between the circumstances where an outcome is to be estimated and the circumstances where an output was utilized, the more difficult is the definition and possible measurement of the outcome. For instance, transport services as outputs and utilizations of services are different, but not that far from the mobility of persons as outcomes. The outcome of an increased or decreased mobility is itself a different issue, though obviously closely linked to the availability and use of transports services. By contrast, the outcome of a given level of military/defence

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<sup>13</sup> - The outcome is in close connection with the purpose or objective that is pursued : good health state, education attainment, internal or external security, etc... However, the functional classifications, as they stand, though taking into account the purpose or objective of final expenditures, remain classifications of means (goods and services). They are not classifications of outcomes, in the above meaning.

<sup>14</sup> - Be cautious ! If a production account for household internal activities is established in a satellite account, the resulting goods and services are still outputs, not outcomes.

expenditures, in terms of the external security of a nation, is much more open to a wide range of appreciation. Let's quote again Nordhaus and Tobin : "Has the value of the nation's security risen from \$ 0.5 billion to \$ 50 billion over the period from 1929 to 1965 ? Obviously not. It is patently more reasonable to assume that the rise in expenditure was due to deterioration in international relations and to changes in military technology. The cost of providing a given level of security has risen enormously. If there has been no corresponding gain in security since 1929, the defense cost series is a very misleading indicator of improvement in welfare" (p. 8).

Anyway the confusion between output and outcome is frequent, the more so when the nature of the output of certain activities is unclear. For instance, when Nordhaus and Tobin 1972 say "Conceptually, the output of the defense effort is national security" (p. 8), this assertion is not acceptable from a national accounts point of view. What they have in mind is obviously the outcome, in the meaning given above to this term. It should be said in their defence however that the issue of the nature of military activities/defence activities/services and their output and its measurement is elusive. Their representation in national accounts is debatable.

### **III - Military expenditures in the history of the SNA**

Emerging national accounts during World War II and international standardization starting at the end of the forties/beginning of the fifties chose to treat military expenditures as final expenditures in the year when they are made. All military final expenditures are treated as current final expenditures, that is, as final consumption expenditures. Military durables are not included in gross fixed capital formation (GFCF), whereas military consumables, like ammunitions, do not enter inventories. On the other hand, non-military government durables are treated as GFCF (except notably, until recently, in the US NIPA where no capital formation was recorded for government activities, except for government market enterprises).

Practically, a package is made with all military expenditures on goods and services (including compensation of employee's), whatever their nature. As soon as acquired by government, it leaves the sphere of economic activities as the latter is described in the SNA.

In this way, a distinction is introduced between two types of government activities, according to their civil or military nature. No explicit rationale was presented in order to justify this solution and explanations were very scarce (see Carson for an informal documentation). Most probably, it was grounded on evidence. Among national accountants at that time (remember, Kuznets followed his own path, apart from national accounts), there was general acceptance of the solution and no debate occurred. During the war, many people had seen military durables in operations.

To consider that this SNA position was based on welfare or ethical considerations of the type presented in section I would be wrong. The usefulness of military expenditures was not questioned. In this respect, as well as for public services in general, national accounts assume, to paraphrase Hicks (1940) formulation, that the public services are worth, to society in general, at least what they cost, and admit that the choices of the authorities, even if expressed by a Nero or a Robespierre, represent the actual wants of society (p. 116).

However, implicitly, military activities were not considered to be of the same nature as economic activities and deserved a specific treatment. By treating the acquisition of military durables as final consumption expenditure, military equipments were not supposed to enter as inputs in a process of production like civil assets do. My interpretation is that what happened then internally in the sphere of military activities was judged external to the domain of economic activities. Anyway the fact that, until the end of the sixties, no explicit process of production was described in the SNA for government non-market activities unfortunately permitted not to elucidate completely the issue of military activities in the system.

Explicit recognition of a process of production for non-market services, when I-O tables were integrated in the SNA and the new born ESA, by the end of the sixties, changed drastically the way government activities were pictured in the international system. However no discussion at all on military activities took place in the preparatory process during the sixties. Nobody anywhere raised the issue of the treatment of military durables<sup>15</sup>. The attention was focussed on other issues.

In the 1968 SNA/ESA 1970, the acquisition of military durables, that were not included in GFCF, appeared as intermediate consumption, like military consumables. Their recording as intermediate consumption was purely formal of course<sup>16</sup> and did not mean that they were not in the end treated as final expenditure. The output of military activities/defence services was simply by convention the total of compensation of employees, consumables and durables, in the year of their acquisition. The package was then included in government final consumption.

*Another way of attaining the same end was possible actually.* Military consumables and durables would have been directly recorded as final consumption expenditures without passing through a production account for defence services as intermediate consumption. Only services equivalent to compensation of employees would have been recorded in a specific production account of government, with a counterpart entry in government final consumption expenditure<sup>17</sup>. This has been unfortunately a lost opportunity.

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<sup>15</sup> - It's a pity in a way. It would have been interesting to see this issue discussed at a time when cold war was not over and the armament race was an important international concern.

<sup>16</sup> - This may have been sometimes a source of misunderstanding. Some people perhaps understood that military durables vanished after going through intermediate consumption.

<sup>17</sup> - The formal treatment sketched above is similar to the one followed in the 1993 SNA/ESA 1995 for the domestic services produced in the households by employing paid staff. In essence, such a treatment would have been very closed actually to the traditional NIPA solution.

The benefit derived from this solution would have been to show clearly that the military activities were not as such analysed in the SNA economic production activities, avoiding to display an artificial process of production and output of defence services. A further analysis of military/defence activities would have been explicitly referred to a satellite account (see section VII).

During the revision of the 1968 SNA, times having changed, the treatment of military durables was questioned (in 1988) for the first time in discussions on the international system (see in appendix 2 an extract from the march 1988 report of the SNA Expert Group). The 1993 SNA/ESA 1995, by changing partly the treatment of military durables, made the issue more confused however (see appendix 1, page 2).

#### **IV - A drastic change proposed for the SNA update : a tank or a battle ship as an economic fixed asset**

In the last years, during the preparation of the update of the 1993 SNA, the recommendation has been made to treat military durables as fixed capital formation and military consumables, not yet consumed, as inventories (see appendix 3).

It seems that two main types of arguments were made in the discussion. The first relied basically either on the analogy between defence services and prevention activities, or on the analogy with insurance activities. The second is essentially based on the consideration that durables are durable.

The first set of arguments is very close to the justifications presented by the economists from the German historic school in the nineteenth century in defence of the military expenditures and activities (see this paper, p. 5-6). They would have been relevant to the debated issue perhaps if the SNA had not already included military expenditures among final expenditures. This was not the case however. Obviously there was a confusion between services as outputs in the SNA sense and the objectives pursued on one hand, and between output and outcome on the other hand (see section II and appendix 1, p. 34). The output of defence services, whatever refinements to the SNA can be imagined, may not be deemed to measure (to measure, not simply "to be in relation with") a change in a certain level of security. Such a change can be an outcome of a number of factors, among which military expenditures, it is not an output in the SNA sense.

Whereas the previous arguments were of the end-goals type, the other ones are based on "technical" evidences. Of course, the fact that military durables are durable is known for a long time. The founding fathers of national accounting knew that. However they were more sensitive to another type of evidence.

When looking at an issue of such an importance, that is, possibly treating, inter alia, destructive military durables as economic fixed assets entering a process of production, it is not enough to state that a tank or a battleship has generally a duration of more than one year. It is necessary to analyse the process of activity (purposely, I avoid to use at first sight the word production) in which these military equipments are involved. National accounting provides a certain representation of the economy, which is of course partly based on conventions. Traditionally in the SNA, the recording of military activities is based on a convention, investigated in section III. In this context, it does not intend at all to give a realistic picture of these activities <sup>18</sup>, nor does it provide an analysis of the nature of their output. These limitations are admissible as long as the crucial idea is accepted that military activities are basically different in nature from civilian activities.

The question is different, however, if one wants to treat military activities similarly as civilian economic production activities, on the basis of technical, realistic considerations, like the durability of durables and the ability to be stored of consumables. Then the precise actual nature of the activity in question, its process and its output must be carefully investigated.

Such an investigation should start with the analysis of military activities in war-time. In effect the goal of military activities is the capability to conduct actual war operations, either aggressively or defensively. In war-time, military means are used according to their specificities. I must stress, and this point should not be forgotten, that I conduct this analysis out of the context of the present SNA recommendations.

## **V - Is war a process of economic production ? That is the core issue**

### A REPRESENTATION OF WAR OPERATIONS

War operations may be schematized as follows (leaving pre-war and post-war activities). They are seen from one belligerent side. Similar items can be seen of course from the other side.

#### **1. War means used**

##### 1.1. Staff

- . killed and disappeared
- . wounded
- . captured by the enemy
- . others

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<sup>18</sup> - Unfortunately, since the 1968 SNA/ESA 1970, its representation of these activities is ambiguous, as I explained above.



## 1.2. Consumables

- . civilian-like (energy, etc...)
- . special clothes, etc...
- . repairs and maintenance of equipments
- . ammunitions

## 1.3. Military-specific equipments

- . destroyed
- . deteriorated
- . others (weared and teared)

## 1.4. Civilian-like war equipments

- . destroyed
- . deteriorated
- . others (weared and teared)

## 2. Operations

2.1. Processes of operations <sup>19</sup> aiming at launching weapons against targets

2.2. Sets of impacts against targets

2.3. Other constraint procedures (blockade, occupation, etc...)

## 3. Field effects of operations and war means use

### 3.1. Enemy military forces

- .killed and disappeared
- . wounded
- . captured
- . hors de combat

3.2. Own and allied military forces killed or wounded by mistake

### 3.3. Enemy military-specific equipments

- . destroyed
- . deteriorated

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<sup>19</sup> - Including of course all upstream phases (training, supplies, logistics, intelligence, etc...)

- . put out of action

#### 3.4. Enemy civilian-like war equipments

- . destroyed
- . deteriorated

3.5. Own and allied military-specific and civilian-like war equipment destroyed or deteriorated by mistake

#### 3.6. Enemy civil population

##### 3.6.1. Voluntarily hit <sup>20</sup>

- . killed and disappeared
- . wounded
- . deported
- . displaced
- . imprisoned
- . forced labour

##### 3.6.2. Unvoluntarily hit <sup>19</sup>

- . killed and disappeared
- . wounded
- . displaced

#### 3.7. Own and allied civil population hit

- . killed and disappeared
- . wounded

#### 3.8. Enemy civil property <sup>21</sup>

- . destroyed
- . deteriorated
- . seized without compensation

#### 3.9. Own and allied civil property

- . destroyed
- . deteriorated.

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<sup>20</sup> - As is well-known, the distinction between "voluntarily hit" and "unvoluntarily hit" is not always clear-cut.

<sup>21</sup> - Here again the distinction between "voluntarily hit" and "unvoluntarily hit" is relevant though not clear-cut. For instance, the destruction of the enemy's infrastructures is generally an essential part of war operations, purposely, when the destruction of houses is most often unintentional.

This scheme applies to *many kinds of wars*, wars between regular official armies, or between regular and irregular forces, or between different types of irregular forces, foreign wars as well as civil wars, colonial wars as well as independence wars, world wars as well as regional wars, just wars as well as unjust wars, etc....

If one likes to consider that defence/military activities are economic production activities, the basic, most important question to answer is "*what would be the "output" of such defence/military "production" activities in war time during an accounting period of, say, one year ?*".

One could refuse to answer this question in an annual frame, arguing that the results of military activities can be evaluated only by taking into account the full period covering preparation to war, actual war-time and even post-war clearing of the political, possibly also economic, consequences of war (remember Kuznets concept of a war cycle, see this paper p. 7). Such an objection would be relevant, if referring to the possible outcome of war, not to the possible "output" of defence/military "production" activities which should be open to accountancy in any period of time.

As both the immediate purpose and the nature of the actions of military activities undertaken in war-time consist of the weakening, possibly the destruction of the enemy's military forces and the enemy's economic and social capability to back these forces, it seems then that *the "output" of military operations in war-time* should be defined basically in terms of the damages voluntarily inflicted to the enemy, which are precisely what the use of military - specific durables and consumables aims at according to their nature (items 3.1, 3.3, 3.4, 3.6.1, part of 3.8). As indicated above, the borderline between what is intended and what is not (what is collateral) is not clear-cut. Anyway what is intended cannot be thought of at any rate as external to the process of war operations. The issue is less clear for collateral damages (3.6.2, part of 3.8). One could argue that they should not be treated as external, contrary to what I did above.

Carrying on the analysis, *the "inputs" in the military operations in war-time* are the war means used up (items 1.1, 1.2, 1.3, 1.4, 3.2, 3.5). Items 3.7 and 3.9 are collateral damages caused by our forces to our population <sup>22</sup>.

*The "value added" of the military operations in war-time* would then be defined as the difference between "output" and "inputs" as defined above.

This is where a realistic analysis of military activities, if supposed to be a process of economic production, in war-time leads <sup>23</sup>. Obviously, the economic concepts of output, inputs

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<sup>22</sup> - The cost of war, in general terms, is for us greater of course than the "inputs" in military operations. It includes in addition the damages inflicted to our civil population (3.7, 3.9 and also 3.6 and 3.8 seen from the other side).

<sup>23</sup> - There are other aspects of military activities in war-time of course, including possible assistance to civil population, etc... For sake of simplification, I concentrate on the major aspects.

including capital inputs, and value added, as designed in the SNA, are not adapted to a really realistic representation of war in accounting terms as sketched in the previous paragraphs. There are a number of reasons for that :

#### DIFFICULTIES WITH USUAL CONCEPTS

1. Because *human capital* is not integrated as an economic asset in the SNA, the recording of effects 3.1, 3.2, 3.6 and 3.7 and the counterpart of 3.1, seen from the enemy's side, in 1.1, is not possible in the SNA central framework.

2. The 1993 SNA concept of *consumption of fixed capital*, as it stands, is ambiguous as regards the treatment to be given to destructive military durables, in case of armed conflicts, if they were to be included among fixed assets. The borderline between consumption of fixed capital and other changes in volume of assets is relevant for civilian activities. It rightly excludes from consumption of fixed capital the value of fixed assets destroyed by acts of war or exceptional events such as major natural disasters which occur very infrequently (1993 SNA, 6.179). Such destructions are recorded as other volume changes and do not influence the estimation of net value added by economic activities. On the contrary, the destruction of military durables during conflicts is a typical feature of the process of war operations. Applying during conflicts the same service life to military durables as estimated for peace-time - as it was suggested recently - and treating their destruction by the enemy as externalities (with symmetrical externalities inflicted to the enemy) is highly unrealistic (see appendix 1, p. 3 to 5).

3. Actually, the usual concept of *externalities* as defined by economists (indirect effects, outside the market framework, derived from the production or consumption action developed by certain economic units, which have an effect on the welfare, profit or wealth of other economic units) needs a careful analysis, if to be applied in the context of military conflicts. A military conflict takes place neither in a market framework, nor in another contractual framework (it is not an agreed upon duel). As a consequence, the distinction between what is inside and what is outside the market framework does not seem relevant in an accounting representation of military activities. The relevant distinction, that I used earlier, is rather between what is internal and what is external to the process of military activities themselves. However, as history shows, the distinction is not clear-cut between what is an internal and what is a collateral effect of war operations. Nevertheless destroying the enemy's forces is generally fully intentional, including voluntarily hitting civil population and civil property in a number of circumstances. Anyway, only the unintentional hitting of civil population and civil property can be a candidate for a treatment similar to that of "externalities".

The above remarks illustrate the complexity involved in the idea of treating destructive military durables as fixed assets and consumables, like ammunitions, as inventories in the SNA. It logically implies, in war-time, their inclusion as inputs in a process of economic production whose

output basically consists, if the analysis really aims at being realistic, of destructions and seizures (damages intentionally inflicted to the enemy) <sup>24</sup>.

Most probably people advocating the inclusion of destructive military durables in fixed assets and military consumables in inventories will object that this (incomplete, I repeat) definition of the "output" of military operations in war-time is not acceptable. The output of defence services, they will say, is the addition of their costs, and the amendment proposed in this respect to the 1993 SNA simply aims at better apportioning these costs upon time.

This argument does not seem receivable for two reasons. On one hand, there is a confusion between a second-best rule of valuation of the output of non-market services by their cost, in the absence of any possible reference to market prices, and the definition itself of this output and its components. It is enough to refer to the case of health services or education services in this respect. A proper analysis of the output of any kind of non-market services involves an analysis of the whole process of production covering the inputs used, the technology - in a wide sense - operating and the outputs that are supplied possibly at various stages of the process, but essentially at the end of it. Surely such an analysis is generally more difficult in the case of collective services than when it concerns individual services, even more when military activities are at stake. Anyway, as the renewed discussion on the measurement of the volume change in the production of non-market services shows (see the Atkinson report in the United Kingdom), the attention is increasingly drawn to the distinction between the components of the cost and the content of the output of non-market services.

On the other hand, when looking at the cost side, a proper analysis of the nature and measurement of the inputs used is necessary. The analysis suggested earlier in this paper, that is debatable of course, shows that the costs ("inputs") of military activities in war-time deserve also a specific definition of their coverage, due to the specificity of such activities.

#### THE POSITION OF WAR IN SOCIAL ACTIVITIES IS UNIQUE

*Only after an analysis of the military activities in war-time along such lines, can it be decided if they are to be, or not to be, characterized as an activity of economic production. This is not the approach that has been followed in the last years discussion. As appendix 3 shows clearly, this discussion took as granted that an economic production was involved. This position is at least partly rooted in the ambiguous treatment of "defence services" in the 1968/1993 SNA (see section III). However, in my view, as soon as one envisages treating destructive military durables as economic*

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<sup>24</sup> - There is an interesting discussion by Kuznets of the issue of booty acquired in war (1951, p. 199-200), of course in the context of his general approach to the definition and measurement of national income. It would be too long to present it fully with the needed caveats and comments. In this passage, Kuznets speaks about "war, a process than can hardly be characterized as economic production". He states below, in the same page 200 : "Unless by some unfortunate development of international relations war becomes an important and regularly practised process for securing economic returns (.....), it seems best to exclude it from the realm of economic activity...".

fixed assets and ammunitions as inventories, it is unavoidable to raise the basic question of "the nature of war", from the point of view of economic production.

*The position of war in social activities is unique*, as it consists mostly of killing <sup>25</sup>, wounding and destroying, and the activities connected with them, in a symmetrical process of course. In my view, for this reason, war is not a process of economic production on both enemy sides.

Of course, another objection may be raised immediately. It would consist of admitting that the destructive nature of war is undeniable from the point of view of the enemy hit by our side's forces ; however, could it be said, from "our" side point of view it is another story. The output is not then a set of destructions. It is providing us with defence services, that is, to be short, security or something like that (in war-time of course, deterrence and insurance analogies do not seem generally relevant).

Let's analyse this view carefully. It means that the same physical "output", as briefly described in this paper, would have a double nature as "output", that is, it would be at the same time something and something else. This does not seem a relevant duality for goods and services as components of the output of certain activities. Once again the confusion is made between the output of a process of activity/production, the end goal of the expenditures incurred and the outcome obtained. For a political entity incurring war expenditures, the outcome of these expenditures and the war operations they finance - to be estimated generally in the long run - possibly includes various components, like victory or defeat, with many intermediary situations, independence or foreign rule, short lasting or durable peace period, war indemnities (to receive or to pay), seizures or losses of territories and other property, changes in political regimes, etc...etc... Not any piece of these benefits/losses can be deemed to be an output in the SNA sense. On the other end, speaking vaguely of "defense services" as an output means refusing to acknowledge the real content of certain social activities.

Instead of arguing on the basis of two opposite qualifications of the same "physical output", as in the last but one paragraph, the issue could be stated perhaps in terms of two consecutive phases in the war operations process. From "our" side, could it be said, the process of use of arms stops at the moment the weapons are fired. Until that point, military activities in war are a process of economic production, using scarce resources, measured by cost, etc... What happens later, when the weapons reach their targets, is another story, belonging to the realm of externalities. Such a distinction would be purely artificial. I may refer the reader to the earlier discussion on the issue of "externality" in the war context. The relevant approach is that these two phases are intrinsically internal to the process of military activities. Taking the above point of view would be denying the actual nature of weapons and the war operations processes in which they are utilized.

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<sup>25</sup> - Only in war, certain people, the military, if respecting the law of war, are allowed to kill (the enemy) without being in state of self-defence. In peace-time, exceptions are very scarce, traditionally the executioner's job. Recent discussions on euthanasia show how the issue is sensitive.

It thus seems that :

- either destructive military durables are treated as fixed assets and ammunitions as inventories and, as a consequence, war inevitably must be treated as a process of economic production with the full set of implications sketched above
- or war is not treated as a process of economic production and, as a consequence, destructive military durables and ammunitions, being not used in a process of production, cannot be treated as fixed assets or inventories respectively. They are utilized in a process of consumption (see earlier p. 12)

*The basic choice actually is whether to treat or not to treat war as a process of economic production.* This choice cannot be avoided and should not be hidden. It has to be made explicitly. Can such a choice be made without any reference, implicit or explicit, to a kind of value judgment ? I am not sure about this because of the unique nature of war among social activities. However, if possibly a value judgment is inescapable, it is not in the conventional welfare approach and it is true for both answers. Possibly even, to decide that war operations are, in addition to their obvious political nature, a process of economic production involves a stronger value judgment, as it runs against the evidence that war operations are destructive in nature.

If one thinks that military activities in war-time are not a process of economic production but only a political process ("continuation of politics itself with other means") in which final goods and services are utilized outside the sphere of economic activities, it is then necessary to investigate a bit more the treatment of military durables and consumables as final consumption expenditures at the time of their acquisition. This is done in the next paragraphs.

#### NOT ALL ASSETS ARE ECONOMIC ASSETS

For a tangible or an intangible object, that still exists at the end of an accounting period, to be treated either as an economic fixed asset or an inventory item of materials and supplies, it is necessary to be part, when actually utilized, of a process of economic production. To be "there" is not enough. It can be enough for being an asset in a very broad sense, nevertheless not necessarily an economic asset. There are many examples of existing assets that are not economic assets in national economic accounting. As purely natural processes are not treated as economic production activities, natural assets engaged in such processes are not economic assets, even if the use of some of them, as the air that we breathe, is of vital importance. Certain assets of society, like the language, the political regime, the cultural values, the so-called "social capital", etc..., are also essential means used in human life, though they are not economic assets in the SNA sense.

Surely the types of assets quoted above are not costly in the economic sense, which makes an important difference with military durables and consumables that are outputs of economic

production activities. To be or not to be costly is not involved in the condition stated in the first sentence of the last paragraph. However this characteristic cannot be discarded without further consideration. In addition to destructive military durables and ammunitions, two other types of costly durables or consumables are not treated as economic fixed assets or inventories in the 1993 SNA : household durables, except dwellings, and consumables on one hand, valuables on the other hand. They follow however different conceptual paths. Let's look at them successively.

In the case of household consumption durables and consumables, that enter final expenditures at time of acquisition, the SNA acknowledges that the process in which they are actually utilized, inside the household, meets the general definition of economic production (see earlier p. 10), as far as it provides services that can be supplied to other members of the household. However, for a number of reasons that are explained in the 1993 SNA, paras 6.21 and 6.22, this process is not included in the sphere of economic activities as described in the SNA/ESA central framework. Though the reasons given for such a treatment are strong from the point of view of the main purposes served by the SNA/ESA central framework, this treatment is essentially presented as based on a convention. However it could have been said also that it relies upon *the delimitation between the social and the private sphere of natural persons life*, as it is prevalent in modern economies in which own consumption represents generally a small portion of activities. This delimitation plays an essential role in the description and analyses of economic activities as socially organized activities which are the focus of central national economic accounting<sup>26</sup>. Among other aspects, this is the basis of the distinction between final consumption expenditures and intermediate expenditures. Is final consumption what crosses the borderline between the social and private spheres of household life as they are defined in the central accounting system<sup>27</sup>.

The interpretation that I proposed earlier of the traditional treatment of military expenditures, until the ambiguity introduced by the 1968/1993 SNA, as final at the time of acquisition of the goods and services they cover, can be paralleled with the above analysis. The actual utilization of military means may be deemed to belong to the "private sphere" of the life of society, as opposed to the economic sphere.

#### MILITARY DURABLES ARE NOT SIMILAR TO VALUABLES

We can look now at valuables, which are "goods of considerable value that are not used primarily for purposes of production or consumption but are held as stores of value over time" (SNA 1993, 10.7). They are treated as economic assets and their acquisition is recorded in the accumulation accounts of the system. They are not fixed assets though and are not used in a process of production.

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<sup>26</sup> - This is why the distinction between the national accounting central framework and other accounting constructs, like the satellite accounts, is an essential feature of the SNA/ESA, not a secondary one. This aspect is not always well understood.

<sup>27</sup> - Some household consumption goods may cross the borderline in the opposite direction. This gives rise to second-hand transactions in used goods that are recorded in the central accounts. It is a simple mechanism without any conceptual difficulty.



They are present in the system's economic assets, not for the satisfactions they may provide, but because they are stores of economic value. As the argument is made sometimes that destructive military durables are to be treated as economic (fixed) assets because part of them may be resold later on as used goods, the question could be raised if they should be analysed in parallel with valuables. That is to say, they would not be treated as fixed assets used in a process of production, but as means of storing up wealth. Such a way of reasoning confuses the rule and the exception. The small part of military equipments resold as used goods is similar to the small part of household consumption durables resold as used goods. This is not at all the main purpose of their acquisition, contrary to the case of valuables.

Of course, the borderline between production activities and other activities can be modified, either inside the central framework or outside of it, for example in satellite accounting. The purpose of the preceding paragraphs was to explain that, in the context of the SNA conceptual central framework, as it stands, a durable can be costly at acquisition without necessarily entering a process of production when actually used. From this, it comes that *the same "physical" durable can be given a different treatment in different contexts in the system*. For instance a computer is a durable good which can be included in capital formation or in final consumption following the type of process in which it is utilized. This point should be strongly stressed. In effect, the analogical way of reasoning based upon the physical characteristics of certain goods often play a major role in certain national accounting discussions. It has been at the origin of the unfortunate and confusing distinction introduced in the 1993 SNA between two types of military durables, the civilian-like and the destructive ones.

## **VI - But what in peace-time ?**

If the condition formulated earlier for a given object to be treated or not as an economic fixed asset or an inventory item of materials and supplies - to be part of a process of economic production when actually used - holds, if it leads to the conclusion of not including military durables in capital assets when war-time military activities are concerned, what then about military/defence activities in peace-time ? In peace-time, that is, in the absence of war operations, the destructive capacity of military equipments and consumables is, by hypothesis, not actually utilized. Nevertheless, if one excludes war from economic production activities, it would be a nonsense to treat the accumulation of war means in peace-time as capital formation. As a consequence, and contrary to the 1968/1993 SNA ambiguous treatment, military/defence activities should not be treated as a process of economic production in peace-time either. Only services equivalent to compensation of employees of defence personnel would be, by convention, recorded in a specific production account of government (see p. 14).

Of course, if one chooses to treat military activities in war-time as a process of economic production, then these activities should be treated similarly in peace-time. However the full

implications of such an approach would have to be taken into account. They were explained earlier in this paper for war-time (definition and measurement of "outputs" and "inputs"). In peace-time, the issue of inputs is simpler, but the nature and definition of the "outputs" would need to be specified by the proponents of such a solution. They should be confused neither with the cost components, nor with the processes of activity themselves (exercises, manoeuvres, etc....), nor of course with the expected outcomes.

From a macroeconomic point of view, the main consequence of treating military/defence activities as a full scale economic production activity would be the change in the figures for capital formation and saving, resulting from the accumulation of armaments, both durables and consumables, when countries have significant defence expenditures. The preparation of war capability would then be treated similarly to the accumulation of civil purpose capital in order to promote economic growth. It is difficult to see any progress in macroeconomic analysis which could be derived from such a treatment. Concerning the impact of military/defense expenditures on economic activities, as factors of demand, the significant figures are already in the SNA, when available, with defense purchases and other expenses. The consequence of changing their qualification would be to blurr the meaning of economic capital formation and saving. As many people are aware of the risk of worsening the meaning of certain essential macroeconomic aggregates, they recommend of course to separate out in this case the defence-related capital formation figures. However, in addition to the possible confusion by users, it is hard to see the interpretation to be given to these new figures for total capital formation and saving.

#### DOES THE THEORY OF CAPITAL FORMATION APPLY ?

It is rather easy to detect the political benefits that are expected, rightly or wrongly, and those possibly derived from the accumulation and use of armaments. Their definition and analysis in terms of economic benefits are much more problematic. In defining the first kind of economic benefits it analyses, SNA 1993, para 10.3 (a) reads "Some benefits are derived by using assets such as buildings or machinery in production". This again refers to the basic issue presented in this paper as to whether military/defence activity in war-time is a process of economic production. If the "outputs" in war-time are specifically and carefully defined, as proposed in this paper, it is difficult to relate the acquisition prices of armaments and the present value of a stream of benefits in monetary terms expected from using them. For similar amounts of armaments at acquisition prices expensed by various countries, the expected political benefits most probably vary considerably. In war-time the political benefits actually derived from the "outputs" of war operations also vary considerably for the victorious side on one hand and the defeated side on the other hand. Any relation with economic benefits in the usual sense is meaningless. Generally speaking, the usual market mechanisms do not play the same role for armaments than for other products, even those products under imperfect competition.

Thus, in my view, the theory of (economic) capital does not apply to armaments. The motivations for "investing" in military expenditures are political <sup>28</sup>, under budgetary and other constraints. At this point, I should perhaps repeat that these political motivations can be legitimate or not, this is another question. They deal with the possible outcomes of military/defence expenditures combined with other factors. The "outputs" and "inputs", as defined in this paper, are an issue for the military in the framework of cost-efficiency analysis.

The above comments help understanding why the application of the treatment of fixed assets to (destructive) military durables, as it is suggested in the updating process of the 1993 SNA, appears purely formal. There is no attempt to a possible definition of "outputs" and "inputs" in war-time. On the contrary, as it seems to be proposed, the related consumption of fixed capital would be calculated under peace-time conditions and applied also to war-time independently of what actually happens in war. All war specificities would be referred to the realm of externalities. The output is fuzzily characterized ("defence services"). Its value is calculated by the sum of costs (inputs), identically conceived and estimated in peace-time and war-time (same service life). The much more complex possible relation between the value of costs/"inputs" and the value of "outputs", if carefully analysed, is not alluded to. Thus the relation between the prices of the military durables and the present value of a stream of economic benefits supposedly derived from them is entirely postulated. The reasoning is circular, in addition based on a hypothetical circularity.

Another formal consequence of treating (destructive) military durables as fixed assets is that their stock would generate a stream of net operating surplus when an opportunity cost for government fixed assets is introduced in the SNA, as it is recommended in the updating process. It has been also proposed in the discussion to record an opportunity cost for stocks of government inventories. Though no recommendation was made in this direction for the time being, the issue will presumably be re-opened in a future revision of the international recommendations. Suppose that in the future an opportunity cost is recorded for inventories, including inventories of military consumables. Look at the inventories of atomic bombs (by the way, it is not totally clear if an atomic bomb would be treated as a kind of fixed asset or an inventory item). The stock/inventory of atomic bombs of, let's say, Cancania would generate a regular stream of net operating surplus, at the rate of government bonds, and increase net domestic product accordingly, until it dies of obsolescence, unless of course it is used before. Logical from the point of view of capital theory and the theory of interest ? However, is the reference to capital theory relevant in this context ? For atomic bombs, as for other military durables, that are typically the result of politically-based decisions, nobody can assume, I suppose, that estimating the present value of a future stream of economic benefits played any role in determining the amount of resources that were devoted to the building up of the nuclear weapons. I doubt the reference to pure economic theory is relevant in this field.

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<sup>28</sup> - These political motivations can be partly determined by economic objectives, like controlling oil and mining resources, etc... However the actual economic results of this type, if any, belong to the analysis of the outcome, they are not economic benefits in the theory of capital or the SNA usual sense.

## VII - CONCLUSION WITH INTRODUCTION OF SATELLITE ACCOUNTING

Let us recapitulate a few points.

1. When dealing with military/defence activities in the framework of national economic accounting, the starting point should be a careful analysis of the activities involved. The purpose of such an analysis is to decide whether military/defence activities are to be considered as economic production activities or not.

2. The analysis should deal in the first instance with military/defence activities in war-time, that is, when war operations occur. It is then that, for example, destructive military durables and consumables are utilized according to their nature.

3. In national accounting, the analysis of an economic activity in general terms covers three aspects : the process of activity, the inputs used and the output of products (goods or services) which is the outflow of the process. Generally speaking, the most delicate issue is the analysis of the outflow/output.

4. The concept of output should not be confused with the concept of outcome. The distinction is normally easy when the outflow consists of tangible objects (goods). The distinction between the final phase of the production process (output) and the process of use of the goods acquired by users, which, in conjunction with other factors, results in the outcome, is then straightforward (cf. food products, clothes, cars, etc...). The distinction is often more difficult in the case of services, all the more when dealing with collective services. The terminology itself is often ambiguous, the same term being possibly used for both output and outcome, like for instance the word security.

5. The possible output of an activity should not be defined as a sum of inflows/inputs, even when the output is measured at cost. This should be made according to the nature of the outflow appearing at the final stage of the process of activity covered.

6. The outflow of a process of activity should be defined in a specific way. Any tautology, as it is often the case in expressions such as "services of such and such activities", is to be avoided.

7. Military activities are precisely a field in which the three types of possible confusion outlined above are very often encountered. The prevailing terminology "defence services" adds to the ambiguity (see appendix 1, page 33).

8. In this paper, I suggest a definition of the outflow ("output") of military activities in war-time in terms of the last phase of the activity process when weapons are fired and hit (or miss) their targets.

9. On this basis I conclude that military activities in war-time, as processes of destruction (in a wide sense) of the enemy forces and reciprocally, cannot be deemed a process of economic production. No consideration of the type of war in question is necessary.

10. A consequence of the above conclusion is that the accumulation of military durables and consumables in peace-time cannot be deemed an accumulation of economic fixed assets and inventories to be used later on in process of economic production. Then military activities in peace-time are not deemed to be a process of economic production either. Stocks of military equipments and inventories of consumables are political assets.

11. Contrary to my own conclusion stated in point 9, one can choose to decide that military activities in war-time are actually a process of economic production. However, the activities in question and their output must then be specifically analysed and defined. One cannot speak vaguely of "defence activities" and "defence services". Then inputs must be defined and measured consistently.

12. If the decision stated in paragraph 11 is made, then the military/defence activities in peace-time are also deemed to be economic production activities. The accumulation of armaments results in economic fixed assets and inventories and increased saving (also in war-time of course).

Let us look now at the full accounting picture that I propose. The recording in the central framework and the building up of a satellite account are successively reviewed.

In the **central framework**, the recording is simple. All goods and services, acquired by government as part of military/defence expenditures, are treated directly as final consumption expenditures. This covers three main types : consumables, durables, services of personnel. Formally, this treatment is similar to the treatment of household consumption goods and services (see p. 14). All consumables and durables are treated in the same way, whatever their nature, military-specific or civilian-like <sup>29</sup>. The distinction, introduced in the 1993 SNA, which increased the confusion, is thus eliminated. A notional production account is introduced in the government accounts as regards the employment of personnel, both military and civilian, by military authorities. Again, this is similar to the treatment of the employment of domestic personnel by households as consumers. Of course, there are borderline issues between military/defence expenditures/activities and certain other government

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<sup>29</sup> - The only apparent exception is the one existing since the fifties. Expenditures on family dwellings for personnel of the armed forces are classified as GFCF. A specific establishment providing housing services is created in this respect.

expenditures/activities. This is a traditional question, not specific to the general treatment outlined here. In short, all goods and services acquired as part of government military/defence expenditures are deemed to leave the sphere of economic activities at time of acquisition (see p. 13). Their actual combined utilization is part of a consumption process which takes place out of the economic sphere<sup>30</sup>. The ambiguity introduced by the 1968 SNA (see p. 14), which led to the creation of a production account for defence services, with military durables treated as intermediate consumption, and which perturbed many people, is thus eliminated.

A **satellite account** for military/defence activities is introduced. The inflows are the goods and services acquired and treated as final consumption expenditures in the central framework. These goods and services can then be detailed according to the type of products covered and their durability. Reserves of consumables and their changes due to new acquisitions, actual utilizations in peace-time (exercises) or war-time (war operations) and other types of disposal (resales<sup>31</sup>, losses) can be recorded. A similar analysis can be made for reserves of equipments, distinguishing military-specific and civilian-like ones. Estimates of wear and tear in peace-time, or in war-time not in the theaters of operations, of obsolescence, of destructions or deteriorations in combats, etc... are necessary. A specific analysis is required for the personnel involved, especially the military, and the losses incurred.

The above analysis should be done, as far as possible, both in physical and in monetary terms, when relevant.

Various types of military activities, in peace as well as in war conditions, could be distinguished, including the participation to international peace-keeping actions, humanitarian interventions, etc....A geographical breakdown is advisable for countries intervening in various fields of operations.

The most delicate issue would be, if attempted, the analysis and measurement of the outflows of different types of military operations in various situations. It is not highly probable that estimates of "output-like" outflows, following the lines indicated in this paper, could be easily done. Most probably a cost analysis would only be possible. In any case, it seems advisable to avoid speaking in terms of outputs, which would be confusing. However, an elaborate analysis of the costs, as complete as possible (see p. 19) of various types of activities and operations would be a very useful information.

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<sup>30</sup> - In the text I referred only to government. The outlined treatment also applies in principle to non-government military activities and expenditures, that is, to unofficial armies in general.

<sup>31</sup> - As is traditional in national accounting for subsequent resales of final consumption consumables, they re-enter the economic sphere in the supply and use table as negative final consumption expenditures balanced by a positive expenditure somewhere else.

In addition, monetary or in-kind transfers between countries linked with military/defence expenditures and more generally the sources of finance used are part of such a satellite account, as well as external trade in armaments.

Collateral destructions, due to military operations, should be accounted for.

The difficulties involved in getting the necessary figures are not to be underestimated, even for official activities (for the unofficial ones, then ...!) and probably, in a number of countries, even for the limited number of figures to be included in the central framework itself. As a consequence, the ambitions of a satellite account in this field should probably be limited, except in some more advanced and more open countries. In countries where the public accounts for government include a balance sheet and cover stocks of military assets (they are political assets in my view), the link between government public accounts and national accounts for government would be through the satellite account sketched above.

Three final remarks.

A system of national accounts, though necessarily simplified as compared to "real life", must provide a certain representation of the economic life, and even partly at least of the social life of a society. It is not simply a machine for defining and estimating aggregates, whatever the importance of the latter is, based on abstract theoretical relations.

A world-wide international system of national accounts, like the SNA/ESA, aspires to be relevant for countries with possibly very different situations, and not only for the European Union or the OECD countries, whose own diversity is not to be underestimated either.

Finally, I left aside in this paper the changes occurred during the last decades in the social environment at large, that can explain why such a drastic and significant **revolution** (yes, I use this word intentionally) in the SNA conceptual framework is now proposed for the update of the 1993 SNA. I have my views on this. However my intention was to stay on the technical ground of national accounting.

## Appendix 1

### Letter sent by André Vanoli to the Intersecretariat Working Group on National Accounts (4 february 2004)

#### Object : Military expenditures

The Advisory Expert Group (AEG) on the updating of the 1993 SNA will discuss by the middle of february 2004 the treatment of destructive military durables. The issue has been discussed beforehand by the Canberra II group which took the view that these durables should be included in Gross Fixed Capital Formation and then in Assets in the Balance sheet. Apparently the Canberra II group was unanimous in this respect. Such a substantial change, which would have far reaching implications, needs a careful examination. I like to let you know my views on this issue.

There is of course nothing new in the fact that military durables are lasting equipments. Those who built national accounts starting from the forties knew that. Nevertheless all countries preparing accounts in the pioneer time excluded military durables from GFCF and this position was taken when the process of international standardization did start at the turn of the forties. This treatment was not based on welfare considerations (I do not want to enter here in the sometimes complex views of Simon Kuznets). Such considerations could have lead to excluding military outlays from product and final expenditure. On the contrary national accountants took these expenditures into account, though treating them as final current consumption expenditure. The important word here is **current**. Although not many explanations were provided in order to justify this treatment (see Carol Carson. An Informal Documentary History of the Treatment of Military Durables and Construction, March 16, 1988), it seemed evident at that time that military operations in war time and by extension military services in general were not considered to be an activity similar to economic activities. My own interpretation is that implicitly military operations were not considered a process of production. As a consequence military equipments were not inputs in a process of production. What happened internally in the sphere of military activites was judged external to the domain of economic activities.

Thus the origin of the treatment adopted by the SNA was rooted in the experience of the recent World Wars. The actual use of arms was evidently destruction.



As other durable goods that are not arms are used in the overall process of preparing or fulfilling military activities, all military expenditures until the 1993 SNA were treated as current. When production accounts for general government were explicitly introduced (1968 SNA) a conventional presentation of a production account for defense activities was introduced. However in substance the same treatment - everything being current - was kept. The meaning was still in fact that what happened across the border of the military activities to the package of goods and services, and labour, used by them was not useful for portraying the economic activities. For the latter it was enough to analyse and measure the demand coming from the military.

Unfortunately the 1993 SNA, by including in GFCF durable goods acquired by the military and potentially utilizable for civilian use, made the message confused and weakened the traditional SNA position. The latter was based on the peculiar nature of the military activities whatever resources were used, whereas the 1993 SNA relied on the criterion of the type of products used. Let me recall that I was against such a change which was decided in march 1988 by a very narrow majority (one voice ! moreover two experts opposed to the change were absent from the meeting at the time of the vote). Actually this change was decided as a kind of compromise with the small minority favouring treating all military durables as GFCF.

I am still convinced that the 1968 SNA solution, in line with what had been done before, was the most convenient one in the context of the central framework of the SNA/ESA. I think the analysis of the nature of military activities must be primarily based on what these activities are in time of war. This is what they are prepared for. It is then that weapons and equipments to release them are actually used according to their characteristics designed for that purpose. The output of military activities during conflicts consists basically in sets of impacts of weapons against targets. Of course military activities take also other forms during war time. Similarly they take also various forms in peace time. However all of them are connected with the final destructive potential of armaments.

I am a bit surprised to notice that, in the on-going discussion, the main emphasis is on the contrary laid on the analysis of defence services in peace time. This can be explained perhaps by the fact that the memory of World War II is becoming remote. However it is hard to say that the planet was peaceful everywhere since 1945. Actually the terminology mostly used itself did change. Apart from periods of war during which expressions like War Office, War Department, Ministry of War were generally used, the most frequent terminology to be found during the nineteenth and the first decades of the twentieth centuries is something like Army Ministry, sometimes with various types of Army Ministries. During the second half of the twentieth century, denominations using the term Defence (Department, Ministry...) became prevalent. Everybody speaks of "defence services". It is of course nowhere possible to find an "Agression Department" or "Agression Services". The evolution in wording may convey contradictory significances, from commendable real peaceful intentions to pure hypocrisy.

However that may be, it is noticeable that the analogy of defence services with prevention or insurance activities seems to have been widely used in the recent debate. Following such a line of reasoning the emphasis is laid on peace-time periods. I do not pretend that prevention is unimportant. However these frequent references to prevention or insurance - two different notions actually - do reflect some confusion between certain activities, the goods or services that are the output of these activities, the purpose for which expenditures on certain types of goods and services are made and the outcome of the use of the goods and services in question. Moreover, the analogy with prevention and insurance activities can hardly be pursued to the time of armed conflicts. It is quite unusual for insurers to cause themselves the losses that occur when the insured risks materialize. More importantly perhaps the analogy with insurance seems basically fallacious. Being insured is a means of avoiding at least partly the consequences of a given risk if it occurs, not a means of avoiding the risk itself. On the contrary, defence expenditures in the prevention approach are incurred in order to avoid the risk itself, not to cover the possible losses if prevention fails (though they may aim secundarily at limiting the extent of the losses). No parallel can be drawn of course between the accumulation of insurance technical reserves and the accumulation of weaponry.

In the prevention approach, in peace-time then, one cannot avoid the issue of the nature of the output of services that are supposed to be produced. This output does not consist in prevention or deterrence services. Prevention or deterrence is a possible outcome. As a matter of fact, I am not sure that someone intends to analyse concretely the types of defence services that would be produced, in the new methodology, during peace-time. Presumably they will be qualified as defence services without any further description. Of course one can argue that in the present SNA no more analysis is made. This is correct. However the SNA (I refer preferably in this context to the 1968 SNA) did not intend really to analyse defence activities as actual processes of production, something that the new proposed treatment is supposed to do as soon as equipments are treated as fixed assets giving rise to a consumption of fixed capital and weapons as entering inventories when acquired and leaving them when actually used as intermediate inputs.

It is interesting to note that in peace-time military equipments would be treated as inputs into a process of production when not actually used according to their full technical characteristics, except for training and exercises. They die of old age (physically or by obsolescence), some by accident. They follow the rates of consumption of fixed capital estimated for them. Probably those rates would be estimated under the assumption of absence of any combat episode, which may look strange at first glance.

From what I read, people participating in the Canberra II group discussions seem to feel a bit uneasy when envisaging war time. As said above, they like to treat military durables like any civilian fixed asset when those equipments are not actually used for military purposes in a period of actual combat. Their service life would be estimated then according to their peace-time use, not taking into account any probability of being destroyed in combat. When such episodes of combat occur, one

could normally expect a revision of service lives in order to take into account the new circumstances. This would imply higher rates of consumption of fixed capital for equipments more intensively used though not destroyed and a full consumption for those that are destroyed in combat. Surprisingly this does not seem to be what is suggested. In war time, service lives would not be changed and the value of military equipments destroyed would be recorded as other volume changes in the other change in volume of assets account of the SNA/ESA. What is the rationale behind such a proposal ? It is said that the losses occurred by the Army forces in combat due to the action of the enemy forces are externalities (the effect of externalities in the SNA is not recorded in transaction accounts but as "other flows" in the OCV account referred to above).

I must confess that I was totally amazed at reading this. It seems to me that there is a confusion here between the damages caused to civilian populations, that are externalities, and those caused to the military forces engaged in the conflict. The losses of the latter are internal to the process of engagement of the forces, though most of them are due to enemy actions. The destructive capability of military equipments is tightly connected with their capacity to be destroyed in combat. They are the two sides of the medal. Perhaps an illustration can be provided by referring to the example of boxing. Each boxer likes to strike blows at his opponent and is at the same time exposed to receiving blows from him. Striking and receiving blows are parts of the game. There is no externality involved, except if the rules of the game are not respected. A parallel can be drawn in this respect with military combats in case the laws of war are not respected, a problem that may arise for soldiers rather than for equipments. In war circumstances, destructions of military equipments are normal losses, not exceptional ones, and they are internal to the process of combat itself, not the result of external causes. I do not think the emerging implicit idea in Canberra II of a kind of "exchange of externalities" (the wording is mine) is relevant.

The reference to externalities in this respect seems attempting a kind of conjuring trick in order not to bear all the consequences of the proposed treatment. This reason was clearly brought forward in the Canberra II Group discussion. If consumption of fixed capital were calculated during periods of war in order to cover both more intensive use and frequent destructions of military equipments, GDP (estimated from the cost side for general government) would be increased accordingly. People feel embarrassed with this perspective, which demonstrates again that their way of reasoning relies basically on peace-time considerations. By the way, one may note that, following what is proposed, the total contribution to GDP of a tank for instance would be greater during its life if never used according to its characteristics and *raison d'être* than if actually used according to them. One aspect perhaps escaped the attention. Net fixed capital formation, in time of war, would record the effect of the presumably higher acquisition of military equipments whereas the consequences of higher rates of consumption of the latter would not be reflected in higher consumption of fixed capital. It is true that exceptional losses in fixed assets are not recorded in CFC by the SNA. However as I stated above destructions of military equipments in period of combats are not exceptional losses.

More deeply I have the feeling that Canberra II participants were afraid of admitting that they want to include destructive military durables in a process of production in war time when obviously the output provided by the latter is destruction. According to their views these durables are supposed to participate in the production of some kind of prevention or insurance "services" (see above for the confusion with the purpose or outcome) all along their life, including in war time. However, by definition, when war breaks out, it means that prevention failed and the analogy with insurance activities is even more irrelevant. Then either destructive durables are deemed to be used in war operations treated as a production process and people have to face the moment of truth, or people do not accept the truth and continue to hide themselves behind purpose - type or outcome - type notions such as prevention and insurance. In the latter case, why not then stick simply to the SNA tradition, the 1968 version being in my view preferable, which by convention allocates all the expenditures for defence activity to the time when they are borne ?

In the previous paragraphs, I discussed some aspects of the proposals recently made, including some irrelevant uses of the SNA concepts. What I like to stress again however is that in my view military equipments and weapons are not economic assets engaged in a process of production. They are political assets.

There are other issues in treating the acquisition of military equipments as gross fixed capital formation. One is that saving and the rate of saving will be changed. I read somewhere that saving measures would be improved. From the point of view of economic analysis, I am very doubtful about that. Would saving be more significant for economic growth when military durables are accumulated ? When asking the question I have in mind all countries in the world, both developed, developing and backward countries and all periods of time, including peace and war.

Another aspect to be stressed is that, in case a net operating surplus is included in the future SNA 1993, revision 1, when calculating non market output, the same procedure would have, I suppose, to be followed for military durables if they are included in GFCF. This means that a net rate of return would be calculated on the stock of accumulated military durables. The economic benefit (economic, not political, the latter being not in discussion here) derived from holding a stock of nuclear bombs or missiles or other equipments and weapons - I know that the borderline between military durables to be treated as fixed assets and those to be treated as inventories is not yet settled - is, at least, not totally obvious. I suspect that some people have in mind the simple following logic. Military durables are objects whose acquisition has been costly. So they are economic assets. As a consequence they bring economic benefits. In the absence of measures derived from objective observations, these benefits are estimated by imputing a rate of return (gross, net) to the stock of assets owned. Instead of starting from the analysis and measure of possible economic benefits, if they exist, the process is the other way round. That is, instead of deriving the qualification of military durables as economic assets by proving the existence of economic benefits, the existence of such benefits is derived from the pre-qualification of these durables as economic assets. Is not this way of

reasoning circular ? I see the benefits derived from holding military durables as being political, not economical.

An issue, apparently not looked at in the on-going discussion, is the existence of unofficial military forces, sometimes with more than one army claiming to be official. Leaving aside the fact that data are missing, what would be the conceptual analysis applied to them ? Would the analogy with prevention or insurance also be referred to ?

Finally, my conclusion is that the proposed treatment of the acquisition of military equipments as GFCF is not sound, would complicate the system and, I dare to say, pollute the SNA/ESA central framework. A deeper analysis of what happens in the field of military activities, both in peace and war time, could be done in the context of a satellite account for defence activity. If public accountants like to include military assets in the balance sheet of government - there is apparently a move in this direction -, the links between Public Accounts and National Accounts could, in this respect, be designed between Public Accounts and such a satellite account. However a memorandum item could be added to the Balance Sheet of government in the SNA central framework

As a consequence of the practical difficulties involved when dealing with military affairs, due to political concerns, even a satellite account could probably not be too much ambitious, except in some more advanced and more open countries.

The data problem should not be underestimated for the central framework if the proposed treatment of military durables is to be applied. In my own experience in technical assistance to a number of countries, I experimented always the difficulty of collecting the data from the military authorities : data, reliable data, data detailed by product, data permitting to go from payments to actual deliveries, etc.. Often the condition to obtain the necessary information was that the data should not be separately shown or identifiable. I cannot imagine that, in addition to the difficulties met in the context of the limited requirements expressed by the simple SNA/ESA traditional treatment, it would be any easy to get data on the value of the stocks of military equipments and the inventories of weapons, with asset accounts explaining how one goes from opening to closing balance sheets, including losses in combat. Practical reasons go in the same direction as conceptual analysis, even if the latter is in my view the deciding factor.

## Appendix 2

### Extract from the Report of the SNA Expert Group on production accounts and I-0 tables, march 1988

#### 8. Military durables

181. The Expert Group Meeting concluded with a very lively discussion on the appropriate treatment in the new SNA of military durables. This topic was introduced by Carol Carson who presented background paper 31 "An informal documentary history of the treatment of military durables and construction". She had attempted to contact all those concerned with earlier recommendations on the appropriate treatment of military durables in the 1968 SNA to define a rationale for the present treatment. It became clear from those replies and discussion around the table that the only rationale for treating equipment bought for the armed forces differently from equipment purchased for other parts of government was the distinctive characteristic of national defense. Some participants felt that military durables do not increase the productive capacity of an economy and therefore treatment should remain unchanged. However, a number of participants felt that this argument was not theoretically robust. They said it was not clear why a computer bought by the army should be treated as current expenditure where a similar computer bought for a Statistics Office would be treated as capital expenditure. An even finer line had to be drawn in the case of an armoured personnel carrier bought for the police which would be capitalized and one bought for the armed forces which would be treated as current expenditures. They also pointed out that incorporation of military durables as capital formation would be a logical corollary of the present SNA treatment to consider production of military services as part of production of government services. There was specific discussion about whether some assets, which are mainly used for military purposes but may also have civilian uses such as schools, hospitals, roads and some vehicles, should be treated as fixed capital (note the annotated agenda in paragraph 122 contains a typing error in this connection where it talks about assets which are mainly used for civilian purposes but may also have some military uses). A narrow majority of the Expert Group was in favour of making this change. There were some members who would go farther than this and could see no theoretical reason for excluding any military durables and would include all of them, including armaments, in fixed capital. The alternative view point also expressed strongly was

summed up concisely by saying that what was proposed was a major change, it was not demanded by the users and presented major measurement problems. Although on a vote a narrow majority favoured the centre way of making some small extensions to the definition of military expenditure to be treated as capital, in view of the importance of the subject and the divergence of opinions held later informal discussion suggested that this was a topic which would need to be returned to in subsequent meetings.

### **Conclusion**

182. The group was divided between those who wished to retain the present SNA treatment of outlays on military durables as consumption expenditure and those who did not. A small majority argued that at least immovable assets, such as hospitals, schools, roads and airfields which are mainly for military use but which can also be used for civilian purposes should be treated as capital formation. Some participants wished to include all military durables as capital formation.

## Appendix 3

### Recommendation of the Advisory Expert Group Update of the 1993 SNA, Full set of provisional recommendations - Issue 19

#### 19. Military expenditures

The 1993 SNA divides military acquisitions into offensive weapons and their means of delivery, and all other. The former are excluded from capital formation regardless of their life length. This treatment implies that "defence" is not a service provided by government using military hardware as associated assets. Further, weapons that have already been expensed can actually be taken out of stock for use or for exports and would have to be balanced by a negative component in government final consumption. Should the line between gross capital formation and intermediate be drawn differently ?

In future, all expenditure by the military which meets the definition of being used in production over a period in excess of one year will be treated as capital formation, regardless of the nature of the expenditure or the purpose intended for it. All equipment will be treated as fixed capital formation except for consumables which will be treated as inventories. Separate items will identify weapons systems within fixed capital formation and military inventories apart from other inventories. (Strategic inventories will no longer be separated from other inventories of the same type of products).



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