Briefing Memo

New Statistical Standards for GDP and Capitalization of Weapon Systems
― Rethinking the Problem of "Guns versus Butter" ―

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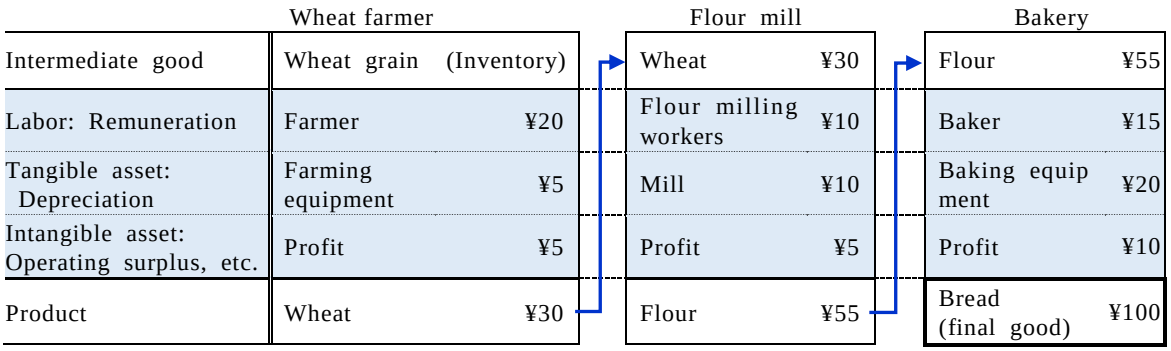
The question of "guns versus butter" is a classical problem concerning the choice between national defense and the civilian economy in the aspect of economic activities. While the protection of lives and assets as well as prevention of invasion through national defense are vital conditions for the sustenance of economic activities, the basis for this problem lies in the recognition that "the ultimate goal of economic activities is to expand the civilian economy, which is in conflict with national defense." Until now, even in the statistical computation of gross domestic product (GDP) weapon systems have been treated as intermediate goods that do not generate any added value. In other words, the point of view taken is that weapon systems are eventually consumed during the process of military operations (provision of the administrative service of national defense). However, in a new standard used for calculating GDP known as "2008SNA" ("SNA" is the abbreviation of "System of National Account"), weapon systems became classified as a form of capital (investment) that produces administrative services (added value) into the future.

1. Basic Approach Toward GDP and Changes in Statistical Standards

If we were to simplify the case where a baker bakes bread, flour would be considered an intermediate good that is transformed into bread and consumed (Figure 1). The added value that the bakery produces (45 yen) when bread (final good) is produced from flour (intermediate good) is dependent upon the labor that the baker puts into the work and the baking equipment (tangible assets), as well as the reputation of the bakery and consumers' trust in its quality (intangible assets: management resources that do not have a tangible form). The flour, which is an intermediate good, carries added value (25 yen) generated through the wheat (intermediate good), the flour milling workers (labor), mills (tangible assets), and the traditions and customer base possessed by the flour mill (intangible assets), as well as an added value (30 yen) of the wheat that comes from the work of the farmers, the farming equipment, and the farming knowhow of the farmers. This relationship among labor and capital (tangible/intangible), intermediate goods and final goods, and GDP (added value) can also be applied to weapon systems.



	Wheat farmer		Flour mill		Bakery	
Intermediate good	Wheat grain (Inventory)		Wheat	¥30	Flour	¥55
Labor: Remuneration	Farmer	¥20	Flour milling workers	¥10	Baker	¥15
Tangible asset: Depreciation	Farming equipment	¥5	Mill	¥10	Baking equip ment	¥20
Intangible asset: Operating surplus, etc.	Profit	¥5	Profit	¥5	Profit	¥10
Product	Wheat	¥30	Flour	¥55	Bread (final good)	¥100

Note: The added value for this process (=GDP: Total of the colored cells) is 100 yen.

Figure 1: Relationship between labor/fixed assets and the prices of intermediate goods/final goods (in the case of a 100-yen bread)

The economic activity of generating added value (GDP) can be captured from the aspects of production, distribution, and consumption. GDP in the aspect of production is aggregated by the respective production entities; GDP in the aspect of distribution is by the respective production elements (Gross Domestic Income); and, GDP in the aspect of consumption is by the respective consumption entities (Gross Domestic Expenditure). As far as we are observing the same item from different perspectives, these three values are equal (the principle of the equivalence of the three aspects of national income: Table 1). In Figure 1, the GDP of the process that transforms "wheat grain→flour→bread," broken down by production entities, is 30 yen for the wheat farmer, 25 yen for the flour mill, and 45 yen for the bakery (total: 100 yen). From the perspective of production elements, remuneration for labor is 45 yen, and the portion for capital (Depreciation + Operating surplus, etc.) is 55 yen (total: 100 yen). Looking at the breakdown by consumption entities, the consumption expenditure incurred by the private sector when this bread is purchased by general consumers is 100 yen. As this example demonstrates, added value (=GDP) is generated when production elements (labor and capital) are injected into the process. The added value (=GDP) is then distributed to the respective production elements as consideration for their input. Workers receive consideration in the form of salaries or wages, while land receives in the form of rent for the land. In accordance with statistical computation methods, the distribution of consideration toward production facilities such as factory equipment is deemed to take the form of depreciation.

Table 1: Nominal GDP for Japan, FY2014 (Unit: Trillion yen)

Production GDP (by production entities)		Distribution GDP (by production elements)		Expenditure GDP (by expenditure entities)	
Non-financial incorporated enterprises	72.2	Compensation of employees	252.4	Private final consumption expenditure	293.2
Financial institutions	53.5	Operating surplus and mixed income	91.0	Government final consumption expenditure Ⓒ	101.0
Households: including private enterprises	317.2	Consumption of fixed capital Ⓑ	103.7	Gross fixed capital formation	106.5
General Government Ⓐ	52.8	Tax on production and exports	47.9	Changes in inventories	0.3
Non-profit institutions serving to households	0.4	Subsidies (deduction)	▲2.9	Export of goods and services	88.4
Statistical discrepancy, etc.	▲6.5	Statistical discrepancy, etc.	▲2.5	Import of goods and services (deduction)	▲99.7
Gross Domestic Product (GDP)	489.6	Gross Domestic Income (GDI)	489.6	Gross Domestic Expenditure (GDE)	489.6

Source: Drawn up based on data extracted from the website for the National Accounts of Japan, Cabinet Office (GDP statistics)

GDP statistics for key countries are drawn up based on standards adopted by the United Nations Statistical Commission with the objective of facilitating and simplifying comparison across different countries. The first standard was “53SNA” (published in 1953), and this was adopted by Japan in 1966 (Figures were recalculated retroactively back to 1951 and published). After that, “68SNA” was adopted, and in 1993, “93SNA” was formulated jointly by five organizations alongside with the United Nations: Organization for Economic Cooperation and Development (OECD), International Monetary Fund (IMF), World Bank, and the European Commission (EC). Based on this standard, Japan drew up its GNP statistics and other figures during the years from 2000 to 2016. Efforts to make the transition into the new standard “2008SNA,” adopted jointly by the abovementioned five organizations (in February 2009), are currently ongoing in the major developed economies. Japan, too, has begun applying the “2008SNA” in phases from December 2016, starting with the Annual Report on National Accounts of 2015 (past statistics were recalculated retroactively back to 1994 and published).

The changes from “93SNA” to “2008SNA” can be classified into the following four broad categories: (1) changes in the concept of production capital; (2) response to the evolution of financial transactions; (3) response to the globalization of economic activities; (4) refinement of the treatment of general governmental and public sectors. Within these, the item that is related to national defense expenditures is “(1) Changes in the concept of production capital,” which covers a re-definition of the relationship between economic activities and weapon systems (defense equipment).

2. Capitalization of Weapon Systems and Its Impact on GDP Statistics

Under “93SNA” the weapon platforms (combat vehicles, warships, military aircraft, etc.) for ammunition (missiles, bombs, etc.) that are not used in production activities were not treated as fixed assets that generate added value. In the SNA, weapon platforms are described as “weapon systems.” In other words, the old standards positioned weapon systems as intermediate goods that are consumed in the process of providing national defense services (in the case of bread, it would be equivalent to the flour). Added value (3.0 billion yen in Figure 2) had been included in the accounts of manufacturers of weapon systems (intermediate goods). However, under “2008SNA”, weapon systems are accounted for as investments (final goods) instead of intermediate goods. Hence, this means that the definition of weapon systems has changed from goods that are “consumed in the process of providing national defense services (final good)” to become goods that are “accumulated as capital, and which produce national defense services (final goods) into the future” (capitalization of weapon systems). That is to say, weapon systems are capital that continue to produce added value as they are depleted (depreciation), and the depleted portion becomes added value that is produced by the weapon system (in Figure 2, this is assumed to be 4.0 billion yen). Ammunition, which is a consumable good, will continue to be treated as an intermediate good (however, certain ammunition such as ballistic missiles are recorded as fixed assets under “2008SNA” as they provide a long-term deterrence service). In addition, as national defense is not a for-profit activity, it does not generate any profits.

Under the “2008SNA,” weapon systems purchased in the past are aggregated as fixed assets, while the portion of their depreciation is included as the added value calculated through the weapon systems, equivalent to the values of Ⓐ, Ⓑ, and Ⓒ in Table 1 (the principle of the equivalence of the three aspects of national income: calculated GDP increases by that amount). Through this capitalization of weapon systems or introduction of “2008SNA”, Japan’s nominal GDP is expected to be revised upward by about 0.1% (approximately 600 billion yen) as compared to the old “93SNA” (under the overall revision of the standards, nominal GDP increases by 19.8 trillion yen, including the impact of changes other than the “capitalization of weapons systems”). Of course, the impact of the capitalization of weapon systems on GDP statistic becomes greater should the ratio of defense spending to GDP be larger. While its effect in pushing up GDP for Germany, Canada, and Australia is about the same level as for Japan (0.1%), it is 0.2% for the United Kingdom and France and forecast to be about 0.5% for the United States, which has a high ratio of defense spending to GDP (Table 2).

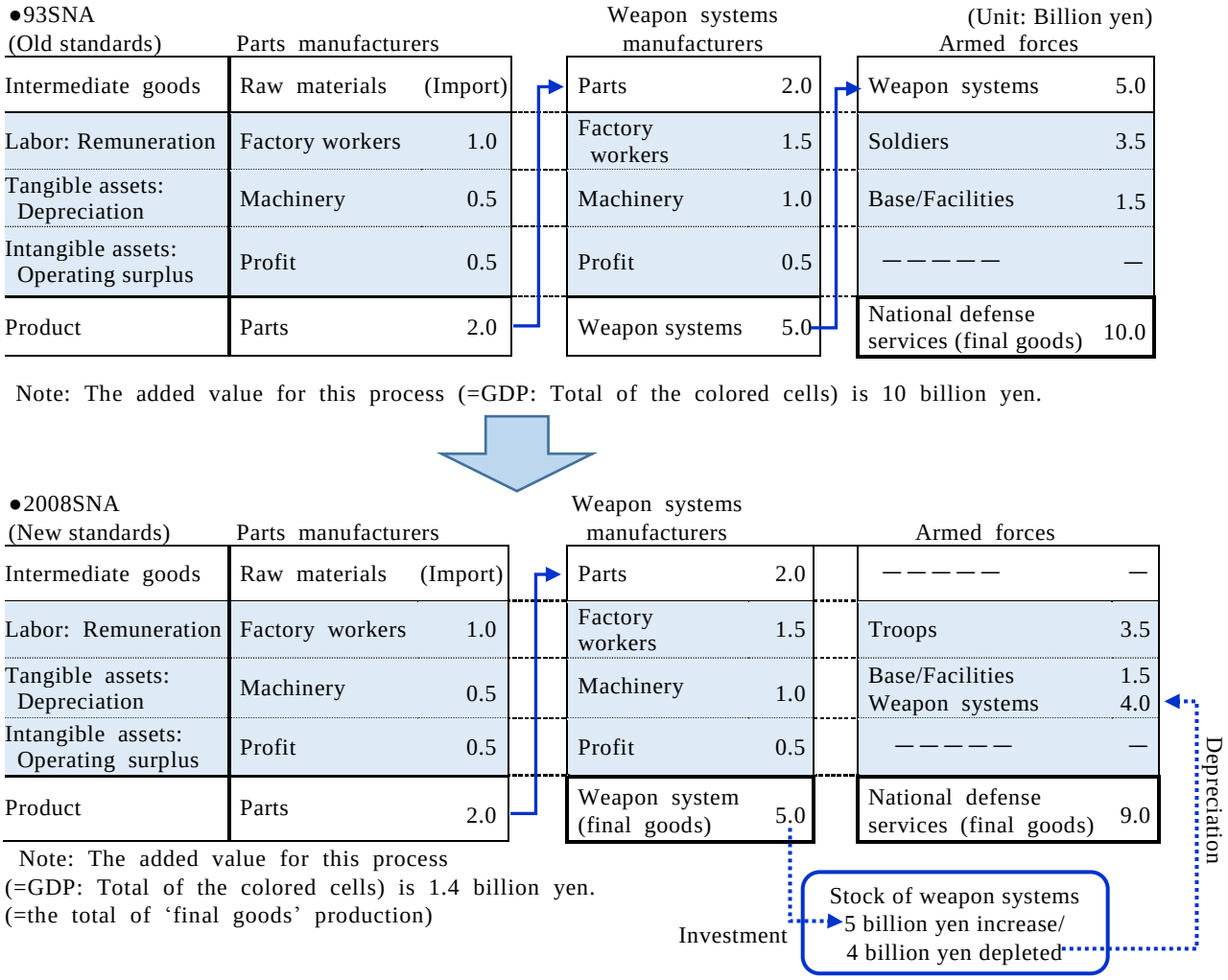


Figure 2: Changes in GDP calculation method as a result of the capitalization of weapon systems

Table 2: Effect of revision to GDP statistical standards (2008SNA) in pushing up GDP

	Japan	USA	U.K.	Germany	France	Canada	Australia
Effect of the application of 2008SNA in pushing up overall GDP	4.2%	3.2%	4.9%	3.3%	3.2%	2.5%	4.4%
Of which, impact from capitalization of weapon systems	0.1%	0.5%	0.2%	0.1%	0.2%	0.1%	0.1%
Ratio of national defense spending to GDP (2010)	1.0%	4.8%	2.6%	1.4%	2.3%	1.5%	1.9%

Source: Department of National Accounts, Economic and Social Research Institute, Cabinet Office, 'Heisei 27 nendo kokumin keizaikeisan nennjisuikei (Heisei 23 nen kijyunkaiteichi) (Flow-hen) points, [Annual Report on National Accounts of 2015 (Revised values from FY2011 standards (Flow)]' (December 22, 2016), Yosuke Tada, "Kakkokuno 2008SNA/ESA2010 donyu jyokyo to kokusai kijyun ni kansuru kokusaiteki na doko [Status of adoption of 2008SNA/ESA2010 by each country and global trends in international standards]" *National Accounts Quarterly*, No.156 (March 2015), and *SIPRI Yearbook 2012* (New York: Oxford University Press, 2012).

Conclusion

The "2008SNA" statistical standard demonstrates a dramatic shift from the previous approach, and positions weapon systems as something that produces added value into the future. In addition to the traditional roles of protecting lives and assets as well as deterring invasions, military activity is increasingly taking on a heavier responsibility in addressing non-traditional threats such as countering terrorism and piracy as well as coping with disasters. Such military activities generate value that fulfills the people's desire for peace and stability. This reality is apparent from the fact that it has been reflected in the GDP statistical standards. To begin with, the result is that under the new standards, the GDP of countries with large defense spending will be recorded as an even higher figure than before. However, this does not necessarily mean that countries which are strengthening their military capability excessively without regard for the lives of their citizens are economically wealthy. This would be precisely what the saying "more than enough is too much" describes; the problem of guns versus butter, raised at the beginning of this paper, has not lost its relevance even today. Rather, this latest revision to the GDP statistical standards could be described as a renewed recognition of the fact that such preparation for countries (weapon systems) produces the added value of satisfying people's longing for peace and stability.

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