Provisional translation

Preview of the Next Benchmark Year Revision in the Japanese National Accounts

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Economic and Social Research Institute, Cabinet Office

1. Overview

Economic and Social Research Institute (ESRI) of Cabinet Office would like to announce that the Japanese National Accounts (JSNA) will have a comprehensive revision, which consists of introduction of the latest international standard on the System of National Account (SNA) – the System of National Accounts 2008 (SNA2008) as well as update of the benchmark (reference year) from 2005 to 2011, incorporations of large scale source statistics, and other methodological changes. This paper explains the revision to be conducted in the JSNA, and demonstrates a provisional estimation of the impact of the revision on current price GDP level in the new benchmark year (i.e. CY2011), in advance of the release of the new JSNA figures, scheduled in December 2016.

The SNA is a statistical system that records (i) current transaction including production, distribution and expenditure, (ii) accumulation of assets and liabilities, and (iii) assets and liabilities outstanding for a whole economy in a comprehensive, consistent and integrated manner. The SNA is compiled in each country by its national statistical office (or government-affiliated organization) in accordance with the international standard adopted by the United Nations. In Japan, ESRI of Cabinet Office (Economic Research Institute of the Economic Planning Agency, the predecessor, up to 2000) has compiled its accounts (i.e. JSNA) since 1966. The current JSNA is compiled based on the SNA1993, the previous international standard. The introduction of the SNA1993 to the JSNA was conducted in 2000.

The international standard for the SNA is revised on non-regular basis, in order to reflect developments in the economic and financial environment. The SNA2008, the latest edition of the international standards, was adopted by the United Nations in February 2009. Advanced economies, including the United States and the members of the European Union (EU) have incorporated the SNA2008 into their accounts in the last few years. Japan will implement the SNA2008 in December 2016, when the JSNA conducts a comprehensive revision called the *Benchmark Year Revision* (BYR), which is usually undertaken quinquennially to revise time-series retrospectively by incorporating large-scale detailed source statistics compiled every half decade including *Input Output Table* (IOT) (Ministry of Internal Affairs and Communication (MIC) and other ministries), *Population Census* (MIC), and *Housing and*

Land Survey (MIC). The upcoming revision is the *Benchmark Year Revision of 2011* (BYR2011) [1] that incorporates *IOT for 2011* released in June 2015 and other source statistics. The results of the new JSNA are scheduled to be published in December 2016 and January 2017[2].

The BYR2011, which contains the implementation of the SNA2008 covers a broad range of changes, including, for instance, the capitalization of research and development (R&D) that will have a considerable impact on the level of Gross Domestic Product (GDP) as noted below. This paper, in advance of releasing the estimated results, aims at providing a preview of the BYR2011, especially in order to inform how the JSNA will change by the SNA2008 implementation, which would expectedly contribute to the convenience of statistical users. The next section summarizes the abstract of the latest international standard (i.e. the SNA2008) and reviews its implementation in other advanced economies. In section 3, the changes prospected in the JSNA due to the SNA2008 implementation are described. Section 4 covers the major changes in the BYR2011 other than the adoption of the SNA2008, including some improvements in estimation methodologies. Section 5, based on the previous two sections, previews quantitative impacts of the revision on the current price GDP level in the benchmark year (i.e. CY2011) and its major factors. Section 6 concludes.

2. Abstract of the SNA2008 and its implementation in other major economies

The SNA2008 is the latest and fourth international standard of SNA, following the SNA1953, the SNA1968 and the SNA1993. In the SNA1968, a comprehensive system was introduced by covering both flow and stock accounts, while it previously covered only flow accounts in the SNA1953. In the SNA1993, various improvements have been made, such as further elaborations in the institutional sector accounts (e.g. subdivision of "income and outlay account" and "other flow account"), an introduction of the concept of social transfer in kind, and an enlargement of the scope of fixed asset by including intangible assets such as computer software. The SNA2008, based on the SNA1993, reflects developments of the economic and financial environment, leading to over 60 items of changes and clarifications in concepts and definitions. Furthermore, the SNA2008 is formulated to be more consistent with other international statistical standards including the *Balance of payments and International Investment Position Manual* (BPM), as well as with the *International Accounting Standards* (IASs).

[1] The last BYR is called the "BYR2005" which incorporates *IOT for 2005* and other statistics. BYR updates the reference year where nominal value equals to real value, and hence the reference year will be changed from 2005 to 2011 in the next revision. In JSNA, such reference year is, by convention, called "benchmark year," same as the year for which the latest IOT is compiled.

[2] Major flow accounts will be released in December 2016, while other accounts including stock accounts will be published in January 2017.

A number of changes and clarifications made in the SNA2008 can be categorized into the following four domains. The first domain is elaborations in the treatments of non-financial asset, in particular an expansion in the scope of non-financial produced asset. For instance, the new standard treats expenditures on R&D and weapon system (other than single-use items) as gross fixed capital formation (GFCF), and those accumulation as fixed assets (i.e. capitalization). Relatedly, the classification of fixed assets is revised to include "intellectual property product" (containing "research and development" as a sub-category) in place of "intangible fixed asset," to reflect the increase in significance of intellectual asset in production activities.

The second domain is more elaborated recording of financial sector. In particular, the classifications of financial assets and financial institutions are revised to correspond to diversification and development in financial instruments and activities and the revision of IAS after the 1990s as well. The examples include the introduction of employee stock option as a new financial instrument, and the improvement in recordings with respect to employment based social insurance (e.g. corporate pensions) strictly resting on accrual basis.

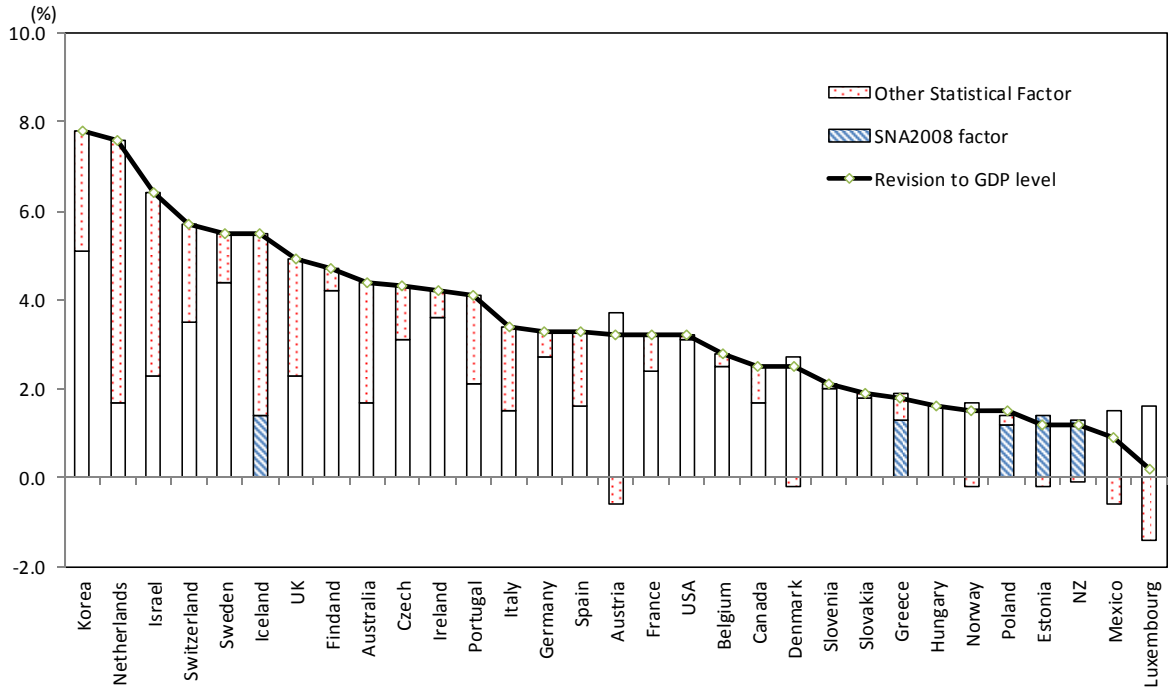
The third domain is elaborations in the treatments of public sector, including clarifications of classifying criteria between general government and public corporations, and changes in the treatment of exceptional payment between general government and public corporations.

The fourth is incorporation of the development in globalization. In particular, the exports and imports of goods and services are recorded strictly based on transfer in ownership in order to capture the advancement in globally diversified corporation activities, to be consist with the latest international standard on the *Balance of payments and International Investment Position* (BPM6).

Major advanced economies, including the U.S. and the EU member states, have incorporated the SNA2008 to their National Accounts. For instance, Australia implemented the new standard at the end of 2009 ahead of other countries, followed by Canada which partially introduced the SNA2008 in the autumn of 2012. In the summer of 2013, the U.S. adopted several major recommendations of the SNA2008 including capitalization of R&D in its *National Income and Product Account* (NIPA). Meanwhile, the EU member states implemented the *European System of National and Regional Accounts 2010* (ESA2010), which corresponds to the internationally agreed standard (i.e. SNA2008), by the autumn of 2014.

These countries commonly adopted the recommendations in the SNA2008 which have impacts on the level of GDP including the capitalization of R&D. The impact on nominal GDP level due to the implementation of the international standard is estimated to raise GDP level by approximately 2 and half percent on average compared to pre-revised GDP level, ranging from 1 to 5% (see Figure 1). Major part of the quantitative effect is explained by the capitalization of R&D, which increases current price GDP by slightly less than 2% on average, ranging from 0.5 to 4%.

Figure 1 Impact on nominal GDP level for OECD member countries due to the SNA2008 implementation and other factor



(%)

Country	Reference Year	Year of Implementation	Revision to GDP level			
				International Standard		Other Statistical Factor
				(SNA2008)	Capitalization of R&D	
Australia	FY2007-08	2009	4.4	1.7	1.4	2.7
Austria	2010	2014	3.2	3.7	2.3	-0.6
Belgium	2010	2014	2.8	2.5	2.4	0.3
Canada	2010	2012	2.5	1.7	1.3	0.8
Czech	2010	2014	4.3	3.1	1.2	1.2
Denmark	2008	2014	2.5	2.7	2.6	-0.2
Estonia	2010	2014	1.2	1.4	0.9	-0.2
Finland	2010	2014	4.7	4.2	4.0	0.5
France	2010	2014	3.2	2.4	2.2	0.8
Germany	2010	2014	3.3	2.7	2.3	0.6
Greece	2010	2014	1.8	1.3	0.6	0.6
Hungary	2010	2014	1.6	1.6	1.2	0.0
Iceland	2010	2014	5.5	1.4	1.4	4.1
Ireland	2010	2014	4.2	3.6	3.5	0.6
Israel	2012	2013	6.4	2.3	2.2	4.1
Italy	2010	2014	3.4	1.5	1.3	1.9
Korea	2010	2014	7.8	5.1	3.6	2.7
Luxembourg	2010	2014	0.2	1.6	0.5	-1.4
Mexico	2008	2013	0.9	1.5	1.4	-0.6
Netherlands	2010	2014	7.6	1.7	1.8	5.9
New Zealand	2010	2014	1.2	1.3	1.1	-0.1
Norway	2011	2014	1.5	1.7	1.4	-0.2
Poland	2010	2014	1.5	1.2	0.5	0.2
Portugal	2010	2014	4.1	2.1	1.3	2.0
Slovakia	2010	2014	1.9	1.8	0.6	0.1
Slovenia	2010	2014	2.1	2.0	1.9	0.1
Spain	2010	2014	3.3	1.6	1.2	1.7
Sweden	2010	2014	5.5	4.4	4.0	1.1
Switzerland	2011	2014	5.7	3.5	3.2	2.2
UK	2010	2014	4.9	2.3	1.6	2.6
USA	2010	2013	3.2	3.1	2.5	0.1
OECD average	－	－	3.4	2.3	1.9	1.1
range	－	－	+0.2～+7.8	+1.2～+5.1	+0.5～+4.0	-1.4～+5.9
EU28 average	2010年	2014年	3.7	2.3	1.9	1.4

(Source) OECD, Eurostat and each country's statistical office

3. Implementation of the SNA2008 in the next benchmark revision of the JSNA

This section summarizes how the major recommendations of the SNA2008 will be incorporated to the JSNA in the BYR2011. Main points are as follows; (i) capitalization of research and development, (ii) change in recording of patent royalties, (iii) capitalization of defense equipment, (iv) elaboration of treatment for ownership transfer costs, (v) clarification of central bank output, (vi) recording of

employees stock options, (vii) improvement in recording corporate pension entitlements, (viii) elaboration of treatment on standardized guarantee, (ix) elaboration of exceptional payments between general government and public corporations, and (x) harmonization with balance of payments. It should be noted that some of the SNA2008 recommendations have already been introduced in the current JSNA since the previous benchmark year revision (i.e. the BYR2005) that was undertaken in 2011 (for instance, clarifications of the boundaries among private, public and government sectors were implemented in accordance with the SNA2008).

(i) Capitalization of research and development

In the SNA2008, research and development (R&D) is defined as "creative work undertaken on systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and enable this stock of knowledge to be used to devise new applications." Hence, the expenditure on R&D is treated as gross fixed capital formation (GFCF), instead of intermediate consumption in the SNA1993, except in cases where it is clear that the activity does not entail any economic benefit to its owner, and therefore its accumulation is recorded as fixed assets.

The current JSNA based on the SNA1993 treats R&D differently depending on three types of R&D producers in the following manner: (a) Firstly, the R&D conducted by scientific research institutions of the market producers (whose primary activity is R&D) is treated as a form of output, and its use is mainly counted as intermediate consumption. (b) Secondly, the output value of own account R&D by corporations (i.e. market producers) is not measured in the current system while costs incurred with respect to research activities are included in the production costs of those producers (e.g. compensation of employee, intermediate input, etc.), and accordingly no demand is recorded. (c) Thirdly, as to R&D activities by non-market producers (general government or NPISHs), since the total service output by those producers is measured as sum-of-cost by the convention of the SNA, the costs related to research activities are reflected in the total output values of those producers (though not recognized explicitly as R&D output), and its use is recorded as own final consumption expenditure by the non-market producers (e.g. government final consumption expenditure in the case of general government).

Figure 2 Accounting Change due to Capitalization of R&D

	Current System (based on SNA1993)	After the BYR2011 (based on SNA2008)
R&D by Market Producer		
Scientific Research Institution	The output of R&D is recorded, which is mainly allocated to intermediate consumption	The output of R&D will continuously recorded, which is mainly allocated to GFCF
Own Account Research and Development	The output of R&D is NOT recorded (although the costs regarding R&D activity is included in each production cost), and thus no demand exists	The output of R&D will be newly measured, which is mainly allocated to GFCF
R&D by Non-market Producer	The value of total service output implicitly contains the cost related to R&D activitity (since the output of non-market producer is measured by sum-of-cost), which is mainly allocated to own final consumption expenditure of non-market producer.	The output of R&D will be explicitly recognized, which is mainly allocated to GFCF

In the new JSNA introducing the SNA2008, first of all, R&D output will be measured in more comprehensive and explicit manner. In other words, the output value of own account R&D by corporations will be measured in addition to that by market scientific research institutions. Meanwhile, R&D by non-market producers will also be explicitly recognized. Along the lines of international standard, the R&D output is to be measured by sum-of-cost approach, using the information derived from *Survey of Research and Development* (MIC), which is compiled based on OECD's Frascati Manual[3] and other source data. In measuring the R&D output by market producers, a net return to fixed capital used in research activity will be added as a mark-up in order to evaluate the output by market price equivalent.

R&D output = *the sum of cost used in R&D activity*
= *compensation of employee + intermediated consumption*
+ *taxes (less subsidy) on production + consumption of fixed capital*
+ *a net return to fixed capital*

Next, the expenditure on R&D will be recorded as GFCF, and its accumulation as fixed asset (included in the category "intellectual property products"). In principle, the R&D which does not provide any economic benefit to its owner (e.g. unsuccessful R&D) should be excluded from the scope of capitalization. The SNA2008, however, allows it to be included in the value of R&D capital by convention. The JSNA will treat the whole value of R&D as GFCF in line with most advanced

[3] It is guidelines for collecting and reporting data on research and experimental development.

economies that already implemented the SNA2008. GFCF of R&D in the whole economy is therefore defined as the sum of R&D output plus net import (import less export) of R&D service that is recorded in the *Balance of payments* (Ministry of Finance (MOF) and Bank of Japan (BOJ)).

$$\textit{GFCF of R\&D} = \textit{R\&D output} + \textit{net import of R\&D service}$$

R&D fixed asset and consumption of fixed capital will be estimated by perpetual inventory method (PIM) under declining-balance model (i.e. fixed rate method), as the same treatment of other fixed assets. Depreciation rate for R&D will basically be set assuming average service life of 10 years that is a standard presumption adopted internationally, whereas, for the R&D asset of manufacturers that account for most part of the total R&D, depreciation rate will vary depending on industries considering the speed of obsolescence for production technology and knowledge that is presumably reflected in the depreciation of industrial machineries owned by each manufacturer (as a result, 9-15 years of average service life are assumed). Deflator on R&D will be measured by input-based approach considering wage index and prices of intermediate inputs in consistency with international convention.

Capitalization of R&D will have a significant impact on the level of GDP as in other major advanced economies. In the following, the channels in which R&D capitalization influences on GDP by three aspects (i.e. production (GDP(O)), expenditure (GDP(E)), income (GDP(I))) are demonstrated depending on the type of R&D producers. Firstly, the channel for the R&D by market research institutions[4] is:

- GDP(O) increases due to the reduction in intermediate input by each industry who purchases the R&D produced by market scientific research institutions
- GDP(I) increases due to the rise in gross operating surplus of the industries abovementioned
- GDP(E) increases due to the rise in GFCF

Secondly, the channel with respect to the capitalization of corporate own account R&D is:

- GDP(O) increases due to the rise in output of market producers undertaking R&D as secondary activity
- GDP(I) increases due to the rise in gross operating surplus of the producers aforementioned
- GDP(E) increases due to the rise in GFCF

Finally, for the R&D by non-market producers:

[4] For the sake of simplicity, net import of R&D service is omitted in this discussion. In the next benchmark year revision, in practice, net import will be treated as GFCF by each market producer who conducts own account R&D.

- GDP(I) increases due to the rise in consumption of fixed capital accrued from R&D fixed asset newly recorded
- GDP(O) increases due to the rise in non-market producers' output which newly reflects the value of consumption of fixed capital accrued from R&D fixed asset
- GDP(E) increases by the value of consumption of fixed capital accrued from R&D foxed asset (Own final consumption expenditure decreases by the value of R&D expenditure, which in turn raises GFCF. That said, consumption of fixed capital contributes to the rise in own final consumption expenditure via the increase in non-market producers' output)

(ii) Change in the recording of patent royalties

The SNA 2008, with the inclusion of R&D expenditure as capital formation, treats patented entities as outcome of R&D and embedded in "intellectual property product" (and its subcategory, "research and development"), while SNA1993 treats them as non-produced intangible asset. Also, the royalty payment under patent agreement from licensee to licenser is recognized either as payment for service (i.e. intermediate consumption) or as payment for acquisition of asset (i.e. GFCF), depending on the form and/or condition of the payment, where SNA1993 treats it only as payment for service.[5]

The current JSNA treats patent as non-produced intangible asset and the royalty as payable and receivable of property income. Meanwhile, in the new JSNA, patented entities will be recognized as embedded in R&D fixed asset with the capitalization of R&D, and their royalties are to be recorded as payment for service[6] (where the service will be recorded under the name of "patent services").

This modification will have an impact on GDP level. Patent services domestically produced are composed of receipts from non-residents (X) and receipts from residents (A), while patent service consumption by residents consists of payments to non-residents (M) and payments to residents (B). Here, A and B are identical by definition (hereafter, named (A) for simplicity). From the viewpoint of supply and use of patent services, the following identity equation holds:

$(A + X)$	$+$	M	$=$	$(A+M)$	$+$	X
Domestic production		Import		Intermediate consumption		Export

[5] The SNA1993 contains a kind of inconsistency in the system, that is, patent royalty is produced as a service from patented entities as non-produced assets rather than produced assets. Normally, property income ought to be derived from non-produced assets, like rent accrued from land. As the current JSNA treats patent as non-produced asset, patent royalties are recoded as property income (i.e. rent) in light of an internal consistency in the system.

[6] Source information is limited in order to distinguish payment for service and payment for asset acquisition.

M (import) and X (export) are derived from "charge for the use of industrial property rights, etc." in the *Balance of payments*, and A (domestic transaction) is estimated from the *Basic Survey on Corporate Activities* (Ministry of Economy, Trade and Industry (METI)).

Based on this framework, the channel in which this modification influences GDP by three sides can be laid out below. In sum, GDP impact will consist of net export of patent services, i.e. X-M.

- GDP(O) increases by X-M since output rises by A+X and intermediate input by A+M
- GDP(I) increases due to the rise in net operating surplus by X-M = (A+X)-(A+M)
- GDP(E) increases by X-M since exports of goods and services rises by X and imports by M

Since X and M are recognized in the current system as property income receivable from and payable to the rest of the world, respectively, GNI (defined as GDP + net income from the rest of the world) will not be influenced by this modification.

(iii) Capitalization of defense equipment

In the SNA2008, weapon system such as tanks and warships is treated as fixed asset that is continuously used in the production of government's defense services, and expenditures on weapon systems are recorded as GFCF by general government, instead of intermediate consumption as in the SNA1993. Likewise, single-use items such as bombs are treated as inventories, and changes in its value are recorded as changes in inventories, rather than as intermediate consumption in the SNA1993.

In the current JSNA, expenditures on the defense equipment are recorded as government intermediate consumption, which constitutes government service output (since it is measured by sum-of-cost approach) and is reflected in government final consumption as its use side. On the other hand, the defense equipment will be capitalized in the new JSNA. Specifically, the increase in ammunition (i.e. single-use item) is recorded as change in inventories, while the expenditure on the equipment used continuously such as tanks and warship will be counted as GFCF by general government. Defense Ministry's settlement report and other statistics with respect to manufacturing sector will be used for the source data.

Fixed asset and consumption of fixed capital of defense equipment will be estimated by perpetual inventory method (PIM) under declining-balance model (i.e. fixed rate method). Depreciation rate will be set, taking into consideration the service life of each category of equipment (provisionally ranging from 15 to 35 years).

While recording increases in ammunition as changes in inventories is neutral to GDP level since

intermediate consumption by government (hence, government final consumption expenditure) recorded in the current system will be offset by change in inventories, the capitalization of other equipment such as tanks and warships has an impact on the level of GDP in the following manner:

- GDP(I) increases due to the rise in consumption of fixed capital accrued from defense equipment fixed asset newly recorded (held by general government)
- GDP(O) increases because of newly counting the value of consumption of fixed capital accrued from defense equipment fixed asset in measuring general government's output (On the other hand, the decrease in intermediate consumption on defense equipment by government is, by definition, offset by the decrease in output by government)
- GDP(E) increases by the value of consumption of fixed capital accrued from defense equipment fixed asset (Own final consumption expenditure decreases by the value of expenditure on defense equipment, which in turn increases government GFCF. That said, consumption of fixed capital contributes to the rise in own final consumption expenditure via the increase in government's output)

(iv) Elaboration of treatment of ownership transfer cost

In the SNA1993, ownership transfer cost (OTC) on acquisition of an asset is recognized as GFCF when it is incurred, and its consumption of fixed capital is recorded over the whole life of the asset in question. On the other hand, the SNA2008 treats OTC on both acquisition and disposal of an asset as GFCF, and records its consumption of fixed capital over the period the asset in question is expected to be held by the purchaser.

In the current system of the JSNA, among those defined as OTC in the international standard, only installation, trade and transport cost (separately invoiced to the purchaser) of an asset are recorded in GFCF (integrated with the asset in question), and their consumption of fixed capital are recorded over the service life of the asset. Meanwhile, in the new JSNA, real estate commission on transaction of dwelling and building land, which is treated as intermediate consumption in the current system, will be newly recognized as GFCF[7]. Consumption of fixed capital of the newly captured OTC is recorded under declining-balance method over the average period during which a residential asset is held by the same owner, while other OTCs such as trade cost is continuously treated to be written off together with the asset in question over the period of its service life. [8]

[7] The commission on transaction of non-residential buildings and other OTCs are difficult to capitalize due to the constraint of source information.

[8] In addition to the change aforementioned, the SNA2008 recommends that "terminal cost," such as those required to render the structure safe or to restore the environment in which it is situated (e.g. dismantling cost), should be explicitly recognized as a part of OTCs. Terminal cost is recorded as GFCF when incurred, and written off over the period of service life of the asset.

While no special treatment is made for terminal cost in the current JSNA, in the new system it will identify terminal cost where

This change has an impact on GDP level in the following manner:

- GDP(O) increases due to the reduction of intermediate consumption by the amount of newly capitalized commission
- GDP(I) increases due to the rise in gross operating surplus by the amount of the commission
- GDP(E) increases due to the rise in GFCF by the amount of the commission

(v) Clarification of central bank output

In the SNA1993, services produced by central bank are measured on the basis of fees and/or commissions and FISIM (financial intermediation services indirectly measured), but there is no other explicit guideline on the treatment of non-market service provided by central bank. On the other hand, the SNA2008 defines central bank output as three groups, that is, (a) FISIM (market product), (b) monetary policy services (non-market product), (c) other services including supervisory services (either market or non-market product), and recommends that non-market service should be measured by sum-of-cost approach, which central government purchases (i.e. as final consumption expenditure) with recording matching current transfer from central bank (financial institution) to central government (general government) in order to avoid affecting net lending(+)/net borrowing(-).

In the current JSNA, the whole output of central bank is measured by sum-of-cost, and the residual after deducting receipts of fees and commissions is recorded on use side as intermediate consumption by other financial institutions. In the new JSNA, total central bank output continues to be measured by sum-of-cost, but the residual, defined as non-market product including monetary policy services, will be recorded as purchased by general government (government final consumption expenditure), and current transfer of the same value from central bank to central government will be also counted.[9]

Channels in which this modification influences GDP level can be described as follows:

- GDP(O) increases due to the rise in the output by general government (via increase in intermediate consumption by government) while intermediate input for total economy is unchanged.
- GDP(I) increases due to the rise in net operating surplus by financial institutions (that is caused by the reduction in intermediate input by the amount of central bank's non-market output)
- GDP(E) increases due to the rise in government final consumption expenditure by the amount

possible, namely decommission cost of nuclear power plant, and record its consumption of fixed capital on the basis of the accounting information of electric utility companies on the allowance for decommission.

[9] FISIM by the central bank, which conceptually exists (e.g. government deposit), continues not to be measured in JSNA in line with other major countries, since the amount is deemed insignificant.

of central bank's non-market output

(vi) Recognizing employees stock options

The SNA2008 recommends that employees stock options (ESO), the purchasing right of company shares which employers grant to their employees, should be explicitly recognized in the system, while the SNA1993 does not provide any guideline. Specifically, in the SNA2008, the value of ESO is recorded as compensation of employees (wages and salaries) as well as some form of households' financial assets over the period from "grant" date to "vesting" date, and after "vesting" date (i.e. "exercise" period), the value is reclassified to the financial asset category called "employees stock options."

The current JSNA, which is based on the SNA1993, does not recognize the value of ESO, whereas in the new JSNA the value of ESO will be recorded in the system in line with the *Flow of Funds* (BOJ), which was reviewed to conform to the SNA2008 in March 2016. The value will be estimated by using the information on "equity warrant" in the *Financial Statements Statistics of Corporations by Industry* (MOF) resting on some working assumptions. It will be recorded as compensation of employees and other financial asset between grant and vesting period, and as financial derivatives and employees stock options during exercise period.

No impact on GDP level is presumed by this modification, as the increase in compensation of employees is offset by the reduction in operating surplus.

(vii) Improvement in recording of corporate pension entitlement

The SNA2008, unlike its predecessor, recommends that recordings of transactions and positions with respect to employment based social insurance (i.e. corporate pension schemes, etc. other than social security scheme that is managed by general government) should strictly rest on accrual basis. The improvement is made particularly for recordings of defined benefit (DB) scheme.

(a) "Pension entitlement" outstanding, recorded as households' assets and pension fund's liabilities, is defined as present value of future benefit payment that the employers promised to its employees (i.e. households) to date.

(b) The difference between pension entitlement liabilities and pension fund assets, called "claim of pension fund on pension managers" which is equivalent to so-called unfunded liabilities, is recognized as pension fund's assets and employers' (i.e. pension managers') liabilities.

(c) "Employers' social contributions," a part of compensation of employees, records "current service increase" (the increase in entitlement associated with the wages and salaries earned in the current

period), rather than the actual pension premium incurred by employers.

(d) Property income called "investment income on pension entitlement" and its rerouting item called "households' contribution supplement" is defined as equivalent to "past service increase" (the increase in the value of the entitlement due to the fact that retirement is one year nearer, i.e. the notional interest amount accrued from the entitlement at the end of previous period, which is calculated as the multiple of discount rate and that entitlement), rather than the actual investment income earned on pension assets.

In the current JSNA, recordings relating to the defined benefit social insurance schemes covered by the *Accounting Standard on Retirement Benefit* (i.e. corporate DB pensions and retirement lump sum allowances) are as follows: (a) the outstanding of pension fund liabilities (called "pension reserves"), in consistency with the previous version of *Flow of Funds* (based on the SNA1993) before 2016 review, is recorded on accrual basis though it is restricted basically to listed companies, (b) likewise, unfunded liabilities of the DB schemes are partially recognized and recorded implicitly[10], (c) "employers' social contribution" records the actual pension premium incurred by employers, and (d) property income (and re-routed employees' social contribution) is recorded on the basis of actual earned interest and/or dividend income.

Meanwhile, in the new JSNA, (a) the outstanding of "pension entitlement" will continue to be recorded on accrual basis with its coverage expanded to include the whole economy (not limited to listed companies) in line with the *Flow of Funds* after 2016 review, and (b) likewise, unfunded component will be estimated more comprehensively and recorded explicitly under the name of "claim of pension fund on pension sponsors." Furthermore, the recording on non-financial flow transactions will be improved as follows: (c) "employers' social contribution" will be recorded on accrual basis resting on accounting information of corporations (i.e. current service increase), and (d) a newly defined property income called "investment income on pension entitlement" (and its re-routed employers' contribution named "households' contribution supplement") is recognized and recorded on accrual basis also using accounting information (i.e. past service increase).

This modification will not change the level of GDP, whereas, by definition, compensation of employees, property income, financial asset/liabilities are to be affected.

(viii) Elaboration of treatment on standardized guarantee

[10] Currently included in the financial asset item called "accounts receivable/payable."

As “guarantee” is a form of contingent liabilities, the SNA1993 does not recognize it as financial assets and liabilities, and not provide clear guideline on how to deal with relevant transaction in the system. On the other hand, the SNA2008 categorizes “guarantee” into three groups, (a) the one included in financial derivatives (e.g. credit default swap), (b) standardized one that is issued in large numbers along identical line (where default probabilities of the debtors can be inferred on the basis of “law of large number”), and (c) one-off guarantee that should be out of scope of financial assets and liabilities. Then, the SNA2008 recognizes the position related to (b), i.e. standardized guarantee, as financial assets and liabilities. In addition, service output and current transfer (net insurance premium, and insurance claim) on the standardized guarantee are also recorded in the analogous way to non-life insurance.

The current JSNA, in consistency with the *Flow of Funds* before 2016 review, treats the position related to standardized guarantee as contingent liabilities like one-off guarantee, and neither record it in financial transaction nor current transfer. On the other hand, the new JSNA will identify mortgage guarantee and credit guarantee (for SMEs), etc. as standardized guarantee, along with the *Flow of Funds* after 2016 review, and measure service output and its consumption, current transfer (i.e. net insurance premium and insurance claim) as well as transaction and position of the financial asset category called “provision for calls under standardized guarantees,” in the same manner with non-life insurance.

While this change will affect financial assets, output and current transfer, etc., impact on GDP level will be negligible since almost all service charges levied by guarantors are consumed intermediately.

(ix) Elaboration of exceptional payments between general government and public corporations

As for exceptional payments from public corporations to general government, i.e. large and irregular payments, the SNA2008 recommends that they should be recorded as withdrawal from equity by general government (and matching increase in currency and deposit), regardless of whether the payer is corporations or quasi-corporations, if they are financed by accumulated reserves or sales of assets. The SNA1993’s treatment of such payments is dependent on whether the payers are corporations or quasi-corporations.

The current JSNA records exceptional payments from public corporations to general government basically as (unilateral) capital transfer, and hence these payments influence the development of net lending(+)/net borrowing(-) (or primary balance) of general government. On the other hand, in the new

JSNA, exceptional payments from public corporations to general government will be defined as those satisfying (i) irregular payment determined by special legislation and (ii) financed by sales of assets or accumulated reserves, and they will be recorded as financial transaction, i.e. withdrawal from equity held by general government (and corresponding increase in currency and deposit), so that those payments will no longer affect government fiscal balance. With the above modification, the outstanding of equity will be newly recognized as liabilities of public corporations and assets of general government, which has not been recorded in the current system.

While this treatment does not have an impact on GDP, net lending(+)/net borrowing(-) and primary balance of general government will be affected. By excluding those exceptional payments from capital transfer, underlying development of fiscal balance could be figured out. It should be noted, however, that since the primary balance of central and local government stipulated in the government policy objective excludes most of such payments as special factor from the JSNA series, quantitative impact on the policy indicator due to this modification would be limited.

(x) Harmonization with balance of payments

The SNA2008 recommends that exports and imports of goods should be recorded on a strict change of ownership basis in consistency with the BPM6. On the other hand, there are a few exception for this principle in the SNA1993 that is consistent with the BPM5. In particular, (i) in the case of goods sent abroad for processing, the fees for processing should be recorded as the import of processing services by the country owning the goods (and the export of that services by the country providing services) in the SNA2008, rather than the export (or import) of unprocessed (or processed) goods as in the SNA1993, and (ii) in the case of merchanting where a resident purchases a good from a non-resident and subsequently resells it to another resident without the good entering the resident's country, the margin of resale by the resident (i.e. merchant) should be recorded as the export of goods in the SNA2009, rather than services as in the SNA1993.

The current JSNA records the goods for processing and merchanting in accordance with the SNA1993, while, after in the new JSNA they will be recorded in the exports and imports of goods and services in GDP(E) in line with the SNA2008 and *Balance of payments* based on the BPM6. Namely, (i) the fee for processing will be recognized as the imports and exports of processing services[11], and (ii) the margin on merchanting will be recorded as the exports of goods. It should be noted, however, that a part of the recommendations in the SNA2008, especially that on goods for processing, is difficult to

[11] Similarly, the repair and maintenance of goods are currently recorded as goods' exports and imports, but will be recorded as service transaction in the new JSNA.

implement in the detailed compilation by commodity and industry (i.e. supply-use framework) due to the data constraint.

Those changes will not have impact on GDP level, though rebalancing between exports and imports of goods and services will occur.

4. Other changes made in the next benchmark year revision

Various modifications other than the SNA2008 implementation will be made in the BYR2011. Firstly, as mentioned in the introduction, incorporations of large-scale source statistics which were not able to be reflected in the current base such as *IOT for 2011*, will lead to revisions in wide range of the series. Secondly, a part of estimation methods will be improved, including the method for compiling construction output. Finally, some of the classifications, concepts and definitions will be changed.

(i) Incorporating source statistics

One of the most important source statistics incorporated in the next benchmark year revision is the latest *IOT for 2011*. The IOT presents input and output structure by detailed commodities for a reference year (that becomes the benchmark year for the JSNA's revision), which provides a foundation for GDP level in the benchmark year[12]. The *IOT for 2011* is compiled to reflect the latest economic structure via incorporating *Economic Census for Business Activity in 2012*[13] (MIC and METI) as one of the core source statistics, which is the first-ever economic census conducted in Japan. Incorporating the *IOT for 2011* could make it possible for the data in JSNA to be re-estimated more accurately than before. Relatedly, the next benchmark year revision will incorporate the information contained in the *Linked Input Output Tables* (MIC and other ministries), which will also cause retrospective revisions in the JSNA time-series data.

Additionally, *Population Census for 2010*[14] will be reflected, which is used to estimate the number of employees and compensation of employees. *Housing and Land Survey*, used for estimating housing rent (including imputed rent for owner-occupied dwellings), will also be incorporated not only for the year 2013 (reference year of the latest survey) but also for the year 2008 (reference year of the previous survey), which was unable to be reflected in the previous benchmark revision (i.e. the BYR2005) due to the compilation schedule.

[12] However, there are some conceptual difference between IOT and JSNA, which are adjusted in the compilation process of JSNA.
[13] Reference year is CY2011.
[14] The latest survey conducted is *Population Census for 2015*, though the information necessary to compile JSNA has not yet been available.

On the estimation of consumption of fixed capital, a fundamental methodological review of introducing perpetual inventory method (PIM) based on GFCF matrix (i.e. assets classified by institutional sectors and economic activities) was undertaken in the last benchmark year revision (i.e. the BYR2005). In the next revision, consumption of fixed capital and fixed assets series will be revised due to the re-estimation of depreciation rate for each fixed asset category by incorporating nine years' accumulation of the *Survey on Capital Expenditure and Disposals of Private Enterprises* (CED) (Cabinet Office), as well as the revisions in time-series of GFCF and related deflators[15].

(ii) **Improvements in estimation methods**

Some ameliorations in the estimation methods will be implemented based on *The 2nd term Master Plan Concerning the Development of Official Statistics* (Cabinet Decision in March 2014), such as (a) improvement in granularity via making better use of the framework called Supply-Use Table (SUT), and (b) review of extrapolation and interpolation method for construction sector output.

On the issue (a), while GDP in expenditure approach (GDP(E)) and GDP in production approach (GDP(O)) conceptually coincide, there exists in practice statistical discrepancy between those two aggregates in JSNA due to differences in compilation approaches[16] and source statistics. Such discrepancy is partially explained by the difference in intermediate consumption estimate produced through GDP(E) compilation and that produced through GDP(O) compilation. Those two intermediate consumption series will be integrated by each commodity level through making better use of SUT framework resting on both manual and automatic adjusting techniques, so that statistical discrepancy can be diminished as much as possible for the next benchmark year and after. Practically, intermediate consumption figures in "Second Annual Estimates" (formerly called Fixed Estimates), which are compiled using *Revised Report on Census of Manufacture* (METI) and other various source data, will be integrated under SUT framework and be released as "Third Annual Estimates" a year after the "Second Annual Estimates." See the column on the change in terminology of each annual estimate and its release cycle.

Column: Terminology for annual estimates revised and other related issues

In the current JSNA, the first annual estimates, which are compiled from detailed source statistics

[15] In the last benchmark year revision, three years' information of CED was available and used in the estimation of depreciation rates.

[16] GDP(E) is compiled mainly through the methodology called "commodity-flow method," while GDP(O) is constructed basically by the approach called "value-added method."

including *Preliminary Report on Census of Manufacture* (METI) and released 9 months after the end of the reference fiscal year, is simply called "Annual Estimates" (*Kakuho* in Japanese). A year later, the figures are re-estimated with additionally available information such *Revised Report on Census of Manufacture* (METI) and released under the name of "Fixed Estimates" (*Kaku-kakuho* in Japanese). From the next benchmark year revision and after, "Annual Estimates" and "Fixed estimates" are renamed as "First Annual Estimates" and "Second Annual Estimates", respectively. "Third Annual Estimates," the integration on the basis of SUT framework, will be additionally produced and released one year after the "Second Annual Estimates".

That said, a major source statistics used to date for the "(First) Annual Estimates," that is *Preliminary Report on Census of Manufactures*[17], will not be available anymore for the compilation due to the change in its release schedule. Consequently, after the First Annual Estimation for the year 2015 (which is scheduled to be released at the end of 2016 together with the results of the BYR2011), alternative source statistics will be used, such as *Current Survey of Production* (METI). See the table below for the revised terminology and release schedule on annual estimates after the BYR2011.

Name	Timeliness	Source Statistics, etc.
First Annual Estimates (formerly called Annual Estimates)	9 months after the end of the reference FY	*Current Survey on Production*, etc.
Second Annual Estimates (formerly called Fixed Estimates)	1 year and 9 months after the end of FY	*Revised Result on Census of Manufactures*, etc.
Third Annual Estimates	2 year and 9 months after the end of FY	(Integration under the SUT framework)

As for the issue (b), construction sector outputs in the benchmark years are basically consistent with the figures in the quinquennial IOTs that are compiled using administrative data based on the value of construction put in place. In the current JSNA, the extrapolation and interpolation are made on the basis of the development in inputs by construction sector such as labor cost and material cost. These extrapolated estimates, however, tend to diverge from the IOT's estimates which can only be observed

[17] *Economic Census for Business Activity* is conducted on (about) five yearly basis and replaces *Census of Manufactures* (i.e. Census of Manufactures is not implemented for the reference year of *Economic Census*). In any case, since those censuses are conducted in about six-seven months after the end of the reference year from 2015 (the decision is made through the deliberation in Statistical Committee), JSNA's "First Annual Estimates" which should be released 12 months after the reference calendar year (9 months after the reference fiscal year) cannot incorporate the preliminary results of those surveys due to the schedule. On the other hand, "Second Annual Estimate" can continue to use the results of those *Censuses* as before.

ex post facto, leading to significant revisions in constriction outputs in the subsequent benchmark year revisions[18]. Hence, the extrapolation and interpolation method is to be modified to make use of the source statistics based on the value of construction put in place, which is the consistent treatment with IOTs. By this improvement, the development in the construction sector (that accounts for a significant share of GFCF in the whole economy) will be captured more adequately, and the *ex post* revisions occurred in benchmark year revisions are expected to diminish.

Other modifications in the estimation methods include the followings:

(c) Currently, the exports and imports of goods and services recorded in the table called "Supply and Demand of Goods and Services" (where imports and exports are estimated by detailed commodities based on *Trade Statistics* (MOF) and *Balance of payments*) differ from those recorded in the table called "Gross Domestic Product (Expenditure approach)" (where import and exports are recorded basically in consistent with *Balance of payments*). Such difference partially causes statistical discrepancy between GDP(E) and GDP(O) on top of the divergence caused by intermediate consumptions abovementioned. In the next benchmark year revision, the exports and imports data will be compiled in a more consistent manner, which is expected to contribute to the reduction in statistical discrepancy.

(d) The estimation method of directors' compensation in wage and salaries is to be modified to better reflect the salary disparity vis-à-vis other employees, together with inclusion of directors' bonuses in compensation of employees (currently recorded in dividend (i.e. property income)) as discussed later, and incorporations of newly available source statistics.

(e) Currently, "mineral exploration" is recorded as GFCF but is assumed to depreciate within a year so that no fixed asset (i.e. stock) for this item is recorded. In the new JSNA, "mineral exploration and evaluation" will be recorded as stock by assuming that it is written-off over several years.

(iii) **Changes in classifications, concepts and definitions**

In the next benchmark year revision, several classifications including economic activities, non-financial and financial assets will be changed, as well as concepts and definitions of some items.

To begin with, "classification of economic activities" (equivalent to industrial classification), which is used for measuring GDP(O), will be improved so as to align with the international classification standard (i.e. *ISIC rev.4*). Specifically, the current classification convention, which firstly divides total

[18] For instance, the current estimate for 2011, which is extrapolated from 2005 figure based on "IOT for 2005," is larger by about 1.7 trillion yen than the figure in *IOT for 2011* (that was published *ex post facto*), which will cause a downward revision in the construction output in the BYR2011.

economy into “Industries” (equivalent to market producers), “Producers of Government Services” and “Producers of Private Non-profit Services to Households”[19] (both of which are non-market producers) and then further classifies them into sub-sectors, will be abolished. In addition, the new classification (as shown in the After BYR2011 column of Figure 3 by division level) will be defined in consistency with *ISIC rev.4* as much as possible, and, in so doing, service sectors’ activities such as *human health and social work* will be captured in a more detailed way.

Figure 3 Changes in classification of economic activities

Before BYR2011
1. Industries (1) Agriculture ,forestry and fishing (2) Mining (3) Manufacturing (4) Construction (5) Electricity ,gas and water supply (6) Wholesale and retail trade (7) Finance and insurance (8) Real estate (9) Transport (10) Information and communications (11) Service activities
2. Producers of government services (1) Electricity ,gas and water supply (2) Service activities (3) Public administration
3. Producers of private non-profit services to households (1) Education (2) Others

After BYR2011	(cf) ISIC Rev.4 Section
1. Agriculture, forestry and fishing	A. Agriculture, forestry and fishing
2. Mining	B. Mining and quarrying
3. Manufacturing	C. Manufacturing
4. Electricity, gas and water supply and waste management service	D. Electricity, gas, steam and air conditioning supply
	E. Water supply; sewerage, waste management and remediation activities
5. Construction	F. Construction
6. Wholesale and retail trade	G. Wholesale and retail trade; repair of motor vehicles and motorcycles
7. Transport and postal services	H. Transportation and storage
8. Accommodation and food service activities	I. Accommodation and food service activities
9. Information and communications	J. Information and communication
10. Finance and insurance	K. Financial and insurance activities
11. Real estate	L. Real estate activities
12. Professional, scientific and technical activities	M. Professional, scientific and technical activities
	N. Administrative and support service activities
13. Public administration	O. Public administration and defence; compulsory social security
14. Education	P. Education
15. Human health and social work activities	Q. Human health and social work activities
16. Other service activities	R. Arts, entertainment and recreation
	S. Other service activities

Secondly, classifications of non-financial assets and financial assets (or liabilities) will be changed in accordance with the SNA2008. For instance, in non-financial assets classification, tangible and intangible partition will no longer apply, and the new classifications such as “defense equipment” and “intellectual property product” (and its sub-category “research and development”) will be added (see Annex1 for the detail). In financial assets classification, for example, the new items such as employees stock options will be included (see Annex 2 for the detail).

Finally, some of the items will change their concepts or definitions as shown below.

(a) Enterprise taxes[20] will be reclassified from “taxes on production and imports” to “current taxes on income and wealth, etc."

(b) Directors’ bonuses[21] will be reclassified from “dividend” in property income to “wages and

[19] “Industries,” “Producers of Government Services” and “Producers of Private Non-Profit Services to Households” are traditional taxonomy in theSNA1968.

[20] Including corporate enterprise tax, individual enterprises tax, and special local corporation tax (which was initiated since FY2008). In light of the fact that most of the tax base are income (with a part being revenue, value added, and capital), this tax will move to “current taxes on income and wealth, etc.”

[21] As directors’ bonuses was treated as cost like directors’ salaries in corporations after the amendment of *Companies Act* in 2005, the JSNA will change its treatment in line with it in the next benchmark year revision.

salaries" in compensation of employees.

(c) Medical assistance in welfare benefit will be reclassified from "social assistance benefit" in social benefit other than social transfer in kind to "social transfer in kind (purchase of market product)."[22]

(d) A few government-affiliated institutions will be reclassified in light of the classification criteria on market vs. non-market and public vs. private sectors. Below are the major examples.

- *Special Account for Patent Registration*: From General Government (Central Government) to Public Non-financial Enterprises.
- *National Agency of Vehicle Inspection* (after FY2008) : From General Government (Central Government) to Public Non-financial Enterprises
- *Business Account of Special Account for Stable Supply of Foods* (from FY2007 to FY2013): from Public Non-financial Enterprises to General Government (Central Government)

5. Impact on current price GDP level in CY2011 due to the BYR2011

As noted in the previous two sections, highly complex and wide array of changes to the system including implementation of the SNA2008 are prospected for the BYR2011. That said, as to the backcasting, all the JSNA data,[23] in principle, will be revised retrospectively up to 1994, so that the time-series commensurate with the current JSNA, i.e. over 20 years, can be available after the revision. On the other hand, the backcating period tends to be limited up to about 10 years in the ordinary benchmark year revisions[24].

In the following, the quantitative impact on current price GDP level for the new benchmark year (i.e. CY2011) by the BYR2011 containing SNA2008 implementation is previewed. It should be noted that these figures are tentative and subject to change until the official release of the results of the BYR2011 in December.

First of all, current price GDP (on expenditure side) in CY2011 on the new basis is estimated 491.4 trillion yen, revised upward by 19.8 trillion yen from the current basis of 471.6 trillion yen (the size of

[22] In the current system, medical assistance is treated as social benefit received by households who in turn consume medical services as final consumption expenditure. On the other hand, in the new system, in light of the fact that medical assistance is effectively a form of transfer in kind, it will be treated to be purchased by the government from healthcare providers in order to supply to households for free (i.e. it constitutes a part of government final consumption expenditure).

[23] It should be noted that some exceptions will apply; for instance, general government outlays by function (classification of the function of government (COFOG) will be revised after FY2005, same period available in the current system.

[24] In the case of the BYR2005 (conducted in 2011), only the series related to GDP(E) and other few series were retrospectively revised up to 1994 (i.e. 17 years of backcasting, from 1994 to 2010), whereas most other series were revised only up to 2001 (i.e. the revised series are 10 years, from 2001 to 2010). The latter series were revised up to 1994 later in October 2013, almost two years after the implementation of the BYR2005.

revision relative to the current GDP level is 4.2%). This revision is attributable to the factor related to the SNA2008 implementation (as shown in Section 3) and other statistical factor (as shown in Section 4). SNA2008 factor accounts for most of the revision for this benchmark year, that is, 19.6 trillion yen (4.2% relative to the current GDP), whereas other statistical factor explains 0.2 trillion yen (0.0% relative to the current GDP).

To further analyze SNA2008 factor (see Figure 4), the single most significant factor is the capitalization of R&D alike in most other advanced economies. It accounts for 16.6 trillion yen of the total revision (3.5% relative to the current GDP), followed by the change in the treatment of patent royalties which explains 1.3 trillion yen of upward revision (0.3% relative to the current GDP), etc. Other statistical factor, which is mainly due to the incorporation of some important source statistics, is limited for this year, although it should be noted that, for other years, the statistical factor other than SNA2008 implementation can contribute to either upward or downward revisions of GDP, which could be larger than the impact on the benchmark year. For instance, the impact caused by the review in the estimation method of construction output will vary depending on years and could significantly lead to relatively large revisions of GDP level and/or growth rate.

Figure 4 Impact on GDP level in CY2011 due to the BYR2011 (by factors)

	Impact (trillion yen)	Relative to current GDP level	Major expenditure components affected
Total	**19.8**	**4.2%**	
SNA2008 Factor	19.6	4.2%	
Captalization of R&D	16.6	3.5%	Private Non-residential Investment Public Investment
Change in the Treatment of Patent Royalties	1.4	0.3%	Net Exports of Goods and Services
Capitalization of Defense Equipment	0.6	0.1%	Public Investment
Elaboration of Ownership Transfer	0.9	0.2%	Private Residential Investment
Clarification of Central Bank Output	0.2	0.0%	Government Final Consumption Expenditure
Other Statistical Factor	0.2	0.0%	All the components

Figure 5 shows the prospected revisions to major expenditure items in nominal GDP in CY2011. Private final consumption expenditure is estimated to be revised upward by 2.0 trillion yen, principally due to the revision on housing rent (including imputed rent) by incorporating “Housing and Land Survey” for both 2008 and 2013. Private residential investment will be revised upward by 0.9 trillion

yen, basically owing to the capitalization of OTC as noted in the Section 3 (iv). Private non-residential investment will be revised upward by 6.3 trillion yen, where the capitalization of R&D (undertaken by private corporations and NPISHs (e.g. private universities) contributes to the increase while investment in non-residential buildings and structures and automobiles will be revised downward due to the incorporation of the latest *IOT for 2011*. Change in private inventories will be revised upward by 2.9 trillion yen mainly because of the incorporation of the *Economic Census for Business Activity in 2012* that affects the wholesale and retail inventories. Government final consumption expenditure will increase by 3.1 trillion yen relative to the current level due to the reclassification of medical assistance in welfare benefit from private final consumption expenditure to government final consumption expenditure. Upward revision in Public investment (GFCF in the public sector) will be 3.4 trillion yen, which is basically explained by the capitalization of R&D (undertaken by general government and public corporations) and defense equipment. Revision for Change in public inventories is limited. Finally, Net exports of goods and services will be revised upward by 1.3 trillion yen due to treating cross-border transaction of patent royalties as the exports and imports of services, rather than property income.

Figure 5 Impact on GDP level in CY2011 due to the BYR2011 (by expenditure component)

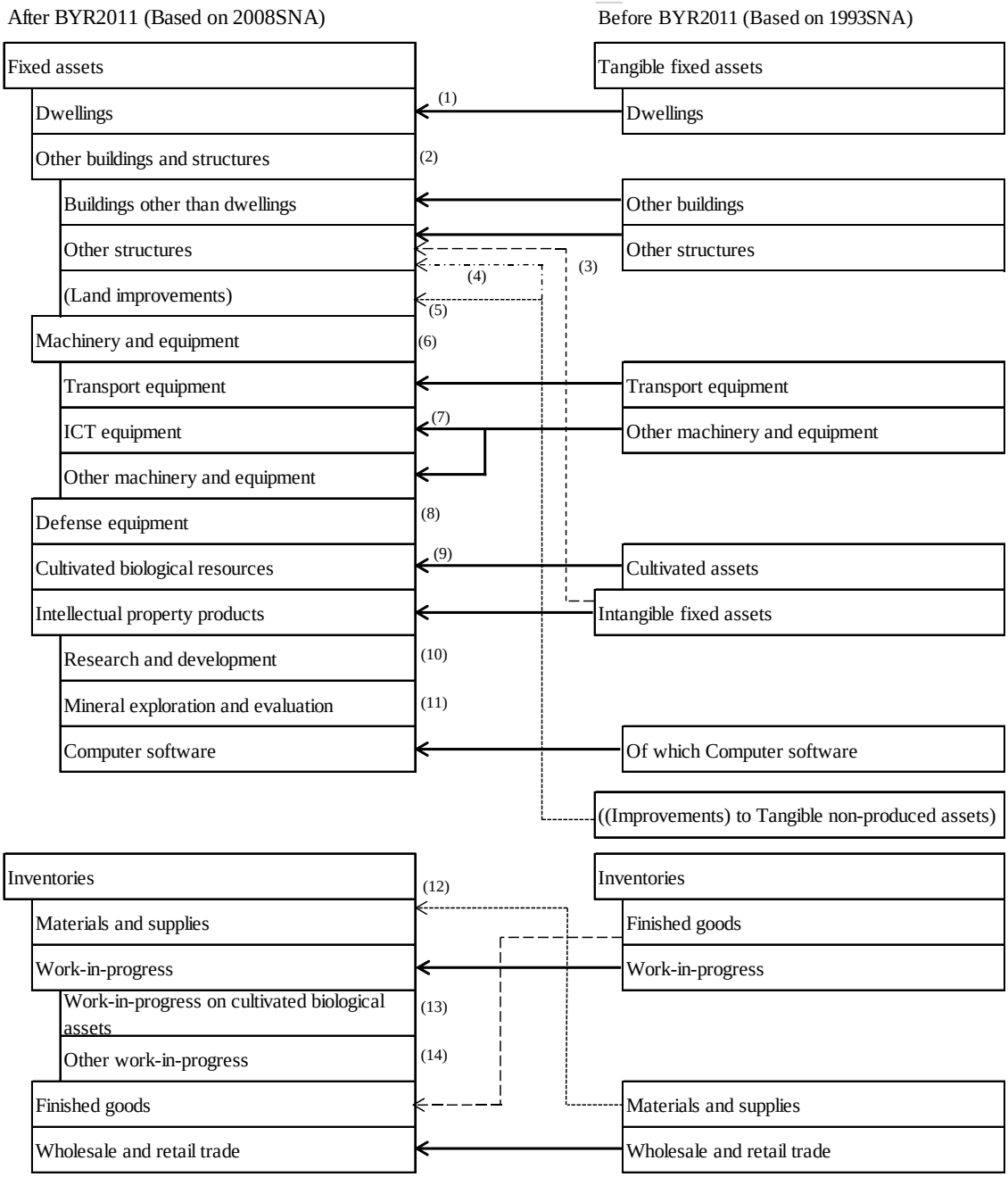
(trillion yen, not otherwise noted)

	Current level	Level after the BYR2011	Revision	Contribution (%)
GDP (Gross Domestic Product)	471.6	491.4	19.8	4.2%
Private Final Consumption Expeniture	284.2	286.3	2.0	0.4%
Private Residential Investment	13.4	14.3	0.9	0.2%
Private Non-residential Investment	63.1	69.4	6.3	1.3%
Change in Private Inventories	-1.9	1.0	2.9	0.6%
Government Final Consumption Expenditure	96.1	99.2	3.1	0.7%
Public Investment	20.5	23.9	3.4	0.7%
Change in Public Inventories	0.0	0.0	-0.0	-0.0%
Net Exports of Goods and Services	-4.0	-2.7	1.3	0.3%
(regrouped) Gross Fixed Capital Formation	97.1	107.6	10.5	2.2%

6. Conclusion

This article briefly previews the comprehensive revision (the BYR2011) of JSNA scheduled in December 2016, especially touching upon the major changes foreseen due to the SNA2008 implementation and other statistical and methodological changes, as well as quantitative impact by the revision on nominal GDP level for the new benchmark year. As mentioned repeatedly before, the revision will be unprecedented in terms of both quality (i.e. more extensive and more granular estimation) and quantity (i.e. longer retrospectively revised period compared to traditional benchmark year revisions), and ESRI will continue to make best effort not only in accurate estimation but also in smooth and appropriate communication with statistical users on this comprehensive project.

Annex 1 Changes in classification of produced assets



(1): Includes ownership transfer costs on dwellings and building lands after the BYR2011.

(2)(6): Newly established as aggregated items.

(3): Plant engineering service currently included in nontangible fixed assets will be recorded as GFCF of Other structures in the flow accounts (as well as in stock accounts).

(4): Seawalls, soil conservation and agricultural land improvement other than irrigation and drainage system which are currently included in improvemnets to tangible non-produced assets will be transferred to Other structures.

(5): Land improvements will be recorded as GFCF only in the flow accounts. On the other hand, It will be treated as Land, i.e. non-produced asset, in the stock accounts.

(7)(13)(14): Newly established as disaggregated items.

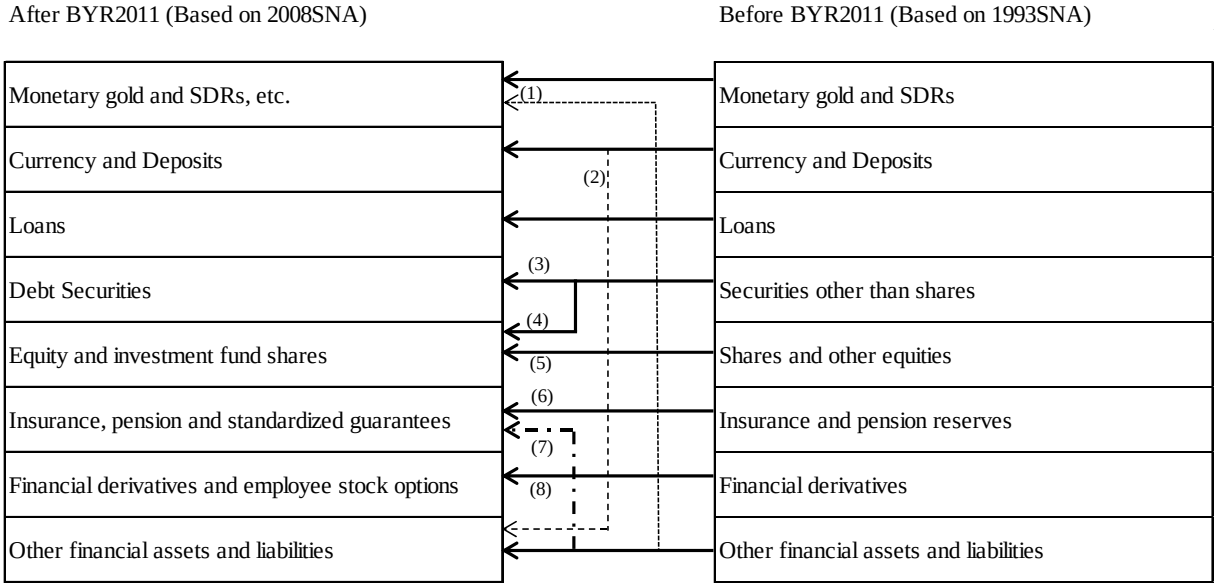
(8)(10): Newly established.

(9): Renamed.

(11): Newly established as disaggregated items (Mineral exploration and evaluation are currently recorded as GFCF in the flow accounts but not in the stock accounts because they are assumed to depreciate within a year. After the next revision, they will be also recorded as stock by assuming average service life which is more than one year).

(12): The coverage will be extended so that bombs etc. will be included in Materials and supplies.

Annex 2 Changes in classification of financial assets



(1): IMF reserve position currently included in Other financial assets and liabilities will be added to Monetary gold and SDRs and thus renamed.

(2): Deposits with the Fiscal Loan Fund currently included in Currency and deposits will be transferred to Other financial assets and liabilities.

(3)(4)(5): Investment trust beneficiary certificates currently included in Securities other than shares will be reclassified to Equity and investment fund shares, and hence each category is renamed.

(6): Provisions for calls under standardized guarantees will be newly established in the BYR2011 and thus renamed.

(7): Technical provisions related to non-life insurance and unfunded liabilities of DB corporate pensions, etc. which are currently included in Other financial assets and liabilities will be classified to Insurance, pension and standardized guarantees.

(8): Employee stock options will be newly introduced in the BYR2011 and the category will be thus renamed.