



## **Who Pays for Employee Stock Options?**

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# Who Pays for Employee Stock Options?

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## Abstract

The concept of “employee stock options (ESOs)” was newly introduced into national accounting in the 2008 version of the SNA, as an element of compensation of employees, where paragraphs were devoted to the treatment of ESOs including their definition, related terminology, time of recording as well as option-theoretical valuation methods. Roughly speaking, ESOs were recognised in the SNA accounts in line with business accounting standards and practices. However, some questions remain to be answered. One of the questions may be about “Who pays for employee stock options?” As a matter of fact, the employers can provide their employees with ESOs practically without incurring any cost at all. In other words, “stock dilution” caused by the issuance of ESOs is not well accounted for in the current SNA. As a multi-agent accounting system, national accounting is better situated for accounting for ESOs than business accounting, which is just a single-agent accounting system. The author claims that ESOs are better understood as a means of redistribution of wealth among stock holders of the issuing company.

## Acknowledgements

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## Introduction

The purpose of this paper is to re-examine the treatment of employee stock options (ESOs) in the SNA 2008, the first SNA that recognised ESOs. Roughly speaking, the treatment of ESOs incorporated into the SNA accounts is in line with that in business accounting practices established by the mid noughties at latest as a consensus of a kind between the two business accounting standards setters, the IASB (International Accounting Standards Board) and the FASB (Financial Accounting Standards Board).

Although executive or employee stock options came into existence as early as in 1920's in the United States, the treatment of ESOs in the US business accounting system was under a heated controversy that continued till the noughties. The issues behind the controversy were vividly described in Chapter Five "Creative Accounting" of Joseph Stiglitz's *Roaring Nineties* originally published in 2003 (Stiglitz [2004]).

The Nobel laureate then described ESOs as "corporate theft" in which executives steal money from unwary shareholders (Stiglitz [2004, p.122]). Also, he wrote: "a company could please employees and bottom-line-conscious investors at the same time" (Stiglitz [2004, p.116]) by using the then valid business accounting rules.

"Options were, of course, a terrific recruiting tool for small, profitless start-ups that could never have come up with their equivalent in cash. And soon the old corporate giants had embraced the practice." "By 2001, options accounted for an estimated 80 percent of the compensation of American corporate managers," he added.

Warren Buffet, one of the most successful investors of all time, chairman and CEO of Berkshire Hathaway, found a solution. Thus, he wrote in Berkshire Hathaway's annual shareholder letter dated March 1, 1999: "When we consider investing in an option-issuing company, we make an appropriate downward adjustment to reported earnings, simply subtracting an amount equal to what the company could have realised by publicly selling options of like quantity and structure." It looks like as if the IASB as well as the FASB just adopted this expedient contrived by the business magnate. In fact, in current business accounting standards, a stock option granted is regarded as remuneration for work done by the employee with the employer's profit being deducted by the same amount.

However, the author is dubious about the adequacy of the consensus reached in the business accounting world being straightforwardly brought into the national accounting system. Current business accounting rules concerning the treatment of ESOs might be justifiable from investors' point of view, but it is also true that granting ESOs does not construe as a cost to the firm in any sense. In fact, as Rosenfield and Jaiven [1990, p.75]

writes: “The stock of an employer into which the option potentially converts is not an asset of the employer. If it were, then the employer could increase its total assets simply by issuing some shares to itself.”<sup>1</sup>

Thus, economic reality involved in the situation is not wholly accounted for in business accounting systems as they now stand. Naturally, nor is it in the SNA, as it adopted business accounting rules for the treatment of ESOs.

At this stage, some remarks may be adequate. First, national accountants are thorough entity theorists by using a business accounting term as W. A. Paton and A. C. Littleton once wrote: “the business accounts and statements should be those of the entity rather than the proprietor, partners, investors, or other parties or groups concerned”.<sup>2</sup> A consequence may be that business entities owe shareholders and other lenders alike so that the net worth concept in the SNA system is a residual exclusive of the shares owed. Thus, by exercising the option, the employee exchanges one liability for the employer to another. The gains he/she may obtain come not from the employer but from the existing shareholders. Because of dilution, there is redistribution in wealth between the existing shareholders and an employee who was granted and just exercises an option.

The second remark is that the business accounting system and the national accounting system are fundamentally different in that the former system is a single-agent (single-entity) system while the latter system is a multi-agent (multi-entity) system, and that as a multi-agent (multi-entity) accounting system, national accounting is better situated than business accounting for accounting for ESOs, as a complex involvement of entities cannot be ascertained in the former system.

This paper is organised as follows. In the first section, which immediately follows this introduction, the treatment of ESOs in the SNA 2008 will be described with related paragraphs being cited or referred to. Corresponding business accounting rules will be mentioned at the bare minimum.

In the second section, the treatment of ESOs in Japanese national accounts will be examined with her estimation method being highlighted. It will be shown that what should be called the “steady-state estimation method” is currently used and that there are some questions to be answered.

In the third section, the authors’ position about the treatment of ESOs in the national accounting system will be presented and explained. The author asserts that ESOs are better understood as a means of redistribution of wealth between the new stock holders, who exercised the options, and the existing stock holders of the issuing company

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<sup>1</sup> Also see Koogler et al. [1994, p.556].

<sup>2</sup> Paton and Littleton [1940, p. 8].

and that this redistribution of wealth aspects involved should be focused on more fully in the accounting system. Also, he wonders whether ESOs should be regarded as a consideration of labour services rendered in the conceptual framework of national accounting or not. For, the fair value of the option relies so heavily on the (historical) volatility of the employer's share price and it is extremely hard to assume that the additional value of labour services rendered by the employee in question is proportionate to the volatility of the share price. The author would like to suggest that national accountants should not rush to introduce business accounting practices into the national accounting system.

And finally, some proposals conclude the paper.

## 1. ESOs in the SNA 2008

In this section, a description of the treatment of ESOs in the System of National Accounts 2008 will be given.

Let us start with the definition of employee stock options. The following paragraph in the SNA 2008 describes a typical definition of ESOs with related terms introduced.

11.125 An employee stock option is an agreement made on a given date (the "grant" date) under which an employee may purchase a given number of shares of the employer's stock at a stated price (the "strike" price) either at a stated time (the "vesting" date) or within a period of time (the "exercise" period) immediately following the vesting date. The exercise date is the time at which the option is exercised. It cannot be earlier than the vesting date or later than the end of the exercise period. (...)

In line with the treatment in business accounts, employee stock options are considered to be part of costs to the employer, that is, reward for work done by the employees in the national accounts. Thus, in the flow accounts of the SNA 2008, transactions in employee stock options are recorded in the distribution of income account as an element of compensation of employees, or a particular type of income in kind, with a counterpart entry in the financial account.<sup>3</sup>

An employee stock option appears in the accounts first when it is granted to an employee, that is, on the grant date. His/her work will be done during the accounting period that includes the grant date as well as probably plural accounting periods that

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<sup>3</sup> See also paragraphs 7.55 and 17.384.

follow until the vesting date depending on the conditions of the option granted. Thus, over these accounting periods, “compensation of employees” will be recorded. The total value of the compensation will be equal to the value of the option.

One interpretation may be that the capitalised value of the work done during the plural accounting periods in question should be equal to the value of the option. A simplified and commonly applied way to get the compensation figures in business accounting is just dividing the value of the option by the number of the accounting periods that lie between the grant date and the vesting date.

As for this selection of time of recording an employee stock option first (i.e., grant date), there is a consensus between business accounting standards setters as well as the co-publishers of the SNA 2008. However, it was a controversial question in business accounting world, whether the counterpart entry in the financial account, is a debt item or an equity item.<sup>4</sup> But, business accounting standards setters generally consider ESOs to be an equity item now.

However, national accountants’ position is quite clear in that they regard options as debt items if ESOs are to be recognised at all. In fact, ESOs are included in a category of “financial derivatives and employee stock options” in the national accounts. Thus, employee stock options are treated like an additional sub-category of “financial derivatives,” which appeared in the SNA 1993 for the first time as a category of financial instruments. The following paragraph makes it clear that it does not appear typically in the other change in the volume of asset account but appears in financial account on grant date and in revaluation account on occasion of revaluation thereafter.

12.43 Typically there are no entries in the other change in the volume of assets accounts for financial derivatives. Financial derivatives appear in the financial account when an agreement is reached between the two parties concerned. Employee stock options are similarly recorded in the same account at the grant date. They then may be subject to transactions in the financial account. When the agreement described in the derivative is activated, or it lapses because the time period is exhausted, the value of the derivative becomes zero and the change in value is shown in the revaluation account.

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<sup>4</sup> See Ohlson and Penman [2005 and 2007], for example. They considered the matter and concluded it should be a debt item. A PV document issued by the FASB in 2007 (FASB [2007]) took the same view as theirs. Also see Barth et al. [2013] as an example of arguing in the opposite direction.

There are differences in necessary accounting entries between an accounting system in which ESOs are regarded as capital (equity, net assets) like current business accounts and an accounting system in which ESOs are regarded as debts like national accounts. Suppose that one unit of ESO is granted to an employee on the first day in July in the year one and its fair value is 250. On the first day in the fourth year it will get vested. In the former system (the business accounts that follow the IASB's rules), in the first year, necessary entries typically are as follows:

(Debit) Compensation expenses      50      (Credit) Net assets (Capital)      50.

In the second and third year, necessary entries are:

(Debit) Compensation expenses      100      (Credit) Net assets (Capital)      100.

On the other hand, in the latter system (including the current national accounting system), in the first year, necessary entries are as follows:

(Debit) Compensation expenses      50      (Credit) Debts(ESOs)      250.  
       Prepaid expenses                      200

In the second and third year, necessary entries are:

(Debit) Compensation expenses      100      (Credit) Prepaid expenses      100.

The following figure shows where the counterpart entry for the compensation expenses lies in the entity's B/S excepting other accounts payable/receivable. In Japanese business accounts, a particular classification system has been introduced for the treatment of some financial instruments that have some characteristics of equity and some characteristics of debts including employee stock options and other similar items.

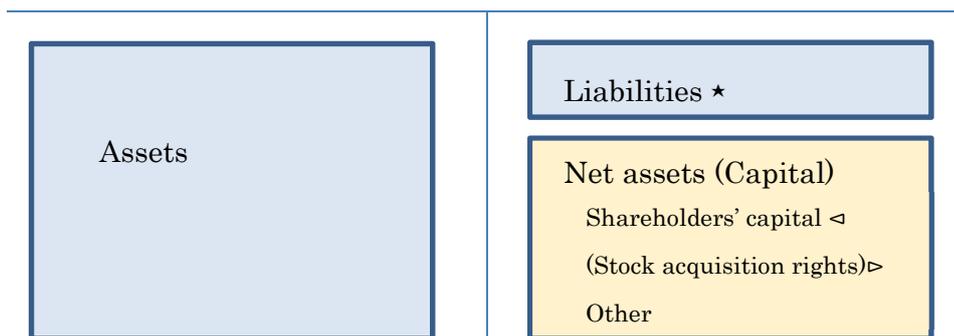


Figure 1 A business entity's balance sheet

Note: A counterpart entry to the compensation expenses lies in < under the IASB's rules; in \* in the SNA; and in > under the Japanese business accounting rules.

In national accounts and other accounting systems in which ESOs are deemed to

be liabilities for corporations, when the option is exercised, there will be an entry for the elimination of the option item (a financial derivative type of liabilities) and an appearance of an equity item in the financial account. It is just a replacement of one liabilities item to another from national accountants' viewpoint. Of course, the business entity can raise resources by issuing new shares, causing dilution (option overhang) of the shares owned by the existing shareholders.

As for the valuation of ESOs, the business accounting standards setters recommend the measurement of a fair value on the grant date and the SNA 2008 also makes similar provisions concerning the valuation of ESOs in paragraph 13.83 as follows.

13.83 Employee stock options (ESOs) should be valued by reference to the fair value of the equity instruments granted. The fair value of equity instruments should be measured at grant date using a market value of equivalent traded options (if available) or using an option pricing model (binomial or Black-Scholes) with suitable allowance for particular features of the options. The IASB gives detailed recommendations on how ESOs may be valued and their recommendations are likely to be followed by corporations using ESOs as a form of compensation for their employees. (...)

It may be argued that the value of the option should be reduced somewhat because of lack of full negotiability of the instrument in general though the company can buy back the option for some reasons. Another remark may be that the Black-Scholes pricing model<sup>5</sup> is not so versatile a tool as the binominal model for the present purpose. Newly designed ESOs may sometimes be so customised or complex (exotic) that their value cannot easily be calculated just by using the Black-Scholes model.

Clearly, the value of an ESO changes between grant date and vesting date as well as between the vesting date and the exercise date. It can occur because of the valuation changes of the underlying assets (shares of the issuing company) and other reasons. The SNA 2008 gives the following recommendations:

17.393 In principle, any change in value between the grant date and vesting date should be treated as part of compensation of employees while any change in value between vesting date and exercise date is not treated as compensation of employees but as a holding gain or loss. In practice, it is most unlikely that estimates of the costs of ESOs to the employers are

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<sup>5</sup> Black and Scholes [1973].

revised between grant date and exercise date. For pragmatic reasons, therefore, the whole of the increase between grant date and exercise date is treated as a holding gain or loss. An increase in value of the share price above the strike price is a holding gain for the employee and a holding loss for the employer and vice versa.

As is clear from the paragraph cited above, in principle, possible valuation changes that may take place between the grant date and the vesting date should be reflected to the valuation of the work done. However, it is not so clear how you could do so. If the capitalised value of work done is to be equal to the revised value of the ESO, the estimates of compensation should be revised retrospectively. Or, if already recorded flows of compensation are to be retained for some reason, it may be necessary to record a *negative* entry for “compensation of employees.”

In business accounting practices, a fair value for the options on the grant date is multiplied by the number of options expected to be exercisable on the vesting date. Then, the product is divided by the number of service years expected to be provided until the vesting date. This “fair value per service year” is applied to the number of service years provided in each year to derive the cost to the firm in the year. As seen in this calculation process, the entity’s assumption or expectation on the number of options exercisable on the vesting date or other given date matters much. Moreover, the fair value per service year is adjusted if the assumptions about the number of options to be exercised alter.<sup>6</sup> In principle, for the household that acquires an option but fails for some reasons to exercise the option, there should be an entry for revaluation. That is, the value of the option comes to be zero. However, if all you can do to produce the ESO data in national accounts is to rely on business accounting records, it is necessary to note that it includes the above-mentioned assumptions and adjustments.

Any administration cost born should be recorded as intermediate consumption related to compensation of employees. This is described in the following paragraph.

17.390 The costs of administering ESOs are borne by the employer and are treated as part of intermediate consumption just as any other administrative functions associated with compensation of employees.

Finally, but not least importantly, it should be noted that there is a relaxed rule

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<sup>6</sup> See paragraph 17.386 in the SNA 2008.

concerning time of recording ESOs. That is, it is permitted that instead of grant date, vesting date may be a possible time of recording, although it is not so clear how you can apply this alternative rule in practice.

17.389 An estimate of the value of the ESO should be made at grant date.

This amount should be included as part of compensation of employees spread over the period between the grant date and vesting date, if possible. If this is not possible, the value of the option should be recorded at vesting date.

## 2. ESOs in Japanese national accounts

There are a couple of features concerning ESOs in Japan. Firstly, the history of (employee) stock options in Japan is very short. It can only go back to 1990's. Secondly, the size of the stock of ESOs is very small. Thus, the highest level of ESOs outstanding in Japan is at most 0.6 trillion yen (around 0.1 per cent of her nominal GDP level) at the end of 2015 according to "Financial Statements Statistics of Corporations by Industry, Quarterly" (FSSCIQ) published by the Ministry of Finance.<sup>7</sup> One of the items in this statistics called "stock acquisition rights" includes ESOs and other similar instruments (of negligible size). It is assumed in the estimation of ESOs and related figures in Japanese national accounts that the amount outstanding of stock acquisition rights is equal to the amount outstanding of ESOs in corporate accounts. The figure below depicts a time series of stock acquisition rights outstanding at the end of each quarter.

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<sup>7</sup> "Financial Statements Statistics of Corporations by Industry" consists of an annual survey and quarterly surveys. The latter cover commercial corporations with capital, contributions, or funds of 10 million yen or over. The surveys are conducted by sending questionnaires by post asking sample corporations to fill in the form of self-settled accounts.

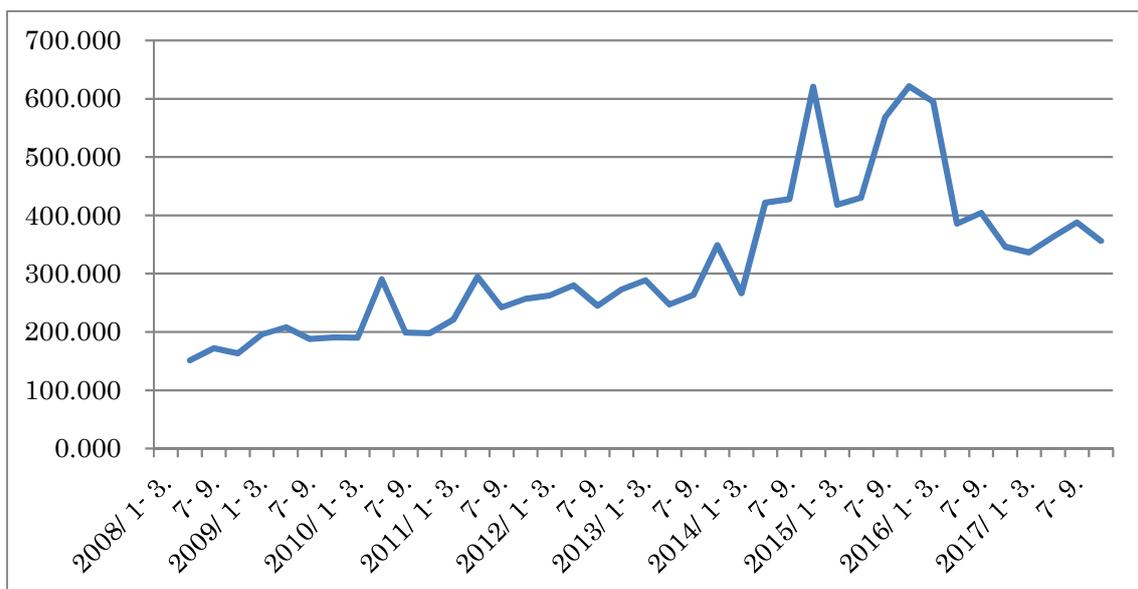


Figure 2 Stock Acquisition Rights outstanding at the end of quarters (in billions of yen)  
Source: Financial Statements Statistics of Corporations by Industry, Quarterly

Thirdly, so-called “one-yen-stock-options” (strike price of which is just one yen, also known as “share-remuneration-type stock options”) have come to be quite common. They are regarded as a kind of retirement bonuses to retiring executives. Fourthly, there is an increasing tendency of the issuance of employee stock options for which the employee is required to pay the company a stated amount of cash. This type of ESOs will be referred to as “paid stock options” here.

The current estimation method of ESOs and related figures including compensation of employees used in the compilation of national economic accounts statistics at present was developed jointly by the Economic and Social Research Institute (ESRI), the Cabinet Office of the Government of Japan and the Research and Statistics Department, the Bank of Japan. The former is in charge of the compilation of the GDP accounts while the latter is in charge of the compilation of the flow of funds (FOF) accounts. The main features of the method are that it is a method of deriving “flow” figures (compensation of employees) from “stock” figures on the corporate balance sheets and that it is a method heavily dependent on a steady state assumption.

Katsufumi Yoshino, a central bank statistician, developed an estimation method that assumes a steady state model where a fixed amount of ESOs is granted, vested, and exercised year after year. <sup>8</sup>He assumed that the vesting date comes two years after the grant date. Also, it is assumed that the option is exercised three years later. These time

<sup>8</sup> Yoshino [2011].

intervals were numerically determined in line with the legal restrictions on “qualified stock options,” the amount of which accounts for some forty per cent of employee stock options outstanding at present in Japan.



Figure 3 A life line of an employee stock option

Here, the ESRI-BOJ model will be explained by using some demographical terms. Suppose that an employee stock option is granted on the first day of the year 1 so that over the two years till the vesting date, a half unit of labour service is rendered each year. See a life line presentation given in Figure 3. A Lexis diagrammatical presentation is given in Figure 4 below. Each diagonal line depicted in the diagram corresponds to a life line in Figure 3. It will be known from the figure that on the first day of the year 2, one unit of option is just granted and one more unit of option granted one year ago still exists and one unit of option granted two years ago just gets vested. In addition, two more units of options already vested still exist, one unit of which was granted three years ago and one unit of which was granted four years ago. Granted but not yet vested options are called “phase 1” options, while vested options are called “phase 2” options. Because the options granted five years ago are just exercised and extinguished, on the first day of the year 2, there are two units of granted but not yet vested options and three units of already vested options exist.

During the year 2, the flow of one unit of compensation of employees can be found. The existing ESOs total is 5 units so that the aforementioned total of ESOs (stock acquisition rights) should be multiplied by 1/5 to get the figure for compensation of employees in question. Thus, if the total amount of stock acquisition rights is 0.6 trillion yen, the corresponding value of compensation of employees should be 0.12 trillion yen.<sup>9</sup>

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<sup>9</sup> It should be noted that prepaid-compensation-type of accounts receivable exist, but in a steady state, they are all cancelled out.

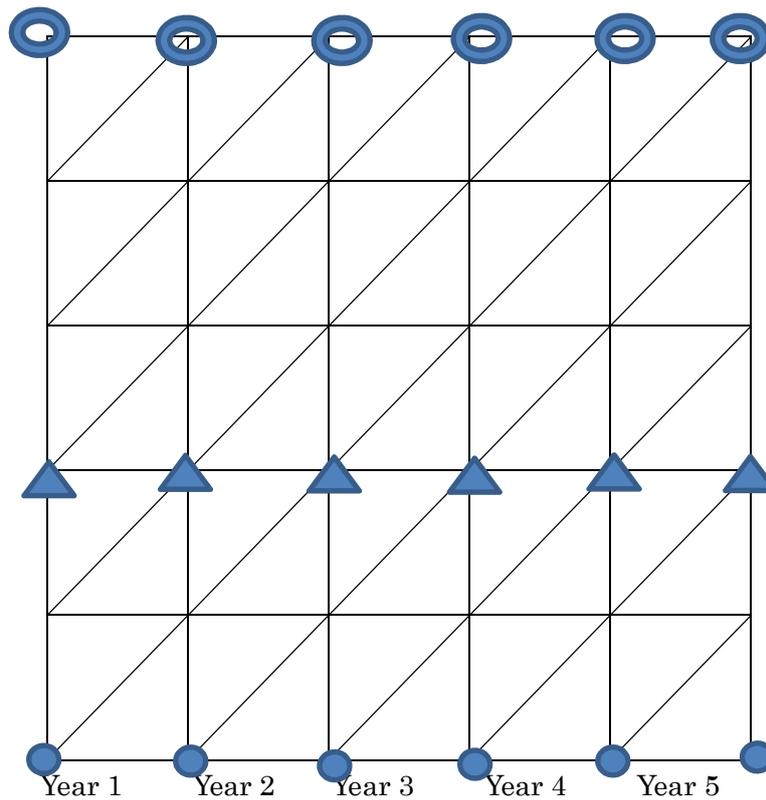


Figure 4 Lexis diagram of employee stock options

Despite the treatment of ESOs in the SNA 2008 (paragraph 12.43), in Japanese national accounts, only the “phase 2” options are regarded as ESOs (“financial derivatives and employee stock options”). The same treatment is followed by Eurostat [2004]. However, in the Eurostat paper, “phase 1” options are recorded as “Other accounts receivable/payable” because not yet vested ESOs are contingent assets and contingent assets/liabilities are not regarded as assets/liabilities because of one of the main principles in the then SNA. They are just the counterpart entries corresponding to the labour services supposed to be rendered. They are liabilities from the viewpoint of the companies.

In Japanese national accounts, instead of recording “other accounts receivable/payable,” “phase 1” options are recorded as “other financial assets/liabilities” which includes, in addition, some financial instruments other than “other accounts receivable/payable.” Also, the ESRI-BOJ’s treatment is different from the original SNA 2008 rules in that ESOs are given to employees in proportion as labour services are rendered by the employees. As mentioned earlier it is consistent with the rule prescribed by the IASB. As a result, in the ESRI-BOJ estimation, the ratio of compensation to stock acquisition rights outstanding (i.e., the total ESOs) is 2/9 instead of 1/5.

Quite remarkably, in Figure 4, the ratio of compensation to total ESOs, as well as the ratio of “phase 1” options to “phase 2” options is determined only by the ratio of the length of the period from the grant date to the vesting date and the length of the period from the vesting date to exercise date. The author has learnt that the Bank of Japan studied the ratio of “phase 1” options to “phase 2” options by examining thoroughly the financial statements of all the listed corporations and the ESRI modified the parameters in Yoshino [2011] to estimate employees’ compensation.

However, a more serious problem with the ESRI-BOJ method is that it relies crucially on a steady state model. By looking at Figure 2 again, until around 2010, a steady state model may be a plausible assumption to depend upon, but in “Abenomics” period (2013-), rising share prices appear to urge corporate executives to make proposals of granting options to them so that there was a sharp increase in ESOs in this period, resulting in inadequacy of the model.

Some researches direct questions at the FSSCIQ. They find that sometimes too much amount of options is issued by the corporate enterprise the size class of which is too small in terms of the stated capital. Ministry of Finance admits that the level of economic activity of a corporation is not necessarily related to its stated capital. Because of its sampling design being based on the stated capital size, the figures included in the statistics may have some biases. Quite interestingly, because the item “stock acquisition rights” in FSSCIQ includes paid stock options as well, Japanese estimates of ESO’s and related compensation of employees include the figure for paid stock options

Finally, the flows of options from abroad or to abroad are totally ignored due to data availability.

### 3. Some criticisms on the treatment of ESOs in the SNA 2008

Who pays for an employee stock option? Or, who “settles” an option, to be precise? Clearly, it is not the corporate enterprise that issued the option. The only thing it does is to exchange one type of liabilities (options) for another (shares). There is no cash out for the corporate entity. Instead, it does cost the existing shareholders through dilution. After all, the existing shareholders pay new shareholders who exercised the option.

Suppose that the number of total shares outstanding of a company is 100 and the number of shares the option-loaded employees will get by exercising the options is 10. Suppose in addition that exercise price that is equal to share price at the time of granting is \$60. Because the share price rose up to, say, \$80, it is assumed that the options are all exercised. Then, the phenomenon called “stock (equity) dilution” takes place. That is, as

a result of the company issuing new equity, the existing shareholders' ownership of a company decreases. "Options overhang," a measure of potential dilution is  $10/110=9.1\%$ . At first glance, the following calculation may be plausible. That is, the new share price will be equal to  $(\$80 \times 100 + \$60 \times 10) \div (100 + 10) = \$73.27$ , so that the existing shareholders lose by  $\$80 \times 100 - \$73.27 \times 100 = \$673$ . The new shareholders that have just exercised the option gain  $\$73.27 \times 10 - \$60 \times 10 = \$132.7$ . This calculation is, however, incomplete. Because the investors know, by Warren Buffet's advice, granting options causes the value of the corporate entity to be lowered just by the fair value of the options evaluated on the grant date and revaluated thereafter. So, the value of the corporate entity becomes  $\$80 \times 100 + (\$80 - \$60) \times 10 + \$60 \times 10 = \$8,800$ . After all, the new share price is just \$80 as before. If the options were not granted, the share price would become  $\$82 = (\$8,800 - \$600) \div 100$ , so that the existing shareholders' loss is  $(\$82 - \$80) \times 100 = \$200 = (\$80 - \$60) \times 10 =$  the new shareholders' gain.<sup>10</sup>

Thus, ESOs are a means of redistribution of wealth between the new stock holders, who exercised the options, and the existing stock holders of the issuing company at the time of exercise. This is how they can give "incentives" or additional pay to executives (or employees in general) by using stock options.

It is a controversial question whether stock options are good for the existing shareholders or not. Some argue positively despite of the adverse redistribution of wealth for the existing shareholders. Relying on so-called agency theory<sup>11</sup>, some argue that stock options can help align the interests of company executives with the interests of the existing shareholders. However, there are also quite a few arguments against. Sanders and Hambrick [2007] suggested that asymmetric nature (unlimited upside and no downside) of options would cause CEOs not to be attuned to early signs of project failure and generally careless about risk mitigation. Wowak et al. [2015] found that granting abundant stock options to CEOs generally increases the incidence of product recalls. Note that they made it clear that granting options may have some consequences to consumers in general or the economy at large as well as the existing shareholders. In addition, it may be worth noting that although a big increase in the issuance of ESOs was recorded in Abenomics period as mentioned earlier, the productivity stagnation instead of the productivity growth has been observed in Japan's economy during the period.<sup>12</sup>

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<sup>10</sup> Note that the employee who exercised the option abandoned the time value of the option.

<sup>11</sup> As regards "agency theory," see Eisenhardt [1989] for example.

<sup>12</sup> See Hattori [2017].

Pros and cons of stock options apart, the author asserts that this redistribution of wealth aspects involved should be focused on more fully in the accounts. Although it may be pointed out that it is just redistribution within the household sector, at the same time, it should be understood that pension funds that have accumulated shares as reserves to meet future pension benefits may be one of the main losers in the redistribution process in question.

On the other hand, concerning the income in kind aspect of ESOs, the author is in the negative about the SNA 2008' position that the option value on the grant date is compensation of employees. Firstly, the quantity (and quality) of services additionally rendered by the executive or the employee in general by granting the option does not always correspond to the value of the option he/she acquired on the grant date not least because the theoretical value of the option relies so heavily on the (historical) volatility of the employer's share. See the figure below.

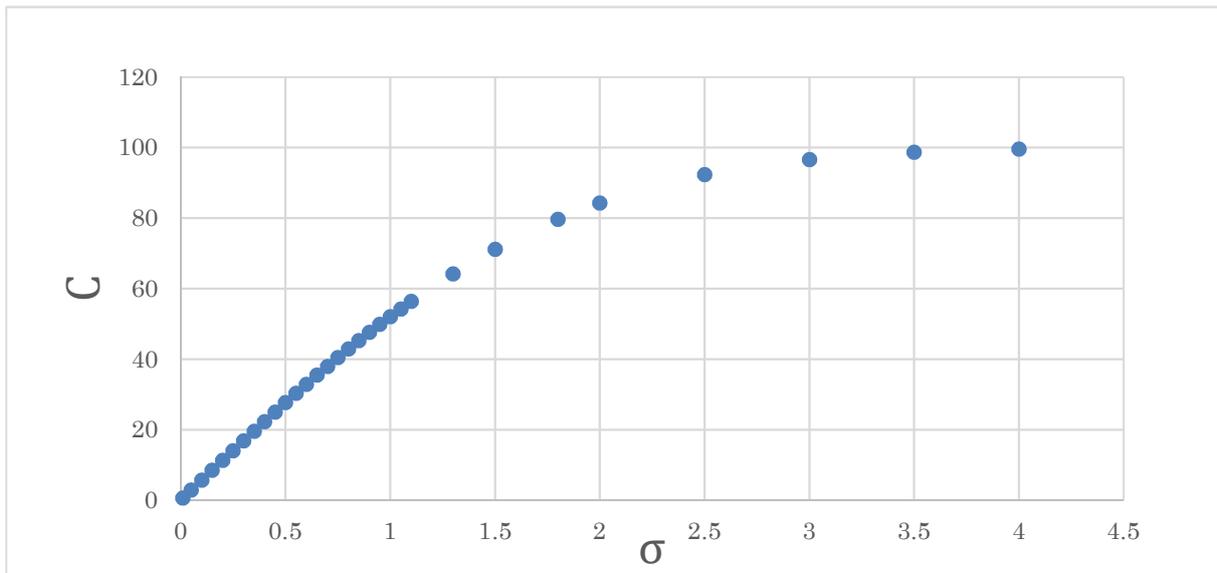


Figure 5 Fair value of call option (C) calculated by using the Black-Sholes option pricing model under varying volatility ( $\sigma$ )

Note to Fig.4: Assumptions are as follows; Stock price as of grant date=100, Strike price=100, Time remaining=2, Risk-free rate=Dividend rate=0.

The figure above shows calculation results of call option prices using the Black-Sholes equation under varying volatility with the other assumptions being fixed as shown in the note to the figure. Clearly, the assumptions behind the figure imply that the intrinsic value of the option is zero. So, the whole value of the option price is the time

value. The figure shows that the volatility is the most important factor for the determination of the option prices on the grant date. Thus, it may be extremely difficult to assume that the quantity of the labour services additionally rendered by the executives (or the employees in general) granted options corresponds to the volatilities of the company's shares or prices of the options.

Secondly, national accountants should recall paragraph 7.15 in the SNA 1968 stated that payment in kind of wages and salaries should cover something that is clearly and primarily of benefit to their employees only so that something which is of benefit to employees as well as the employer should not be income in kind.

In this regard, the author asserts that granting an option may be part of capital policy for the business entity that issued the option. For example, the company wants more (common) shares outstanding for some reasons, say, because it does not want to be merged by another, big corporation. It should be noted that there are occasions when a business entity provides a particular investor with its common shares for some reason without quid pro quo in the form of economic objects. Of course, the investor is expected to behave on the management side if something unfavourable to them happens.

A serious question is whether so-called "paid stock options" are remuneration in kind or not. According to the IASB's rule, what you have to do is just the same as in the case of ordinary stock options. You should subtract the fair value of the stock option from the profit measure as it is compensation expenses.

Suppose as in the above example, on the grant date, the price of the company's share was \$60. On that day, options were sold to some of the executives and they are given the right to buy 10 shares of the company at exercise price \$6/share in exercise period. The corporate value increases by \$60 because of their payment for the option. However, the investors should reduce the value by the option value (\$60) granted following Warren Buffet's advice if the company's profit recorded is not changed. The IASB's rules (IFRS 2 "share-based payment" first released in 2004) just prescribe that the company should record compensation expenses in the case of "paid stock options" as well. It should be noted that this is just because of the accounting treatment of share-settled financial instruments in the IFRS 2. If the options are regarded as debts (like in national accounting) or "stock acquisition rights" (in Japanese business accounting), this recognition is not necessary.

The problem is whether this amount (\$60) should be treated as compensation for work done by the executive or the employee in general who is granted the options. Even if there may be some relations with the work that will be done by the employee, that is, there may be a service condition (or a performance condition) involved and it may be only

the employees that can purchase the option, the reason to believe the fair value of the option is compensation in IFRS 2 appears to be quite weak as this option is not sold at discount by the employer. If the recognition of compensation in the case of paid stock options is not acceptable, the IASB's rule concerning the treatment of ESOs as a whole may be also disputable at least.

Thirdly, there remain many empirical questions involved about the problem of the recognition of ESOs as compensation of employees. First of all, it should be questioned whether the profit measure thus calculated fits well to the empirical estimation of behavioural equations in econometric models. It should be recalled that granting ESOs does not have anything to do with cash flows (cash in or cash out) for the entity. Another empirical question may be one about consumption functions. Do employees as consumers consider the value of options at the time of granting to be part of current income or capital transfer? This may be partly a question of whether contingent assets or liabilities should be recognised within the conceptual framework of the SNA or not. In addition, the recognition of ESOs as compensation of employees may have some impact on the measurement of productivity because highly rewarded labour is often regarded as labour inputs of high quality.

Finally, but not least importantly, as noted earlier, in phase 1, the employee stock option component may be negative leading possibly to anomaly in industrial or other breakdown level figures for compensation of employees.

#### 4. Some proposals

The present paper has two conclusions. The first one is that national accountants should seek a better accounting presentation for the wealth redistribution aspect of ESOs. The second conclusion is to negate the employees' compensation aspect of ESOs.

Concerning the first conclusion, it will be proposed to construct a small satellite system of accounts to record the redistribution of wealth aspects of ESOs. This satellite system will be called "stock option accounts" hereafter.

Concerning the second conclusion, it is proposed to record capital transfer instead of compensation of employees as ESOs cause the redistribution of wealth. By adopting this proposal, the possibility of negative compensation of employees can be excluded.

Because national accountants are thorough entity theorists and a national accounting system is a multi-entity accounting system, it may be meaningful to construct an account for the group of shareholders that own the entity at present or will own the entity in the future, only in the aspect of the relation with the business

entity. An account shown below reflects “net assets”<sup>13</sup> part of the account of the business entity in the debit side. The only exception is (A) the fair value of share settled debts including stock options, which are included in liabilities (except equity) part of the national accounts. They may be regarded as liabilities for the existing shareholders to the potential shareholders. The only item (D) in the credit side of the account just balances the account. This item can be subdivided into the wealth of groups of the shareholders, including that of pension funds in particular. The numerical example given in the figure is the same as what appeared earlier in the text. The assumptions behind are summarised below.

Number of total shares outstanding of the company	100
Option price given to an employee on the grant date	\$6
Number of shares the option-loaded employees will get by exercising them	10
Exercise price (being equal to) share price on the grant date	\$60
Share price on the exercise date	\$80

If it is assumed that all the investors are rational in the sense that they follow Warren Buffet’s advice. So, once the existing shareholders were informed that options were granted, they came to know that they overestimated the value of their assets. The value of the corporate enterprise equals to (A)+(B), that is, 6060 of which only 6,000 is to be distributable to the existing shareholders. The boxed part of the account should be “net assets” in the business entity’s account in line with the IASB’s rule of reducing its profit or corporate value by the option value. Note that all the items are valued at current prices.

The value of (A) Share settled debts should be revaluated over time till the exercise date. If the options are exercised, because the time value of the options is abandoned then, the intrinsic value of the options will be the value of (A). The value of new shares issued (N) will be added to both sides of the account. The value of (A) is the measure of redistribution between the existing shareholders and the potential shareholders, company executives or employees in general who exercised the options. The boxed part is again the part of corporate value that is distributable to the existing shareholders. It may be quite natural for pension fund manager to demand that such an account should be made known at a regular interval. Of course, this type of accounts can

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<sup>13</sup> Here, “net assets” is a business accounting term meaning the total assets minus the total liabilities. Here, liabilities are interpreted in business accounting sense excluding equity.

be compiled at macro as well as micro level.

(A) Share settled debts	60	(D) Wealth=(A)+(B)+(C)
(B) Market share value	6,000	The wealth of the existing shareholders and potential shareholders loaded with ESOs
(C) Net worth <sup>14</sup> (national accounting concept)	0	6,060

Figure 6 Stock option accounts at the time of granting options

(A) Redistribution	200	(D)+(N) Wealth
(N) New Shares issued	600	=(A)+(B)+(C)+(N)
(B) The existing shares	8000	8,800
(C) Net worth (national accounting concept)	0	

Figure 7 Stock option accounts after the exercise date

Because of the denial of the recognition of compensation flows, it is necessary to record capital transfer instead of compensation of employees on the grant date or at latest on the vesting date. Note the transfer flows occur between the existing shareholders and the option loaded employees.

Figure 8 below shows two flow accounts, one for the existing shareholders and one for the potential shareholders.

(F) Capital transfer	(L) Share settled debts
(L) Share settled debts	(F) Capital transfer

Figure 8 Flow accounts

<sup>14</sup> See Sakuma [2015] about the national accounting concept of net worth.

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