TAX LOSSES AND EXCESSIVE RISK TAKING UNDER LIMITED LIABILITY: A CASE STUDY OF THE TEPCO BAILOUT AFTER THE FUKUSHIMA NUCLEAR DISASTER

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It is commonly accepted in the tax law literature that, in theory, business tax losses resulting from risk taking should be fully refundable to taxpayers. Further, when such refunds are unrealistic, tax losses should instead be freely transferable or carried forward without time limitations to achieve tax neutrality on risk taking. The general position taken in the literature assumes that such risk taking is socially desirable. However, that assumption does not always hold. For example, the corporate law literature clearly establishes that the rule of limited liability of shareholders encourages corporations to take excessive risks that might harm social welfare. Accordingly, this study theoretically examines the relationship between tax losses and limited liability.

Furthermore, this study conducts a case study to empirically demonstrate what kind of tax problem can happen with respect to excessive risk taking. Specifically, the bailout of Tokyo Electric Power Company Holdings (TEPCO) after the Fukushima Dai-ichi nuclear disaster caused by the Great East Japan Earthquake on March 11, 2011, provides an informative case study for a further analysis of this relationship. TEPCO ended up owing over 7.9 trillion yen of compensation liability for the damages caused by its shareholders' excessive risk taking under limited liability. Although TEPCO's lack of resources to fully compensate for the damages was

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I am grateful to Professors Thomas Brennan, Daniel Halperin, Andrew Hayashi, Masahiro Kozuka, Mark Ramseyer, Paul Stephan, Xiaotong Wen, Ethan Yale, George Yin, and participants at roundtables at Harvard and UVA for valuable comments. All errors are my own. The research for this article was conducted while I was a visiting scholar at East Asian Legal Studies of Harvard Law School. This work was supported by JSPS KAKENHI Grant Number JP15K20926, JP18K12634.

easily foreseen, the company did not go into bankruptcy. Instead, the government rescued it without wiping out its existing shareholders. The problem does not end there because the TEPCO bailout created a tax problem. This study questions the appropriateness of allowing TEPCO to deduct its tax losses. This is because TEPCO can circumvent the strict time limitation of the tax loss carryforward period owing to the peculiar legal structure of its bailout scheme. In other words, TEPCO's existing shareholders, who are assumed to have taken excessive risk can enjoy tax windfall that other corporations' shareholders cannot. This study considers possible, although imperfect, legislative solutions to the problem.

I. INTRODUCTION

It is commonly accepted in the tax law literature that, in theory, business tax losses resulting from risk taking should be fully refundable to taxpayers. Further, when such refunds are unrealistic, tax losses should instead be freely transferable or carried forward without time limitations to achieve tax neutrality on risk taking. The general position taken in the literature explicitly or implicitly assumes that such risk taking is socially desirable. However, that assumption does not always hold. For example, the corporate law literature clearly establishes that the rule of limited liability of shareholders encourages corporations to take excessive risks that might harm social welfare. Accordingly, this study theoretically examines the relationship between tax losses and limited liability.

Furthermore, this study conducts a case study to empirically demonstrate what kind of tax problem can happen with respect to excessive risk taking. Specifically, the bailout of Tokyo Electric Power Company Holdings (TEPCO) after the Fukushima Dai-ichi nuclear disaster caused by the Great East Japan Earthquake on March 11, 2011, provides an informative case study for a further analysis of this relationship. TEPCO ended up owing over 7.9 trillion yen of compensation liability for the damages caused by its shareholders' excessive risk taking under limited liability. Although TEPCO's lack of resources to fully compensate for the damages was easily foreseen, the company did not go into bankruptcy. Instead, the government rescued it without wiping out its existing shareholders, which was harshly criticized by corporate law scholars.[1]

The problem does not end there because the TEPCO bailout created a tax problem. In contrast to voluntary creditors, involuntary creditors, including the victims of a mass tort, such as a nuclear disaster, cannot defend themselves ex-ante via a contract from shareholders' excessive risk taking conducted under the rule of

[1] *See infra* note 95 and accompanying text.

limited liability. This study therefore questions the appropriateness of allowing TEPCO to deduct its tax losses. This is because TEPCO can circumvent the strict time limitation of the tax loss carryforward period owing to the peculiar legal structure of its bailout scheme. In other words, TEPCO's existing shareholders, who are assumed to have taken excessive risk can enjoy tax windfall that other corporations' shareholders cannot. This study considers possible, although imperfect, legislative solutions to the problem.

The remainder of this paper proceeds as follows. Part II provides an overview of the theories of tax losses and limited liability in the tax law and corporate law literatures, respectively. Part II also proposes that the government stop acting as a silent partner in taxpayers' investments when the investments are socially undesirable. Part III conducts a case study on the TEPCO bailout to examine the treatment of tax losses, and Part IV concludes.

II. THEORIES OF TAX LOSSES AND LIMITED LIABILITY

A. TAX LOSSES

The tax law literature commonly accepts that achieving tax neutrality on risk taking is important for the efficient allocation of production factors[2] or individual welfare.[3] To achieve this goal, profits and losses must be treated symmetrically for tax purposes, and the tax rate should be proportional[4] such that the government

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[2] *See* Mark Campisano & Roberta Romano, *Recouping Losses: The Case for Full Loss Offsets*, 76 NW. U. L. REV. 709, 729 (1981).

[3] *See* Joseph Bankman & Thomas Griffith, *Is the Debate Between an Income Tax and a Consumption Tax A Debate About Risk? Does it Matter?*, 47 TAX L. REV. 377, 402–03 (1992).

[4] *See* Evsey D. Domar & Richard A. Musgrave, *Proportional Income Taxation and Risk-Taking*, 58 Q. J. ECON. 388 (1944) (arguing that profits and losses must be treated symmetrically for tax purposes, and the tax rate should be proportional to achieve neutrality on risk taking); Louis Kaplow, *Taxation and Risk Taking: A General Equilibrium Perspective*, 47 NAT'L TAX J. 789 (1994) (expanding the Domar and Musgrave model into a general equilibrium model by introducing the government's portfolio management behavior); David A. Weisbach, *The (Non) Taxation of Risk*, 58 TAX L. REV. 1 (2004) (using the assumptions about symmetric tax treatment of profits and losses to inform the debate on income tax versus consumption tax).

imposes taxes on both profits and losses at a single rate.[5] In other words, the government pays a tax refund to a taxpayer when her risk taking results in failure, and it collects a tax from her at the same rate when her risk taking is successful.

The following is a simple numerical example. *Investor* is assumed to be rational, and she makes an investment decision based on whether the expected after-tax return of a given investment project is more profitable for her than her alternative investment is. In *Scenario 1, Investor* considers a risky *Project A* with a 50% chance of returning 150% and a 50% chance of losing 100% and a risk-free *Asset B* with a rate of return of 0%. There is no tax. If *Investor* invests 100 in *Project A* and 100 in *Asset B*, her expected return for *Project A* is 25,[6] which is more than that for *Asset B*. Accordingly, investing in *Project A* is desirable for both *Investor* and the society in the absence of tax.

Investor may not take this risk, however, when profits and losses are not treated symmetrically for tax purposes, as *Scenario 2* shows. *Scenario 2* is the same as in *Scenario 1* except that income is taxed at the rate of 40% with no tax refund if *Investor* has net losses. In *Scenario 2*, *Project A*'s expected after-tax return is -5.[7] Thus, *Investor* does not choose to invest in *Project A*. Clearly, the incentive effect of the asymmetrical tax treatment discourages socially desirable risk taking.

This incentive effect can be eliminated, however, if the government provides a tax refund to the investor, as in *Scenario 3*. *Scenario 3* is the same as *Scenario 2* except that *Investor* can receive a tax refund from the government when she earns net losses. The refund amount is determined by multiplying the net losses by the tax rate. In *Scenario 3*, *Investor*'s expected after-tax return is 15.[8]

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[5] *See* Jacob Nussim & Avraham Tabbach, *Tax-Loss Mechanisms*, 81 U. CHI. L. REV. 1509, 1546 (2014) (pointing out that determining what tax rate should be applied to losses in a progressive rate structure is not straightforward).

[6] $= (100 \times 1.5 \times 0.5) + \{100 \times (-1) \times 0.5\}$.

[7] $= (100 \times 1.5 \times 0.5 \times 0.6) + \{(100 \times (-1) \times 0.5\}$.

[8] $= (100 \times 1.5 \times 0.5 \times 0.6) + \{(100 \times (-1) \times 0.5 \times 0.6\}$.

Importantly, the expected after-tax rate of return can be the same as in *Scenario 1* with the portfolio adjustment as described below, even though the total absolute expected return decreases owing to the imposition of the tax. Accordingly, the tax has no distortive effect on an investor's decision if we omit the income effect. In this situation, the government plays the role of a "silent partner" in the investor's risk taking as a 40% equity holder. If *Investor* hopes to earn the same after-tax return as in *Scenario 1*, she can simply increase the initial amount of expenditure on *Project A*[9] to 166.7 by selling investments in *Asset B*.[10] This analysis underpins the proposal that the full refundability of tax losses is indispensable for achieving tax neutrality on risk taking.[11] Yet such a full refundability system is politically difficult to implement in practice. As a result, alternative methods are proposed for lenient treatment of tax losses, including free transferability and the indefinite carryforward of tax losses with adequate interest added.[12]

Despite these proposals, we cannot identify a country that allows full refundability in practice.[13] Aside from budgetary concerns, one plausible justification for limiting the utilization of tax losses is that existing tax statutes have difficulty in measuring pure economic income owing to the realization principle and redundant tax

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[9] *See* Kaplow, *supra* note 4, at 792–93; Weisbach, *supra* note 4, at 17–19, 53–54 (assuming that the investor makes a portfolio adjustment and the government also makes a portfolio adjustment to the opposite direction from the investor to supply risky assets to the investor). *But see* John R. Brooks II, *Taxation, Risk, and Portfolio Choice: The Treatment of Returns to Risk Under a Normative Income Tax*, 66 TAX L. REV. 255, 283–84 (2013) (questioning the assumption of a full portfolio adjustment even for rational investors given the implications of modern portfolio theory, which incorporates the fact that most people are more loss averse than they are risk averse and, thus, weight the risk of loss more heavily than the prospect for gain).

[10] More generally, an investor can negate the effect of a tax by increasing her investment by t/ (1 - t) times the initial investment.

[11] This conclusion is supported by a formal analysis that takes the income effect of taxation on risk taking into account. *See* Campisano & Romano, *supra* note 2, 722–29.

[12] *See* Nussim & Tabbach, *supra* note 5, at 1531–53 (analyzing the economic equivalence of full refundability, full transferability, and full offsets systems).

[13] *See* OECD, CORPORATE LOSS UTILISATION THROUGH AGGRESSIVE TAX PLANNING 26 (2011).

expenditures.[14] Instead, many countries, allow limited[15] transferability and carryforward of tax losses as a policy compromise. One transferability mechanism in these countries is that tax losses can be succeeded from one corporation to another during mergers and acquisitions.[16] The consolidation tax return system of corporate groups can also be classified as a transferability mechanism.[17] Moreover, many countries allow carryforward of tax losses with time limitations.[18] Owing to these limitations to tax loss utilization, corporations are inefficiently incentivized to become conglomerates or conduct mergers and acquisitions to offset the losses from one business against the profits of another business.[19]

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[14] *See* AMERICAN LAW INSTITUTE, FEDERAL INCOME TAX PROJECT SUBCHAPTER C: PROPOSALS ON CORPORATE ACQUISITIONS AND DISPOSITIONS 211–12 (1982); Satya Poddar & Morley English, *Treatment of Tax Losses: Lessons from the Canadian Experience*, *in* TAXATION TOWARDS 2000 479, 493 (John G. Head & Richard Krever eds., 1997); YOSHIHIRO MASUI, Ketsugō Kigyō Kazei no Riron [TAXATION OF CORPORATE GROUPS] 265, 290 (2002); Thomas Abhayaratna & Shane Johnson, *Revisiting Tax Losses*, 24 AUSTL. TAX F. 59, 64–66 (2009); Michael J. McIntyre, *Identifying Tax Losses Entitled to Full Loss Offsets in a Business Profits Tax under the Domar-Musgrave Risk Model*, 24 AUSTL. TAX F. 77 (2009).

[15] *See e.g.*, AMERICAN LAW INSTITUTE, *supra* note 14, at 216 (noting that considering ways to limit the trafficking in loss carryovers in mergers and acquisitions is prudent given US Congress's view that the trafficking in loss carryovers is abuse).

[16] *See* OECD, *supra* note 13, at 37–38 (summarizing the rules on tax losses in some of the OECD countries including Austria Canada, France, Italy, New Zealand, Norway and Spain).

[17] *See* Yoshihiro Masui, *General Report*, *in* CAHIER DE DROIT FISCAL INTERNATIONAL Vol. 89b, 21, 46–51 (2004); ANTONY TING, THE TAXATION OF CORPORATE GROUPS UNDER CONSOLIDATION: AN INTERNATIONAL COMPARISON 139–75 (2013).

[18] *See* Tibor Hanappi, *Loss Carryover Provisions: Measuring Effects on Tax Symmetry and Automatic Stabilisation*, 35 OECD TAXATION WORKING PAPERS 1, 16 (2018) (showing that 16 out of 34 sample countries limit tax loss carryforward periods). Regarding Japan's net losses carryforward rules, see *infra* note 109.

[19] Campisano & Romano, *supra* note 2, at 719–21; David Hasen, *Taxation and Innovation: A Sectorial Approach*, 2017 U. ILL. L. REV. 1043, 1076–78 (2017). With regard to cases related to the trafficking in losses through mergers and acquisitions to circumvent the time limitations of the carryforward period in Japan, see Saikō Saibansho [Sup. Ct.] Feb. 29, 2016, Hei 27 (Gyo-hi) no. 75, 70 Saikō Saibansho Minji Hanreishū [Minshū] 242 [Yahoo Japan]; Saikō Saibansho [Sup. Ct.] Feb. 29, 2016, Hei 27 (Gyo-hi) no. 177, 70 Saikō Saibansho Minji Hanreishū [Minshū] 470 [IDCF]. *See also* Takayuki Nagato, *A General Anti-Avoidance Rule (GAAR) and the Rule of Law in Japan*, 13 PUB. POL'Y REV. 35, 58–63 (2017) (analyzing the cases).

To summarize, in tax law literature, tax losses resulting from genuine risk taking should be utilized without any restrictions to achieve tax neutrality on risk taking, at least in theory. However, policies to restrict the utilization of tax losses can be justified when we assume the current income tax system as given.

B. LIMITED LIABILITY

In corporate law literature, the rule of limited liability has drawn strong academic interest for a long time. Limited liability is thought to be among the greatest developments for promoting capital formation and economic growth.[20] In the modern economy, public corporations, which combine both specialized business management skills and vast amounts of capital from small investors, emerged. Limited liability reduces the costs associated with this separation of management and ownership, including the costs of monitoring the manager, other shareholders and so on.[21] Furthermore, limited liability makes it easier for risk-averse investors to take on more risk.[22] However, the negative byproducts of the rule of limited liability are well recognized. Specifically, limited liability induces shareholders to take excessive risk because it allows them to externalize the risk to a third party.

The following is a simple numerical example. In *Scenario 4, Investor* has 5,000 in assets. *Project C* has an 80% chance of producing 500 in profits and a 20% chance of producing 5,000 in losses. Thus, the expected return of *Project C* is -600.[23] *Project C* is therefore socially undesirable, and *Investor* does not take this risk if she has unlimited liability because she is liable for all of the losses. However, taking this risk is rational for *Investor* under the rule of

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[20] STEPHEN M. BAINBRIDGE & M. TODD HENDERSON, LIMITED LIABILITY: A LEGAL AND ECONOMIC ANALYSIS 302 (2016).

[21] *See* FRANK H. EASTERBROOK & DANIEL R. FISCHEL, THE ECONOMIC STRUCTURE OF CORPORATE LAW 41–44 (1991).

[22] Michael Simkovic, *Limited Liability and the Known Unknown*, 68 DUKE L. J. 275, 285 (2018). *See also* BAINBRIDGE & HENDERSON, *supra* note 20, at 47–49 (showing a numerical example).

[23] $=500\times0.8-5000\times0.2$.

limited liability. In *Scenario 5*, *Investor* establishes a *Corporation* to enjoy the benefits of limited liability by contributing 1,000 of her assets with setting aside the remaining 4,000 in her pocket. *Investor* assumes the risk of *Project C* via *Corporation* because her private expected return is now 200 due to the limited liability feature.[24] Losses that are not covered by *Corporation*'s assets are shifted to other parties in society, such as creditors.

This scenario is a typical example of the judgment proof problem.[25] This externalization of risk is not as problematic if creditors can protect themselves in advance through contracts. Accordingly, voluntary creditors often require corporations to pay additional risk premia in the form of higher interest rates as a consideration for their assumption of additional risk. They can also monitor corporations using contractual covenants. As a result, sophisticated voluntary creditors are often considered as risk takers[26] who play a crucial role in corporate governance.[27]

In contrast, involuntary creditors, such as the victims of a mass tort, have no such opportunities to protect themselves before they are damaged. Thus, many prominent scholars have argued for unlimited shareholder liability for tort liability.[28] This radical proposal seems attractive, but it is not practical considering the administrative costs of monitoring shareholders' assets and handling collections from the small dispersed shareholders of a public corporation.[29] At the

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[24] $=500\times0.8\text{-}1000\times0.2$.

[25] *See generally* Steven Shavell, *The Judgment Proof Problem*, 6 INT'L REV. L. & ECON. 45 (1986).

[26] Such a view can be helpful in connecting the corporate law literature to the tax law literature, which focuses on the economic distinction between time-value and bets rather than legal distinction between debt and equity.

[27] *See generally* Douglas G. Baird & Robert K, Rasmussen, *Private Debt and the Missing Lever of Corporate Governance*, 154 U. PA. L. REV. 1209 (2006).

[28] *See* Henry Hansmann & Reinier Kraakman, *Toward Unlimited Shareholder Liability for Corporate Torts*, 100 YALE L. J. 1879, 1907–09 (1991) (arguing for unlimited proportionate shareholder liability for tort claims to incentivize corporate managers to engage in less risky conduct or purchase additional corporate insurance).

[29] *See* BAINBRIDGE & HENDERSON, *supra* note 20, at 70–72. *See also* Joseph A. Grundfest, *The Limited Future of Unlimited Liability: A Capital Markets Perspective*, 102 YALE L. J. 387 (1992) (arguing that proportional unlimited shareholder liability would not function well given the opportunity for arbitrage

moment, other mechanisms, such as government regulations,[30] are being used to force corporations to internalize their risks, although these mechanisms are still far from sufficient.[31]

In summary, the rule of limited liability is an effective mechanism for capital formation and economic growth, but the problem of the externalization of risk is not completely solved. Thus, limited liability is an imperfect mechanism in the modern economy.

C. AN INTEGRATED ANALYSIS

An integrated analysis of the relationship between tax losses and limited liability is important because many businesses operate under the rule of limited liability,[32] but, to the best of our knowledge, few studies focus on this issue.[33] The dominant argument in the tax law literature is that full refundability or its alternatives should be provided to taxpayers. However, this argument in the literature does not consider limited liability, which induces excessive risk taking by shareholders.[34] Traditionally, analyses of this dominant argument have focused on individuals without considering the bankruptcy system[35] or, when arguing for lenient tax loss treatments for

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in capital markets); Lynn M. LoPucki, *The Death of Liability*, 106 YALE L. J. 1, 56–61 (1996) (detailing thoroughly why unlimited liability for shareholders is unworkable).

[30] Simkovic, *supra* note 22, at 307–11 (analyzing the limits of previous solutions).

[31] *See* BAINBRIDGE & HENDERSON, *supra* note 20 at 75. *See also* EASTERBROOK & FISCHEL, *supra* note 21, at 60–62 (detailing other methods of decreasing risk, such as minimum capital requirements, mandatory insurance, managerial liability, and regulation of inputs).

[32] Although this paper conducts a case study about corporation, individuals can also enjoy the benefit of limited liability under the bankruptcy system.

[33] Hiroyuki Kohyama, Fukakujitusei no Moto deno Zaisei to Sijō no Yakuwari [*The Roles of Public Finance and Markets under Uncertainty*], 113 FINANCIAL REVIEW 21, 33–34 (2013) is an exception that slightly analyzes this issue. *See also* Simkovic, *supra* note 22, at 321 ("the corporate tax will not do much to discourage excessive risk-taking resulting from limited liability").

[34] Part II . B.

[35] Kaplow, *supra* note 4 (assuming a representative individual in his model), at 790; Weisbach, *supra* note 4, at 34 (admitting the omission of the existence of corporate tax as a potential problem of his model).

corporations, have not taken limited liability into account.[36] Moreover, the argument for full refundability seems to implicitly or explicitly assume that the expected return on the taxpayer's investment is positive for society.[37] Under this assumption, it is reasonable to think that discouraging such risk taking, which can add value to society, is socially undesirable.

This assumption, however, does not always hold when we take the prevalence of the rule of limited liability into consideration. Thus, limiting the tax loss deduction may be justified in certain situations from an ex-ante view that values social welfare maximization. That is, one can argue that a government should not be required to serve as a silent partner in an investment whose expected return is positive only for shareholders and is negative for society. Rather, tax policy that discourages such excessive risk taking under limited liability may be socially desirable.[38]

We consider *Scenario 6*, which is the same as *Scenario 5* except that an income tax is levied at the rate of 40% with full refundability. *Investor's* after-tax expected return on *Project C* is 120.[39] The government serves as a silent partner to *Investor* in *Project C*, as in *Scenario 3*. Accordingly, *Investor* still takes on this risk, as in *Scenario 4*, even if taking this risk is socially undesirable.

In the next scenario, *Scenario 7,* the government stops being a silent partner of *Investor* when the project's expected return for society is negative. Here, the facts are the same as in *Scenario 6* except that the government does not allow *Investor* to utilize tax losses resulting from investments with negative expected returns. In

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[36] *See* Domar & Musgrave, *supra* note 4, at 392; Campisano & Romano, *supra* note 2, at 711–14 (explaining the full refundability system in the context of business corporations); Nussim & Tabbach, *supra* note 5, at 1533, 1544, 1560 (including corporations in their analysis).

[37] *See* Domar & Musgrave, *supra* note 4, at 389; Weisbach *supra* note 4, at 12–19.

[38] *See* Kohyama, *supra* note 33, at 33–34 (discussing the possibility of limiting the tax loss deduction to make the government collect insurance premia from companies enjoying the benefit of limited liability).

[39] $=500\times(1-0.4)\times0.8+\{-1000\times(1-0.4)\}\times0.2$.

this case, *Investor*'s after-tax expected return is reduced to 40.[40] Thus, the government partly discourages *Investor* from making a risky investment in *Project C*. Although this scenario is far from a complete solution to the problem of making *Investor* fully internalize her risk,[41] the government is at least no longer an accomplice in socially undesirable risk taking. If we assume that such limitation can be justifiable, there is a reason to limit the utilization of tax losses as a second-best rule.

Importantly, in *Scenario 7*, the liabilities that are not covered by *Corporation*'s assets produce cancellation of indebtedness (COD) income at the *Corporation* level when it is exempted. The COD income is offset by the bloated tax losses originating from excessive risk taking. Accordingly, tax losses that result from excessive risk taking do not produce tax windfall to the risk takers as long as there is adequate COD income taxation to offset the bloated tax losses. Put differently, if offsetting COD income taxation is not enough, tax windfall owing to the bloated tax losses can accrue to the risk takers.[42] In such a case, we can argue for limiting deduction of expenses for tort liability that is incurred owing to excessive risk taking.[43]

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[40] $=500\times(1-0.4)\times0.8+(-1000)\times0.2$.

[41] This solution's problem is the magnitude of the tax incentive to discourage risk taking is determined by the amount of property the investor holds.

[42] For example, the COD income was not adequately taxed in the past because of the existence of the insolvency exception and the stock-for-debt exception in the U.S. tax law. *See* William T. Plumb Jr., *The Tax Recommendations of the Commission on the Bankruptcy Laws—Reorganizations, Carryovers and the Effects of Debt Reduction*, 29 TAX L. REV. 227, 258–81 (1974) (explaining the insolvency exception and proposing to abolish it); Katherin Pratt, *Shifting Biases: Troubled Company Debt Restructurings After the 1993 Tax Act*, 68 AM. BANKR. L. J. 23, 29–31 (1994) (summarizing the history of the stock-for-debt exception).

[43] Interestingly, Income Tax Act denies the deductibility of expenses for tort liability from a deliberate or gross negligence behavior, even if the liability is incurred in conducting a business because such liability is thought to be "unnecessary" to raise revenue. Shotokuzeihō [Income Tax Act], Law No. 33 of 1965, art. 45(1), para 7, Shotokuzeihō Sekōrei [Cabinet Order for Enforcement of ITA] art. 98. Chūkai Shtokuzeihō Kenkyūkai, Chūkai Shotokuzeihō [COMMENTARY ON INCOME TAX ACT] 1011(5th ed. 2011).

III. CASE STUDY: THE TEPCO BAILOUT

The tax treatment of TEPCO under its bailout scheme offers a good opportunity to further explore the relationship between tax losses and limited liability because the TEPCO bailout provided TEPCO and its existing shareholders with unintended tax benefits. These tax benefits accrued not from the insufficient taxation of the COD income mentioned in Part II. Rather, the tax benefits came from the bailout of TEPCO and its shareholders who took excessive risk under limited liability. Analyzing the tax treatment of TEPCO will be an informative case study to understand the interaction between tax losses, limited liability, and bailout.[44]

This part begins by introducing the concrete scheme of the TEPCO bailout (Section A). Next, we investigate the desirability of TEPCO's corporate income tax treatment under this scheme (Section B). Then, we consider possible solutions to eliminate undesirable tax benefits to TEPCO and its existing shareholders with their limits (Section C).

A. THE TEPCO BAILOUT SCHEME

In this section, we briefly introduce the legal background and the course of the TEPCO bailout[45] to prepare for the discussion of TEPCO's tax treatment under the scheme in the following section.

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[44] Someone might refute that there is no direct causal relationship between the problem of tax losses discussed in Part III and limited liability. However, the tax problem in Part III is caused by the bailout of TEPCO without wiping out its existing shareholders, and TEPCO was bailed out because its shareholders took excessive risk under limited liability. Therefore, I believe there is an indirect but close relationship to be discussed as the relationship between tax losses and limited liability.

[45] For a concise explanation of Japan's nuclear industry, see J. Mark Ramseyer, *Why Power Companies Build Nuclear Reactors on Fault Lines: The Case of Japan*, 13 THEORETICAL INQ. L. 457, 460–67 (2012).

1. *Act on Compensation for Nuclear Damage*

The Act on Compensation for Nuclear Damage [46] (the "Compensation Act") was enacted in 1961 (i) "to protect persons suffering from 'nuclear damage'" and (ii) "to contribute to the sound development of the nuclear industry by establishing the basic system regarding compensation in case of nuclear damage caused by reactor operation."[47] The Compensation Act can be summarized as follows. To begin with, the "nuclear operator"[48] who is engaged in the reactor operation on the occasion shall be liable for the "nuclear damage."[49] This liability is strict liability based on the "liability without fault" principle,[50] although there is room for exemptions from liability if the damage was caused by a grave natural disaster of an exceptional character or by an insurrection.[51]

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[46] Genshiryoku Songai no Baishō ni Kansuru Hōritsu [Act on Compensation for Nuclear Damage], Law No. 147 of 1961, *translation is available in* OECD, JAPAN'S COMPENSATION SYSTEM FOR NUCLEAR DAMAGE: AS RELATED TO THE TEPCO FUKUSHIMA DAIICHI NUCLEAR ACCIDENT 61– 69 (2012). Although Act on Compensation for Nuclear Damage was amended in December 2018 (Law, No. 90 of 2018), this paper does not explain the revision because the amendment has no direct influence on this paper's analysis and the effective date of the revision is January 1, 2020.

[47] Act on Compensation for Nuclear Damage, *supra* note 46, § 1.

[48] *Id.* § 2, para 3.

[49] *Id.* § 2, para 2.

[50] *Id.* § 3, para 1. Strictly speaking, the nature of the liability is not classified as tort liability of article 709 in Civil Law (Minpō) but as special liability in the Compensation Act. *See, e.g.*, Maebashi Chihō Saibansho [Maebashi Dist. Ct.] March 17, 2017, Hei 25 (wa) no. 478, Hei 26 (wa) no.111, Hei 26 (wa) no. 466, 2239 Hanrei Jiho [Hanji] 4. However, the technical characterization does not matter for this study's purposes to the extent that the victims can be seen as involuntary creditors. The assumption that the victims in the Fukushima Dai-ichi nuclear disaster are involuntary creditors may not perfectly hold because they voluntarily asked for the nuclear reactors to receive government subsidies in exchange for the great risk of disaster. *See* J. Mark Ramseyer, *Nuclear Reactors in Japan: Who Asks for Them, What Do They Do?*, EUR. J. LAW. ECON. (2017), https://doi.org/10.1007/s10657-017-9561-8.

[51] Act on Compensation for Nuclear Damage, *supra* note 46, § 3, para 1. Many scholars think that TEPCO is not exonerated by this clause because the exemption requirement has been interpreted very narrowly and TEPCO was able to foresee large tsunamis and earthquakes. *See, e.g.*, Eri Osaka, *Corporate Liability, Government Liability, and the Fukushima Nuclear Disaster*, 21 PAC. RIM L. & POL'Y 433, 444–47 (2012); Hatsuru Morita, *Rescuing Victims and Rescuing TEPCO: A Legal and Political Analysis of the TEPCO Bailout*, 34 J.

This liability is also an unlimited liability in which the nuclear operator is liable for the entire damage, but the shareholders of the nuclear operator are only liable for their investments in the nuclear operator corporation.[52] Thus, the shareholders can still enjoy the benefits of limited liability in accordance with general corporate law principles.[53] Moreover, the compensation liability is concentrated on the nuclear operator; no person other than the nuclear operator, who is liable for the compensation, owes any liability for the damage.[54] Because the nuclear operator's compensation liability is expected to be huge once a nuclear disaster occurs, a nuclear operator is prohibited from operating a reactor unless financial security for this nuclear damage compensation has been provided to ensure adequate compensation.[55] The minimum amount of this financial security (the "Financial Security Amount") is currently 120 billion yen for each installation or site.[56]

In addition, it is abstractly stipulated that the Japanese government shall provide a nuclear operator such aid as is required to compensate for the damage when the compensation liability amount exceeds the Financial Security Amount to the extent that the National Diet authorizes the government to provide this compensation.[57] Thus, the Nuclear Damage Compensation

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JAPANESE L. 23, 27 (2012). The government expressed its position that TEPCO would not be exempted from the liability by this provision. *See* YASUFUMI TAKAHASHI, Kaisetsu Gensiryoku Songai Baishō Shien Kikō Hō [EXPLANATION ON NUCLEAR DAMAGE COMPENSATION FACILITATION CORPORATION ACT] 26–27 (2012).

[52] Act on Compensation for Nuclear Damage, *supra* note 46, § 3, para 1. *See* TAKAHASHI, *supra* note 51, at 7.

[53] Kaishahō [Companies Act], Law No. 86 of 2005, art.104.

[54] Act on Compensation for Nuclear Damage, *supra* note 46, § 4, para1.

[55] *Id.* § 6. Financial security shall be provided by the conclusion of a contract of liability insurance for nuclear damage and an indemnity agreement for the compensation of nuclear damage or by a deposit approved by the Minister of Education, Culture, Sports, Science, and Technology. *Id.* § 7, para 1. *See also* Osaka, *supra* note 51, at 436–37.

[56] Act on Compensation for Nuclear Damage, *supra* note 46, § 7.

[57] *Id.* § 16.

Facilitation Corporation Act[58] (NDCFCA) was enacted hastily in August 2011 to substantiate the content of the government's obligation to assist nuclear operators, as it was certain that TEPCO's compensation liability would exceed the Financial Security Amount.

2. *Nuclear Damage Compensation Facilitation Corporation Act*

As mentioned in the previous section, TEPCO was likely to be liable for a substantial compensation for the nuclear damage resulting from the Fukushima Dai-ichi nuclear disaster. The estimated compensation liability amount was large enough to render TEPCO insolvent. According to TEPCO's financial statements as of March 31, 2011, its total assets were 14.8 trillion yen; its total debt excluding compensation liability was 13.2 trillion yen, including 4.4 trillion yen of electric company bonds; and its equity was only 1.6 trillion yen.[59] In comparison, the amount of compensation liability that TEPCO has already paid reached nearly 7.7 trillion yen in 2017,[60] and the final amount is estimated to be more than 7.9 trillion yen.[61]

However, TEPCO did not enter into bankruptcy, as in the proceedings under the Corporate Reorganization Act.[62] Instead,

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[58] Genshiryoku Songai Baishō Shien Kikō Hō [Nuclear Damage Compensation Facilitation Corporation Act], Law No. 94 of 2011, *translation is available at* http://www.japaneselawtranslation.go.jp/law/detail/?id=2082&vm=04&re=01. This statute was renewed to Genshiryoku Songai Baishō Hairotō Shien Kikō Hō [Nuclear Damage Compensation and Decommissioning Facilitation Corporation Act] in August 2014, but the relevant provisions for the purpose of this study were not changed.

[59] Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2010) [FINANCIAL STATEMENTS IN FISCAL YEAR 2010], 49–50 (2011).

[60] Kaikei Kensa In [THE BOARD OF AUDIT OF JAPAN], Tokyo Denryoku Kabusiki Gaisha nikakaru Gensiryoku Songai no Baishō nikansuru Kuni no Sientō no Jisshijōkyō nikansuru Kaikeikensa no Kekka nitsuite (youshi) [ON THE RESULT OF THE AUDITING OF IMPLEMENTATION OF THE GOVERNMENT SUPPORT OF TEPCO'S COMPENSATION FOR NUCLEAR DAMAGE (SUMMARY)], 5 (March, 2018), *available at* http://www.jbaudit.go.jp/pr/kensa/result/30/pdf/300323_youshi_1.pdf.

[61] *Id.* at 11.

[62] Kaisha Kosei Hō [Corporate Reorganization Act], Law No. 154 of 2002.

TEPCO was bailed out[63] under the newly enacted NDCFCA without wiping out its existing shareholders or cutting off voluntary creditors' claims, including electric company bonds. This deal occurred for several reasons.[64] First, it was difficult to find financial sponsors to help TEPCO reorganize in a bankruptcy procedure owing to its unpredictably large amount of expenses for compensation and the decommissioning of reactors. Second, the disaster victims would have to file proof to participate in a reorganization procedure,[65] but it was unrealistic to expect them to do so. Third, compensation would be delayed during the formulation process of the reorganization plan. Fourth, the electric company bondholders would be treated more favorably in a bankruptcy proceeding than would the tort claimants because electric company bonds had been given general security interests under the Electricity Business Act at that time.[66]

The legal structure for compensating the victims[67] under NDCFCA is as follows (see Figure 1). First, the Nuclear Damage Compensation Facilitation Corporation (the "Corporation") was established using capital contributions from the government (7 billion yen), TEPCO (2.3 billion yen) and other nuclear operators (4.6 billion yen).[68] TEPCO, as a nuclear operator, could apply to receive "Financial Assistance," including granting funds, for the compensation to the extent that its Financial Security Amount was

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[63] *Cf.* Adam J. Levitin, *In Defense of Bailout*, 99 GEO. L. J. 435 (2011) (proposing a framework for analyzing a bailout's legitimacy, and stressing ensuring accountability and fairness is essential for bailouts' political legitimacy and ultimate efficacy).

[64] Kōji Aribayashi, Genshiryoku Songai Baishō Shien Kikō Hō no Seitei to Gaiyō [*Enactment of the Nuclear Damage Compensation Facilitation Corporation Act and its Outline*], 1433 JURISUTO 32, 37 (2011).

[65] Corporate Reorganization Act, *supra* note 62, art.138.

[66] Denki Jigyō Hō [Electricity Business Act], Law No. 170 of 1964, art.37 (amended by Denki Jigyō Hō tou no ichibu wo kaisei suru Hōritsu [Amendment Act of Electricity Business Act etc.], Law No. 72 of 2014).

[67] The definition of "victims" and the scope of the compensation are controversial issues. *See* Eric A. Feldman, *Fukushima: Catastrophe, Compensation, and Justice in Japan*, 62 DEPAUL L. REV. 335, 342–49 (2013).

[68] *See* THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 5.

insufficient to cover the compensation amount,[69] although it remained legally liable for the nuclear damage.[70] Then, the Corporation, following its management committee resolution, decided whether to provide Financial Assistance and set the contents and amounts of any Financial Assistance it chose to provide.[71]

TEPCO was permitted to receive grants as Financial Assistance from the Corporation. The total amount of granted funds has already reached 7.5 trillion yen as of the end of 2017.[72] Importantly, the funds granted to TEPCO are not legally designed as loans to ensure that TEPCO does not become insolvent. Accordingly, TEPCO has no legal obligation to repay the funds.[73] The Corporation finances the funds by borrowing from financial institutions in the market with government guarantee or requesting the redemption of delivery bonds issued without receiving any consideration by the government.[74] In addition, the government would fund approximately 1–1.6 trillion yen.[75] The government finances the delivery bonds[76] by borrowing from financial institutions or issuing bonds. The borrowed funds are recorded as nuclear damage compensation facilitation expenses in a special financial account for energy-related expenditures.[77] The total amount of issued delivery

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[69] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 41 para 1.

[70] Victims have three routes to receive compensation: direct compensation, Alternative Dispute Resolution (ADR), and litigation. *See* Eric A. Feldman, *Compensating the Victims of Japan's 3-11 Fukushima Disaster*, 16 ASIAN-PAC. L. & POL'Y J. 127, 135–52 (2015). Regarding the ADR mechanism, see Daniel H. Foote, *Japan's ADR System for Resolving Nuclear Power Related Damage Disputes*, 12 U. TOKYO L. REV. 102 (2017).

[71] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 42.

[72] THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 5.

[73] TAKAHASHI, *supra* note 51, at 180.

[74] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 49. The government issues delivery bonds without consideration. The holders of the delivery bonds can redeem them anytime. *See* TAKAHASHI, *supra* note 51, at 188–89.

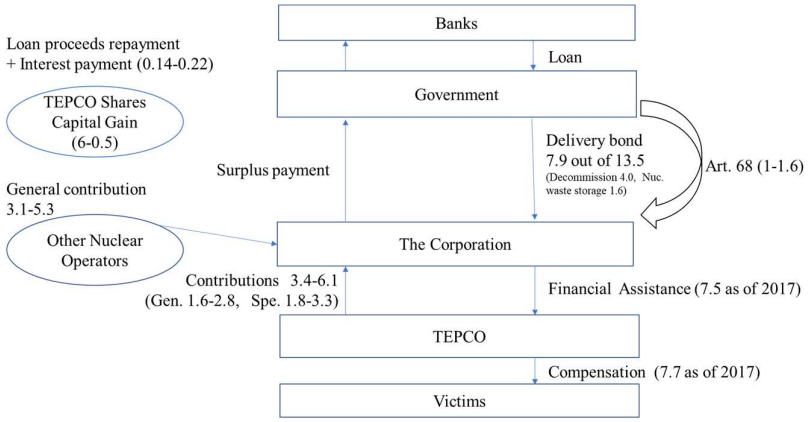
[75] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 68. *See* THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 9.

[76] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art.48.

[77] Tokubetsu Kaikei ni Kansuru Hōritsu [Act on a Special Account], Law No. 23 of 2007, arts. 85 & 87.

bonds has reached 13.5 trillion yen, 7.9 trillion yen of which was issued for nuclear damage compensation, as of the end of 2017.[78]

Figure 1: Cash Flow of the Scheme (JPY trillion)



(Data Source: The Board of Audit of Japan, *supra* note 60, at 5)

Nevertheless, it should be no surprise that this Financial Assistance does not come free of charge in substance despite its legal form. All nuclear operators under NDCFCA, which include other entities besides TEPCO, are annually obligated to pay so-called "General Contribution" to the Corporation to support its business operations.[79] This obligation is justified under NDCFCA as joint expenses for the common interests of the nuclear operators, which can benefit from the trust for nuclear power generation by assuring the prompt and appropriate implementation of compensation for nuclear damage.[80] One estimate suggests that the other nuclear

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[78] THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 5. Of the remainder, 4 trillion yen are for decontamination, and 1.6 trillion yen are for intermediated nuclear waste storage. *See id.* at 2.

[79] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 38, para 1. The "General Contribution" cannot be characterized as an insurance premium because the nuclear disaster had already occurred. *See* Wataru Tanaka, Tōden Shori ni Kansuru Ichikōsatsu: Hōteki Seiri to Kenri no Yūsen Kankei no Mondai wo Chūshin ni [*How to Reorganize TEPCO?: On Priority of Claims*], *in* Fukkō to Kibō no Keizai-gaku: Higashi Nihon Dai-shinsai ga Toikakeru Mono [ECONOMICS OF RESTORATION AND HOPE: AFTER THE GREAT EARTHQUAKE IN EAST JAPAN] at 158, 162 (2011).

[80] Aribayashi, *supra* note 64, at 34.

operators will bear about 3.1–5.3 trillion yen of the total burden of paying the General Contribution.[81] TEPCO has been mandated to pay about 56.7 billion yen per business year for the General Contribution in recent years;[82] the precise amount is set annually by the Corporation through its management committee.[83] It is estimated that the total amount of the General Contribution that TEPCO will ultimately pay is about 1.6–2.8 trillion yen.[84]

In addition, TEPCO has a duty to pay an annual "Special Contribution" as an "Approved Operator" because it received the Financial Assistance from the Corporation.[85] Under NDCFCA, the Corporation is obligated to pay its annual surplus to the government until the paid amount reaches the amount of money that the Corporation raised through the redemption of delivery bonds.[86] The purpose of the Special Contribution is to help the Corporation fully repay the government expeditiously.[87] TEPCO's total portion of this contribution is estimated to be 1.8–3.3 trillion yen.[88] Thus, TEPCO's total payment across the two types of contributions is estimated to be 3.4–6.1 trillion yen.[89]

The substance of this scheme seems to imply that TEPCO was partially exempted from the compensation liability and that the government and other nuclear operators partially assumed the compensation liability in its stead. The legal structure also seems to

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[81] THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 9.
[82] *Id.* at 5. TEPCO's burden accounts for around 35% (290.0 billion yen) of the total General Contribution amount (834.3 billion yen) as of 2017. *See id.* at 8.
[83] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 39.
[84] THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 9.
[85] When a nuclear operator is granted permission to receive Financial Assistance and the Corporation finances this Financial Assistance with delivery bonds, the nuclear operator and the Corporation are required to prepare a Special Business Plan for the nuclear operator's implementation of compensation for damage and other business administration. A nuclear operator who receives approval for its Special Business Plan from the competent minister is called an "Approved Operator." *See* Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, arts. 45 & 52.
[86] *Id.* art. 59, at para 4.
[87] *See* TAKAHASHI, *supra* note 51, at 195–96.
[88] *See* THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 9.
[89] *Id.*

suggest that TEPCO borrowed funds for the remaining compensation from the Corporation without having to pay interest,[90] and that it made payments to the loan proceeds as its annual contributions. One estimate suggests that it takes 25–40 years for the government to collect money for the redemption of delivery bonds.[91] However, the drafters of NDCFCA purposefully avoided a legal design that would combine a partial exemption with a loan and its repayment to keep TEPCO solvent.[92]

As mentioned above, TEPCO did not go into bankruptcy, and the existing shareholders and voluntary creditors remained under NDCFCA. This point is utterly contrary to the proposals of many corporate law scholars and economists. From the perspective of corporate law, the Fukushima Dai-ichi nuclear disaster was a predictable result of excessive risk taking by shareholders under limited liability.[93] TEPCO owed massive compensation liability that could not be fully paid with its property.[94] Thus, corporate law scholars naturally proposed that TEPCO should go into bankruptcy to wipe out its existing shareholders and to make voluntary creditors suffer losses so that these voluntary investors did not enjoy financial

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[90] The government finances the interest expenses of its loans from its general account. *See id.* at 5. It is estimated that the interest burden for the government ranges from anywhere between 143.9 to 218.2 billion yen, or possibly from 131.8 to 202 billion yen, depending on the financial assumptions made to determine when full "repayment" of the delivery bonds will be satisfied. *See id*. at 9.

[91] *See id.* at 10 (the estimated collection completion time varies between fiscal year 2036 and 2051 in the four scenarios being considered). In addition to contributions from TEPCO and other nuclear operators, 1 to 1.6 trillion yen would be funded by the government and 0.5 to 6 trillion yen would be collected by selling the TEPCO stocks held by the government through the Corporation. *See* Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 68; THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 9.

[92] MAKOTO SAITO, Shinsai Fukkō no Seijikeizaigaku [POLITICAL ECONOMY OF RECOVERY FROM EARTHQUAKE] 36–37 (2015).

[93] *See* Ramseyer, *supra* note 45, at 458–59 ("Every century a massive (magnitude 8+) earthquake hits the Sanriku coast, and every century it brings a devastating (typically 20+ meters high) tsunami. Any seismologist knew this. Any Sanriku fisherman knew this. And blithely, Tokyo Electric placed ten nuclear reactors on the coast. Blithely—but rationally and not recklessly."). *See also* Part Ⅱ. B.

[94] *See supra* note 59 & 60 and accompanying text.

assistance from the government.[95] These scholars further proposed that the victims of the disaster should be aided through direct rescue funds from the government rather than being indirectly rescued through the TEPCO bailout.[96]

3. *Nationalization of TEPCO*

In July 2012, TEPCO was indirectly nationalized by the government via the Corporation, which assumed TEPCO's preferred shares for 1 trillion yen in total. The Corporation funded the money by borrowing from financial institutions and issuing bonds.[97] TEPCO issued two classes of preferred shares. The Corporation acquired 50.1% of TEPCO's voting rights by assuming 1.64 billion of its Class-A preferred shares, which were convertible to common shares and included voting rights, for the price of 200 yen per share. Moreover, the Corporation can acquire up to 75% of voting rights by assuming 0.34 billion of the Class-B preferred shares for the price of 2,000 yen per share, which do not include voting rights but are convertible to the Class-A preferred shares.[98] Importantly, TEPCO's existing shareholders again remained in the nationalization process although TEPCO was assumed to be insolvent if we take the large amount of compensation liability into consideration. These existing shareholders include large merchant banks, insurance companies, trust funds, and individual investors.[99] TEPCO stocks seem to have been thought of as stable and suitable for investment portfolio diversification for both institutional and individual investors until the disaster.[100]

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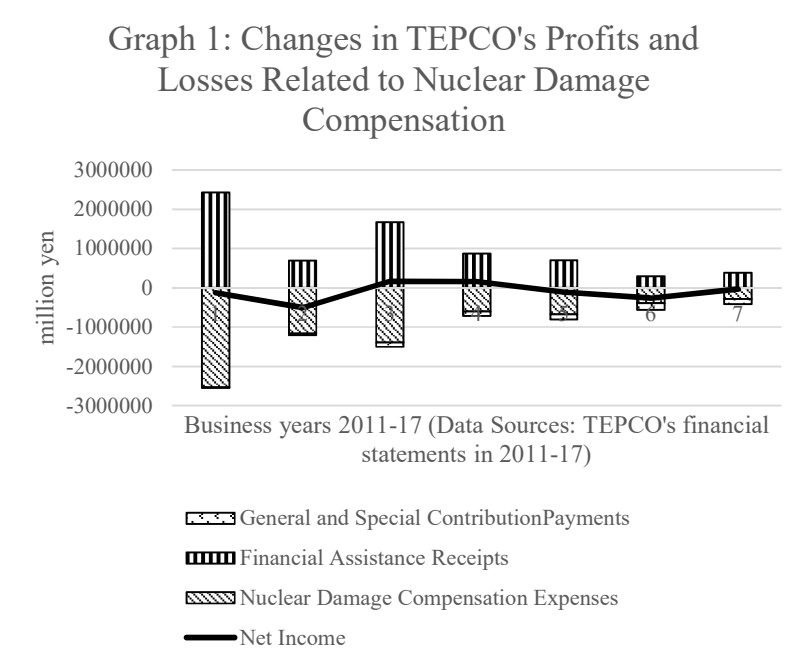
[95] Tanaka, *supra* note 79, at 160–61; Morita, *supra* note 51, at 34–35, 40.
[96] Tanaka, *supra* note 79, at 160; Morita, *supra* note 51, at 34.
[97] THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 5.
[98] *See* Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2012) [FINANCIAL STATEMENTS IN FISCAL YEAR 2012], 34–45 (2013) (describing the precise contents of the two types of preferred shares in detail).
[99] *See infra* Appendix, Table1-4.
[100] Morita, *supra* note 51, at 36.

4. *Changes in TEPCO's Profits and Losses under the NDCFCA Scheme*

Graph 1 shows the change in TEPCO's relevant profits and losses under the NDCFCA scheme during business years 2011–17 based on its annual financial statements.[101] The graph indicates the relevant profits and losses under the scheme, including nuclear damage compensation expenses, receipts of Financial Assistance from the Corporation, and the combined amount of both types of contribution payments to the Corporation. On TEPCO's financial statements, nuclear damage compensation expenses are classified as extraordinary losses, and Financial Assistance from the Corporation is classified as extraordinary income.[102] The contributions, however, are classified as expenses for nuclear power generation and are therefore recorded as operating expenses on the financial statements.[103]



[101] TEPCO's financial statements are *available at* http://www.tepco.co.jp/ir/tool/yuho/bk-j.html.
[102] *See, e.g.*, Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2017) [FINANCIAL STATEMENTS IN FISCAL YEAR 2017], 119 (2018).
[103] *See id.* at 121.

The characteristics of the profits and losses can be summarized as follows. First, the nuclear damage compensation expenses in each business year are approximately equal to the amount received as Financial Assistance. Thus, the amount of net losses is not so large despite the magnitude of the nuclear damage compensation expenses, which ranges from hundreds of billions of yen to more than 2 trillion yen each year. Second, we can predict that TEPCO will require decades to finish "repayment" if we deem the payments of contributions as repayments to loan proceeds.[104]

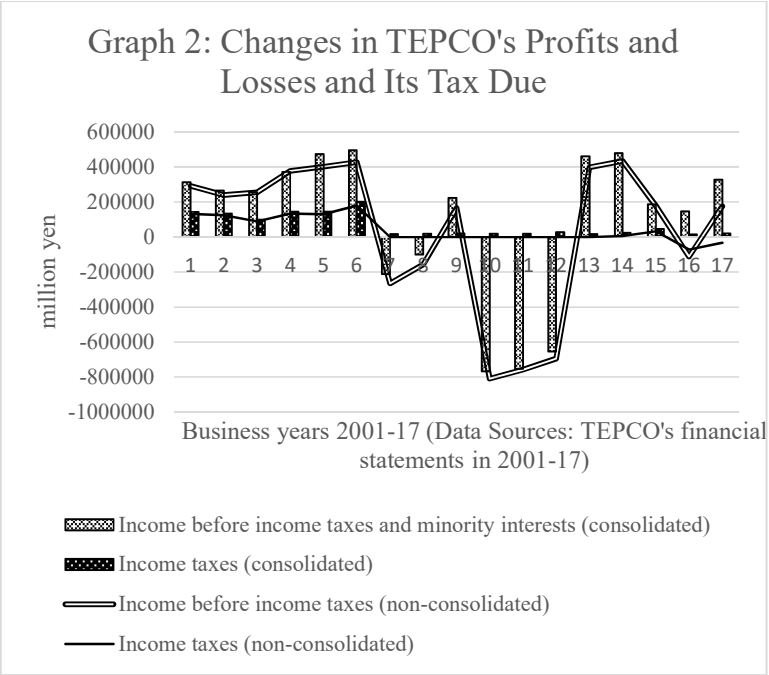
B. TAX TREATMENT UNDER THE SCHEME

In this section, we will discuss the problem of TEPCO's tax treatment under the bailout scheme. First, we will analyze the changes in TEPCO's before-tax net profits and losses based on its financial statements. Next, we will discuss a specific tax law issue. Then, we will analyze the conditions under which undesirable tax benefits accrue to TEPCO's shareholders.

1. *Changes in TEPCO's Before-tax Profits and Losses and its Tax Due*

Graph 2 indicates the changes in TEPCO's before-tax profits and losses and its total tax due in business years 2001–17. We summarize some trends and patterns reflected in this graph and relevant descriptions in TEPCO's financial statements, as follows.

[104] *See supra* note 91 and accompanying text.



First, TEPCO consistently earned stable profits before 2007 and consistently paid substantial amounts of taxes, including corporate income tax. Second, it made substantial net losses after the *Chuetsu-oki* earthquake in 2007 because it stopped operating the *Kashiwazaki* and *Kariwa* nuclear power plants and had to spend substantial amount on repairs.[105] Third, TEPCO again made substantial net losses in 2010 because it recorded massive disaster recovery expenses following the Great East Japan Earthquake, which occurred near the end of business year 2010. The financial statements in 2010 do not include nuclear damage compensation expenses because it was still difficult for TEPCO to reasonably estimate the total amount of these expenses.[106] Fourth, TEPCO continued to record sizable net losses in 2011–12, partly owing to nuclear damage compensation expenses. Expenses paid for nuclear

[105] Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2007) [FINANCIAL STATEMENTS IN FISCAL YEAR 2007], 12 (2008).

[106] Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2010) [FINANCIAL STATEMENTS IN FISCAL YEAR 2010], 22 (2011).

damage compensation were deductible as business expenses under Japan's corporate tax law.[107] Fifth, TEPCO has paid almost no taxes since 2007 because it had substantial net losses that were carried forward to offset taxable income in the following years.

2. *A Problem with the Tax Treatment*

The tax treatment of TEPCO after the Fukushima Dai-ichi nuclear disaster has an important problem. Specifically, it unintentionally allows TEPCO to circumvent the strict time limitation for the net loss carryforward.

The tax treatment of TEPCO under the bailout scheme broke horizontal equity between TEPCO and other corporations that make borrowing from an ex-post perspective. This treatment may also be undesirable for future bailouts from an ex-ante perspective if we think that discouraging excessive risk taking through tax law is justifiable.[108] Moreover, tax benefits are enjoyed by its remaining shareholders, who are assumed to have taken excessive risk. Under current Japanese corporate tax law, large corporations can deduct their net losses only for the following ten years, and the maximum deductible amount is limited to 50 percent of net income in each business year.[109] However, TEPCO can essentially deduct its tax losses without any time limitation by converting its net losses into

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[107] Hōjinzeihō [Corporation Tax Act], Law No. 34 of 1965, art. 22(3). The National Tax Agency of Japan interprets the compensation liability expenses that a corporate taxpayer incurs with respect to its business as deductible for corporate tax purposes. *See* Hōjinzei Kihon Tsūtatsu [Basic Interpretive Circulars of the Corporate Tax Act] 2-2-13. *See also* TAKAHASHI, *supra* note 51, at 215.

[108] Part II.C. For those who think the full refundability or indefinite carryforward of net losses as ideal, the tax treatment of TEPCO under the bailout scheme may be more desirable. However, if we take the existing law as given, the sudden tax benefits of its bailout scheme do not have desirable incentive effects ex-ante for TEPCO shareholders.

[109] Table 5 in the Appendix shows the precise figures of the deductible ratios and carryforward periods of net losses in force under the Corporation Tax Act between 2011 and 2018. The deductible amount and carryforward period depend on the year that the net losses accrued and the year that the net losses are used to shelter taxable income owing to several legislative modifications to these figures in recent tax reforms. *See also* Corporation Tax Act, *supra* note 107, art. 57(1).

deductible annual contributions payments, which can be considered as installment repayments of the loan proceeds.

Figure 2 shows the concrete mechanism for this process. Under the basic income tax treatment of borrowing, loan proceeds are not includible in gross income when they are received, and loan repayments are not deductible when they are made.[110] Thus, if TEPCO had financed its nuclear damage compensation expenses by borrowing, most of its substantial net losses that stem from the nuclear damage compensation expenses in 2011 and the following years would expire in nine or ten years without being utilized. This outcome would result because it is still difficult for TEPCO to make much net income to be sheltered considering its substantial yearly accruing compensation liabilities.

However, owing to the TEPCO bailout scheme, the granted Financial Assistance, unlike the receipts of loan proceeds, is immediately includible in gross income when it is received,[111] and this gross income can be offset by the deductible nuclear damage compensation expenses,[112] whose amounts are nearly equal to the grant amounts from the Corporation. Then, the deductible contribution payments, which, in substance, are "installment repayments" of the Financial Assistance, can shelter TEPCO's stable annual income from its electric utility operation in later years regardless of the net loss carryforward period. Considering that it takes 25–40 years[113] to finish the "installment repayment," such a tax treatment is beneficial for TEPCO and its shareholders. Accordingly, we can observe that the tax windfall gain accrues to the

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[110] MICHAEL J. GRAETZ ET AL., FEDERAL INCOME TAXATION: PRINCIPLES AND POLICIES (8TH ED.) 177–78 (2018); Yoshihiro Masui, Sozeihō Nyūmon (2d ed.) [INTRODUCTION TO TAX LAW] 124 (2018).

[111] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 69 para 2. This section slightly defers the timing of inclusion from the time when income is decided to be realized under the rule of Corporation Tax Act, article 22(4) to that when the actual receipt of Financial Assistance occurred to avoid a timing mismatch with deductions of nuclear damage compensation expenses. *See* TAKAHASHI, *supra* note 51, at 215–16.

[112] Nuclear Damage Compensation Facilitation Corporation Act, *supra* note 58, art. 69 para 1.

[113] *See supra* note 72 and accompanying text.

remaining shareholders,[114] although, presumably, legislators did not intend for such a consequence.

Figure 2: Conversion of Compensation into Deductible Contributions

	Cash outflow	Cash inflow	Cash outflow
Implicit loan	Compensation deductible	Financial Assistance includible	Contributions deductible ⇒No expiration
Explicit loan	Compensation deductible ⇒ expiration	Loan Non-includible	Repayment Non-deductible

3. *Conditions for Tax Benefits*

We further delve into the question regarding the conditions under which the tax benefits accrue to the remaining shareholders. First, existing shareholders can enjoy the tax benefits only by remaining in TEPCO till the market reflects the value of the tax benefits because a corporation cannot directly distribute its losses to its shareholders, in contrast to its profits,[115] and the tax benefits are legally bestowed to TEPCO rather than the shareholders. Relatedly,

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[114] If TEPCO had entered into bankruptcy, it would have been able to utilize net losses entirely to shelter the COD income. *See* Corporation Tax Act, *supra* note 107, art. 59. Also, on investors' side, corporate shareholders can deduct the unrecognized losses of the trading securities by revaluation of their investment when the market value of the securities significantly declined. *See* Corporation Tax Act, *supra* note 107, art. 33(2), Hōjinzeihō Sekōrei [Cabinet Order for Enforcement of Corporate Tax Act] art. 68(1), para. 2. As for individual investors, they cannot deduct their losses in listed stocks by revaluation unless the issuer company goes into bankruptcy. *See* Sozei Tokubetsu Sochi Hō [Special Taxation Measures Act], art. 37-11-2(1), para. 2; Sozei Tokubetsu Sochi Hō Sekōrei [Cabinet Order for Enforcement of Special Taxation Measures Act] art. 25-9-2(3), para. 1.
However, it is not appropriate to compare TEPCO with bankrupt corporation because TEPCO did not enter into bankruptcy and TEPCO's shareholders are remaining in the corporation owing to the bailout scheme.

[115] Tadao Okamra, Hōjinkazei no Imi [*The Meaning of Corporate Tax*], *in* Atarashii Hōjinzeihō [CORPORATE TAXATION: FACING THE FUTURE], 1, 11–12 (Tadao Okamura ed., 2008).

the nationalization of TEPCO[116] reduces the amount of tax benefits to existing shareholders to the extent that the government indirectly recaptures these benefits through its shareholding via the Corporation.[117] Once the value of the tax benefits is reflected in the share price, existing shareholders can economically enjoy the tax benefits by selling their stocks at a higher price than they would have received without such tax benefits.[118] Accordingly, existing shareholders must wait until TEPCO's share price reflects the favorable tax treatment scheme, which presumably occurred in June 2011, when the draft of NDCFCA was discussed and its adoption was likely.[119]

Second, it is clear that the peculiar legal structure of the Financial Assistance and related contribution payments allowed circumvention of the strict limitation of the net loss carryforward period. Compensation liability for the disaster damage accrued in the relatively early years, and the electric power business can earn stable profits owing to its business model in later years once the nuclear disaster compensation has been fully paid.

Unfortunately, these conditions were satisfied by the TEPCO bailout scheme. Because TEPCO did not enter bankruptcy, existing shareholders were not wiped out from the corporation through a bankruptcy proceeding. Moreover, the government's quick action to rescue TEPCO discouraged existing shareholders from disposing of their devalued TEPCO stocks before the announcement of the NDCFCA legislation. Furthermore, TEPCO succeeded in

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[116] Part III.A.3.

[117] *See supra* note 91. In the bailout of General Motors (GM), the US treasury disguised the true cost of the bailout through holding the GM shares and giving illegal tax breaks. *See* J. Mark Ramseyer & Eric B. Rasmusen, *Can the Treasury Exempt Its Own Companies from Tax? The $45 Billion GM NOL Carryforward*, 1 CATO PAPERS ON PUB. POL'Y 1, 7–9 (2011).

[118] If investors sell their investment in listed stocks, they can deduct the basis of their stocks. *See* Corporation Tax Act, *supra* note 107, art. 22(3) (for corporate shareholders); Special Taxation Measures Act, *supra* note 114, art. 37–11 (for individual shareholders who invest in listed stocks). Individual investors cannot deduct the basis of their investment in unlisted securities because of the narrow wording of Shotokuzeihō [Income Tax Act]. *See* Shotokuzeihō [Income Tax Act], Law No. 33 of 1965, art. 51.

[119] *See* Morita, *supra* note 51, at 33.

circumventing the time limitation of the net loss carryforward owing to the peculiar legal structure of the bailout scheme.

If the market predicts that similar bailout schemes would continue to be applied for future disasters,[120] corporations and shareholders that are likely to be bailed out upon their failure are not discouraged from taking excessive risk ex-ante by the time limitation of the net loss carryforward. Thus, certain corporations can enjoy ex-ante bailout subsidy that ordinary corporations cannot.

C. POSSIBLE SOLUTIONS AND THEIR LIMITS

In this section, we consider possible solutions to remedy these problems and their limits. First, we roughly simulate the results of an alternative tax treatment without worrying about the possible constitutionality concerns associated with retroactive legislation. Next, we consider a possible solution that does not rely on retroactive legislation to avoid constitutionality questions.[121] The solutions in this section are mainly proposed from an ex-post perspective rather than an ex-ante perspective[122] because what is done cannot be undone.

1. *A Possible Solution with Retroactive Effects*

One possible solution is to treat the Financial Assistance and contribution payments as loans and repayments. We can roughly estimate the magnitude of the tax benefits by comparing TEPCO's financial statements to those under the proposed solution.[123]

According to this solution, TEPCO's tax burden would be zero while substantial nuclear damage compensation expenses accrue because the expenses are still deductible, leading to sizable net

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[120] In practice, NDCFCA was legislated in the form that is applicable to future nuclear accidents.

[121] *See* HIROSHI KANEKO, RULE OF LAW AND JAPANESE TAX LAW 14–20 (2016).

[122] Nevertheless, this solution can have ex-ante effects for future bailouts.

[123] A simulation using financial statements has limits because the purpose of financial statements differs from that of tax accounting, which is not open to the public. However, we believe that it is helpful to provide a concrete image of the results of the proposed solution.

losses.[124] This scenario may seem more favorable for TEPCO than the treatment under NDCFCA do because Financial Assistance receipts and compensation liability payments are treated asymmetrically. However, it is not as favorable as it appears because the net losses go away without sheltering taxable income owing to the time limitation of the carryforward. For instance, net losses in 2011 would expire in 2020, when TEPCO would still have difficulty in earning a large net income to be sheltered using the carryforward of net losses.

Thus, this solution is not very different from the treatment under the current law where the compensation liability is sufficient to shelter taxable income. One important difference is TEPCO could circumvent the limitation on the annual deductible amount of net losses since 2012[125] because it would not need to utilize net losses to shelter taxable income. However, once the compensation ended, TEPCO would no longer have compensation liability expenses to shelter taxable income, and the net loss carryforward period may have already expired. Accordingly, this solution would increase rather than decrease TEPCO's tax burden in the long run.

In addition, the results for TEPCO may be harsh if we consider the treatment of *de facto* exemptions. For example, TEPCO's total payment of both types of contributions is estimated to be only 3.4–6.1 trillion yen,[126] which is far less than the total Financial Assistance receipts.[127] This is because *de facto* exemption exists under the current TEPCO bailout scheme. Under the scheme, the *de facto* exempted amount is includible in gross income when TEPCO receives Financial Assistance funds.[128] For example, consider a

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[124] The estimate of the corporate income tax burden was calculated based on numbers in TEPCO's financial statements by 1) subtracting the amount of Financial Assistance from and adding the amount of the contributions to the net income before tax (non-consolidated) in each year and then 2) multiplying by the applicable effective corporate tax rate (ECTR) (the multiplier is zero when the net income is less than zero). *See infra* Appendix, Table 6.

[125] *See supra* note 109 and accompanying text.

[126] *See supra* note 89 and accompanying text.

[127] *See supra* note 78 and accompanying text.

[128] *See supra* note 111 and accompanying text.

corporation that makes losses and has 5,000 in tort liability but only 1,000 of income with no other property in *Year 1*. The corporation borrows 4,000 to compensate for the difference, and 4,000 in net losses are carried forward to the next year. The corporation is insolvent, and if 4,000 of debt are exempted in *Year 2*, a COD income of 4,000 accrues to the corporation and is offset by 4,000 of carried forward net losses from *Year 1*. If the corporation instead receives 4,000 as a grant in *Year 1*, then the grant is used to repay the tort liability, and the corporation is still solvent. For tax purposes, the 4,000 in grant is includible in gross income in *Year 1*, and the income is offset by 4,000 of the compensation liability expenses. The inclusion of the 4,000 of the receipts functions as the front-loaded substitutive inclusion of COD income in *Year 1*.

TEPCO's current tax treatment is similar to the latter case in the above example, and TEPCO keeps receiving *de facto* exemptions in the legal form of grants. Thus, we need to consider when the *de facto* exempted amount should be included in gross income for tax purposes instead of simply including it in the years of the Financial Assistance fund receipts.[129] One possibility is to focus on the amount of General Contribution paid by other nuclear operators and the funds from the government based on article 68 of NDCFCA[130] because these funds are paid by the relevant third parties instead of TEPCO.[131] If TEPCO includes these payments in gross income as COD income substitutes instead of including them in the years when it receives Financial Assistance funds, the result may be harsh for TEPCO because it may no longer be able to offset the included COD income substitute with the compensation liability expenses owing to the expiration of the net loss carryforward period.[132] Nevertheless,

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[129] Part III.A.4.
[130] *See infra* Appendix, Table 7.
[131] *See supra* note 68 & 75 and accompanying text. Interest on the loan proceeds and other miscellaneous contributions from the government are omitted here for simplicity.
[132] *See supra* note 91 and accompanying text.

this tax burden may be justified as a recapture mechanism for the bailout funds from the government.[133]

2. *A Possible Solution without Retroactive Effects*

We can treat the Financial Assistance receipts and contribution payments as receipts of loan proceeds and their repayments without retroactive effects.[134] This treatment is harsher for TEPCO than the retroactive legislation is in one aspect and is more lenient in another. As for the loan proceeds part, while most of the Financial Assistance funds (7 out of the 7.9 trillion yen) have already been included in gross income, TEPCO must pay substantial contributions (2.4–5.4 out of 3.4–6.1 trillion yen) in the future.[135] Thus, the amount of income newly made non-includible by such legislation is less than the amount of expenses newly made non-deductible, such legislation is therefore harsher for TEPCO in this aspect. As for the *de facto* exemption part, however, TEPCO has already sheltered the COD income substitute using expenses for past nuclear damage compensation. Considering the magnitude of the Financial Assistance funds and past expenses for the nuclear damage compensation, this legislation will be more favorable for TEPCO than the retroactive legislation would be.

The problem with this solution is that over- and under-reach are both inevitable. Even if such a law were to be enacted, on the one hand, it would not be able to impact the old shareholders who have already sold their shares at a higher price, reflecting the value of the tax benefits. On the other hand, shareholders who bought TEPCO shares at a higher price after the bailout would be economically

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[133] The bailout funds from the government that will not be repaid are the interest amounts for the delivery bonds (143.9–218.2 or 131.8–202 billion yen) and the granted funds based on article 68 of NDCFCA (1–1.6 trillion yen). *See supra* note 90 & 91 and accompanying text.

[134] However, it may be legally difficult to deny the deductibility of the General Contribution payments because not only TEPCO, but also other nuclear operators are paying it. If we find it difficult to deny the deductibility of the General Contribution payments, we can maintain the discussion below by limiting its scope to the Special Contribution payments.

[135] I calculated the numbers based on TEPCO's financial statements in 2010–17.

disadvantaged by such new legislation. Thus, this solution has limits because of its focus on the corporate rather than the shareholder level.

Nevertheless, this solution can partly restore equality among corporate borrowers. If preventing TEPCO from insolvency is the only reason for the odd legal structure, there is room to deviate from its legal form for tax purposes not by interpretation but by legislation.[136]

IV. CONCLUSION

The relationship between tax losses and limited liability has received little academic attention for a long time. Although it is still a plausible option to maintain a policy of tax neutrality on risk taking even when it is excessive and alternative non-tax measures is necessary to make shareholders internalize risks, this study suggests the possibility that the government stops being a silent partner of taxpayers whose risk taking is excessive, as the Fukushima Dai-ichi nuclear disaster revealed that such non-tax measures, such as insurance[137] and regulation,[138] are far from sufficient.

In addition, this study explores the relationship by analyzing the TEPCO bailout after the nuclear disaster. The study finds that the financing scheme for the bailout that does not take the tax effect into account allows TEPCO to circumvent the strict time limitation of the tax loss carryforward period. These tax benefits are exploited by TEPCO's remaining shareholders, who have presumably taken excessive risk. Also, this treatment, if predictable in the market, can have a potential ex-ante effect of subsidizing corporations that are

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[136] Someone may argue that without the tax benefits, the government, in any case, may be required to give additional funds to TEPCO. However, such a justification of allowing the tax benefits is not convincing because unintended tax preference is not salient to people, therefore, it is inferior as a bailout device to other direct bailout methods, which are politically more accountable to the people. *See supra* note 63.

[137] *See* Part III. A. 1.

[138] Kiyoshi Kurokawa & Andrea Ryoko Ninomiya, *Examining Regulatory Capture: Looking Back at the Fukushima Nuclear Power Plant Disaster, Seven Years Later*, 13 U. PA. ASIAN L. REV. 47, 51–54 (2018) (arguing that the regulatory system has been dysfunctional in Japan).

likely to be bailed out in their crises. These problems could be partially solved by legislation that treats the Financial Assistance receipts and contribution payments as loans and repayments.

Although the problems discussed in this study may be unique to the TEPCO bailout scheme, we believe that similar situations may occur again somewhere in the world when excessive risk taking results in failure and a bailout follows.

APPENDIX

Table 1: TEPCO's Large Shareholders as of March 31, 2010

(Data Sources: Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2009) [FINANCIAL STATEMENTS IN FISCAL YEAR 2009], 34 (2010))

Name of Shareholder	Ratio to the Aggregate Issued Shares （%）	Number of Holding Shares (thousands)
Japan Trustee Service Trust Bank (trust account)	4.47	60,489
Dai-ichi Life Insurance	4.07	55,001
Nippon Life Insurance	3.9	52,800
The Master Trust Bank of Japan	3.81	51,557
Government of Tokyo Metropolitan	3.15	42,676
Sumitomo Mitsui Banking Corporation	2.66	35,927
Mizuho Corporate Bank	1.76	23,791
TEPCO Employees Shareholding Association	1.52	20,620
Japan Trustee Services Bank (Trust Account No. 4)	1.03	13,925
MUFG Bank	0.98	13,239
Total	27.35	370,029

Table 2: TEPCO's Large Shareholders as of March 31, 2012

(Data Sources: Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2011) [FINANCIAL STATEMENTS IN FISCAL YEAR 2011], 36 (2012))

Name of Shareholder	Ratio to the Aggregate Issued Shares (%)	Number of Holding Shares (thousands)
Government of Tokyo Metropolitan	2.66	42,676
the TEPCO Employees Shareholding Association	2.39	38,398
Sumitomo Mitsui Banking Corporation	2.24	35,927
Dai-ichi Life Insurance	2.22	35,600
Nippon Life Insurance	2.19	35,200
The Master Trust Bank of Japan	1.85	29,802
Japan Trustee Services Bank (Trust account)	1.73	27,770
Mizuho Corporate Bank	1.48	23,791
SSBT OD05 Omnibus Account-Treaty Clients	1.12	17,935
State Street Bank West Client-Treaty	0.78	12,458
Total	18.64	299,561

Table 3: TEPCO's Large Shareholders as of March 31, 2013

(Data Sources: Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2012) [FINANCIAL STATEMENTS IN FISCAL YEAR 2012], 49 (2013))

Name of Shareholder	Ratio to the Aggregate Issued Shares (%)	Number of Holding Shares (thousands)
Nuclear Damage Compensation Facilitation Corporation	54.69	1,940,000
The TEPCO Employees Shareholding Association	1.4	49,670
Government of Tokyo Metropolitan	1.2	42,676
Sumitomo Mitsui Banking Corporation	1.01	35,927
The Master Trust Bank of Japan	0.94	33,184
Nippon Life Insurance	0.74	26,400
Mizuho Corporate Bank	0.67	23,791
Japan Trustee Services Bank (Trust account)	0.64	22,667
SSBT OD05 Omnibus Account-Treaty Clients	0.44	15,657
Japan Trustee Services Bank (Trust account No.1)	0.43	15,182
Total	62.17	2,205,157

Table 4: TEPCO's Large Shareholders as of March 31, 2018

(Data Sources: Tokyo Denryoku Kabushiki Gaisha [TOKYO ELECTRIC POWER COMPANY HOLDINGS, INC], Yūka Shōken Houkokusho (FY 2017) [FINANCIAL STATEMENTS IN FISCAL YEAR 2017], 46 (2018))

Name of Shareholder	Ratio to the Aggregate Issued Shares (%)	Number of Holding Shares (thousands)
Nuclear Damage Compensation and Decommissioning Facilitation Corporation	54.74	1,940,000
The Master Trust Bank of Japan (Trust Account)	1.74	61,566
The TEPCO Group Employees Share Holding Association	1.44	51,155
Government of Tokyo Metropolitan	1.20	42,676
Japan Trustee Services Bank (Trust account)	1.20	42,543
Japan Trustee Services Bank (Trust account No.9)	1.04	36,823
Sumitomo Mitsui Banking Corporation	1.01	35,927
Japan Trustee Services Bank (Trust account No.5)	0.86	30,506
State Street Bank West Client-Treaty	0.78	27,616
Nippon Life Insurance	0.74	26,400
Total	64.77	2,295,215

Table 5: Deductible Ratio and Carryforward Period

(Date Sources: Hōjinzeihō [Corporation Tax Act], Law No. 34 of 1965, art. 57, *amended by* Law, No. 114 of 2011, Law, No. 9 of 2015, Law, No. 15 of 2016)

First day of the business year	Ratio of deductible amount to net income amount (%)
Before April 1, 2012	100
April 1, 2012–March 31, 2015	80
April 1, 2015–March 31, 2016	65
April 1, 2016–March 31, 2017	60
April 1, 2017–March 31, 2018	55
After March 31, 2018	50

First day of the business year when net losses accrued	Carryforward period (yrs)
Before April 1, 2001	5
April 1, 2001– March 31, 2008	7
April 1, 2008–March 31, 2018	9
After March 31, 2018	10

Table 6: Estimated Corporate Income Tax Burden in the Solution with Retroactive Effects[139]

(Data Sources: TEPCO's financial statements in 2011–17)

Business Year	2011	2012	2013	2014
ECTR	39.54%	37.00%	37.00%	34.62%
Net income before tax (non-consolidated) (million yen)	-3,156,324	-1,352,305	-1,160,055	-317,548
Income tax (million yen)	0	0	0	0
Business Year	2015	2016	2017	
ECTR	34.62%	29.97%	29.97%	
Net income before tax (non-consolidated) (million yen)	-396,636	-239,232	-81,063	
Income tax (million yen)	0	0	0	

[139] *See supra* note 124 and accompanying text.

Table 7: Third Parties' Burdens under the NDCFCA Scheme

(Data Sources: THE BOARD OF AUDIT OF JAPAN, *supra* note 60, at 5)

Year	2011	2012	2013	2014
General Contribution from other nuclear operators (million yen)	53,100	61,900	106,200	106,200
Art. 68 funds (million yen)	-	-	-	35,000
Year	2015	2016	2017	
General Contribution from other nuclear operators (million yen)	106,200	106,200	106,200	
Art. 68 funds (million yen)	35,000	35,000	47,000	