# Efficient Compensation
## Lessons from Civil Liability

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*Document Version*
Accepted author manuscript

*Published in:*
Journal of Institutional and Theoretical Economics

*DOI:*
10.1628/093245616X14743741664917

*Publication date:*
2017

*License*
Unspecified

*Citation for published version (APA):*
Lando, H. (2017). Efficient Compensation: Lessons from Civil Liability. *Journal of Institutional and Theoretical Economics*, *173*(1), 77-83. https://doi.org/10.1628/093245616X14743741664917

# Efficient Compensation: Lessons from Civil Liability - Comment

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Journal article (Post print version)

**CITE:** Efficient Compensation: Lessons from Civil Liability - Comment. / Lando, Henrik. In: Journal of Institutional and Theoretical Economics, Vol. 173, No. 1, 2017, p. 77-83.

DOI: 10.1628/093245616X14743741664917

# COMMENTS TO URS SCHWEIZER: EFFICIENT COMPENSATION: LESSONS FROM CIVIL LIABILITY

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## 1. Introduction

In prior work (e.g. [4]) Schweizer has conceptualized civil remedies as obligation-based, balanced transfer schemes. In short, private law imposes obligations on parties, and a party is required to compensate others if the party deviates from his or her obligation in a way that causes the others to suffer a loss. Symmetrically, in Schweizer's formulation, a party may require compensation from others if the party goes beyond his or her obligation and thereby benefits others. Schweizer analyzes under which conditions obligation-based transfer schemes are able to reconcile the aim of compensating parties for their losses and providing optimal incentives. If proper compensation entails optimal incentives, the legal approach that emphasises ex-post compensation may not conflict with the economic approach that emphasises ex-ante incentives. One central result is that when transfers (compensation) follow the difference hypothesis (akin to but not confined to expectation damages), and obligations are efficient, the Nash-equilibrium becomes equal (or pay-off equivalent) to the efficient outcome.

In the paper discussed here [5], Schweizer applies his model to the sphere of public law, to eminent domain, and analyzes both the case of a benevolent and of a Government suffering from fiscal illusion. Is it the case, he implicitly asks, that the congruence between the goals of compensation and incentives found in the private domaine, carries over to takings such that the compensation schemes which ensure both compensation and optimal incentives can be applied also to eminent domain?

My discussion focuses on two issues. *The first* concerns the application of the model of private remedies to public law. One might be led to believe that the transfer schemes, which induce efficiency in a civil setting, would for the same reason induce efficiency in the context of takings, although Schweizer does not claim this. What Schweizer does claim (in section 7) is that what he denotes the unilaterally compensatory scheme achieves efficient incentives when the Government is benevolent. This leaves somewhat open the question of the applicability of the (other) obligation-based compensation principles to takings. On this point, I shall argue that the schemes which work in the private may not work in the public sphere, because *a benevolent Government's incentives are not affected by transfers* at least not when utilities are quasi-linear. I shall use an example to demonstrate this.

I would like to thank Daniel Klerman and Urs Schweizer for very valuable comments to a first draft of my comments.

I shall also briefly comment on the unilaterally compensatory transfer scheme, which does work by making the private owner of land the residual claimant. When the Government is benevolent, it will act in a socially optimal manner and so all it takes for efficiency is to ensure that the private individual is the residual claimant. I ask (and answer in the affirmative) whether it is possible to design this scheme such that it ensures not only efficient incentives but also reasonable compensation.

*My second issue* goes beyond the paper under discussion by raising a point concerning Schweizer's formalisation of the difference hypothesis. In the formalisation, compensations are often based on hypothetical rather than actual losses, which seems at odds with legal practice. I ask whether it is possible to devise transfers that are tied to actually occurred losses (or enrichments), and that both compensate and yield efficiency.

## 2. On the application of the difference hypothesis in the context of takings

As illustration of the difficulty of applying Schweizer's formalisation of the difference hypothesis to takings, consider the following example of three parties, $A$ (he), $nA$ (they), and $G$, where $A$ is a private owner of land, $nA$ may be thought of as all other members of society than $A$ (as non-A), and $G$ is a benevolent Government. Actor $A$ may ($x = 5$) or may not ($x = 0$) invest in his property, and subsequently $G$ may ($q = 1$) or may not ($q = 0$) take the property, i.e. make it available to $nA$. $G$'s objective is to maximise the sum of $A$'s and $nA$'s quasi-linear utility-functions. If $A$ owns the land, he derives no utility if he does not invest in it (it then becomes valueless). If $A$ invests 5 to improve the land, the value of the land to $A$ is 41 if not taken, such that the net welfare is 36 if $A$ keeps the land. If G takes the land, G puts it at the disposal of the rest of society, $nA$, who value it at 39 whether or not $A$ has invested in it.

The game is sequential: $A$ first chooses whether or not to invest, then $G$ chooses whether or not to take. The matrix shows the pay-offs to $A$, $nA$ and $G$ expressed in monetary terms, when there is no compensation in the case of a taking. Since the game is sequential, the normal form representation should ideally show each possible strategy on the part of $G$; a strategy involves a choice for each of $A$'s choices. However, the exposition is here simplified by not considering the sequential nature of the game when presenting it in the normal form.

| $U_A(x,q), U_{nA}(x,q), U_G(x,q)($ | $q = 1$ | $q = 0$ |
|---|---|---|
| $x = 5$ | $-5, 39, 34$ | $36, 0, 36$ |
| $x = 0$ | $0, 39, 39$ | $0, 0, 0$ |

Table 1. Pay-offs to the three parties when no compensation

Note that total welfare $W(x,q) = U_A(x,q) + U_{nA}(x,q) = U_G(x,q)$, and that the optimal outcome is $(x,q) = (0,5)$, i.e. for $A$ not to invest and for $G$ to take. This yields total welfare $U_G(0,1) = U_A(0,1) + U_{nA}(0,1) = 39$. However, since the optimal response functions are $q^w(5) = 0$ and $q^w(0) = 1$, which will be the response function of $G$ since G is benevolent, A will invest in order to prevent G from taking. The subgame-perfect equilibrium of

the sequential game is hence inoptimal when no compensation is paid. This potential inoptimality is well-known from the literature (Blume et al [1]). The question is which compensation schemes, if any, can alleviate the inefficiency.

One could imagine that if G compensates A for taking the land, A would act in socially efficient manner by not investing, but in the example, the compensation would be zero for the land is worthless without investment which means that G does not impose a loss on A by taking it. This raises the question of whether the schemes, which Schweizer demonstrates to be efficient in the context of civil law, might work. Schweizer introduces obligation-based transfer schemes that lets A and G (i.e. A and B through the Government budget) transfer money to each other in each state. In the civil context, the scheme works even if one of the parties' obligation is inefficient (as it may well be in some situations when the world is stochastic but the obligation is not). When the obligation is for G not to take and for A not to invest, such that only G's obligation is inefficient, according to Schweizer's scheme presented in equation (8) on page 8 (?), G must pay 0 to A if G does not adhere to the obligation whether or not A invests; (this is a special feature of the transfer scheme when G's obligation is to not choose the efficient strategy), while A must compensate G 5 when A invests and G takes (since the loss to G is then 5 from A's choice). Finally, G must compensate A by 36 when A invests and G does not take (since G's gain is then 36). Such transfers lead to the following game, recalling that transfers are in effect not to and from G but to and from B:

| $U_A(x,q), U_{nA}(x,q), U_G(x,q)($ | $q=1$ | $q=0$ |
|---|---|---|
| $x=5$ | $-10, 44, 34$ | $72, -36, 36$ |
| $x=0$ | $0, 39, 39$ | $0, 0, 0$ |

TABLE 2. Pay-offs to the three parties with compensation

In this game the sequential equilibrium is still inefficient, as A will invest and G will not take.

If, on the other hand, transfers are calculated based on B's pay-offs, the game with transfers does not change from the original one, so the equilibrium is also then inefficient.

The problem appears to be that transfers do not play the normal role when G is benevolent, because G's utility is then not affected by transfers. For example, G's utility remains 36 even when B must transfer 36 to A for choosing to invest. This means that the transfers may not be compensatory relative to the efficient state. Hence, the principle of applying transfers that are compensatory relative to the efficient strategies (when one party faces an inefficient obligation) may not be feasible when G is benevolent. (It should be noted, however, that the scheme provides optimal incentives (but if not modified, no compensation) if obligations are equal to the efficient strategy profile).

As mentioned, Schweizer instead suggests a scheme which is unilaterally compensatory relative to efficient investments. This lets $A$ compensate $nA$ (the rest of society) when A deviates from the optimal strategy (by not investing). A must compensate $nA$ such that $nA$ is as well off as $nA$ might be if A chose the efficient act (not to invest). Schweizer mentions

that this leads to optimal incentives but makes no mention of reasonable compensation. However, it does actually seem possible to devise a transfer scheme that compensates A for takings in a fair manner while maintaining optimal incentives. The reason is that as long as A is the residual claimant, the level of pay-off to the rest of society ($nA$)does not matter for efficiency, and so a compensation that is reasonable from A's viewpoint can be found. Consider e.g. the possibility of allowing $nA$ a pay-off of 0, as would be the result if A were allowed to keep his land. Pay-offs would then be:

| $U_A(x,q), U_{nA}(x,q), U_G(x,q)($ | $q=1$ | $q=0$ |
|---|---|---|
| $x=5$ | $34,0,34$ | $36,0,36$ |
| $x=0$ | $39,0,39$ | $0,0,0$ |

TABLE 3. Pay-offs to the three parties under the unilaterally compensatory scheme

In this scheme, A is compensated by 39 if his land is taken. Society simply disgorges all its gains, making A the residual income earner. See also Hermalin [3] on this scheme of making the land-owner the residual claimant. Under this scheme, it is as if A compensates society when A chooses to invest inefficiently, because society benefits less when A acts inefficiently. Note also that society's constant pay-off can be set at any level, reflecting notions of fair distribution of the gains from a taking.
My conclusion is that while transfer schemes that are effective among private parties may not work in the case of takings, there seems to exist a simple solution for the case of a benevolent Government which combines efficiency and just compensation. This solution may not, however, reflect legal practice.

## 3. On hypothetical versus actual losses

There are in my view two main discrepancies between Schweizer's transfers, as applied in the civil sphere, and legal reality. One is that restitution in the case of enrichment seems much rarer in reality than in the model. This issue is discussed e.g. by Dari-Mattiacci [2]. Another discrepancy arises when both parties deviate from their obligations in which case the transfers are based on outcomes in hypothetical states rather than on the parties' actual losses in the given state as compared with the efficient state. This can be illustrated in a simple prisoner's dilemma between two private individuals, who may both exercise either high (H) or low (L) effort.

| Utilities | H | L |
|---|---|---|
| L | (2,-10) | (0,0) |
| H | (1,1) | (-1, 2) |

TABLE 4. Pay-offs to the two parties in the free-rider game

When the obligation is (H,H), Schweizer's obligation-based transfers lead to the game in

table 5: The question is why the first player should pay 9 to the other when both suffer

| Utilities | H | L |
|---|---|---|
| L | (-9,1) | (-9,9) |
| H | (1,1) | (1,0) |

TABLE 5. Pay-offs to the two parties in the free-rider game with transfers

equally from the other party's low effort. What loss of 9 justifies this payment? The compensation is based on losses in two hypothetical states, not on any actual loss. But could compensations be based on actual losses and still lead to optimal incentives? This question cannot be fully dealt with here, of course, but let me suggest an alternative transfer scheme, similar in spirit to the unilaterally compensatory scheme mentioned above: If, in any given state, there is a winner and a loser compared with the efficient state, the winner should compensate the loser such that the loser is made as well off as in the efficient state. If there is no winner relative to the efficient state, there should be no compensation, as would be the case in (L,L) in the example. Mathematically, if the first player chooses a strategy $x$ and the second a strategy $y$, such a transfer scheme would be the following: Let $(x^*, y^*)$ be the efficient strategy profile. If $U_A(x, y) \geq U_A(x^*, y^*)$ then $D_{AB} = U_B(x^*, y^*) - U_B(x, y)$. If $U_B(x, y) \geq U_B(x^*, y^*)$ then $D_{BA} = U_A(x^*, y^*) - U_A(x, y)$ where $D_{AB}$ is the payment from A to B and $D_{BA}$ is the payment from B to A. The only difference to Schweizer's scheme occurs when both parties deviate from the equilibrium in which case the compensation seems more in line with legal reality, since it is based on the actual loss compared with what would occur if both parties lived up to their obligations. The suggested transfers would replicate *Coasian transfers* in the sense that the compensations represent the amounts it would take to convince the losing party to move away from the efficient state. This is not the case in Schweizer's scheme as can be seen from table 5. I mention Coasian transfers because I would suggest that the congruence between the goals of compensation and incentives may be viewed, not only in light of internalisation, but also in light of the existence of Coasian transfers which, by allowing parties to be compensated for acting efficiently, induce both compensation and optimal behaviour. Moreover, with the suggested transfers, it would be a (weakly) dominant strategy for each player to play the efficient strategy as there would be full internalisation of costs to deviating from the efficient strategy when such internalisation is needed (when the deviator gains).

## 4. SUMMARY AND FINAL COMMENTS

I have focused on Schweizer's general model of remedies as obligation-based, balanced transfers. I suggested that it is difficult to apply it to the case of takings when the Government is benevolent. Instead, Schweizer's scheme adapted to that setting, that of unilateral compensation relative to the efficient strategies, does ensure optimal incentives, as claimed by Schweizr. I argued that it may also be devised such that it leads to a socially desirable level of compensation to A.

I then raised a general issue, relating more to Schweizer's general approach to remedies than to the context of takings, concerning the realism of the obligation-based transfer schemes that are compensatory relative to the efficient strategies. The transfers suggested by Schweizer are sometimes based on hypothetical losses, not on the pay-offs in the state compared with the pay-offs in the efficient (legally required) state. This may not be realistic as Schweizer is well aware: he mentions the same issue with regards to Wittman's [6] scheme of compensating for marginal loss in the case of sequential choice. I tentatively suggested that it may, however, be possible to construct transfer schemes for which compensation equals the actual loss compared with the efficient state and which create optimal incentives.

Let me end by stressing that my comments concerning the realism of some of the transfer schemes should not be interpreted as criticism. The very significant contribution of Schweizer's work on remedies is, in my view, that it takes the analysis to a higher level of abstraction, which in itself provides a new tool for thinking about remedies. At this level of abstraction, it is of course inevitable that the proposed schemes (including of course the one that I mention above) will in some way appear unrealistic. In any given context, the schemes may have to be adjusted to account for specific factors present in that context. The point is that such analysis has become possible due to Schweizer's conceptualisation of remedies. For instance, Schweizer's analysis may well prove valuable for contracting parties who are free to establish their own obligation-based transfer schemes that both compensate and yield optimal incentives.

Moreover, Schweizer's analysis of transfer schemes can be used to explain why certain remedies cannot be expected to yield efficiency and what changes it would take for them to ensure both efficiency and compensation.

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