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# **A Consumer Surplus Defense in Merger Control**

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## Abstract

A government wanting to promote an efficient allocation of resources as measured by the total surplus, should strategically delegate to its competition authority a welfare standard with a bias in favour of consumers. A consumer bias means that some welfare increasing mergers will be blocked. This is optimal, if the relevant alternative to the merger is another change in market structure that will even further increase the total surplus. Furthermore, a consumer bias is shown to enhance welfare even though it blocks some welfare increasing mergers when the relevant alternative is the status quo.

Key Words: merger control; competition policy; consumer surplus.

JEL classification: L11; L13; L41.

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# 1 Introduction

The main task of Merger Control is to evaluate mergers in light of their welfare effects on different interest groups and to take a decision based on this evaluation. This task requires that the Merger Control system specifies the interest groups - consumers, shareholders, workers, competitors, suppliers and so on - to be included in the evaluation. In case of conflicting interests, the Merger Control system must also trade-off the different groups' interests against each other. The purpose of so-called welfare standards is to clarify how these trade-offs are made by explicitly stating which interests groups ought to be included in the evaluation and by assigning specific weights to each group.

The actual welfare standards used in different jurisdictions are characterized by two particularly striking regularities. First, many welfare standards tend to be strongly biased in favor of the consumers' interests. In the US, a merger that increases market concentration might be challenged unless it is expected to deliver such cost-savings that it is also beneficial to consumers (US Horizontal Merger Guidelines, 1997). In the EU, the EC Merger Regulation (2004) stipulates that concentrations are allowed unless they significantly impede effective competition. Furthermore, competition is significantly impeded if the concentration harms consumers' interests. Thus the world's two largest economies apply a pure consumer welfare standard (henceforth referred to as a consumer surplus standard). Second, if a jurisdiction does not apply a consumer surplus standard, the producers (i.e. the merging firms and competitors) tend to be the additional interest group represented in the welfare standards. In Canada, for example, Section 96 of the Competition Act directs the Tribunal not to issue an order ... if it finds that the merger ... is likely to bring about efficiency gains that will be greater than, and

will offset, the effects of any prevention or lessening of competition ... . The 1991 Canadian Merger Enforcement Guidelines interprets these wordings as a welfare standard giving the same weight to consumers and producers (henceforth referred to as a total surplus standard). However, in *Hillsdown* this interpretation was questioned by the court; a reasonable reinterpretation of the court's decision suggests a standard, which in effect gives a larger weight to consumers than to producers (see McFetridge, 1998).

The two above regularities raises at least two questions. What is the motive behind the strong focus on consumers' interests and why are the interests of some groups, for example workers, so unlikely to be taken into account? When faced with policy objectives in favor of a specific interest group, a natural reaction is to look after an explanation based on distributional considerations. A tempting answer to the first question is therefore that the focus on consumers' interests is driven by a concern for the distribution of wealth, combined with a belief that consumers are, on average, less wealthy than firm owners. This view, however, has been criticized on at least two grounds (see e.g. Williamson, 1968). First, it has been questioned whether consumers are poor; for sure, many luxurious goods are primarily purchased by rich consumers. Second, even if the focus on consumers' interests has some distributional effects, there are other instruments such as taxes and transfers that seem more appropriate for affecting distribution. On these grounds, many economists argue that competition policy ought to promote allocative efficiency only (see e.g. Crampton, 1994 and Jenny, 1997).

Any reasonable answer to the second question seems even more unlikely to incorporate a distributional dimension. Indeed, among all the interest groups affected by mergers, the one group that may perhaps motivate a distribu-

tional concern, namely workers,<sup>1</sup> is excluded from most welfare standards<sup>2</sup> or at least is not given a large weight. Note also that because workers probably would merit a larger weight than consumers if welfare standards were primarily designed for the purpose of affecting distribution, the actual focus on consumers' interests is all the more puzzling.

The present paper shows in the context of merger control that the choice of welfare standard can have an impact on which mergers are proposed by firms. As a result, a government whose aim is to promote an efficient allocation of resources as measured by the total surplus - the sum of the consumer and producer surpluses - should strategically delegate a welfare standard with a consumer bias. This result thus indicates that the current practice of protecting the consumers' interests need not be understood as a concern for the distribution of wealth; rather it may be motivated on the sole ground of promoting allocative efficiency.

The underlying mechanism behind this result is simple. In terms of the total surplus it may be optimal to block a merger, even though it enhances the total surplus relative to the initial market structure, if the relevant alternative is another merger. To see this, consider the example described in Table 1. For simplicity, there are only three possible market structures, the initial one,  $M^0$ , and market structures  $M^1$  and  $M^2$ . A change in market structure, for example achieved by means of a merger, induces changes in the producer ( $\Pi$ ), the consumer ( $S$ ) and the total ( $T$ ) surpluses. The producer surplus is largest in market structure  $M^1$ , followed by  $M^2$  while it is smallest in

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<sup>1</sup>If merger induced rationalizations primarily take place through a process of skill biased technological change, one may at least hypothesize that mergers tend to hurt low skilled workers with low wages.

<sup>2</sup>Interestingly, in Sweden, a country which is widely perceived as one of the most pro-galitarian ones in the world, it is explicitly stated that the workers' interests should not be taken into account (see Röller, Stennek and Verboven, 2001).

the initial market structure. Similarly, Table 1 ranks the different market structures in terms of the other two surpluses.

	$M^1$	$M^0$	$M^2$
$\Pi$	++	0	+
$S$	-	0	+
$T$	+	0	++

Table 1.

Assume that any change in market structure is initiated by the firms and that they maximize the producer surplus. Furthermore, assume that the competition authority can assess the consequences of a proposed change in market structure relative to the initial one, but not the consequences of the alternative change in market structure. Delegating a consumer surplus standard to the competition authority is then, in the example of Table 1, optimal in terms of the total surplus. Indeed, such a welfare standard forbids market structure  $M^1$ , since it reduces the consumer surplus relative to the initial market structure,  $M^0$ . Thereby, it instead induces market structure  $M^2$  which maximizes the total surplus. In contrast, the total surplus standard is not optimal, since it induces market structure  $M^1$ .

The crucial assumption underlying the above argument is that the competition authority can perfectly assess the consequences of a *proposed* change in market structure, but not the consequences of *alternative* changes. Clearly, the former assumption overestimates the ability of competition authorities to assess the consequences of a proposed change in market structure. The latter assumption, on the other hand, possibly underestimates the ability of competition authorities to assess the consequences of alternative changes in

market structure.<sup>3</sup> For instance, the US Horizontal Merger Guidelines (1997) prescribe that US competition authorities should assess whether alleged cost savings are specific to the proposed merger. Thus some competition authorities at least attempt to evaluate the consequences of alternatives to a proposed merger, possibly other changes in market structure. While the above assumption abstracts from these important issues, it captures in the simplest possible way the following realistic feature of merger control. Assessing the consequences of all possible changes in market structure is clearly much more difficult for a competition authority than assessing the consequences of a proposed one only. For example, it may be possible to perform the latter task while pursuing the former is too costly due to time constraints. Furthermore, it may be easier for a competition authority to require firms to disclose information regarding a proposed change in market structure as opposed to disclose information about some other hypothetical change in market structure. The present paper may thus be viewed as a first attempt to analyze the implications of the differences in how difficult it is for a competition authority to perform these different tasks.

Due to the above information problem, the competition authority cannot pursue a first-best policy. The reason is that different welfare standards yield different errors. By applying a total surplus standard, the competition authority may allow a market structure increasing the total surplus, even though the relevant alternative is a market structure increasing the total surplus even further (as in the example of Table 1). By applying a consumer surplus standard, on the other hand, the competition authority may forbid market structures that increase the total surplus even though the relevant

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<sup>3</sup>Note that this latter assumption is implicit in most policy analyses related to merger control (see, for example, Williamson, 1968, Farrell and Shapiro, 1990, Besanko and Spulber, 1993 and Neven and Röller, 2005).

alternative to the proposed market structure is the status quo. The choice of welfare standard ought to take into account that both these types of errors may occur. Due to the first type of error, however, distorting the competition authority's objective function, that is delegating an operational goal that differs from the total surplus, turns out to be optimal in expected terms. This result is best understood by considering a small distortion in favor of the consumers. The foregone surplus due to the second type of error must be small, since the consumer bias is small. In contrast, the gain in terms of total surplus generated by avoiding the first type of error is potentially large. Therefore the total surplus standard cannot be optimal in expected terms even though the objective of Merger Control is assumed to be to maximize the total surplus.

This result is derived in Sections 3 and 4 using a simple model where two firms can merge to form a monopoly or can undertake an alternative change in market structure. In this model, the changes in surpluses resulting from the different changes in market structure are taken as the model's exogenous variables. It should be emphasized, however, that these changes in surpluses ought to be viewed as the outcome of some oligopolistic interaction before and after the possible changes in market structure. I postpone to Section 5 the discussion of how these changes in surpluses may be generated so as to focus on the important insight of this paper - that alternatives to a proposed change in market structure matter for the choice of welfare standard. The paper ends by some concluding remarks in Section 6. Before introducing the model, I discuss the related literature in the next section.



## 2 Related literature

The present paper constitutes an application of the concept of strategic delegation whereby a principal (the government) distorts the objective function of its agent (the competition authority) so as to affect the interaction between the agent and a third party (the merging firms) in a manner that benefits the principal. Strategic delegation has been applied in many different areas of economics, in particular for the purpose of designing economic policy. A classical application in this vein is due to Rogoff (1985) in the context of monetary policy. Monetary policy typically exhibits a time-inconsistency problem when wage setters have rational expectations. As a result, delegating monetary policy to a “too conservative” central banker - a central banker whose weight on inflation relative to unemployment is higher than what is socially optimal - may be optimal. Rogoff considers an economy where the natural rate of unemployment is higher than what is socially optimal (for example due to labor market imperfections) and where wage negotiations determine nominal wages for a fixed period of time. In such a framework, and provided that inflation is not too high, an “unbiased” central banker is tempted to inflate the economy by issuing money so as to reduce real wages and thereby reduce unemployment below its natural rate. Under rational expectations, however, wage setters foresee this opportunistic behavior, and negotiate ex ante high nominal wages associated with high inflation. Thereby it becomes too costly for the central banker to reduce unemployment at the expense of a further increase in inflation. That is, under rational expectations, an unbiased central banker’s only time-consistent policy is one where both unemployment and inflation is fairly high. Delegating monetary policy to a conservative banker mitigates the time-inconsistency problem. Intuitively, the temptation of a conservative central banker to inflate the economy so as

to reduce unemployment is removed at lower levels of inflation.

Needless to say, there exist many other applications of strategic delegation.<sup>4</sup> Three of them are of particular interest for the present paper, since they also constitute defenses for a consumer bias in merger control, which are not based on distributional considerations. Besanko's and Spulber's (1993) consumer surplus defense is driven by two important assumptions: merger induced marginal cost savings are private information to the merging firms and the merging firms incur a fixed cost when they propose a merger. These assumptions turn out to imply that an "unbiased" competition authority lacks the ability to credibly commit to an optimal policy as captured by an optimal probability of challenging mergers. The reason is that the mere decision to propose a merger conveys information to the competition authority - in fact, it conveys good news. To see why, note that mergers are more profitable, and enhance welfare more, the larger the cost-savings. Therefore, taking the challenging probability as given, a merger proposal is profitable in expectation if and only if the cost savings are sufficiently large. This means that the competition authority, when faced with a merger proposal, will update its beliefs in favor of the proposed merger. In fact, if the unbiased competition authority could commit to the optimal challenging probability thanks to some exogenous commitment technology, its updated beliefs would be so favorable to the proposed merger that the competition authority would strictly prefer not to challenge it. The problem is that the competition authority does not have access to an exogenous commitment technology and, as an immediate consequence, the unbiased authority cannot credibly commit to challenge the merger with the optimal probability. Besanko and Spulber

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<sup>4</sup>Strategic delegation has for instance been applied to positive analyses. For example, Fershtman and Judd (1987) have proposed strategic delegation as an explanation for managerial incentive schemes, which differ from profit maximization.

show that delegating a welfare standard with a consumer bias mitigates the commitment problem, since it implies that competition authorities' assessments of a proposed merger become less favorable.

More recently, Neven and Röller (2005) compare a total surplus standard with a consumer surplus standard in a lobbying model where the firms can influence the competition authority's decision through perks. The competition authority's objective function is assumed to consist both of the delegated welfare standard and the perks. Due to the presence of the welfare standard in the objective function, competition authorities are tougher under a consumer surplus standard implying also that under such a standard, they are less sensitive to perks. Thereby a consumer surplus standard reduces the extent of type 2 errors - to allow welfare reducing mergers due to perks. Of course, the disadvantage of a consumer surplus standard is that it increases the extent of type 1 errors - to forbid welfare enhancing mergers on the ground that they reduce the consumer surplus.<sup>5</sup>

Finally, Lyons (2002) has recently proposed in independent work a consumer surplus defense, which is driven by the same insight as in the current paper: there are alternatives to proposed changes in market structure. The main differences between his work and mine are twofold. First, he models a merger formation game where the potential alternative to a proposed merger is another merger. In contrast, I only consider a model with two firms. The main advantage with my model is its simplicity. In particular, the restriction

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<sup>5</sup>Neven and Röller argue informally that the perks' weight in competition authorities' objective function depend on the institutional framework: they conjecture that less transparent legal frameworks are likely to increase authorities' ability to take decisions in conflict with the delegated welfare standard. If this conjecture is correct, their analysis suggests that a consumer surplus standard is better suited in jurisdictions where the legal framework is less transparent. On this ground, Neven and Röller argue that a consumer surplus standard probably fits better to the EU than to the US, since the legal framework in the latter jurisdiction is commonly viewed as more transparent than in the EU.

to two firms makes it unproblematic to assume that the firms choose the market structure maximizing the producer surplus. Thereby I avoid dealing with the tedious details involved in the modelling of endogenous merger formation games. Second, Lyons only compares the performance of the consumer surplus standard with the total surplus standard. As a result, he finds that depending on the situation, either the consumer or the total surplus standard is optimal. In contrast, I consider all possible welfare standards. Thereby I clarify why, in expected terms, the optimal welfare standard must have a consumer bias.

The above mentioned studies and the present paper are all applications of strategic delegation and as such they share the following feature: a consumer bias renders the competition authority tougher and thereby affects the firms' merger decisions. It is striking, however, that the underlying mechanisms are very different in nature. Equally striking is that the studies nevertheless point in the same direction and, as such, should be viewed as complementary. The fact that the different mechanisms point in the same direction suggests that a more general principle may be at work. Consumers typically have difficulties to organize themselves so as to promote their common interests - they suffer from a collective action problem. As a result, they end up in a weak position relative to the merging firms. The above studies suggest that the collective action problem is important for at least two reasons. First, by its very nature, consumers become unable to counteract lobbying activities by the firms. Second, consumers have little incentives to gather information about for example cost-savings or potential alternatives to proposed mergers and thus are particularly poorly informed. In turn, the firms exploit the consumers' collective action problem and this give rise to inefficiencies. The more general principle suggested by the above studies is thus that organizing

an agency whose objective is to defend the interests' of a weak party reduces inefficiencies.

### 3 A Simple Model

Consider a market with two competing firms, which may alter the market structure in two different ways: the two firms may merge to monopoly or they may undertake an alternative change in market structure. In the next section, I give several possible interpretations of the alternative market structure.

Time is divided into four periods. In period 0, a policy objective, a so-called welfare standard, is delegated to a competition authority. In period 1, the firms decide which change in market structure to propose to the competition authority. In period 2, the competition authority either accepts or rejects the notified proposal. In period 3, the firms earn the profits in the resulting market structure. Note that the firms' interests perfectly coincide at the time of the proposal. In period 1, the firms are therefore assumed to propose the market structure, which maximizes aggregate profits in period 3, subject to the approval of the authority in period 2.

Let the changes in producer surplus following the merger to monopoly and the alternative change in market structure be denoted  $\Pi_m$  and  $\Pi_a$  respectively. Throughout the paper it is assumed that the monopoly maximizes the producer surplus, i.e.  $\Pi_m > \max\{0, \Pi_a\}$ . The alternative change in market structure is either profitable ( $\Pi_a \geq 0$ ) or unprofitable ( $\Pi_a < 0$ ). The relevant alternative to the monopoly is thus the alternative market structure in the former case while it is the original market structure in the latter.

Changes in market structure typically alter firms' price and output decisions and thereby affect consumers' welfare. Let  $S_m$  ( $S_a$ ) denote the change

in consumer surplus relative to the original market structure following the merger to monopoly (the alternative change in market structure). A change in market structure may have an adverse effect on consumers ( $S < 0$ ) for example by increasing the firms' market power, but may also have a positive effect ( $S > 0$ ) if it reduces market power or if it allows the firms to exploit synergies.

As discussed in the Introduction, I assume that the competition authority has the ability to perfectly assess the consequences of a proposed change in market structure relative to the original market structure, but not the consequences of the alternative change. Therefore, I restrict the attention to the class of policies approving a transfer of assets if and only if it increases a weighted average of the consumer and producer surpluses relative to the initial market structure, i.e.  $\Pi + \alpha S \geq 0$ . An element of this class of policies will be referred to as an  $\alpha$ -standard and is characterized by the parameter  $\alpha \in [0, +\infty)$ . Note that the competition authority is delegated a total surplus standard (henceforth referred to as a  $T$ -standard) when  $\alpha = 1$  and a consumer surplus standard (referred to as a  $S$ -standard) when  $\alpha \rightarrow \infty$ .

Before presenting the equilibrium market structure, I make two additional assumptions, namely that  $S_m < 0$  and  $S_a \geq 0$ . The first assumption is not important, since all standards are equivalent when  $S_m \geq 0$ . Indeed, any welfare standard induces the merger to monopoly when  $S_m \geq 0$ , since  $\Pi_m > 0$  and thus  $\Pi_m + \alpha S_m \geq 0$ . The second assumption simplifies the exposition by making it redundant to state the conditions under which the alternative market structure is allowed. Indeed,  $\Pi_a + \alpha S_a \geq 0$  under the assumption whenever the alternative market structure is proposed ( $\Pi_a \geq 0$ ). It should be emphasized, however, that the assumption is not innocuous, since it implies that the alternative market structure always raises the total surplus. I discuss

how the assumption affects my main result after its derivation.

Recall that in period 1, the firms can either propose the monopoly, propose the alternative market structure or choose to remain in the status quo. The firms equilibrium strategies are the following. (i) Propose the monopoly whenever it is allowed ( $\Pi_m + \alpha S_m \geq 0$ ), since the monopoly maximizes the producer surplus ( $\Pi_m > \max\{0, \Pi_a\}$ ). (ii) Propose the alternative market structure whenever the monopoly is blocked ( $\Pi_m + \alpha S_m < 0$ ) and the alternative market structure is profitable ( $\Pi_a \geq 0$ ). (iii) Remain in the status quo whenever the monopoly is blocked ( $\Pi_m + \alpha S_m < 0$ ) and the alternative market structure is unprofitable ( $\Pi_a < 0$ ). Taking the  $\alpha$ -standard as given, the unique equilibrium market structures are thus given by

$$\left\{ \begin{array}{l} \text{The monopoly if and only if } \Pi_m + \alpha S_m \geq 0, \\ \text{The alternative if and only if } \Pi_m + \alpha S_m < 0 \text{ and } \Pi_a \geq 0, \\ \text{The status quo if and only if } \Pi_m + \alpha S_m < 0 \text{ and } \Pi_a < 0. \end{array} \right. \quad (1)$$

## 4 A Consumer Surplus Defense

Throughout the paper it is assumed that the overall objective of competition policy is to maximize total welfare as measured by the total surplus, i.e. the sum of the consumer and producer surpluses. Nevertheless, delegating a  $T$ -standard to the competition authority needs not be optimal. To see why, consider an example where the monopoly increases the total surplus so that the  $T$ -standard approves the merger to monopoly. This is suboptimal if the relevant alternative to the monopoly is the alternative market structure ( $\Pi_a > 0$ ) and if this market structure increases the total surplus by even more ( $\Pi_a + S_a > \Pi_m + S_m$ ). Note also that the  $S$ -standard would be optimal, since it would block the consumer harming merger to monopoly and thereby

induce the alternative market structure. This example thus shows that the  $S$ - but not the  $T$ -standard may be optimal. There are, however, other examples where the reverse is true. For instance, assume that the alternative market structure is unprofitable. Then the  $S$ -standard will block mergers to monopoly that increases the total surplus even though the original market structure is the relevant alternative. Clearly, the  $T$ -standard does not suffer from this drawback.

Taken together, the two above examples suggest that there is no single welfare standard, which is optimal for all possible parameter configurations. A natural extension is therefore to analyze different welfare standards in terms of their performance in expected terms. For this purpose, let the probability density function  $f(\Pi_a, S_a, \Pi_m, S_m)$  (in short,  $f(\cdot)$ ) describe the distribution of the exogenous parameters. The expected change in total surplus as a function of the welfare standard can then be written as

$$\begin{aligned}
W(\alpha) = & \int_{-\infty}^0 \int_{-\alpha S_m}^{\infty} \int_0^{\infty} \int_{-\infty}^{\Pi_m} (\Pi_m + S_m) f(\cdot) d\Pi_a dS_a d\Pi_m dS_m \\
& + \int_{-\infty}^0 \int_0^{-\alpha S_m} \int_0^{\infty} \int_0^{\Pi_m} (\Pi_a + S_a) f(\cdot) d\Pi_a dS_a d\Pi_m dS_m \quad (2) \\
& + \int_{-\infty}^0 \int_0^{-\alpha S_m} \int_0^{\infty} \int_{-\infty}^0 0 f(\cdot) d\Pi_a dS_a d\Pi_m dS_m
\end{aligned}$$

The first line corresponds to those parameters when the merger to monopoly arises in equilibrium. (By inspection of the integration limits,  $\Pi_m + \alpha S_m \geq 0$  and thus the monopoly is approved.) The second line corresponds to those parameters when the alternative market structure arises in equilibrium. (By inspection of the integration limits,  $\Pi_m + \alpha S_m < 0$  and  $\Pi_a \geq 0$  and thus the monopoly is forbidden when the relevant alternative is the alternative market structure.) The third line corresponds to those parameters when the status



quo is an equilibrium. (By inspection of the integration limits,  $\Pi_m + \alpha S_m < 0$  and  $\Pi_a < 0$  and thus the monopoly is forbidden when the relevant alternative is status quo.) Note that this line equals 0, since the status quo generates no change in total surplus.

So as to discuss the pros and cons of different welfare standards, consider the difference in expected total surplus from using an arbitrary  $\alpha$ -standard relative to the  $T$ -standard, i.e.  $W(\alpha) - W(1)$ . Note that

$$\begin{aligned}
 W(\alpha) - W(1) = & \int_{-\infty}^0 \int_{-S_m}^{-\alpha S_m} \int_0^{\infty} \int_0^{\Pi_m} [\Pi_a + S_a - (\Pi_m + S_m)] f(\cdot) d\Pi_a dS_a d\Pi_m dS_m \\
 & (3) \\
 & - \int_{-\infty}^0 \int_{-S_m}^{-\alpha S_m} \int_0^{\infty} \int_{-\infty}^0 (\Pi_m + S_m) f(\cdot) d\Pi_a dS_a d\Pi_m dS_m.
 \end{aligned}$$

To interpret this expression, consider a welfare standard with a consumer bias ( $\alpha > 1$ ). The difference  $W(\alpha) - W(1)$  is determined by those parameter configurations when the monopoly is approved under the  $T$ -standard ( $\Pi_m + S_m \geq 0$ ) but not under the  $\alpha$ -standard ( $\Pi_m + \alpha S_m < 0$ ).<sup>6</sup> The second line corresponds to those parameter configurations when the relevant alternative to the merger to monopoly is status quo, since  $\Pi_a < 0$ . This line is negative if and only if  $\alpha > 1$ . Intuitively, a welfare standard with a consumer bias blocks mergers to monopoly even though these mergers increase the total surplus. This is costly in terms of total surplus, since the relevant alternative to the merger to monopoly is the status quo. By contrast, the first line corresponds to parameter configurations when the relevant alternative to the merger to monopoly is the alternative market structure, since  $\Pi_a \geq 0$ . The sign of this line is ambiguous, since the total surplus may be largest both in the monopoly and in the alternative market structure ( $\Pi_a + S_a \gtrless \Pi_m + S_m$ ).

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<sup>6</sup>Otherwise the two standards induce the same market structure and are thus equivalent.

What is important to note for the purpose of this paper, however, is that there are cases where the total surplus is maximized in the alternative market structure. It is those cases that provide a reason for delegating a welfare standard with a consumer bias. As in the example where the  $S$ -standard was optimal, the  $\alpha$ -standard blocks a merger to monopoly, which would increase the total surplus. This is optimal, since it thereby induces the alternative market structure, which increases the total surplus by even more.

Equation (3) thus highlights the costs and benefits of distorting the competition authority's welfare standard in favor of consumers. A closer inspection of equation (3) also suggests why such a distortion can serve the purpose of maximizing the expected total surplus. Recall that the (potential) cost of a welfare standard with a consumer bias is that such a welfare standard will block some mergers to monopoly, which increase the total surplus. Thereby, society foregoes an increase in total surplus of  $\Pi_m + S_m$ . By inspection of the upper integration limit of  $\Pi_m$ , note however that this cost is incurred if and only if  $\Pi_m$  is sufficiently low, namely lower than  $-\alpha S_m$ . (Otherwise the merger to monopoly would be allowed also under the  $\alpha$ -standard). Thus the foregone increase in total surplus will be bounded from above by  $-\alpha S_m + S_m$  and will thus be negligible if  $\alpha$  is close (although larger) to one. By contrast, the (potential) benefit,  $\Pi_a + S_a$ , is strictly positive. Expressed differently, by raising  $\alpha$  marginally above 1, the competition authority will block mergers to monopoly, which yield 0 in total surplus. In exchange, the alternative market structure arises with strictly positive probability and is associated with a strictly positive change in expected total surplus, since  $\Pi_a > 0$  whenever the merger to monopoly arises in equilibrium and since  $S_a > 0$  by assumption. (I discuss this assumption at the end of this section.) For this reason, it is at least optimal to distort the welfare standard in favor of consumers by a

small amount. Formally, this is shown by evaluating the derivative of  $W(\alpha)$  at  $\alpha = 1$ . By equation (2),  $W'(\alpha)$  is given by

$$W'(\alpha) = \int_{-\infty}^0 \int_0^{\infty} \int_{-\infty}^{-\alpha S_m} (1 - \alpha) S_m^2 f(\Pi_a, S_a, -\alpha S_m, S_m) d\Pi_a dS_a dS_m \quad (4)$$

$$- \int_{-\infty}^0 \int_0^{\infty} \int_0^{-\alpha S_m} (\Pi_a + S_a) S_m f(\Pi_a, S_a, -\alpha S_m, S_m) d\Pi_a dS_a dS_m$$

The second line is the benefit of marginally increasing the weight  $\alpha$ : by blocking mergers to monopoly, it induces the alternative market structure, which has the value  $\Pi_a + S_a$ . The first line is the cost of marginally increasing the weight  $\alpha$ , since the competition authority, after the marginal increase, blocks mergers to monopoly with value  $-\alpha S_m + S_m$ .<sup>7</sup> Clearly this cost equals 0 when  $\alpha = 1$  so that  $W'(1) > 0$ . Thus the  $T$ -standard must in expected terms be dominated by some welfare standard with a consumer bias.<sup>8</sup>

While the above analysis shows that the optimal welfare standard must have a consumer bias, it does not tell which welfare standard is the optimal one. That depends on the shape of the distribution  $f(\cdot)$ , i.e. on the likelihood of making the different mistakes. The fact that the potential benefit of distorting  $\alpha$  in favor of the consumers may be very large suggests, however, that the distribution  $f(\cdot)$  must be very skewed in favor of the  $T$ -standard for that standard to be a good approximation of the optimal welfare standard.

Finally, I discuss how the above result must be qualified if the assumption  $S_a \geq 0$  is relaxed. For this purpose, make the distinction between those

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<sup>7</sup>The potential gain and cost (i.e.  $\Pi_a + S_a$  and  $-\alpha S_m + S_m$ ), are multiplied by  $-S_m$ , since we are considering a marginal increase in  $\alpha$  and  $\alpha$  is the standard's weight on the consumer surplus.

<sup>8</sup>To complete the proof of the present consumer surplus defense, it actually remains to show that a welfare standard with a producer bias ( $\alpha < 1$ ) cannot be optimal. Intuitively, a welfare standard with a producer bias is suboptimal, since it allows some mergers to monopoly, which reduce the total surplus. This intuition can be verified through an inspection of equation (3) and is proved by noting that  $W(\alpha) - W(1) < 0$  if  $\alpha < 1$ .

alternative changes in market structure that must be notified to the competition authority and those that must not. In the former case, the assumption is innocuous. The reason is that the alternative change in market structure must satisfy the welfare standard, that is  $\Pi_a + \alpha S_a \geq 0$ , implying that the alternative market structure will increase the total surplus if  $\alpha > 1$ .<sup>9</sup> The assumption is not innocuous in the latter case, however, since then the alternative change in market structure may well take place and reduce the total surplus. The critical condition for a small consumer bias to increase the expected total surplus is then that

$$E[\Pi_a + S_a \mid \Pi_a > 0 \text{ and } \Pi_m + S_m = 0] > 0.$$

That is, the expected change in total surplus from the alternative market structure is positive, given that the merger to monopoly yields no change in total surplus and the firms would choose the alternative change in market structure in case the monopoly is blocked.<sup>10</sup>

## 5 Underlying Market Interactions

So far I have abstracted away from how the changes in surpluses can be generated as outcomes of market interactions. In this section, I give several possible interpretations of the model with an emphasis on how alternative changes in market structure may arise.

In the original version of this paper (Fridolfsson, 2001*b*), the changes in surpluses were modelled formally using a two firm Cournot model where the

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<sup>9</sup>To see this, assume that  $\Pi_a + S_a < 0$  due to the fact that  $S_a < 0$ . Such a market structure will not be approved by a competition authority with a consumer bias, since  $\Pi_a + \alpha S_a < \Pi_a + S_a < 0$  if  $\alpha > 1$ .

<sup>10</sup>I thank the referee of this paper for pointing out this qualification.

firms are endowed with transferable physical assets. By merging their assets, the firms can form a monopoly. Because the production technology exhibits long run increasing returns to scale, the merger gives rise to cost-savings. Therefore the merger to monopoly does not only maximize the producer surplus ( $\Pi_m > \max\{0, \Pi_a\}$ ); it may also increase the total surplus ( $\Pi_m + S_m > 0$ ) even though it increases market concentration and thereby harms the consumers ( $S_m < 0$ ).<sup>11</sup> The model also exhibits a more surprising feature, which gives rise to the alternative market structure. A transfer of assets from the largest to the smallest firm may yield so large cost-savings in the small firm that the transfer increases the two firms' aggregate profits ( $\Pi_a > 0$ ). Furthermore, such a transfer of assets also benefits the consumers, since it reduces market concentration ( $S_a > 0$ ). Because this alternative transfer of assets both gives rise to cost savings and reduce market concentration, it also maximizes the total surplus ( $\Pi_a + S_a > \Pi_m + S_m > 0$ ). As a result, a consumer bias may be optimal by blocking the merger to monopoly and thereby induce the alternative transfer of assets, which maximizes the total surplus.

A partial merger, whereby the two firms merge but divest a subset of their assets (for example, some of their brands) to a new entrant, constitute a second example of an alternative to a full-fledged merger. Due to the entrant, the merger's anti-competitive effects are mitigated and still at least some of the merger induced cost savings are likely to materialize. Also in this example, a consumer bias may be optimal by blocking the full-fledged merger and thereby induce the alternative in the form of the partial merger

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<sup>11</sup>The model thus captures the important welfare trade-off that increased concentration can reduce production costs, but at the expense of an increase in market power. As such it provides an example where an efficiency defense as outlined by the US Horizontal Merger Guidelines (1997) or the EC Merger Regulation (2004) could be applied.

with divestiture.<sup>12</sup>

The third example of an alternative change in market structure is an alternative merger. This interpretation of the model is straightforward if we are willing to accept the following assumption: the process of endogenous merger formation - the process by which firms choose a specific merger(s) when there are alternative mergers - selects the merger that maximizes the producer surplus. In this case the merger to monopoly should be reinterpreted as the merger, which, among all allowed mergers, maximizes the producer surplus. In such a setting, anti-competitive mergers may preempt pro-competitive ones<sup>13</sup> and, as a result, a welfare standard with a consumer bias may be optimal. In general, however, the literature on endogenous mergers suggests that it is difficult to motivate the above assumption.<sup>14</sup> Nevertheless, the assumption is not crucial for the paper's main result, namely that a consumer bias is optimal in expected terms. What is important to note is that the result may need to be qualified if firms propose mergers which benefit consumers but at

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<sup>12</sup>Of course the divestiture has the same qualitative effects as a remedy ordered by a competition authority. The notable difference is that here, it is the merging firms who propose the divestiture without any initial proposal or suggestion by the competition authority. Note that initial merger proposals, which include a divestiture proposal for the purpose of reducing market concentration, is not only a theoretical construct; in the 1992 merger between Nestlé and Perrier, the merging firms proposed to divest Perrier's subsidiary Volvic to the competitor BSN (see Compte, Jenny and Rey (2002) for an in-depth discussion of this merger).

<sup>13</sup>Fridolfsson (2001*a*) makes this point in a model of endogenous merger formation with asymmetric firms.

<sup>14</sup>Horn and Persson (2001) provide some foundation for efficient outcomes from the firms' point of view in a game theoretical cooperative model of merger formation. Lyons' (2002) merger formation game suggests that the firms select the merger maximizing the producer surplus. To obtain this result, however, he makes sufficient assumptions on the underlying parameters of his oligopoly model and does not solve his merger game for the remaining parameters. In contrast, Kamien and Zhang (1990 and 1993) show in a non-cooperative model that the monopoly may not arise even though it maximizes the producer surplus. Fridolfsson and Stennek (2005*a*) highlight yet another inefficiency from the firms' point of view: profitable mergers may be delayed if it is even more profitable to remain as an outsider to mergers.

the expense of an even higher reduction in the producer surplus.<sup>15</sup> In such cases, a merger may not only be required to increase a weighted surplus with a consumer bias; it may also be required to increase the total surplus. This additional criterion in effect means that a competition authority could block a merger on the ground that it harms the firms themselves, possibly including the merging firms. Extending the powers of competition authorities in this direction may be perceived as delegating tasks to competition authorities, which go beyond the role of competition policy. The additional criterion should therefore be scrutinized with care before considering implementation.

The above examples share the common feature that the alternatives must be approved by the competition authority. Of course it is conceivable that the firms undertake an alternative course of action, which has not to be scrutinized by competition authorities. For example, internal reorganization or investment in new machinery may for each firm work as an imperfect substitute to the merger. They may also choose other forms of cooperation than mergers such as the establishment of for example a R&D joint venture. Such alternatives may also imply cost reductions without the negative side effects associated with merger induced increases in market concentration. These examples thereby suggest that a welfare standard with a consumer bias may be optimal. It should be emphasized, however, that the qualification discussed at the end of Section 4 applies in those cases.

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<sup>15</sup>Such a scenario cannot be disregarded. Indeed, Fridolfsson and Stennek (2005*b*) show in a non-cooperative model of endogenous mergers that unprofitable mergers may occur if they harm competitors. Furthermore, mergers that harm competitors typically benefit consumers (see for example Farrell and Shapiro, 1990). Thus firms may well propose mergers, which benefit consumers while they reduce the producer surplus.

## 6 Concluding Remarks

The critical assumption behind the present consumer surplus defense in merger control is worth a final emphasis: the competition authority is assumed to perfectly assess the consequences of a *proposed* change in market structure, but not the consequences of *alternative* ones. It is widely recognized that the former assumption overestimates the ability of competition authorities. Given this wide consensus, the latter assumption seems much less problematic to accept. Yet it is striking that most competition authorities seem to be acutely aware of alternatives' relevance. The efficiency defenses as outlined by the US Horizontal Merger Guidelines (1997) and the EC Merger Regulation (2004) both stress that the efficiencies should be merger specific. The US failing firm defense constitutes one instance where competition authorities actively look for alternatives (to the status quo). Furthermore, the vast majority of problematic mergers are eventually cleared subject to the use of remedies. The proposed merger between the two Swedish truck manufacturers Volvo and Scania even suggests that the decision by the European Commission may have been influenced by the possibility of alternative mergers.<sup>16</sup> All these observations suggest that real world competition authorities are more sophisticated with respect to alternatives than what has been assumed here. It should be emphasized, however, that even if competition authorities may sometimes identify alternatives and perhaps even evaluate their welfare effects accurately, these alternatives are not necessar-

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<sup>16</sup>When the two firms announced their intention to merge, there were plenty of rumors in the Swedish business press suggesting that the main motive was to preempt alternative mergers. The merger was subsequently blocked by the European Commission on the ground that it was deemed anti-competitive, and, within a few weeks, Volvo acquired the french truck manufacturer RVI. This latter merger was subsequently cleared, since the merger partners were judged to be more distant competitors. After the clearance, a few Swedish newspapers raised the concern that the European Commission was pursuing an active industrial policy.



ily the ones maximizing welfare. If so, the argument underlying the present consumer surplus defense is still valid.

Finally, it should be emphasized that the main result is qualitative only. Absent some knowledge about the likelihood of alternatives and about the magnitude of the additional surplus generated, it is impossible to say something about the optimal weight on consumers. In fact, the optimal weight may even correspond to a pure consumer surplus standard if the distribution of the exogenous variables is sufficiently skewed in favor of the alternative.

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