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# Compulsory or Voluntary Pre-merger Notification? A Theoretical and Empirical Analysis\*

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# Compulsory or Voluntary Pre-merger Notification? A Theoretical and Empirical Analysis

## Abstract

We study a voluntary pre-merger notification game under asymmetric information and characterize perfect Bayesian equilibria. It is shown that the equilibrium outcomes are similar to those when notification is compulsory. However, thanks to the signaling opportunity that arises when notification is voluntary, voluntary notification leads to lower enforcement costs for the regulator and lower notification costs for the merging parties. Some of the theoretical predictions are supported from preliminary empirical tests using merger data from Australia where pre-merger notification is voluntary. Overall, our results suggest that voluntary merger notification may achieve objectives similar to those achieved by compulsory systems at lower costs to the parties as well as to the regulator.

KEY WORDS: Merger regulation, pre-merger notification, abnormal returns

JEL CLASSIFICATION: D21, G34, K21, L40

# 1. Introduction

In a significant number of jurisdictions around the world, pre-merger notification is considered essential to allow governments either to stop anticompetitive mergers or to negotiate remedies with the parties. The fundamental rationale for such notification provisions is to give the regulatory bodies time to challenge mergers, and seek modifications if necessary, before they are realized. It also avoids the costly and complicated process of seeking an order through the courts to unscramble a merger after it has been consummated. While a handful of countries such as Argentina, Japan, and Russia have post-merger notification regimes, various pre-merger review policies have proliferated recently around the world, notably in new democracies and developing economies. According to Battistoni (2002), there are more than seventy jurisdictions around the world (excluding the U.S. and the E.U.) that have some form of pre-merger review, and the UNCTAD reports giving over 50 developing or transition economies technical assistance in the area of competition policy since 1980.

The dominant pre-merger notification model follows the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (modified in 2000) of the United States (HSR Act), which requires certain types of transactions to be notified to the Federal Trade Commission and the Department of Justice. In the European Community, which is perhaps the second largest merger market after the US, the requirements have been similar to those in the US since 1990.<sup>(1)</sup> The differences between the various notification procedures are mostly in such details as the thresholds for notification and the time allowed for consideration of the proposal.

Among the various merger notification systems, the US and European systems of compulsory notification have been much analyzed for their effectiveness, with a general consensus that the systems work reasonably well.<sup>(2)</sup> However, as systems of compulsory pre-merger notification have multiplied throughout the world in recent years, increasing attention has been paid to the related issues of associated

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<sup>(1)</sup> Battistoni (2002) provides details about modifications in the HSR Act that became effective in 2001. Aktas et al. (2004) provide details about the pre-merger notification procedure and control in the EC.

<sup>(2)</sup> See, for example, Baer (1997), Baer and Redcay (2001), and Blumenthal (1997) for related commentaries.

costs and requirements, especially involving mergers of multinational corporations. A recent study commissioned by the American Bar Association and International Competition Network estimated that the average external costs associated with complying with notification procedures for mergers covering multiple jurisdictions amounted to 3.28 million euros, with average review duration of approximately seven months.<sup>(3)</sup> In another study, Todaro and Walsh (2002) report that merger reviews often required filing of multiple applications in a myriad of different formats in many different languages. Additionally, pre-merger notification expands the window of opportunity for speculators and rival bidders to cash in on the entrepreneurial insight of the notifying firm. Information leakage and the delays to completion of notified mergers imply reduced incentives for entrepreneurship to find and exploit profitable opportunities.

In view of the costs and complexities associated with compulsory notification, the primary objective of this study is to analyze a system of voluntary notification and examine whether compulsory notification is necessary for consumer protection and the efficient functioning of an antitrust merger policy. We address these issues by studying an *existing* voluntary merger notification regime. There are countries such as Australia, Chile, and the UK that have no legal rule requiring pre-merger notification.<sup>(4)</sup> In Australia, for example, the Trade Practices Act of 1974 proscribes mergers that substantially lessen competition, but it does not compel pre-merger notification. Instead the parties to a merger are given the option of voluntary notification before they proceed to a merger while the regulator can challenge the consummated merger that went ahead without notification.

There are two main differences between the compulsory and voluntary notification regimes. First, the parties' notification decision under the voluntary notification regime signals private information regarding the merger, which the regulator can utilize in its enforcement activities. However, compulsory notification deprives the parties of such a signaling opportunity. Second, under compulsory notification, the parties have the opportunity to negotiate with the regulator

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<sup>(3)</sup> Report on the Costs and Burdens of Multi-jurisdictional Merger Review, November 2004, International Competition Network ([www.internationalcompetitionnetwork.org](http://www.internationalcompetitionnetwork.org)).

<sup>(4)</sup> EC regulations, however, effectively over-ride the UK provisions, implying pre-merger notification in the UK (Aktas et al. (2004)).

before the merger is consummated, thereby avoiding costly litigation.<sup>(5)</sup> Moreover the negotiation may result in an outcome with higher social welfare. This is the main rationale for, and the potential benefits of compulsory notification. On the other hand, compulsory notification entails the costs for the regulator of reviewing each and every submission from the merging parties, and the costs of notification for the merging parties. The available evidence suggests that significant part of these costs may be unnecessary.<sup>(6)</sup> Under voluntary notification, large part of such costs can be avoided, precisely because of the signaling opportunity discussed above.<sup>(7)</sup> Therefore the choice of compulsory or voluntary notification should depend on weighing the potential benefits of higher social welfare from negotiation against the costs discussed above.

We present a model where each merger is represented by private benefits (to the parties) and social welfare, which are private information to the parties that the regulator can learn only at some costs. The parties maximize private benefits less any costs involved, which include the costs of notification and litigation-related costs. The regulator maximizes social welfare less any enforcement costs. The extensive-form game starts with the parties' notification decision, in which the system of compulsory notification is embedded as a subgame that follows when the parties choose to notify.

Under compulsory notification, we show that all mergers are separated into three groups: those with small private benefits are settled into a negotiated outcome; those with large private benefits but low social welfare are challenged by the regulator and contested in the court; those with large private benefits and high social welfare are cleared. Under voluntary notification, we show that a separating perfect Bayesian equilibrium exists where only the mergers with small private benefits and low social welfare are notified, and subsequently settled into negotiated outcomes. All other types of mergers are not notified and investigated ex

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<sup>(5)</sup> As we discuss in Section 2.1, negotiation is also an option under voluntary notification if the regulator investigates a merger before completion.

<sup>(6)</sup> Fels and Walker (1994) report that a large number of mergers in Australia involve competitively neutral transactions, and the vast majority do not infringe the Trade Practices Act.

<sup>(7)</sup> The Australian evidence also suggests that there are few midnight mergers that have anti-competitive consequences. Until the mid-1990s, the Petersville/General Jones merger was the only example of such a merger (Industry Commission (1995)).

post with a positive probability. Among these, mergers with high social welfare are cleared after investigation, and those with large private benefits but low social welfare are challenged by the regulator and contested in the court. It is also shown that voluntary notification does not lead to more litigation than compulsory notification. Overall, our results suggest that voluntary merger notification does work and may achieve objectives similar to those achieved by compulsory systems at much lower costs to the parties as well as to the regulator.

There is a large body of empirical studies that employ stock market data to study the efficacy of regulatory regimes along two principal lines - the effectiveness of a regime and the impact of the regime on individual or groups of firms. Empirical evidence has indicated effects on output prices and stock market prices (Eckbo (1983), Feinberg (1986), and Stillman (1983)). Eckbo and Wier (1985) find effects on firms that are in the same or related industry to the firm in question. Further studies by Bittlingmayer (1992), Eckbo (1992), Brady and Feinberg (2000), and Aktas et al. (2004) show linkages between merger policy (including regime shifts, which could include significant changes in policy, changes in the implementation of the current policy, or both) and capital market reactions to merger announcements. These and more empirical studies are reviewed in Section 4.

While much attention has been paid to empirical analyses of merger policies, there is a paucity of theoretical studies that analyze the optimal merger notification policy. Motta and Vasconcelos (2005) study a dynamic merger game where the antitrust authority can be either myopic or forward looking. Lagerlöf and Heidhues (2005) analyze the merging parties' incentives to gather and strategically reveal efficiency-related information to the regulator. In both of the above studies, pre-merger notification is assumed compulsory. Although our theory is focused mainly on comparison of merger notification regimes, it is also related to work by Besanko and Spulber (1989), Hahn (2000), and Neven and Röller (2005), who model various aspects of regulatory decision making vis-à-vis mergers.

The remainder of the paper proceeds as follows. Section 2 begins by briefly describing the voluntary notification regime of Australia, which is followed by an extensive-form game of the merger process. Section 3 solves the game. Section 4 discusses empirical implications of the model and reports empirical results for Australian mergers. Section 5 concludes the paper.

## 2. A Model of Pre-Merger Notification

This section presents a model of pre-merger notification regime. While our model can be applied to any voluntary notification regimes, it is based on the merger process in Australia. This will help motivate the extensive form game laid out below.

### *2.1. Merger process in Australia*

In Australia, the Trade Practices Act of 1974 prohibits mergers that substantially lessen competition in a market. Pre-merger notification, however, is not compulsory. The Cooney Report of the Senate Standing Committee on Legal and Constitutional Affairs did propose in 1991 that merger notification be made compulsory in Australia, but its recommendations were not implemented. In the absence of pre-merger notification, the regulator - Australian Competition and Consumer Commission (ACCC) - can oppose anti-competitive mergers by seeking court orders that prohibit such transactions before consummation, or impose penalties, and/or force divestitures after completion. By contrast, both in the U.S. and Europe, firms can face substantial fines for not notifying the regulator. Merging parties in Australia can, however, voluntarily notify the ACCC of the impending merger and seek an informal opinion about its anti-competitive effects, although this does not provide immunity from the ACCC seeking court orders after consummation of the merger.<sup>(8)</sup>

The result is a system of quasi-compulsory pre-merger notification. The ACCC is considered a tough merger regulator who is willing to seek high penalties from the courts if the parties proceed with mergers without seeking informal clearance (Shekhar and Williams (2004)). The parties' incentives to notify thus increase in their belief that the merger would breach the anti-trust provisions and the expected penalties would be high.

Under this system of merger notification, the process can unfold in one of

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<sup>(8)</sup> The only provision that grants immunity from prosecution for breaching the Trade Practices Act is an explicit authorization from the ACCC, which is granted if the regulator decides that the merger is of net benefit to the public. However, this path is seldom taken as only eight authorizations were sought between 1995 and 2001 (Williams and Woodbridge, 2004).

the two ways.<sup>(9)</sup> If the parties choose to proceed without notification, the ACCC can investigate the merger either on its own or by the request of third parties, often the competitors who will be affected by the merger. For a merger that has not been completed, the ACCC can decide to either leave it alone or raise anti-trust concerns. In the latter case, the parties can withdraw the transaction, or settle into a negotiated outcome, or proceed with the merger despite the ACCC's concerns. Should the parties choose the last option, it certainly leads to court proceedings initiated by the ACCC, which may eventually lead to unwinding of the merger. For a midnight merger that has been completed without notification, negotiation is no longer an option: the ACCC either clears the merger or issues court proceedings for breach of anti-trust provisions. Subsequently the parties can choose to contest the orders, with courts deciding the final outcome.

If the parties do notify the ACCC, then the ACCC can give clearance or raise antitrust concerns. The events that unfold subsequently are the same as those for a merger that the ACCC investigates before it is completed. If the parties expect the merger to raise anti-trust concerns, then they can make the option of negotiation certain through notification. Without notification, they run the risk of facing the ACCC's challenge after the merger has been consummated.

The recently concluded merger between Toll Holdings Ltd. and Patrick Corporation Ltd. illustrates the process. Toll initially chose not to notify the ACCC of its merger intentions but sought clearance after its market announcement on August 22, 2005. Its subsequent undertakings to address the ACCC's anti-trust concerns were deemed inadequate, leading the ACCC to eventually institute legal proceedings in the Federal Court opposing the merger. Finally on March 1, 2006 Toll offered a new set of undertakings under the direction of the Federal Court, which resulted in the ACCC discontinuing the legal proceedings.<sup>(10)</sup>

## *2.2. An extensive-form game of the merger process*

We represent a merger by two parameters:  $b$  denotes the private benefits for the parties to a merger;  $w$  denotes social welfare from the merger. To simplify

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<sup>(9)</sup> Williams and Woodbridge (2004) provide a detailed description of this process.

<sup>(10)</sup> See <http://www.accc.gov.au/content/index.phtml/itemId/724185/fromItemId/633100>.



analysis, we assume that  $b$  takes on either  $b_h$  or  $b_l$  with  $b_h > b_l > 0$ . Similarly  $w \in \{w_l, w_h\}$  with  $w_h > w_l > 0$ . Thus there are four types of potential mergers:  $(b_h, w_h)$ ,  $(b_h, w_l)$ ,  $(b_l, w_h)$  and  $(b_l, w_l)$ . Only the parties to a merger know their type, and the regulator's prior beliefs on the types are given by probabilities  $p$  for  $b_h$ , and  $q$  for  $w_h$ . Since  $b$  and  $w$  may not have any a priori relationship, we assume that  $p$  and  $q$  are independent. Then the probability of a merger to be of  $(b_h, w_l)$ -type, for example, is  $p(1 - q)$ . The parties' objective is to maximize the private benefits less any costs involved. As is standard in the literature on regulation, the regulator is assumed to maximize social welfare less any enforcement costs.<sup>(11)</sup>

We now describe the extensive form of the game, which is shown in Figure 1. In the left part of Figure 1 corresponding to no notification, we consider only the case where the regulator investigates the merger after it has been completed. For mergers that are not notified and investigated before completion, the subsequent events and the outcomes are essentially the same as those for notified mergers that raise anti-trust concerns.

In the first stage of the game, the parties decide whether or not to notify. If the parties do not notify, then the regulator may, at cost  $\gamma$ , investigate the merger ex post either on its own or by the request of third parties. The investigation reveals the type of merger for sure.<sup>(12)</sup> After the investigation, the regulator may give clearance or issue proceedings. If the merger is cleared after investigation, then the payoff for the parties is  $b$ , and that for the regulator is  $w - \gamma$ . In case the regulator issues proceedings, the parties may contest the regulator's decision, which is followed by litigation. We assume that the probability that the court finds contravention is fixed at  $\pi \in (0, 1)$ , which is exogenous and independent of whether or not the parties elect to notify. That the court does not behave strategically seems not only reasonable but is also standard in the literature on regulation. If the parties lose the antitrust case, then the merger is unravelled and the parties pay  $f$ , the penalty for antitrust infringement, and  $c$ , the cost of the trial which, under a simplified version of the Australian practice, is assumed to be

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<sup>(11)</sup> See, for example, Besanko and Spulber (1989).

<sup>(12)</sup> More generally, the regulator could obtain some imperfect information about  $(b, w)$  after the investigation. As this will not alter our qualitative conclusions, we assume, for expositional simplicity, that the investigation reveals  $(b, w)$  completely.

the sum of the costs incurred in the litigation by both parties. Thus the expected payoff for the parties in case of litigation is  $\pi(-c - f) + (1 - \pi)b$ , and that for the regulator is  $\pi f + (1 - \pi)(w - c) - \gamma$ . We assume here that the penalty for infringement, if any, can be used by the regulator for its enforcement activities. If the parties do not contest the regulator's challenge, then the payoffs are  $-f$  for the parties and  $f - \gamma$  for the regulator.

— **Figure 1 goes about here.** —

Next is the subgame in which the parties notify their intention of merger. Denote the cost of notification by  $n$ . This includes not only the direct cost incurred in the process of notification, such as preparing documents and filing, but also the reduced benefits due to notification delays and any information leakage that can be exploited by speculators or rival bidders. If the parties notify their intention of merger, the regulator reviews the case at cost  $\gamma' < \gamma$  and learns  $(b, w)$  for sure. Since notification provides the regulator with vast amount of information about the proposed merger, it seems reasonable to assume that the cost of review is lower than the cost of investigating a merger that was not notified. Based on the review, the regulator can either give clearance or raise concerns. If the parties' notification is cleared, then the game ends with payoffs  $b - n$  for the parties, and  $w - \gamma'$  for the regulator. If the regulator raises concerns, then the parties have three options. First, they may be given the choice of negotiation and asked to offer undertakings to overcome the concerns raised by the regulator. Should this course of action be taken, the parties' merger benefits are reduced to  $b(1 - \alpha)$  where  $0 < \alpha < 1$ . The regulator prefers the negotiated outcome to the status quo since the former leads to higher social welfare.<sup>(13)</sup> Second, the parties can proceed with the transaction despite the regulator's concerns. In this case, the regulator may give clearance or challenge the merger in the court. Given that the regulator had not chosen to clear the merger in the first place when notification was given, we can deduce that the regulator will always challenge the merger that went ahead despite its express concerns. The expected payoffs in this case are  $\pi(-c - f) + (1 - \pi)b - n$  for the

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<sup>(13)</sup> We do not need to specify how social welfare will change after negotiation. As will become clear, all we need is that the social welfare from negotiation is not smaller than that from the status quo.

parties, and  $\pi f + (1 - \pi)(w - c) - \gamma'$  for the regulator. The final option is to withdraw the transaction.

Before we solve the game, we note that there are three main differences between notification and no notification. First, notification imposes additional notification costs to the parties. Therefore the parties with strong conviction that their merger would be cleared would opt for no notification. Second, the regulator should review all cases that have been notified, while investigation is optional in case of no notification. Although information provided through notification could reduce the regulator's cost of reviewing each application, compulsory notification could drastically increase the regulator's burden. Third, notification introduces the option of negotiation. Thus if the regulator's challenge and the court-found contravention are highly likely, then the parties may be better off notifying and negotiating a settlement, rather than becoming embroiled in risky litigation.

### 3. Equilibria of the Merger Notification Game

#### 3.1. Equilibrium outcome under compulsory notification

In solving the whole game, we start with the subgame following the parties' notification. The equilibrium outcome of this subgame will be equivalent to that for the game in which notification is compulsory. Let us first look at the parties' decision given the regulator's concerns. If they choose negotiation, then their payoff is  $b(1 - \alpha) - n$ . If they decide to go ahead with the merger, then the regulator challenges the merger for sure. Should the game reach this stage, the parties will always contest the regulator's decision. The other option of "no contest" is strictly dominated since the payoff from negotiation is strictly larger than that from "merger and no contest". Since the expected payoff from "merger and contest" is  $\pi(-c - f) + (1 - \pi)b - n$ , the parties will choose "negotiate" if  $\pi(-c - f) + (1 - \pi)b - n \leq b(1 - \alpha) - n$  or, equivalently,  $b \leq \frac{\pi(c + f)}{\alpha - \pi}$ , and "merger and contest" otherwise.<sup>(14)</sup> There are two cases to consider. First, if  $\alpha \leq \pi$ , then the parties will always choose "negotiate" since the probability of losing the antitrust

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<sup>(14)</sup> As a tie-breaking rule, we assume that the parties, when indifferent, choose the option preferred by the regulator.

case is large relative to the reduction in private benefits from negotiation. To this, the regulator's best response is "raise concerns". Second, if  $\alpha > \pi$ , then the parties will choose "negotiate" if  $b \leq \frac{\pi(c+f)}{\alpha-\pi}$ , and "merger and contest" otherwise. If the parties choose "negotiate", then the regulator's best response is "raise concerns". However, if the parties choose "merger and contest", then the regulator should choose "clear" if  $w - \gamma' \geq \pi f + (1 - \pi)(w - c) - \gamma'$  or, equivalently,  $w \geq \frac{\pi f - (1 - \pi)c}{\pi}$ , and "raise concerns" otherwise. Summarizing, we have

**Lemma 1:** The equilibrium outcome under compulsory notification can be described as:

- (a) If  $\alpha \leq \pi$ , then the regulator chooses "raise concerns" and the parties choose "negotiate";
- (b) If  $\alpha > \pi$  and  $b \leq \frac{\pi(c+f)}{\alpha-\pi}$ , then the regulator chooses "raise concerns" and the parties choose "negotiate";
- (c) If  $\alpha > \pi$ ,  $b > \frac{\pi(c+f)}{\alpha-\pi}$ , and  $w < \frac{\pi f - (1 - \pi)c}{\pi}$ , then the regulator chooses "raise concerns" and the parties choose "merger and contest";
- (d) If  $\alpha > \pi$ ,  $b > \frac{\pi(c+f)}{\alpha-\pi}$ , and  $w \geq \frac{\pi f - (1 - \pi)c}{\pi}$ , then the regulator chooses "clear".

In words, the equilibrium outcome under compulsory notification is always "negotiate" if the reduction in private benefits is small relative to the cost of losing the litigation ( $\alpha \leq \pi$ ). If  $\alpha > \pi$ , then all mergers are separated into three groups: those with small private benefits are settled into a negotiated outcome; those with large private benefits, but low social welfare are challenged by the regulator and contested in the court; those with large private benefits and high social welfare are cleared. Since the case where all parties settle into a negotiated outcome is less interesting (and contrary to evidence), henceforth we will focus on the case where  $\alpha > \pi$ . Moreover we maintain the following assumption.

*Assumption 1:*  $b_h > \frac{\pi(c+f)}{\alpha-\pi} \geq b_l$ ,  $w_h \geq \frac{\pi f - (1 - \pi)c}{\pi} \geq w_l$ .

*Assumption 2:*  $\pi(-c - f) + (1 - \pi)b_l - n \geq 0$ ,  $b_l(1 - \alpha) - n \geq 0$ .

Assumption 1 is sufficient for the parties with different types of mergers to behave differently under compulsory notification. Note that Assumption 1 implies  $\alpha > \pi$ . Assumption 2 ensures that notification cost is not too high to prevent all

but  $(b_h, w_h)$ -type mergers from going ahead. Then from Lemma 1, the following is immediate.

**Proposition 2:** Given Assumptions 1 and 2, the equilibrium outcome under compulsory notification has (a)  $(b_h, w_h)$ -type mergers cleared, (b)  $(b_h, w_l)$ -type mergers challenged and contested in the court, and (c)  $(b_l, w_h)$ -type and  $(b_l, w_l)$ -type mergers settled into negotiated outcomes.

### 3.2. Equilibrium outcome under voluntary notification

The game starts with the parties' decision of whether or not to notify. In the previous section, we have already described the equilibrium outcome of the subgame that follows the parties' notification. Suppose now the parties chose not to notify. In deciding whether to leave alone or investigate the merger, the regulator must look forward and reason backward. If the regulator chooses "investigate", then the regulator learns  $(b, w)$  for sure. If the regulator chooses "leave alone", then the regulator does not learn  $(b, w)$ , so its payoff is the expected welfare denoted by  $E_\mu(\tilde{w})$ , where the expectation is with respect to the regulator's beliefs  $\mu$  about the types of merger that went ahead. As this is the game of incomplete information, we solve the game for perfect Bayesian equilibria.

We start by analyzing the subgame following the regulator's investigation. If the regulator issues proceedings, then the parties will choose "contest" if  $\pi(-c - f) + (1 - \pi)b - n > -f - n$  or, equivalently,  $b > \frac{\pi c - (1 - \pi)f}{1 - \pi}$ . If the parties contest the regulator's challenge, then the regulator's best response is "issue proceedings" if  $\pi f + (1 - \pi)(w - c) - \gamma \geq w - \gamma$  or, equivalently,  $w \leq \frac{\pi f - (1 - \pi)c}{\pi}$ , and "clear" otherwise. If the parties do not contest, then the regulator's best response is "issue proceedings" if  $w \leq f$ , and "clear" otherwise. Since  $\frac{\pi(c + f)}{\alpha - \pi} > \frac{\pi c - (1 - \pi)f}{1 - \pi}$ , Assumption 1 is not sufficient for the parties with different merger types to behave differently in the subgame. Thus we make an additional assumption.

*Assumption 3:*  $b_l \leq \frac{\pi c - (1 - \pi)f}{1 - \pi}$ ,  $w_h \geq f$ .

**Lemma 3:** Given Assumptions 1 to 3, the subgame following the regulator's investigation has the equilibrium outcome: (a)  $(b_h, w_h)$  and  $(b_l, w_h)$ -type mergers

are cleared; (b)  $(b_h, w_l)$ -type mergers are challenged and contested in the court; (c)  $(b_l, w_l)$ -type mergers are challenged and the parties offer no defense.

We now analyze the regulator's investigation decision. If the regulator does not investigate the merger, then its payoff is the expected welfare  $E_\mu(\tilde{w})$  where the expectation is with respect to the regulator's beliefs consistent with the parties' equilibrium notification decision. Denote the probability of investigation by  $\sigma$ . Consider first the parties with  $(b_h, w_h)$ -type mergers. They are strictly better off by not notifying: their payoff from no notification is  $b_h$  regardless of  $\sigma$  while their payoff from notification is  $b_h - n$ . Similarly,  $(b_l, w_h)$ -type mergers will not be notified since  $b_l > b_l(1 - \alpha) - n$ , the latter being the payoff from the negotiated outcome after notification. Consider now the parties with  $(b_h, w_l)$ -type mergers. If they notify, then their payoff is  $\pi(-c - f) + (1 - \pi)b_h - n$  since their merger will be challenged and contested in the court. If they do not notify, then their expected payoff is  $\sigma[\pi(-c - f) + (1 - \pi)b_h] + (1 - \sigma)b_h$ . Thus they would not notify, either. Simply put, if they know that their merger will be challenged and contested after notification, then they are better off by not notifying. In the worst case where their merger is investigated, they will contest the regulator's challenge anyway, but save the cost of notification. Finally, the parties with  $(b_l, w_l)$ -type mergers may notify depending on  $\sigma$ . If they notify, then their payoff is  $b_l(1 - \alpha) - n$ , that from negotiation. If they do not notify, their expected payoff is  $\sigma(-f) + (1 - \sigma)b_l$ . Thus they will notify if  $\sigma \geq \frac{b_l\alpha + n}{b_l + f}$ . Note that  $\frac{b_l\alpha + n}{b_l + f} < 1$  by Assumption 2. We divide the analysis into two cases depending on the notification decision of the parties with  $(b_l, w_l)$ -type mergers.

Suppose first  $\sigma < \frac{b_l\alpha + n}{b_l + f}$ . Then none of the parties will notify their intention of merger. For this pooling equilibrium to exist, we have to check if  $\sigma < \frac{b_l\alpha + n}{b_l + f}$  in equilibrium. Suppose such a pooling equilibrium exists. Then the regulator's beliefs about the merger types are equal to its prior beliefs.<sup>(15)</sup> Therefore, the regulator's expected payoff from not investigating a merger is

$$E_\mu(\tilde{w}) = qw_h + (1 - q)w_l. \quad (1)$$

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<sup>(15)</sup> Since notification reveals the type perfectly and all but  $(b_l, w_l)$ -type mergers have a dominant strategy of no notification regardless of the regulator's beliefs, a specification of the regulator's belief off-the-equilibrium path is not needed.

From Lemma 3, the regulator's expected payoff from investigation, denoted by  $E_\mu W$ , can be calculated as

$$E_\mu W = qw_h + p(1-q)[\pi f + (1-\pi)(w_l - c)] + (1-p)(1-q)f - \gamma. \quad (2)$$

Thus the regulator will choose  $\sigma$  such that

$$\sigma = \begin{cases} 0, & \text{if } E_\mu(\tilde{w}) > E_\mu W \text{ or } w_l > f - \frac{1}{1-p(1-\pi)} [p(1-\pi)c + \frac{\gamma}{1-q}]; \\ \in [0, 1], & \text{if } E_\mu(\tilde{w}) = E_\mu W \text{ or } w_l = f - \frac{1}{1-p(1-\pi)} [p(1-\pi)c + \frac{\gamma}{1-q}]; \\ 1, & \text{if } E_\mu(\tilde{w}) < E_\mu W \text{ or } w_l < f - \frac{1}{1-p(1-\pi)} [p(1-\pi)c + \frac{\gamma}{1-q}]. \end{cases} \quad (3)$$

For the pooling equilibrium to exist, we thus need  $w_l \geq f - \frac{1}{1-p(1-\pi)} [p(1-\pi)c + \frac{\gamma}{1-q}]$ . Moreover, since  $w_l \leq \frac{\pi f - (1-\pi)c}{\pi}$  by Assumption 1, we further need  $\frac{\pi f - (1-\pi)c}{\pi} \geq f - \frac{1}{1-p(1-\pi)} [p(1-\pi)c + \frac{\gamma}{1-q}]$  or, equivalently,  $\frac{\gamma}{1-q} \geq \frac{(1-p)(1-\pi)c}{\pi}$ . Thus the pooling equilibrium is more likely to exist if the regulator's cost of investigation ( $\gamma$ ) is large, the proportion of mergers with high social welfare ( $q$ ) is large, the proportion of mergers with large private benefits ( $p$ ) is large, or the litigation-related costs ( $c$ ) are small. In this case, the net expected return to the regulator's investigation is not high enough, implying that the regulator is less likely to investigate. To this, merging parties' best response is no notification. This leads to

**Proposition 4:** Suppose Assumptions 1 to 3 hold. Suppose further that  $\frac{\gamma}{1-q} \geq \frac{(1-p)(1-\pi)c}{\pi}$  and  $w_l \geq f - \frac{1}{1-p(1-\pi)} [p(1-\pi)c + \frac{\gamma}{1-q}]$ . Then a perfect Bayesian equilibrium exists in which (a) none of the parties choose notification, (b) the regulator investigates a merger with probability  $0 \leq \sigma < \frac{b_l \alpha + n}{b_l + f}$ , and (c) the outcome following investigation is as in Lemma 3.

Consider now the case  $\sigma \geq \frac{b_l \alpha + n}{b_l + f}$  where only the parties with  $(b_l, w_l)$ -type mergers choose to notify. Then the regulator's updated beliefs are  $\mu(b_h, w_h) = \frac{pq}{q+p(1-p)}$ ,  $\mu(b_l, w_h) = \frac{(1-p)q}{q+p(1-p)}$ ,  $\mu(b_h, w_l) = \frac{p(1-q)}{q+p(1-p)}$ , and  $\mu(b_l, w_l) = 0$ . The regulator's expected payoff from no investigation is

$$E_\mu(\tilde{w}) = \frac{qw_h + p(1-q)w_l}{q + p(1-q)}, \quad (4)$$

and that from investigation is

$$E_\mu W = \frac{qw_h + p(1-q)[\pi f + (1-\pi)(w_l - c)] - \gamma}{q + p(1-q)}. \quad (5)$$

As before, the regulator's equilibrium investigation decision is given by

$$\sigma = \begin{cases} 0, & \text{if } E_\mu(\tilde{w}) > E_\mu W \text{ or } w_l > f - \left(\frac{1-\pi}{\pi}\right)c - \frac{\gamma}{\pi p(1-q)}; \\ \in [0, 1], & \text{if } E_\mu(\tilde{w}) = E_\mu W \text{ or } w_l = f - \left(\frac{1-\pi}{\pi}\right)c - \frac{\gamma}{\pi p(1-q)}; \\ 1, & \text{if } E_\mu(\tilde{w}) < E_\mu W \text{ or } w_l < f - \left(\frac{1-\pi}{\pi}\right)c - \frac{\gamma}{\pi p(1-q)}. \end{cases} \quad (6)$$

If  $w_l$  is small enough, then we have an equilibrium in which the parties with small private benefits and low social welfare self-select themselves by notifying their intention of merger.

**Proposition 5:** Suppose Assumptions 1 to 3 hold. If  $w_l \leq f - \left(\frac{1-\pi}{\pi}\right)c - \frac{\gamma}{\pi p(1-q)}$ , then a perfect Bayesian equilibrium exists in which (a) only the parties with  $(b_l, w_l)$ -type mergers choose notification and settle into negotiated outcomes, (b) the regulator investigates other mergers with probability  $\sigma \geq \frac{b_l \alpha + n}{b_l + f}$ , and (c) the outcome following investigation for all other mergers is as in Lemma 3.

### 3.3. Comparing compulsory and voluntary notification regimes

One of the key differences between the compulsory and voluntary notification regimes is that, under the former, the parties have the opportunity to negotiate with the regulator before the merger is consummated, thereby avoiding costly litigation. This is the main rationale for, and the potential benefits of compulsory notification. On the other hand, the regulator would insist on the negotiated outcome at the cost to the merging parties even if there is only a small gain in social welfare. Indeed, as Proposition 2 shows, all mergers with low private benefits are negotiated under compulsory notification. Then it is straightforward to see that all the parties to a merger would prefer voluntary notification to compulsory notification.

How do the benefits from compulsory notification weigh up against its costs? The main costs of compulsory notification are the costs for the regulator of reviewing each and every submission from merging parties, and the costs of notification for the merging parties. As we mentioned earlier, the available evidence suggests that significant part of these costs may be unnecessary. Under voluntary notification, large part of such costs can be avoided. For example, in the separating equilibrium of Proposition 5, only  $(b_l, w_l)$ -type mergers are notified and reviewed,



and the others are randomly investigated ex post.<sup>(16)</sup> Voluntary notification certainly benefits the merging parties by alleviating their notification burden if their transactions are not likely to raise antitrust concerns. While the regulator's cost of investigating a merger ex post ( $\gamma$  in our notation) will be certainly higher than that of reviewing a notified merger ( $\gamma'$  in our notation), the number of cases to be investigated ex post<sup>(17)</sup> could be considerably lower than the total number of mergers, all of which have to be reviewed under compulsory notification.

Then, does voluntary notification increase the likelihood of litigation? In our analysis, only the parties with  $(b_h, w_l)$ -type mergers proceed with the merger, and contest the regulator's challenge in the court. Given the choice of notification, these parties will opt for no notification since, even with the regulator's investigation, the same outcome is expected, but without notification cost. All other types of mergers are either cleared or reach out-of-court settlement (for  $(b_l, w_l)$ -type mergers in the pooling equilibrium). In case of compulsory notification,  $(b_h, w_l)$ -type mergers are always contested in the court. Since  $(b_h, w_l)$ -type mergers are investigated with probability at most one when notification is an option, the likelihood of litigation is actually smaller under voluntary notification.

Finally we compare social welfare under the two notification regimes. The option of negotiation certainly opens up a potential for higher social welfare under compulsory notification compared to voluntary notification. Under voluntary notification, the parties with  $(b_l, w_h)$ -type mergers choose not to notify, with resulting social welfare  $w_h$ . Under compulsory notification, they choose negotiated settlement since they would not be better off contesting the regulator's challenge. In the separating equilibrium under voluntary notification, social welfare for all other types of mergers remains the same as that under compulsory notification. Therefore the choice of compulsory or voluntary notification should depend on weighing the potential benefits of higher social welfare from negotiation against the costs discussed above.

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<sup>(16)</sup> In the pooling equilibrium of Proposition 4, none of the mergers are notified, nor are mergers without notification investigated (in case  $\sigma = 0$ ). While this is certainly a theoretical possibility, the existence of various merger policies and enforcement authorities suggests that the conditions for the pooling equilibrium are unlikely to hold in reality.

<sup>(17)</sup> The lower bound for the proportion of un-notified mergers to be investigated ex post is  $\frac{b_l \alpha + n}{b_l + f}$  in the separating equilibrium of Proposition 5.

## 4. Empirical Analysis

### 4.1. Empirical implications and prior studies

In the previous section, we have characterized equilibrium outcomes from the two notification regimes. In case of voluntary notification, we have also identified conditions under which the separating equilibrium exists. Among the sufficient conditions are (i) the regulator's cost of investigating a merger is not too high, (ii) the regulator has strong beliefs that mergers are likely to be of anti-trust concern, or (iii) the penalty for anti-trust infringement is large. In view of reality, we focus on the separating equilibrium. Then our main theoretical results are summarized in Table 1.

— **Table 1 goes about here.** —

Table 1 leads to the following implications. First, only the mergers with small private benefits and low social welfare are notified, and subsequently settled into negotiated outcomes. All other types of mergers are not notified. Among these, mergers with high social welfare are cleared after investigation, and those with large private benefits but low social welfare are challenged by the regulator and contested in the court. Second, mergers that are not notified are investigated with a positive probability, which increases in the cost of notification and decreases in the penalty for antitrust infringement. Third, mergers with large private benefits are either cleared or contested in the court under compulsory notification. Fourth, voluntary notification does not lead to more litigation than compulsory notification. In sum, the two notification regimes lead to the same outcomes except for  $(b_l, w_h)$ -type mergers. But voluntary notification reduces the parties' notification burden and the regulator's enforcement costs. To the extent that the welfare gain from the negotiated outcomes of  $(b_l, w_h)$ -type mergers is not too large, one should expect voluntary notification regime to work as well as compulsory notification but at much lower costs to all involved parties.

Although our analysis of voluntary notification has focused only on the regulator's investigation of completed mergers that are not notified, it was noted earlier that negotiation is also an option if a merger is investigated before completion.

Indeed, as is shown below, a few mergers in Australia that are not notified are investigated before completion and settled into negotiated outcomes. This further strengthens the case for voluntary notification.

There is an extensive literature that estimates benefits to merging parties.<sup>(18)</sup> This literature essentially relies on the traditional event-study methodology to estimate abnormal returns - which are considered equivalent to private benefits - to merging parties around announcement dates and on the announcement of regulatory challenges. As indicated in Bruner (2002), bulk of this evidence indicates statistically significant positive returns to targets, whereas bidders typically experience small negative returns on merger announcement. The combined abnormal returns are typically positive, although much of the gain is limited to target shareholders. In addition, Aktas et al. (2004) and Fee and Thomas (2004) report that firms involved in transactions facing regulatory challenge also experience strong positive returns. Since their studies are based on European and US merger cases under compulsory notification, the results are consistent with the implication of our analysis.

Measuring a merger's social benefits and associated notification and enforcement costs proves to be more elusive. As mentioned earlier, a study commissioned by International Competition Network has estimated average notification costs over multiple jurisdictions to be as much as 3.28 million euros. As several fee-charging jurisdictions do so to recover the cost of merger review,<sup>(19)</sup> this estimate may be considered a proxy for enforcement costs as well. Social benefits can comprise effects on all other parties - customers, suppliers, and rivals - and the predictions for the overall combined effect are ambiguous (Shahrur (2005), and Fee and Thomas (2004)). Both studies focus only on horizontal takeovers and rely on input-output tables and customer information respectively to assess the impact of proposed mergers on these parties. Although neither of the two studies measures social benefits per se, the reported results for other parties are inconclusive. In a study of anti-trust challenge of steel companies' merger in 1901, Mullins et al.

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<sup>(18)</sup> See, for example, Eckbo (1992), Brady and Feinberg (2000), Aktas et al. (2004), Fee and Thomas (2004), and Shahrur (2005).

<sup>(19)</sup> See Merger Notification Filing Fees, April 2005. Available at International Competition Network ([www.internationalcompetitionnetwork.org](http://www.internationalcompetitionnetwork.org).)

(1995) find that railroads (who were major customers of steel mills) experienced positive abnormal returns, suggesting that proposed merger would have resulted in negative social benefit. Ivaldi and Verboven (2005) explore use of simulation to assess anti-competitive effects of Volvo-Scania merger that was proposed in 1999 but disallowed by the European Commission. Finally, in a theoretical setting, Neven and Röller (2005) question the use of social welfare versus consumer surplus standard when analyzing the effect of a merger. Taken together, this discussion suggests that issues relating to measurement of social benefits of mergers remain unresolved and previous work is driven both by data availability (as in Shahrur (2005), and Fee and Thomas (2004)) and by researchers' choice of tools (as in Ivaldi and Verboven (2005)).

#### *4.2. Data & Results*

This section provides some empirical results for a sample of Australian acquisitions. In light of the discussion in the previous section about the difficulty of measuring social benefits, our analysis is based only on private benefits of merger and the responses of the ACCC and the merging parties to the two types of mergers, notified or un-notified. Nevertheless, our findings suggest that voluntary notification in Australia leads to the results similar to what have been obtained in other studies where notification is compulsory. Our empirical analysis is at best indicative, and further progress in estimating social benefits would significantly inform the debate over compulsory notification.<sup>(20)</sup>

Shekhar and Williams (2004) study Australian mergers utilizing a sample of 850 mergers to June 2002 compiled from the ACCC's public register. We begin with this sample and, to conduct an event study to measure private benefits of mergers, collect price data from SIRCA. Also noted is the event date, defined as the earliest date a merger proposal can be identified publicly. Our sample is restricted to Australian publicly traded companies, although we do not require that both the acquirer and the target be public companies.<sup>(21)</sup> The final sample

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<sup>(20)</sup> We are also faced with data limitations as we are not aware of the sources for relevant Australian data that may be used to measure social welfare, such as the extensive input-output tables used by Shahrur (2005), or the set of major customers used by Fee and Thomas (2004).

<sup>(21)</sup> A large number of mergers involve a foreign acquirer, and others involve either the sale of

consists of 126 self-reported transactions and 44 transactions reported by other sources. Table 2 reports summary statistics.

— **Table 2 goes about here.** —

Table 2 shows that notified mergers are more likely to be objected to by the ACCC, but also more likely to proceed to completion after negotiation. It also shows that a significant number of mergers (36%) are not notified, indicating significant savings in notification costs.<sup>(22)</sup> A majority of mergers that are not notified and investigated ex post are not objected to by the ACCC. Finally a small number of un-notified mergers reach negotiated settlements. These are mergers that are not notified initially but investigated by the ACCC before completion.

To estimate the private benefits, we estimate the market model for all companies and calculate the abnormal returns around the event date. The basic market model is specified as

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}, \quad (7)$$

which describes a company  $i$ 's equilibrium returns at time  $t$ ,  $R_{it}$ , as a function of a constant  $\alpha_i$ , the corresponding market returns  $R_{mt}$ , and an error term  $\epsilon_{it}$ . We used the daily return on the All Ordinaries Accumulated Index as the proxy for the market return. The abnormal return is defined as the difference between the actual return and the estimated return as

$$AR_{it} = \tilde{R}_{it} - R_{it}. \quad (8)$$

The market model is estimated for each firm by using daily returns for a period of approximately 255 days and stopping 15 days before the date raised or the event date. The results for cumulative average abnormal returns (CAARs) for various intervals around the announcement date are reported in Table 3.<sup>(23)</sup> As the portfolios consist of both acquirers and targets, all the reported CAARs are positive

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private companies or a merger between private parties. Other mergers may only involve foreign parents, but are nevertheless examined by the ACCC as these companies may own subsidiaries that operate in Australia.

<sup>(22)</sup> Shekhar and Williams (2004) also report that notified mergers take longer to complete. Average delay to completion is 72 days for notified mergers and 66 days for un-notified mergers.

<sup>(23)</sup> Out of the final sample of 126 self-reported transactions and 44 transactions reported by other sources, we identified 148 firms with notification and 50 firms without notification for which price data are available. Panel A of Table 3 is based on this.

and statistically significant. However, our primary interest is whether the firms in different groups experience different market reactions in light of their reporting choice. In Panel A, we report average returns for all notified and un-notified mergers. Although all returns are positive, there is no statistically significant difference between mean returns of the two portfolios, suggesting that on average, neither of the two groups is better (or worse) off by choosing alternative notification method.<sup>(24)</sup> In other words, estimated private benefits from proposed mergers are similar across the two sub-samples. As noted by Aktas et al. (2004) and Eckbo (1992), if markets are efficient, then announcement returns must incorporate the likelihood of regulatory challenge to the proposal. For our sample, returns to notified mergers are conditioned by increased likelihood of regulatory objection and of a negotiated settlement. Returns to mergers that are not notified are also subject to similar concerns (although with lower likelihood) but conditioned on lower likelihood of reaching a settlement.

— **Table 3 goes about here.** —

In Panel B, we report the abnormal returns for firms in the two groups conditioned on the ACCC raising no objection to the proposal. Consistent with Shekhar and Williams (2004), a larger proportion of firms involved in un-notified mergers do not face the ACCC objections to the proposal. All returns are positive and statistically significant, but of interest is the difference between returns to the two sub-samples. Parametric t-tests indicate no difference, although non-parametric tests suggest that un-notified mergers experience higher abnormal returns over two of the intervals. This is consistent with our theoretical findings: the parties that choose no notification have private benefits at least as large as those of the parties that choose notification. Another possible interpretation is that lower returns for notified group may be attributed to both the notification costs already incurred and to the delay in merger completion as parties must now wait for the ACCC's clearance before consummation. As a vast majority of notified mergers are eventually cleared, a greater proportion of notifying firms could consider the

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<sup>(24)</sup> This interpretation implicitly assumes that other factors that may affect announcement returns - form of the offer, business overlap etc. - affect both sub-samples equally. See Bruner (2002) for a survey of studies that have analyzed these factors.

other alternative available if they are positive that their transactions are not likely to raise antitrust concerns.

In Panel C, we report the abnormal returns for objected mergers. Notified and objected mergers experience strong positive abnormal returns whereas one merger that was not notified and objected has negative returns. The positive reaction may be explained by the fact that these transactions can still be completed after negotiations with the ACCC, an option not available to the ones that are not notified.<sup>(25)</sup> However, this is contrary to our theoretical predictions: mergers that are not notified but challenged have high private benefits and low social welfare. Although the sample size precludes even basic statistical testing, these results suggest that if the firms anticipate anti-trust concerns it is in their interest to notify than not.<sup>(26)</sup>

We finally discuss some contentious merger proposals that have come to the ACCC under the voluntary notification system. From the ACCC's public register, we could identify ten firms that were involved in notified proposals which were objected to by the ACCC, and subsequently withdrawn by the firms. One of these proposals eventually resulted in litigation and was eventually settled by court order. In contrast, there was only one proposal that was not notified and objected to by the ACCC, which was eventually withdrawn without any litigation. Although it is hard to justify why the un-notified merger was eventually withdrawn without any litigation, these results are largely consistent with our theoretical predictions: under voluntary notification, notified mergers are more likely to be challenged and negotiated than un-notified mergers.

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<sup>(25)</sup> In case of compulsory notification, both Aktas et al. (2004) and Fee and Thomas (2004) also report strong positive returns for objected mergers in their samples (Europe and US respectively), consistent with the notion that a negotiated settlement with the regulator is likely for such transactions.

<sup>(26)</sup> We re-ran the tests reported in Table 3 using value-weighted returns. Weights are assigned to firms in notified and un-notified sub-samples using the constituent firms' end-of-month market value of equity, measured approximately three months before the event date. Portfolio returns are no longer statistically significant over all time intervals. However, inferences pertaining to differences in average returns remain unchanged. The details are available upon request from the authors.

## 5. Summary and Conclusion

This paper has studied a voluntary pre-merger notification game under asymmetric information and characterized perfect Bayesian equilibria. In the separating equilibrium, all mergers can be divided into three groups: only those with small private benefits and low social welfare are notified and settled into negotiated outcomes; those with high social welfare are not notified and, even if investigated ex post by the regulator, cleared; those with large private benefits and low social welfare are not notified and, when investigated ex post by the regulator, challenged at the court. These outcomes are similar to those when notification is compulsory. The only difference is that, under compulsory notification, all mergers with small private benefits are settled into negotiated outcomes. On the other hand, voluntary notification leads to substantial savings in the enforcement costs for the regulator and the notification costs for the merging parties. Moreover, voluntary notification does not lead to more litigation than compulsory notification. Therefore the choice of compulsory or voluntary notification should depend on weighing the potential benefits of higher social welfare from negotiation against the reduction in various costs related to enforcement, notification, and litigation.

We have also conducted preliminary tests of our empirical implications for merger data from Australia where there is no legal requirement for the pre-notification of mergers. Previously reported results support our contention that notified mergers are more likely to enter into negotiated outcomes. Estimation of private benefits to parties via abnormal market returns indicates that there is no significant difference between notified and un-notified mergers. It is also found that, for mergers that are not objected to by the ACCC, notifying parties experience lower abnormal returns than those that choose not to notify. Although the empirical results are not unambiguous since a vast majority of notified mergers are cleared eventually, the difference may be attributed to both notification costs and the delay in waiting for clearance from the ACCC. At least some of these firms could avoid these costs by not notifying and just proceeding with the merger. It is also possible that firms feel compelled to notify - play it safe - as the ACCC's antitrust guidelines are not clear and their implementation is not yet deeply rooted in precedence. However, notification does not guarantee a negotiated settlement,



although instances of litigation are rare.

To have a more accurate assessment of the voluntary notification vis-à-vis the compulsory notification regimes, more work needs to be done to incorporate the measures of social welfare, enforcement costs for the regulator, and notification-related costs for the parties. However, our theoretical predictions, empirical findings on the market reaction, the rarity of litigation or contentious mergers that went ahead without notification, all seem to suggest that the voluntary notification system in Australia may achieve objectives similar to those of a compulsory notification system at lower overall costs to all the involved parties.

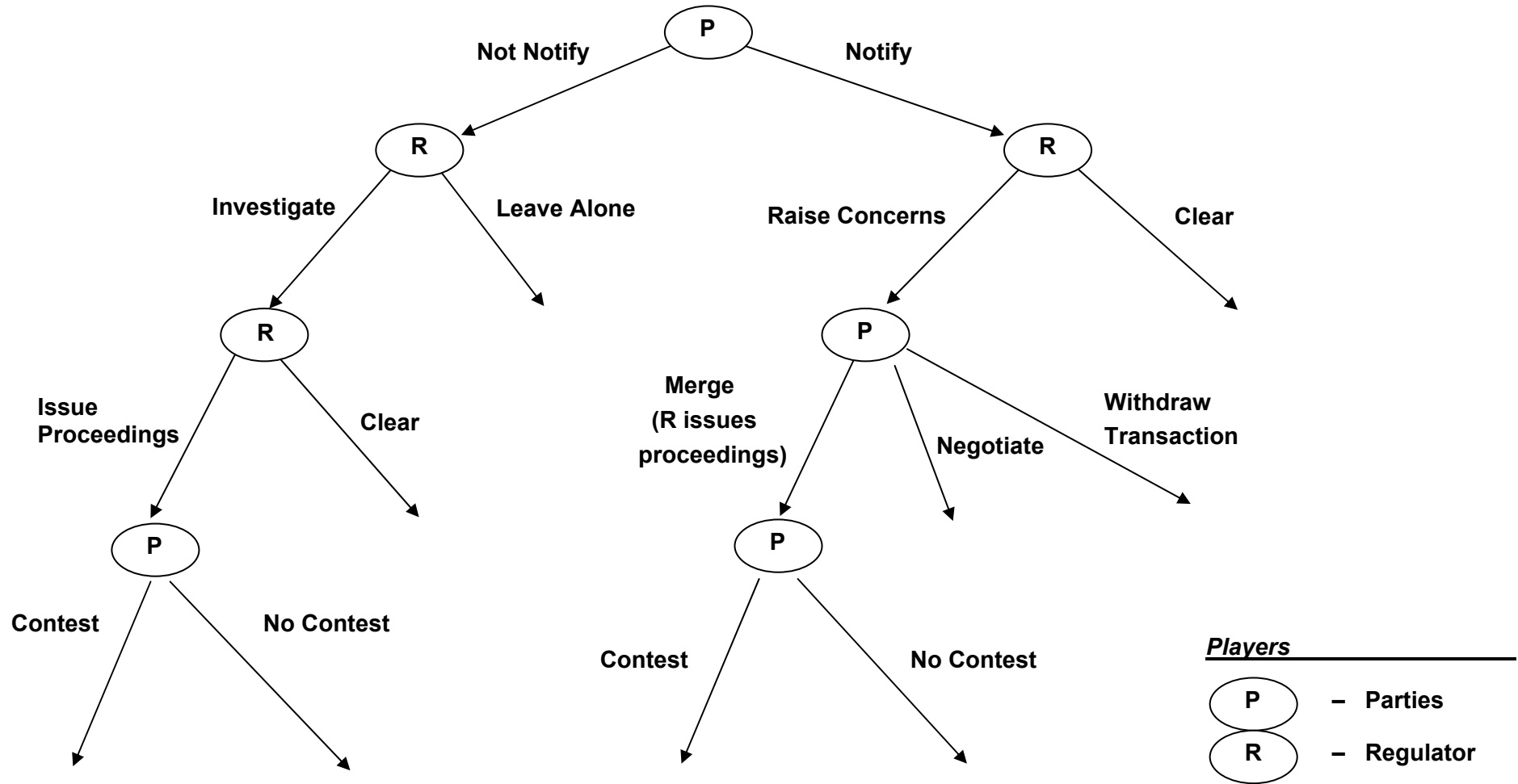
### References

- Aktas, N., de Bodt, E. and R. Roll (2004), “Market Response to European Regulation of Business Combinations”, *Journal of Financial and Quantitative Analysis*, 49(4), pp. 731-757.
- Baer, W. J. (1997), “Reflections on Twenty Years of Merger Enforcement under the Hart-Scott-Rodino Act”, *Antitrust Law Journal*, 65, pp. 825-863.
- Baer, W. J. and R. C. Redcay (2001), “Solving Competition Problems in Merger Control: The Requirements for an Effective Divestiture Remedy”, *George Washington Law Review*, 69, pp. 1701-1712.
- Battistoni, M. (2002), “The Hart-Scott-Rodino Improvements Act of 2000 and the International Effects of U.S. Merger Review Reform”, mimeo., The Fletcher School, Tufts University.
- Besanko, D. and D. F. Spulber (1989), “Antitrust Enforcement under Asymmetric Information”. *Economic Journal*, 99, pp. 408-425.
- Bittlingmayer, G. (1992), “Stock Returns, Real Activity, and the Trust Question”, *Journal of Finance*, 47, pp. 1701-1730.
- Blumenthal, W. (1997), “Introductory Note”, *Antitrust Law Journal*, 65, pp. 813-823.
- Brady, U. and R. M. Feinberg (2000), “An Examination of Stock-Price Effects of EU Merger Control Policy”, *International Journal of Industrial Organization*, 18, pp. 885-900.

- Bruner, R. (2002), "Does M & A Pay? A Survey for the Decision Maker", *Journal of Applied Finance*, 12, pp. 48-60.
- Cooney Report (Senate Standing Committee on Legal and Constitutional Affairs) (1991), *Mergers, Monopolies and Acquisitions: Adequacy of Existing Legislative Controls*, Australian Government Publishing Service.
- Eckbo, B. E. (1983), "Horizontal Mergers, Collusion and Stockholder Wealth", *Journal of Financial Economics*, 11, pp. 241-273.
- Eckbo, B. E. and P. Wier (1985), "Antimerger Policy under the Hart-Scott-Rodino Act: A Re-examination of the Market Power Hypothesis", *Journal of Law and Economics*, 28, pp. 119-149.
- Eckbo, B. E. (1992), "Mergers and the Value of Antitrust Deterrence", *Journal of Finance*, 47, pp. 1005-1029.
- Fee, C. E., and S. Thomas (2004), "Sources of Gains in Horizontal Mergers: Evidence from Customer, Supplier, and Rival Firms", *Journal of Financial Economics*, 74, pp. 423-460.
- Feinberg, R. M. (1986), "The Effects of European Competition Policy on Pricing and Profit Margins", *Kyklos*, 39, pp. 267-287.
- Fels, A. and J. Walker (1994), "Merger Policy and Practice", *Australian Economic Review*, 4th Quarter, pp. 96-100.
- Hahn, V. (2000), "Antitrust Enforcement: Abuse Control or Notification?", *European Journal of Law and Economics*, 10, pp. 69-91.
- Industry Commission (1995), "Pre-merger Notification and the Trade Practices Act 1974", prepared by the Office of Regulation Review as a submission to the Treasury. (Url: [www.pc.gov.au/orr/reports/submission/premerge](http://www.pc.gov.au/orr/reports/submission/premerge))
- Ivaldi, M and F. Verboven (2005), "Quantifying the Effects from Horizontal Mergers in European Competition Policy", *International Journal of Industrial Organization*, 23, pp. 669-691.
- Lagerlöf, J. N. M. and P. Heidhues (2005), "On the Desirability of an Efficiency Defense in Merger Control", *International Journal of Industrial Organization*, 23, pp. 803-827.
- Motta, M and H. Vasconcelos (2005), "Efficiency Gains and Myopic Antitrust Authority in a Dynamic Merger Game", *International Journal of Industrial Organization*, 23, pp. 777-801.

- Mullin, G. L., Mullin, J. C. and W. P. Mullin (1995), "The Competitive Effects of Mergers: Stock Market Evidence from US Steel Dissolution Suit," *RAND Journal of Economics*, 26, pp. 314-330.
- Neven, D. J. and L. Röller (2005), "Consumer Surplus vs. Welfare Standard in a Political Economy Model of Merger Control", *International Journal of Industrial Organization*, 23, pp. 829-848.
- Shekhar, C. and P. L. Williams (2004), "Should the Pre-Notification of Mergers Be Compulsory in Australia?", *Australian Economic Review*, 37(4), pp. 383-390.
- Shahrur, H. (2005), "Industry Structure and Horizontal Takeovers: Analysis of Wealth Effects on Rivals, Suppliers, and Corporate Customers", *Journal of Financial Economics*, 76, pp. 61-98.
- Stillman, R. (1983), "Examining Antitrust Policy towards Horizontal Mergers", *Journal of Financial Economics*, 11, pp. 225-240.
- Todaro, P. M. and K. E. Walsh (2002), "From Vienna to Moscow to Rio de Janeiro: The Current Complexities of Foreign Antitrust Filings", American Bar Association, *Corporate Counselling Report*, pp. 2-8.
- Williams, P. L. and G. Woodbridge (2004), "Antitrust Merger Policy: Lessons from the Australian Experience", in Ito, T. and A. O. Kruger (eds), *Governance, Regulation, and Privatization in the Asia-Pacific Region*, University of Chicago Press, pp. 35-66.

Figure 1 - Extensive Form of the Australian Regulatory Game



**Table 1: Outcomes under Two Notification Regimes**

	Compulsory notification (Proposition 2)	Voluntary notification (Proposition 5)
$(b_l, w_l)$	negotiation	notification/negotiation
$(b_l, w_h)$	negotiation	no notification/clear
$(b_h, w_l)$	court challenge	no notification/court challenge
$(b_h, w_h)$	clear	no notification/clear

**Table 2** – Summary statistics of merger proposals considered (and decided upon) by the ACCC over the period of January 1996 – June 2002. Data are collected from information disclosed on the ACCC public register. The proposals are classified according to the identity of the notifying party. The companies proposing the merger must be one of the notifying parties for the transaction to be classified under “Initiated by Parties”. If notification is received from sources other than the companies in question, the proposal is classified as “Initiated by Others”. Mergers are classified as Objected if the ACCC raised concerns, and Not Objected otherwise. Panel A is for the full sample whereas Panel B reports the summary statistics for transactions where stock price data are available for at least one of the merging firms and the firm is listed in Australia.

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*Panel A - All merger proposals*

	<u>N</u>	<u>Not Objected</u>	<u>Objected</u>	<u>Renegotiated</u>	<u>Withdrawn</u>
Initiated by Parties	547	499 (91.22%)	48 (8.77%)	35 (6.39%)	13 (2.37%)
Initiated by Others	303	295 (97.35%)	8 (2.64%)	2 (0.66%)	6 (1.98%)

*Panel B - Merger proposals by firms with price data available*

	<u>N</u>	<u>Not Objected</u>	<u>Objected</u>	<u>Renegotiated</u>	<u>Withdrawn</u>
Initiated by Parties	126	102 (81%)	24 (19%)	17 (13.49%)	7 (5.55%)
Initiated by Others	44	43 (97.72%)	1 (2.27%)	0 (0%)	1 (2.27%)

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Panel A is based on summary statistics presented in Shekhar and Williams (2004).

**Table 3** – Cumulative average abnormal returns around the event date for equally weighted portfolios of all firms. Portfolios consist of all firms (acquirers and targets) for whom price data are available. ‘Notified’ consists of all firms that notify ACCC of their merger plans, whereas ‘Not Notified’ consists of firms that do not. If the ACCC raises concerns, mergers are classified as Objected, and Not objected otherwise. Abnormal returns are the residuals of the market model, which are estimated using up to one year’s returns prior to event date. Returns significantly different from zero are *italicized*. Test statistics for difference of means (t-statistics for parametric test and z-statistic for Wilcoxon rank test) are also reported where \* denotes statistical significance at the 10% level.

**Panel A - Notified vs. Not Notified mergers, all firms**

Interval	(-1, 1)	(-1, 0)	(0, 0)	(0, 1)	(-2, 2)
Notified (N=148)	4.83%	2.7%	2.44%	4.55%	5.32%
Not Notified (N=50)	5.32%	5.08%	3.65%	3.84%	7.57%
<i>t-statistic</i>	0.26	1.48	0.9	-0.44	1.06
<i>z-statistic</i>	0.24	1.46	0.48	-0.124	0.897

**Panel B - Notified vs. Not Notified mergers, not objected mergers only**

Interval	(-1, 1)	(-1, 0)	(0, 0)	(0, 1)	(-2, 2)
Notified (N=120)	3.75%	2.75%	2.58%	3.51%	4.12%
Not Notified (N=49)	5.59%	5.32%	3.85%	4.07%	7.88%
<i>t-statistic</i>	-0.98	-1.55	-0.91	-0.34	-1.75
<i>z-statistic</i>	1.05	1.89*	0.824	0.594	1.716*

**Panel C - Notified vs. Not Notified mergers, objected mergers only**

Interval	(-1, 1)	(-1, 0)	(0, 0)	(0, 1)	(-2, 2)
Notified (N=28)	9.34%	2.435%	1.67%	9.015%	10.39%
Not Notified (N=1)	-8.24%	-7.0%	-6.23%	-7.48%	-7.81%
<i>t-statistic</i>	-	-	-	-	-
<i>z-statistic</i>	-1.61	-1.58	-1.576	-1.6	-1.61