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**Working Paper**

## Trigger happy or gun shy? : Dissolving common-value partnerships with Texas shootouts

CSIO Working Paper, No. 0045

**Provided in Cooperation with:**

Department of Economics - Center for the Study of Industrial Organization (CSIO), Northwestern University

Suggested Citation: Brooks, Richard; Spier, Kathryn E. (2004) : Trigger happy or gun shy? : Dissolving common-value partnerships with Texas shootouts, CSIO Working Paper, No. 0045, Northwestern University, Center for the Study of Industrial Organization (CSIO), Evanston, IL

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<http://hdl.handle.net/10419/23474>

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THE CENTER FOR THE STUDY  
OF INDUSTRIAL ORGANIZATION  
AT NORTHWESTERN UNIVERSITY

Working Paper #0045

**TRIGGER HAPPY OR GUN SHY?  
DISSOLVING COMMON-VALUE PARTNERSHIPS WITH  
TEXAS SHOOTOUTS**

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June 4, 2004

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<sup>1</sup> We would like to thank Jim Dana, Roberta Romano, Elliot Surkin and participants at the 2004 American Law and Economics Association Meetings in Chicago for helpful comments.

## **Abstract**

Many partnership contracts (and other joint-venture agreements) include so-called “Texas Shootout Clauses” to govern future breakups. In a Texas Shootout, one partner names a single buy-sell price and the other partner has the option to buy or sell at that price. While the prior literature has considered the allocative efficiency of the Texas Shootout, this paper focuses on the incentives of private parties to make these offers to begin with. We consider a model where sole ownership is more efficient than joint ownership. Although both partners are equally capable, one has private information about the common value of the asset. When given the choice, they avoid making buy-sell offers because these offers give away bargaining surplus (the partners are “gun shy”). Instead, they often (but not always) prefer to make simple offers to buy or simple offers to sell and bargaining failures arise. Texas Shootout contracts that assign trigger rights – where one party can force the other to name a price – increase efficiency and are jointly desirable.

## 1. Introduction

This paper is concerned with the dissolution of common ownership agreements — such as closely-held corporations, partnerships, and limited-liability companies — where the external market for ownership interests is thin. The absence of efficient ownership markets implies that dissolution effectively leads to a private auction among the members of the venture. There are numerous ways of conducting this auction,<sup>1</sup> as well as meaningful alternatives to an auction (e.g., negotiation, mediation, or liquidation), but we focus on a particular auctioning device known as a Texas Shootout.<sup>2</sup> A Texas Shootout—so labeled because once initiated (or triggered) only one party will be ‘left standing’—is a buy-sell provision where a party names a price for her share of the venture and another party decides whether to pay that price (i.e., buy out the first party) or to be paid that price (i.e., sell out to the first party).<sup>3</sup>

The practical implementation of a Texas Shootout is well-illustrated by the contested dissolution of Omnibus Financial Group (Omnibus). Omnibus was organized as a limited liability company (LLC) by four investors (members) in 1996. Two members withdrew within two years, leaving John Valinote and Stephen Ballis as co-member-managers of the venture. Valinote soon ceased participating in the venture and sought an exit strategy. After some delay, Ballis announced a price for the business under the buy-sell clause in Omnibus’s operating

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<sup>1</sup> See McAfee (1992) and Brams and Taylor (1996) for comparisons (in terms of efficiency and fairness) of various auctions that may be employed.

<sup>2</sup> Texas shootouts are alternatively referred to in the literature as Texas auctions or the cake-cutting rule. Practitioners also refer to these auctions as Texas shootouts (*RDO Foods Co. v. U.S. Int’l, Inc.*, 194 F.Supp.2d 962, 2002), as well as shotgun provisions (*Damerow Ford Co. v. Bradshaw*, 876 P.2d 788, 1994), Russian roulette agreements (*Delaney v. Georgia-Pacific Corp.*, 601 P.2d 475, 1979), put-call options (*Resolution Trust Corp. v. Residential Developers Fund Partners*, 1991 WL 193363 (E.D.Pa) 1991) and simply buy-sell mechanisms (*Universal Studios Inc. v. Viacom Inc.*, 705 A.2d. 579, 1997). Though these terms are often used interchangeable in practice, we will treat shootouts as a special class of buy-sell agreement where the price is determined uniquely by the offeror.

<sup>3</sup> Some shootout agreements allow any party to trigger them for any reason, while others require the occurrence of stipulated (often verifiable) events before they can be initiated.

agreement, which invited Valinote to buy or sell at that price.<sup>4</sup> Valinote opted to sell his fifty percent stake, allowing Ballis to continue the business without the disruption and transaction costs associated with a negotiated separation or liquidation.<sup>5</sup>

Because of their potential for efficient and fair dissolution of common ownership agreements, shootout clauses have practically become boilerplate.<sup>6</sup> Despite their widespread use, shootout provisions have received only limited attention in the academic literature. We consider a simple extensive-form game where two partners initially share joint ownership of an asset. Later, an event occurs that makes joint ownership inefficient: the value of the underlying asset is higher if one partner has sole control. Bargaining is complicated by the fact that one of the partners has private information about a common underlying value of the asset.<sup>7</sup> In our model, Texas Shootouts dissolve the partnership efficiently by removing the "status quo" of joint ownership from the bargaining table. While Texas Shootout contracts are jointly efficient, they are under-utilized by the partners *ex post*. A partner -- whether he is informed or uninformed -- can usually capture greater equilibrium rents through simple offers to buy or simple offers to sell.<sup>8</sup> We show that buy-sell offers are made in the signaling equilibrium only when the common

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<sup>4</sup> *Valinote v. Ballis*, 295 F.3d 666 (7<sup>th</sup> Cir., 2000). The initiation of a buy-sell clause often imposes several formal requirements, including giving proper written notice, postings of deposits or bonds or both, and the triggering of time periods within which the other party must accept the buy-sell offer and close. A party's failure to meet these requirements may have severe detrimental consequences for that party.

<sup>5</sup> Ballis actually announced a value of -\$1,581.29 per one percent interest in the business (i.e., the business had negative value) and thus by choosing to sell his interest in the business, Valinote \$79,064 to Ballis.

<sup>6</sup> The importance of buy-sell agreements is now so broadly recognized that a lawyer's failure to recommend or include them in modern joint venture agreements is considered "malpractice" among legal scholars and practitioners.

<sup>7</sup> Texas Shootouts would be unnecessary for efficiency under symmetric information. Rational partners would easily negotiate a price for the sale of the asset.

<sup>8</sup> Suppose that it is commonly known that the joint asset is \$0 if the two partners stay together, but is worth \$2 with concentrated ownership. In other words, there is \$2 of bargaining surplus on the table. Suppose that Partner 1 can make a take-it-or-leave-it offer to Partner 2. The best buy-sell offer that Partner 1 could make is  $p = \$1$ , giving each of the two partners half of the bargaining surplus. Partner 1

value is in an intermediate range and the gains from trade are not too large. The threat to remain with the "status quo" of joint ownership is used strategically to extract rents in bargaining and, in the process, destroys joint value. The idea that making a buy-sell offer may not be unilaterally profitable has been largely overlooked by practitioners and academics.

Since private parties have an insufficient incentive to make buy-sell offers *ex post*, we argue that it is in their interest to write restrictive contracts *ex ante* to encourage their use. We first consider clauses that make shootouts mandatory for partnership dissolution. We show that when gains from trade are high then a coordination game arises: although both partners want to dissolve their partnership, neither wants to be the one to make the buy-sell offer.<sup>9</sup> Although equilibria exist where the partnership is dissolved efficiently, there may be a risk of coordination failure. For this reason, it makes sense for the partners to contractually assign "trigger rights" *ex ante*, giving one or both partners the right to *compel* the other partner to make a buy-sell offer. When the gains from trade are small, however, the uninformed partner credibly refrains from making buy-sell offers.

The formal economics literature has, for the most part, focused on direct revelation mechanisms for allocating partnership assets and has not considered the strategic use of buy-sell offers in decentralized bargaining.<sup>10</sup> Cramton, Gibbons and Klemperer (1987) first characterized the set of incentive-compatible interim-individually-rational dissolution mechanisms in the independent private values context. They demonstrated that *ex post* efficient allocations may be reached where parties have roughly equal *ex ante* ownership stakes in the asset (such as with

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can clearly capture the entire bargaining surplus with a simple offer to buy Partner 2's stake for a penny or, analogously, to sell his stake for just under \$2.

<sup>9</sup> The property that the offeror does worse than the offeree is not unique to our model. It appears in McAfee's (1992) model with independent private values among others.

<sup>10</sup> Cf. e.g., Minehart and Neeman (1999), who examine termination and coordination of activities in partnerships, and Levin and Tadelis (2002), who focus on investment in partnerships and organizational form.

equal partners), unlike the case, for instance, where one party begins with complete ownership (Myerson and Satterthwaite 1983). However, the Texas Shootout is not an efficient allocation mechanism in this context (McAfee 1992; Minehart and Neeman 1999).<sup>11</sup> Jehiel and Paudner (2002) and Fieseler et. al. (2003) employ a mechanism design approach to the partnership dissolution problem where parties have interdependent values and are asymmetrically informed and show that efficiency is even harder to achieve in this setting. (See also Moldovanu 2001).

As the literature moved from the assumption of private values to interdependent or common values, some of the focus has shifted from bargaining efficiency to fairness concerns. See Morgan (2003) and Brams and Taylor (1996) for a survey of the fairness implications.<sup>12</sup> The focus on fairness is justified, at least implicitly, by the observation that if an asset has a value that is common to all individual parties then no allocative efficiency implications are raised by an ex post assignment of ownership to one partner or the other. In our model, however, Texas Shootouts raise salient efficiency implications even in the context of common values. In this context shootouts restrict strategic behaviors that interfere with the allocation of the asset to one party or another when joint ownership is no longer desirable.

The next section lays out the basic notation of the model. The third section considers Texas Shootouts without restrictions. The equilibrium strategies and outcomes are characterized where one party can make a final offer. It is shown that buy-sell offers are underutilized -- the partners are "gun shy". The fourth section focuses on contractual restrictions on Texas

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<sup>11</sup> Ex post efficiency is achieved under full information and the parties prefer to be offerors rather than offerees, which flips under asymmetric information (McAfee 1992). In a recent working paper, de Frutos and Kittsteiner (2004) argue that McAfee's inefficiency is mitigated if the parties bid to see who gets to be the offeror. This essentially restores symmetry to an otherwise asymmetric mechanism and could be considered a form of "trigger right." Their work and ours were pursued independently.

<sup>12</sup> Morgan (2003: 4) "abstracts away from efficiency considerations entirely" based on the view that "with common values, all allocations are efficient." Morgan's also considers a common value model but his information structure is more general than ours. He does not consider decentralized bargaining or the question of how the shootout is triggered. Morgan's work and our own were pursued independently.

Shootouts and argues that the contract should allocate "trigger rights" to one or both partners where a partner can compel the other to make a buy-sell offer. The final section discusses the implications, extensions, and limitations of the analysis. Proofs, when omitted from the text, are given in the Appendix.

## 2. The Model

Suppose that two partners,  $i = 1, 2$ , initially have equal ownership of an asset whose (future) value is  $x$ . Partner 1 is better informed than Partner 2: he privately observes the value of the asset,  $x \in [0,1]$ , which is non contractible and drawn from a commonly known distribution  $f(x)$ . Although presumably joint ownership of the assets was originally desirable, an event has occurred that makes joint ownership inefficient. We assume that the value created by the asset is higher when under the sole control of one of the partners,  $x + a$ , where  $a$  is a positive number. Although the underlying value of the asset,  $x$ , is privately observed by Partner 1 it is common knowledge that gains from trade,  $a > 0$ , exist. The partners subsequently attempt to dissolve their partnership in the shadow of joint ownership where they each would receive half of the asset value,  $x/2$ .

The assumption that the asset creates more value with concentrated ownership may be justified in a number of different ways. First, it may reflect an underlying moral-hazard-in-teams problem (Holmstrom, 1982) in which joint ownership leads to underinvestment relative to the socially efficient level. Second, it may reflect private benefits of control that are outside the model. A sole partner, for example, may gain disproportionate non-pecuniary benefits such as respect and prestige in the business community or disproportionate pecuniary benefits from invitations to serve on boards of directors. Third, the partnership may, by its very nature, require



investments from each partner that are duplicative at this stage in the firm's life cycle.<sup>13</sup> Finally, but certainly not least likely, the partnership may be in deadlock,<sup>14</sup> wherein irreconcilable differences between partners prevents the business from moving forward.<sup>15</sup>

We assume that the two partners are equally capable of running the firm alone. We have adopted this assumption mainly for the purpose of streamlining the exposition: the notation is simpler and the proofs are shorter as a result. Our results extend to positive asymmetric stakes where, for example, Partner 1 derives greater value from sole ownership than Partner 2. Indeed, buy-sell clauses are often instigated by the death of one partner. We would expect that the heirs to the deceased partner's shares are in a worse position to run the firm than the living partner.<sup>16</sup>

Since the status quo of joint ownership is inefficient, the partners clearly have private incentives to dissolve their partnership. We assume that negotiations consist of a single take-it-or-leave-it offer involving a price,  $p^{ik}$ . Indicator  $i$  refers to the partner making the offer,  $i = 1, 2$ . Indicator  $k \in \{B, S, T\}$  tells whether it is an offer to buy at the given price ( $B$ ), an offer to sell at that price ( $S$ ), or a buy-sell offer which gives the receiver the option to either buy or sell at the

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<sup>13</sup> The ongoing transactions costs of filing tax returns as a partner should be higher than, say, simply liquidating the asset and purchasing shares in an index fund instead. To give an even more innocuous example, the transactions costs associated with partnerships may be higher since two signatures would be required on many partnership documents.

<sup>14</sup> The generic definition of deadlock is “a complete standstill; lack of progress due to irreconcilable disagreement or equal opposing forces” (OED). In a legal proceeding, a determination of deadlock allows the court to dissolve the joint venture agreement discharge appropriate remedies. Demonstration of deadlock will empower a court to dissolve the partnership if a party seeks a judicial resolution, however the issue of the efficient allocation of partnership assets is not an explicit objective of such proceedings.

<sup>15</sup> Deadlock is a salient concern in corporations and LLCs, as well as in partnerships (Hoberman, 2001). “Deadlock in a closely held corporation arises when a control structure permits one or more factions of shareholders to block corporate action if they disagree with some aspect of corporate policy.” Black’s Law Dictionary.

<sup>16</sup> To accommodate this concern, buy-sells that are triggered by death typically use a predetermined price (updated annually), and in many cases are structured as buy-out clauses, where the estate of the deceased must sell to the surviving partner(s) (see e.g., *Stephenson v. Drever*, 947 P.2d. 1301, 1997). There are additional normative implications when the partners’ competences are asymmetric. The question becomes not only whether the partnership is dissolved (the avoidance of the status quo) but who gets sole control (allocative efficiency).

named price ( $T$ ). (The "T" refers to the Texas Shootout). We will also use the following notation:  $\pi_j^{ik}(x)$  is the equilibrium probability that Partner  $j$  ends up owning the asset given the offer of type  $k$  made by Partner  $i$  and  $S_j^{ik}(x)$  will be Partner  $j$ 's equilibrium surplus, or his payoff above the status quo payoff  $x/2$ .

Finally, our equilibrium concept is perfect Bayesian equilibria (PBE). In the game where Partner 1, the informed partner, makes the take-it-or-leave-it offer we refine the multiple equilibria by choosing the equilibrium in which Partner 1's offer fully reveals his private information. This equilibrium is also the one that would be selected using Banks and Sobel's (1987) refinement of universal divinity (D1).

### 3. Unrestricted Shootouts

In this section we assume that there are no contractual agreements regulating the use of buy-sell offers. Instead, a partner will choose to make a buy-sell offer (or choose to accept a buy-sell offer) only when it is in his private interest. We will see that while the parties are more than willing to *accept* buy-sell offers they are "gun shy" when it comes to *making* them. The reason is that the Texas Shootout mechanism gives a large part of the bargaining surplus to the other side, surplus that may be retained with simple offers to buy or sell. Importantly, we will show that the parties' reluctance to make buy-sell offers reduces social welfare in the presence of asymmetric information.

To start, observe that the partner who receives a buy-sell offer at price " $p$ " necessarily prefers buying or selling at  $p$  to rejecting the offer out-of-hand. To see this, suppose that the receiver believes that the asset is worth  $E(x)$  on average, so if he rejects the buy-sell offer he receives an expected status quo payoff of  $E(x)/2$ . When  $p > E(x)/2$  he clearly prefers selling at

price  $p$  to joint ownership. On the other hand, if  $p < E(x)/2$  then his expected payoff from buying at price  $p$ ,  $E(x) + a - p$ , is also larger than his status quo payoff  $E(x)/2$ . So the receiver of the buy-sell offer -- whether informed or uninformed -- necessarily prefers buying or selling at any named price to remaining with the status quo payoff.

In contrast, the partners are very reluctant to make buy-sell offers. This is easily illustrated for the special case where  $x$  is commonly known. Partner 1's best shootout offer,  $p^{IT}$ , may be found by backwards induction. Given a price,  $p^{IT}$ , Partner 2 will certainly sell to Partner 1 if  $p^{IT} > x + a - p^{IT}$ , or equivalently  $p^{IT} > \frac{x+a}{2}$ , and will buy when  $p^{IT} < \frac{x+a}{2}$ .

Working backwards in time, it is not hard to see that the best offer (from Partner 1's perspective) makes Partner 2 indifferent between buying and selling:  $p^{IT} = \frac{x+a}{2}$ .<sup>17</sup> Note that in equilibrium the two partners *share the bargaining surplus equally*:  $S_1^{IT}(x) = S_2^{IT}(x) = a/2$ . It is easy to see why Partner 1 will never voluntarily choose to make a buy-sell offer. He can extract all of the bargaining surplus,  $a$ , through a simple offer to buy Partner 2 out for a price  $p^{IB} = x/2$  (plus a penny, perhaps) or through a simple offer to sell his share for  $p^{IS} = x/2 + a$  (minus a penny).<sup>18</sup>

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<sup>17</sup> If  $p^{IT} > \frac{x+a}{2}$  then Partner 2 strictly prefers to sell and Partner 1 could profitably lower the price. If  $p^{IT} < \frac{x+a}{2}$  then Partner 2 strictly prefers to buy and so Partner 1 could profitably raise the price. Any probability of buying versus selling constitutes an equilibrium. The payoffs of the two parties are the same whether Partner 2 buys or sells.

<sup>18</sup> This reluctance would also appear in an infinitely repeated version of this model. To see why, suppose the partners believe that the Texas Shootout will be invoked at date  $t+1$  where they will split the surplus equally. Partner 2's outside option when viewed from at date  $t$  is  $\delta(x+a)/2$  where  $\delta$  is the discount factor. Partner 1 surely prefers a simple offer to buy Partner 2's stake at date  $t$  for  $p^B = \delta(x+a)/2$  to a buy-sell offer where he splits the surplus 50/50. We conjecture that this game will feature delay when the partners are privately informed about the common value of the asset.

The next sections show that with symmetric information the partners are still reluctant to make buy-sell offers, even though simple offers to buy and a simple offers to sell lead to bargaining breakdowns in where the status quo is maintained .<sup>19</sup>

### 3.1 *The Informed Partner Makes the Offer*

This section characterizes the fully separating equilibrium that arises when Partner 1, the informed partner, can make a take-it-or-leave-it offer. As in the illustration above, the offeror shies away from buy-sell offers in the presence of asymmetric information because he or she often captures a greater share of the bargaining surplus through simple offers to buy or simple offer to sell. In particular, when the common value  $x$  is sufficiently low, Partner 1 offers to sell her shares to Partner 2. On the other hand, when the value of  $x$  is sufficiently high then Partner 1 offers to buy Partner 2's shares. Only in an intermediate range will Partner 1 voluntarily choose to make a buy-sell offer. In all three regions, the offer makes Partner 2 indifferent and he subsequently randomizes among his options.

Proposition 1: When the informed partner, Partner 1, makes a take-it-or-leave-it offer to Partner 2 there is a unique fully separating equilibrium. Letting  $\hat{x} = \min\{1/2, a \ln(4)\}$ ,

i. if  $x \leq \hat{x}$  Partner 1 offers to sell his shares to Partner 2 for  $p^{1S}(x) = x/2 + a$ ;

$$\pi_2^{1S}(x) = e^{-x/2a}, \pi_1^{1S}(x) = 0, S_1^{1S}(x) = ae^{-x/2a} \text{ and } S_2^{1S}(x) = 0 ;$$

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<sup>19</sup> The Coase conjecture, that bargaining will resolve itself in the "twinkling of an eye," does not extend to common value bargaining games, even when it is common knowledge that gains from trade exist. See Vincent's common value bargaining model (1989). A more familiar manifestation is Akerlof's (1970) Market for Lemons.

ii. if  $x \in (\hat{x}, 1 - \hat{x}]$  Partner 1 makes a buy-sell offer:  $p^{1T}(x) = (x + a)/2$ ;

$$\pi_1^{1T}(x) = \pi_2^{1T}(x) = 1/2, \text{ and } S_1^{1T}(x) = S_2^{1T}(x) = a/2;$$

iii. if  $x > 1 - \hat{x}$  Partner 1 offers to buy Partner 2's shares for  $p^{1B}(x) = x/2$ ;

$$\pi_1^{1B}(x) = e^{-(1-x)/2a}, \pi_2^{1B}(x) = 0, S_1^{1B}(x) = ae^{-(1-x)/2a} \text{ and } S_2^{1B}(x) = 0.$$

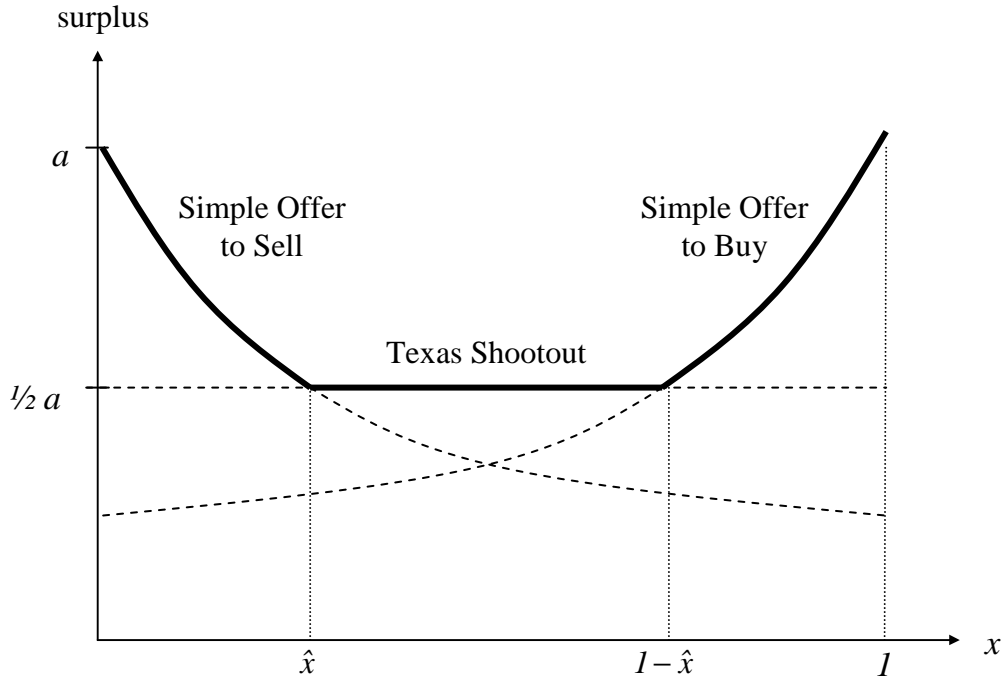
We see in part (i) of the Proposition that if  $x = 0$  (so the asset is worthless when owned jointly) that Partner 1 offers to sell the asset for  $p^{1S}(x) = a$  and Partner 2 accepts this offer for sure:  $\pi_2^{1S}(0) = 1$ . Partner 1 is able to extract the entire bargaining surplus,  $a$ , at this extreme.

When  $x$  rises the equilibrium has the feature that  $p^{1S}(x) = x/2 + a$  and Partner 2 is indifferent and randomizes between accepting and rejecting.<sup>20</sup> Note that Partner 2's probability of acceptance,  $\pi_2^{1S}(x) = e^{-x/2a}$ , is falling in the common value of the asset,  $x$ . This is necessary for incentive compatibility.

This may be understood intuitively. When Partner 1's offers are higher -- signaling that the value  $x$  is higher as well -- then a lower probability of acceptance is necessary in order to maintain incentive compatibility for Partner 1. This lower probability of acceptance prevents Partner 1 from exaggerating and pretending to have a "plum" rather than a "lemon." It is also important to notice that Partner 1 is capturing equilibrium rents and that Partner 1's rents fall as  $x$  rises. Partner 2, on the other hand, receives no rents here. He is indifferent between purchasing the shares and the status quo of joint ownership. Partner 1's equilibrium surplus from the simple offer to sell is proportional to the probability of acceptance and is depicted in Figure 1.

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<sup>20</sup> If he rejects the offer he gets the status quo payoff of  $x/2$ , and if he accepts he gets  $x + a - p^{1S}(x) = x/2$  as well.



**Figure 1:**  
**Partner 1's Surplus in the Signaling Equilibrium**

When  $x$  is high, Partner 1 will choose to make a simple offer to buy in favor of a simple offer to sell. The equilibrium, as characterized in part (iii) of the proposition, is the mirror image of part (i). When  $x = 1$  -- its highest level -- Partner 1 offers to buy Partner 2's shares for  $1/2$  and Partner 2 always accepts,  $\pi_1^{1B}(1) = 1$ . There is no reason for Partner 2 to be dubious here:  $1/2$  is his status quo payoff when  $x$  takes on its highest value -- an excellent price! Notice that Partner 1 extracts all of the surplus,  $a$ , through this offer to buy when  $x = 1$ . More generally, when  $x$  falls below  $1$  then Partner 1 offers  $p^{1B}(x) = x/2$  and the probability of acceptance,  $\pi_1^{1B}(x) = e^{-(1-x)/2a}$ , is rising in the offer. Again, this is necessary to maintain incentive compatibility. Partner 1's rents,  $a\pi_1^{1B}(x)$ , are rising in  $x$ , the common value of the asset and equal  $a$  when  $x = 1$ .

Now suppose that Partner 1 makes a Texas Shootout offer with price,  $p^{1T}$ . Partner 2 can buy that price, giving the two partners payoffs  $\{p^{1T}, x + a - p^{1T}\}$ , or can sell at that price giving payoffs  $\{x + a - p^{1T}, p^{1T}\}$ . The separating equilibrium with the Texas Shootout has a particularly simple form. Partner 1 offers to split the value fairly with the uninformed partner,  $p^{1T}(x) = (x + a)/2$ , making Partner 2 indifferent between buying and selling. Partner 2 subsequently flips an evenly weighted coin to determine whether to buy or sell:  $\pi_1^{1T}(x) = \pi_2^{1T}(x) = 1/2$ .<sup>21</sup> Partner 1 is, in fact, indifferent among the offers here and is happy to "tell the truth." As in the symmetric information example presented earlier, Partner 1 and Partner 2 share the bargaining surplus, each receiving  $a/2$ .

It is not hard to see why Partner 1 is "gun shy," avoiding the buy-sell offer at the extremes of the distribution. Suppose that Partner 1 knows that the asset is a plum:  $x = 1$ . He will capture the whole surplus,  $a$ , with a simple offer to buy the asset from Partner 2 for  $p^{1B} = 1/2$ . Similarly, if  $x = 0$  then Partner 1 can capture the whole surplus by making a simple offer to sell the asset for  $p^{1S} = 0$ .<sup>22</sup> In the middle range, however, incentive compatibility requires that the simple offers be rejected with probability greater than one half. It is therefore in Partner 1's interest to use the Texas Shootout, guaranteeing himself exactly half of the surplus. Indeed, the cutoff  $\hat{x} = \min\{1/2, a \ln(4)\}$  is where Partner 1's surplus is  $a/2$  whether he makes a simple offer to buy or a buy-sell offer. Similarly, when  $x = 1 - \hat{x}$  then Partner 1 is indifferent between a simple offer to sell and a buy-sell offer.

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<sup>21</sup> Morgan (2003) has a "purified" version of this result in a more general model. He does not, however, consider the possibility that players can make simple offer, nor does he consider the coordination problems and trigger rights discussed later.

<sup>22</sup> Plus a penny, perhaps. As before, Partner 2 will accept this offer regardless of his beliefs.

Corollary 1: If  $a < [2 \ln(4)]^{-1}$  then  $(\hat{x}, 1 - \hat{x})$  is a non-empty set and Partner 1 makes a buy-sell offer with positive probability in equilibrium. When  $a \geq [2 \ln(4)]^{-1}$  then  $(\hat{x}, 1 - \hat{x})$  is an empty set and no buy-sell offers are made.

### 3.2 The Uninformed Partner Makes the Offer

Suppose instead that the uninformed partner, Partner 2, makes a take-it-or-leave-it offer to Partner 1. We will first characterize Partner 2's best buy-sell offer and then show that Partner 2 will never voluntarily make it. From Partner 2's perspective, the best buy-sell offer is dominated by either a simple offer to buy or a simple offer to sell.

Consider a Texas Shootout where Partner 2, the uninformed partner, names a price  $p^{2T}$ . Being informed about the true common value,  $x$ , Partner 1 would "buy" instead of "sell" if and only if  $x + a - p^{2T} > p^{2T}$ . This implies a cutoff,  $x^{2T} = 2p^{2T} - a$ , where Partner 1 buys when  $x$  is above the cutoff and sells when  $x$  is below the cutoff. We can think of Partner 2's problem as finding the best cutoff,  $x^{2T}$ , and corresponding offer,  $p^{2T} = (x^{2T} + a)/2$ , to maximize his expected payoff:

$$x^{2T} = \arg \max_z \int_0^z [x + a - (z + a)/2] f(x) dx + \int_z^1 [(z + a)/2] f(x) dx. \quad (1)$$

Differentiating this expression and setting the derivative equal to zero shows that the cutoff satisfies

$$1 - 2F(x^{2T}) = 0. \quad (2)$$

In other words, Partner 2's favorite offer corresponds to the median of the distribution.

Intuitively, Partner 2 is just indifferent between raising and lowering the offer because there is a 50/50 chance that he will buy versus sell at the named price.



Lemma 1: Partner 2's best Texas Shootout offer,  $p^{2T} = (\bar{x} + a) / 2$ , corresponds to the median of the type distribution,  $\bar{x}$ .

(i) If  $x < \bar{x}$  then Partner 1 sells his shares to Partner 2.  $\pi_1^{2T}(x) = 0$ ,  $\pi_2^{2T}(x) = 1$ ,

$$S_1^{2T}(x) = \frac{\bar{x} - x + a}{2}, \text{ and } S_2^{2T}(x) = \frac{x - \bar{x} + a}{2}.$$

(ii) If  $x > \bar{x}$  then Partner 1 buys Partner 2's shares.  $\pi_1^{2T}(x) = 1$ ,  $\pi_2^{2T}(x) = 0$ ,

$$S_1^{2T}(x) = \frac{x - \bar{x} + a}{2}, \text{ and } S_2^{2T}(x) = \frac{\bar{x} - x + a}{2}.$$

Despite the fact that the Texas Shootout may be desirable for the two partners jointly, Partner 2 will never find it in his individual interest to make the buy-sell offer -- he is "gun shy." The Texas Shootout is an unusually unattractive mechanism from Partner 2's perspective. If the asset is a "plum",  $x > \bar{x}$ , then Partner 1 will buy out Partner 2 at an "average" price. If the asset is a "lemon,"  $x \leq \bar{x}$ , then Partner 1 sells out an average price and Partner 2 is stuck with a less valuable asset. In both cases, Partner 2 is getting the short end of the stick.

Proposition 2: The uninformed partner, Partner 2, never voluntarily makes a buy-sell offer. He prefers making either a simple offer to buy the asset or a simple offer to sell the asset instead.

Proof: Using the Lemma, Partner 2's expected surplus from the Texas Shootout is:

$$\int_0^l S_2^{2T}(x) dF(x) = \int_0^{\bar{x}} \left[ \frac{x - \bar{x} + a}{2} \right] dF(x) + \int_{\bar{x}}^l \left[ \frac{\bar{x} - x + a}{2} \right] dF(x)$$

or

$$\int_0^1 S_2^{2T}(x) dF(x) = \left(\frac{1}{2}\right) \left\{ a + \int_0^{\bar{x}} (x - \bar{x}) dF(x) + \int_{\bar{x}}^1 (\bar{x} - x) dF(x) \right\}. \quad (3)$$

Suppose instead that Partner 2 makes a simple offer to sell the asset to Partner 1 for  $\bar{x}/2 + a$ .

Partner 1 accepts if  $x$  is above the median and rejects the offer if  $x$  is below the median, the same cutoff as before. (If Partner 1 accepts the offer Partner 1 receives payoff  $x + a - (\bar{x}/2 + a)$  and if he rejects Partner 2 receives his status quo payoff  $x/2$ . These are equal when  $x = \bar{x}$ .) Partner 2's expected surplus from this simple offer to sell is:

$$\int_0^{\bar{x}} \left[ \frac{x}{2} - \frac{x}{2} \right] dF(x) + \int_{\bar{x}}^1 \left[ \frac{\bar{x}}{2} + a - \frac{x}{2} \right] dF(x) = \left(\frac{1}{2}\right) \left\{ a + \int_{\bar{x}}^1 (\bar{x} - x) dF(x) \right\}. \quad (4)$$

Comparing (3) and (4) shows that the latter is missing a negative term,  $\int_0^{\bar{x}} (x - \bar{x}) dF(x) < 0$ . We

conclude that Partner 2 strictly prefer the simple offer to sell for  $\bar{x}/2 + a$ . A similar argument can be made, of course, to show that he would also prefer a simple offer to buy.<sup>23</sup>

Q.E.D.

Intuitively, Partner 2 would rather use the simple offer to buy or the simple offer to sell to create a threat of breakdown for Partner 1. This threat strengthens Partner 1's private incentive to accept hard-ball offers. Although this lead to inefficient breakdowns in equilibrium, it increases Partner 2's share of the bargaining surplus.

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<sup>23</sup> Note that these are not Partner 2's best offers. It is not difficult to show that he would make an offer to sell for  $p^{2S} = x^{2S}/2 + a$  where  $1 - F(x^{2S}) - 2af(x^{2S}) = 0$  or an offer to buy for  $p^{2B} = x^{2B}/2$  where  $2af(x^{2B}) - F(x^{2B}) = 0$ .

## 4. Contractual Restrictions on Shootouts

The last section of the paper showed that the partners' natural reluctance to make buy-sell offers, combined with asymmetric information, leads to the inefficient continuation of joint asset ownership. The possibility of *ex post* inefficiency suggests that partners would find it in their interest to write contracts *ex ante* to encourage their future use. This section will consider two types of provisions. The first, the "mandatory shootout," states that partnerships must be dissolved through shootouts and effectively prohibits the partners from making simple offers to buy or simple offers to sell. Partnership agreements sometimes include mandatory buy-sell provisions,<sup>24</sup> though practitioners often advise against this (Welborn 1990). The second provision allocates "trigger rights" to the partners where one (or both) can compel the other to pull the trigger and place a buy-sell offer on the table.

### 4.1 Mandatory Shootout Clauses

Let's first consider mandatory shootouts using the following simultaneous move game. First, each partner may place a buy-sell offer on the table. (If both partners make buy-sell offers then a coin is flipped to choose the active offer.) Second, the receiver of the offer decides whether to buy or sell at the named price. Each partner would prefer the other to "pull the trigger" for a simple reason: When the informed party makes the buy-sell offer the bargaining surplus is divided evenly, but when the uninformed partner makes the offer the allocation is uneven.<sup>25</sup> The next Lemma states that when the gains from trade are small then Partner 2, the uninformed partner, prefers the status quo to making a buy-sell offer.

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<sup>24</sup> See e.g., *Lyon Dev. Co. v. Business Men's Assurance Co. of America*, 76 F.3d 1118).

<sup>25</sup> Recall that Partner 2 is at an information disadvantage and gets less than half of the bargaining surplus when he makes the offer.

Lemma 2: When  $a < \hat{a} = E(x) - 2 \int_{\bar{x}}^1 x dF(x)$  then Partner 2 prefers to make no offer at all to

making a buy-sell offer. When  $a > \hat{a}$  then Partner 2 prefers making the buy-sell offer to making no offer at all.

Proof: Partner 2 would never voluntarily make a buy-sell offer when the expected surplus (relative to the status quo) is negative. From section 3, Partner 2's expected surplus from the

buy-sell offer is  $\int_0^1 S_2^{2T}(x) dF(x) = \left(\frac{1}{2}\right) \left\{ a + \int_0^{\bar{x}} (x - \bar{x}) dF(x) + \int_{\bar{x}}^1 (\bar{x} - x) dF(x) \right\}$ . Rearranging terms

shows that this is positive if and only if  $a > \hat{a}$  where  $\hat{a}$  is defined in the Lemma.

Q.E.D.

This result may be understood intuitively. Suppose that the bargaining surplus,  $a$ , is very small so the status quo is almost as efficient as concentrated ownership. Partner 2, the uninformed partner, has no incentive to make a shootout offer: If he names an "average" price then Partner 1 will buy when  $x$  is above average and sell when  $x$  is below average, giving Partner 2 less than remaining with the status quo. He is getting the "short end of the stick," so to speak. As the bargaining surplus grows the figurative "stick" is getting longer. Although Partner 2 is still getting the short end of the stick, there comes a point where he prefers the short end of the stick to having no stick at all.

Proposition 3: Suppose that the contract includes a "mandatory shootout clause."

(i) If  $a < \hat{a}$  then Partner 1 makes a buy-sell offer.

- (ii) If  $a \geq \hat{a}$  then there are three equilibria: (1) Partner 1 makes a buy-sell offer, (2) Partner 2 makes a buy-sell offer, (3) Partners 1 and 2 mix between making buy-sell offers and refraining from doing so.

When  $a < \hat{a}$ , Lemma 2 tells us that Partner 2 will refuse to make the offer. In this case, Partner 1 bites the bullet, pull the trigger, and shares the surplus evenly with Partner 2. As the parameter  $a$  rises, then Partner 2's unilateral incentive to make a buy-sell offer rises as well. When  $a \geq \hat{a}$  there is a coordination game where each partner is willing to make a buy-sell offer but would prefer to be on the receiving end instead.<sup>26</sup> As in the famous game of Chicken, a coordination failure or stalemate can arise in the resulting mixed strategy equilibrium.

The main insights of this paper are important in practice. The reluctance of private parties to make buy-sell offers is illustrated by the well-known case of *Owen v. Cohen* (1941).<sup>27</sup> This case involved the dissolution of a bowling-alley partnership in Burbank, California. After enduring several breaches of the partnership agreement — and personal mistreatment by Cohen<sup>28</sup> — Owen demanded that his partner “make an offer either to buy out his [Owen’s] interest in the business or to sell to him.” In flatly rejecting this solicitation, Cohen replied, “it would cost [Owen] plenty to get rid of him.”

A mandatory shootout clause, which might have assisted Owen, could be enforced in a variety of ways. First, the agreement would be self-enforcing if one partner could sue for

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<sup>26</sup> MacAfee (1992) shows that partners prefer receiving offers to making them in a model with independent private values. He does not, however, consider the possibility that the partners will make simple offers to buy or sell.

<sup>27</sup> 19 Cal.2d 147.

<sup>28</sup> The court found that in addition to shirking his management responsibilities (allegedly informing Owen that he “had not worked yet in 47 years and he did not intend to start now”), Cohen wrongly appropriated partnership funds, sought to open an illegal “gambling room on the second floor of the bowling –alley property”, and engaged in persistent efforts to “humiliate [Owen] before the employees and customers of the bowling-alley.”

damages if the other partner dared to make a simple offer to buy (or a simple offer to sell). Alternatively, this agreement would be enforced through the involvement of a third party who would receive payments if the two partners ever deviated and negotiated a side deal. There is a practical alternative to these mechanisms, however: the assignment of trigger rights.

#### **4.2 Trigger Rights**

The potential for coordination failures identified in the last section can be solved if one (or both) partners is given the right to force the other to initiate the shootout ("trigger rights").<sup>29</sup> When both parties have trigger rights they will "race" to compel the other to make a buy-sell offer and the partnership will be dissolved efficiently. This is in stark contrast to the previous section where coordination failures and inefficiencies arise when each partner would like the other to name a price.<sup>30</sup>

Our model does not tell us which partner should retain these trigger rights -- the Texas Shootout leads to the efficient allocation of assets regardless of who makes the buy-sell offer in our context.<sup>31</sup> The analysis does suggest, however, that equity may better served when the informed party makes the offer for, in this case, the two partners ultimately share the bargaining surplus equally.<sup>32</sup> This suggests that the design of Texas Shootouts may vary depending on whether the parties exist in a Rawlsian world, not knowing which partner is likely to be more

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<sup>29</sup> Parties do sometimes negotiate over which partner will be required to make the shootout offer. See e.g., *Damerow Ford Co. v. Bradshaw*, 876 P.2d 788 (1994).

<sup>30</sup> Although not explicitly discussed by McAfee (1992), this coordination failure would arise with independent private values as well.

<sup>31</sup> De Frutos and Kittsteiner suggest that allocative efficiency is higher when the parties bid to see who will be the receiver of the offer. This is an ex post allocation of trigger rights.

<sup>32</sup> *In Damerow Ford Co. v. Bradshaw*, the partners "entered a 'shotgun agreement,' under which Preble [the more-informed party] was to set a price for the [company's] stock within 20 days and [the other partner] had the option either to sell (put) his shares to Preble at the set price or to buy (call) Preble's shares at that price."

informed, or if they can fairly predict who will know more about the value of the business upon dissolution.

To give an example, since non-managing investors (such as, for example, limited partners) have weaker management and control rights over the assets and are less likely to participate in the business than managing investors (e.g., general partners), the parties can predict at the start of the relationship that non-managing investors will often, though not always, be less-informed. Thus limited partners, members in manager-managed LLCs and non-participating shareholders in closely held corporations should be willing to pay for trigger rights given their informational disadvantage. Similarly, it should be more difficult to allocate trigger rights in ventures where investors do not begin with this informational disadvantage, such as general partnership, member-managed LLCs and LLPs.

## **5. Conclusion**

Though Texas Shootout contracts have long been used to restrict behaviors—strategic and otherwise—there remains ambiguity about the different ways they restrict and which restrictions serve efficiency. Our paper is the first to consider the case of decentralized bargaining where the partners may, but are not required to, make buy-sell offers. We showed that the partners eschew buy-sell offers in favor of simple offers to either buy or sell. Naming a single price and giving the receiver the option to either buy or sell at that price transfers bargaining surplus to the receiver, surplus that could be retained through more traditional offers. Because of their hesitation to share this bargaining surplus (in addition to concerns about

subsequent legal challenges arising out of tax implications<sup>33</sup> and fiduciary duty claims<sup>34</sup>), parties will be reluctant to make buy-sell offers. We showed that in the presence of asymmetric information, the reluctance to use buy-sell offers leads to bargaining failures where value is destroyed.<sup>35</sup> These inefficiencies may be avoided through contractual clauses that mandate the use of shootouts, although coordination failures may arise. "Trigger rights," or the right to force the other partner to make a buy-sell offer, will unambiguously lead to an efficient outcome.

There may be other reasons why partners write Texas Shootout clauses in their partnership agreements. Shootouts may, for example, serve the useful function of preventing departing members from transferring their ownership interests to third parties without the approval of the remaining members of the venture. A more common means of limiting such transfers is, of course, a right of first refusal. A right of first refusal gives the remaining members the right to purchase the departing member's interest at the price offered to the third party. There are also often statutory constraints on transferring full ownership interests to third parties without the prior approval of the remaining parties to the venture (see e.g., the Uniform Partnership Act). Furthermore, given the statutory and common law limits on shootouts (e.g.,

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<sup>33</sup> "The initiating partner can also expect legal challenge if adverse tax consequences could follow from a resulting dissolution, which will be considered a sale or exchange of partnership property or discharge of indebtedness." Welborn (1993, pp.62-3).

<sup>34</sup> Offerees often subsequently challenge the price as a low-ball offer in breach of a fiduciary duty owed by the offeror. These challenges to low-ball offers usually occur when the offeree faces some liquidity constraint and is therefore unable to buy, leaving only the option of selling at a low price. Courts treat the price under a Texas shootout buy-sell as only presumptively fair; they will consider other evidence to determine whether the price was a fair measure of value. If it is deemed unfair (e.g., too low) the offeror may face penalties. Sometimes even a high-price could be considered unfair and a breach of fiduciary duty. In *Delaney v. Georgia-Pacific Corp.* (601 P.2d 475), Georgia-Pacific admitted "that one of its objectives was to make the offer price sufficiently high to prevent the Montana group [its partner] from opting to purchase [Georgia-Pacific's] shares under the buy-sell agreement."

<sup>35</sup> This was illustrated in *Owen v. Cohen* (1941). See also, for example, *Rochez Bros., Inc. v. Rhoades*, 491 F.2d 402 (1974), where the soon-to-be separated co-venturers began discussing a buy-sell agreement in spring of 1967, but it was not until September 11, 1967 that Rochez Bros. named a price.



fiduciary constraints), they may simply serve as a mechanism for bringing parties to the bargaining table (Welborn 1993). The relative advantages of alternative motivations, and the possible complementarities among them, remain fruitful areas for future study.

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## 7. Appendix

### Proof of Proposition 1:

Suppose Partner 1 makes a buy-sell offer to Partner 2 that perfectly reveals his type,  $p^{IT}(x)$ . Partner 2's response must be mixed; if  $p^{IT}(\hat{x}) > p^{IT}(\tilde{x})$  and  $\pi_2^{IT}(\hat{x}) = \pi_2^{IT}(\tilde{x}) = 1/2$  (for example) then Partner 1 would pretend to be of type  $\hat{x}$  when he was in fact of type  $\tilde{x}$ . Partner 2 mixing implies indifference, so  $p^{IT}(x) = (x+a)/2$ . Incentive compatibility for Partner 1 implies that type  $x$  doesn't want to mimic the offer made by another type  $\hat{x}$ :

$$\begin{aligned} \pi_2^{IT}(\hat{x})(\hat{x}+a)/2 + [1 - \pi_2^{IT}(\hat{x})][x - (\hat{x}+a)/2] \\ \leq \pi_2^{IT}(x)(x+a)/2 + [1 - \pi_2^{IT}(x)][x - (x+a)/2] \end{aligned}$$

for all  $x$  and  $\hat{x}$ . This inequality implies that

$$\frac{\partial \pi_2^{IT}(\hat{x})}{\partial \hat{x}}(\hat{x} - x) + \pi_2^{IT}(\hat{x}) - 1/2 = 0$$

when  $x = \hat{x}$ , so  $\pi_2^{IT}(\hat{x}) = 1/2$ .

Suppose Partner 1 makes a simple offer sell his share to Partner 2 for price  $p^{1S}$ . Partner 2 can accept the offer giving the two partners payoffs  $\{p^{1S}, x+a-p^{1S}\}$ , or reject the offer giving the two parties their joint ownership payoffs  $\{x/2, x/2\}$ . In the fully separating equilibrium, Partner 2 is indifferent and randomizes between accepting and rejecting the offer. Indifference between accepting and rejecting the offer requires that  $p^{1S}(x) = x/2 + a$  -- Partner 2 gets none of the surplus. To find the probability of acceptance, suppose that Partner 1's true type is  $x$  but he offers  $p^{1S} = (\tilde{x}/2) + a$ , his payoff is  $\pi_2^{1S}(\tilde{x})[(\tilde{x}/2) + a] + [1 - \pi_2^{1S}(\tilde{x})](x/2)$ . Differentiating this expression with respect to  $\tilde{x}$  and rearranging terms gives

$\frac{d\pi_2^{1S}(\tilde{x})}{dx}[\tilde{x}/2 + a - x/2] + \frac{\pi_2^{1S}(\tilde{x})}{2} = 0$  . In equilibrium, Partner 1 perfectly reveals his type through the offer so  $\tilde{x} = x$  . Substituting and setting the expression equal to zero gives a first-order differential equation:

$$2a \frac{d\pi_2^{1S}(x)}{dx} + \pi_2^{1S}(x) = 0 .$$

Now we can solve the differential equation to get the acceptance probability. In general, the function must satisfy  $\pi_2^{1S}(x) = ce^{-x/2a}$  where  $c$  is an arbitrary constant. Partner 1's surplus is  $S_1^{1S}(x) = \pi_2^{1S}(x)a$  . Since  $\pi_2^{1S}(x)$  is decreasing in  $x$  it will bind at the bottom where  $\pi_2^{1S}(0) = 1$  and so we have  $c = 1$  . Partner 1 receives surplus  $S_1^{1S}(x) = ae^{-x/2a}$  .

Suppose instead that Partner 1 makes an offer to buy the asset. In a perfectly separating equilibrium partner 2 must randomize between accepting and rejecting, so  $p^{1B}(x) = x/2$  , Partner 2's outside option. Suppose that Partner 1's true type is  $x$  but he offers  $p^{1B} = \tilde{x}/2$  . His expected payoff would be  $\pi_1^{1B}(\tilde{x})(x + a - \tilde{x}/2) + [1 - \pi_1^{1B}(\tilde{x})](x/2)$  . Differentiating this expression with respect to  $\tilde{x}$  and rearranging terms gives  $\frac{d\pi_1^{1B}(\tilde{x})}{dx}[x/2 + a - \tilde{x}/2] - \frac{\pi_1^{1B}(\tilde{x})}{2}$  . In equilibrium Partner 1 chooses  $p^{1B}(x) = x/2$  so  $\tilde{x} = x$  . Substituting into the expression above and rearranging terms gives first-order differential equation:

$$2a \frac{d\pi_1^{1B}(x)}{dx} - \pi_1^{1B}(x) = 0 .$$

Now we can solve this to get the acceptance probability. In general, the acceptance function must satisfy  $\pi_1^{1B}(x) = ce^{x/2a}$  where  $c$  is an arbitrary constant. Partner 1's surplus is

$S_1^{1B}(x) = \pi_1^{1B}(x)a$ . Since  $\pi_1^{1B}(x)$  is increasing in  $x$  it will bind at the top where  $\pi_1^{1B}(1) = 1$ , so  $c = e^{-1/2a}$  and  $\pi_1^{1B}(x) = e^{-(1-x)/2a}$ . Partner 1 receives surplus  $S_1^{1B}(x) = ae^{-(1-x)/2a}$ .

Finally,  $S_1^{1B}(x) \geq S_1^{1S}(x)$  if and only if  $x \geq 1/2$ ;  $S_1^{1S}(x) \geq S_1^{1T}(x)$  if and only if  $x \leq a \ln(4)$ ;  $S_1^{1B}(x) \geq S_1^{1T}(x)$  if and only if  $x \geq 1 - a \ln(4)$ .

Q.E.D.

Proof of Proposition 3: If neither partner makes an offer then the status quo is maintained where each receives  $x/2$ . If the informed partner makes the offer then in the continuation equilibrium they will split the surplus evenly, each receiving  $(x+a)/2$ . If the uninformed partner, Partner 2, makes the buy-sell offer then the surplus is not divided evenly, however. Partner 1, the receiver of the offer, earns information rents: If  $x < 2p^{2T} - a$  then Partner 1 would sell and earn more than  $(x+a)/2$ ; if the price  $x > 2p^{2T} - a$  then Partner 1 would buy and earn more than  $(x+a)/2$ . For  $a < \hat{a}$  it is a dominant strategy for Partner 2 to remain passive and wait for an offer from Partner 1. When  $a > \hat{a}$  then Partner 2 prefers making a Texas Shootout offer to the status quo; if Partner 2 expects Partner 1 to refrain from making an offer then Partner 2 will choose make the offer instead. A similar argument can be made for Partner 1. In sum, when  $a > \hat{a}$  the simultaneous move game is a coordination game and, of course, a third mixed strategy equilibrium exists.

Q.E.D.