

The inadequacy of specificity and role of importance in explaining hold-up

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Abstract

It is argued that specificity is inadequate to explain hold-up, as the definition is imprecise as to which party incurs a loss if an asset is redeployed. If both parties to a transaction incur a loss when an asset is redeployed, neither party can credibly hold up the other party. Also the concept does not address expectations. It is the expected loss (not the actual loss) of parties that will drive attempts at hold-up. Therefore focusing on specificity when talking hold-up can be misleading. As a consequence the concept of importance is introduced. The importance of an asset to a firm is the *expected loss to the firm* if access to the asset is lost. Various determinants of importance are discussed by using a formal framework. Implications are forwarded, and it is argued that the relative importance of the parties has to change for hold-up to occur. One-sided specific investments inherently lead to mutual importance, which mitigates hold-up. Situations without specificity can lead to hold-up if expectations are asymmetric. Lastly, hold-up does not imply a hold-up *problem*.

1. Introduction

In the economic literature (transaction cost economics and beyond) specific investments have been given special attention as driving corporate strategic decisions. There are three forces at work. One is that, given a specific investment, there is an *ex post* hazard of hold-up, which is to say that quasi-rents are appropriated opportunistically (Klein, Crawford, and Alchian 1978; Williamson 1985). Increased specificity increases the hazard and ultimately results in firms internalising transactions as a safeguard against hold-up. Secondly, the benefit of an investment that is specific to another party only partially accrues to the party making the investment, resulting in in-optimal levels of investment *ex ante* (Grossman and Hart 1986; Hart and Moore 1990; Hart 1995). Integration can in some cases result in investments closer to the optimal level. Thirdly, specific investments create a situation of bilateral dependency between parties that increases the value of adaptive coordination (Williamson 1985, 1991). As specificity increases, the bilateral dependency reaches a point where hierarchies, being superior at adaptive coordination, are called for, resulting in the transaction being internalised. The third consideration resembles an *ex ante* anticipation of the second effect kicking in at some point in the future when the parties are tied in to each other and changed circumstances creates opportunities for new investments that result in gains to both parties. However, a difference is Williamson's emphasis on the direct costs of bargaining.

This paper will explore the first effect, *ex post* hold-up when we take investments for given, and argue that focusing on specificity is certainly relevant for the possibility of *ex post* hold-up, but focusing exclusively on specificity is inadequate. What matters is the importance of each party to the other. In determining the importance of one party to the other, discussing other issues than specificity, namely expectations and bargaining, is essential.

Consider for a moment what a firm about to engage in a transaction will focus on when evaluating whether or not there will be hold-up *ex post*. Hold-up occurs when one party uses the fact that he is engaged in a transaction with a second party to increase his own welfare by exploiting the second party. For this to happen, one party has to be vulnerable to the other party, and the question is what creates this vulnerability. I will argue that if a firm's expected fall in profits from losing access to an asset is positive, it potentially exposes the firm to hold-up. If the firm expects to lose no profits from losing access to an asset, there is nothing to exploit for the owner of the asset, as the firm will simply turn away if the owner starts to engage in hold-up. In the following I will be

referring to the importance of an asset to capture this idea. I will be arguing that importance is necessary, but not sufficient, for parties to expect *ex post* hold-up.

Although hold-up can take many forms, I will be making my points in a more stylised world, where I will take behaviour of one party that changes the terms of access to an asset contrary to the will of the other party to constitute hold-up. Thus, in effect, I will focus on hold-up through the ability of parties to change the price of access to assets. Since the terms of access will be determined by a bargaining game between the two parties, something has to change from the *ex ante* bargaining game (before the asset is accessed) to the *ex post* bargaining game (after the asset is accessed) for hold-up to emerge. In other words, hold-up will only emerge if something changes the bargaining strengths and threat points of the parties. Specific assets can influence the bargaining game, but I will argue that it is neither necessary nor sufficient for the parties to expect hold-up.

2. The concept of importance

The importance of an asset to a firm is defined as the expected fall in profits if access to an asset was lost¹. For analytical purposes it is useful to introduce two concepts, *ex ante* value and *ex post* value. *Ex ante* value is the potential value of an asset to a firm that does not have access to the asset, that is, the value from gaining access to the asset. The *ex ante* value is thus the increase in the firm's expected profit from obtaining access. The *ex post* value is the expected value of keeping access (in a narrow sense) to an asset. In other words, the expected fall in profits from relinquishing access to an asset, holding other things equal. Then, for asset A to be important, the *ex post* value of asset A has to exceed the *ex ante* value of the alternative assets available (calculated as if there was no access to asset A). Only if the lost value from relinquishing access to an asset is larger than the value that can be obtained from accessing an alternative asset will profits fall from losing access. And only if this is the case is the firm vulnerable to hold-up. If the firm can access an alternative asset with the same value, the owner of the asset the firm is currently accessing cannot hold up the firm as the firm would simply turn away.

¹ I will be looking at two parties where one is paying the other for access to an asset. For the owner of the asset the other party will be an "asset" that can also be important. For instance, I will talk of the importance of a producer (who is paying for access) to a supplier (who owns the asset).

The definition of important assets is in some way similar to that of specific assets². Both are expressed in terms of lost value – specific assets in terms of the lost productive value should the asset be redeployed to its next best user; and important assets in terms of the expected lost value to a firm should access to an asset be lost. However, the two have different focus. Specificity considers the lost value to all parties involved in present use net of the benefits to all involved in its second best use – thus focusing on the redeployment of the asset, in a sense “following” the asset. The focus on the asset means the term in itself does not say who loses value by the asset being redeployed. Importance, on the other hand, is concerned with the loss of a particular firm involved – thus focusing on the replacement of the asset from the viewpoint of the firm. The term does not (directly) consider the value of the asset to alternative users or in alternative uses. This focus points to the need to consider terms of access and alternative assets available. In order to do this the bargaining game between parties needs to be considered, both *ex ante* and *ex post*. Another difference is that specificity is defined³ and analysed in terms of *actual* lost value (e.g. Williamson (1991), Klein, Crawford, and Alchian (1978), Hart (1995)). Importance is defined in terms of *expected* lost value. As will be argued below, expectations alone can drive strategic decisions. The “real” importance of an asset is a very complex thing to figure out. Therefore, parties will at most have some expectation of the importance of assets (being bounded rational in an uncertain world). Consequently, that they will be acting based on these expectations.

There are two main reasons why an asset can be important. Either because the expectations of parties differ or because there are specific assets involved. Barney (1986) describes how differing expectations of parties can result in assets having positive value. He argues that if all parties had perfect information, all assets would be priced at their gross value. In this way he reduces all positive value to divergent expectations by rolling the argument backwards in time. There are two reasons this does not imply that importance is only created by divergent expectations. First, importance is an *ex post* concept, and what Barney (1986) is arguing, adapted to this context, is that the *ex ante* value can only be different from zero if expectations differ. Secondly, what matters for

² Specificity is a concept widely used, and its meaning can be ambiguous. To make clear how specificity is thought of here, consistent with both Williamson (1991), Klein, Crawford, and Alchian (1978) and Hart (1995), consider the following example: There are two firms. Each has generic assets available. The productive value of these assets is 8 to firm A and 4 to firm B. One special asset is also available, which has productive value 10 to firm A and productive value 7 to firm B. Suppose (for ease of exposition) that the cost of supplying access to the assets is zero. In this context the special asset is specific to firm B (while a more narrow view could hold that the asset was specific to firm A as $10 > 7$). One can deduce this in two ways: In a Williamsonian way by noticing that the productive value is highest when firm B has access to the asset ($7+8 > 10+4$) – thus productive value is lost if access to the asset was to be transferred from B to A; or in a Klein, Crawford, and Alchian/Hart’sk manner by noticing that firm B has the highest value gain (and will therefore be willing to pay more) from gaining access to the asset ($7-4 > 10-8$).

³ Although a clear definition is hard to find.

strategic choice (and the value of importance) is the situation at the time of the decision. Past occurrences leading to the situation are in a sense irrelevant. Hence, the *ex ante* value can be positive, even if both parties hold the same expectations. The existence of specific assets is one reason for this. An asset can be specific because it is simply more productive to one user than to others. If this is the case, the party to whom the asset is specific can use it to gain positive *ex ante* value. As the gross value of the asset is higher to one party than to others, it puts the party in a favourable bargaining position, which can give him a surplus. Specific assets also affect the *ex post* value. As assets are specific either due to a direct loss in productive value from redeployment or transaction costs from terminating a transaction, parties become locked in. This creates *ex post* value as it implies a loss from terminating the transaction. As both *ex ante* and *ex post* value of assets can take on non-negative values for other reasons than divergent expectations, so can importance.

A more formal analysis will help to clarify the logic of the concepts introduced; and expose some of the issues that are relevant for the discussion.

To be able to make the points in a simple, concise manner while focusing on the first effect of interest here, I will make a number of simplifying assumptions. Assume we concentrate our attention on a firm that only considers securing access to assets by a hybrid (that is, by a long term contract – contrary to owning the asset (hierarchy) or without a contract (market) (Williamson 1991)). In other words, it drafts an agreement with the owner of an asset specifying the terms of access to the asset. As I take the asset for given, the second effect (in-optimal investment level) is ignored. Furthermore, assume that if access to an asset is lost, the best response is always to secure access to one (single) alternative asset (or none). The argument will take place in a two period game (there is a single *ex post* value). This leaves out considerations for the third effect (future adaptation).

Denote the *ex ante* value of an asset by A . Then $A = \alpha - a$, where α is the gross *ex ante* value (the expected increase in profits from gaining access, gross of the cost of access); and a is the expected cost of accessing the asset. There are two components to the cost. $a = p + c$, where p is the expected price of access (some discounting of the price of access in the future) and c are the expected transaction costs associated with gaining access (costs of finding the right asset, bargaining over terms of access, drafting the agreement etc.)

Now, denote *ex post* value by E . This makes $E = \varepsilon - e$, where ε is the gross *ex post* value (the expected fall in profits if access is lost, gross of costs saved), and e is the expected costs saved by

terminating access. $e = q - d$ where q is the expected price of future access and d are the expected transaction costs associated with terminating access (compensation to owner for terminating an agreement, costly lawsuit etc.)

Lastly, denote the importance of the asset by I . This results in $I = E - \tilde{A}$, where E is the *ex post* value of the asset, and $\tilde{A} = \max\{0, \tilde{A}_1, \dots, \tilde{A}_n\}$, when there are expectedly n alternative assets to the asset in question. \tilde{A}_n is the *ex ante* value of alternative asset n . If no alternative assets has positive *ex ante* value, $\tilde{A} = 0$ as it is better not to secure access to any asset. \tilde{A}_n is calculated as the *ex ante* value of asset n if the firm does not have access to the asset it is replacing. In other words, \tilde{A} is the *ex ante* value of the best alternative asset (or zero if no good alternative is available).

I will now forward some considerations regarding A , E , and I in turn:

A : There are different ways $A > 0$. One is due to different expectations of firm and owner. For instance, the firm might have a more optimistic expectation of the future value of the asset than the owner without the owner realizing this. This can result in him setting a sufficiently low price for A to be positive, that is, $p < \alpha - c$.

A second way A can become positive is if the owner believes that the firm is able to secure access to an alternative asset (denoted a) that has $A_a > 0$. This makes the owner believe the firm is unwilling to access the asset unless the *ex ante* value is at least A_a . Since the owner believes A needs to be at least as large as A_a for firm to be interested in buying, the owner might lower the price making $A > 0$. If, for instance, the owner believes $\alpha_a = \alpha$ and $c_a = c$, and observes p_a , he believes he has to set $p \leq p_a$ to sell – otherwise $A_a > A$ and the firm would prefer the alternative. But the owner could have wrong expectations, as the firm might in fact believe $\alpha_a = \alpha$ and $c_a > c$. If this is the case, and the owner sets p as high as he believes possible at $p = p_a$, he is giving the firm a larger surplus than needed: $A = \alpha - p - c = \alpha_a - p_a - c > \alpha_a - p_a - c_a = A_a$. If the alternative asset is priced so the firm realized zero value, he would still have positive value from buying A , as $A > A_a = 0$.

A last case is when the firm has higher valuation of the asset (net of transaction costs) than other firms. In other words, the asset is specific to the firm. Let b denote the firm where the asset would be put to second-best use. That makes $\alpha - c > \alpha_b - c_b$. Consider the case where the owner can only sell access to one firm and there is perfect information⁴. The owner knows that his alternative is to turn to the alternative firm, who will never pay more than $\alpha_b - c_b$. Thus, $p = \alpha_b - c_b$ is the threat point of the owner. The firm's threat point is somewhere between $p = \alpha_b - c_b$ and $p = \alpha - c$ (as $p =$

⁴ In the case where the owner can sell access to several firms, the firms might get a surplus if the owner is not able to perfectly price discriminate.

$\alpha - c \Leftrightarrow A = 0$)⁵. If each has positive bargaining power, the result is a price that lies strictly between the threat points, that is, $\alpha - c > p > \alpha_b - c_b$. This makes $A = \alpha - p - c > \alpha - (\alpha - c) - c = 0$. Note that the argument can be redone only being driven by the expectations of the parties. It is enough that the firm and owner *believe* that an alternative firm has lower *ex ante* gross valuation of the asset (net of transaction costs) for the argument to hold. Expectations are enough to establish the threat point needed for the result.

E: Turning to *ex post* value, there are several reasons that the expected gross value of an asset can change *ex post*, that is why $\varepsilon \neq \alpha$. First of all, since both α and ε are expected values derived in an uncertain world, as time passes the expected gross value of the asset might change. This can be due to expectations of the future looking different at a later point in time. Wear and tear might make the asset less valuable. It can also be due to experience with the asset. For instance, if the true gross value of the asset is ε_t , and $\varepsilon_t > \varepsilon$, the firm is likely to realize the potential of the asset by accessing it, making its valuation of it converge to the true value, $\varepsilon \rightarrow \varepsilon_t$, as time passes. Immediately after the purchase, the *ex post* gross value will equal the *ex ante* gross value, that is $\varepsilon = \alpha$. Therefore, the difference between ε at a later time and α at the time of buying is going to grow as time passes. The converse could also be the case – if accessing an asset one might realize *ex post* that the value is lower than expected, making $\varepsilon < \alpha$.

One can also give a few reasons why $E \neq 0$. The reasons advanced to argue that $A > 0$ carry over and explain why $E > 0$. Additional considerations arise, though. For instance, while the firm would never access an asset with negative A , it can end up in a situation where E is negative. Consider the case where the firm discovers *ex post* that $\varepsilon < \alpha$. If this is the case, it might have agreed upon a price q that *ex post* gives the asset negative value. If the transaction costs from terminating access are sufficiently low relative to the gain from termination ($d < q - \varepsilon$) then $E = \varepsilon - q + d < 0$, and termination would be profitable even before considering alternatives.

In addition to the arguments made that A can be positive, E can become positive even if $A = 0$ and the gross valuation of the asset is the same and an identical asset is accessible at the same terms ($\alpha = \varepsilon$ and $p = q$). This is due to the transaction costs of terminating and engaging access: $A = 0$ leads to $\alpha - (p + c) = 0 \Leftrightarrow \alpha - p = c$. Hence, $E = \varepsilon - (q + d) = \alpha - (p + d) = c + d > 0$. Some surplus is needed to warrant the costs of drafting the initial agreement and commencing access; and some costs will arise from terminating the agreement. Both create *ex post* value.

⁵ His threat point can be a $p < \alpha - c$ if other assets with positive value are available.

I : Now, consider importance. Generally, $I > 0$ if $E > \tilde{A}$. Notice that since $\tilde{A} \geq 0$, it is a necessary condition for the asset to be important that it is *ex post* valuable, that is $I > 0$ only if $E > 0$. If an asset is not *ex post* valuable, there is a gain from terminating access without considering alternatives. As an alternative is always to do nothing, it is always profitable to terminate access to an asset that has negative *ex post* value. If no alternative asset is available then $\tilde{A} = 0$, and thus $I > 0$ if $E > 0$. Thus, *ex post* value leads to importance. However, *ex post* value is not a sufficient condition for importance. If alternative assets are available, it is a matter of these being less valuable than the asset in question for the asset to be important. Otherwise the asset can be sold and an alternative bought with a gain.

As importance is tied to *ex post* value of the asset and *ex ante* value of alternatives, the conditions that gives rise to importance is a matter of combining the arguments given above. Higher *ex post* value tends to make the asset important. Low *ex ante* value of the best alternative tends to make the asset important.

However, rewriting $I = E - \tilde{A}$ provides a few insights: $I = \varepsilon - q + d - (\alpha - p - c) = \varepsilon - \alpha + p - q + d + c$, with α , p and c being tied to \tilde{A} . Thus, the higher the *ex post* gross value is relative to the gross *ex ante* value of the best alternative, the more important is the asset. The higher the price of access to the best alternative asset relative to the price of current access, the more important is the asset. The higher the transaction costs of terminating access, the more important is the asset. And the higher the transaction costs of accessing the alternative asset, the more important is the asset.

3. The implications of importance for hold-up

The implication is that if a firm expects an asset to be *ex post* important, it has to consider the hazard from hold-up if the asset is not owned. Since the firm expects a loss to be associated with lost access, the owner of the asset can potentially hold up the firm for the entire importance. I stress potentially, because this is not the end of the story. The owner of the asset might also incur a loss from the transaction terminating, that is, the firm can be important to the owner. When mutual importance is present, this mitigates the hold-up problem, relative to a situation of one-sided importance. One party cannot credibly threat the other party to withdraw from the transaction if both lose from termination.

For instance, consider a supplier and a producer. The supplier makes some generic widget and the producer makes some output. The producer wishes to buy widgets from the supplier, and they negotiate some terms of delivery. *Ex ante* there is nothing specific about the widget to the producer, but due to the costs of drafting an agreement and costs that would result from termination of the transaction (such as a non-productive period due to lack of supplies) the supplier is *ex post* important to the producer. Does this mean that the producer should expect a hold-up problem *ex post*? Not necessarily. Assume he believes that the supplier will incur a loss of equal magnitude from the transaction terminating (the supplier also has to draft a new agreement and might face a period with no sales). Then if the terms of access are determined by a symmetric Nash bargaining game, he will not expect a hold-up problem *ex post*, as the outcome of the *ex post* bargaining game will be the same as the outcome of the *ex ante* bargaining game. If the supplier similarly believes the *ex post* importance of each party to be the same, neither party will push for protective measures as a consequence of fear of hold-up.

So, what matters for hold-up is the importance of the asset to the firm relative to the importance of the firm to the owner of the asset. If both are important, both lose from the transaction terminating, and the relative importance of the parties determine whether or not hold-up can be expected. If the *ex post* bargaining game is solved by symmetric Nash bargaining, equal *ex post* importance leads to no change in the terms of access, as both parties' threat points are weakened by the same amount. If both parties expect this *ex ante*, they have no need to fear *ex post* hold-up. Note that the parties merely have to expect the loss to be split. The parties do not need to have the same expectations, as long as both expect the importance of each party to be equal *ex post*.

Consider the argument, often used, that specific investments are made due to these having more value than a generic investment. If a specific investment is made by a supplier to a producer, a symmetric Nash bargaining game would result in the gain being split between the supplier and the producer. If parties split the costs of terminating the transaction and the producer has nowhere else to turn⁶, there will be no hold-up *ex post*. As the gain was split, both parties' threat points are weakened by the same amount *ex post*, and a new bargaining game would result in no change in the terms of access, and hence no hold-up. Thus, the specific investment of one party does not automatically result in hold-up. What matters is the relative importance of the transacting parties

⁶ That the producer cannot turn somewhere else will not always be the case, but the reason for this could be that no other supplier is available, or that other suppliers, having seen the producer renege on one supplier, cannot be expected to enter a similar deal. Alternatively, it can be so costly for the producer to switch supplier (for example, due to a period of no production) that it matches the loss the supplier faces due to the specific investment.

that results from the investment. Note that this differs from the hostage models of Williamson (1985) and co-specific investment model of Koss and Eaton (1997) in that my arguments do not involve bilateral investments. My point is that a one-sided specific investment is likely to lead to mutual importance which will mitigate *ex post* hold-up⁷.

Only if the relative bargaining positions *change* from the *ex ante* situation to the *ex post* does hold-up emerge. The implication is that if the firm expects the importance of the asset to exceed the importance of the firm, he will push for protection (again, assuming a symmetric Nash bargaining game). Similarly, if the supplier believes the importance of the firm exceeds the importance of the asset, he will push for protection. Thus, if either party expects a large discrepancy in *ex post* importance that puts him at a disadvantage, we can expect the governance choice to be pushed in the direction of the firm. This is because a discrepancy in importance changes the *ex post* bargaining positions relative to the *ex ante* bargaining positions. A specific investment by one party to another is one reason the bargaining positions can change, and *ex post* hold-up can be expected. But, as the simple example above pointed to, specific investments are not sufficient for this to be the case.

Nor are specific investments necessary. This can be illustrated by the following example. A producer would normally have better information about the output market and its strategy than a supplier. Thus, the producer might know the future value of the particular supplies to its strategy, contrary to the supplier who might have a more pessimistic view. In this case, an *ex ante* bargaining game will result in a deal that is favourable to the producer relative to the supplier, from the viewpoint of the producer. Thus, he believes the importance of the supplier exceeds his importance to the supplier, and he can expect the supplier to learn more and more about the importance of the supplies as time evolves (can expect the bargaining game to change). As a consequence, he will want to secure the favourable terms of access to avoid *ex post* hold-up. Thus, asymmetric information leads the producer to push for safeguards.

4. Discussion

The above arguments were made in a stylised world where the only negotiable parameter was the price of access. In a real world setting, hold-up can occur through a whole range of measures.

⁷ However, note the discussion on the investment decision itself below.

However, the fact that each party can inflict a loss on the other party will still have a disciplining effect on transacting parties – that is, mutual importance can keep transacting parties in line.

It is also noteworthy that several arguments assumed that bargaining takes place according to a symmetric Nash game. This makes the exposition simpler, but the results are not due to this assumption. More complicated bargaining games can be introduced without changing the main message: the relative bargaining positions of parties has to change from the *ex ante* to the *ex post* bargaining game for hold-up to emerge. If the producer inherently has more bargaining power than the supplier, he will capture a bigger share of the pie in the *ex ante* bargaining game. This will, *ceteris paribus*, make the supplier more important to the producer than the producer to the supplier. In other words, the producer will lose more from the transaction terminating than the supplier. This will “keep him in line” *ex post*, even though he has more bargaining power.

Also the arguments are silent on the *ex post* costs of bargaining. As Foss and Foss (2002) and Foss (2002) stress, these costs have implications. In this context, introducing them might even support the point made, as the relative importance of parties would have to get further out of line for hold-up to pay off, as each party can foresee costs from engaging in bargaining. Again, what matters is the expectation of the *outcome* of the bargaining game. If the expectation is that the bargaining game will not lead to a positive change that exceeds the expected costs from engaging in the bargaining, there is no motivation to engage in bargaining. Thus, transaction costs might lead to less hold-up, as the expected gain from bargaining would have to be larger for bargaining to pay off.

Fairly unmentioned has been the implication if parties disagree on their relative strengths and threat points. This would result in more complicated bargaining, and the results would be of a more ambiguous nature. One consequence will be that parties can be expected to use resources to influence the expectations of the other party (Foss and Foss 2002, Foss 2002). If expectations are totally out of line, a possibility is that agreements break down. If expectations are somewhat in line, the gist of the arguments should still apply.

A point worth mentioning is that the analysis takes assets for given. If one includes the (specific) investment decision itself, the bargaining game will change from before the investment is made to after the investment is made, as a specific investment implies sunk costs. For instance, a supplier investing in a machine specific to a producer will when bargaining *ex ante* over the cost of each output have the average cost as his threat point (assuming there is only one supplier), while *ex post* it will be the marginal cost (assuming the investment is “totally” specific). As sunk costs will create a difference between average and marginal costs, the threat point will change, and the

supplier can expect to be held up. However, hold-up does not necessarily imply a hold-up *problem*. If the supplier expects the *ex post* bargaining game to result in a price that is above his average costs, he will still expect profits from making the specific investments. Therefore, it is not obvious that he will be unwilling to make the investment without safeguards – even though there is *ex post* hold-up, he might have no other investment options (or the option might be to make an investment in some generic technology, where the output will be prone to competition that result in small profits). If several suppliers are competing *ex ante* for the deal, *ex post* hold-up might not even occur. Each supplier will have a weak *ex ante* bargaining position – that is, each cannot expect to split the surplus 50:50 with the producer as he can play the suppliers out against one another. This might result in the *ex ante* and *ex post* bargaining games resulting in the same price, and no safeguards would be called for⁸.

Lastly note that since human assets cannot be owned, it is never possible to guarantee that human assets do not become inaccessible. The arguments above (at times) implicitly revolved around non-human assets. However, the analysis points to mutual importance being effective in securing access to human assets. This is in line with Hart (1995), who argues that human assets are tied in by the specific investments they make to the non-human assets constituting the firm, and Rajan and Zingales (2001) who argue in terms of human assets' specific investments to an already existing web of specific investments.

An objection might be forwarded that abandoning perfect expectations opens up for all kinds of arbitrary expectations for explaining hold-up. Let me offer some arguments why introducing imperfect expectations has value added. First of all, for firms competing in the real world expectations clearly matter and are clearly not perfect. Think back a couple of years to the booming IT-years. Thus, imperfect expectations clearly play a role, and this role should be examined. Secondly, abandoning perfect expectations does not imply introducing completely irrational expectations. As a parallel to the notion of feasible foresight (Williamson 1985), we might talk of reasonable expectations. It might in fact be argued that not introducing imperfect expectations with respect to the value of assets is inconsistent with the assumption of bounded rationality. Thirdly, this whole exercise has been comparative. What matters for hold-up is whether the bargaining game changes. In other words, explaining the exact expectations are not necessary for predictions if we have an idea of the *relative* expectations of parties and how these might *change* over time. A

⁸ Note that the under-investment problem described by Hart (1995) will not be solved. This will persist as long as the benefits from the investment are split. However, these problems are not due specifically to specific investments, but arise whenever there are mutual gains from trade and more than one party has positive bargaining power.

comparative analysis and a notion of reasonable expectations can yield predictions, as the tentative one forwarded at the end of section 3. Lastly note that even with perfect expectations of the value of assets the argument that specificity is inadequate for explaining hold-up stands. Specificity is imprecise in awarding losses to parties and thus inadequate for explaining the bargaining game that determines whether hold-up will take place.

5. Concluding remarks

I have argued that what I have termed importance is what matters for the nature of *ex post* hold-up. If parties expect the relative importance to change as time evolves, hold-up can be foreseen, and safeguards in the form of long-term contracts or internalising the transaction might be called for. However, an expectation of hold-up is not necessarily a problem if parties are satisfied with the situation hold-up leads to.

Specificity inadequately addresses these issues. There will often be no need for bilateral specific investments or hostages to avoid hold-up in a market setting. Thinking in lines of importance is thus necessary for adequately describing hold-up. Specificity inherently leads to mutual importance, which mitigates hold-up.

Considering importance rather than specificity as driving hold-up arguable has better explanatory power. However, as added complexities are introduced, it comes at a cost of predictive power. This is a trade-off to consider when evaluating the merit of the arguments forwarded here.

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