

# HOW DO ENTREPRENEURS ATTRACT (HIGH VALUATION FROM) OUTSIDERS? INTEGRATING REAL-WORLD PRACTICES AND ECONOMIC THEORY TO UNDERSTAND ENTREPRENEURS' ACTIONS

GARY DUSHNITSKY  
The Wharton School  
University of Pennsylvania  
Philadelphia, PA 19104

## ABSTRACT

We investigate which actions entrepreneurs pursue to attract outsiders. Popular actions include *Disclosure* of invention, and a *Contingent-Payment-Scheme* offer (e.g., salary deferral, royalty-based license). We identify four stylized characteristics of entrepreneurial settings (information-asymmetries, weak IP-protection, limited-wealth, and optimism), and explore the impact each has on the ultimate course of action.

## INTRODUCTION

This paper explores early-stage technology-based entrepreneurs and the real-life actions they undertake to attract capital and other resources. A few examples include an Internet entrepreneur seeking venture capital, a young biotechnology firm pursuing partnership with a leading pharmaceutical company, or an electronics professor interested in capitalizing on a recent breakthrough by licensing it to an existing firm.

During the early days of a venture, the entrepreneurial toolkit consists primarily of disclosure and Contingent Payment Scheme (CPS). The ‘disclosure’ scenario is one where an entrepreneur attracts outsiders by first revealing her invention (e.g., showcasing a prototype, or handing over blueprints). Outsiders inspect the invention and subsequently seek the rights for it in return for a certain payment. The ‘CPS’ scenario is one where an entrepreneur offers a contingent payment scheme (e.g., a royalty-based license, or willingness to defer her salary). The invention is revealed after outsiders accept the offer.

We focus on these two actions since other practices – such as employing prestigious directors, showcasing strategic partnerships, or leveraging patent portfolios – are available only later in a venture’s life. Put differently, disclosure and CPS are likely the mechanisms through which an entrepreneur attracts her first director, her first strategic partner, or her first investor.

A formal model of entrepreneurial action is developed. The insights are as follows. Disclosure mitigates adverse selection by allowing outsiders to *directly* evaluate the invention. However, disclosure can prove detrimental to the entrepreneur as outsiders may choose not to pay for the invention and simply imitate it. CPS mitigates imitation concerns because outsiders are not privy to the invention upfront. Rather, the value of the invention is *indirectly* inferred from entrepreneur’s willingness to offer a contingent payment scheme. Realizing that optimistic entrepreneurs may mistakenly extend a CPS offer, wary outsiders (who are unable to inspect the invention) perceive CPS as a noisy signal and discount their valuation.

The full paper presents a formal Perfect Bayesian Equilibrium of entrepreneurial action. This write-up gives the intuition as to the impact each characteristic has on chosen course of actions. To that end, we first review characteristics and actions in entrepreneurial settings.

## MARKETS FOR ENTREPRENEURIAL INVENTION: A REVIEW

### Market Characteristics

Entrepreneur's attributes, outsider's features and industry characteristics vary by settings. Yet, four factors persist across settings. Those are (a) asymmetric information between an entrepreneur and outsiders, (b) difficulty in maintaining ownership over an invention, (c) entrepreneurs' wealth constraint, and (d) entrepreneurial optimism.

Information asymmetries are commonplace in the market for entrepreneurial inventions and give rise to the adverse selection problem. Inventions are a result of insight and ability to recombine existing assets in new ways (Schumpeter, 1934). The entrepreneur thus is best informed of her invention's quality. A malevolent individual can take advantage of the situation; pose as if she holds a high-quality invention and extract funds from outsiders. Wary of such opportunistic behavior, outsiders may forego relationships with entrepreneurs (e.g., investment, licensing). That is, adverse selection likely results in a market failure (Akerlof, 1970). The problem is salient in early stages where information asymmetries are high (Gompers, 1995).

Entrepreneurs often find it difficult to maintain ownership over their ideas. That is, when an invention is copied or imitated the entrepreneur enjoys little or none of the wealth. This occurs because Intellectual Property Rights (e.g., patents) do not offer complete protection (Levin et al., 1987; Arora, 1995; Cohen et al., 2001). The difficulties can be traced back to the economic properties of an invention which makes it a public good (Arrow, 1962). Namely, outsiders cannot easily be excluded from its use once it has been revealed.

Launching a new business requires significant resources, often in excess of personal wealth. An entrepreneur faces a major challenge: on the one hand she has to attract capital and other resources from outsiders, but on the other hand she is limited in her ability to offer sufficient collateral. Consistently, Evans and Leighton (1989) find the probability of switching into self-employment increases with personal wealth. It follows that limited wealth is a common characteristic of individuals who contemplate, or currently engage in, entrepreneurship.

Finally, prior research indicates entrepreneurs are optimistic. Psychologists have long recognized that individuals are overconfident about their relative abilities (Taylor and Brown, 1988). As a group, entrepreneurs are excessively optimistic. Experiments show entrepreneurs overestimate the likelihood of success (Camerer and Lovo, 1999). They exhibit unfounded confidence in a given situation (Cooper, Woo and Dunkelberg, 1988), and overestimate their own abilities (Wu and Knott, 2006). Also, they are more prone to overconfidence in comparison to managers in large organizations (Busenitz and Barney, 1997). An optimistic entrepreneur, by definition, overestimates her invention's quality and may thus act in a way which is subjectively advantageous (i.e., given erroneous beliefs) yet objectively detrimental.

A critical observation is that optimism is qualitatively different from the conscious and opportunistic pursuit of personal rewards. Put differently, entrepreneurial optimism is a distinct concept from that of agency behavior. The latter denotes *conscious* action where an entrepreneur seeks either pecuniary or non-pecuniary (e.g., status, independence; see Amit *et al.*, 2000) private benefits, whereas the former describes an *unconscious* bias affecting entrepreneur's evaluation of the invention. Empirically, both are commonplace and may result in misallocation of outsiders' resources. The key difference is that contractual mechanisms (e.g., control-rights, board-rights) may mitigate agency behavior but not optimism (Kaplan & Stromberg, 2004).

## Entrepreneurial Actions

An early-stage entrepreneur can either disclose her invention, or specify a contingent payment scheme. The term ‘disclosure’ denotes a scenario where an entrepreneur reveals technical details to outsiders. Outsiders evaluate the invention and if their assessment is positive, a contract delineating the rights to the invention and entrepreneur’s payoff is concluded. Common disclosure strategies include a demonstration of a service or a product-prototype. Consider the following anecdote (Zott & Huy, 2006):

*The large company was going to do a formal search through a number of companies, and they really got so excited about WIRE—they truncated that process... This win happened when the business founder gave what I’ll call a controlled demonstration. The demo really looked great. (Investor, WIRE)*

Disclosure facilitates negotiation on the basis of full, rather than asymmetric, information. By allowing outsiders to directly assess the invention, an individual with a useful (i.e., high-quality) invention eliminates adverse selection concerns and can proceed to capture its full value.

The term ‘Contingent Payment Scheme’ (CPS) describes a scenario where an entrepreneur attempts to attract outsiders by making her payoff contingent on the invention’s quality. Offering a licensing contract which specifies contingent payments (i.e., royalties) exemplifies such an action. Willingness to defer salary is another example (Zott & Huy, 2006).

*We asked people to defer salary at the time. People turned back and wanted to defer more than we’d asked for... The investors were awe-struck by the fact... They said that after they closed the financing round, it was one of the key things that really gave them belief in the business. (Founder, WIRE)*

CPS is not profitable for an individual with a useless invention. Thus, by offering to defer salary, or another type of a CPS action, the entrepreneur circumvents outsiders’ concerns. It allows her to attract outsiders even without revealing the invention. Specifically, the order of events (i.e., agreement followed by disclosure) is the reverse of that under the ‘disclosure’ scenario (i.e., reveal and then contract). Indeed, Lazear (1999) analyzes the structure of inventors’ compensation and finds it resolves information asymmetries at time of contracting.

## PREDICTING ENTREPRENEURIAL ACTIONS

Under what conditions would an entrepreneur pursue either course of action? This write-up offers the intuition behind entrepreneur’s choice. The paper formalizes it. Briefly, we harness the differences between each course of action (i.e., whether disclosure pre-dates an agreement, or vice versa) and exploit the fact they are associated with distinct benefits and costs. Each subsection discusses the sensitivity of CPS and disclosure to a given market characteristic.

We assume the two actions are mutually exclusive; an entrepreneur pursues either CPS or disclosure. In practice, the two are employed in tandem. Even the most adventurous buyer would not license a ‘black box’ only because of a favorable payment scheme; and indeed entrepreneurs often supplement their offers with partial information regarding the invention’s inner-workings. Given real-world practices, we view an entrepreneurial action as ‘disclosure’ if critical technical data is revealed yet no contingent payment is offered (e.g., surrendering blueprints, but not making pay contingent on success). An action is labeled as ‘CPS’ if limited data – e.g.,

description of functionality as opposed to exposure of inner-workings – is revealed to support a CPS (e.g., extending a royalty-based license after a brief Demo, yet withholds key design detail).

### **Information Asymmetries and Entrepreneurial Actions**

Wary that they are faced with a ‘lemon,’ outsiders often shun an entrepreneur or offer terms that are unsatisfactory. Consequently, entrepreneurs and outsiders may fail to get together in the presence of information asymmetries and the resultant adverse selection problem.

To overcome adverse selection problem and secure favorable valuation, entrepreneurs holding useful inventions are motivated to convey their true quality (Amit *et al.*, 1990). We propose that a number of common entrepreneurial actions are geared towards credibly conveying an invention’s quality and attracting (favorable valuations from) outsiders. We focus on two actions in particular: making payoff contingent on invention’s quality and exposure of the invention. The latter allows outsiders to directly assess the invention thus ameliorating information asymmetries. The former is unprofitable for those who hold a useless invention and hence is likely offered only by entrepreneurs with a useful invention.

### **Contingent Payment Scheme as a Solution to Imitation Concerns**

By divulging technical information, a high-quality entrepreneur can attract outsiders. Yet, entrepreneurs often choose not to reveal their inventions. They do so due to the combined effect of information asymmetries and the inherent difficulty in protecting intellectual property.

The entrepreneur faces a dilemma. Though disclosure increases outsider’s valuation – in the absence of disclosure, an outsider is unable to evaluate the invention – once disclosed an outsider has in effect acquired the invention without cost. This problem is known as the paradox of disclosure (Arrow, 1962). The paradox of disclosure is an integral part of daily business activity. The development of the 56K computer modem exemplifies the unfavorable implications of disclosure (Computer Reseller, October 1997).

*Townshend said substantial elements of his concept were shared with Rockwell in 1995 during unsuccessful negotiations... Those elements, he said, were unjustly integrated into the K56flex modems developed by Rockwell, and other vendors... "Rockwell's K56flex modem technology appears to correspond in all material respects to Dr. Townshend's 'Asymmetrical High-Speed PCM Modem' technology," reads the complaint. The document also alleges Rockwell... utilizing proprietary information "which Rockwell knows was acquired... through improper means."*

Such risks deter inventors from exposing technical information. Similarly, in the venture capital market entrepreneurs are encouraged to “*discuss their idea in minimal detail. Startups should be especially careful about leaving materials behind or providing elaborate detail.*” (RedHerring, August, 1999).

A contingent payment scheme emerges as an appealing alternative. An entrepreneur who holds a useful invention can identify herself as such not by revealing the invention, rather by offering to make her payoff contingent on outcomes. Outsiders infer its quality indirectly thus rendering imitation implausible. Put differently, disclosure implies that invention’s exposure predates an agreement, whereas the reverse is true under a CPS. Having to reveal the invention only after a payment framework is specified makes it less vulnerable to weak IP protection.

Nonetheless, an entrepreneur may capture some of the value of her invention by pursuing disclosure. Even when IP rights are weak she is not necessarily left empty-handed. To the extent that several outsiders compete for the invention, the entrepreneur can play them against each other. She may also reveal the invention to a given outsider and threaten to publicly share it with others (inviting fiercer competition) if the outsider imitates it (Anton and Yao, 1994).

In sum, to the extent a contingent payment contract allows inventors to capture more value, it may dominate disclosure as a common course of action. The shortcomings of a CPS approach are highlighted in the next sub-sections.

### **The Effect of Entrepreneur's Wealth on Contingent Payments**

Contingent payment is an attractive course of action for financially strong entrepreneurs. The willingness to surrender personal wealth in case of a failure enables outsiders to distinguish between useless and useful inventions. That is, entrepreneur's readiness to withstand negative payments in case of a failure (e.g., forego a collateral) leads outsiders to commit towards making larger positive payments in case of success. Limited wealth implies lower collateral capacity and hence constrains an entrepreneur's ability to capture value. Contrary to CPS, disclosure does not necessitate collateral and thus alleviates sensitivity of value-captured to entrepreneur's-wealth.

The capacity of an individual to post collateral affects her ability to raise funds at favorable terms. For example, creditors and investors alike require collateral to deter those with unfavorable investment opportunities. The same holds in entrepreneurial settings. Thus, limited personal wealth hinders financing opportunities: "...[entrepreneurs] are [less likely] to have the credit score or fixed assets a bank requires to approve a new loan or line of credit." (WSJ, May 2006). These insights carry over to a situation where an entrepreneur presents a contingent payment scheme in an effort to win outside financing, whether it is from banks, venture capitalists, or angel investors. Put differently, signaling via CPS results in a sensitivity of value-captured to entrepreneur's-wealth. The lower entrepreneur's personal wealth, the less able she is to post collateral and consequently the smaller is her part of invention's value.

Disclosure emerges as an attractive course of action for a high-quality entrepreneur who has limited personal wealth. In contrast to a CPS, disclosure allows outsiders to distinguish between useful and useless inventions prior to contracting. Collateral is not required because information asymmetries are mitigated by sharing technical information. Thus, when an entrepreneur opts for disclosure her wealth does not affect her share of invention's value.

In sum, to the extent disclosure allows wealth-constrained entrepreneurs who hold a high-quality invention to capture greater value, it may dominate contingent payment scheme.

### **Disclosure as a Remedy to Contractual Shortcomings in the Face of Optimism**

An optimistic entrepreneur, as defined in the literature, overestimates the quality of her invention (Busenitz and Barney, 1997; Cooper *et al.*, 1988). Optimism leads to unproductive allocation of resources. For example, Åstebro (2003) finds that 50% of inventors with very poor quality ideas continued to pursue it even when paid advice strongly argued against it.

In the presence of optimism, outsiders would require a larger stake of the invention. To see why, note that an optimistic entrepreneur acts in a way which is subjectively optimal (given her erroneous beliefs) but objectively detrimental. Amongst those that behave as if they hold a high-quality invention, there are in fact many who misjudge their inventions. This does not

escape prospective investors or buyers: “‘You have to be optimistic to be an entrepreneur’ Power said. ‘(But) they don’t realize it will take longer and more money than they expected.’” (*The Tribune*, 1 May 2003). From an outsider viewpoint, the value of an invention that is self-proclaimed as useful should therefore be discounted.

The higher the level of optimism in a given setting, the greater the discount outsiders employ. In practice, prospective investors utilize publicly-available industry aggregates to determine the magnitude of the discount. These include official statistics (e.g., “According to the U.S. Small Business Administration, one in every five ventures fails within two years.” *Forbes*, 28 May 1992) and informal rules-of-thumb (e.g., “An entrepreneur’s projections are never conservative... As a rule of thumb, when I see a projection, I add one year to delivery time and multiply by 0.1.” Guy Kawasaki’s blog, 8 January 2006).

The magnitude of the discount is also affected by entrepreneurial actions. It is high when an entrepreneur offers a contingent payment scheme and low when she utilizes disclosure. Recall, under the former outsiders infer the quality of the invention *indirectly*, whereas under the latter they inspect the invention *directly*. In a world where entrepreneurs pursue disclosure, outsiders can easily detect an entrepreneur who erroneously behaves as if she holds a high-quality invention: they simply inspect the disclosed information and evaluate it for its objective merit. Next, consider a world where entrepreneurs employ CPS. An optimistic entrepreneur holding a useless invention would mistakenly offer the same contingent payment as a realist with a useful one. Unable to distinguish those who actually hold high-quality inventions from the rest of the crowd, outsiders discount the value of all self-proclaimed useful inventions as a result.

This insight carries implications to entrepreneurial action. As the level of entrepreneurial optimism rises, an entrepreneur with a useful invention would opt to reveal it. Put differently, offering a contingent payment scheme would be counter-productive because it is liable to ‘optimism discount,’ whereas disclosure is not.

## CONCLUSIONS

It has been long argued that an entrepreneur can attract funding by signaling the quality of her invention. This paper advances our understanding of the fundamental entrepreneurial decision – the choice of entrepreneurial action. To that end, we draw on two streams of literature, namely economic theory and descriptive studies of entrepreneurial practice, and tackle the following question: How do entrepreneurs attract (high valuation from) prospective buyers?

The paper contributes to the literature. It is the first attempt, to the best of our knowledge, to understand *how* – rather than simply *can* – an entrepreneur attract outsiders. We go beyond the abstract concept of an ‘entrepreneurial signal’ and explicitly describe real-life actions that serve to that effect. A couple of insights follow: (a) entrepreneurs choose among several viable courses of action, and (b) some actions convey economic, in addition to symbolic, value. The latter informs the study of entrepreneurial resource acquisition; it facilitates a taxonomy of purely-symbolic and economic-driven entrepreneurial actions. The former insight offers an opportunity to advance a fine-grained understanding of entrepreneurs’ behavior. Interestingly, the feature that makes CPS valuable when imitation is prevalent (invention is not exposed upfront) renders it less effective given optimism (indirect inference of invention’s quality is vulnerable to optimistic entrepreneurs, who mistakenly offer CPS, and results in lower valuation).

## REFERENCES AVAILABLE FROM THE AUTHOR