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ESSAYS ON AWARDS AND ACHIEVEMENT

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ABSTRACT

This dissertation comprises three essays on the intended and unintended consequences of achievement. The introductory essay summarizes the theoretical and empirical work on awards and integrates across these literatures to identify unanswered questions. The second essay uses an instrumental variables approach to demonstrate that by patenting an inventor's idea, firms unintentionally send signals about the employee inventor's quality to their labor-market competitors, thereby increasing the probability of inventor mobility and entrepreneurship. The final essay argues that prestigious awards may decrease ex post productivity and performance. Empirically, I use a propensity score design based on the prediction market odds of winning an Academy or Golden Globe Award to condition on the probability of winning an award. My results suggest that winning decreases the winner's future productivity, leads the winner to explore other careers, and causes them to take less important roles.

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July 3, 2018

Summary

This dissertation comprises three essays on the intended and unintended consequences of achievement. The introductory essay discusses the growing literature on awards in organizational contexts. I summarize the theoretical and empirical work on awards and integrate across these literatures to identify unanswered questions.

The next essay explores an unintended organizational consequence of patenting. Building on theories of appropriability and firm-specificity, prior studies support the notion that patents constrain inventors from leaving their employer. I argue, however, that by patenting an inventor's idea, firms unintentionally send signals about the employee inventor's quality to their labor-market competitors, thereby increasing the probability of inventor mobility and entrepreneurship. I match US patent data to linked employee-employer Census microdata at the individual level. This novel dataset allows me to observe the near-complete patent, wage, and employer history of most US inventors between 1995 and 2008. To causally identify the effect of patenting, I use the historical leniency of quasi-randomly assigned patent examiners to instrument for whether a patent is granted. I challenge prior work by finding support for the signaling, rather than constraining, effects of patents. To test whether signaling is the operant mechanism, I show that patenting also increases the inventor's wages and future productivity. My findings reveal an interesting paradox for innovative firms: by patenting

an inventor's idea, firms send signals to their labor market competitors and dramatically increase the probability that the inventor will leave to join or start another firm.

My final essay explores the effect of prestigious awards on artist's subsequent productivity and performance. There is a large body of literature that finds award-winners have higher status, greater access to resources, and enhanced self-confidence; all of which may lead to increased performance and productivity. However, in this essay, I argue that prestigious awards may *decrease* ex post productivity for three reasons: (1) winners may become complacent after winning a prestigious award, and (2) winners may be freed to explore alternative career paths, and (3) winners may be more selective in choosing new projects. I investigate these conjectures in the US film industry from 2002-2018. I use prediction market odds to estimate the probability of winning an Academy or Golden Globe Award. I then condition on the probability of winning an award using a propensity score design to estimate the causal effect winning an award on subsequent productivity and performance. My results suggest that winning does lead to a decrease in the actor's future productivity. Further analysis suggests that winning an award also leads the winner to explore other careers (e.g., actors become directors) and to take less important roles. Award winners subsequently join movies that receive higher artistic ratings, but less commercial success. I find no effect on the number of screens the movie is released on or the movie's budget size. The results suggest that the productivity-enhancing effects in the pre-award period may be reversed after an award is granted.

Signals or Shackles? The Effect of Patents on Inventor Mobility and Entrepreneurship

This paper investigates whether patents enable or constrain the mobility and entrepreneurship of employee inventors, or inventors whose patents are owned by their employers. Prior literature generally supports the notion that patents constrain inventors from leaving their employers because it makes the inventor's knowledge more firm-specific and reduces their

ability to appropriate the value of the patented knowledge elsewhere (Hoisl, 2007; Marx et al., 2009; Palomeras and Melero, 2010; Ge et al., 2016; Melero et al., 2017). However, I argue that there are both theoretical and empirical reasons to doubt these findings. Specifically, I argue that patents increase opportunities for mobility and entrepreneurship by signaling the inventor’s quality to potential employers, founding-team members, entrepreneurial financiers, and others. My results support the signaling mechanism by showing that, after addressing multiple sources of bias, patents do increase inventor mobility and entrepreneurship. The results challenge previous findings and have important implications for firms’ intellectual property and human capital strategies.

Theoretically, scholars have argued that patents limit inventor mobility for several reasons. First, they argue that patents transfer the right to commercialize the inventor’s ideas to their employer (Melero et al., 2017; Anton and Yao, 1995; Kim and Marschke, 2005). Thus, patents serve to diminish the stock of knowledge the inventor can profitably deploy at another firm. Further, the inventor’s related tacit knowledge becomes more firm-specific after the patent is granted. Finally, patents increase the legal liability of poaching firms (Melero et al., 2017; Ganco et al., 2015; Agarwal et al., 2009). Given these theoretical arguments, it is perhaps unsurprising that both observational (Palomeras and Melero, 2010; Ge et al., 2016) and quasi-experimental studies (Hoisl, 2007; Melero et al., 2017) have found support for the notion that patents constrain employee inventors.

Despite arguments that patents constrain inventors (Melero et al., 2017; Ganco et al., 2015; Agarwal et al., 2009; Kim and Marschke, 2005), signaling theory predicts that patents will increase opportunities for inventor mobility. The signaling perspective begins with the observation that distinguishing high-quality inventors from low-quality inventors is difficult. Such information asymmetry leads to the well-known “lemons problem,” which decreases opportunities for mobility and entrepreneurship (Akerlof, 1970; Greenwald, 1986). In such settings, patents may act as credible signals of inventor quality, increasing opportunities for mobility (Spence, 1973; Melero et al., 2017). Patent signals will also increase entrepreneurial

opportunities by enhancing the inventor’s ability to attract founding-team members, entrepreneurial finance, customers, and suppliers (Conti et al., 2013; Hsu and Ziedonis, 2008; Farre-Mensa et al., 2017; Ekinici, 2016). Therefore, the signaling perspective suggests that patents will increase, not decrease, inventor mobility and entrepreneurship.

There are also empirical reasons to question prior findings that patents negatively affect inventor mobility rates. First, most previous investigations of this question rely on patent-based measures of mobility (Hoisl, 2007; Marx et al., 2009; Palomeras and Melero, 2010; Melero et al., 2017),¹ which have recently come under criticism due to severe misclassification bias inherent in such measures (Ge et al., 2016). Second, patent-based measures of mobility also rely on samples of inventors with multiple patents, which leads to sampling on “star” inventors that are likely to behave differently than non-stars. Finally, the studies that do not rely on patent-based measures of mobility are unable to establish causality and focus on atypical samples, like university scientists (Crespi et al., 2007; Lenzi, 2009; Ge et al., 2016; Azoulay et al., 2017). Therefore, all prior empirical investigations of the effect that patents have on mobility suffer from misclassification, sampling, selection, or omitted-variable bias.

I improve on prior studies by matching hundreds of thousands of inventors’ USPTO patent histories to confidential U.S. Census Longitudinal Employer-Household Dynamics (LEHD) data. These data allow me to observe the near-complete patenting, employer, and wage histories of most US inventors between 1995 and 2008. By measuring mobility using Census data, rather than patent data, I overcome the sampling and misclassification bias that has plagued prior studies. To identify the causal effect of patents, I implement an instrumental variables approach that leverages the USPTO’s quasi-random assignment of patent examiners to patent applications (Sampat and Williams, 2015; Farre-Mensa et al., 2017; Melero et al., 2017). My results challenge previous findings that patenting has a negative effect on inventor mobility (Hoisl, 2007; Marx et al., 2009; Palomeras and Melero, 2010; Melero et al., 2017; Ge et al., 2016). Rather, I find that patenting roughly doubles

¹Marx et al. (2009) does not explicitly investigate the effect of patenting on mobility but uses patent productivity as a control variable.

the short-term mobility and entrepreneurship rates of employee inventors after addressing sources of sampling, misclassification, and omitted-variable bias. I demonstrate that the results are not due to firms simply “discarding” inventors after they patent the inventor’s idea by showing that inventor wages and patent productivity also increase after a patent grant.

This paper makes several meaningful contributions. First, I contribute to the literature on employee mobility and entrepreneurship. I challenge prior work that suggests patents constrain inventors (Hoisl, 2007; Marx et al., 2009; Palomerias and Melero, 2010; Melero et al., 2017; Ge et al., 2016) by showing that, after correcting for sources of bias, patents increase inventor mobility and entrepreneurship. For scholars interested in strategic human capital, it means that employee successes that are observable to outsiders may damage the employer’s ability to realize informational rents (Campbell et al., 2012). I also contribute to the fields of innovation and entrepreneurship by being the first, to my knowledge, to empirically investigate the effect of patenting on employee-inventor entrepreneurship. For scholars interested in firm-level IP strategy, these findings introduce inventor mobility and entrepreneurship as an unintended consequence of patenting (Cohen et al., 2000), which may inflict significant costs on the firm (Coff, 1997). For scholars interested in the economic value of patents (Hall et al., 2005; Trajtenberg, 1990), this paper is one of the first to isolate the signal value of patents from the value of the property rights they confer by focusing on employee-inventors who do not own the rights to their inventions. Next, this study weighs in on the role of luck in determining career outcomes (Brookman and Thistle, 2013; Gompers et al., 2010). I demonstrate that a “lucky” patent-examiner draw has statistically and economically significant effects on inventor careers. This study also has significant policy implications. Scholars have long argued over whether patents are economically efficient. This study suggests that patents may increase economic productivity, even if the exclusivity rights are valueless, by allowing inventors to find more productive firm-matches (Jovanovic, 1979). Further, legal scholars have debated the need for “inventor compensation” laws, based on

the assumption that inventors are not fairly rewarded for the patents granted to employers (Dratler, 1979; Manly, 1978; Noble, 1979; Merges, 1999). However, there has been little empirical evidence on how US labor markets reward inventors for their inventions. This paper provides evidence that inventors are rewarded by the market with increased opportunities for mobility and entrepreneurship as well as increased wages. Finally, this paper adds to the nascent literature that cautions against using patents to measure inventor mobility (Ge et al., 2016).

The Effects of Prestigious Awards on Artistic Careers

This paper investigates the effects of winning prestigious awards on the winner’s subsequent productivity and performance. The impacts of awards have been studied from two distinct lenses. The first perspective approaches awards as incentive devices that organizations can use to encourage productivity and performance. This literature has focused on the ex ante consequences of awards, finding generally positive effects on productivity and performance before the awards are granted (Frey and Neckermann, 2008; Chan et al., 2014; Gallus and Frey, 2015; Gallus, 2017; Restivo and van de Rijt, 2012), with some negative effects also noted (Gubler et al., 2016). However, scholars in this stream have paid little attention to the consequences of awards in the periods after they are bestowed.

Other scholars have studied awards as a means of climbing status hierarchies (Azoulay et al., 2013; Reschke et al., 2017). This literature suggests that awards have positive effects on productivity because they boost the award-winners’ status, access to resources, perceived competence, and self-determination (Azoulay et al., 2013; Reschke et al., 2017; Ertug and Castellucci, 2013; Bothner et al., 2012; Wade et al., 2006). In comparison to the “awards as incentive” literature, status scholars do generally focus on the ex post effects of award-winning. Yet, this literature has paid little attention to the downsides of award-winning.

This paper bridges these two literatures by investigating the downside effects of awards in the period after the award has been granted. I argue that winning awards can decrease

subsequent productivity and performance because winners feel more complacent and are sheltered from the risks of failure associated with exploration and experimentation.

I empirically test these conjectures in the US film industry. I measure the post-award productivity and ratings of winners and nominees of the Academy and Golden Globe Awards. I use prediction markets to measure an actor's ex ante probability of winning an award. I then condition on these probabilities using a propensity score design to estimate the effect of winning an Oscar or Golden Globe award on the winner's future productivity. This design estimates a causal effect of winning the award, assuming that winning the award is not correlated with future productivity, conditional on the probability of winning. This is a reasonable assumption if all of the information observable to the market is factored into the prediction market. My results suggest that winning does lead to a decrease in the actor's future productivity. Other results indicate that winning an award leads the winner to take on other roles. For example, actors that win an Academy Award are more likely to become directors than non-winners. I also find that winners take less important roles (are listed lower in the billing order), participate in movies that are rated more highly, but perform worse in the box-office. I find no effect on the number of screens the movies are released on or the budget size of the movies.

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