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Abstract

Non-compete agreements (also known as Covenants Not to Compete or CNCs) are frequently used by many businesses in an attempt to maintain their competitive advantage by safeguarding their human capital and the associated business secrets. Although the choice of whether to include CNCs in employment contracts is made by firms, the real extent of their restrictiveness is determined by the state laws. In this paper, we explore the effect of state level CNC enforceability on firm productivity. We assert that an increase in state level CNC enforceability is detrimental to firm productivity, and this relationship becomes stronger as comparable job opportunities become more concentrated in a firm's home state. On the other hand, this negative relationship is weakened as employee compensation tends to become more long-term oriented. Results based on hierarchical linear modeling analysis of 21,134 firm-year observations for 3,027 unique firms supported all three hypotheses.

***Keywords*:** Covenants not to compete, Firm productivity, CNC

***JEL Classification*:** J61 K2 O31

1. Introduction

All organizations operate within the realm of their external environment from which they draw their inputs and into which they release their outputs (Miles, Snow, & Pfeffer, 1974; Scott, 1981; Starbuck, 1976). The external environment of an organization consists of a wide range of exogenous factors such as government laws and regulations, societal culture, and general economic conditions (Duncan, 1972) that shape organizational effectiveness through their influence on the organization's ability to acquire, use, and retain resources needed for value creation (Aldrich, 1979; Pfeffer & Salancik, 2003). One of the most important resources needed for value creation in contemporary businesses is human capital –a unique form of capital arising from the skills and attributes embodied in the workforce (Becker, 1964; Crook, 2011). As the US economy has gradually evolved from a labor-based economy to primarily a knowledge-based economy, firms have become increasingly reliant on human capital to develop and sustain their competitive advantages (Barney, 1991; Bishara, 2006). However, despite its huge reliance on human capital a firm cannot fully control this resource as it is completely contained within the workforce. Firms often try to shield themselves from losing human capital by incorporating a non-compete agreement or covenant not to compete (CNC) into employment contracts. CNC refers to a restrictive clause in the employment contract, which forbids an employee from competing with the former employer either by taking up an employment with a competing firm or by setting up a new start-up within a certain geographical area within a certain length of time (Bishara, Martin, & Thomas, 2015; Estlund, 2006; Malsberger, 2004; Whitmore, 1989). Though inclusion of CNCs in employment contracts is the purview of a firm, their enforceability is determined by state labor laws that are a part of the firm's external legal environment. State labor laws thus influence one of the most important inputs needed by firms -the human capital, and

wield significant impact on an organization's productivity and competitiveness. Because firms have virtually no control over these laws (Duncan, 1972), it is critical for their managers to understand the relationship between the legal environment and firm performance so they can devise strategies to enhance firm effectiveness while abiding with the laws.

CNCs have become common in industries as diverse as biotech and pharmaceuticals, high-technology, book publishing and education (Garmaise, 2011; Gilson, 1999; Kaplan & Strömberg, 2003; Leonard, 2001; Lobel, 2013; Posner, Triantis, & Triantis, 2004). Top executives in approximately 70% of firms in the ExecuComp database entered into non-compete agreements with their employers, and more than 70% of venture-backed private firms used CNCs in their labor contracts (Garmaise, 2011; Kaplan & Strömberg, 2003). Evidence indicates that CNCs are no longer limited to the upper echelons of the organization; these covenants are increasingly common across a wide array of jobs at various hierarchical levels and pay grades such as camp counselors, event planners, hair and nail stylists, cleaning maids, agricultural workers, and pesticide spray technicians (Depillis, 2015; Greenhouse, 2014). For instance, sandwich maker Jimmy John's non-compete agreement restricts its employees from working for any other sandwich makers within 3 miles of a Jimmy John's store for 2 years after they leave (Jamieson, 2014). According to some estimates, about 18% of all employees working in a wide range of areas such as engineering, computers, education, food preparation and serving, grounds maintenance, and personal services in the U.S. are currently bound by a CNC (Dynan, 2016; Starr, Bishara, & Prescott, 2015; U.S. Department of the Treasury, 2016).

CNCs are expensive for the firms because of the substantial costs incurred in drafting and enforcing these agreements (Richards, 1972; Taylor, 2012). In recent years there has been a marked increase in the number of lawsuits filed by firms against their former employees to

enforce these covenants (Simon & Loten, 2013). The number of published U.S. court decisions on CNCs has gone up by more than 60% from 2002 to 2012 (Lublin, 2013). CNC related lawsuits exist in a wide range of industries such as computers, software development, pharmaceuticals, healthcare, and food (e.g., APR LLC v. Lomans (Ongoing); GeoLogic Computers Sys. Inc. v. Maclean (2014); IBM v. Papermaster (2008)). Though the contract drafting and enforcement related information such as legal fees, and number of arbitrations and litigations is kept private by the employers, some estimates regarding these costs can be gauged from the alternatives suggested in lieu of enforcing these contracts. One of such alternatives is "garden leave", that requires employees to give a significant advance notice, usually of the same duration as that specified in the non-compete covenant, before leaving a firm (Estlund, 2006; Lembrich, 2002). After providing the notice, the employee is no longer obligated to do any work but is entitled to receive full salary and benefits such as health and dental insurance premiums (Lumex Inc. v. Highsmith and Life Fitness, 1996; Perri, 2010). In return the employee cannot begin to work for a competitor during this period. Garden leave thus requires the firm to pay a prearranged high cost that is likely much lower than the costs involved in legally enforcing CNCs. With legal fees ranging from $300 - $500 per hour a simple litigation case can cost tens of thousands of dollars (Weiss, 2008), which suggests that with an estimated 30 million CNCs in existence (Dynan, 2016; Starr et al., 2015), even if a small percentage ends up in courts, the legal costs of enforcing CNCs can be in billions of dollars.

Aside from the legal costs of CNCs, there are additional implicit costs borne by the society at large because being contractually bound to their current jobs may prohibit employees from utilizing their talents to the fullest extent (Fama, 1980). Indeed, empirical evidence suggests that a large number of employees are reluctant to start or join a new venture due to the fear of a

law suit from their former employers (Marx, Strumsky, & Fleming, 2009; Samila & Sorenson, 2011). Altogether the substantial costs imposed by CNCs on firms, employees, and the overall economy suggest that CNCs may not be as beneficial as projected by their proponents. Accordingly, CNCs, and especially, their legal enforcement, merit a careful analysis by human resource management researchers, practitioners, and policy makers in regards to their net impact on a firm.

This study is therefore an attempt to understand the effects of CNCs on firms by exploring linkages between the extent to which a firm's home state enforces CNCs and firm productivity. We examine state level CNC enforceability because while the decision to sign CNCs lies with the firms, the enforceability of these agreements is controlled by the labor laws and regulations constituting a firm's legal environment. The presence of CNCs in a firm's employment contract is not effective unless the state labor laws uphold these agreements. Our assertion is consistent with extant research that has utilized state level CNC enforceability to explicate the effects of CNCs on firms (Garmaise, 2011; Marx et al. 2009; Samila and Sorenson 2011). Moreover, the 50 states of the U.S. and the District of Columbia (DC) have significant variation in the extent to which CNCs can be enforced (Garmaise, 2011; Gilson, 1999; Ingram, 2002; Malsberger, 2004; Marx et al., 2009). For instance, while California has a history of prohibiting CNCs, Massachusetts chooses to strictly enforce them[1] - a difference that has strong implications for firms. This variation in the legal enforcement of CNCs provides a natural experiment to investigate the potential effect of such contractual terms.

By explicating the link between CNC enforceability and firm productivity this study contributes to extant research in several ways. Extant research has largely focused on the effects of state enforcement of CNCs on reduction in employee mobility (Marx et al., 2009), reduction

in executive mobility and compensation (Garmaise, 2011), and hindrance to entrepreneurial activity (Samila & Sorenson, 2011). Our paper adds to the literature by investigating firm productivity to shed further light on the economic consequences of CNC enforcement. We also contribute to this literature by investigating conditions in a firm's external and internal environment that can set boundaries to the relationship between CNC enforceability and firm productivity. We examine two variables: job opportunity concentration in a firm's home state and the degree of long-term orientation of employee compensation, because of their correspondence with geographic and temporal limits to CNC enforceability.

2. Non-compete agreements and firm productivity

Human capital theory posits that the qualifications, skills, experiences, insights and other abilities lying within the employee base of a firm constitute an intangible form of capital for the firm (Becker, 1964; Crook, Todd, Combs, Woehr, & Ketchen, 2011; Lepak & Snell, 1999). These talents are built by investing time, money, and efforts in gaining education, professional certifications, on-the-job trainings, and internships (Snell, Lepak, Dean Jr, & Youndt, 2000). Both the firm and the employees make these investments and seek to maximize their returns. Firms try to protect their investments in human capital through retention strategies and contractual mechanisms, whereas employees attempt to choose jobs that offer compensation commensurate with their talents (Coff, 1997). Human capital is a critical source of an organization's sustained competitive advantage in today's fiercely combative markets (Barney, 1991; Hatch & Dyer, 2004; Mueller, 1996; Ployhart & Moliterno, 2011). Indeed, meta-analytic evidence attests to the strong positive relationship between a firm's human capital and performance, and urges firms to develop and retain their human capital (Crook et al., 2011).

However, due to the complete containment of human capital in the workforce, a firm is able to exercise minimal control over its movement.

Employee turnover prevents a firm from realizing returns on investments made in building or acquiring its human capital. Moreover, recruiting and training new employees to replace the lost human capital often requires substantial new investments from the firm. An employee's departure becomes an even bigger concern if this ex-employee joins a competitor's workforce or establishes a new competing business. Firms try to protect their investments in human capital by employing various retention strategies and contractual mechanisms. One example of such mechanism is non-compete agreements between employers and their employers (Blake, 1960). However, drafting CNCs is costly (Richards, 1972; Taylor, 2012), and the incompleteness of these contracts (Hart & Moore, 1988) generates an additional challenge for the firm in enforcing these covenants. The enforceability of these covenants across different jurisdictions is inconsistent, which can be seen from the large number of lawsuits concerning these covenants and the general inability of lawyers in predicting the outcomes of these costly litigations (Jackson, 2008; Richtel, 2005; Simon & Loten, 2013).

In addition to incurring contract drafting and enforcement costs, the firm faces difficulties in acquiring desirable human capital from the external labor market because of state regulations pertaining to CNC enforcement. First, the mobility restrictions embedded in CNCs make it harder for a firm to recruit employees whose skill sets best match its requirements, because these individuals may be bound to their current employers by CNCs. Research suggests that CNCs can force employees to switch to jobs outside of their previous career domain (i.e., leave engineering or sandwich-making for a different career) for the duration they are bound by the contract with the employer they have left (Jamieson, 2014; Marx, 2011). Hence, high CNC enforceability

effectively shrinks the recruitment pool of job candidates for the hiring firms. Second, enforcement of CNCs can also create the problem of adverse selection and diminish the quality of the recruitment pool. In an environment with less compelling CNCs, employees have access to a wider set of outside opportunities and have a higher potential to earn a wage concomitant with their abilities in the external labor market. Employees with lower abilities expect limited wage growth in external labor market and end up self-selecting into jobs with lower mobility (Hermalin, 2002). Employees with higher abilities, on the other hand, stand to benefit more from external labor market and hence, are less willing to give up their accessibility to it. Stringent CNCs thus create a problem of adverse selection where employees with lower than the desired ability are attracted to firms. Further, firms may resort to offering higher than market wages to compensate for mobility restrictions stemming from CNCs (Ingram, 2002). This higher compensation offered to lure the desirable employees often enhances the attractiveness of that particular firm for everyone including employees who may not be best suited for these positions. The resulting larger, but lower in quality, applicant pool often makes it harder for the employers to screen out the applicants with a stock of not-so-desirable human capital (Akerlof, 1970; Carlstrom, 1987). Consequently, in order to identify the best recruits, firms may have to incur higher recruitment expenses. Thus, in an environment of where CNCs are highly enforceable firms not only bear higher recruitment costs, but also find it harder to acquire the most suitable employees for their requirements.

Aside from these difficulties in attracting and hiring talent, firms also face difficulties in motivating their workforce. Enforceable CNCs allow firms to hold on to their desired and needed talent by restricting employee ability to compete in the free labor market. Insodoing enforceable CNCs hurt employee interests as they are no longer able to achieve the highest returns on their

human capital (Coff, 1997). This creates divergence between the benefits of human capital accruing to the employees vis-à-vis the firm. This incongruence between the goals of employees and employers (Jensen & Meckling, 1976) has negative implications for firm productivity. Our assertion is in line with research by Garmaise (2011) that shows managers to be less motivated to enhance their human capital and firm performance in an environment of high CNC enforceability. In summary, increased CNC enforceability escalates the various administrative, logistic, and recruitment expenses incurred by the firm, creates a rift between the employees and the firm, and negatively impacts firm productivity.

Hypothesis 1: CNC enforceability is negatively associated with firm productivity.

Moderating effect of relative job opportunities within a state

CNCs have a limited geographical scope in terms of their legal enforcement, most often within a state (Malsberger, 2004; Whitmore, 1989). For example, one firm's CNC may forbid employees from finding an alternative employment within 3 miles of any of its locations (Jamieson, 2014), while another may further extend this boundary (Greenhouse, 2014). While CNCs are enforced to protect and promote the interests of the firms, by definition, they hurt the freedom of the employees. As a result, the states in the U.S. vary in their views of the net social benefits of CNCs, and have adopted differential attitudes towards enforcement of these covenants. In addition to the explicitly stated limitations on their geographical scope, the differential enforcement of CNCs by different states makes it even more difficult for them to be effective across state boundaries (Garmaise, 2011; Ingram, 2002; Malsberger, 2004).

Given the limited geographic constrains of CNCs, the presence of significant out-of-state competition and hence out-of-state employment opportunities can weaken the negative relationship between CNC enforceability and firm productivity. We conjecture that this happens

primarily due to the reduced impact of CNCs on the inward and outward movement of human capital to and from the external labor market. When an industry is spread across many states, the limited geographical boundaries of CNCs make it easier for firms to attract high quality employees residing in other states. Having ample job opportunities outside of the firm's state mitigates the restrictive impact of CNCs on the movement of labor between firms, thereby effectively increasing the job applicant pool for all firms. The ease of capital mobility across states facilitates the placement of capital at its most productive use, and enables all firms to attract their desired human capital. On the other hand, when competition is more concentrated in-state, the chances of recruiting appropriate human capital for a firm diminish, further hurting its productivity.

We maintain that firms with majority of their competitors located outside of their state are more likely to find it harder to enforce their CNCs to prevent employees from exiting and joining their competitors. In this condition employees have access to a more competitive external labor market, wherein they can receive increasingly competitive returns on their human capital (Chamberlin, 1948). This is because the market forces set the minimum wages that employees can receive for their human capital. These wages, however, are largely based on the performance of employees' current firms, for the external market relies on firm performance to gauge the value of human capital embodied by its employees (Fama, 1980). Thus, the potential to achieve higher wages motivates employees to make efforts towards enhancing the firm's productivity. On the other hand, if the industry is concentrated within a state boundary, the external opportunities become more limited to the employees, and the resulting disincentivizing effect is detrimental to firm productivity.

Hypothesis 2: As relative job opportunities increase in a focal firm's state, the negative relationship between CNC enforceability and firm productivity becomes stronger.

Moderating effect of long-term oriented employee compensation

While a firm may succeed in holding on to its employees through the use of CNCs, such longer term alliance would not generate many benefits if the employee concerns are not well aligned with those of the employer (Jensen & Meckling, 1976). Fama (1980) maintains that employees compare the costs of their efforts to the current and future benefits generated. Because an increasing number of firms rely on acquiring human capital from the free market (Somaya, Williamson, & Lorinkova, 2008), the resulting competition for talent acquisition allows employees to maximize returns on their human capital. In this manner the external labor market serves as a disciplinary mechanism for employees to remain productive (Fama, 1980). However, stringent CNCs weaken this disciplinary mechanism by reducing employee access to opportunities in the external labor market and thereby limiting the returns to their investments on human capital. Research suggests that CNC bound employees find fewer buyers for their talents in the external labor market, and even upon switching jobs are not able to get optimal returns on their human capital (Garmaise, 2011). In an empirical study Garmaise (2011) found that even when employees from a firm in high degree of state level CNC enforceability are able to move to another firm, they receive relatively smaller gains in compensation and assume lower-ranked positions relative to their counterparts coming from firms in low degree of state level CNC enforceability who are not bound by CNCs. This inability to attain maximum returns to their human capital generates incongruence between the interests of employees and employers.

Firms do not control the degree to which their home state enforces CNCs; however, firms do get affected by these regulations. When the external/legal environment is detrimental to

productivity, firms can choose to alleviate these negative effects by changing their internal attributes. Compensation design –a key aspect of a firm's internal environment- has been shown by scholars to be related to firm productivity (Aboody & Lev, 2000; Balkin & Bannister, 1993). We assert that tailoring compensation design to better align employee interests with those of the firm may allay some of the negative effects of CNC enforceability on firm productivity. Research suggests that firms frequently use long-term compensation plans as a motivational mechanism such that, rather than for concentrating on short-term returns, employees get rewarded for maximization of firm value over a longer horizon (Murphy, 2003; Oyer & Schaefer, 2005). This is because long-term oriented compensation plans encourage employees to pursue long-term strategic goals of firm, and discourage them from myopically focusing on their individual interests (Lambert, 1983). These beneficial effects of long-term compensation may mitigate the negative effects of CNC enforceability, for this compensation design engenders employees high gains upon meeting long-term firm goals and thus reduces the need to go to the external labor market to receive optimal returns on their human capital.

Typically, long-term compensation is linked to the value of firm equity, and includes stock options, restricted stocks, performance shares, etc. The vesting period for these usually lasts between 3 to 5 years (Kole, 1998). The incentive effects of these longer term programs intensify with the length of the vesting period (Chi & Johnson, 2009), which is consistent with the rational actor model wherein the expected share of future gain accruing to an agent determines the extent of efforts made by him or her (Simon, 1959). Drawing on the rational actor model, we assert that the potential of higher returns within the firm, upon successful accomplishments of long-term objectives, can mitigate the impact of diminished opportunities in

the external labor market. As a result, employees get incentivized to increase their contribution and commitment towards the firm, which is likely to benefit the firm's productivity.

Hypothesis 3: As more long-term oriented employee compensation is used, the negative relationship between CNC enforceability and firm productivity becomes weaker.

3. Methods

Sample and procedure

Our primary goal in this research is to explore the effects of state level CNC enforceability on firm productivity. Because firms in different industrial sectors adopt different production functions, it is difficult to compare their productivity measures. For example, a service firm and a manufacturing firm follow quite different criteria for assessment of firm productivity. We chose manufacturing sector as the setting for the study because of the availability of a large sample size, and because all of the firms in this sector are required to disclose information that can be used to compute a standard measure of firm productivity called "Total Factor Productivity". A recent survey shows that this sector is about average in terms of CNC agreement prevalence (Depillis, 2015; Starr, Prescott, & Bishara, 2015), therefore findings of the study can be generalized to other industrial sectors. We focused on publicly traded U.S. firms only in the manufacturing sector (SIC code 2000-3999) as recorded in Compustat database (Javorcik, 2004).

The manufacturing sector covers 459 industries, as indicated by four-digit SIC codes, such as food, lumber and wood products, chemical, petroleum and coal products, electronics, and instruments. Our analyses utilize 21,134 firm-year observations for 3,027 unique firms representing 134 four-digit SIC codes for which complete information was available from Compustat database. Our final sample covers the time span from 1991 to 2004, because the

primary independent variable state level CNC enforceability is available only for this time period (Garmaise, 2011).

Measures

Firm productivity. In this study, we examine an economically relevant metric of firm performance, namely total factor productivity (TFP), which is defined as the change in output that cannot be explained by a corresponding change in all of the known inputs. The conventional methods to estimate productivity suffer from simultaneity and selection biases (Olley & Pakes, 1996). Simultaneity bias arises because profit-maximizing firms can endogenously determine their input levels to accommodate productivity shocks (Marschak & Andrews, 1944). Selection bias occurs because observed samples only include firms staying in the markets, and do not include firms who have chosen to exit the markets to avoid productivity shocks. Olley and Pakes (1996) proposed a novel approach that controls for these biases, and provides a robust estimate of firm productivity. This method assumes that firms invest more upon observing a positive productivity shock, and therefore uses capital expenditures as proxy for the unobserved time-varying shocks to productivity. Further, this method generates an exit rule to account for the selection bias.

Following Olley and Pakes' (1996) recommendations, we estimated firm output as a log-linear Cobb-Douglas production function of several input factors. TFP is the residual difference (a_{ijt}) between predicted and actual firm outputs in the following equation (Yasar, Raciborski, & Poi, 2008):

$$\text{logSales}_{ijt} = \alpha + \beta_1 * \text{logCapital}_{ijt} + \beta_2 * \text{logLabor}_{ijt} + \beta_3 * \text{logMaterial}_{ijt} + a_{ijt} + \varepsilon_{ijt} \ ,$$

where i indexes firms, j indexes industries, and t indexes years.

We measured firm output as firm sales, capital input as the value of property, plant, and equipment net of depreciation, labor as the number of employees, and material as total expenses exclusive of labor expenses. Further, because coefficients of capital, labor, and material inputs can vary by industry and year, we gathered deflating factors for each four-digit industry-year from the NBER CES database (http://www.nber.org/nberces) to adjust the sales, capital, materials, and investment measures (Bartlesman & Gray, 1996) prior to calculating TFP. Finally, we calculated TFP as a logged measure of raw productivity, and used the logged measure as the dependent variable in subsequent hierarchical linear modeling analyses.

CNC enforceability. We used the measure of state enforceability of non-compete agreements computed by Garmaise (2011) as our main explanatory variable. Garmaise analyzed the 50 U.S. states and the District of Columbia to compute an index of state level enforceability of CNCs from 1991-2004. Garmaise's analysis utilized 12 questions developed by Malsberger (2004) regarding various critical aspects of CNC enforcement in the 50 states and the DC. For example, one of the 12 questions is "Is there a state statute of general application that governs the enforceability of covenants not to compete?" Garmaise created a threshold for each of the 12 questions, so that a score of 1 or 0 could be assigned to each of the states, based on their exceeding the threshold for that question. For the previously described question, the threshold is "States that enforce noncompetition agreements outside a sale-of-business context receive a score of 1". Garmaise assigned a state a score of 1 for this question, if the state enforced non-compete agreements outside a sale-of-business context. For example, under California state laws (Business and Professions Code Section 16600[2]), non-compete agreements connected to a business sale are generally unenforceable. Therefore, according to Garmaise California scores a 0 for this particular question. Through his extensive legal analyses Garmaise assigned scores of 1

or 0 to each of the 50 U.S. states and the DC for all 12 questions, such that the sum of all 12 answers ranges from 0 to 12. The sum of all 12 answers captures the strength of legal enforcement of CNCs in a firm's state, such that higher scores indicate stronger enforcement. The maximum possible score for CNC enforceability is 12, however in practice this index ranges from 0 to 9 as no state passes thresholds of all of the 12 questions[3].

Relative in-state job opportunities. We assessed the extent to which employees are likely to perceive job opportunities to be concentrated in their focal firm's home state. Because CNC enforceability is usually limited to a firm's home state, we assert that mobility restrictions arising from CNCs are more severe when job opportunities are more concentrated in a focal firm's home state. To capture this effect, we created a measure of in-state relative competition for a particular firm using the following formula:

$$\text{Relative Competition}_{ijkt} = \text{Number of Firms}_{jkt} / \text{Number of Firms}_{kt} ,$$

where i, j, k, and t index firm, state, 4-digit SIC industry, and year, respectively. A high value implies that for a focal firm in a given year, a high percentage of competitors are within-state firms, and thus employees are likely to perceive higher availability of job opportunities within the focal firm's state than out of state. In this case, relative job opportunities are higher in state, where the CNCs are more likely to be enforceable to limit employee mobility. In our study, this variable ranged from 0.004 to 0.824 with a mean of 0.164 and a standard deviation of 0.149.

Long-term oriented employee compensation. Long-term oriented compensation such as stock options promotes long-term commitment because they tie employees' personal wealth to firm's long term performance. We gathered compensation information for firm executives and other employees from ExecuComp and Compustat databases. We collected data from the ExecuComp database on both newly granted and previously granted options to company

executives. Because newly granted options are only a small portion of the long-term employee incentives tied to the firm value, we also considered options granted in previous years that have not yet been exercised. We supplemented this information with employee stock-based compensation data obtained from Compustat. We normalized the total long-term oriented stock-based compensation for all employees by firm market capitalization to make this ratio comparable across firms regardless of differences in their size.

Control variables: Empirical research (Huynh & Petrunia, 2010) suggests that firm size and leverage affect firm productivity, therefore we measured firm size (Firm size) as the natural logarithm of firm book assets to control for the differences in the scale of production across different firms. We measured firm's capital structure (Book leverage) as book value of long-term debt plus short-term debt divided by book value of firm assets to control for the relative capital utilization of debt and equity. Because firm research and development (R&D) and technological advancement are a significant source of productivity improvement (Stokey, 1995), we measured R&D intensity by scaling firm R&D expenditures by net sales. In addition to the investment in R&D, firms make continuous investment in physical assets that contribute to the productivity (Amir, Guan, & Livne, 2007). We thereby measured firm capital investment (Capital expenditure) as the ratio of capital expenditures to book assets to control for the unobservable time-varying demand for capital input. Finally, to account for differences in firms' investment in employee relations, we collected information from MSCI ESG KLD social ratings (KLD). KLD evaluates how well a firm treats its employees and provides rating in the category of employee relation, which includes items such as employee professional development, employee involvement, cash profits sharing, and union relations (Bae, Kang & Wang, 2011). Specifically, for each item, KLD assigns 1 to indicate that a firm has strength on that attribute and 0

otherwise. We thereby defined a variable called Employee treatment strength as 1 if a firm has received a score of 1 on any of the items in employee relation category, and 0 otherwise. We used this indicator to account for differential investments made by firms in their employees.

In addition to the aforementioned firm level variables, we also controlled for several state-level variables capturing various aspects of an individual state's labor market relevant to the study. Omitting these variables could result in biased estimation. For example, we measured the natural logarithm of state population as a proxy for the size of a particular state, which can also be viewed as the size of labor pool available in the state (Kirchhoff, Newbert, Hasan, & Armington, 2007). Further, states differ in the extent to which resources are devoted to developing human capital, which can potentially reshape labor markets across different states (Kane & Rouse, 1995). Therefore, to capture state level investment in developing human capital we collected data from the National Center for Higher Education Management Systems (NCHEMS) on per capita operating expense for higher education by state and local government. Finally, the state unionization rate has been recognized as an important determinant of labor mobility (Farber, 1999), so we used Union Membership and Coverage Database from the Current Population Survey (CPS) to calculate state unionization rate as the percent of wage and salary workers who were members of unions.

Analytical strategy

Data for this study have a multi-level structure in that the individual firms are nested in both state and industry levels. Because variability in the dependent variable "Firm productivity" is distributed across multiple levels, multilevel analyses employing hierarchical linear models (HLM) are required to test our hypotheses. This analytical strategy allows us to capture the unobservable heterogeneity at individual firm, state, and industry levels, and analyze cross-level

interactions. Therefore, our model specifications incorporated residual error terms at Level 1 to account for economy wide shocks and annual trends, and at Level 2 to account for unobservable state- and industry-level heterogeneity (Raudenbush & Bryk, 2002). Our two-level HLM model specification is as follows:

Level 1 Model:

Firm Productivity$_{ijk}$ = β_{0jk} + β_{1jk} * Firm size + β_{2jk} * Book leverage + β_{3jk} * Capital expenditure + β_{4jk} * R&D intensity + β_{5jk} * Employee treatment strength + β_{6j} * State size + β_{7j} * State higher education expense + β_{8j} * State unionization rate + ε_{ijk}

Level 2 Model:

$\beta_{0jk} = \gamma_{00} + \gamma_{01}$ * CNC enforceability + $\mu_{00j} + \nu_{00k}$

$\beta_{1jk} = \gamma_{10}$

$\beta_{2jk} = \gamma_{20}$

$\beta_{3jk} = \gamma_{30}$

$\beta_{4jk} = \gamma_{40}$

$\beta_{5jk} = \gamma_{50}$

$\beta_{6j} = \gamma_{60,}$

$\beta_{7j} = \gamma_{70,}$

$\beta_{8j} = \gamma_{80,}$

where subscript i stands for firm, j stands for state and k stands for industry. The Level 2 model has two error terms to allow us to estimate the impact of unobservable heterogeneity at both state-level (j) and industry-level (k).

Further, the HLM model to test the moderating effects is as follows:

Level 1 Model:

Firm Productivity$_{ijk}$ = β_{0jk} + β_{1jk} * Firm size + β_{2jk} * Book leverage + β_{3jk} * Capital expenditure + β_{4jk} * R&D intensity + β_{5jk} * Employee treatment strength + β_{6j} * State size + β_{7j} * State higher education expense + β_{8j} * State unionization rate+ β_{9jk} * Mod + ε_{ijk}

Level 2 Model:

$\beta_{0jk} = \gamma_{00} + \gamma_{01}$ * CNC enforceability + $\mu_{00j} + \nu_{00k}$

$\beta_{1jk} = \gamma_{10}$

$\beta_{2jk} = \gamma_{20}$

$\beta_{3jk} = \gamma_{30}$

$\beta_{4jk} = \gamma_{40}$

$\beta_{5jk} = \gamma_{50}$

$\beta_{6j} = \gamma_{60,}$

$\beta_{7j} = \gamma_{70,}$

$\beta_{8j} = \gamma_{80,}$

$\beta_{9jk} = \gamma_{90} + \gamma_{91}$ * CNC enforceability,

where MOD refers to the moderator variables: relative in-state job opportunities or long-term oriented employee compensation.

We used Stata code “mixed” (StataCorp, 2013) to perform HLM analysis with maximum-likelihood estimation (Graubard & Korn, 1996). We employed deviance tests (Kreft, 2000) for comparing model fits and determining effect sizes. Because multilevel models include error variances at multiple levels, it is difficult to determine model fit improvements and effect sizes by traditional methods (i.e., reduction of unexplained variance between successive models). We calculated a deviance value for each model, such that a fit improvement is indicated by statistically significant reduction in deviance as new predictors are added to a model. This method of determining model fit improvements is similar to examining chi-square differences to judge model fit in structural equation modeling (Snijders & Bosker, 1999).

4. Results

Table 1 summarizes the descriptive statistics and pairwise correlation matrix of the variables used for our analyses.

[Insert Table 1 about here]

Prior to hypothesis testing we examined the extent to which variability in the dependent variable firm productivity was distributed across multiple levels. From a null model (i.e., a model without any predictors), we found that unobservable state heterogeneity and industry heterogeneity explained approximately 17% and 19% of total variation in firm productivity respectively, which justified the inclusion of state and industry random effects in our HLM models. Next, we ran 2 successive models to test Hypothesis 1 regarding the negative relationship between state level CNC enforceability and firm productivity. Model 1 included all of the control variables: firm size, book leverage, capital expenditure, R&D intensity, employee treatment strength, state size, state higher education expense, and state unionization rate. Adding CNC enforceability created Model 2. As reported in Table 2, the significant fit improvement in Model 1 as compared to the null model (2905.46, $p < .01$) justifies the inclusion of these control variables. Further, in Model 2 CNC enforceability was significantly related to firm productivity ($\gamma_{01} = -.01$, $p < .05$) and model fit was substantially improved over Model 1 (204.29, $p < .01$), which provided support for Hypothesis 1.

[Insert Table 2 about here]

Next, we tested Hypothesis 2 regarding the moderating effect of relative in-state job opportunities on the relationship proposed in Hypothesis 1. As reported in Table 3, we added relative in-state job opportunities to Model 2 (reported in Table 2) to create Model 3, which served as the preliminary model to test moderation Hypothesis 2. In this model, we introduced

the product term of CNC enforceability and relative in-state job opportunities to create Model 4. As reported in Model 4, a negative coefficient for the product term (γ_{91} = -.08, $p < .01$) and fit improvement over Model 3 (310.13, $p < .01$) provided initial support for Hypothesis 2. To further understand the nature of the interaction, we followed the procedure recommended by Cohen, Cohen, West, and Aiken (2003) and calculated simple slopes of the relationship between state level CNC enforceability and firm productivity for high and low values (i.e., one standard deviation above and below the mean respectively) of the moderator variable relative in-state job opportunities. The simple slopes were -0.16 ($p < .01$) and -0.01 ($p < .01$) respectively. We also plotted the relationship between state level CNC enforceability and firm productivity at high and low levels of the moderator variable in Figure 1. The significant simple slope values along with Figure 1 indicate a consistently negative relationship between state level CNC enforceability and firm productivity; however, the magnitude of the negative relationship is larger when relative in-state job opportunities are high. These findings provide support for Hypothesis 2.

[Insert Table 3 about here]

[Insert Figure 1 about here]

Finally, Hypothesis 3 regarding the attenuating effect of long-term oriented employee compensation on the negative relationship between state level CNC enforceability and firm productivity was tested in a similar manner. As reported in Table 4-Model 6, a positive coefficient for the interaction term (γ_{91} = .33, $p < .05$) and fit improvement over Model 5 (224.15, $p < .01$) provided initial support for Hypothesis 3. Further, the simple slopes at high and low moderator values were -0.02 ($p < .01$) and -0.05 ($p < .01$), respectively. As shown in Figure 2, the magnitude of the negative relationship between CNC enforceability and firm productivity

was smaller for high level of long-term oriented employee compensation, thus providing support for Hypothesis 3.

[Insert Table 4 about here]

[Insert Figure 2 about here]

5. Discussion

Overall, the results support our theoretical perspective regarding the negative relationship between state level enforceability of CNCs and firm productivity. Findings of the study show that a firm's external legal environment influences its productivity. Strong legal enforcement of CNCs in a firm's home state may lead to an increased cost of acquiring and retaining human capital, and hurt firm productivity. However, findings of this study demonstrate that the strength of this relationship depends on the geographical characteristics of firms' competitors in the labor market and firms' compensation design. If majority of the employees' external labor market opportunities are beyond the bounds of the non-compete agreements, then CNCs have less of a negative impact on firm productivity. On the other hand, this adverse effect on firm productivity increases as job opportunities become more limited to firms' home states where CNCs can be more easily enforced. We also found that long-term compensation mitigates the negative effects of CNC enforceability on firm productivity. This maybe because employees who are compensated using assets which cannot be immediately liquidated are more likely to think about the firm's long term goals, make better long-term strategies and decisions, adopt better technologies, and make efforts to enhance firm productivity (Lambert, 1983).

Findings of the study contribute to the ongoing debate on benefits of enforcing CNCs. While many argue that CNCs allow firms to protect their human capital and competitive advantage, our findings suggest that state level CNC enforceability hurts firm productivity. The

study thus contributes to the research stream on human capital theory by exploring how labor laws associated with enforcing employee mobility restrictions can hurt firm performance. Further, by explicating two factors of the firm's external and internal environment this study contextualizes human capital theory.

Strengths, weaknesses & future research

This research explores the variation in state level enforceability of CNCs across the U.S., and establishes a robust link between the legal environment and firm productivity. While the intention to put non-compete agreements in labor contracts is to limit the loss of valuable human capital, those contracts also end up disincentivizing employees because of reduced access to job opportunities in external labor markets (Motta & Roende, 2002). These effects are difficult to establish through empirical analysis based on individual or employee-level data. One possible approach is to track actual employee turnover and productivity for firms over time. An increase in employee turnover can be used as a proxy for increased labor mobility, and thus a gauge of the extent to which employees perceive the incentive effects from job opportunities in external labor markets. However, this *ex-post* measure suffers from issues of endogeneity, because employee turnover can easily be a consequence of shocks to firm productivity (i.e., reverse causality). It is thereby difficult to make an inference about causality. We therefore utilized firm level longitudinal data gathered from multiple sources to explore the link between restrictions on labor mobility and firm productivity without yielding to issues of common source common method biases and endogeneity (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). We treat the variations of noncompetition regulation across different states in the U.S. as the primary explanatory variable, which allows us to draw causal inferences because it is unlikely that any individual firm's productivity will affect regulations for the home state. Further, we argue that it

is unlikely for CNC enforceability to be a primary factor in determining a company's headquarters location, which is largely based on access to natural resources, unionization levels, state taxes, and energy costs (Bartik, 1985). Therefore, we are able to treat CNC enforceability as an exogenous shock and use the variations in state legislation as a natural experiment to make causal inferences of its effect on firm productivity. In other words, our operationalization eliminates the possibility of reverse causality. In addition, we utilized a large scale longitudinal data including firms representing 134 four-digit industrial sectors at locations across the 50 states and DC. Our results are thus not drawn from a small number of business segments or small regional units, which increases the strength of generalizability. The use of a large sample from multiple industries combined with our appropriately specified multi-level models and use of econometric techniques enhances confidence in our results. The use of theoretically relevant numerous control variables further increases the robustness of our findings.

However, this research is not without limitations. Data used in the study are from 1991-2004, so it may be argued that the association between CNC enforceability and firm productivity today may be different from what we found. To alleviate this concern we conducted an extensive literature search, and found that non-compete agreements have started to draw substantial attention from policymakers across the 50 states (Nagele-Piazza, 2016; U.S. Department of the Treasury, 2016; White House Report, 2016). For instance, Illinois recently changed laws pertaining to non-competes for low-wage workers (Stahr, 2016). As many states are contemplating changes in their non-compete laws we suspect CNC enforceability will become more salient to employees, and will further deepen the chasm between the interests of employees and those of the firms. Hence, we believe that our results provide a conservative estimate of the linkages between CNC enforceability and firm productivity. We urge future researchers to gather

new data to replicate our findings and generalize to other settings. Moreover, our data do not include employee domicile information, or detailed locations of each of the firms included in our dataset. It is possible that an employee lives near the state borders and the neighboring state does not enforce CNCs. In this scenario the restrictive effects of current employer's CNC on employee mobility may be reduced, because the employee can work in the neighboring state. Lack of detailed information at the employee level prevents us from testing this potential boundary effect. Further, our analysis is based on the premise that CNCs are widely used in labor contracts and their enforceability is determined by state laws, therefore we utilize state level rather than firm-specific contractual terms in our sample. However, we note that even when CNCs are enforceable by the state, it is possible for firms in that state to stay away from those contracts. Additionally, there is substantial heterogeneity in the contracts enforced by different firms. Future research may further refine our findings by gathering firm-specific non-compete agreement information through surveys. Surveys can also be used to assess employee perceptions of CNCs and associated mobility restrictions. It is possible that the negative effects of CNCs are rooted in employees' psychological contract violations (Rousseau, 1995), reduced motivation to perform (Amir & Lobel, 2013), or perceptions of unfairness in the workplace (Colquitt, Conlon, Wesson, Porter, & Ng, 2001). Analyzing these perceptions will allow deeper insights in the theoretical underpinnings of the relationship between CNC enforceability and firm productivity.

It is plausible the legal enforcement of non-compete agreements will be more prominent in situations where human capital is crucial, such as innovation activities (Nelson, 1982). Future researchers should extend this line of research to investigate how state enforcement of CNC contracts may affect firm innovation and research and development efficiency. Another avenue

for research is presented by firms at the initial public offering (IPO) stage. IPO firms are associated with significant asymmetric information regarding their upper management, especially when the IPO presents an opportunity for the incumbent management to cash out. Furthermore, the top management teams hold significant firm-specific human capital that is a key determinant of the firm's future success. Future research can explore if and how CNC enforcement affects pricing and long-term performance of these firms. Finally, future research should also explore state level outcomes such as employee mobility into and out of the state, and innovation indicated by the number of new start-ups and patents.

Managerial implications

There is an asymmetric relationship between firms and their legal environments, such that state laws exert significant influence on firm performance but firms do not have much control over the laws (Bertrand & Mullainathan, 2003). Firms do have the ability to choose their location, however this choice is dependent on multiple facets of the external environment such as availability of natural resources, unionization levels, tax laws, etc. (Bartik, 1985; Ellison, Glaeser & Kerr, 2010). While state level labor laws such as CNC enforceability are very important, they are only one factor in a firm's decision to choose its headquarter state. Since firms cannot control state level CNC enforceability, we recommend that firms should carefully evaluate their decision to include CNCs in their employment contracts. If a great deal of the demanders for the firm's labor are located within the geographic purview of these agreements, then the firms might be better off (individually as well as jointly) by doing away with these agreements. In fact, firms facing these conditions should publicize their lack of CNCs as an aspect of distinctive HR policies, targeted to create a supportive environment laden with trust between employee and employer. It is counterintuitive to grant mobility to one's labor force when it can be easily lured

away, but giving this freedom may actually bind the employees to the firm, if other firms are still utilizing CNCs. In this case, employees may see lack of CNCs at a particular firm as an additional valuable benefit that allows them to move if and when they desire. Firms cannot control state level regulations or the choices made by the competitors, but they can certainly manage how employees perceive those regulations in their particular context.

If external conditions necessitate placements of CNCs because of a war for talent (i.e., an acute shortage of a particular type of skilled labor), fear of losing proprietary knowledge (i.e., employees working on highly confidential projects), or industry norms (i.e., all the industry competitors have them in place), then firms should consider offering long-term oriented compensation to employees. Along with this compensation design, HR managers should emphasize the signing of non-compete agreements as a symbol of the firm's desire for a long term relationship with the employees. Carefully designed messages from HR managers can mitigate any remaining negative perceptions arising from CNCs in employees, and weaken their negative effects on firm productivity. Management literature asserts that organizational communication can shape employee interpretations of salient events and their outcomes (Gopinath & Becker, 2000; Rousseau, 1995). We propose that communications from HR managers during recruitment can shape how applicants interpret the restrictiveness of non-compete covenants, and not let the firm's legal environment limit the effectiveness of HR practices. For instance, a firm located in a state that enforces CNCs can face considerable difficulty in attracting the desired talent. HR managers of the firm can provide detailed communication about CNCs (i.e., whether the firm enforces those, what are the geographic and temporal limits of the contract, etc.), and allay applicants' fears about losing their mobility. By providing information that clarifies the reasons for establishing CNCs, and the benefits to the

firm and the employee (i.e., your firm will not lose proprietary information due to a colleague's exit) HR managers can demonstrate honesty and inclusiveness, and create a collaborative environment whereby employee interests are aligned with those of the firm. HR managers can also suggest other alternatives to CNCs, such as garden leave (Lembrich, 2002), or requiring employees to reimburse their employer for all training and related costs (Long, 2005). The presence of CNCs thus demands strategic participation from HR managers during employees' organizational entry, socialization, contract renegotiations, and exit processes.

6. Conclusion

Non-compete agreements have been used by firms for over 100 years (Marx et al., 2009). Extant research shows that these contracts help the firms in keeping their employees tethered; however, net benefits of such ties are questionable. Findings of this research establish that state level CNC enforceability can have counter effects on firm productivity. However, these effects are weakened if a large part of employment opportunities resides outside of the geographic boundaries imposed by CNCs. This finding suggests that an industry does not necessarily have to grow in geographic clusters in order to thrive. By strategically choosing their locations, firms in the industry can all grow together, but can stay away from cut-throat competition in the labor market. This explains why technology firms like Texas Instruments (Texas) and IBM (New York) are located outside of Silicon Valley and are continually thriving. While the location of the firm, once determined, cannot be changed easily, there are other instruments that a firm can employ to incentivize employees to pursue its interests. One such instrument is the nature of compensation offered to employees. We found that the negative effects of CNC enforceability are largely mitigated by offering compensation that is spread over a longer horizon. Firms cannot control state laws and regulations determining the enforceability of CNCs, however

compensation structure can be changed easily and frequently to keep employees motivated towards pursuing their employer's long-term strategic goals. We suggest that HRM researchers, practitioners and policy makers need to build a deeper understanding of the side effects of CNCs before employing those as a tool to guard their intellectual capital. Such an understanding would be vital in understanding the role of CNCs in the success of firms, and ultimately, in the growth of an economy.

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Figure 1: Moderating effect of relative job opportunities within a state on the relationship between CNC enforceability and firm productivity

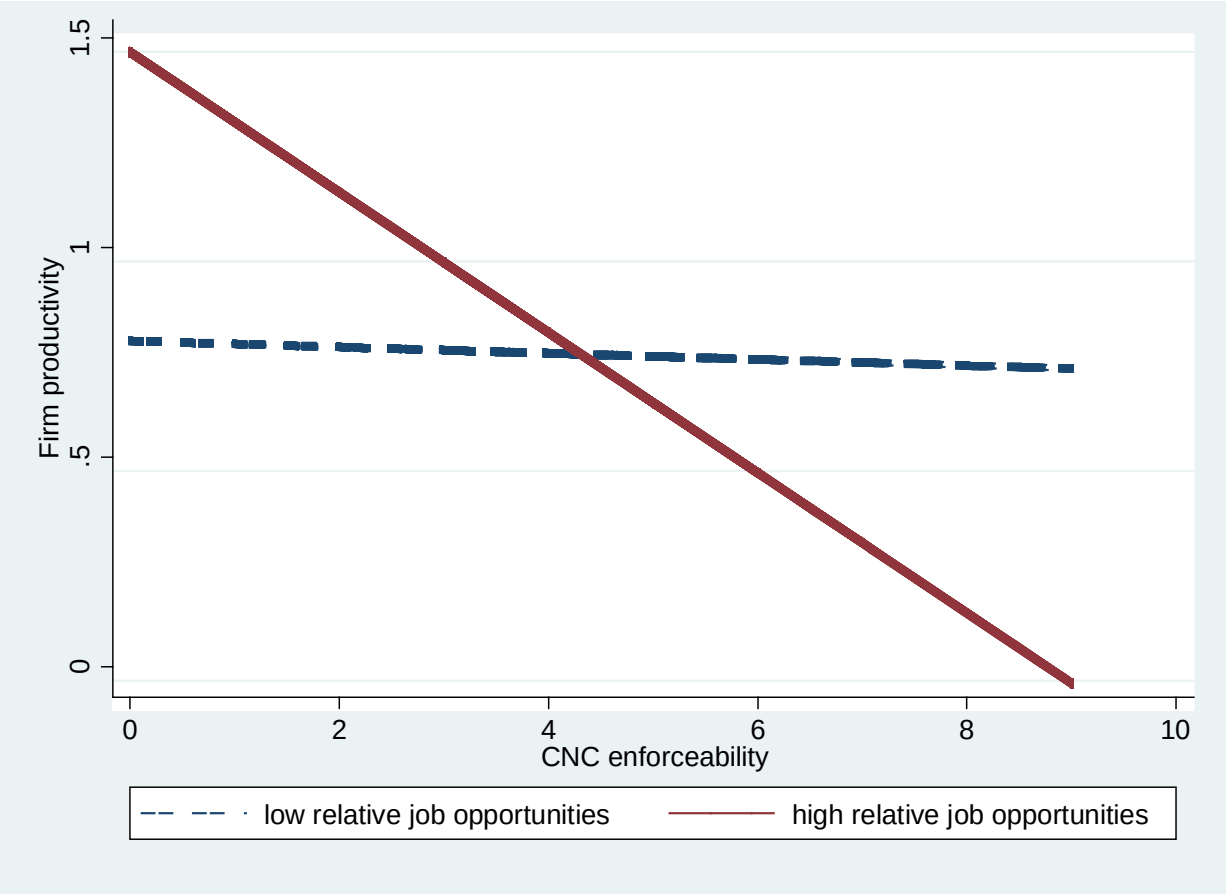

Figure 2: Moderating effect of long-term oriented employee compensation on the relationship between CNC enforceability and firm productivity

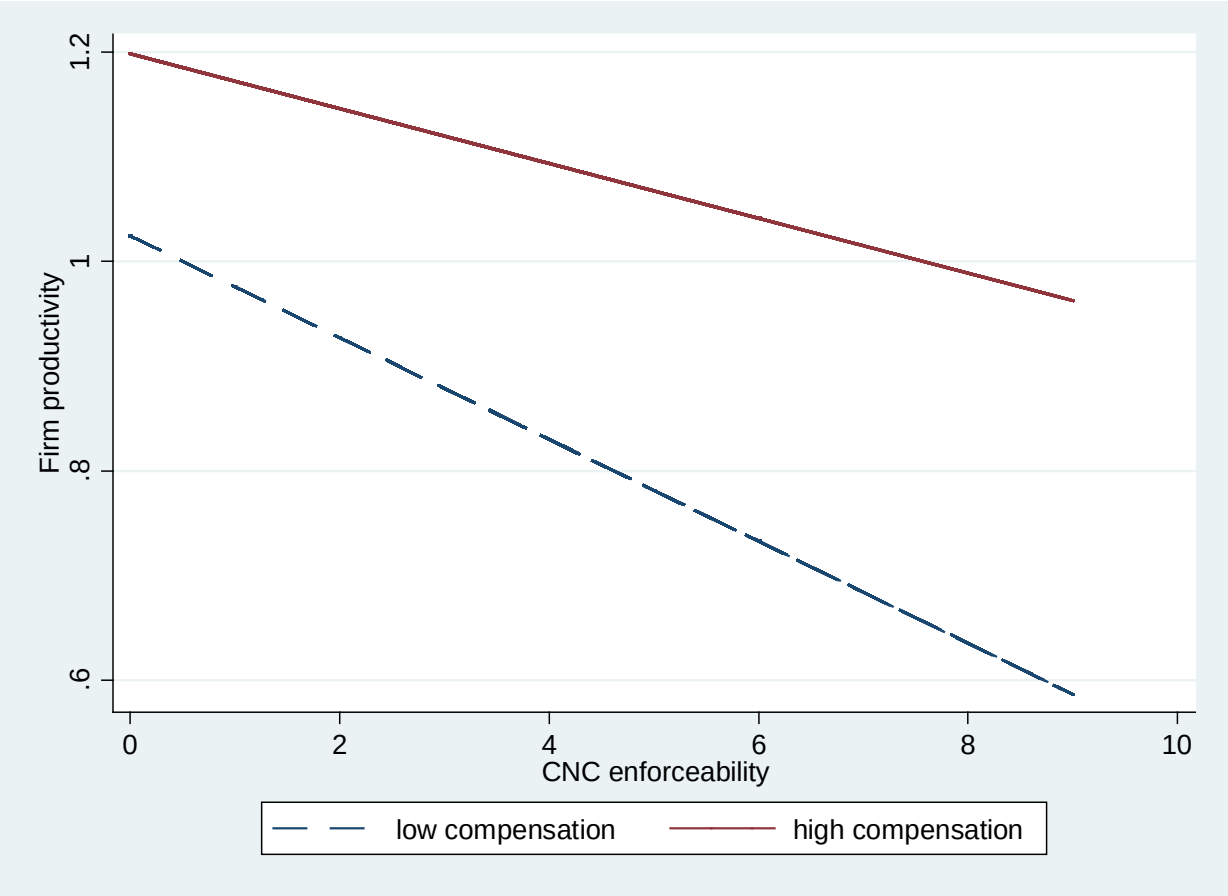

Table 1: Summary statistics and pairwise correlation matrix

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1	TFP	0.91	0.81	1											
2	CNC enforceability	3.62	2.36	-0.12**	1										
3	Relative in-state job opportunities	0.16	0.15	0.16**	-0.46*	1									
4	Employee long-term oriented compensation	0.24	2.40	0.06**	-0.04**	0.05**	1								
5	Firm size	18.17	2.18	-0.11**	0.04**	0.16**	0.07**	1							
6	Book leverage	0.28	2.61	-0.05**	0.01	-0.01	-0.01	-0.08**	1						
7	Capital expenditure	0.05	0.05	-0.01	-0.00	0.04**	0.02**	0.09**	-0.01	1					
8	R&D intensity	0.39	6.89	-0.24**	-0.01	-0.01	-0.00	-0.05**	-0.00	0.00	1				
9	Employee treatment strength	0.11	0.31	-0.02**	-0.00	0.09**	0.05**	0.43**	-0.01	-0.03**	-0.01	1			
10	State size	16.17	0.86	0.06*	-0.46*	0.29*	0.04**	0.03**	0.01	-0.02**	0.01	0.03**	1		
11	State higher education expense	5.22	0.26	0.05*	-0.44**	0.28**	0.04**	0.02**	0.01	-0.03**	0.02**	0.13**	0.34**	1	
12	State unionization rate	15.79	6.04	-0.01	-0.17**	0.06**	-0.00	0.00	-0.01*	-0.03**	0.01	-0.02**	0.19**	-0.08**	1

Note: ** and * denote significance level at 0.01 and 0.05 respectively.

N = 21134.

Table 2: HLM results for testing Hypothesis 1

Independent variable	Dependent variable: Total factor productivity	
	Model 1	Model 2
Intercept (γ_{00})	1.57**	1.75**
Control variables		
Firm size (γ_{10})	-0.04**	-0.04**
Book leverage (γ_{20})	-0.01**	-0.01**
Capital expenditure (γ_{30})	-0.95**	-0.95**
R&D intensity (γ_{40})	-0.03**	-0.03**
Employee treatment strength (γ_{50})	0.04*	0.04*
State size (γ_{60})	0.00	-0.00
State higher education expense (γ_{70})	-0.01	-0.03
State unionization rate (γ_{80})	0.00	0.00
Main effect		
CNC Enforceability (γ_{01})		-0.01*
Wald Chi-square	3040.30**	3049.12**
Deviance	35011.01	34806.72
Decrease in deviance	2905.46**	204.29**
Random Effect	Variance component	
State	0.07	0.07
Industry	0.08	0.08
Residual	0.27	0.27

Note: ** and * denote significance level at 0.01, and 0.05 respectively.

N = 21134.

Table 3: HLM results for testing Hypothesis 2

Independent variable	Dependent variable: Total factor productivity	
	Model 3	Model 4
Intercept (γ_{00})	1.86**	1.89**
Control variables		
Firm size (γ_{10})	-0.04**	-0.04**
Book leverage (γ_{20})	-0.01**	-0.01**
Capital expenditure (γ_{30})	-0.86**	-0.87**
R&D intensity (γ_{40})	-0.03**	-0.03**
Employee treatment strength (γ_{50})	0.04*	0.04*
State size (γ_{60})	-0.01	-0.02
State higher education expense (γ_{70})	-0.02	-0.03
State unionization rate (γ_{80})	0.00	0.00
Main effect		
CNC Enforceability (γ_{01})	-0.01*	-0.01*
Relative in-state job opportunities (γ_{90})	0.15*	0.35**
CNC Enforceability × Relative in-state job opportunities (γ_{91})		-0.08**
Wald Chi-square	2849.80**	2862.47**
Deviance	33956.59	33644.46
Decrease in deviance		310.13**
Random Effect	Variance component	
State	0.08	0.08
Industry	0.08	0.08
Residual	0.27	0.27

Note: ** and * denote significance level at 0.01, and 0.05 respectively.

N = 21134.

Table 4: HLM results for testing Hypothesis 3

Independent variable	Dependent variable: Total factor productivity	
	Model 5	Model 6
Intercept	1.77**	1.76**
Control variables		
Firm size (γ_{10})	-0.04**	-0.03**
Book leverage (γ_{20})	-0.01**	-0.01**
Capital expenditure (γ_{30})	-0.95**	-0.94**
R&D intensity (γ_{40})	-0.03**	-0.03**
Employee treatment strength (γ_{50})	0.04*	0.04*
State size (γ_{60})	-0.00	-0.00
State higher education expense (γ_{70})	-0.03	-0.03
State unionization rate (γ_{80})	0.00	0.00
Main effect		
CNC Enforceability (γ_{01})	-0.01*	-0.01*
Employee long-term oriented compensation (γ_{90})	4.76**	4.44**
CNC Enforceability × Employee long-term oriented compensation (γ_{91})		0.33*
Wald Chi-square	3060.47**	3066.70**
Deviance	34996.80	34772.65
Decrease in deviance		224.15**
Random Effect	Variance component	
State	0.07	0.07
Industry	0.08	0.08
Residual	0.27	0.27

Note: ** and * denote significance level at 0.01, and 0.05 respectively.

N = 21134.

Endnotes

1. As of July 6, 2015, there is an ongoing public hearing to consider banning the enforcement of CNCs in Massachusetts.

See http://www.natlawreview.com/article/uncertain-future-non-compete-agreements-massachusetts-legislators-seek-compromise.

2. http://www.leginfo.ca.gov/cgi-bin/displaycode?section=bpc&group=16001-17000&file=16600-16607

3. Please refer to Garmaise, 2011 for a list of CNC enforceability index values for all 50 states and Washington D.C.

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