



## To Compete, or To Non-Compete?

### The Effects of Employee Non-Compete Agreements

By **Matt Marx**, (Harvard Business School), **Deborah Strumsky** (University of North Carolina - Charlotte), and **Lee Fleming** (Harvard Business School)

The movement of talented individuals among different firms is a key to the growth and development of new firms and, by extension, to regional economic development. While all states have laws barring mobile employees from revealing their former employer's trade secrets, many states, including Massachusetts, go further and allow the use of "non-compete" agreements—provisions in employment contracts that prevent employees from taking jobs in similar businesses for a certain period of time after they leave their current firm.

Established firms in knowledge-intensive fields generally favor such agreements as a way to ensure that trade secrets are not revealed as well as to honor customer confidentiality and prevent competitors from appropriating the specialized skills and knowledge of others' employees. In recent years, however, a small but growing body of research has suggested that more new firms form in states that ban such agreements, such as California (Gilson 1999; Almeida and Kogut 1999; and Stuart and Sorenson 2003). However, causal evidence for these assertions remains thin (Fallick, Fleischman, and Rebitzer 2006) and we know little about which groups of knowledge workers are

likely to be more affected by non-competes.

Michigan's 1985 reversal of its law banning the use of non-compete agreements created a natural experiment that allows us to fill these gaps. In particular, a close examination of thousands of patents before and after the law's passage suggests that after passage of the law the job mobility of inventors in Michigan fell 8.1 percent, compared to inventors in other states that continued not to enforce non-competes. Moreover, mobility for individuals who had firm-specific skills or who specialized in a narrow range of technologies fell by more than 15 percent. The Michigan data and subsequent qualitative studies further suggest that individuals who do leave firms that used non-compete agreements were more likely to take "occupational detours" and also to take jobs with larger firms. Taken as a whole, these findings suggest that states that allow non-compete agreements may want to reexamine those policies.

#### Background

The components of non-competition law have not changed materially for centuries. The earliest recorded case was settled in England in 1414, only

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a few decades after the Bubonic plague had decimated the European labor supply and subsequent to the Ordinance of Labourers, which essentially outlawed unemployment in post-medieval England. Thus a plaintiff's request to enjoin one of his former clothes dyers from working in the same town for six months was met with disdain from the judge, who threatened the plaintiff himself with jail time for having sought to restrict a citizen from practicing his trade (Decker 1993).

Firms use non-competes to protect their interests: to prevent the disclosure of trade secrets, to honor customer confidentiality, and to prevent competitors from appropriating the specialized skills and knowledge of its employees (Valiulis 1985). One might argue that trade secrets are already protected by the non-disclosure agreement (NDA) employees are generally required to sign, but violations of an NDA can be difficult to detect or prove (Hyde 2003). Preventing an ex-employee from joining a competitor via a non-compete reduces the likelihood that an employee will violate the corresponding NDA via so-called "inevitable disclosure" of confidential information at a new job (Whaley 1999).

**States, like Massachusetts, that allow non-compete agreements may want to reexamine those policies.**

Although the law of trade secrets is fairly similar across U.S. states (Hyde 2003), enforcement of non-competes varies significantly from state to state. For example, California's Business and Professions Code section 16600 is reminiscent of early English law: "*Except as provided in this chapter, every contract by which anyone is restrained from engaging in a lawful profession, trade, or*

*business of any kind is to that extent void.*"<sup>1</sup> Section 16600 has been upheld by the courts and was reaffirmed in August 2008 by the California Supreme Court's ruling in *Edwards v. Arthur Andersen*. Citing the attenuating impact of non-competes on employee mobility, Gilson proposed that this practice is in fact "the causal antecedent" of the high-velocity labor market as well as the unique culture Saxenian attributes to Silicon Valley.

Gilson's hypothesis went untested until 2003, when Stuart and Sorenson (2003) examined the effect of initial public offerings (IPOs) and acquisitions on founding rates of biotech firms in regions that enforce non-competes compared with those that did not. That proportionally more biotech firms were founded in states that proscribe enforcement of non-competes is consistent with Gilson's hypothesis. However, as the Stuart and Sorenson analysis measures firm foundings, it does not directly track individual mobility.

An individual-level study of mobility was undertaken in Fallick et al.'s (2006) examination of the computer industry in Silicon Valley. Using month-by-month data from the Current Population Survey in the top 20 metropolitan areas, they found an increase in intraregional employee mobility for the California computer industry vs. other states. The authors caution, however, against interpreting their results as unequivocal evidence linking non-competes and mobility.

### **Michigan's Reversal of Non-Compete Enforcement**

At the turn of the 20th century, the metropolitan area of Detroit, Michigan in many ways resembled the Silicon Valley of the last few decades. Growth of the nascent auto industry was explosive, with 500 firms entering before 1915 (Klepper 2002). Ten years prior, the Michigan legislature had passed statute

445.761 (bearing resemblance to California’s prohibition): “*All agreements and contracts by which any person...agrees not to engage in any avocation or employment...are hereby declared to be against public policy and illegal and void.*” This law governed non-compete enforcement until March 1985, when the Michigan Antitrust Reform Act (MARA) repealed section 445 and with it the prohibition on enforcing non-compete agreements.

More than 20 pages of legislative analysis of MARA by both House and Senate subcommittees does not mention non-competes as a motivation for the bill (Bullard 1983a; Bullard 1983b; Bullard 1983c; and Bullard 1985). This may be a consequence of MARA having been modeled on the Uniform State Antitrust Act of 1983, designed to “make uniform the law with respect to the subject of this act among those states that enact similar provisions.” Given that the impetus for the change in law appears to have been general antitrust reform and not specifically altering non-compete enforcement, it appears that the 1905 statute prohibiting non-competes was inadvertently repealed as part of the anti-trust reform. If so, then Michigan’s change in enforcement would be an exogenous event rather than an example of the legislature simply “catching up” with the courts or responding to lobbying efforts. Even if it were the case that behind-the-scenes lobbying by powerful interests contributed to the legislature’s move—and we did not uncover any evidence of this—such a change would still be exogenous to the inventors who are the subjects of this study, assuming that they would have been unaware of such efforts.

### Study Design

For several reasons, we used the U.S. patent database to examine inventor mobility. First, patents are public documents and thus make

the productivity of inventors visible outside of their current employer. Second, since each patent lists both the inventor’s hometown and the patent assignee—if not owned by the inventor, in which case the field is blank or lists the inventor, the patent is “assigned,” typically to the inventor’s employer—we know the inventor’s employer and state of residence. Third, by combining the NBER patent file (Hall, Jaffe, and Trajtenberg 2001) with weekly updates from the US Patent & Trademark Office, we are able to observe these inventors longitudinally from 1975 through 2006. (When available, we also included more limited data from 1963-1974.)

After applying various algorithms to account for some of the documented weaknesses in patent data (Griliches 1991) and to identify specific inventors, the resulting dataset contains

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98,468 inventors who patented in Michigan or in another non-enforcing state prior to MARA. Following these inventors throughout the study period yielded 372,908 patents between 1963 and 2006, for a patent-per-inventor ratio of 3.79. About 28 percent of these people – 27,478 inventors – patented with different employers during the study period. We also included controls for a variety of factors, including the particularly large presence of the automobile industry in Michigan.

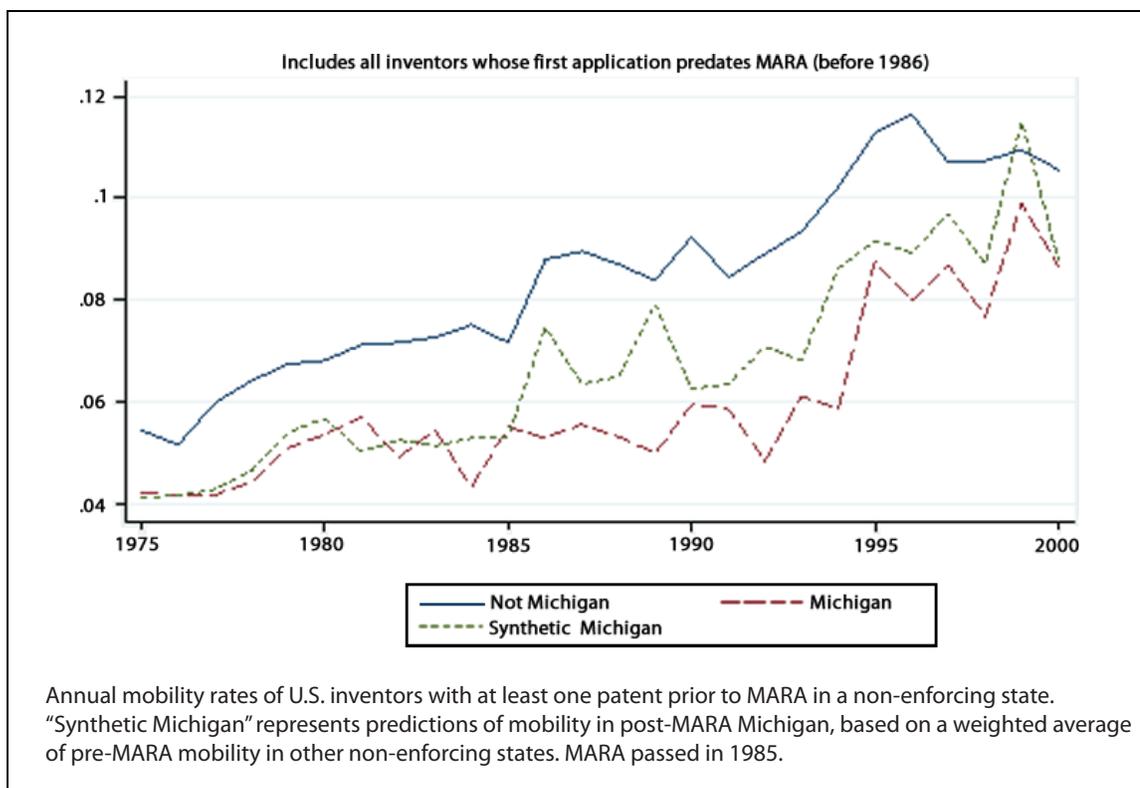
## Results

We began by comparing the mobility rates of Michigan vs. other non-enforcing states from 1975 to 2000. (See Figure 1) Non-Michigan states demonstrate a volatile and increasing trend in mobility over the entire time period. Michigan mobility increases similarly during the early years, but levels off in the 1980s, though it does jump in the late 1990s. Figure 1 also includes a “synthetic” Michigan line (Abadie, Diamond, and Hainmueller, 2007). Prior to and including 1985, the algorithm used to generate this line reconstructs “real” Michigan prior to 1986 from a composite of similar states. In 1986 and later, the synthetic line of Figure 1 is a prediction based on patenting in the control states, multiplied by the same composite weighting determined before 1986. This analysis indicates that MARA does seem to be associated with less mobility

as measured by the percentage of patents in the states that indicate a change in assignee. Overall, it appears that MARA did not cause an absolute decrease in Michigan mobility, though it may have contributed to a decrease relative to other states that continued to proscribe non-competes.

The marked upward trend of synthetic Michigan immediately following MARA further supports this interpretation. Rabaut (2006) ascribed the real upturn in the late 1990s to a judicial pendulum swing. On a scale of 1 to 10, with 1 being complete inability to enforce non-competes and 10 being the opposite, he indicated that Michigan went from a 1 before MARA to an 8 immediately after passage and then back to somewhere between 4 and 6 because “judges got sick of non-competes. At first they felt they had to enforce them but then they looked harder at being ‘reasonable.’”

**Figure 1: Yearly Moves/Patents for Michigan and Other Non-Compete States**



Rabaut further reported that even employers in Michigan became less enamored with non-competes over time, because while they appreciated the use of non-competes as a “hiring shield” they began to realize that it also deprived them of a “hiring sword.”

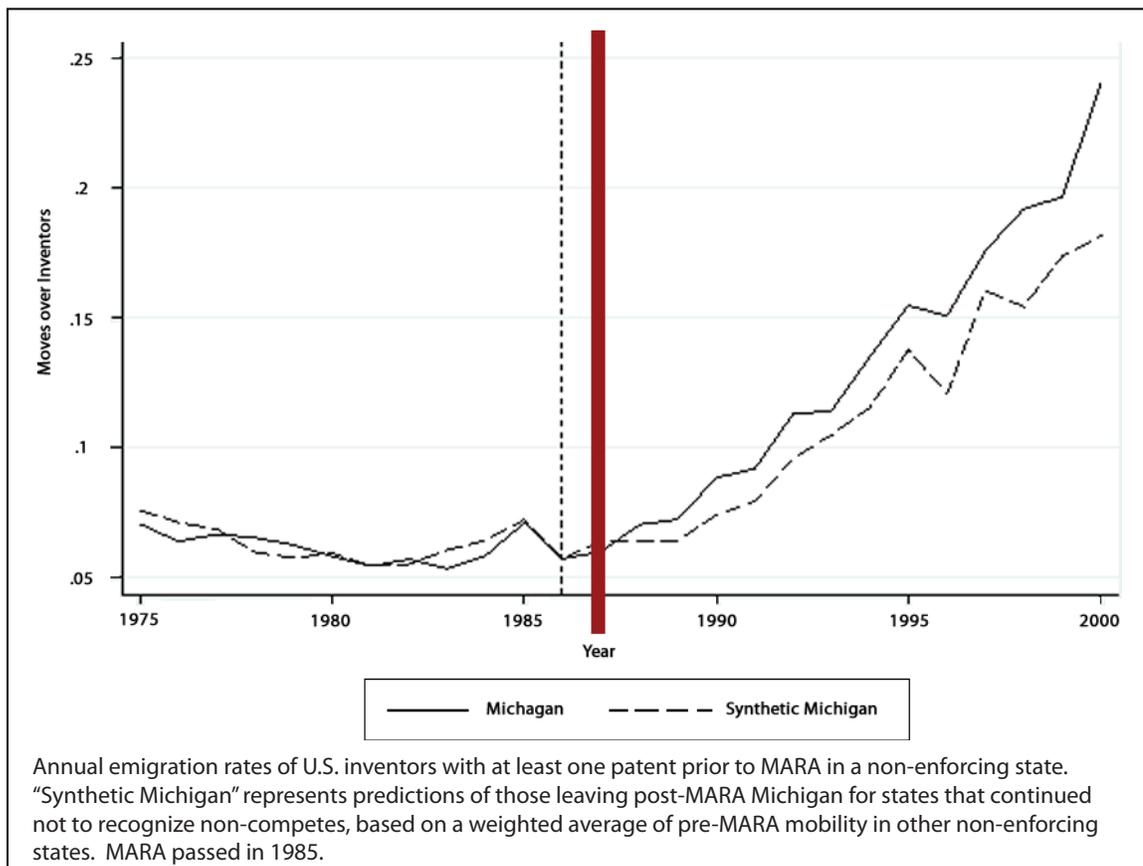
A similar pattern is revealed by modeling an individual inventor’s decision to change jobs. We estimate that the baseline predicted annual probability of changing firms for non-Michigan inventors is 7.95 percent before MARA and 10.80 percent thereafter while the predicted probability of mobility for Michigan inventors is 7.18 percent before MARA and 8.98 percent afterwards. Put another way, after MARA, inventor mobility in Michigan dropped by 8.1 percent relative to mobility in other states that

continued to limit non-compete agreements. Moreover, those who have completed projects which developed firm-specific human capital as opposed to general human capital were 15.4 percent less likely to change employers under a non-compete regime. Similarly, employees who are highly technologically specialized are found to be 16.2 percent less likely to change jobs. Moreover, the emigration of inventors from Michigan to states that continued not to recognize non-competes appears to increase after MARA’s passage. (See Figure 2)

### Effects on Ex-Employees

To better understand how individuals respond to limits on their future employment, we surveyed 5,000 members of the Institute of Electrical and Electronic Engineers (IEEE),

Figure 2: Annual Emigration Rates of U.S. Inventors



interviewed 50 individuals in the automatic speech-recognition industry, and examined a smaller set of data from Michigan. We found that:

- Many individuals took “occupational detours” such as taking jobs in general programming while their non-compete agreements banned them from working in their specialized field.
- While small firms might be more attractive to those subject to non-compete agreements, many consciously chose to work for larger firms both because they wanted to shield a small firm from potential legal expenses and because many small firms require particularly lengthy non-compete agreements.
- Some managers and entrepreneurs are coming to believe that the value of non-compete agreements to their firm may be outweighed by the benefit of being able to tell potential employees that the firm does not use such agreements.

**Michigan’s experience strongly suggests that non-compete agreements discourage the mobility of skilled workers, especially those with firm- and technology-skills.**

## Conclusion

While these findings are striking, we interpret these results cautiously because the statistical analysis depends on patent data which, it should be emphasized, enable only imperfect matching of inventors across patents and imperfect observations of job changes. We also cannot determine whether job changes are voluntary or involuntary, although

conversations with employment lawyers and review of specific non-compete agreements indicate that such contracts are typically constructed to survive involuntary separation of employee from employer. Moreover, the interviews and survey responses qualitatively corroborate the results of the statistical analysis. And though we have attempted to control for alternative explanations of post-MARA mobility changes in Michigan, the models may be incomplete.

Despite these caveats, Michigan’s experience strongly suggests that non-compete agreements discourage the local mobility of skilled workers, especially those with firm- and technology-skills. In addition, it appears that the agreements encourage ex-employees to take “occupational detours,” and shun small firms in favor of larger enterprises. Consequently, states that continue to allow widespread use of such agreements as a way to protect established firms may instead be inadvertently creating a “brain drain” of the very workers needed to create and build successful new firms.

## Endnotes

<sup>1</sup> Note that although contracts typically stipulate a “choice of law”—a state under whose laws the agreement is to be governed—in their 1971 *Frame v. Merrill Lynch* ruling the California courts forbade corporations from specifying out-of-state jurisdiction as a means of cherry-picking one’s non-compete enforcement regime.

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