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Bradley T. Ewing, Charles M. North, and Beck A. Taylor

Abstract

With passage of a 1987 statute, Montana became the only state to adopt a “good cause” standard for discharge of employees with contracts of unspecified duration. The new statute was a legislative response to a series of Montana Supreme Court cases, starting in 1980, that gave otherwise at-will employees a broad right to sue for wrongful discharge. Estimating a policy intervention model using monthly time-series data on Montana employment, the authors find that the seminal Montana wrongful discharge case reduced annual employment growth in Montana by 0.46 percentage points, and that the “good cause” statute restored the original growth rate. While the firing costs literature would suggest that employment should fall following implementation of a heightened discharge standard, the contrary result in Montana is likely due to important procedural and other limitations imposed by the new statute on discharged employees’ legal recourse.

KEYWORDS: employment effects of a good cause discharge standard, wrongful discharge

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THE EMPLOYMENT EFFECTS OF A “GOOD CAUSE” DISCHARGE STANDARD IN MONTANA

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With passage of a 1987 statute, Montana became the only state to adopt a “good cause” standard for discharge of employees with contracts of unspecified duration. The new statute was a legislative response to a series of Montana Supreme Court cases, starting in 1980, that gave otherwise at-will employees a broad right to sue for wrongful discharge. Estimating a policy intervention model using monthly time-series data on Montana employment, the authors find that the seminal Montana wrongful discharge case reduced annual employment growth in Montana by 0.46 percentage points, and that the “good cause” statute restored the original growth rate. While the firing costs literature would suggest that employment should fall following implementation of a heightened discharge standard, the contrary result in Montana is likely due to important procedural and other limitations imposed by the new statute on discharged employees’ legal recourse.

An important trend in U.S. employment law in recent decades has been the state-by-state drift away from employment-at-will. Generally, this change in the law has been achieved through court-created exceptions to the common law employment-at-will doctrine. While the nature of the

exceptions to employment-at-will varies by state, the overall effect has been that at-will employees in most states have acquired causes of action for wrongful discharge¹

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A data appendix with additional results, and copies of the computer programs used to generate the results presented in the paper, are available from the first author at Information Systems & Quantitative Sciences, Rawls College of Business, Texas Tech University, Lubbock, TX 79409-2101.

¹“Wrongful discharge” is a shorthand term used to describe a body of court-made law modifying the employment-at-will doctrine. Unfortunately, there is no clear agreement on the name to be given this body of law. For example, in the economics literature alone, terms used have included “unjust dismissal” (Krueger 1991; Autor 2003), “unjust discharge” (Stieber 1980), “wrongful discharge” (Abraham 1998; Autor, Donohue, and Schwab 2004a, 2004b), “wrongful termination” (Dertouzos and Karoly 1992), “common law exceptions to employment at will” (Miles 2000; Schanzenbach 2003), and “relaxation of the employment-at-will doctrine” (Hamermesh 1993). There is similar variation in the legal literature, where terms used include “wrongful discharge” (Gould 1993, Chap. 3; Epstein 1994; Morriss 1996; Walsh and Schwarz 1996), “wrongful dismissal” (Perritt 1998), “wrongful termination” (Grodin 1990), “unjust discharge” (St. Antoine 1988), and “unjust dismissal” (Summers 1976; Minda and Raab 1989). The Mon-

under certain circumstances. In 1987, the Montana Legislature passed the Wrongful Discharge from Employment Act (WDFEA), establishing the first and so far only “good cause” standard for discharge in the United States. In this article, we investigate the employment impact of Montana’s common law of wrongful discharge and of the WDFEA.

The employment-at-will doctrine provides that, in an oral or written employment contract with no specified duration, either party to the employment relationship can terminate the contract at any time for any reason. Employment-at-will has been the dominant rule in the United States since at least the early twentieth century, so that in most states an employment contract with no stated duration has long been considered terminable at will. In recent decades, employees and employee rights advocates have grown increasingly dissatisfied with employment-at-will. Unhappy with claimed disparities in bargaining power between employers and employees and with the differences in treatment accorded to union and nonunion workers,² these supporters of workers’ rights have sought protection from the alleged harshness of employment-at-will. Beginning in California in 1959,³ the courts in various states began recognizing exceptions to the common law doctrine of employment-at-will. Such exceptions rapidly spread across the country during the 1970s and 1980s, and the courts

of most states recognized at least one of three main types of cause of action for wrongful discharge of otherwise at-will employees:

(i) *Public Policy*—these courts held that employers could not discharge employees for reasons that were contrary to public policy as set forth by constitutional, statutory, or administrative provisions, and even some nonstatutory grounds as well. Discharges in violation of public policy were actionable in tort, meaning that punitive damages and damages for pain and suffering were often available in addition to standard pecuniary damages.

(ii) *Implied Contract*—these courts imposed liability in contract on employers based on statements contained in employee handbooks, statements made by supervisors at the time of hiring, the prior course of dealing between the employer and the employee, and other similar factors.

(iii) *Good Faith*—these courts held that every at-will employment contract contained an implied covenant of good faith and fair dealing from the employer to the employee. Often, these courts left it to a jury to determine whether the employer’s justification for firing violated this implied covenant. Whether liability was in contract or in tort varied from state to state.

Useful state-by-state summaries of wrongful discharge law are contained in Autor, Donohue, and Schwab (2004b), Morriss (1995), and Walsh and Schwarz (1996). According to Autor, Donohue, and Schwab (2004b), 47 states had some form of wrongful discharge law in 1999. By category, 43 states recognized a public policy exception, 42 states recognized an implied contract exception, and 11 states recognized a good faith exception. As discussed in the next section, the Montana Supreme Court adopted a public policy exception in 1980 and a tort-based good faith exception in 1982. The legislature passed the WDFEA in 1987, in part as a reaction to the direction of the Court’s rulings on wrongful discharge. This article focuses on the employment effects of this series of legal changes.

Several studies have attempted to measure the impact on employment levels of

tana statute we examine is named the “Wrongful Discharge from Employment Act.” Among the various naming options listed, the term “common law exceptions to employment-at-will” is probably the most accurate description of the body of law analyzed in this article. Unfortunately, it is also the most cumbersome and the one that has least caught on in the economics literature.

²Collective bargaining agreements typically have grievance provisions, specified terms, and other job protection rules that effectively exempt unionized workers from the employment-at-will doctrine.

³The first case to provide a common law action for wrongful discharge to an at-will employee is generally recognized to be *Petermann v. International Brotherhood of Teamsters*, 344 P.2d 25 (Cal. Dist. Ct. App. 1959).

changes in employment-at-will. Dertouzos and Karoly (1992) found statistically significant reductions in employment in states whose courts had created judicial exceptions to employment-at-will, as high as 4.7% for states with both contract- and tort-based wrongful discharge actions. However, Miles (2000) found only insignificant (negative) effects of wrongful discharge actions on state employment levels. Autor, Donohue, and Schwab (2004b) found that the implied contract exception had a “modest” negative impact on employment. They also found that the good faith exception had a statistically significant negative effect on employment levels, but this result was not found when yearly regional dummies were included in the empirical model. To explain the differences between their results and those found by Dertouzos and Karoly and by Miles, they cited spurious influences picked up by Dertouzos and Karoly’s instrumental variable approach and a flawed classification of legal changes used by Miles.

Additional empirical analyses of common law exceptions to employment-at-will have found other important effects on labor markets. Hamermesh (1993) concluded that between 1973 and 1988, adjustment of U.S. employment levels to fluctuations in product demand was slower in less-unionized industries (where at-will employment was more prevalent); he interpreted this pattern as evidence that changes in the employment-at-will doctrine made non-union employers less willing to lay off and hire workers in response to changes in product demand. Morriss (1995) found that nonunion employee job tenure was significantly longer in states whose courts had adopted public policy exceptions to employment-at-will than in other states. Schanzenbach (2003) found evidence of increased job tenure in states with implied contract exceptions. Both Autor (2003) and Miles (2000) concluded that the adoption of an implied contract exception led to accelerated growth in employment in the temporary help services industry.

In this article, using monthly employment data, we analyze the impact of the Montana Supreme Court case law and the

subsequent passage of the WDFEA on growth in Montana’s aggregate employment. In addition, to test the validity of our results, we examine employment growth in the four states that border Montana.

A Statute’s Tale

In 1895, as part of its civil code, Montana enacted a statute that expressly adopted employment-at-will, stating, “An employment having no specified term may be terminated at the will of either party on notice to the other.”⁴ Various statutory schemes modified this rule in particular settings, but employment-at-will was the general rule in Montana for many years. Indeed, the at-will statute survived on the books until 2001, when it was repealed. The history of Montana’s law on wrongful discharge is discussed in greater detail in Hopkins and Robinson (1985), Schramm (1990), Krueger (1991, 1992), Stieber and Block (1992), and Bierman and Youngblood (1992). This section relies on these sources as well as the original opinions of the Montana Supreme Court.

The Montana Legislature passed the WDFEA in reaction to a series of Montana Supreme Court cases that substantially expanded the right of at-will employees to seek redress for wrongful discharge. The Court’s first major wrongful discharge decision was *Keneally v. Orgain*.⁵ Decided on January 30, 1980, the *Keneally* case was the first in Montana to recognize a common law wrongful discharge claim based on a public policy exception to the employment-at-will doctrine. Almost two years later, on January 5, 1982, the Court issued its opinion in *Gates v. Life of Montana Insurance Co.*⁶ In *Gates*, the Court recognized a good faith

⁴Mont. Code Ann. § 39-2-503 (1999) (repealed 2001).

⁵606 P.2d 127 (Mont. 1980).

⁶638 P.2d 1063 (Mont. 1982). There are two important Montana Supreme Court opinions springing from the *Gates* litigation. The 1982 opinion adopting the good faith exception is commonly referred to as *Gates I*. A second opinion issued on a subsequent appeal permitted successful plaintiffs su-

exception in an at-will employment contract. Thus, these two cases created two new tort-based causes of action for wrongful discharge for employees who otherwise held their jobs at-will.

Beyond *Keneally* and *Gates*, the Montana Court decided other important cases on the topic of wrongful discharge during the early 1980s.⁷ These cases generally continued the development of legal doctrine established in *Keneally* and *Gates*, but they did not break new ground in terms of establishing new legal theories for liability for discharge of an at-will employee.⁸ Surely, though, the rapid series of pro-employee decisions in wrongful discharge cases added to the anxiety employers felt about their discretion to discharge employees and the uncertainty over the extent and scope of liability that could follow discharge. As Hopkins and Robinson (1985) wrote in an analysis of Montana's common law of em-

ployment-at-will two years before the WDFEA,

As the law presently exists in Montana, the plaintiff who properly pleads a complaint with conclusory allegations can readily argue that a jury issue has been created in nearly every discharge situation....

.... [I]t appears that the ability of a discharged employee to contest his discharge judicially creates, as a practical matter, an exception that has swallowed the statutory [at-will] rule. In contrast to the pre-1980s environment where a discharged employee was effectively without recourse unless he was employed under a collective bargaining agreement, today's at-will employee who takes issue with his employer's decision to terminate the employment relationship has access to traditional judicial remedies in the Montana courts.

.... Until there is further amplification or clarification by the Legislature or the courts on this subject, an employer in Montana may be subject to liability whenever a jury disagrees with the employer's exercise of a management decision affecting the employment relationship.

Although the Montana Supreme Court has stated that it has not affected the employer's statutory at-will right, it at the very least has imposed on employers a wariness of juries who may not agree with the decisions required in the myriad employment disputes which can result in employment termination. (pp. 22-23)

Montana employers likely recognized the potential for large and unpredictable judgments against them any time an employee was fired, and this uncertainty, combined with the potential increase in the cost of labor, could have led to a reduction in the demand for labor in Montana.

Out of concern over liability for wrongful discharge, a coalition of Montana employers and insurers drafted a bill that, with revisions, became the WDFEA. Passed in April 1987 with an effective date of July 1, 1987, the WDFEA's core provision established the elements of an action for wrongful discharge. Under the WDFEA, a discharge was wrongful only if (a) the discharge was in retaliation for the employee's refusal to violate public policy or for reporting a violation of public policy; (b) the discharge was not for good cause and the

ing under the good faith exception to recover punitive damages: *Gates v. Life of Montana Ins. Co.*, 668 P.2d 213 (Mont. 1983). The 1983 opinion is generally referred to as *Gates II*. Since our focus in this article is solely on the *Gates I* decision, all references in the text to *Gates* are to the 1982 decision.

⁷Such cases include *Reiter v. Yellowstone County*, 627 P.2d 845 (Mont. 1981) (rejecting a wrongful discharge claim based on implied contract); *Nye v. Department of Livestock*, 639 P.2d 498 (Mont. 1982) (administrative rules can provide the source of a public policy violation supporting a wrongful discharge claim); *Dare v. Montana Petroleum Mktg. Co.*, 687 P.2d 1015 (Mont. 1984) (implied covenant of good faith and fair dealing does not have to be connected to written employment policies); *Crenshaw v. Bozeman Deaconess Hosp.*, 693 P.2d 487 (Mont. 1984) (good faith exception applies to probationary employees); and *Flanigan v. Prudential Fed. Sav. & Loan Ass'n*, 720 P.2d 257 (Mont. 1986) (upholding a \$1.5 million award for wrongful discharge, in part because length of service creates an expectation of continued employment if work performance is satisfactory).

⁸The Court in *Crenshaw* recognized a separate basis for challenging a discharge through a negligence action. However, any discharge that could be challenged as negligent likely could also have been challenged under the good faith exception. Thus, it is not clear that the negligence action recognized in *Crenshaw* permitted claims for discharges that were not already actionable.

employee had completed the employer's probationary period of employment; or (c) the employer violated the express provisions of its own written personnel policy.⁹

Thus, the WDFEA codified wrongful discharge actions premised on public policy and added a whistle-blowing public policy claim. It also created a new cause of action on (narrow) implied contract grounds. The "good cause" provision substantively altered the traditional rule of employment-at-will and effectively replaced the common law good faith exception. In a sense, passage of the statute could be viewed as a victory for employees' rights, in that a discharge for no cause was no longer permissible once a probationary period was completed.

However, several provisions in the WDFEA substantially reduced the degree to which employees could claim victory in the passage of the statute. First, the WDFEA limited the available compensatory damages to at most four years of lost wages and fringe benefits, and it eliminated the possibility of recovering damages for pain and suffering and emotional distress.¹⁰ Second, the evidentiary showing needed to recover punitive damages was increased, and plaintiffs could recover punitive damages only in actions based on public policy violations.¹¹ Third, the duration of an employee's probation was left up to employers, creating the possibility that an employer could keep employees on permanent probation and thereby exempt them from the "good cause" requirement.¹² Fourth, the limita-

tions period for wrongful discharge actions was reduced from three years to one year.¹³ Fifth, the WDFEA required discharged employees to exhaust their employers' internal grievance procedures before going to court.¹⁴ Such procedures could have included a short time frame in which to file a grievance, thus further reducing the de facto limitations period. Sixth, the attorneys' fee recovery scheme provided strong incentives to plaintiffs to arbitrate their claims rather than pursue them in court,¹⁵ which would have placed discharge disputes in the generally less volatile hands of arbitrators and reduced the influence of the court system on the development of wrongful discharge law.

Thus, the apparently increased protection afforded workers by the WDFEA's establishment of a "good cause" requirement for terminating employees was deceptive. In reality, the heightened standard, combined with the additional procedural and substantive hurdles, provided less protection against discharge than "good cause" typically implies, and it may even have provided less protection than the common law it replaced.

In hindsight, Robinson (1996) contended that the "good cause" provision of the WDFEA increased the opportunities of discharged employees to sue their former employers, but that the other provisions of the WDFEA increased the certainty of the outcomes of such cases. In a sense, the WDFEA may have increased the frequency of liability for wrongful discharge compared to the pre-1987 common law regime, but it also appears to have reduced the variance of damages awards—a tradeoff that would appeal to risk-averse employers. Additionally, the WDFEA's negative incentives to pursue a wrongful discharge claim may actually have reduced the frequency of claims, thus reducing the frequency of liability too.

Abraham (1998) supported the hypothesis that the WDFEA benefited employers.

⁹Mont. Code Ann. § 39-2-904(1) (2001). These paragraphs were numbered (1)–(3) when the WDFEA was first enacted. They were renumbered in a 2001 amendment, discussed in note 12, which added a new § 39-2-904(2) that clarified the duration of probationary employment periods.

¹⁰*Id.* at § 39-2-905(1), (3).

¹¹*Id.* at § 39-2-905(2).

¹²*See id.* at § 39-2-904(1) (b). In 2001, the Montana legislature added § 39-2-904(2), which established a presumptive probation period of six months, unless the employer specifically provided otherwise. Thus, employers are still free to set probationary periods of whatever duration they choose, but they must do so explicitly.

¹³*Id.* at § 39-2-911(1).

¹⁴*Id.* at § 39-2-911(2).

¹⁵*Id.* at § 39-2-914.

The author conducted an event study on stock prices in the first half of 1987 for the eight publicly traded companies whose primary location was in Montana. He studied several event windows for various points during the debate and passage of the WDFEA. There were statistically significant positive abnormal returns over each event window examined, which suggests that investors believed that the WDFEA was favorable toward employers.

Based on the above historical analysis of Montana's common law of wrongful discharge prior to 1987, the subsequent changes in legal standards brought about by the WDFEA, and previous findings in the economics literature, our hypotheses are the following:

- Employment growth in Montana was negatively affected by the adoption of the public policy exception in *Keneally* in January 1980 and the good faith exception in *Gates* in January 1982.
- Because the WDFEA was generally viewed as less drastic and more predictable than the common law had been between 1980 and 1987, the passage of the statute had a positive effect on employment growth after April 1987.
- These hypothesized effects were strongest in industries that were the least unionized, since those industries had the greatest number of at-will employees.

In the balance of the article, we test these hypotheses.

Empirical Analysis

Data

In order to examine the potential effects that *Keneally*, *Gates*, and the WDFEA had on the Montana labor market, we collected monthly employment data for the state of Montana and for the entire United States for the period from January 1939 through December 2001. The state-specific employment data are the unadjusted estimates of the number of employed persons in Montana's civilian nonagricultural sector.¹⁶

¹⁶State-level seasonally adjusted data on employment are available only back to 1982.

We used the ratio-to-moving-average method to seasonally adjust the series. The employment data were obtained from the Bureau of Labor Statistics (www.bls.gov).

The dependent variable in our analysis is the annual growth rate in employment, which is computed as the difference in the log of employment between month t and month $t-12$. This approach eliminates any seasonality effects remaining after the seasonal adjustment procedure. We have a usable sample size of 744 observations (January 1940 through December 2001).

We expect that the performance of the Montana economy, and thus the state of its labor market, are related to the performance of the overall U.S. economy even after the effects of seasonality have been removed. Therefore, we include a measure of the U.S. business cycle in our model to capture these effects—specifically, the growth rate in total U.S. employment calculated analogously to Montana's employment growth rate.

Table 1 presents descriptive statistics for the employment growth rates in Montana and the United States. Moreover, as discussed in more detail below, we test the validity of our results using employment growth rates from the four states bordering Montana: Idaho, North Dakota, South Dakota, and Wyoming. These states did not experience the same legal innovations as Montana between 1980 and 1987, and they therefore serve as a useful control group to assure that any statistically significant effects found for Montana are genuine and not merely spurious correlations with unobserved regional effects. Descriptive statistics for employment growth in these four states are also presented in Table 1.

The United States experienced a greater average rate of employment growth than Montana, and the means of the two series are significantly different ($p = 0.065$). However, an F -test for the equality of variances suggests that employment growth in Montana was significantly less volatile than that across the entire country ($p < 0.000$). Plots of the two employment growth rate series are presented in Figure 1. The two

Table 1. Descriptive Statistics.

Variable	Sample Period	
	Jan. 1949–Dec. 2001	Jan. 1940–Dec. 2001
Montana Employment Growth Rate	0.0191 (0.0221)	0.0209 (0.0262)
U.S. Employment Growth Rate	0.0204 (0.0220)	0.0236 (0.0300)
Idaho Employment Growth Rate	0.0286 (0.0293)	0.0308 (0.0358)
North Dakota Employment Growth Rate	0.0218 (0.0197)	0.0245 (0.0250)
South Dakota Employment Growth Rate	0.0222 (0.0193)	0.0239 (0.0268)
Wyoming Employment Growth Rate	0.0214 (0.0380)	0.0244 (0.0397)
Number of Observations	636	744

Notes: Numbers reported are the means of each series during the specified sample period. Standard deviations are in parentheses.

series move together in a general sense, but they are only modestly correlated ($r=0.40$). Augmented Dickey-Fuller tests suggest that both employment growth rate series are stationary, while the levels of the series are nonstationary. Therefore, given the long sample period used in this analysis, the sample means for the growth rates are reasonable estimates of the unconditional means of the series. Furthermore, this finding implies that using growth rates, as opposed to the levels, to examine a model of employment is appropriate.

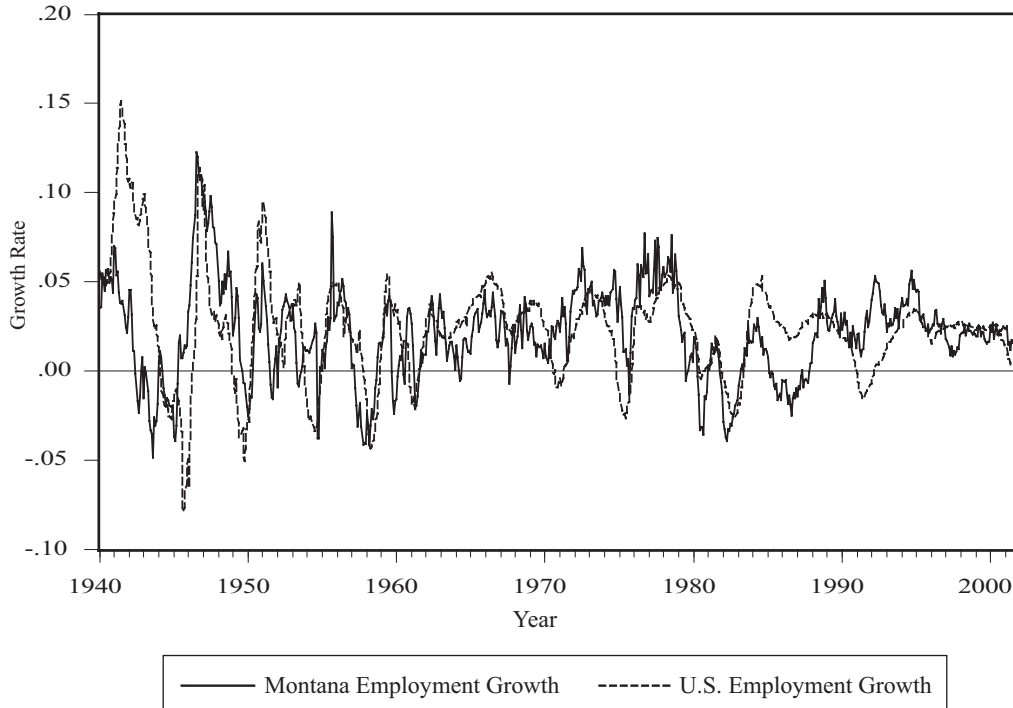
As seen in Figure 1, the U.S. and Montana employment growth rates do not move together in perfect tandem. There are several instances in which the Montana employment growth rate does not closely parallel the U.S. growth rate, and some of these episodes last for several months. Thus, while the U.S. business cycle may influence the Montana economy, it is not the case that Montana's economy simply follows the movements of the nation as a whole. Hence, although it is important to control for the U.S. economy, it is unlikely that movements in the Montana employment growth rate may be explained solely by movements in the U.S. employment growth rate. Further-

more, taken at face value, Figure 1 might be viewed as showing that Montana's employment growth rate has become less variable over time. As we discuss above, however, our statistical tests indicate that these series are stationary, and additional testing indicates that there is no systematic variability in the growth rates of these series over time.

Empirical Specification

Most empirical work examining changes in the law of employment-at-will has used state-level panel data, taking advantage of variations in state laws across states and over time. A panel methodology was appropriate in the various instances in which it has been used because multiple states adopted the same basic legal innovations at different points in time, thereby allowing a difference-in-differences method to be used. In contrast, a panel technique is not the best way to analyze the effect of a policy unique to one state (like the WDFEA). Because the WDFEA exists in only one state, standard panel techniques are not adequate for disentangling the effect of the WDFEA from other contemporaneous but unobserved time-variant effects in Montana. That

Figure 1. Employment Growth in Montana and the United States.



is, a panel estimation would not adequately distinguish between the effects of legal changes unique to Montana and other unmeasured changes that might have occurred within Montana at the same time as the legal changes.

As a result, we have opted to use well-known and widely accepted models rooted in time-series econometrics in order to determine what effect, if any, *Keneally, Gates*, and the WDFEA had on employment growth in Montana. Use of time-series methods allows us to establish whether there were any structural changes within Montana (as already discussed, we found none), and to detect how long-run average growth changed in response to the various policy interventions that occurred in Montana's labor market. We then conduct a comparative time-series analysis using data from Montana's four neighboring states to as-

sure that any results obtained for Montana are genuine and limited to Montana.

To perform this analysis, we construct autoregressive moving average (ARMA) models of the Montana employment growth rates. The ARMA model is particularly well suited for studies in which endogeneity of judicial decisions may be of concern—cases, for example, in which a court may be more likely to adopt a wrongful discharge action when the employment growth rate is high. The reason that incorporating autoregressive and moving average terms (which we explain in more detail below) helps safeguard the analysis is that it takes into account historic changes of employment growth as well as any “surprise” instances in which actual growth rates did not equal expected growth rates. Furthermore, choosing the best-fitting ARMA model and having a well-behaved error term imply that all

possible information contained in the error term has been used to fit the model as closely as possible. Thus, with a best-fitting ARMA model, there is generally minimal concern about any omitted variable problem.¹⁷

In order to test for the effects of relevant labor market interventions on the Montana labor market, our empirical model includes policy intervention variables that represent the three major changes in Montana's labor policy that were described in the previous section: *Keneally*, *Gates*, and *WDFEA*. Each intervention variable is equal to zero for all periods prior to the intervention and equal to one for all periods thereafter until the end of the sample period. Because the dependent variable is a growth rate calculated in year t as the change in the level of employment from year $t-1$ to year t , we code the policy intervention variable as in effect only when both the starting and ending levels used to calculate the growth rate are affected by the policy change.¹⁸ *Keneally* and *Gates* continue to be equal to one after the *WDFEA* becomes effective because the legal doctrines in the *WDFEA* are at least partially cumulative of those adopted in *Keneally* and *Gates*. The *WDFEA* did not completely overturn *Keneally* and

Gates. Rather, it left alive *Keneally*'s public policy exception and converted *Gates*'s good faith exception into a good cause firing standard. Our coding thus treats the legal effects as cumulative rather than successive.¹⁹

In order to examine the impact of the policy interventions on the Montana labor market, we estimated the following ARMA model:

$$(1) \quad \phi(L)\text{GROWTHMT}_t = \theta(L)\varepsilon_t + c_0 + \psi\text{GROWTHUS}_t + \lambda_1\text{KENEALLY}_t + \lambda_2\text{GATES}_t + \lambda_3\text{WDFEA}_t,$$

where GROWTHMT_t is the employment growth rate in Montana in month t ; GROWTHUS_t is the employment growth rate in the United States in month t ; ψ is the coefficient on GROWTHUS ; the λ_i are the coefficients on the intervention variables, KENEALLY , GATES , and WDFEA ; ε_t is an error term for month t ; and c_0 is an intercept term. The functions $\phi(L)$ and $\theta(L)$ are polynomials in the lag operator L , indicating that the best-fitting number of lagged values of GROWTHMT_t and ε_t are included in the estimation. Thus, the "autoregressive" (AR) component of the model is the inclusion of lagged values of the dependent variable GROWTHMT , while the "moving average" (MA) component is the inclusion of lagged error terms. For example, the model that we most frequently use in this article includes one AR term and one MA term:

$$(2) \quad \text{GROWTHMT}_t - \phi\text{GROWTHMT}_{t-1} = c_0 + \psi\text{GROWTHUS}_t + \lambda_1\text{KENEALLY}_t + \lambda_2\text{GATES}_t + \lambda_3\text{WDFEA}_t + \varepsilon_t + \theta\varepsilon_{t-1}.$$

This is transformed for estimation to the ARMA(1,1):

¹⁷See Pagan (1984) for discussion of the omitted variable problem in the ARMA model.

¹⁸For the reasoning behind this coding, consider the KENEALLY variable, which measures the effects of the court decision rendered on January 30, 1980. The dependent variable in our equations is the growth rate in employment over a 12-month period. Thus, the February 1980 observation on employment growth in Montana captures the change in (log) employment from February 1979 to February 1980, so that almost all of the growth measured by the February 1980 observation occurred prior to the *Keneally* decision. Setting KENEALLY equal to 1 beginning in February 1980 would attribute to the *Keneally* decision growth that preceded it in time. We avoid this timing problem by "turning on" the KENEALLY , GATES , and WDFEA dummy variables only when both values of employment used to calculate growth are measured subsequent to the intervention. In any event, our results for Montana employment growth are qualitatively the same whether we "turn on" the intervention dummy variables immediately or after 12 months.

¹⁹Another possible specification is a regime change model, which would set the policy variables equal to one only in the years in which each policy was in effect. A regime change treatment is not appropriate because of the cumulative nature of the legal doctrines. Even so, we have also estimated the models reported below using a regime change specification, and the results are substantively similar.

$$(3) \quad \text{GROWTHMT}_t = c_0 + \psi \text{GROWTHUS}_t + \phi \text{GROWTHMT}_{t-1} + \lambda_1 \text{KENEALLY}_t + \lambda_2 \text{GATES}_t + \lambda_3 \text{WDFEA}_t + \varepsilon_t + \theta \varepsilon_{t-1}.$$

The model is estimated using a two-stage least-squares approach, in which the MA terms (that is, the ε_t terms) are estimated by ordinary least squares in the first stage and the model above is estimated in the second stage using nonlinear least squares.

The intervention model provides a direct test of the degree to which changes occurred in the long-term growth rate of employment while the policy interventions were in effect. A statistically significant coefficient on an intervention variable implies that the long-term growth rate has changed. The ARMA specification and the inclusion of the U.S. growth rate combine to control for general trends in employment so as to make the before-and-after comparison as accurate as possible. After obtaining initial results on Montana's employment growth series, we next address the possibility of a spurious correlation by analyzing the employment growth time-series of Montana and the four states adjacent to its borders. Using the seemingly unrelated regressions (SUR) technique to estimate simultaneously five ARMA(1,1) models for these five states, we obtain two important results: the sign and statistical significance of the intervention variables in Montana are unchanged, while no similar pattern is detected for any of the contiguous states.²⁰

Results

Montana Total Employment Growth

The ARMA procedure begins by identifying the best-fitting specification of equation (1) using standard Box-Jenkins techniques and then performing diagnostic tests on the chosen specification to ensure an adequate representation of the dependent

variable over the time period studied. Examination of the autocorrelation and partial autocorrelation functions, as well as Akaike's information criterion, showed that the ARMA(1,1) was the best-fitting specification for total employment growth in Montana.²¹ An additional consideration is the possibility of structural change following World War Two, as suggested in Hatanaka (1996, Chap. 9). To control for any potential effects of structural change in labor markets, we used two different sample periods throughout our analysis: January 1949–December 2001 and January 1940–December 2001. We pick 1949 as the starting point of our "postwar" period because that choice is consistent with Hatanaka's (1996) treatment.

Table 2 reports the results of our analysis of total employment growth in Montana. The first column reports the results from the postwar period, while the second column reports results using all available time periods. The clear pattern displayed in both columns is a statistically significant negative coefficient estimate for KENEALLY and a statistically significant positive coefficient estimate for the WDFEA. Because the coefficients are more precisely estimated using the data from the postwar period, our discussion focuses on the postwar results reported in the first column of Table 2.

The KENEALLY coefficient estimate of 0.0046 indicates that the impact of the *Keneally* decision was a lowering of the employment growth rate by 0.46 percentage points per year until the enactment of the WDFEA. The coefficient on the GATES intervention variable is statistically insignificant, which may be nothing more than a result of the close proximity in time between *Keneally* and *Gates*. The resulting near-collinearity of KENEALLY and GATES

²⁰The SUR technique is described in Greene (2000:614–36).

²¹Mills (1999) provides detailed information on the Box-Jenkins model selection procedure that is employed here. The necessary and sufficient condition for the ARMA model to be stationary was met. For a discussion of these conditions and their derivation, see Harvey (1994).

Table 2. Effects of Policy Interventions on Montana Employment Growth Rate.

Independent Variable	Sample Period	
	Jan. 1949–Dec. 2001	Jan. 1940–Dec. 2001
KENEALLY	0.0046 (0.01)	0.0039 (0.01)
GATES	0.0012 (0.50)	0.0023 (0.16)
WDFEA	0.0047 (0.00)	0.0021 (0.08)
U.S. Growth Rate	0.0834 (0.00)	0.0166 (0.33)
Montana Growth Rate (One Month Lag)	0.8175 (0.00)	0.8972 (0.00)
MA(1)	0.1065 (0.08)	0.0942 (0.06)
Constant	0.0019 (0.03)	0.0019 (0.01)
Adjusted R ²	0.82	0.86
Durbin-Watson	2.01	2.01
F-statistic	488.5 (0.00)	782.7 (0.00)
KENEALLY + GATES + WDFEA	0.0013	0.0005
χ^2 Test Statistic for KENEALLY + GATES + WDFEA = 0	1.74 (0.19)	0.20 (0.65)
Number of Observations	636	744

Notes: The dependent variable in each column is the growth rate in Montana total civilian nonagricultural employment between month t and month $t-12$, measured as

$$\text{GROWTHMT}_t = \ln(\text{EMPL}_t / \text{EMPL}_{t-12}).$$

Numbers in parentheses are p-values. The ARMA(1,1) model used is the best-fitting specification for both models according to Box-Jenkins techniques.

could render indistinguishable the individual effects of each variable. On the other hand, it is also possible that the *Keneally* decision sent a signal to Montana employers about likely future developments in Montana's common law of employment-at-will, so that employers could have anticipated the potential adoption of the good faith exception that ultimately occurred in *Gates*.²²

In contrast to the impact of the case law, the coefficient on the WDFEA intervention variable has a positive and statistically sig-

nificant effect on total employment growth. The coefficient estimate is 0.0047, which is practically equal in absolute magnitude to the KENEALLY coefficient. Indeed, as shown in the lower panel of Table 2, we cannot reject the hypothesis, based on the chi-squared test, that the sum of the coefficients on KENEALLY, GATES, and the WDFEA is zero. As hypothesized, the WDFEA worked to reverse the negative effect of *Keneally* on employment growth in Montana.²³ It is important to note that the effect

²²We also estimated each model in Tables 2 and 3 without the intervention variable for *Gates*. There was no qualitative difference in the results.

²³We also find (but do not present) some evidence of similar effects on real personal income growth. These results are presented in an unpublished appendix that is available from the authors on request.

of the statute is only to return Montana to its pre-*Keneally* average growth rate; the WDFEA has *not* restored any jobs lost during the six-and-a-half-year reign of the common law wrongful discharge action in Montana.

The implications of these findings are nontrivial. In January 1980, the total civilian nonagricultural employment in Montana was approximately 274,000. We can produce a rough estimate of the reduction in employment attributable to common law wrongful discharge actions in Montana by adjusting the observed change in log employment by the coefficient estimates for KENEALLY and the WDFEA.²⁴ Such a calculation shows that employment in January 2001 would have been approximately 396,200 had Montana remained a strictly at-will state, instead of the observed 381,800. Moreover, if the WDFEA had never been passed, leaving *Keneally* in effect after 1987, we estimate that employment in Montana would have been approximately 359,500 in January 2001. Thus, the adoption of common law wrongful discharge actions and the subsequent passage of the WDFEA reduced employment in Montana by approximately 14,400 jobs—that is, employment in Montana would have been 3.8% higher in January 2001 had the *Keneally* and *Gates* decisions never been issued (and if the WDFEA had therefore never been proposed). On the other hand, the passage of the WDFEA reversed the negative effect of *Keneally*, so that Montana employment was 6.2% higher than it would have been if the common law regime had continued in place through January 2001.²⁵

²⁴Because we were unable to reject the hypothesis that *Keneally* and the WDFEA dummies were equal in magnitude, we reestimated the model in the first column of Table 2 constraining the coefficients on KENEALLY and on WDFEA to sum to zero. This had the effect of forcing the WDFEA to exactly offset the impact of KENEALLY. We did this by creating a new variable equal to KENEALLY minus WDFEA. The coefficient estimate for this new variable was -0.004637 , with a p-value of 0.00.

²⁵A detailed table of these calculations is available from the authors on request.

The magnitude of these effects is reasonable in light of the prior literature. Using a difference-in-differences panel estimation approach, Autor, Donohue, and Schwab (2004b) concluded that in states with an implied contract exception, the employment-to-working-age-population ratio was on average 0.8 to 1.6 percentage points lower than in at-will states. Dertouzos and Karoly (1992) found a 2.9 percentage point reduction in employment levels due to tort-based wrongful discharge from an instrumental variables panel approach applied to seven years of data. In comparison, our analysis suggests that both the employment level and the employment-to-working-age-population ratio would have been 3.8% higher in 2001 than it actually was had Montana adhered to employment-at-will. We suspect that our estimated effects are slightly larger than the effects found in the literature because (1) we examine a longer time period using a growth rate measure, (2) relative to other states, Montana has a small labor force and population, so that percentage change is calculated from a relatively smaller base in Montana, and (3) Montana was much more pro-employee than the average state. Nevertheless, our estimates are in line with those from prior literature.

Checking for Spurious Correlation

One serious concern in any time-series analysis is that the intervention variables could be detecting a spurious correlation between changes in the series and other factors that coincided with the events being studied, rather than truly picking up the effects of the policies. To address this concern, we assembled a control group consisting of the four states bordering Montana: Idaho, Wyoming, South Dakota, and North Dakota. Using employment growth from all five states, we simultaneously estimated a system of identical ARMA(1,1) equations for each of the five states using the seemingly unrelated regressions (SUR) technique.

We consider the SUR approach to be preferable to standard panel estimators in

Table 3. Effects of Policy Interventions on Regional Employment Growth Rates.

<i>Variable</i>	<i>Montana</i>	<i>Idaho</i>	<i>N. Dakota</i>	<i>S. Dakota</i>	<i>Wyoming</i>
KENEALLY	-0.0139 (0.03)	-0.0052 (0.45)	-0.0080 (0.20)	-0.0082 (0.13)	-0.0127 (0.18)
GATES	0.0006 (0.93)	0.0079 (0.26)	0.0041 (0.53)	0.0104 (0.06)	-0.0002 (0.98)
WDFEA	0.0161 (0.01)	0.0078 (0.27)	0.0024 (0.71)	0.0061 (0.26)	0.0131 (0.18)
U.S. Growth Rate	0.4316 (0.00)	0.5062 (0.00)	0.2655 (0.00)	0.2528 (0.00)	0.6281 (0.00)
State Growth Rate (One Month Lag)	0.8263 (0.00)	0.9301 (0.00)	0.9171 (0.00)	0.9051 (0.00)	0.9454 (0.00)
MA(1)	0.0685 (0.02)	0.0103 (0.69)	-0.0061 (0.80)	0.432 (0.04)	0.0648 (0.05)
Constant	0.0128 (0.00)	0.0128 (0.00)	0.0128 (0.00)	0.0128 (0.00)	0.0128 (0.00)
Adjusted R ²	0.90				
Durbin-Watson	1.95				
No. of Observations	3,180				

Notes: Results reported are from a seemingly unrelated regressions estimation of a system of equations on state-level employment growth rates for Montana and the states bordering Montana. The constant is constrained to be equal in each equation. The specification used is ARMA(1,1) for all five states.

The sample period is January 1949 to December 2001.

Numbers in parentheses are p-values.

our setting for four reasons. First, as mentioned above, panel estimation techniques cannot effectively distinguish between the effect of a unique policy in a single state and other time-variant factors occurring simultaneously in that state. Second, panel estimation routines generally allow only for AR(1) processes, and therefore often fail to account for the possibility of more complex time-dependent aspects of long time series like the employment data used here. Third, the SUR technique accounts for cross-state correlation in the error terms, just as panel techniques do. Fourth, a panel AR process forces shocks in all states to exhibit uniform persistence properties; that is, it forces each state's shocks to have exactly the same effect on future values of the dependent variable. To correct for this in a panel estimation would simply require introduction of state-specific dummy variables interacted with the various AR terms, but at that point one would be performing a separable estimation anyway. Overall, the

SUR approach is more flexible, and it provides better controls for various time-series processes, while at the same time accounting for cross-state correlations in error terms and providing a control group for comparison purposes.

The results of our SUR estimation for the postwar period are presented in Table 3. The key result in Table 3 is that the coefficient estimates on KENEALLY and the WDFEA are statistically significant in Montana, while the three intervention variables almost never have a statistically significant coefficient estimate in the other four states. Outside Montana, only South Dakota's coefficient estimate for GATES is statistically significant, and it is positive, a result at odds with the results for Montana. We conclude that the results reported in Table 2 for Montana employment growth point not merely to some general regional trends, but rather to an appreciable impact of *Keneally* and the WDFEA on Montana's labor market.

Table 4. Industry-Level Effects of Policy Interventions on Montana Employment Growth Rate.

Independent Variable	Transportation/ Public Utilities		Manu- facturing	Mining	Wholesale & Retail Trade		Finance, etc.
	Construction	Services					
KENEALLY	0.0014 (0.62)	0.0018 (0.88)	-0.0128 (0.08)	-0.0224 (0.28)	-0.0008 (0.69)	-0.0023 (0.26)	-0.0044 (0.00)
GATES	-0.0093 (0.00)	-0.0259 (0.07)	0.0132 (0.10)	0.0267 (0.27)	-0.0020 (0.42)	0.0012 (0.60)	0.0008 (0.65)
WDFEA	0.0060 (0.00)	0.0342 (0.00)	0.0011 (0.81)	-0.0021 (0.09)	0.0044 (0.01)	0.0016 (0.28)	0.0032 (0.06)
U.S. Growth Rate	0.3032 (0.00)	0.1207 (0.01)	0.1101 (0.00)	0.1888 (0.00)	0.1253 (0.00)	0.0789 (0.01)	0.0604 (0.08)
Montana Growth Rate (One Month Lag)	0.7361 (0.00)	0.7991 (0.00)	0.7717 (0.00)	0.7925 (0.00)	0.8759 (0.00)	0.9036 (0.00)	0.8893 (0.00)
MA(1)	0.0674 (0.16)	0.0621 (0.30)	0.1790 (0.00)	0.1115 (0.02)	-0.1271 (0.01)	-0.1692 (0.00)	-0.2493 (0.00)
Constant	-0.0018 (0.01)	0.0004 (0.91)	0.0009 (0.58)	-0.0004 (0.94)	-0.0006 (0.41)	0.0004 (0.76)	0.0022 (0.08)
Adjusted R ²	0.88	0.75	0.76	0.74	0.84	0.80	0.75
Durbin-Watson	1.98	1.98	2.01	2.00	1.97	1.93	1.96
F-Statistic	748.4 (0.00)	316.1 (0.00)	338.4 (0.00)	297.1 (0.00)	545.8 (0.00)	418.2 (0.00)	319.5 (0.00)
KENEALLY + GATES	-0.0079	-0.0241	0.0004	0.0043	-0.0028	-0.0011	-0.0036
χ^2 Test Statistic for KENEALLY + GATES = 0	18.49 (0.00)	8.55 (0.00)	0.01 (0.92)	0.10 (0.75)	3.81 (0.05)	0.68 (0.41)	6.13 (0.01)
KENEALLY + GATES + WDFEA	-0.0019	0.0101	0.0015	0.0022	0.0016	0.0005	-0.0004
χ^2 Test Statistic for KENEALLY + GATES + WDFEA = 0	2.68 (0.10)	3.64 (0.06)	0.27 (0.60)	0.06 (0.81)	2.68 (0.10)	0.33 (0.57)	0.15 (0.70)

Notes: The dependent variable is the growth rate in Montana employment between month t and month $t-12$ in the specified industry, measured as $\text{GROWTHMT}_t = \ln(\text{EMPL}_t/\text{EMPL}_{t-12})$. The sample period is January 1949 to December 2001. $n = 636$. Numbers in parentheses are p-values. MA(1) is the first-order moving average term. ARMA(1,1) is the best-fitting specification for all models according to Box-Jenkins techniques.

Montana Industry-Level Employment Growth

The finding that total employment growth in Montana was affected by the legal innovations related to employment-at-will leads to the issue of which industries (if any) provide the main portion of these effects. Following appropriate Box-Jenkins specification testing, we estimated the same augmented ARMA(1,1) model for employment growth in seven one-digit-level SIC industries in Montana. Table 4 presents the results of these estimations. In the table, the industries are ordered from the most-unionized (Transportation) on the

left to the least-unionized (Finance) on the right. In light of Hamermesh (1993), we expect the effects of *Keneally*, *Gates*, and the WDFEA to be most pronounced in the least-unionized industries. As seen in Table 4, however, our industry-level hypotheses are not consistently confirmed.

The statistically significant industry-level coefficient estimates on the intervention variables are spread across all the industries, not just those that are less unionized. These results are contrary to our hypothesized industry-level relationships. Moreover, the industry-level coefficient estimates are very sensitive to the particular ARMA specification chosen (each column in Table

4 is an ARMA(1,1), which is the best-fitting specification for each series).

This contrasts with the coefficient estimates in Table 2's statewide Montana employment model, which are qualitatively similar as we vary the specification.

Even though the results in Table 4 are not conclusive, they generally conform to the statewide results. The estimated coefficient on *KENEALLY* is negative for five of the seven industries, while the estimated coefficient on the *WDFEA* is positive for six of the seven industries. Thus, the industry-level employment results are consistent with the statewide results, although the coefficients are estimated with less precision and the pattern of results does not neatly match our *a priori* expectations regarding varying employment effects across industries by degree of unionization. Based on the foregoing analysis, we conclude that the state-level effects of Montana's employment-at-will laws cannot be attributed precisely to any specific sectors of the state economy.

Finally, we note that industry-level data are at best a rough proxy for estimating the differential effects of wrongful discharge laws on union versus nonunion employment. A better method for analyzing the union/nonunion effect would be to examine the differences in employment growth between union and nonunion establishments within industries. However, we are aware of no data allowing such a detailed estimation for all time periods needed. Hirsch and Macpherson's (2003) data on state-level private sector union employment might suffice, but these data only go back to 1983. Similarly, while Hirsch, Macpherson, and Vroman's (2001) data on state-level union employment are available back to 1964, these data lump together both public and private sector employment. Because public sector nonunion employment and private sector nonunion employment should differ in their reactions to wrongful discharge law, the lack of distinction between public and private sector union employment renders the Hirsch, Macpherson, and Vroman (2001) data less than ideal for studying differences in the effect of wrongful discharge law across

union and nonunion employment. In the end, we limit our analysis to industry-level employment growth because (1) our interest is primarily in the existence (or not) of industry-level variation in employment responses to changes in Montana law, rather than the union/nonunion question; (2) the available data on union employment are not better suited than the industry employment data to addressing potential variations across industry sectors and between union and nonunion establishments; and (3) in *Hamermesh* (1993), a precedent exists in the wrongful discharge literature to conduct an industry-level analysis.

Conclusion

Our results indicate that the Montana Supreme Court's adoption of common law wrongful discharge actions adversely affected the annual rate of employment growth in Montana, reducing it on average by 0.46 percentage points each year. The decision of the legislature in 1987 to pass the Wrongful Discharge from Employment Act (*WDFEA*) remedied this decline in employment growth, increasing the growth rate by 0.47 percentage points—statistically indistinguishable from the absolute effect of the earlier laws. Thus, the statute that adopted a "good cause" discharge standard actually had a favorable effect on employment growth relative to the common law exceptions to employment-at-will that preceded it.

The estimated aggregate effects of these legal changes are substantial. At the beginning of 2001, Montana's actual civilian nonagricultural employment was 381,800. Our estimates imply that Montana employment would have been 396,200 in 2001 had the Montana Supreme Court never adopted the public policy and good faith exceptions to employment-at-will, a 3.8% increase in jobs. However, absent the *WDFEA*'s passage in 1987, the story would be even more bleak: had the common law regime stayed in place through 2001, Montana employment would have been only 359,500, 6.2% less than actually observed.

Why did the WDFEA have a positive impact on employment levels, even though it adopted a “good cause” discharge standard? Most likely, the various procedural and other limitations on legal claims under the WDFEA, described above, offset any potentially negative impact on hiring from the increased discharge standard. A survey of Montana attorneys summarized in Bierman, Vinton, and Youngblood (1993) reflected the attorneys’ belief that the WDFEA provided much more benefit to employers than to employees. Nearly half of all attorneys surveyed believed that the WDFEA did not provide adequate incentives for workers to pursue cases under the Act; only 20.5% of plaintiffs’ attorneys thought the Act provided adequate incentive to workers to pursue a claim. Most attorneys advised their clients against arbitration, even though failure to request arbitration would preclude the possibility that a prevailing plaintiff could recover attorneys’ fees under the WDFEA. Finally, about 65% of the responding attorneys believed that employer practices had changed due to the WDFEA. Many attorneys believed that there were more employer personnel policies established under the common law wrongful discharge scheme than under the WDFEA, and many also thought that employers were less cautious in their treatment of employees due to the reduction in potential liability afforded by the WDFEA.

These survey data suggest the possibility

that common law wrongful discharge created rents for the discharged employee, the employee’s attorney, or both. To the extent that the WDFEA reduced such rent-seeking, it would have reduced the cost of labor and thereby stimulated demand for labor. This story is consistent with our results, which suggest that Montana case law reduced employment growth significantly in Montana and that the WDFEA restored the state to its pre-*Keneally* average growth rate.

In the early 1980s, the Montana Supreme Court was one of the most pro-employee courts in the nation. It was a relatively early adopter of a public policy exception, and its adoption of a tort-based good faith exception established one of the most expansive wrongful discharge causes of action in the United States. Given that Montana’s experience with common law wrongful discharge was, therefore, atypical even before the passage of the WDFEA, it would be rash to generalize from our results in Montana to what happened—or might have happened—in other states. Nevertheless, the results are suggestive of what can happen in a U.S. jurisdiction when courts implement aggressive reform of employment-at-will. Employment can decline, and an employment protection statute establishing a heightened “good cause” standard for discharge of nonprobationary employees can paradoxically have a positive corrective effect on employment levels.

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