

IZA DP No. 6269

**Less Myth, More Measurement:  
Decomposing Excess Returns from the  
1989 Minimum Wage Hike**

Carl Lin

January 2012

# Less Myth, More Measurement: Decomposing Excess Returns from the 1989 Minimum Wage Hike

**Carl Lin**

*Beijing Normal University  
and IZA*

Discussion Paper No. 6269  
January 2012

IZA

P.O. Box 7240  
53072 Bonn  
Germany

Phone: +49-228-3894-0  
Fax: +49-228-3894-180  
E-mail: [iza@iza.org](mailto:iza@iza.org)

Any opinions expressed here are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but the institute itself takes no institutional policy positions.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit organization supported by Deutsche Post Foundation. The center is associated with the University of Bonn and offers a stimulating research environment through its international network, workshops and conferences, data service, project support, research visits and doctoral program. IZA engages in (i) original and internationally competitive research in all fields of labor economics, (ii) development of policy concepts, and (iii) dissemination of research results and concepts to the interested public.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

## ABSTRACT

### **Less Myth, More Measurement: Decomposing Excess Returns from the 1989 Minimum Wage Hike<sup>\*</sup>**

In the book *Myth and Measurement*, Card and Krueger (1995) examine the economic impact of the 1989 minimum wage hike on the welfare of 110 firms which employ a disproportionate number of minimum-wage workers. Their results show mixed evidence that excess returns associated with news about the 1989 minimum-wage legislation. This paper re-examines this question by decomposing excess returns. Our simple and intuitive approach attributes excess returns to either differences in market performances (economy-wide factors) or firm-specific traits (individualistic factors). We likewise show that, generally, minimum wage legislation had little or no effect on employer wealth. However, by decomposing total excess returns, we find that the apparent lack of an effect is a consequence of two off-setting forces: (1) a negative effect arising from firm-specific traits (adverse information on minimum-wage worker employers) and (2) a positive effect arising from market performance. In other words, we show that while the aggregate effect of the 1989 minimum wage hike was neutral, there was a significant negative impact on firms that was neutralized by positive market performance.

JEL Classification: G14, J31, J38

Keywords: minimum wage, excess returns, decomposition

Corresponding author:

Carl Lin  
School of Economics and Business Administration  
Beijing Normal University  
No.19 Xin Jie Kou Outer St.  
Haidian Dist.  
Beijing 100875  
China  
E-mail: [csmlin@bnu.edu.cn](mailto:csmlin@bnu.edu.cn)

---

<sup>\*</sup> I would like to thank Ira Gang, John Knight, Myeong-Su Yun and participants in the IZA Research Seminar and Wuhan University Workshop for helpful comments and discussions.

## 1. Introduction

In comparison with the vast literature on the effects of the minimum wage on employment and wages, research of the influence of minimum wages on firm profits has been rather sparse. Given that most of the theoretical models of the minimum wage start from the assumption that firms operate in a way that maximizes profits (or minimizes costs), the models predict an increase in the minimum wage will reduce firm profits. However, there are only a few empirical studies that examine the effects of the minimum wage on profits.

One recent study that addresses this question is Draca, Machin, and Van Reenan (2011). They directly estimate the link between profits and the re-introduction of the minimum wage in the United Kingdom using firm-level data on profit margins. Their study shows that the introduction of the minimum wage had a negative effect on the profitability of low-wage employers in the United Kingdom. Neumark and Wascher (2008) state results that seem reasonably well supported by the data and consistent with most theoretical models of the low-wage labor market.

In the book *Myth and Measurement*, Card and Krueger (1995) examine the economic impact of 1989 minimum wage hike on the welfare of 110 firms which employ a disproportionate number of minimum wage workers. They combine data on stock returns with news about the minimum wage legislation to conduct an event study of the effects of changing expectations about future minimum wage increases on firm profits. Their results show mixed evidence that excess returns associated with news about the 1989 minimum wage legislation are generally unsystematic and rarely seem to affect employer wealth. In this paper, we re-examine this question by introducing an approach to decomposing excess returns. This simple and intuitive approach attributes excess returns to either differences in market performances (economy-wide factors) or firm-specific traits (individualistic factors).

Our results confirm Card and Krueger (1995), showing that, generally, the minimum wage legislation had little or no effect on employer wealth. However, by decomposing total excess returns, we find that the apparent lack of an effect is a consequence of two off-setting forces: (1) a negative effect arising from firm-specific traits (adverse information on minimum-wage worker employers) and (2) a positive effect

arising from market performance. In other words, we show that while the aggregate effect of the 1989 minimum wage hike was neutral, there was a significant negative impact on firms that was neutralized by positive market performance.

In section 2, we introduce the approach. Section 3 is the application in which we re-examine the results of the 1989 minimum wage hike in Card and Krueger (1995). Section 4 is the conclusion.

## 2. Decomposing Excess Returns

### 2.1. Sources of Return

In the discussion of the sources of return, we often identify sources of return that originated from the issuer of the security (the firm) and sources of return that affected securities in general. The firm-specific return is usually called *unsystematic return*, because it is unique to each issuer of securities and does not affect all financial securities. The market-related return affecting all securities is called the *systematic return*. In other words, the security return can be divided into two components: a systematic component that is correlated with the overall market performance and an unsystematic component that is independent of the market. That is,

$$\text{Security return} = \text{Systematic return} + \text{Unsystematic return}$$

In order to analyze or measure the degree of systematic and unsystematic return that a security contains, a model of the return-generating process must be identified. A widely accepted model to achieve this is called the “market model”. The classic market model is shown by equation(1):

$$\begin{aligned} R_{it} &= \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \\ E[\varepsilon_{it}] &= 0 \quad \text{Var}[\varepsilon_{it}] = \sigma_{\varepsilon_i}^2, \end{aligned} \tag{1}$$

where:

$R_{it}$  = the return on the  $i$  th security during time  $t$ ;

$\alpha_i$  = the intercept of the regression model;

$\beta_i$  = the slope of the regression model which is a measure of systematic risk of the  $i$  th security;

$R_{mt}$  = the random return on the market index during time  $t$ ;

$\varepsilon_{it}$  = the disturbance term of security  $i$  during time  $t$ .

In general, equation (1) identifies a linear relationship between the return on the market ( $R_{mt}$ ) and the return on an individual security ( $R_{it}$ ) during time  $t$ .

In addition to the return on security, investors are also interested in its risk or variability. Chen and Keown (1981) show that the variance of a security's return is the sum of the degree of systematic risk and the degree of unsystematic risk which is contained in the total risk of the security.<sup>2</sup> Therefore, by decomposing the variance of the security's return, one can know how much of the risk of an individual security return is due to the market (systematic risk) and how much is due to the firm (unsystematic risk).

Besides the risk of a security's return, excess returns to a security is of high interest for researchers and investors. However, unlike risk of a security's return, it is unclear how much of the excess returns can be attributed to market performance or firm-specific traits. In the next section, we introduce a simple and intuitive approach to address this question by attributing excess returns to either differences in market performances (economy-wide factors) or firm-specific traits (individualistic factors).

## **2.2. Decomposing Excess Returns**

An often used methodology to study labor market outcomes by groups (gender, race, etc.) is to decompose mean differences in log wages based on regression models in a counterfactual manner. Decomposition techniques for linear regression models have been used for many decades. This heterogeneous collection of techniques is more generally referred to as regression standardization (Althausser and Wigler 1972, Duncan 1969, Duncan, Featherman and Duncan 1968, Coleman and Blum 1971, Coleman, Berry, and Blum 1971, Winsborough and Dickinson 1971). Oaxaca (1973) and Blinder (1973) introduced regression decomposition to the economics literature.

As stated in Powers, Yoshida and Yun (2011), decomposition is widely used in social research to quantify the contributions to group differences in average predictions from regression models. The technique utilizes the output from regression models to parcel out components of a group difference in a statistic (such as a mean or proportion) which can be attributed to differences between groups (i.e., differences in characteristics, endowments, or attributes) and to differences in the effects of characteristics (i.e.,

---

<sup>2</sup> The process is called variance decomposition. The variance of the return for an individual security is often used to measure the risk of the individual security.

differences in the returns, coefficients, or behavioral responses). Next, we introduce a method allowing decomposition of a firm's excess return into differences in economy-wide and individualistic factors.

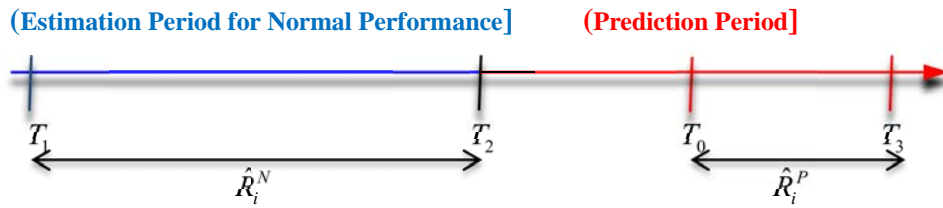
Suppose for firm  $i$  on any day, the market model in equation (1) can be written as,

$$\begin{aligned} R_i &= a_i + \beta_i R_m \\ a_i &= \alpha_i + \varepsilon_i, \end{aligned} \quad (2)$$

where  $\beta$  is the measure of systematic return (due to market performance) and  $a$  is the measure of unsystematic return (due to firm-specific traits).

To illustrate, Figure 1 shows the time line of estimation and prediction periods which are used to decompose excess returns of a firm.

**Figure 1 Time Line of Decomposing Excess Returns**



$\hat{R}_i^N$  represents the normal performance of a firm's stock return from  $T_1$  to  $T_2$ . Typically, 255 days is selected to correspond approximately to the number of trading days in a calendar year.  $T_0$  is the event day and  $\hat{R}_i^P$  is the predicted return of the firm.

At the firm level, excess return ( $AR$ , or prediction error) of firm  $i$  on any day during the prediction period can be calculated by,

$$\begin{aligned} AR_i &= \hat{R}_i^P - \hat{R}_i^N \\ &= \hat{R}_i^P - (\hat{\alpha}_i^N + \hat{\beta}_i^N R_m^N) \\ &= \hat{\alpha}_i^P - \hat{\alpha}_i^N + \hat{\beta}_i^P (R_m^P - R_m^N) + R_m^N (\hat{\beta}_i^P - \hat{\beta}_i^N) \end{aligned} \quad (3)$$

where:

$\hat{R}_i^P$  = the predicted return of firm  $i$ ;

$\hat{R}_i^N$  = the estimated normal performance return of firm  $i$ ;

$\hat{\alpha}_i^N$  = the estimated intercept from the estimation period of firm  $i$ ;

$\hat{\alpha}_i^P$  = the estimated intercept from the post-event day period of firm  $i$ ;

- $\hat{\beta}_i^N$  = the estimated slope from the estimation period of firm  $i$  ;  
 $\hat{\beta}_i^P$  = the estimated slope from the post-event day period of firm  $i$  ;  
 $R_m^N$  = the mean market performance return from the estimation period;  
 $R_m^P$  = the mean market performance return from the post-event day period.

At industry level, the mean excess return of an industry containing  $N$  firms is,

$$\overline{AR}_i = \frac{1}{N} \sum_{i=1}^N (\hat{\alpha}_i^P - \hat{\alpha}_i^N) + \frac{1}{N} \sum_{i=1}^N \hat{\beta}_i^P (R_m^P - R_m^N) + \frac{1}{N} \sum_{i=1}^N R_m^N (\hat{\beta}_i^P - \hat{\beta}_i^N) \quad (4)$$

After the estimation period, we can get the ex post estimated systematic risk  $\hat{\beta}^P$  and ex post individualistic component  $\hat{\alpha}^P$ .  $R_m^P$  is the ex post mean market return. Therefore, equation (4) can be expressed as,

$$\overline{AR}_i = \underbrace{\frac{1}{N} \sum_{i=1}^N (\hat{\alpha}_i^P - \hat{\alpha}_i^N)}_{\text{Due to differences in firm-specific traits}} + \underbrace{\frac{1}{N} \sum_{i=1}^N R_m^N (\hat{\beta}_i^P - \hat{\beta}_i^N)}_{\text{Due to differences in systematic risks}} + \underbrace{\frac{1}{N} \sum_{i=1}^N \hat{\beta}_i^P (R_m^P - R_m^N)}_{\text{Due to differences in market performances}} \quad (5)$$

Not explained by the market  Explained by the market

The mean excess returns  $\overline{AR}_i$  of industry  $i$  can then be decomposed into three terms. The first and second terms represent the parts that are not explained by the market. More precisely, the first term represents how much of the excess returns can be attributed to differences in firm-specific traits. The second term represents the mean excess returns which can be attributed to differences in systematic risks,  $\beta$ . The third term represents the part that is explained by the market which is equivalent to differences in market performances.

To illustrate the approach, in the next section we first replicate the results of Chapter 10 in the book *Myth and Measurement* by Card and Krueger (1995). Then we employ the approach to re-examine the effect of 1989 minimum wage hike.



### **3. Revisiting *Myth and Measurement***

#### **3.1. A Brief Look at Events Leading to the 1989 Minimum-Wage Legislation<sup>3</sup>**

To examine the stock market's reaction to news about the minimum wage, it is important to identify events that change investor's expectations about the future course of the minimum wage. Card and Krueger (1995) use past issues of the *Wall Street Journal* and other sources in order to identify key events connected to 1989 legislation on the minimum wage.

Periodically since 1938, the U.S. Congress has amended the Fair Labor Standards Act (FLSA) to increase the level of the minimum wage. In the years between increases, the real value of the minimum wage has been eroded by inflation, causing a sawtooth pattern in the real value of the minimum over time. In 1977, the U.S. Congress amended the FLSA to raise the minimum wage to \$2.65 per hour in 1978, to \$2.90 per hour in 1979, to \$3.10 per hour in 1980, and to \$3.35 per hour in 1981.

Under President Reagan, the historical pattern of periodic increases in the minimum wage was halted. In all likelihood, investors came to regard the prospects of a minimum wage increase in the Reagan era as remote and lowered their forecasts of the long-run level of the minimum wage.

In March 1987, Senator Edward Kennedy and Representative Augustus Hawkins introduced legislation to increase the minimum wage to \$4.65 per hour by 1990. In June 1987, President Reagan signaled that he might soften his opposition to a minimum wage increase if the legislation were weakened to include a subminimum wage for youths. Hearings lasting several months were held on the proposed increase. On September 19, 1988, then-Vice President Bush announced during the presidential campaign that he would support an increase in the minimum wage. Later that month, however, a Republican-led filibuster in the Senate thwarted the Kennedy and Hawkins effort to increase the minimum wage. The vote fell five votes short of reaching cloture.

In early March of 1989, Congress and President Bush again considered the issue. The Bush administration signaled that it would propose increasing the hourly minimum to \$4.25 by 1992, provided that employers were allowed to pay a short-term "training

---

<sup>3</sup> This section is adapted from Card and Krueger (1995) pp. 328-29.

wage” of \$3.35 to youths. Shortly thereafter, the Senate Labor Panel voted 11 to 6 in favor of raising the minimum to \$4.65 per hour. The administration signaled its resolve to veto any legislation that would “go beyond its proposal of raising the minimum to \$4.25 per hour, with a training wage of \$3.35”. On March 23, 1989, the House voted by a 248 to 171 margin on H.R. 2 to raise the minimum to \$4.55 per hour by 1991. The White House reiterated its resolve to veto his legislation. Nonetheless, the Senate followed the lead of the House and, on April 12, 1989, voted 62 to 37 in favor of the Senate minimum wage increase bill S-4. In mid-May 1989, after a conference, both house of Congress approved a bill to raise the minimum wage to \$4.55 per hour. The number of votes in favor of this legislation in both the Senate and the House, however, fell short of the margin required to override a presidential veto. President Bush vetoed the legislation on June 13, 1989. Although a veto had been threatened, the actual veto was significant because it was the first of Bush’s presidency. The following day, the House again voted on H.R. 2, and, as expected, the vote fell short of the required number to override a veto.

The U.S. Congress took up the minimum wage again in the fall of 1989. The House Labor Panel voted to increase the minimum to \$4.25 per hour over two years, and to set a 60-day subminimum wage. Labor Secretary Elizabeth Dole reiterated the President’s intention to veto any bill that increased the minimum wage to more than \$4.25 per hour in less than three years. On November 1, 1989, the *Wall Street Journal* reported that President Bush and Congressional Democrats had reached a compromise agreement on the minimum wage, clearing the way for eventual passage of the legislation. On November 1, 1989, the House passed H.R. 2710 by a margin of 382 to 37. This bill increased the minimum wage to \$3.80 per hour on April 1, 1990, and to \$4.25 per hour on April 1, 1991, and created a 60-day youth subminimum wage. One week later, the Senate passed identical legislation by a vote of 89 to 8.

### **3.2. Implementation**

From Card and Krueger (1995) Table A.10.1, we collect daily stock return data on the same sample of 110 publicly-traded firms that are particularly likely to have been affected by the 1989 minimum wage increase. The sample consists of 110 firms in the restaurant, department store, grocery store, merchandise store, variety store, hotel and motel, linen supply, and motion picture theater industries. Companies in these industries

tend to employ a disproportionate number of minimum wage workers. A complete list of the firms is included in Appendix Table A 1.

Daily stock returns for the 110 companies and market returns are obtained from the Center for Research in Security Prices (CRSP). Then we run a daily stock return model using equation (1). Formally, we estimate the “normal performance” of firm  $i$  in the one year prior to the minimum-wage legislation using equation (6):

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (6)$$

where  $R_{it}$  is the return on the common stock of firm  $i$  on day  $t$ , adjusted for stock splits and dividends;  $R_{mt}$  is the return on the equally-weighted NYSE/AMEX portfolio on day  $t$ .  $\alpha_i$  and  $\beta_i$  are regression coefficients; and  $\varepsilon_{it}$  is the error term for firm  $i$  on day  $t$ .

To be consistent with Card and Krueger (1995), equation (6) is estimated using data on returns in 1987 to get the normal performance of each company. Next, the mean predicted return of each company after an event from day 1 to day 10 is obtained by estimating equation (6). Mean excess returns ( $AR$ ) are then calculated and decomposed for each company on each day. Lastly, using equation (5) the result attributes the excess returns immediately to differences in firm-specific traits, systematic risks and market performances. Formally, the implementation steps are summarized as,

1. Run a daily stock return market model to get the normal performance for each firm.
2. Estimate the post-event performance to get the predicted return for each firm.
3. Decompose excess returns using equation (3)<sup>4</sup>.
4. Analyze the results.

### 3.3. Less Myth, More Measurement

Card and Krueger (1995) quantify the impact of minimum-wage legislation on firm profits. Their results show mixed evidence that news about a minimum wage hike induces investors to adjust their valuation of firms downward. Excess returns associated with news about the 1989 minimum-wage legislation are generally unsystematic. They conclude that in the sample of events they have examined, news about a minimum wage

---

<sup>4</sup> Excess return decomposition results can be obtained using `mvdcmp`, the Stata program, by Power, Yoshioka and Yun (2010). The program is available at <http://www.tulane.edu/~msyun/research.htm>

hike rarely seems to have effect on shareholder wealth.

In this section, we re-examine their results using the method developed in the previous sections. Card and Krueger (1995) describes 20 newsworthy events leading up to the 1989 amendments to the Fair Labor Standards Act. The descriptions are generally based on the title of the *Wall Street Journal's* article on the event. The date corresponds to the publication date of the article; the event usually occurred on the preceding day. There are six minimum-wage legislation events which Card and Krueger (1995) show are interesting and worth examining.<sup>5</sup> Their results show that almost all the mean excess returns are small and not statistically significant from zero. On the day that the event was described in the *Wall Street Journal*, only two of the twenty mean excess returns are statistically significant different from zero at the 10% level.

To be comparable, we replicate their results and show that the graphs (Figure 2 to Figure 7) are identical to those in Card and Krueger (1995). These six legislation events are:

1. June 12, 1987: *Reagan may ease minimum wage stand.*
2. March 4, 1988: *Panel votes to sharply boost minimum wage.*
3. September 27, 1988: *Democrats' bid to boost minimum wage thwarted by GOP filibuster.*
4. March 3, 1989: *Bush to propose raising minimum wage \$4.25 to lower training wage.*
5. June 14, 1989: *Bill on raising minimum wage vetoed by Bush.*
6. November 1, 1989: *Compromise bill on minimum wage reached and the House passed H.R. 2710 by a margin of 382 to 37.*

### **3.3.1. June 12, 1987 - Headline: Reagan "May" Ease Minimum Wage Stand**

On June 12, 1987, *Wall Street Journal* reported that Reagan signaled he might soften his opposition to a minimum wage increase. Figure 2 depicts the 10 days mean excess return and cumulative mean excess return around June 12. Table 1 reports the two-fold and three-fold decomposition result of excess returns from day 1 to day 10.

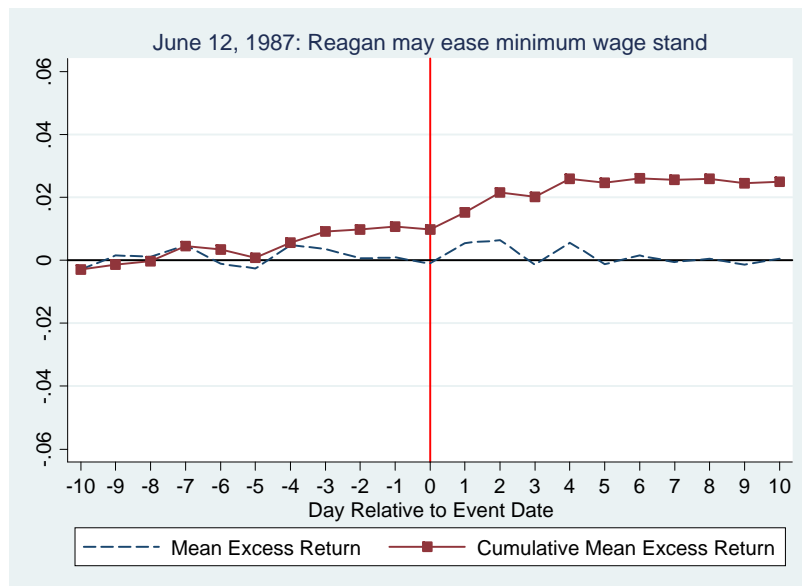
It seems this news may have a negative effect on the profits of the sample

---

<sup>5</sup> Card and Krueger (1995) pp.334-337.

companies, but the signal that Reagan “may” ease minimum wage stand doesn’t sound strong and decisive which the direction of the impact is likely to be ambiguous. In fact, from Table 1 although the post-event mean excess return is .247% and significant at 1% level, we find that 35% of the mean excess returns is explained by the market performance and is significant at 10% level, though 65% of the mean excess returns is not explained by the market and is not statistically significant. Furthermore, we found that almost all (64.917%) the excess returns can be attributed to difference in firm-specific traits ( $\alpha$ ) and very little (.003%) can be attributed to difference in systematic risks ( $\beta$ ). However, both are not statistically significant from zero. Hence, the insignificant decomposition results support the prediction of Card and Krueger (1995).

**Figure 2 June 12, 1987: Reagan “May” Ease Minimum Wage Stand**



**Table 1 June 12, 1987: Reagan “May” Ease Minimum Wage Stand**

<b>Prediction: Ambiguous or Negative Effect</b>	<b>Day 1-10 (%)</b>	<b>Share</b>
<b>Mean Excess Return</b>	.24738*** (.085362)	100%
Explained by the Market	.086779* (.052248)	35.08%
Not Explained by the Market	.1606 (.10008)	64.92%
<b>Mean Excess Return</b>	.24738*** (.085362)	100%
Due to Differences in Market Performances	.086779*	35.08%

	(.052248)	
Due to Differences in Systematic Risks $\beta$	7.3119e-06 (1.3225e-04)	.003%
Due to Differences in Firm-specific Traits $\alpha$	.1606 (.10015)	64.917%

---

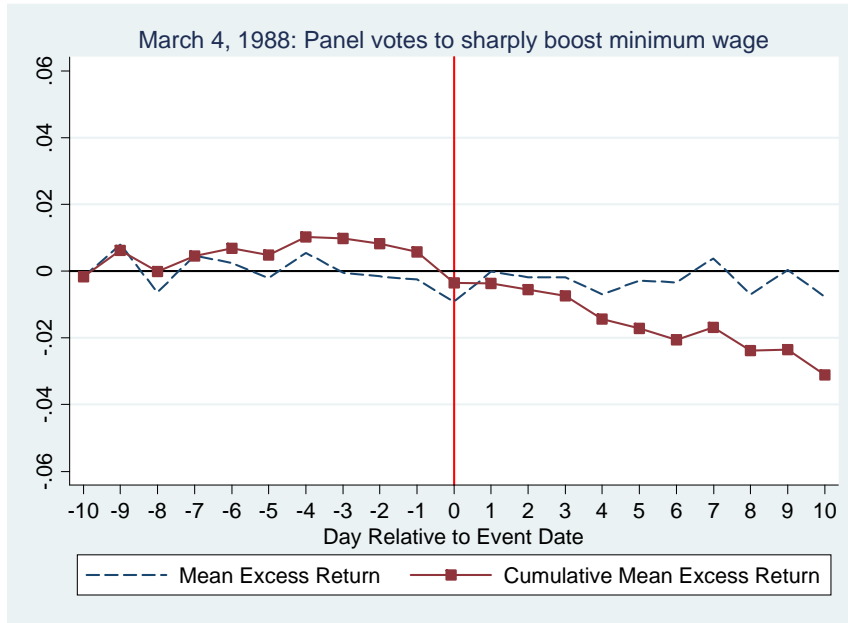
### 3.3.2. March 4, 1988 - *Headline: Panel Votes to Sharply Boost Minimum Wage*

On March 4, 1988, Senate Panel votes to sharply boost minimum wage. When the news was released, the interpretation should be adverse to employers' profit. Card and Krueger (1995) predict a negative effect on the wealth of sample companies. They show that the cumulative excess return is decreasing after March 4 as shown in Figure 3, but neither cumulative excess return nor mean excess return is statistically significant from zero.

Table 2, however, offers a different perspective than Card and Krueger (1995). By decomposing excess return, we find that even though the post-event mean excess return is only 0.077% and not significant, the strong pull and push between market and non-market forces play a very active role. The market performs exceptionally well from day 1 to day 10 (compared to its 1987 performance) which should drive the profits of the 110 sample companies up by a large magnitude. Nevertheless, the news of March 4 generates another strong but negative effect on the sample companies which offsets most of the increase. The three-fold result in the lower panel of Table 2 supports the findings because the difference in systematic risk  $\beta$  only plays a very little role compared to the firm-specific traits,  $\alpha$ .

Card and Krueger (1995) show the news on March 4, 1988 has an insignificant but negative effect on minimum wage firms' wealth. We show that although the effect is not significant, the news that Senate Panel voted to sharply boost the minimum wage indeed had a strong and significantly negative impact on the firms' wealth. But as the market was performing exceptionally well, the negative impact is neutralized.

**Figure 3 March 4, 1988: Panel votes to sharply boost minimum wage**



**Table 2 March 4, 1988: Panel votes to sharply boost minimum wage**

Prediction: Negative Effect	Day 1-10 (%)	Share
<b>Mean Excess Return</b>	.077749 (.093774)	100%
Explained by the Market	.44996*** (.092915)	578.72%
Not Explained by the Market	-.37221*** (.13201)	-478.72%
<b>Mean Excess Return</b>	.077749 (.093774)	100%
Due to Differences in Market Performances	.44996*** (.092915)	578.72%
Due to Differences in Systematic Risks $\beta$	9.2706e-04 (9.2680e-04)	1.20%
Due to Differences in Firm-specific Traits $\alpha$	-.37313*** (.13266)	-479.92%

**3.3.3. September 27, 1988 - Headline: *Democrats' Bid to Boost Minimum Wage Thwarted by GOP Filibuster***

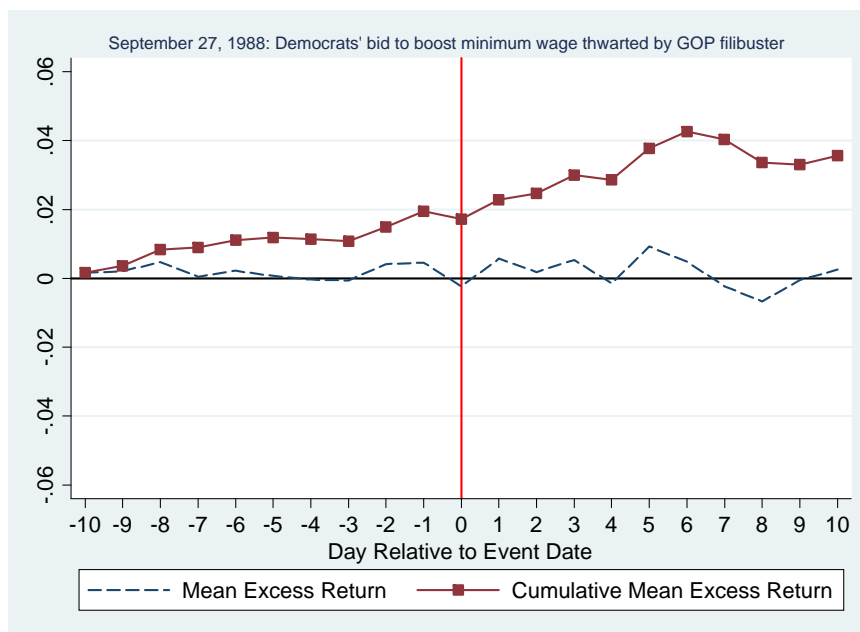
On September 19, 1988, Bush announced during the presidential campaign that he “could” support an increase in the minimum wage. After six days, a Republican-led filibuster in the Senate thwarted the Kennedy and Hawkins effort to increase the

minimum wage. The vote fell five votes short of reaching cloture. According to Card and Krueger (1995), the event contains the strongest evidence that investors view a minimum-wage hike as having negative consequences for corporate profits. Figure 4 shows the cumulative excess returns around the time of the final cloture vote on the Republican-led filibuster of the Kennedy-Hawkins minimum-wage bill. The cumulative excess return in the 10-day interval around the successful filibuster was nearly 4%. Moreover, negative excess returns are apparent a few trading days before the final cloture vote, which coincides with the date of an earlier vote on cloture.

Table 3 reports the mean excess returns in the 10-day interval is 0.42% and significant. In the 10 days, 81.6% of the mean excess return cannot be explained by the market which means the event has a significant and large effect on the sample companies; on the other hand, only 18.4% can be explained by the market. This point can be supported by looking at the three-fold decomposition. The difference in systematic risks is small and not significant.

Our results here further support the argument of Card and Krueger (1995) and show that firm-specific characteristics account for more than 80% of the good news to the firms to the event on September 27, 1988. Market performance only contributes 18%.

**Figure 4 September 27, 1988: Democrats' bid to boost minimum wage thwarted by GOP filibuster**





**Table 3 September 27, 1988: Democrats' bid to boost minimum wage thwarted by GOP filibuster**

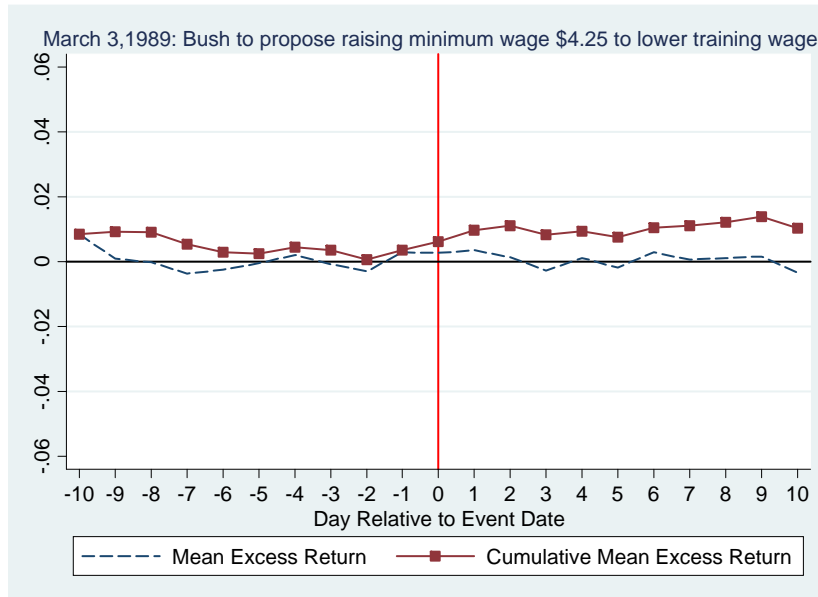
<b>Prediction: Positive Effect</b>	<b>Day 1-10 (%)</b>	<b>Share</b>
<b>Mean Excess Return</b>	.42005*** (.094595)	100%
Explained by the Market	.077214*** (.025621)	18.38%
Not Explained by the Market	.34283*** (.098003)	81.62%
<b>Mean Excess Return</b>	.42005*** (.094595)	100%
Due to Differences in Market Performances	.077214*** (.025621)	18.38%
Due to Differences in Systematic Risks $\beta$	-4.2676e-04 (.0010391)	-.10%
Due to Differences in Firm-specific Traits $\alpha$	.34326*** (.098279)	81.72%

**3.3.4. March 3, 1989 - Headline: *Bush to Propose Raising Minimum Wage \$4.25 to Lower Training Wage***

After failing to increase the minimum wage in the Senate in September of 1988, in early March of 1989, Congress and President Bush again considered the issue. On March 3, 1989, the Bush administration signaled that it would propose increasing the hourly minimum to \$4.25 by 1992, provided that employers were allowed to pay a short-term “training wage” of \$3.35 to youths. The prediction of the effect on employers’ wealth can be negative or ambiguous when the news was released as merely a proposal. Investors should be more responsive to news which is decisive to the increase of minimum-wage legislation.

Graphically in Figure 5 we see little change before and after March 3. The post-event 10-day mean excess return is 0.126% which is also not significant from zero. However, decomposition results show that approximately 85% of mean excess return can be attributed to differences in market performances and is statistically significant at 1% level. Differences in systematic risk is significant at the 10% level but only contribute 0.78% of the mean excess return. Although differences in firm specific-traits contribute 14%, it is not statistically significant.

**Figure 5 March 3, 1989: Bush to propose raising minimum wage \$4.25 to lower training wage**



**Table 4 March 3, 1989: Bush to propose raising minimum wage \$4.25 to lower training wage**

Prediction: Ambiguous or Negative Effect	Day 1-10 (%)	Share
<b>Mean Excess Return</b>	.12594 (.076941)	100%
Explained by the Market	.10732*** (.013991)	85.22%
Not Explained by the Market	.01862 (.078203)	14.78%
<b>Mean Excess Return</b>	.12594 (.076941)	100%
Due to Differences in Market Performances	.10732*** (.013991)	85.22%
Due to Differences in Systematic Risks $\beta$	9.8981e-04* (5.9451e-04)	0.78%
Due to Differences in Firm-specific Traits $\alpha$	.01763 (.078311)	14.00%

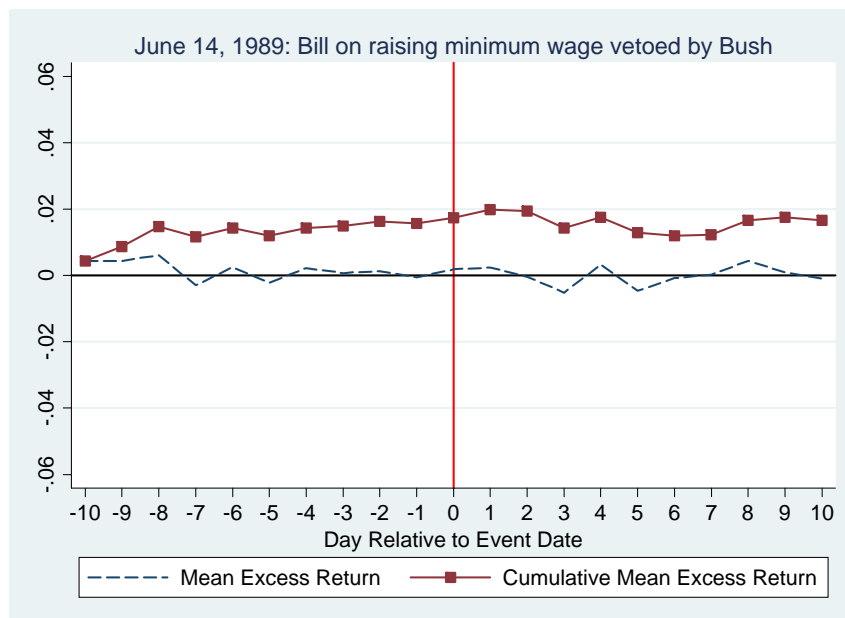
**3.3.5. June 14, 1989 - Headline: *Bill on Raising Minimum Wage Vetoed by Bush***

On June 13, 1989, President Bush vetoed the minimum-wage legislation. Although a veto had been threatened, the actual veto was significant because it was the first of Bush's Presidency. The following day, the House again voted on H.R. 2, and, as expected, the

vote fell short of the required number to override a veto. Card and Krueger (1995) show that the event has no effect on sample companies, as is apparent from Figure 6. The post-event mean excess return 0.009% is small. Although their prediction is correct, it is not statistically significant.

Though their results show no effect, by decomposing excess return we found that 85% of it can be significantly attributed to differences in market performances. The differences in systematic risks  $\beta$  is -4%, which is not significant from zero. However, the differences in firm-specific traits contributes 18.5% of the excess return which is consistent to the prediction albeit statistically insignificant.

**Figure 6 June 14, 1989: Bill on raising minimum wage vetoed by Bush**



**Table 5 June 14, 1989: Bill on raising minimum wage vetoed by Bush**

Prediction: Positive Effect	Day 1-10 (%)	Share
<b>Mean Excess Return</b>	.0091909 (.08159)	100%
Explained by the Market	.007856*** (.0022258)	85.476%
Not Explained by the Market	.0013348 (.081618)	14.524%
<b>Mean Excess Return</b>	.0091909 (.08159)	100%

Due to Differences in Market Performances	.007856*** (.0022258)	85.476%
Due to Differences in Systematic Risks $\beta$	-3.6858e-04 (9.0407e-04)	-4.010%
Due to Differences in Firm-specific Traits $\alpha$	.0017034 (.081647)	18.534%

---

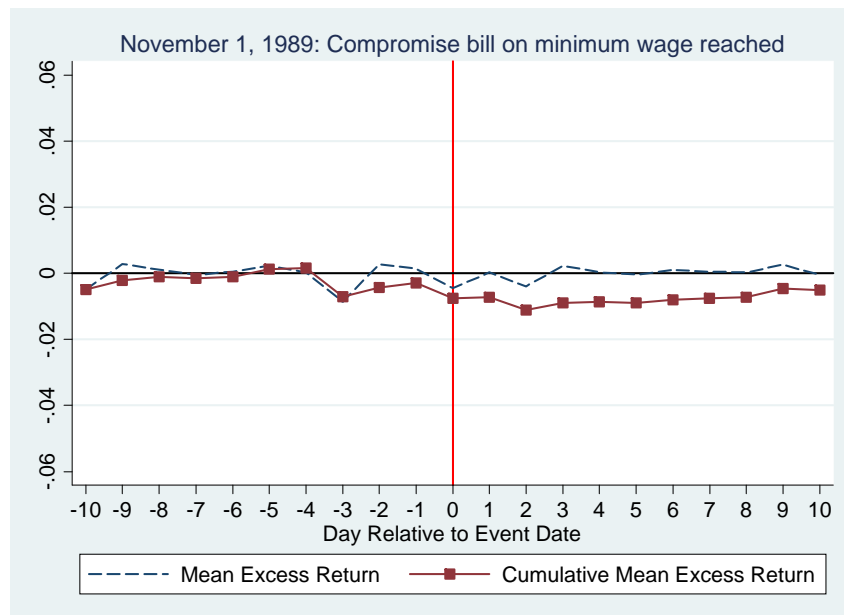
### 3.3.6. November 1, 1989 - *Headline: Compromise Bill on Minimum Wage Reached and the House Passed H.R. 2710 by a Margin of 382 to 37*

The U.S. Congress took up the minimum wage again in the fall of 1989. On November 1, 1989, the *Wall Street Journal* reported that President Bush and Congressional Democrats had reached a compromise agreement on the minimum wage, clearing the way for eventual passage of the legislation. On November 1, 1989, the House passed H.R. 2710 by a margin of 382 to 37. This bill increased the minimum wage to \$3.80 per hour on April 1, 1990, and to \$4.25 per hour on April 1, 1991, and created a 60-day youth subminimum wage. One week later, the Senate passed identical legislation by a vote of 89 to 8.

Figure 7 depicts the mean excess return and cumulative mean excess return of this event. From the figure it is difficult to see whether the news has a negative effect on employer wealth. Table 6 shows that the post-event mean excess return is -0.011% but not significant. By decomposing the negative excess return, we find that only 15.5% is explained by the market and largely 84.5% is not explained by the market though it is not significant from zero. By examining further, we found that 46% can be significantly attributed to differences in systematic risks  $\beta$  at 5% level; 38% can be attributed to differences in firm-specific traits but not statistically significant.

In sum, the Card and Krueger (1995) found a negative but not significant effect of this minimum-wage legislation on employer wealth. In spite of the insignificant outcome, we further examine the sources of the effect and show that market performance plays a relatively small role (15%). Most of the negative effect (85%) is not explained by the market. Differences in systematic risks and firm-specific traits contribute 46% and 38% to the negative excess return, respectively. Hence, our findings show that the compromise of the minimum wage bill and the passage in the House has an adverse effect on the sample companies. Economy-wide factors play a small role.

**Figure 7 November 1, 1989: Compromise bill on minimum wage reached and the House passed H.R. 2710 by a margin of 382 to 37**



**Table 6 Event: November 1, 1989: Compromise bill on minimum wage reached and the House passed H.R. 2710 by a margin of 382 to 37**

Prediction: Negative Effect	Day 1-10 (%)	Share
<b>Mean Excess Return</b>	-0.01091 (.075326)	100%
Explained by the Market	-0.0016898*** (3.7288e-04)	15.49%
Not Explained by the Market	-0.0092201 (.075327)	84.51%
<b>Mean Excess Return</b>	-0.01091 (.075178)	100%
Due to Differences in Market Performances	-0.0016898*** (3.7288e-04)	15.49%
Due to Differences in Systematic Risks $\beta$	-0.0050552** (.002073)	46.34%
Due to Differences in Firm-specific Traits $\alpha$	-0.0041648 (.075345)	38.17%

#### 4. Conclusion

Minimum wages exist in more than one hundred countries, both industrialized and developing. The goals associated with the minimum wage are widely accepted as right

and proper. However, there is much less agreement about whether the minimum wage is effective at attaining these goals. Although overwhelmingly popular with the public in the United States, the minimum wage has, from the time of its introduction, been highly controversial in the political arena. In addition, minimum wages have typically received less support from economists, who from the very beginning of the minimum wage debate pointed to the potential loss of jobs stemming from a wage floor. Despite decades of economic research, policy debates about the costs and benefits of minimum wages continue to the present day.

Based on their comprehensive reading of the evidence, Neumark and Wascher (2008) argue that minimum wages do not achieve the main goals set forth by their supporters. They reduce employment opportunities for less-skilled workers and tend to reduce their earnings; they appear to have adverse longer-term effects on wages and earnings, in part by reducing the acquisition of human capital. In comparison with the vast literature on the effects of the minimum wage on employment and wages, research on the influence of minimum wages on firm profits has been relatively little.

Among the few studies, Card and Krueger (1995) examine the economic impact of 1989 minimum wage hike on the welfare of 110 firms which employ a disproportionate number of minimum-wage workers. Their results show mixed evidence that excess returns associated with news about the 1989 minimum-wage legislation are generally unsystematic and rarely seems to have effect on shareholder wealth. We present a simple and intuitive approach to re-examine their results by decomposing excess returns.

Our results confirm Card and Krueger (1995) by decomposing mean excess returns. Table 7 summarizes our key findings. We found that the apparent lack of an effect is a consequence of two off-setting forces: (1) a negative effect arising from firm-specific traits (adverse information on minimum-wage worker employers) and (2) a positive effect arising from market performance. Our more nuanced view shows that while the aggregate effect of the 1989 minimum wage hike was neutral, there was a significant negative impact on firms that was neutralized by positive market performance.

**Table 7 Summary of Key Results**

Event	Cumulative Excess Return in Card and Krueger (1995)		Decomposition of Mean Excess Return (%)	
	T= -10 to 10	T = 1 to 10	T = 1 to 10	Share
				<b>Mean Excess Return</b>
1				
June 12, 1987			.24738***	100%
<i>Reagan may ease minimum wage stand.</i>	.027*	.0152*	Explained by the Market .08678*	35.08%
			Not Explained by the Market .1606	64.92%
			<b>Mean Excess Return</b>	
			.24738***	100%
			Due to Differences in Market Performances .086779*	35.08%
			Due to Differences in Systematic Risks 7.3119e-06	.003%
			Due to Differences in Firm-specific Traits .1606	64.917%
2				
March 4, 1988			.077749	100%
<i>Panel votes bill to sharply boost minimum wage.</i>	-.013	-.0276***	Explained by the Market .44996***	578.72%
			Not Explained by the Market -.37221***	-478.72%
			<b>Mean Excess Return</b>	
			.077749	100%
			Due to Differences in Market Performances .44996***	578.72%
			Due to Differences in Systematic Risks 9.2706e-04	1.20%
			Due to Differences in Firm-specific Traits -.37313***	-479.92%
3				
September 27, 1988			.42005***	100%
<i>Democrats' bid to boost minimum wage this year is thwarted by GOP filibuster.</i>	.039**	.0320***	Explained by the Market .07721***	18.38%
			Not Explained by the Market .34283***	81.62%
			<b>Mean Excess Return</b>	
			.42005***	100%
			Due to Differences in Market Performances .07721***	18.38%
			Due to Differences in Systematic Risks -4.2676e-04	-.10%
			Due to Differences in Firm-specific Traits .34326***	81.72%
4				
March 3, 1989			.12594	100%
<i>Bush to propose raising minimum wage to \$4.25 an hour, a lower training pay.</i>	.017	.0040	Explained by the Market .10732***	85.22%
			Not Explained by the Market .01862	14.78%
			<b>Mean Excess Return</b>	
			.12594	100%
			Due to Differences in Market Performances .10732***	85.22%
			Due to Differences in Systematic Risks 9.8981e-04*	0.78%

				Due to Differences in Firm-specific Traits	.01763	14.00%
				<b>Mean Excess Return</b>	.00919	100%
				Explained by the Market	.00786***	85.476%
				Not Explained by the Market	.00133	14.524%
June 14, 1989				<b>Mean Excess Return</b>	.00919	100%
5 <i>Bill on raising minimum wage vetoed by Bush.</i>	.015	-.0009		Due to Differences in Market Performances	.007856***	85.476%
				Due to Differences in Systematic Risks	-3.6858e-04	-4.010%
				Due to Differences in Firm-specific Traits	.00170	18.534%
				<b>Mean Excess Return</b>	-.01091	100%
				Explained by the Market	-.00169***	15.49%
				Not Explained by the Market	-.00922	84.51%
November 1, 1989				<b>Mean Excess Return</b>	-.01091	100%
6 <i>Compromise bill on minimum wage reached.</i>	.002	.0024		Due to Differences in Market Performances	-.00169***	15.49%
				Due to Differences in Systematic Risks	-.00506**	46.34%
				Due to Differences in Firm-specific Traits	-.00416	38.17%

Note: The sample size ranges between 102 and 108. \* Significant at the 10% level. \*\* Significant at the 5% level. \*\*\* Significant at the 1% level.



## References

- Althauser, Robert P. and Michael Wigler.** 1972. "Standardization and Component Analysis." *Sociological Methods Research*, 1(1), 97-135.
- Beaver, William; Paul Kettler and Myron Scholes.** 1970. "The Association between Market-Determined and Accounting-Determined Risk Measures." *The Accounting Review*, 10(2), 654-82.
- Becker, Brian E. and Craig A. Olson.** 1986. "The Impact of Strikes on Shareholder Equity." *Industrial and Labor Relations Review*, 39(3), 425-38.
- Black, Fischer; Michael C. Jensen and Myron Scholes.** 1972. *The Capital Asset Pricing Model: Some Empirical Tests*. New York, NY: Praeger Publishers Inc.
- Blinder, Alan S.** 1973. "Wage Discrimination: Reduced Form and Structural Estimates." *The Journal of Human Resources*, 8(4), 436-55.
- Boehmer, Ekkehart; Jim Musumeci and Annette B. Poulsen.** 1991. "Event-Study Methodology under Conditions of Event-Induced Variance." *Journal of Financial Economics*, 30(2), 253-72.
- Brown, Philip and Ray Ball.** 1967. "Some Preliminary Findings on the Association between the Earnings of a Firm, Its Industry, and the Economy." *Journal of Accounting Research*, 5, 55-77.
- Brown, Stephen J. and Jerold B. Warner.** 1980. "Measuring Security Price Performance." *Journal of Financial Economics*, 8(3), 205-58.
- Brown, Stephen J. and Jerold B. Warner.** 1985. "Using Daily Stock Returns." *Journal of Financial Economics*, 14(1), 3-31.
- Campbell, John Y.; Andrew W. Lo and A. Craig MacKinlay.** 1997. *The Econometrics of Financial Markets*. Princeton, New Jersey: Princeton University Press.
- Card, David and Alan B. Krueger.** 1995. *Myth and Measurement: The New Economics of the Minimum Wage*. Princeton: Princeton University Press.
- Chen, Son-Nan and Arthur J. Keown.** 1981. "Risk Decomposition and Portfolio Diversification When Beta Is Nonstationary: A Note." *The Journal of Finance*, 36(4), 941-47.
- Coleman, James S. ; Charles C. Berry and Zahava D. Blum.** 1970. "White and Black Careers During the First Ten Years of Work Experience: A Simultaneous Consideration of Occupational Status and Income Changes," Johns Hopkins University Center for Social Organization of Schools Report 76,
- Coleman, James S. and Zahava D. Blum.** 1971. "Note on the Decomposition of

- Differences between Two Groups," Johns Hopkins University,
- Corrado, Charles J.** 2009. "Event Studies: A Methodology Review," Available at SSRN: <http://ssrn.com/abstract=1441581>,
- Cotton, Jeremiah.** 1988. "On the Decomposition of Wage Differentials." *Review of Economics & Statistics*, 70(2), 236-43.
- Cowan, Arnold.** 2003. *Eventus 8.0 User's Guide*. Ames, Iowa: Cowan Research LC.
- Draca, M.; S. Machin and J. Van Reenen.** 2011. "Minimum Wages and Firm Profitability." *American Economic Journal-Applied Economics*, 3(1), 129-51.
- Duncan, Otis Dudley** 1969. "Inheritance of Poverty or Inheritance of Race?," D. P. Moynihan, *On Understanding Poverty*. New York: Basic Books, 85-110.
- Duncan, Otis Dudley; David L. Featherman and Beverly Duncan.** 1968. *Socioeconomic Background and Occupational Achievement: Extensions of a Basic Model*. New York and London: Seminar Press.
- Elton, Edwin J. and Martin J. Gruber.** 1995. *Modern Portfolio Theory and Investment Analysis*. John Wiley & Sons, Inc.
- Fama, Eugene F.** 1976. *Foundations of Finance: Portfolio Decisions and Securities Prices* Basic Books.
- Fama, Eugene F.; Lawrence Fisher; Michael C. Jensen and Richard Roll.** 1969. "The Adjustment of Stock Prices to New Information." *International Economic Review*, 10(1), 1-21.
- Fisher, Lawrence and James H. Lorie.** 1968. "Rates of Return on Investments in Common Stock: The Year-by-Year Record, 1926-65." *The Journal of Business*, 41(3), 291-316.
- Fisher, L. and J. H. Lorie.** 1964. "Rates of Return on Investments in Common Stocks." *The Journal of Business*, 37(1), 1-21.
- Gardeazabal, Javier and Arantza Ugidos.** 2004. "More on Identification in Detailed Wage Decompositions." *The Review of Economics and Statistics*, 86(4), 1034-36.
- Horrace, William C. and Ronald L. Oaxaca.** 2001. "Inter-Industry Wage Differentials and the Gender Wage Gap: An Identification Problem." *Industrial and Labor Relations Review*, 54(3), 611-18.
- Jann, Ben.** 2008. "A Stata Implementation of the Blinder-Oaxaca Decomposition," ETH Zurich Sociology Working Papers No.5,
- Jones, F. L.** 1983. "On Decomposing the Wage Gap: A Critical Comment on Blinder's

- Method." *The Journal of Human Resources*, 18(1), 126-30.
- Jones, F. L. and Jonathan. Kelley.** 1984. "Decomposing Differences between Groups. A Cautionary Note on Measuring Discrimination." *Sociological Methods and Research*, 12(3), 323-43.
- Khotari, S. P. and Jerold B. Warner.** 2007. "Econometrics of Event Studies," B. E. Eckbo, *Handbook of Corporate Finance: Empirical Corporate Finance*. Elsevier/North Holland,
- King, Benjamin F.** 1966. "Market and Industry Factors in Stock Price Behavior." *The Journal of Business*, 39(1), 139-90.
- Lin, Carl.** 2011. "Decomposing Excess Returns in Stochastic Linear Models," *IZA Discussion Paper No. 6237*.
- Lin, Carl.** 2011. "Give Me Your Wired and Your Highly Skilled: Measuring the Impact of Immigration Policy on Employers and Shareholders," *IZA Discussion Paper No. 5754., IEB Working Paper Series [2011/17]*.
- Lin, Eric S.** 2007. "On the Standard Errors of Oaxaca-Type Decompositions for Inter-Industry Gender Wage Differentials." *Economics Bulletin*, 10(6), 1-11.
- Lintner, John.** 1965. "The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets." *The Review of Economics and Statistics*, 47(1), 13-37.
- Neumark, David and William L. Wascher.** 2008. *Minimum Wages*. Cambridge, Mass.: MIT Press.
- Oaxaca, Ronald L.** 1973. "Male-Female Wage Differentials in Urban Labor Markets." *International Economic Review*, 14(3), 693-709.
- Oaxaca, Ronald L. and Michael R. Ransom.** 1998. "Calculation of Approximate Variances for Wage Decomposition Differentials." *Journal of Economic and Social Measurement*, 24(1), 55-61.
- Oaxaca, Ronald L. and Michael R. Ransom.** 1999. "Identification in Detailed Wage Decompositions." *The Review of Economics and Statistics*, 81(1), 154-57.
- Oaxaca, Ronald L. and Michael R. Ransom.** 1994. "On Discrimination and the Decomposition of Wage Differentials." *Journal of Econometrics*, 61(1), 5-21.
- Patell, James M.** 1976. "Corporate Forecasts of Earnings Per Share and Stock Price Behavior: Empirical Tests." *Journal of Accounting Research*, 14(2), 246-74.
- Peterson, Parmela P.** 1989. "Event Studies: A Review of Issues and Methodology." *Quarterly Journal of Business and Economics*, 28(3), 36-66.

- Piotroski, Joseph D. and Barren T. Roulstone.** 2004. "The Influence of Analysts, Institutional Investors, and Insiders on the Incorporation of Market, Industry, and Firm-Specific Information into Stock Prices." *The Accounting Review*, 79(4), 1119-51.
- Powers, Daniel A.; Hirotohi Yoshioka and Myeong-Su Yun.** 2011(forthcoming). "Mvdcmp: Multivariate Decomposition for Nonlinear Response Models." *The Stata Journal*.
- Prager, Robin A.** 1989. "Using Stock Price Data to Measure the Effects of Regulation: The Interstate Commerce Act and the Railroad Industry." *The RAND Journal of Economics*, 20(2), 280-90.
- Ross, Stephen A.** 1976. "The Arbitrage Theory of Capital Asset Pricing." *Journal of Economic Theory*, 13(1), 341-60.
- Ruback, Richard S. and Martin B. Zimmerman.** 1984. "Unionization and Profitability: Evidence from the Capital Market." *Journal of Political Economy*, 92(6), 1134-57.
- Schwert, G. William.** 1981. "Using Financial Data to Measure Effects of Regulation." *Journal of Law and Economics*, 24(1), 121-58.
- Sharpe, William F.** 1964. "Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk." *Journal of Finance*, 19(1), 425-42.
- Winsborough, H.H. and Peter Dickinson.** 1971. "Components of Negro-White Income Differences." *Proceedings of the Social Statistics Section of the American Statistical Association*, Social Statistics Section, 6-8.
- Yun, Myeong-Su.** 2004. "Decomposition Differences in the First Moment." *Economics Letters*, 82(2), 275-80.
- Yun, Myeong-Su.** 2007. "An Extension of the Oaxaca Decomposition Using Generalized Residuals." *Journal of Economic and Social Measurement*, 32(1), 15-22.
- Yun, Myeong-Su.** 2005. "Hypothesis Tests When Decomposing Differences in the First Moment." *Journal of Economic and Social Measurement*, 30(4), 295-304.
- Yun, Myeong-Su.** 2005. "A Simple Solution to the Identification Problem in Detailed Wage Decompositions." *Economic Inquiry*, 43(4), 766-72.

## Appendix

**Table A 1 110 Companies Used in the Analysis**

<b>Company Name</b>	<b>Primary Industry</b>	<b>PERMNO*</b>	<b>SICCD**</b>
Albertson's Inc.	Grocery Stores	50032	5411
AMC Entertainment Inc.	Motion Picture Theaters, Except Drive-ins	66413	7832
American Stores Co.	Grocery Stores	44652	5912
Ampal American Israel Corp.	Hotels and Motels	64864	6799
Angelica Corp.	Linen Supply	45583	2337
Arden Group Inc.	Grocery Stores	14868	5410
Ark Restaurants Corp.	Eating Places	85586	5810
Bayport Restaurant Group Inc.	Eating Places	21304	5812 <sup>a</sup>
Benihana National Corp.	Eating Places	17671	5812
Brendle's Inc.	Variety Stores	10282	5990
Brinker International Inc.	Eating Places	23297	5812
Bruno's Inc.	Grocery Stores	19589	5411
Buffets Inc.	Eating Places	86167	5812
Carl Karcher Enterprises Inc.	Eating Places	47133	5812
Carmike Cinemas Inc.	Motion Picture Theaters, Except Drive-ins	10750	7832
Carter Hawley Hale Stores Inc.	Department Stores	40352	5311 <sup>a</sup>
Casey's General Stores Inc.	Grocery Stores	21742	5399
Cineplex Oden Corp.	Motion Picture Theaters, Except Drive-ins	75045	6711
Cintas Corp.	Linen Supply	23660	7213
Chart House Enterprises Inc.	Eating Places	75815	5812 <sup>b</sup>
Club Med Inc.	Hotels and Motels	66464	7011
Consolidated Products Inc.	Eating Places	26607	5812
Consolidated Stores Corp.	Variety Stores	67467	5531
Cracker Barrel Old Country Store Inc.	Eating Places	27562	5812
Craig Corp.	Grocery Stores	49496	5041
Crowley Milner & Co.	Department Stores	31026	5311
Dairy Mart Convenience Stores Inc.	Grocery Stores	87151	5411
Dayton Hudson Corp.	Variety Stores	49154	5311
Delchamps Inc.	Grocery Stores	29226	5411
Dial Corp. DE	Eating Places	19721	4131
Dillard Department Stores Inc.	Department Stores	49429	5311
Dollar General Corp.	Variety Stores	30382	5399
El Chico Restaurant Inc.	Eating Places	31748	5812
Family Dollar Stores Inc.	Variety Stores	53866	5331
Family Steak Houses of Florida Inc.	Eating Places	10170	5810
Federated Department Stores Inc.	Department Stores	18550	5311 <sup>a</sup>

Food Lion Inc.	Grocery Stores	37189	5411
Foodarama Supermarkets Inc.	Grocery Stores	47036	5411
Frisch's Restaurants Inc.	Eating Places	57330	5812
G & K Services Inc.	Linen Supply	37955	7213
Gander Mountain Inc.	Miscellaneous Merchandise Stores	10141	5960
Giant Food Inc.	Grocery Stores	32205	5411
Gottschalks Inc.	Department Stores	69411	6711
Ground Round Restaurants Inc.	Eating Places	49736	5810
Hannaford Bros Co.	Grocery Stores	59301	5141
Healthcare Services Group Inc.	Linen Supply	41292	8059
Hilton Hotels Corp.	Hotels and Motels	23309	7011
Ingles Markets Inc.	Grocery Stores	11701	5410
Jamesway Corp.	Department Stores	48100	5311
JB's Restaurants Inc.	Eating Places	46114	5812
Kahler Corp.	Hotels and Motels	46958	7011
Kmart Corp.	Department Stores	89757	5331
Kroger Co.	Grocery Stores	16678	5411
L. Luria & Son Inc.	Miscellaneous Merchandise Stores	62316	5961
La Quinta Inns Inc.	Hotels and Motels	58624	7011
Luby's Cafeterias Inc.	Eating Places	64020	5812
Mac Frugal's Bargain Close Outs Inc.	Variety Stores	62894	5331
Marcus Corp.	Hotels and Motels	51423	7011
Max & Erma's Restaurants Inc.	Eating Places	51984	5812
May Department Stores Co.	Department Stores	13100	5311
McDonald's Corp.	Eating Places	43449	5812
Mercantile Stores Co. Inc.	Department Stores	22891	5311
Morgan's Foods Inc.	Eating Places	64442	2033
Morrison Restaurants Inc.	Eating Places	55213	5812
Motts Holdings Inc.	Grocery Stores	40731	5411
National Convenience Stores Inc.	Grocery Stores	60978	5411 <sup>a</sup>
National Pizza Co.	Eating Places	56630	5212
Neiman Marcus Group Inc.	Department Stores	75179	5311
Orient Express Hotels Inc.	Hotels and Motels	66085	7011
Pancho's Mexican Buffet Inc.	Eating Places	61058	5812
PEC Israel Economic Corp.	Grocery Stores	66296	6052
Penn Traffic Co.	Grocery Stores	75310	5411
Pepsico Inc.	Eating Places	13856	2086
Piccadilly Cafeterias Inc.	Eating Places	62907	5812
Proffitt's Inc.	Department Stores	11382	5311
Quality Food Centers Inc.	Grocery Stores	11215	5411
Rio Hotel & Casino Inc.	Hotels and Motels	12395	7011
Riser Foods Inc.	Grocery Stores	75359	5141
Rose's Stores Inc.	Variety Stores	67620	5331
Ruddick Corp.	Grocery Stores	54818	2281

Ryan's Family Steak Houses Inc.	Eating Places	68049	5812
S K I Ltd.	Hotels and Motels	91636	7999
Sbarro Inc.	Eating Places	67715	5812
Schultz Sav O Stores Inc.	Grocery Stores	12253	5410
Sears Roebuck & Co.	Department Stores	14322	5311
Seaway Food Town Inc.	Grocery Stores	69682	5411
Service Merchandise Co Inc.	Miscellaneous Merchandise Stores	70077	5961
Shoney's Inc.	Eating Places	70376	5812
Sizzler International Inc.	Eating Places	56354	5812
Smith's Food & Drug Center Inc.	Grocery Stores	75602	5411
Spaghetti Warehouse Inc.	Eating Places	90676	5812
Stop & Shop Cos. Inc.	Grocery Stores	36986	5411
Strawbridge & Clothier	Department Stores	73083	5311
Stuarts Department Stores Inc.	Variety Stores	73171	5311
Thousand Trails Inc.	Hotels and Motels	76102	7033
TPI Enterprises Inc.	Eating Places	75089	5810
Tuesday Morning Corp.	Variety Stores	10094	5710
Unifirst Corp.	Linen Supply	65306	7213
United Inns Inc.	Hotels and Motels	54420	7011
Unitog Co.	Linen Supply	79410	2328
Uno Restaurant Corp.	Eating Places	75103	5812
Vicorp Restaurants Inc.	Eating Places	80654	5812
Vie de France Corp.	Eating Places	80785	5462
Volunteer Capital Corp.	Eating Places	66747	5812
Vons Cos. Inc.	Grocery Stores	22074	5411
Wal Mart Stores Inc.	Department Stores	55976	5311
Wall Street Deli Inc.	Eating Places	68743	5810
Walt Disney Co.	Amusement Parks	26403	7813
Warehouse Club Inc.	Miscellaneous Merchandise Stores	92997	5990
Weis Markets Inc.	Grocery Stores	42059	5411
Wendy's International Inc.	Eating Places	63060	5812
Winn Dixie Stores Inc.	Grocery Stores	24803	5411
Woolworth Corp.	Variety Stores	15456	5331
WSMP Inc.	Eating Places	82449	5812

Note: PERMNO is a unique permanent security identification number assigned by CRSP to each security. SICCD is the Standard Industrial Classification Code.

Source: Card and Krueger (1995) Table A.10.1.