The NBER Digest

NATIONAL BUREAU OF ECONOMIC RESEARCH

August 2003

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Labor Dispute Caused Poor Quality Products

In August 2000, Bridgestone/Firestone and Ford jointly announced the recall of 14.4 million tires, some 6.5 million of them still on the road, mostly on Ford Explorers. It was big business news, especially after the National Highway Traffic and Safety Administration (NHTSA) the following month issued an advisory concerning several other sizes and models of Firestone tires and asserted that Firestone tires under investigation were related to 271 fatalities and more than 800 injuries. The most common source of failure of the recalled tires was tread separation: that is, a sudden detachment of the tire's rubber tread from the steel belts, causing the tire to blow out.

At the time, a number of observers — members of Congress, plaintiffs' attorneys, and reporters — hypothesized that the tire problem was related to a long, contentious strike at a plant in Decatur, Illinois, that made many of the tires involved. They speculated that under-trained replacement workers or lax supervision during the strike contributed to an excess number of tire defects. Or that workers may have been fatigued and more prone to errors because Firestone had introduced a 12-hour, rotating shift to operate the plant 24 hours a day during the strike.

In **Strikes, Scabs and Tread Separation: Labor Strife and the Production of Defective Bridgestone/Firestone Tires** (NBER Working Paper No. 9524), coauthors **Alan Krueger** and **Alexandre Mas** do find that labor strife in the Decatur plant coincided closely with lower product quality, but the story is not simply that replacement workers made bad tires. Instead, defects peaked when strikers returned to the plant, and just before they went out on strike. Thus the paper provides new evidence on the impact of labor strife on the quality of production at the plant level, and suggests that workers provide more effort and due diligence if they feel that they are being treated better.

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The relationship between worker treatment and the quality of production has proved difficult to establish. But because of the recall of the Firestone tires, Congressional hearings, and scores of liability lawsuits, confidential, proprietary data now have been made publicly available.

In large part, tires are still made by hand. So, there is scope for human error in producing this product. In addition, because millions of tires are made and in service each year, failure rates can be calculated for an enormous sample. The available data also enable the authors to rule out several other explanations that might account for the excessive number of defects found in tires produced in the Decatur plant during the period of the labor dispute, from 1994 to 1996.

For instance, Bridgestone/Firestone executives blamed the tire defects in part on the design of the Ford Explorer, which they argued was prone to roll over. They also argued that Ford recommended that the air pressure of the tires be set at 26 pounds per square inch, while the tire manufacturer recommended 30 PSI. At lower pressures, tires

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become hotter and are more prone to blow out. The NHTSA data, however, indicate that there were more complaints involving tires manufactured in Decatur during the labor dispute than at other times, or about the same tire models made at other Bridgestone/Firestone plants. The researchers analysis of the company's own engineering tire tests, conducted at controlled speeds, load, tire pressure, and ambient temperature indicated the same pattern.

Krueger and Mas estimate that more than 40 lives were lost as a result of the excessive number of problem tires produced in Decatur during the labor dispute, and that the number probably would have been more than twice as high if not for the tire recall. "There may be costs associated with hiring replacement workers and labor strife that are not internalized or anticipated by labor or management, especially in industries that affect the public safety," they write. "Public policy could possibly play a valuable role by requiring more safety inspections for products manufactured during a strike or period of labor strife."

Ironically, the authors note, an internal Bridgestone document obtained by the United Rubber Workers union reportedly stated, "…while it was nice to share a good relationship [with the union], it would no longer be in the company's interest." But in the four months after the recall announcement, the stock market value of Bridgestone/Firestone stock plunged from $16.7 billion to $7.5 billion. The company's top management was replaced. And the Decatur plant was closed in December 2001. "This episode would serve as a useful reminder that a good relationship between labor and management can be in both the company's and the union's interests," Krueger and Mas conclude.

The Japanese tire manufacturer Bridgestone purchased Firestone in 1988, making the combination the largest tire maker in the world. Initially, labor relations went smoothly. But in 1994, the company demanded that the union move from 8-hour to 12-hour shifts that rotated between day and night and that it operate the plant seven days a week, among other concessions. The negotiations ended in a strike. The company hired replacement workers at a pay rate 30 percent less than the union rate.

The Decatur plant, by May 1995, employed 1048 replacement workers and 371 permanent workers who crossed the picket line. The union unconditionally agreed to return to work that month, and by 1996 a majority of the workforce in the Decatur plant was made up of strikers who had returned to work. A month-by-month analysis reveals that the excess number of defect claims for tires from the Decatur plant reached a peak for tires made in the beginning of 1996.

Four years after they were produced, P235 tires made in Decatur during the labor dispute were some 15 times more likely to have resulted in a financial claim against the company than were tires manufactured in other plants. Before the recall, these tires had a fatal accident rate of 10 to 30 per million tires produced. A settlement was ratified in December 1996, and the number of defects began to abate at the Decatur plant.

— David R. Francis

Student Aid Packages and College Choices

Colleges work hard to lure exceptionally high achieving students. Typically, high achieving students can expect to receive individualized packages of loans, grants, and work opportunities from each school where they apply. The package structure will depend on parents' ability to pay, the student's demonstrated ability, and how well the college thinks the student fits its needs. If students are rational investors, then they will look beyond the superficial aspects of college aid, and refuse to attend schools offering good aid packages but reduced human capital investments that will affect their lifetime earnings.

In **Do and Should Financial Aid Packages Affect Students' College Choices?** (NBER Working Paper No. 9482), co-authors **Christopher Avery** and **Caroline Hoxby** followed a specially constructed sample of high achieving students through the college admissions process in 1999-2000. Mean SAT scores for the sample were in the 90th percentile nationally. The data included parental preferences, the schools to which the students applied, and the schools where they enrolled. Information on aid was collected by questionnaire, and information on college costs and administration was gathered from the college students themselves.

"The results suggest that students make rational choices."

The results suggest that students make rational choices, overall. They are more likely to attend more selective colleges that offer larger grants, larger loans, and larger work-study opportunities. Students are also more likely to enroll in a college that is the most selective that they applied to, is their father's alma mater, or is one a sibling attends. Having SAT scores above a college's mean SAT scores make students less likely to attend a college.

Family circumstances also condition student choices. Students with parents who attended very selective colleges are less attracted to a sibling's college, less attracted to in-state colleges, and more attracted by a college with a median SAT above their own. Students who attended a private school and come from high income families will focus more on a college's selectivity and are relatively insensitive to college costs and less attracted by aid. Still, some students did not respond rationally when evaluating the value of loans and work-study programs versus grants. Marketing also appears to make a difference. Calling a grant a scholarship, or front-loading it by making it worth more in a student's freshman year, increased a college's attractiveness.

This behavior can be explained either by credit constraints or by lack of sophistication. The authors believe that lack of sophistication is the culprit. They report that their parent surveys were rife with complaints about the complexity of the aid process, and the demands for records that parents said "they did not expect to need and cannot readily assemble." Though Avery and Hoxby caution against too much reliance on anecdotal evidence, they "think that it is revealing that words like 'bewildering' and 'confusing' are the modal words" in parents' comments on the aid process.

— Linda Gorman

Big Firms Lose Value in Acquisitions

Mergers and acquisitions destroy shareholder wealth in the acquiring companies. New research from the NBER shows that, over the past 20 years, U.S. takeovers have led to losses of more than $200 billion for shareholders. However, this result is dominated by the big losses experienced by shareholders in big companies. Small companies that make acquisitions create value for their shareholders.

In **Do Shareholders of Acquiring Firms Gain from Acquisitions?** (NBER Working Paper No. 9523), co-authors **Sara Moeller**, **Frederik Schlingemann**, and **Rene Stulz** calculate that takeovers by large firms have destroyed $226 billion of shareholder wealth over 20 years. In contrast, small firms, defined as companies whose market capitalization is equivalent to the smallest 25 percent of companies listed on the NYSE in each year, created $8 billion of shareholder wealth through their transactions.

The researchers use a sample of 12,023 transactions, taking the data from the Securities Data Company's U.S Mergers and Acquisitions database. They limit the sample to completed transactions worth at least $1million. Of the 12,023 transactions, 5,583 involved the acquisition of private firms, 3,798 involved the acquisition of subsidiaries, and 2,642 involved the acquisition of public firms.

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The researchers concentrate on the three days around the announcement of an acquisition. They estimate the abnormal share return accruing to acquiring shareholders on their holdings measured as the share return relative to a market benchmark, the abnormal change in the value of the acquiring firm per dollar spent on the acquisition, and the sum of the abnormal changes in value of acquiring firms across all acquisitions.

In the aggregate, the abnormal return on the acquisition of a public firm is negative 1.02 percent. Shareholders lose 5.9 cents per dollar spent on acquiring a public firm. The aggregate losses on acquiring public firms were $257 billion in the past 20 years. Purchases of private firms provide better returns than purchases of public companies. On average, acquiring firm shareholders gained from the purchase of private firms, although in the aggregate shareholders lose because of big losses experienced during the merger wave of the late 1990s. It is only in acquiring subsidiaries, as opposed to whole companies, that returns are positive for acquiring shareholders in the aggregate.

Previous studies often have concentrated on whether acquisitions are paid for in cash or in stock, typically showing better returns in cash deals. Moeller, Schlingemann, and Stulz show that cash deals are associated with superior returns for acquirers as compared with equity deals only for acquisitions of public firms. They also show that controlling for financing, and for the question of whether it is a public company, a private company, or a subsidiary that is being bought, returns are still better for shareholders in smaller firms. An acquisition made by a small firm — regardless of funding and the nature of the target — has an announcement return that is 1.55 percent higher than a comparable acquisition made by a large firm.

The overall results are dominated by acquisitions made by large firms, and in particular the big value-destroying deals announced during the merger boom of the late 1990s. If the period 1994-2001 is excluded from the sample, the total dollar amount of gains/losses on acquisitions is still negative, but the sum of losses is only $10.4 billion. More than 87 percent of the money spent on acquisitions in the sample comes after 1993, accounting for 95 percent of the losses that also occurred after 1993.

Because small firms make so many acquisitions — accounting for half of the total acquisitions of private companies and a quarter of the acquisitions of private companies — abnormal returns can be positive for acquisitions even though acquisitions appear to destroy wealth as a whole. Results that put the same weight on acquisitions by small firms and large firms may be poorly suited for analyses of the social benefits of acquisitions, the researchers suggest.

Part of the explanation for why big companies make value-destroying acquisitions may be the "agency problem" that results from the separation of ownership and control in big companies with dispersed shareholders. It is also possible that when large firms make acquisitions, they signal that they have exhausted internal growth opportunities. In that case, even when the takeover is a project with positive net present value, a negative return may be observed when looking at the share price following the transaction.

Yet, even if the abnormal returns incorporate information other than an estimate of the net present value of the acquisition, this information differs across small and large companies. Small firms make acquisitions that, when announced, have an abnormal return that is systematically higher than acquisitions by large firms.

— Andrew Balls

Responses to Health Insurance Premium Increases

As insurance premiums rise, the use of flexible benefit plans, in which employees explicitly choose how to allocate compensation between cash and various benefits, has been increasing in the United States. Currently, approximately 13 percent of workers in medium and large firms are covered by such plans.

In **The Reallocation of Compensation In Response to Health Insurance Premium Increases** (NBER Working Paper No. 9540), authors **Dana Goldman**, **Neeraj Sood**, and **Arleen Leibowitz** investigate how increases in health insurance premiums affect workers' decisions to reallocate their compensation. They find that a $1 increase in health insurance premiums leads to a 52-cent increase in employee expenditures on health insurance. Employees finance approximately two-thirds of that increase through reduced wages and one-third through reductions in other benefits, such as retirement, life insurance, and disability insurance. Rising health insurance prices not only reduce employee resources for current consumption, but also lower insurance purchases against a variety of risks, potentially leaving employees vulnerable to health, mortality, disability and other significant risks in the long term.

"A $1 increase in health insurance premiums leads to a 52-cent increase in employee expenditures on health insurance."

The authors use a dataset consisting of three years (1989-91) of earnings and benefit information for employees under age 65 at a single U.S. company. While the data is ten years old, the period was characterized by rapidly rising health insurance premiums, a situation that is still true today. The 7,896 employees in the sample were geographically dispersed over 47 states. All are single employees, since no information was available on health insurance options available to spouses.

Employees at the firm were given a menu of benefit options and a completely discretionary benefits credit allocation that depended on salary and job tenure. Employees also had the option of cashing out most of their credit allocation. The authors aggregated benefits into three broad categories: wage, health insurance, and other benefits.

The 52-cent increase in health insurance expenditures was financed by a 37-cent reduction in take home wages and a 15-cent reduction in other benefits. Put differently, each 100 percent increase in the price of health insurance leads to a 50 percent increase in employee health insurance expenditures, a 1 percent decrease in take home pay, and a 28 percent decrease in other benefits.

Choosing to absorb health insurance premium increases through reducing take-home pay might reflect the advantage to employees of retaining non-taxed compensation. This suggests that within a flexible benefits plan, employers who trade off wage increases for increases in health insurance premiums are reallocating compensation in a way that workers have shown they prefer.

— Les Picker

Capital Account Liberalization, The Cost of Capital, and Economic Growth

Capital account liberalization policies have fallen from favor in recent years. Initially they were touted as a way to permit financial resources to flow from capital abundant countries, where expected returns on investment are low, to capital-scarce countries, where expected returns are high. The inflow of capital was expected to reduce an emerging economy's cost of capital, to increase investment, and to raise output. However, opponents of capital account liberalization have argued that it does not generate greater efficiency and, in fact, invites speculative money flows, thus increasing the likelihood of financial crises with no positive effects on investment and output.

In **Capital Account Liberalization, The Cost of Capital, and Economic Growth** (NBER Working Paper No. 9488), author **Peter Blair Henry** finds that the initial predictions about capital account liberalization hold true in actual practice. Three things happen when emerging economies open their stock markets to foreign investors. First, the aggregate dividend yield falls by an average of 240 basis points. Second, the growth rate of the capital stock increases by an average of 1.1 percentage points per year. Third, the growth rate of output per worker rises by 2.3 percentage points per year.

According to the author, because the cost of capital falls, investment soars, and the growth rate of output per worker increases when countries liberalize the stock market, the recently popular view that capital account liberalization brings no real benefits seems untenable.

In the late 1980s and early 1990s a number of developing countries liberalized their stock markets, opening them to foreign investors for the first time. The author uses these 18 countries as the basis for his research. The approximate 240 basis point decline in dividend yield reflects an average of yield of 5 percent in the five years prior to liberalization versus an average yield of 2.6 percent in the five years following liberalization. The growth of the capital stock rose from an average of 5.4 percent in the pre-liberalization period to 6.5 percent in the post-liberalization period. Finally, the output per worker rose from an average of 1.4 percent pre-liberalization to 3.7 percent post-liberalization.

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Henry points to several issues regarding capital account liberalization that we need to understand better, such as whether the policy causes financial crises when adopted. He suggests that moving from aggregate-level data to firm-level data should enhance our general understanding of the process by which the effects of liberalization are transmitted to the real economy.

— Les Picker

Teacher Certification Raises Salaries but not Quality

As of 1999, 43 states required prospective teachers to pass a certification test. Proponents of testing say that it establishes minimum quality standards. Economists have long been skeptical of such claims, pointing out that there is little evidence that licensing requirements create benefits for consumers and quite a bit of evidence to suggest that they create barriers to entry that raise pay rates in the professions that they protect.

In **Does Teacher Testing Raise Teacher Quality? Evidence From State Certification Requirements** (NBER Working Paper No. 9545), co-authors **Joshua Angrist** and **Jonathan Guryan** estimate the effect of state teacher testing requirements on teacher wages and teacher quality. Preparation for teacher certification tests is costly. If private sector jobs with similar wages but less costly entry requirements are readily available, then the best applicants may choose those over public school teaching, lowering the average quality of the new teacher pool. Using data from the Schools and Staffing Survey, the authors find that state-mandated testing for teachers increases their wages by 3 to 5 percent but has no observable effect on their quality, as measured by the average SAT score of an individual teacher's undergraduate institution.

> "… state-mandated testing for teachers increases their wages by 3 to 5 percent but has no observable effect on their quality."

Consistent with their finding of no quality benefit from testing teachers, the authors point out that "while occupational licensing requirements are widespread and apparently increasing, most skilled workers in the private sector are still not subject to formal licensing or testing."

— Linda Gorman