

# UNIONS CAN INCREASE EFFICIENCY

## Ten Examples



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## UNIONS CAN INCREASE EFFICIENCY: TEN EXAMPLES

### ILEPI Economic Commentary #25

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#### INTRODUCTION

Millions of workers in different countries and in different times have sought to organize into unions. Whether or not a government's laws facilitate organizing, there has been widespread demand by individuals for labor unions— as an expression of their freedom of association. In spite of higher costs that may be related to unions, workers have fought for the right to organize to tilt the balance of power from employers to workers, to provide due process procedures, and to ensure that workers earn an adequate living to support a family. Unions do not form out of thin air; they arise when individuals decide to come together to collectively address market inefficiencies and social problems.

These private actions of individuals make it clear that unions have some place in benefiting the economy. While the *costs* of unions are often brought up, politicians and the voting public must also consider the *benefits* of unions. This Illinois Economic Policy Institute (ILEPI) Economic Commentary investigates how unions can increase economic efficiency. The report outlines ten examples of unions positively improving the economy for the better:

1. Union workers earn higher wages and increase consumer demand;
2. Unions reduce socially inefficient levels of income inequality;
3. Union workers receive less government assistance;
4. Union workers contribute more in income taxes;
5. Unions increase productivity in construction, manufacturing, and education;
6. Unions reduce employee turnover rates;
7. Unions fight against child labor and for public education;
8. Unions fight against all forms of discrimination;
9. Unions collectively bargain toward efficient contracts; and
10. Unions fight against the “monopsony” power of owners, especially in sports.

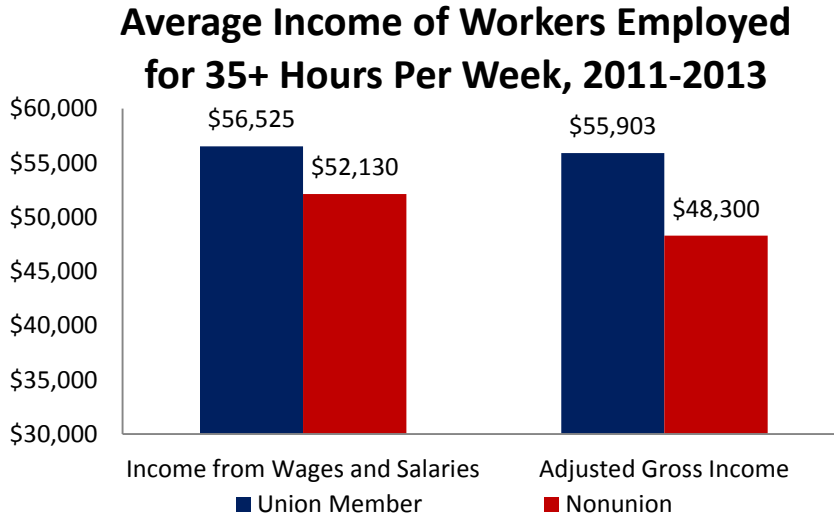
#### 1. Union workers earn higher wages and increase consumer demand

There are many personal benefits to being a union member. The most obvious is that unions raise worker wages and increase labor's share of the economic “pie.” In the early 1990s, two leading labor economists found that unions raise worker wages by between 10 and 17 percent (Freeman, 1991; Card, 1992). This union wage premium has held over time (Hirsch & Macpherson, 2006; Schmitt, 2008; Bruno et al., 2015). Figure 1 displays average incomes from wages and salaries and average adjusted gross income for full-time workers laboring at least 35 hours per week, by union status. Full-time union workers earn \$56,525 per year, \$4,395 more than their nonunion counterparts (\$52,130). After itemized deductions and exemptions, the average full-time union worker earns \$7,603 more than the average nonunion worker (\$55,903 to \$48,300). The union premium in Figure 1 ranges from 8.4 percent by wages and salaries to 15.7 percent by adjusted gross income.

While the personal benefit to joining a labor union has held over time, the share of workers belonging to a union has steadily declined. Figure 2 compares the national union membership rate with labor's share of gross domestic product, or GDP (IPUMS, 2014; BEA, 2014). Labor's share of GDP is the

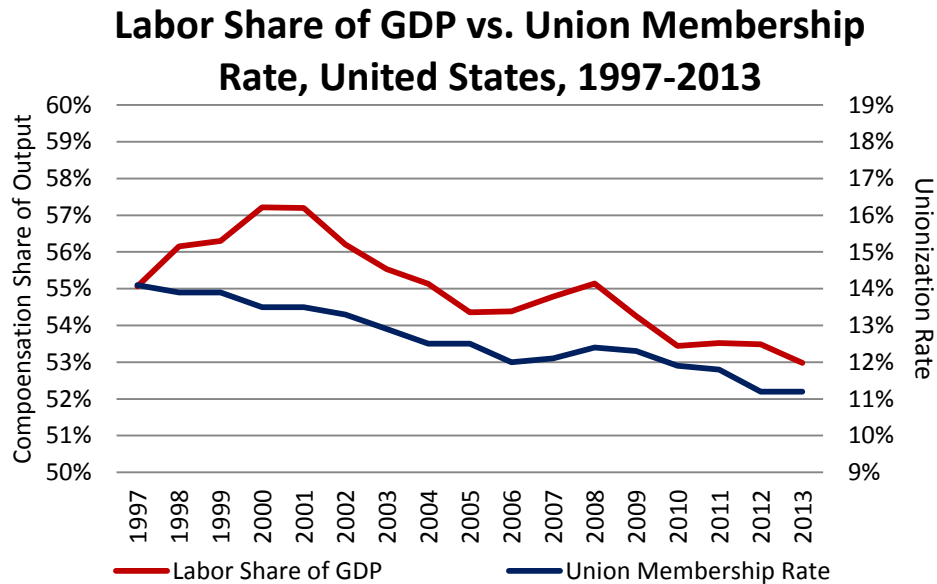
sum of all wages, salaries, employer contributions for pension and insurance funds, and government social insurance divided by total economic output. In 1997, labor “captured” 55.1 percent of the economic pie and union members comprised 14.1 percent of the workforce. Despite a peak in 2000 where labor’s share of GDP was 57.2 percent, both have tended to fall in tandem. By 2013, labor captured only 53.0 percent of the economic pie and union membership has fallen to 11.2 percent. The correlation coefficient between the two trends is a high 0.85, meaning that there is a very strong relationship between declining unionization and declining labor share of the economy. Less unionization means that more of the economic pie is being transferred from workers to owners.

Figure 1: Incomes of Full-Time Union Workers and Full-Time Nonunion Workers, 2011-2013



\*Source(s): Current Population Survey – Annual Social and Economic Supplement (ASEC) for 2011-2013. Estimates are adjusted for inflation. “Union Member” and “Nonunion” estimates are for workers employed for at least 35 hours per week.

Figure 2: Employee Compensation (Labor) Share of GDP and Union Membership Rate, 1997-2013



\*Source(s): Current Population Survey – Outgoing Rotation Groups (ORG) and Bureau of Economic Analysis for 1997-2013.

Although better wages translates into higher labor costs for employers, the economic benefit of increasing consumer demand for workers is significant. Economic research shows that consumer spending is “a major generator of employment,” accounting for 61 percent of total employment in the economy (Toossi, 2002). Full-time union workers— who have higher incomes on average— spend more money in the economy, creating jobs which offset the potential negative effects that unions have on total employment.

## **2. Unions reduce socially inefficient levels of income inequality**

Unions raise but also *compress* wages. In 2008, the union hourly wage premium was 11.9 percent for the average worker nationwide (Schmitt, 2008). The union wage premium was 13.7 percent for the median worker in America, but the wage effect was even larger for workers earning below the median, ranging from 15.0 to 20.6 percent. Accordingly, “unions benefit lower- and middle-wage workers most,” helping to reduce inequality (Schmitt, 2008). Wage dispersion has been found to be 25 percent lower in unionized firms than in nonunion workplaces. As a result, unionization reduces wage inequality in the national economy by as much as 10 percent (Freeman, 1996). This reduction in income inequality tends to improve the economy, because working and middle-class families proportionately spend larger shares of their incomes back into the economy (Dynan et al., 2004; Aaronson et al., 2012).

Conversely, the gradual decline in labor union membership has been a significant contributor to the growth in income inequality. A comprehensive multi-nation study by the International Labour Organization finds that “a growing number of studies attribute the rise in wage inequality in these countries to the decline in union density and influence” (ILO, 2015). The increase in inequality for men was caused mainly by shrinking unionization (Gordon & Dew-Becker, 2008). Western and Rosenfeld (2011) have also estimated that, because unions equalize the wage distribution by instituting norms for fair pay, the decline in unionization rates fully explains a fifth to a third of the growth in inequality in America. Finally, research by the International Monetary Fund (IMF) has found that “[t]he decline in unionization is strongly associated with the rise of income shares at the top,” “is associated with less redistribution of income,” and explains about half of the rise in income inequality (Jaumotte & Osorio Buitron, 2015). Morgan Stanley notes that, “as income inequality increases, demand across income groups grows more uneven, negatively impacting consumption” and hurting the economy (Zentner & Campbell, 2014).

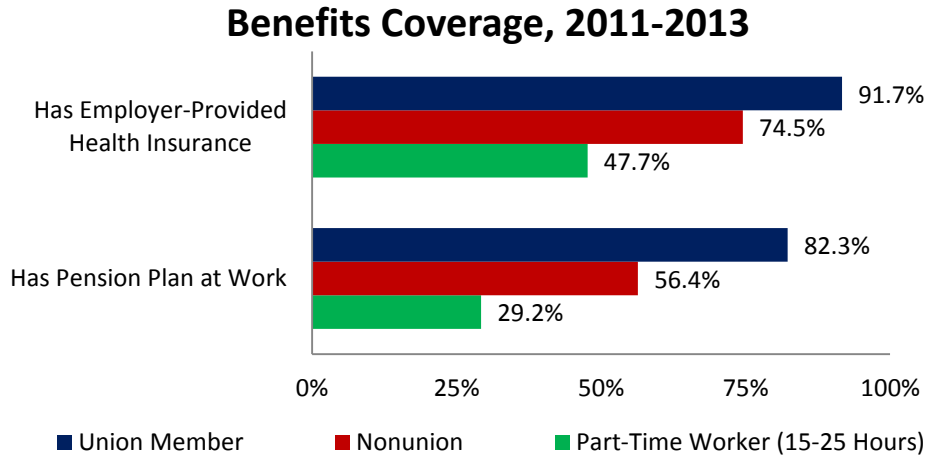
## **3. Union workers receive less government assistance**

The Bureau of Labor Statistics provides an Annual Social and Economic Supplement to the *Current Population Survey*. The supplement investigates income, poverty, health insurance coverage, taxes, and government assistance for the population. Figures 3, 4, and 5 present information for union workers that work at least 35 hours, nonunion employees that work at least 35 hours, and all part-time workers (including union and nonunion employees) that work between 15 and 25 hours per week. Nationwide, the number of full-time union workers (13.11 million) is roughly the same as the number of part-time employees working 15 to 25 hours (13.56 million).

Full-time union workers are significantly more likely to have employer-provided health insurance and be covered by a pension plan at work (Figure 3). The share of workers covered by an employer-provided health insurance plan is 91.7 percent for full-time union members, 17.2 percentage points higher than for full-time nonunion workers (74.5 percent) and nearly double the rate for part-time workers (47.7 percent). Similarly, the share of workers covered by a retirement plan at work is 82.3 percent for full-time union members. This is 25.9 percentage points higher than for full-time nonunion workers (56.4 percent)

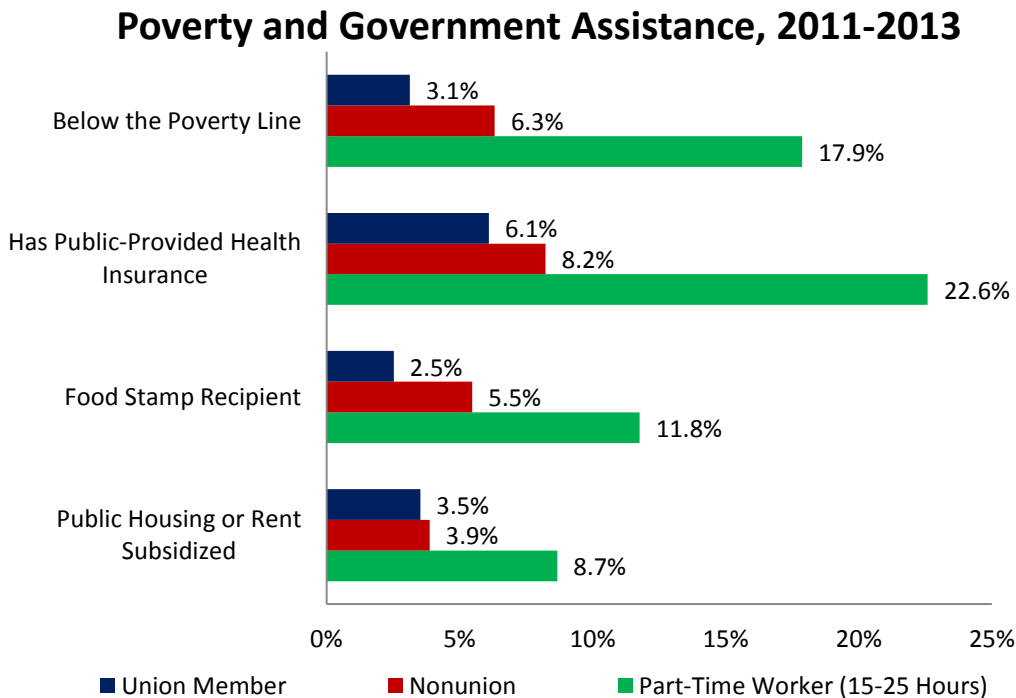
and 53.1 percentage points higher than the rate for part-time workers (29.2 percent). Union workers therefore are less likely to rely on government programs for security when they exit the labor force into retirement or when they suffer an illness or injury.

*Figure 3: Health Insurance and Pension or Retirement Coverage by Type of Worker, 2011-2013*



*\*Source(s): Current Population Survey – Annual Social and Economic Supplement (ASEC) for 2011-2013. Estimates are adjusted for inflation. “Union Member” and “Nonunion” estimates are for workers employed for at least 35 hours per week.*

*Figure 4: Poverty Status and Reliance on Government Assistance by Type of Worker, 2011-2013*



*\*Source(s): Current Population Survey – Annual Social and Economic Supplement (ASEC) for 2011-2013. Estimates are adjusted for inflation. “Union Member” and “Nonunion” estimates are for workers employed for at least 35 hours per week.*

Figure 4 reinforces this finding. By raising worker wages and reducing income inequality, unions reduce the number of people in poverty. Just 3.1 percent of full-time union workers live below the official poverty line compared to 6.3 percent of full-time nonunion workers and 17.9 percent of part-time workers. Dependency on publicly-provided health insurance programs, such as Medicaid, is lower for full-time union workers (6.1 percent) than for full-time nonunion workers (8.2 percent), and is significantly below the rate for part-time workers (22.6 percent). Approximately 2.5 percent of full-time union workers receive food stamps compared to comparable rates of 5.5 percent for full-time nonunion workers and 11.8 percent for part-time workers. Additionally, an estimated 3.5 percent of full-time union workers reside in a public housing unit or a rent-subsidized unit. By contrast, 5.5 percent of full-time nonunion workers and 8.7 percent of part-time workers live in publicly-assisted housing.

Figure 5 presents additional dollar value information on government assistance. Over recent decades, government assistance has shifted from traditional welfare programs to an indirect assistance model that aims to encourage employment, especially through the Earned Income Tax Credit (EITC). The average full-time union worker receives \$115.95 in EITC tax assistance from the federal government and just \$5.12 in welfare assistance. By contrast, the average full-time nonunion worker receives \$240.24 in EITC assistance and a marginally higher \$6.15 in welfare payments. Federal government spending on full-time nonunion workers is nearly double the amount expended on full-time union workers. With an average of \$328.38 received in EITC value and \$27.57 received in welfare payments, government assistance to part-time workers is nearly triple the amount on full-time union workers. In total, reliance on the EITC and on traditional welfare annually costs taxpayers \$1.6 billion for full-time union workers and \$21.2 billion for full-time nonunion workers.

*Figure 5: Average Annual Spending on Government Assistance by Type of Worker, 2011-2013*

Type of Worker (National Economy)	Average EITC Value	Average Welfare	Number of Workers	Total EITC + Welfare Spending
Full-Time Union Worker	\$113.95	\$5.12	13,106,682	\$1.56 billion
Full-Time Nonunion Worker	\$240.24	\$6.15	86,093,279	\$21.21 billion
Part-Time (15-25 Hours) Worker	\$328.38	\$27.57	13,558,782	\$4.83 billion

*\*Source(s): Current Population Survey – Annual Social and Economic Supplement (ASEC) for 2011-2013. Estimates are adjusted for inflation.*

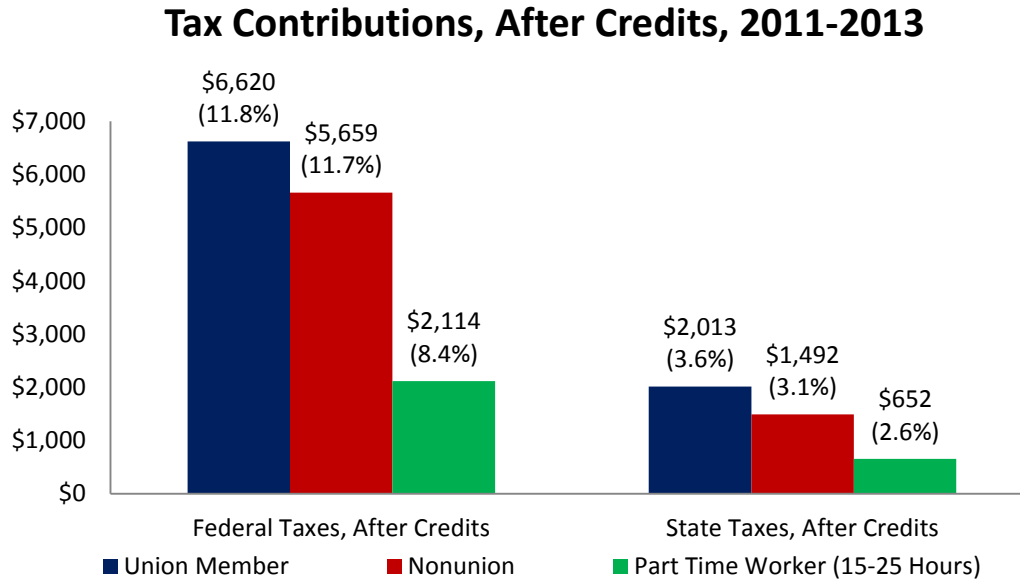
The results are fairly consistent. Compared to full-time union workers, full-time nonunion workers are about twice as likely to rely on government assistance programs and part-time workers are about three to five times as likely to rely on government assistance programs. By decreasing reliance on government assistance programs, labor unions reduce any distortionary effects of government intervention into the market and consequently increase economic efficiency.

#### **4. Union workers contribute more in income taxes**

Despite receiving less government assistance than nonunion and part-time workers, full-time union members contribute significantly more in state and federal income taxes. Figure 6 again displays data from the Annual Social and Economic Supplement to the *Current Population Survey*. Estimated average tax contributions are expressed as total values and as an effective tax rate— which is a worker’s estimated tax liability after credits and deductions divided by the adjusted gross income (after credits and deductions). The data reveal that the average full-time union worker contributes \$6,620 in federal income taxes and \$2,013 in state income taxes per year. The comparable taxes paid by the average full-time nonunion worker

are \$5,659 in federal income taxes and \$1,492 in state income taxes. Thus, union workers contribute nearly \$1,000 more in federal income taxes per year and over \$500 more in state income taxes per year. Taxes paid by a full-time union worker are also about triple the contributions of a part-time employee working 15 to 25 hours per week. By contributing more in income tax revenues but receiving less in government assistance due to higher wages, full-time union members are subsidizing the low-wage employment model of nonunion employers. Declining union membership means less tax revenues, more workers relying on government assistance programs, and lost economic efficiency.

Figure 6: Average Federal and State Income Taxes Contributed by Type of Worker, 2011-2013



\*Source(s): Current Population Survey – Annual Social and Economic Supplement (ASEC) for 2011-2013. Estimates are adjusted for inflation. “Union Member” and “Nonunion” estimates are for workers employed for at least 35 hours per week.

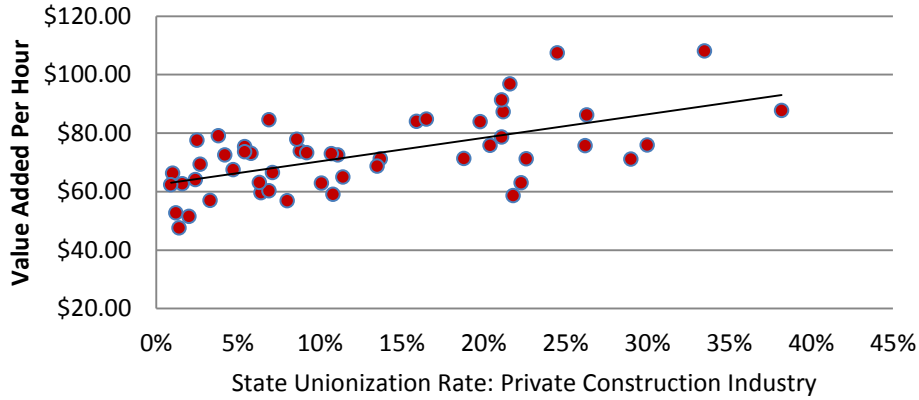
## 5. Unions increase productivity in construction, manufacturing, and education

Recently released data from the U.S. Census Bureau’s *Economic Census of Construction* illustrates the strongly positive relationship between unionization and productivity in the construction industry. Across the country, a one percentage-point increase in a state’s construction unionization rate is found to boost worker productivity by \$0.805 per hour per worker (Figure 7). Illinois had the highest construction industry unionization in 2012, at 38.2 percent compared to the national average of 13.2 percent. However, blue-collar construction workers in Illinois added \$87.72 in value per hour worked to the state’s economy, the 5th-highest productivity in the nation. This \$87.72 per hour is significantly higher (16.7 percent) than the national average of \$75.15 per hour.<sup>1</sup>

<sup>1</sup> One criticism that has been levied against this analysis is that the “value added” metric of estimating a worker’s contribution to economic output includes compensation, and paying higher wages artificially inflates the estimate. However, this is a misunderstanding of distributive economics. Suppose two workers are employed by a manufacturer to make toys that sell for \$10. Both workers make 5 toys per hour, thus adding \$50 of value per hour to the economy. If one worker gets paid \$30 per hour while the other makes \$20 an hour, does that change the “value added?” No, both workers are equally productive. The manufacturer simply earns a higher profit margin from the second worker, but output is the same. Put differently, value added is the economic “pie,” while employee compensation is a slice of the pie.

Figure 7: Hourly Productivity and Unionization Rate of Private Construction Workers, by State, 2012

### Value Added Per Construction Worker Hour vs. Industry Unionization, By State, 2012



$$\text{Value Added Per Hour} = \$0.805 * (\text{Unionization Rate}) + \$62.292$$

Correlation: 0.610

\*Source(s): Current Population Survey – Outgoing Rotation Groups (ORG) and Economic Census of Construction for 2012.

The linear relationship between unionization and worker productivity indicates that, if the private construction industry unionization rate were to fall from 38.2 percent to 0 percent, worker productivity would decline from \$87.72 per hour per worker to between \$56.97 and \$62.29 per hour per worker. This equates to a loss of \$7.1 billion to \$8.6 billion in economic output over the 279.1 million hours worked by construction workers across Illinois. This means that construction craft unions currently add between \$7 billion and \$9 billion to the Illinois economy. The added productivity is because unionized construction workers are better trained and are less likely to suffer workplace injuries on average.

This data aligns with previous economic research which shows that union membership increases worker productivity. In a meta-analysis of 53 academic studies covering a total of 47,469 workers, Doucouliagos and Laroche (2004) find that American unions raise productivity in the manufacturing sector by 10 percent and in the education sector by 7 percent. Additionally, Allen (1984) has found that union productivity in the construction sector is 17 to 22 percent higher than nonunion output. The high degree of unionization is one of the main reasons why road and bridge construction workers across the Midwest are so productive (Manzo & Bruno, 2015).

## 6. Unions reduce employee turnover rates

The late economist Albert Rees, in *The Economics of Trade Unions*, notes that “the most general way in which unions raise productivity is to reduce turnover” (Rees, 1989). Unions institute democratic workplaces that give workers a voice and standardize safety procedures. Through effective grievance procedures, unions protect workers against both workplace conflict and the abuses of managerial authority. On net, the result is a workforce with high morale, so workers do not want to quit. Lower turnover fosters a more experienced workforce and cuts down on training costs, increasing employee productivity. Rees details industry case studies that “report higher productivity in union than in nonunion plants” (Rees, 1989). Because unionized employers suffer less turnover, they are incentivized to invest in employee training and to take a “high road” approach to human resources (Voos, 2009).



## **7. Unions fight against child labor and for public education**

Labor unions were integral in the movement to end child labor and install compulsory education. Unions in New England came out against child labor as early as 1832. In its first national convention in 1881, the American Federation of Labor passed a resolution calling on states to ban children under 14 years old from working. By 1938, pressure from labor organizations during the Great Depression helped to pass the Fair Labor Standards Act, which regulated minimum ages of employment for children under federal law (CLPEP, 2015).

Economic research has found that, without policy intervention, there is “an inefficiently high level of child labor because each generation discounts the value of the other generations’ schooling” (Tsuyuhara, 2014). More children would have continued to work without the Fair Labor Standards Act, which would have reduced the economic welfare of future generations. Furthermore, child labor has been found to negatively influence the accumulation of human capital, which in turn significantly reduces GDP per capita (Hussain & Maskus, 2003). Increases in adult education have powerful impacts on reducing child labor, as adults with more education earn enough to absorb reductions in income associated with removing children from the workforce (Hussain & Maskus, 2003). An additional year of education on average in the population also raises a country’s economic growth rate by 1.2 percentage points (Barro, 1997). Thus, by working to reduce child labor and to increase funding of public education, unions have increased national economic productivity over the long run.

## **8. Unions fight against all forms of discrimination**

A very simple conclusion from economic theory is that “[d]iscrimination is not profitable” (Borjas, 2010). Employers who discriminate forgo higher profits because they hire workers based on their prejudices rather than on an objective cost-benefit analysis, which results in hiring the wrong mix and wrong number of workers. Thus, by fighting against racial and gender discrimination, labor unions have helped to increase economic efficiency.

Speaking at the AFL-CIO Fourth Constitutional Convention, Dr. Martin Luther King, Jr. (King Center, 2011) articulated the duality of interests between unions and minorities:

“[African Americans’] needs are identical with labor’s needs: decent wages, fair working conditions, livable housing, old-age security, health and welfare measures, conditions in which families can grow, have education for their children, and respect in the community.”

The shared goals led union members to play a critical role in the civil rights movement. Strikes and labor marches figured prominently in the battle against race discrimination. Often forgotten in the history books is that Dr. King was assassinated while supporting striking sanitation workers in Memphis.

In addition, prior to its merger with the American Federation of Labor (AFL), the Congress of Industrial Organizations (CIO) helped promote fair employment legislation in states across the country (Collins, 2003). Historian Steve Babson (1999) writes that, “on balance, labor had done more in 1964 than any other majority-white institution to ensure passage of the [Civil Rights Act].” Economic research has demonstrated that early fair employment laws in states increased incomes for African-American men by between 5 and 7 percent and for African-American women by between 12 and 13 percent (Collins, 2003). Collins notes that, “from a variety of perspectives, black women appear to have benefited more from the laws than did black men.”

Today, labor unions remain at the forefront of anti-discrimination legislation. Unions continue to partner with civil rights groups, women’s organizations and equal pay supporters, and the LGBTQ community to ensure fair pay, job safety, and freedom from employment discrimination. By helping to eliminate wage gaps and discriminatory hiring practices, unions have helped to increase profits and improve economic efficiency.

### **9. Unions collectively bargain toward efficient contracts**

In the collective bargaining process, both workers and employers come to the table wanting something. Workers may want higher wages, better working conditions, better health and retirement plans, more vacation time, or other perks provided by the company. Employers may want lower costs, lax workplace rules, and increased flexibility in hiring and firing employees. But the main item that employers “want” is labor. When a contract is agreed upon, neither side leaves the table entirely happy, having to exchange demands with the other side to a level that is acceptable to both parties.

This helps firms and unions arrive at an agreement in which unionized firms hire the efficient level of employment. The give-and-take process exhausts all possible bargaining outcomes between the employer and the union, and the employer hires “the ‘right’ number of workers so that the union does not distort the allocation of labor, and there is no deadweight loss to the national economy” (Borjas, 2010). One study supporting this theory of efficient contracts comes from an analysis of stock market value. A one dollar unexpected increase in the share of the economic pie going to union workers reduces shareholders’ wealth by exactly one dollar (Abowd, 1989). If unions caused economic inefficiency, a one dollar increase in union compensation would have reduced shareholders’ wealth by more than one dollar, which would imply that the company lost total value. Instead, while there is “a dollar-for-dollar tradeoff” between workers and firms, the economic pie remains the same size. Unions do not reduce economic output; they just alter the division of the income to an efficient allocation between workers and employers.

### **10. Unions fight against the “monopsony” power of owners, especially in sports**

In economics, a monopoly exists when there is only one seller of a good or a product. Similarly, a *monopsony* exists when there is only one employer hiring workers in a market— such as a coal mine in a remote location. Because they are the only game in town, monopsonies are able to drive down wages below the competitive level. When workers are organized in a union, however, they counter this downward pressure by the employer and push earnings back to the free-market level.

The clearest example of this increase in efficiency is in sports labor markets. An extraordinarily talented football player currently only has one labor market in which he can enter: the National Football League. While other leagues start up and flame out in America and abroad, a potential football player’s employment options are limited (Leeds & Allmen, 2008). The same is true for players in the National Basketball Association, National Hockey League, Major League Baseball, and Major League Soccer.

Labor unions in sports increase efficiency by fighting for free-market wages. In response to an unrestricted system in which baseball players went from team to team— often in the middle of a season— baseball owners introduced the “reserve clause” in 1889 to lower player costs. Reserve clauses restricted players from selling their services to competing teams. With no alternative employer able to bid for a player’s services, the reserve clause drove down player salaries. Owners, acting in their own interests, destroyed the free market. Players had to accept these restrictions on freedom of movement and salaries

because there was no other labor market for their services. Disempowered, players organized into labor unions and fought for free agency (Leeds & Allmen, 2008).

The effort to enact free agency took years. A 1922 U.S. Supreme Court case found that the MLB was not subject to federal antitrust law, curbing players' ability to fight the reserve clause in court. The high court again sided with owners fifty years later in 1972. Then, in 1975, pitcher Jim "Catfish" Hunter became a free agent when an independent arbiter ruled in his favor. The bidding war for Hunter's services "became a cultural phenomenon," and he eventually moved from the Oakland Athletics to the New York Yankees (Gilbert, 2013). The league and players' union finally agreed to a new system of veteran free agency in the summer of 1976. Today, all five major American sports have some form of free agency, allowing the skilled players who risk their health— and who actually attract fans— to earn what they are worth.

But owners still fight against an open free-market system. A limited version of free agency in MLS has only recently been introduced in the 2015 collective bargaining agreement for players who are at least 28 years old and have at least eight years of experience (Sandomir, 2015). In the NFL, the "franchise tag" is a weakened reserve clause, restricting player movement and lowering salaries of superstar players, and a recent wage scale essentially eliminates the bargaining power of individual rookies (Brandt, 2014). Disputes between the NBA and players' union center on the issue of whether workers should be paid according to a relatively fixed scale (supported by the owners) or according to the free market (supported by the players) (Leeds & Allmen, 2008).

In 2015, the most economically inefficient sports labor market is the National Collegiate Athletic Association (NCAA). Although the tasks of a "student-athlete" and the university's control over the player check off every box required to be classified as an employee-employer relationship (Ohr, 2014), collegiate athletes entertain fans for far below their market value as a result of NCAA price-fixing. Players are only compensated for tuition, room and board, and other school-related expenditures. However, recent estimates suggest that an average college basketball player is actually worth \$375,000 per year and an average college football player is actually worth \$178,000 per year (McGuire, 2014), and more for big-time sports programs (Gaines, 2015). In professional sports, unions have helped to increase efficiency by improving parity and raising salaries toward the competitive level. The movement to form a collegiate players' union, such as the College Athletes Players Association (CAPA), could provide similar economic benefits (Schwarz, 2014). The movement experienced a setback in August 2015, as the National Labor Relations Board dismissed a petition by Northwestern University football players seeking to unionize, stating that it "would not serve to promote stability in labor relations" (NLRB, 2015).

## Conclusion

Labor unions are imperfect, but they are also far from the distortionary institutions that shrink the economy and hurt job growth, as characterized by some commentators and politicians. Private, public, and nonprofit organizations can all increase and decrease economic efficiency— institutions are not inherently economically good or bad. The same is true of labor unions. While there are potential *costs* of unions, politicians and the voting public need to balance those concerns out by also considering the economic *benefits* of unions.

This Economic Commentary has investigated ten examples of how unions can— and do— increase economic efficiency. Unions still play a significant role in the American economy. Ultimately, unions boost consumer demand, reduce reliance on government assistance programs, support tax revenues, increase productivity, fight against social inefficiencies, and counter the power of big businesses. In evaluating the pros and cons of labor unions in the modern economy, these benefits must be considered.

## Sources

- Aaronson, Daniel, Sumit Agarwal, and Eric French. (2012). "The Spending and Debt Response to Minimum Wage Hikes." *American Economic Review* 102(7): 3111-39.
- Abowd, John. (1989). "The Effect of Wage Bargains on the Stock Market Value of the Firm." *American Economic Review* 79: 774-800.
- Allen, Steven. (1984). "Unionized Construction Workers Are More Productive." *Quarterly Journal of Economics* 99. North Carolina State University.
- Babson, Steve. (1999). *The Unfinished Struggle: Turning Points in American Labor, 1877-Present*. New York: Rowman & Littlefield Publishers, Inc. Book: 113-154.
- Barro, Robert. (1997). *Determinants of Economic Growth: A Cross-Country Study*. National Bureau of Economic Research.
- Borjas, George. (2010). *Labor Economics*. Fifth Edition. New York: McGraw-Hill/Irwin. Book: 365-457.
- Brandt, Andrew. (2014). "The New Age of Rookie Contract Negotiations." *Sports Illustrated*.
- Bruno, Robert, Frank Manzo IV, and Virginia Parks. (2015). *State of the Unions 2015: A Profile of Unionization in Chicago, in Illinois, and in America*. Illinois Economic Policy Institute; School of Labor and Employment Relations, University of Illinois at Urbana-Champaign; School of Social Service Administration, University of Chicago.
- Bureau of Economic Analysis (BEA). (2014). "National Data: GDP & Personal Income." U.S. Department of Commerce.
- Card, David. (1992). *The Effect of Unions on the Distribution of Wages: Redistribution or Relabelling?* National Bureau of Economic Research. Department of Economics, Princeton University.
- Census Bureau (Census). (2012). *2012 Economic Census of Construction*.
- Center for Economic and Policy Research (CEPR). (2013). *1997-2013 Current Population Survey Outgoing Rotation Groups: CPS ORG Uniform Extracts, Version 2.0.1*. Washington, DC.
- Child Labor Public Education Project (CLPEP). (2015). "Child Labor in U.S. History."
- Collins, William. (2003). The Labor Market Impact of State-Level Anti-Discrimination Laws, 1940-1960. *Industrial and Labor Relations Review* 56(2): 244-272.
- Doucouliagos, Hristos and T.D. Stanley (2009). *Publication Selection Bias in Minimum-Wage Research? A Meta Regression Analysis*. Deakin University Australia; Hendrix College.

- Dynan, Karen, Jonathan Skinner, and Stephen Zeldes. (2004). "Do the Rich Save More?" *Journal of Political Economy*. 112(2). Federal Reserve Board; Dartmouth College; Columbia University.
- Freeman, Richard. (1991). "Longitudinal Analysis of the Effects of Trade Unions." *Journal of Labor Economics* 2.
- Freeman, Richard. (1996). "Unionism and the Dispersion of Wages." *Industrial and Labor Relations Review* 34.
- Gaines, Cork. (2015). "College Basketball Players are Worth As Much as \$1.5 Million Per Year." *Business Insider*.
- Gilbert, Daniel. (2013). *Expanding the Strike Zone: Baseball in the Age of Free Agency*. Boston: University of Massachusetts Press. Book: 41-74.
- Gordon, Robert and Ian Dew-Becker. (2008). *Controversies about the Rise of American Inequality: A Survey*. National Bureau of Economic Research. Department of Economics, Northwestern University; Department of Economics, Harvard University.
- Hirsch, Barry and David Macpherson. (2006). *Union Membership and Earnings Data Book: Compilations from the Current Population Survey (2006 Edition)*. Washington, DC: Bureau of National Affairs, Table 2b.
- Hussain, Mahmood and Keith Maskus. (2003). *Child Labor Use and Economic Growth: An Econometric Analysis*. San Francisco State University; University of Colorado at Boulder.
- International Labour Organization (ILO). (2015). *Labour Markets, Institutions and Inequality Building Just Societies in the 21st Century*. Edited by Janine Berg. International Labour Office in Geneva, Switzerland.
- Jaumotte, Florence and Carolina Osorio Buitron. (2015). "Power from the People." *Finance & Development*. International Monetary Fund: 29-31.
- King Center. (2011). *What Martin Luther King Said About Unions, Unemployment and Economic Justice: Quotations from King's Speeches to Trade Unions*. The Martin Luther King Jr. Center for Nonviolent Social Change.
- Leeds, Michael and Peter von Allemen. (2008). *The Economics of Sports*. (Third Edition). Boston: Addison Wesley. Book: 111-146; 249-334.
- Manzo, Frank and Robert Bruno. (2015). *Road and Bridge Construction Workers in the Midwest: Productive, High-Skilled, and Well-Paid*. Midwest Economic Policy Institute; School of Labor and Employment Relations, University of Illinois at Urbana-Champaign.
- McGuire, Kevin. (2014). "Report: Market Value for College Football Player is \$178,000 Per Year." *NBC Sports*.
- National Labor Relations Board (NLRB). (2015). *Northwestern University and College Athletes Players Association (CAPA), Petitioner*. Case 121359.
- Ohr, Peter Sung. (2014). *Northwestern University and College Athletes Players Association (CAPA)*. United States Government Before the National Labor Relations Board Region 13. Case 13-RC-121359.
- Rees, Albert. (1989). *The Economics of Trade Unions*. (Third Edition). Chicago: The University of Chicago Press. Book: 131-132.

- Ruggles, Steven, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. *Integrated Public Use Microdata Series (IPUMS): Version 5.0* [Machine-readable database]. Minneapolis: University of Minnesota, 2010. Annual Social and Economic Supplement (ASEC) of the *Current Population Survey*.
- Sandomir, Richard. (2015). "M.L.S. and Union Reach Deal Giving Free Agency to Veterans." *The New York Times*.
- Schmitt, John. (2008). *The Union Wage Advantage for Low-Wage Workers*. Center for Economic and Policy Research.
- Schwarz, Andy. (2014). "But Nobody Even Makes Any Money on College Sports: A Point-By-Point Evisceration of the Ridiculous Myths that Prevent NCAA Athletes from Getting Paid." *Slate*.
- Toossi, Miltra. (2002). "Consumer Spending: An Engine for U.S. Job Growth." *Monthly Labor Review*. 12-22. Office of Occupational Statistics and Employment, Bureau of Labor Statistics. U.S. Department of Labor.
- Tsuyuhara, Kunio. (2014). "A Welfare Analysis of Child Labor Restriction: Intergenerational Perspectives." *Journal of Economic Development* 39(3): 15-33.
- Voos, Paula. (2009). *How Unions Can Help Restore the Middle Class*. Testimony before the Senate Committee on Health, Education, Labor and Pensions at a hearing entitled: "Rebuilding Economic Security: Empowering Workers to Restore the Middle Class." Rutgers University.
- Western, Bruce and Jake Rosenfeld. (2011). "Unions, Norms, and the Rise in U.S. Wage Inequality." *American Sociological Review* 76(4): 513-537.
- Zentner, Ellen and Paula Campbell. (2014). *US Economics: Inequality and Consumption*. Morgan Stanley.