Teacher Labor Markets

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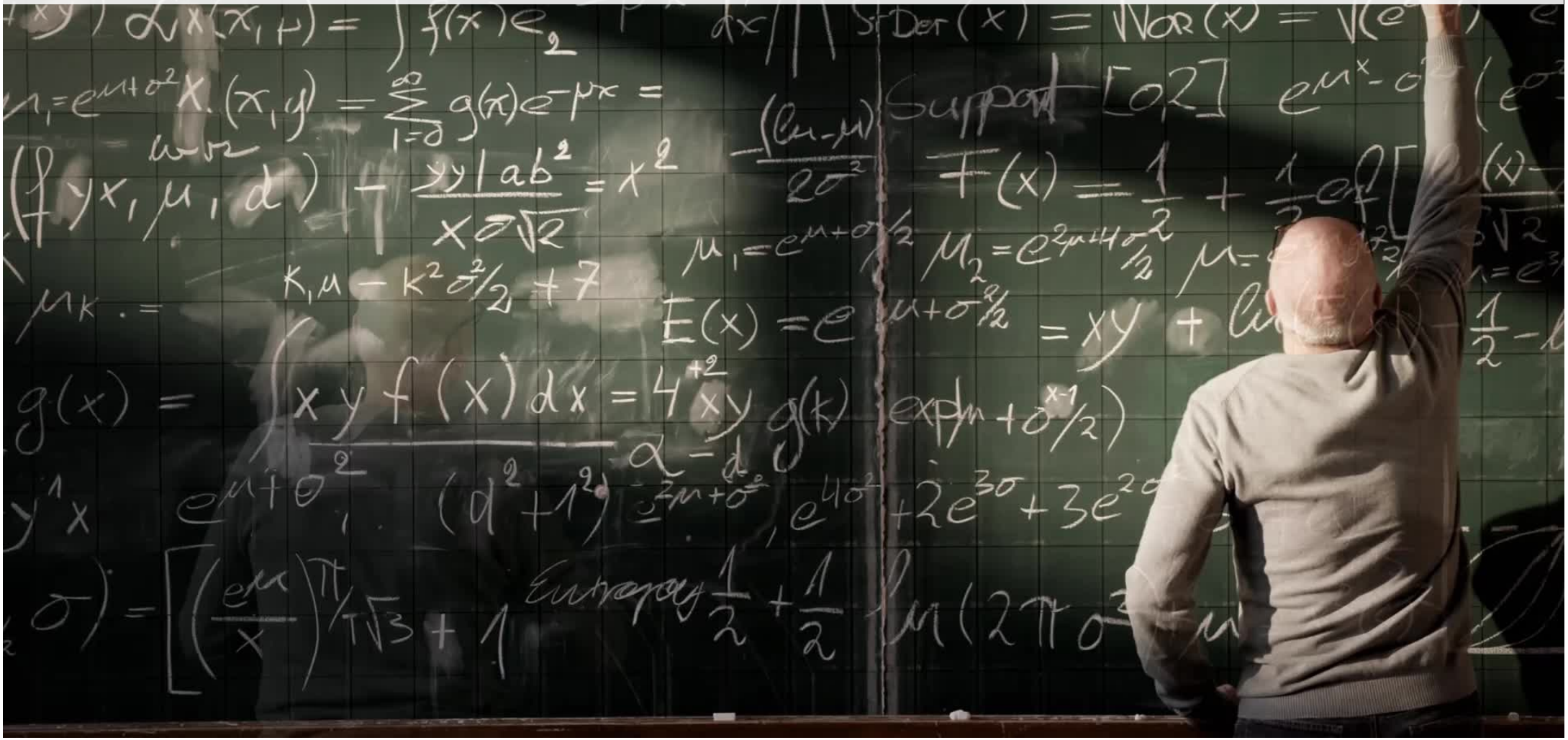


TEACHER SALARIES

The effect of compensation on teacher behavior – not just whether young people go into teaching, but who decides to become a teacher, where they teach, how well they teach, and how long they choose to stay in the profession

- Real versus nominal wages
- Relative wages
- Uniform salary schedule
- Determinants of teacher salaries

REAL VS. NOMINAL SALARIES

Nominal salary

- The original or stated value
- It does not take into consideration the effects of inflation on purchasing power over time

Real salary

- The actual purchasing power of the salary
- To convert nominal salaries to real salaries, we must use an index that compares the costs of different goods at different times
- The index used is often referred to as a consumer price index

RELATIVE SALARIES

- A teacher's relative salary is **the salary that a teacher earns in comparison to salaries in similar fields available to prospective teachers**.
- Gives an idea of what a teacher could have earned if he or she had chosen a different career.
- Direct comparisons with other fields are difficult due to a number of unique features of the teaching profession.
- Teachers usually do not work the whole year and their benefits and job security tend to be greater than those in other fields
- On the other hand, teachers generally do not earn bonuses, overtime, or other types of income not included in the teacher salary schedule

HOW ARE TEACHERS PAID?

- **Uniform salary schedule** – rewards teachers for the years of experience and the level of educational attainment and training they have received.
- The near universal use of teacher salary schedules means that the method of compensating teachers varies little across countries.
- The uniform salary schedule eliminates much of the subjectivity and uncertainty that result from rewarding workers on the basis of merit.
- No incentive to work harder or teach more effectively.
- Does not distinguish between teachers of different subjects or take into account current labor market conditions.
- It may reward teachers using criteria that do not adequately distinguish effective teachers from less effective teachers.

ALTERNATIVES TO THE UNIFORM SALARY SCHEDULE

- To identify and reward teachers who work harder or teach better
- To merit pay is to base salary increases on the performance of students on standardized tests or some other measure of academic performance
- As problematic as the uniform salary schedule is, alternative approaches also pose many difficult problems

DETERMINANTS OF TEACHER SALARIES

- The size of the student populations
- The total number of current teachers
- Their age and qualifications
- The structure of the current salary scale
- The presence and strength of teacher unions
- Economic factors – the level of per capita income, taxation, and property values

EFFECTS OF TEACHERS UNIONS

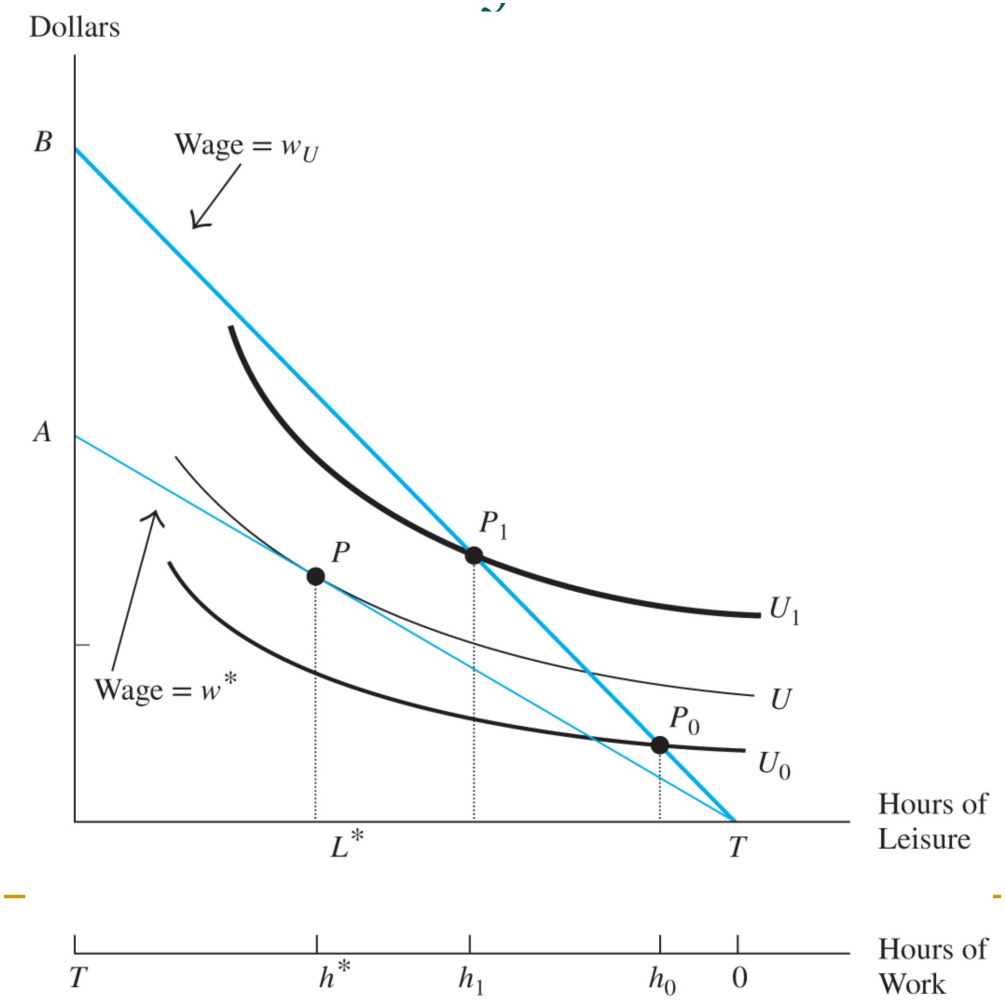
- Unions operate differently in education.
- Union in other fields often control who joins the profession by requiring that employees hire only union members.
- Teacher unions exercise control not by influencing admission to the occupation, but through collective bargaining, during which unions negotiates salaries and working conditions.

Determinants of Union Membership

- **A worker joins a union if** the union offers him or her a wage-employment (benefit) package that provides more utility net of union dues than the wage-employment package offered by a nonunion employer.
- Higher wages increase firm costs, so there could be employment cutbacks.
- If a firm's demand curve for labor is inelastic the employment reduction is small (and vice versa).

The Decision to Join a Union

- The budget line is given by AT, and the worker maximizes utility at point P by working h* hours.
- The proposed union wage increase shifts the budget line to BT.
- The wage increase comes at a cost, and the cost may be a cutback in employment.



Suppose that the firm's demand curve for labor is downward sloping and elastic.

- If the firm responds to the union wage increase by moving up the labor demand curve, the union-mandated wage increase reduces the worker's workweek to h_0 hours, placing him at point P_0 on the BT budget line.
- If union organizes the firm's workforce, therefore, the worker would be worse off (**he moves to the lower IC U_0**).
- This worker, therefore, opposes the union in the certification election.

If the firm's demand curve for labor is inelastic

- The employment reduction is small and union offers the wage-employment combination at point P_1 (where the workweek lasts h_1 hours).
- The union shifts the worker to a higher IC (given by U_1) and the worker supports the union in the certification election.

The Demand For and Supply of Union Jobs

- The demand for union jobs depends on the size of the wage increase, the amount of employment loss, and the costs of union membership.
- The supply of union jobs depends on the ability to organize a workforce, the legal environment affecting union activities, the resistance of management, and whether a firm is making excess rents.

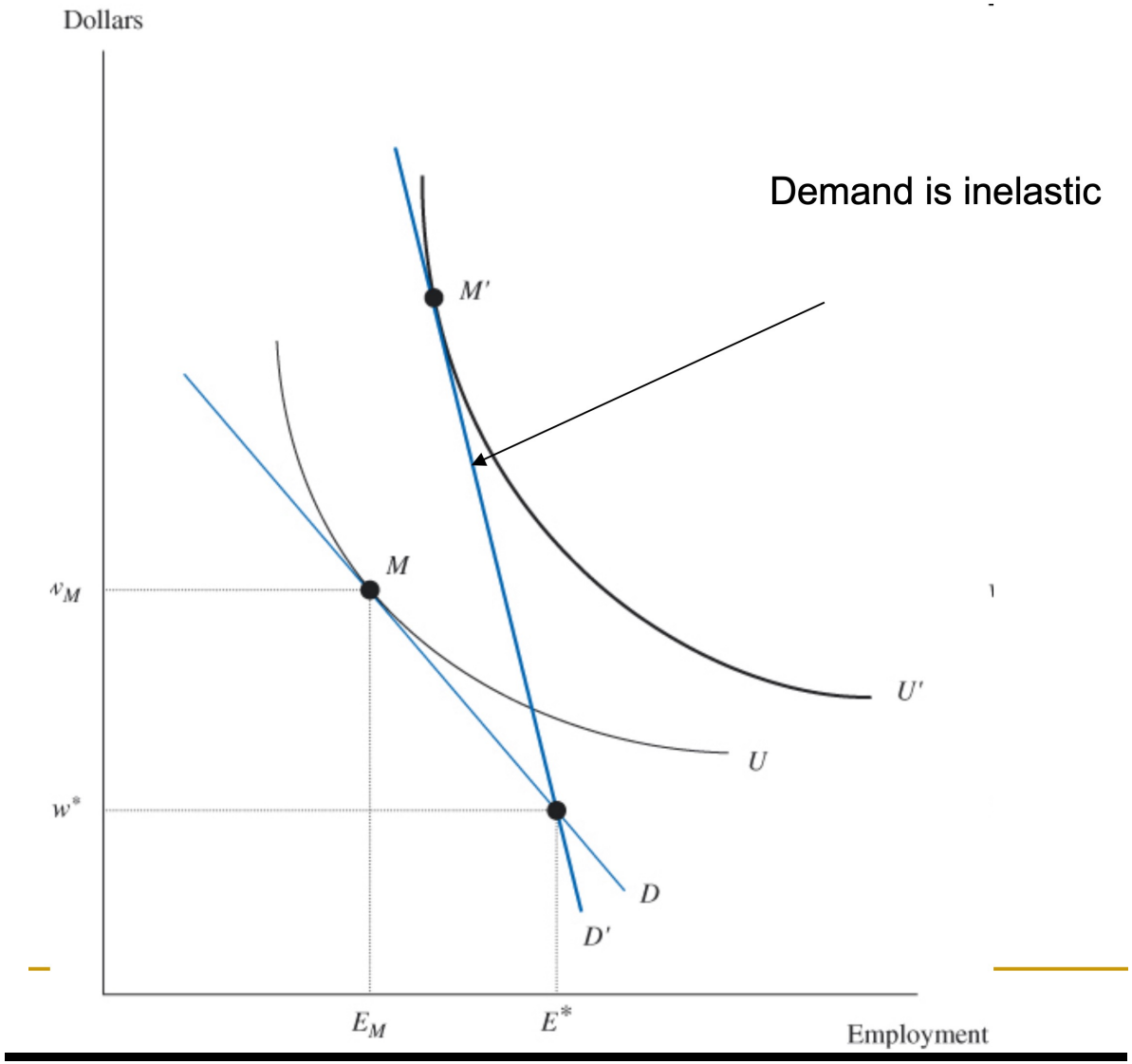
Monopoly Unions

- The model of union behavior is called a model of **monopoly unionism.**
- The union sets the price of its product and firms looks at the demand curve and determine how many workers to hire.
- Some workers will lose their jobs as a result of the union's wage demand.
- **Unions get more utility when the demand curve for labor is inelastic**.

The Behavior of Monopoly Unions

Assume that the union's utility depends on the wage w and employment E, and that unions want more of both.

- The union's utility function is then given by $U(w, L)$ and the union's indifference curves have the usual shape.
- A monopoly union maximizes utility by choosing the point on the labor demand curve D that is tangent to the union's IC.
- The union demands wage w_M and the employer cuts employment to E_M (from the competitive level E^*)
- If the demand curve were inelastic (as in D'), the union could demand a higher wage and get more utility.



Suppose that the competitive wage is w^*.

- In the union's absence, the firm would hire E^* workers.
- The union, however, demands a wage of w_M and the firm responds by cutting employment to E_M.
- The union chooses the wage and the firm then moves along the demand curve to set the profit maximizing level of employment.
- The model of union behavior summarized is called a model of monopoly unions.
- The model of monopoly unions implies that some workers lose their jobs as a result of the union's wage demand.

The effects of teacher unions on salaries and employment depend on many conditions.

- If the demand for teachers is growing, then the effect of the union on overall employment should not be as strong as it is if the demand curve remains stable.
- Growing demand should raise employment levels- counterbalancing the downward pressure of unions on the demand for employees.
- If the demand for teachers is inelastic – demand does not change even if price change – then union demands should not have an effect on employment no matter how high the salaries they negotiate (Cohn & Geske, 1990).

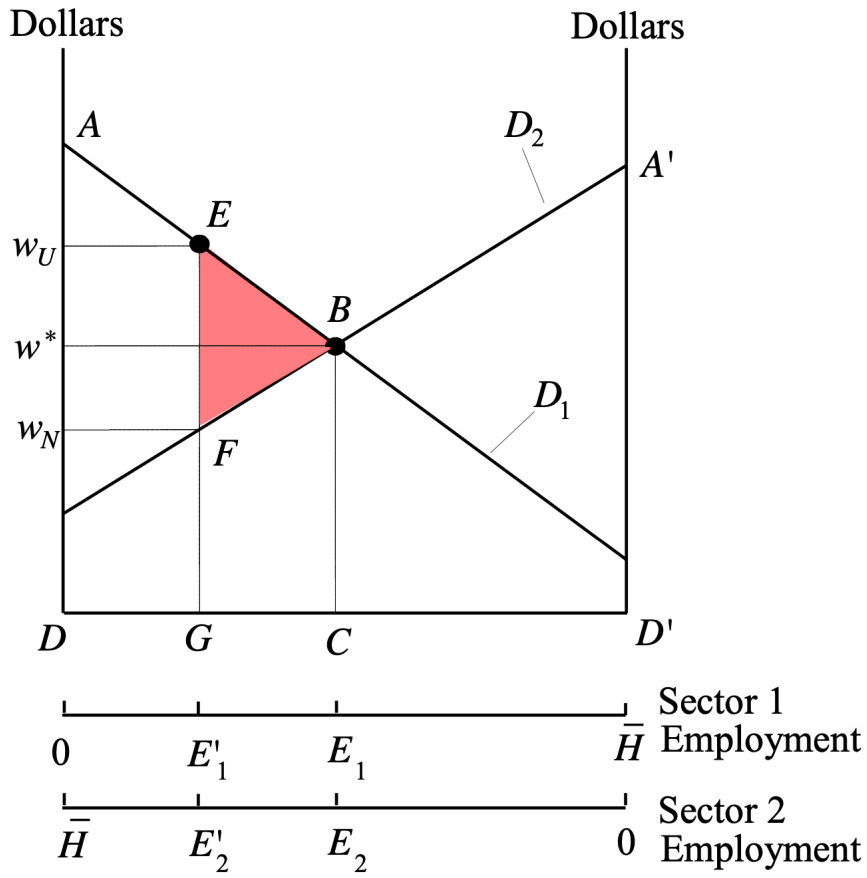
Do the results of economic studies support the prediction that presence of unions raises salaries?

- In the United States, union members earn salaries that are 10 to 20 percent higher than workers in similar occupations who do not belong to unions.
- Unions reduce employment levels in the individual firms where they operate (Ehrenberg & Smith, 2000).
- There results do not necessarily apply to teacher unions, but studies also suggest that the presence of unions has a positive effect on teachers' salaries (Cohn & Geske, 1990).

Unions and Market Efficiency

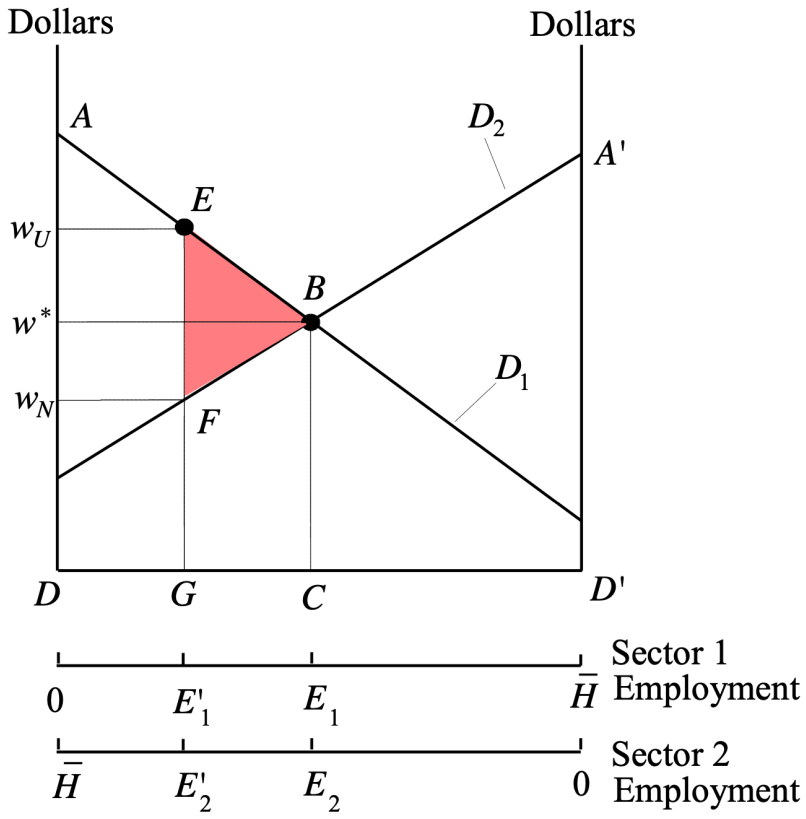
Policy Application: The Efficiency Cost of Unions

The wage-employment solution implied by the model of monopoly unions is inefficient because unions reduce the total value of labor's contribution to national income.



Unions and Market Efficiency

- We assume labor supply is inelastic, so that a total of $\bar{H}$ workers must be employed in one of the two sectors.
- In the absence of unions, the competitive wage is w^*. At this wage, all workers are employed. Sector 1 employs and E_1 workers and sector 2 employs E_2 workers (or $\bar{H} - E_1$).
- Because the labor demand curve gives the VMP_L, the area under the demand curve measures the value of total product. In the initial equilibrium , therefore, the value of output in sector 1 equals the area of $ABCD$ and value of output in sector 2 equals the area of $A'BCD'$. The sum of these two areas equals national income.

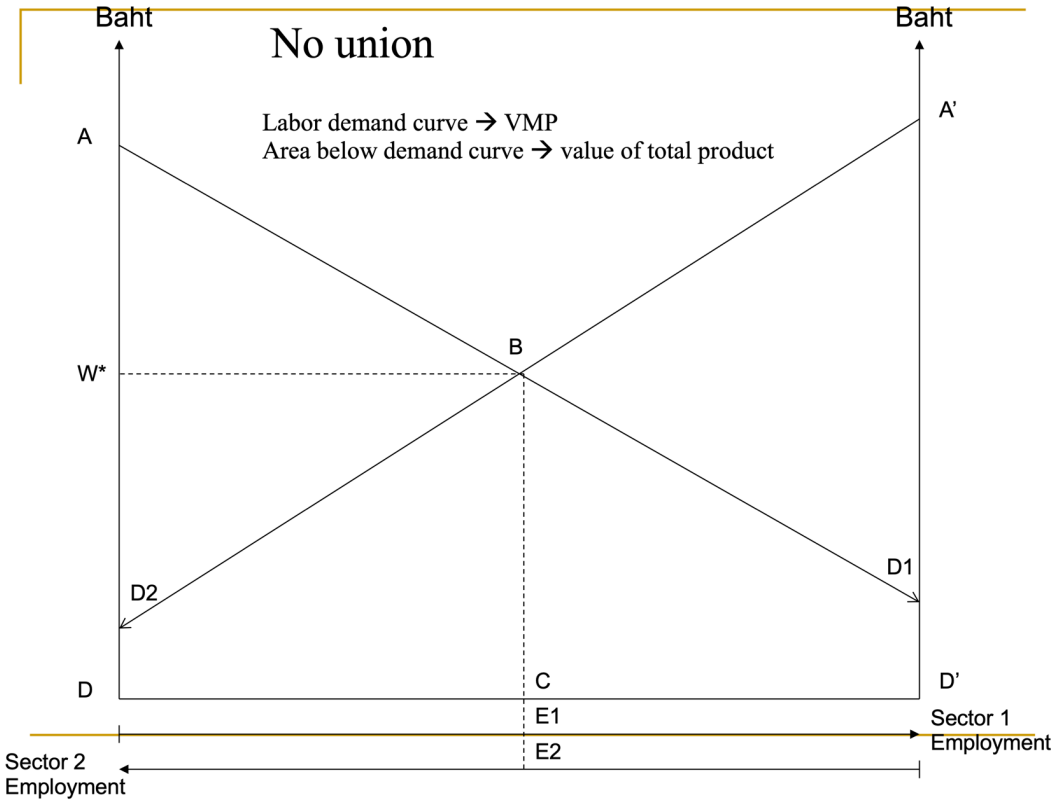


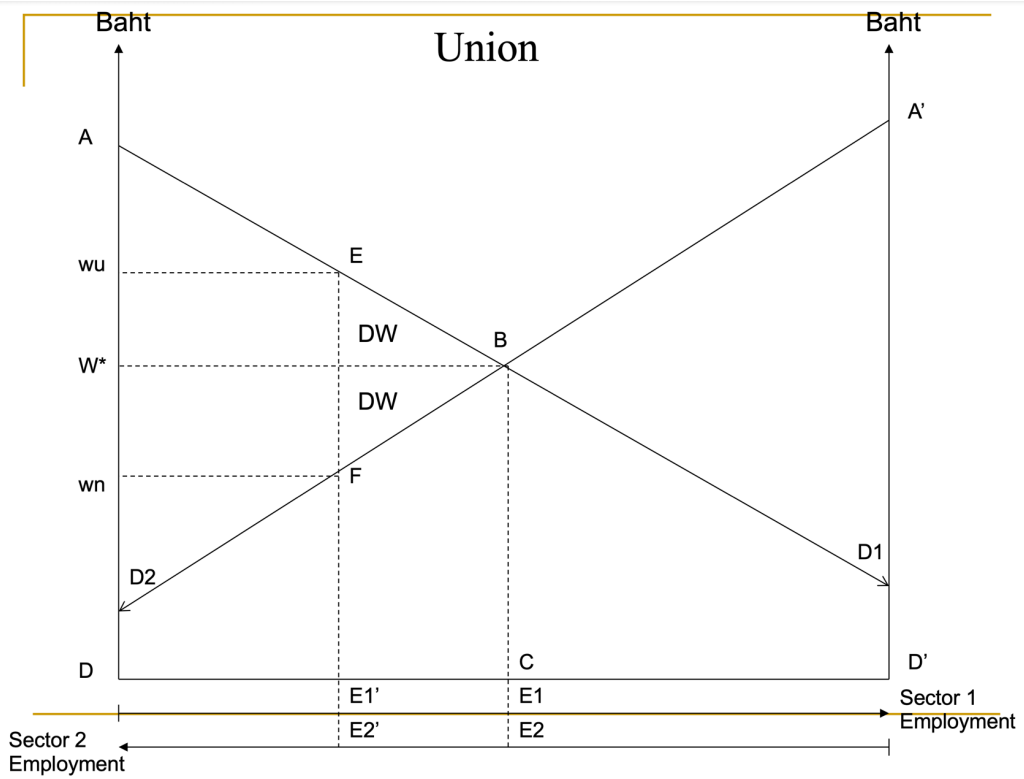
Suppose that a monopoly union represents workers in sector 1, raising that sector's wage to w_U.

- Because employment in the union sector falls to E_1', employment in the nonunion sector must increase to E_2' and the nonunion wage falls to w_N.
- National income is now given by the sum of areas $AEGD$ and $A'FGD'$. The misallocation of labor reduces national income by the area of the triangle EBF.
- This triangle is the deadweight loss that arises because the union sector is hiring too few workers and the nonunion sector is hiring too many.

Effect

- National employment will be decreased by union.
- Union reduces value of labor’s contribution to national income.
- Unions misallocate the resources → cost.
- Assume we have two sectors – union sector and non- union sector → different efficiency.


No union
Baht
Baht
Labor demand curve → VMP
Area below demand curve → value of total product
A
A'
W*
B
D2
D1
D
C
D'
E1
E2
Sector 1
Employment
Sector 2
Employment


Union
Baht
Baht
A
A'
wu
E
DW
W*
B
DW
wn
F
D2
D1
D
C
D'
E1'
E1
E2'
E2
Sector 1
Employment
Sector 2
Employment

The area of the shaded triangle EBF

Efficiency loss / National Income =
0.5 x (percent union-nonunion wage gap)

x (percentage decline in employment in union sector)

x (Fraction of labor force that is unionized)

x (Labor's share of national income)

$$Efficiency\ Loss = \frac{1}{2} \times (w_U - w_N) \times (E_1 - E_1')$$

Policy Application: Unions and Resource Allocation

- Unions reduce the total value of labor's contribution to national income.

Efficient Contracts

- The firm and the union could make a deal that makes at least one of them better off without making the other worse off.
- The efficient contract curve lies to the right of the labor demand curve.
- Efficient contracts imply that unions and employers' bargain over wages and employment.

Efficient Bargaining

The wage–employment solution implied by monopoly unionism is inefficient because unions reduce national income.

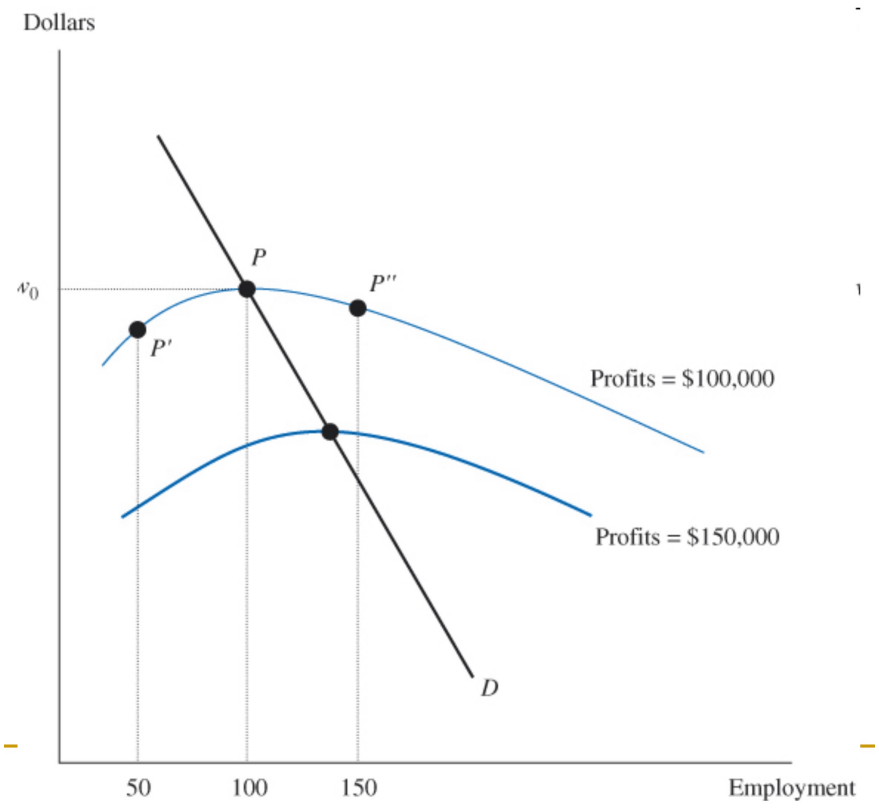
This fact suggests that perhaps the firm and the union could find – and agree on – an employment contract that does not lie on the labor demand curve and that would make at least one of the parties better off, without making the other party worse off.

- The Firm's Isoprofit Curves
- The Contract Curve
- Strongly Efficient Contracts

The Firm's Isoprofit Curves

Before showing how both the union and the firm can benefit by moving off the labor demand curve.

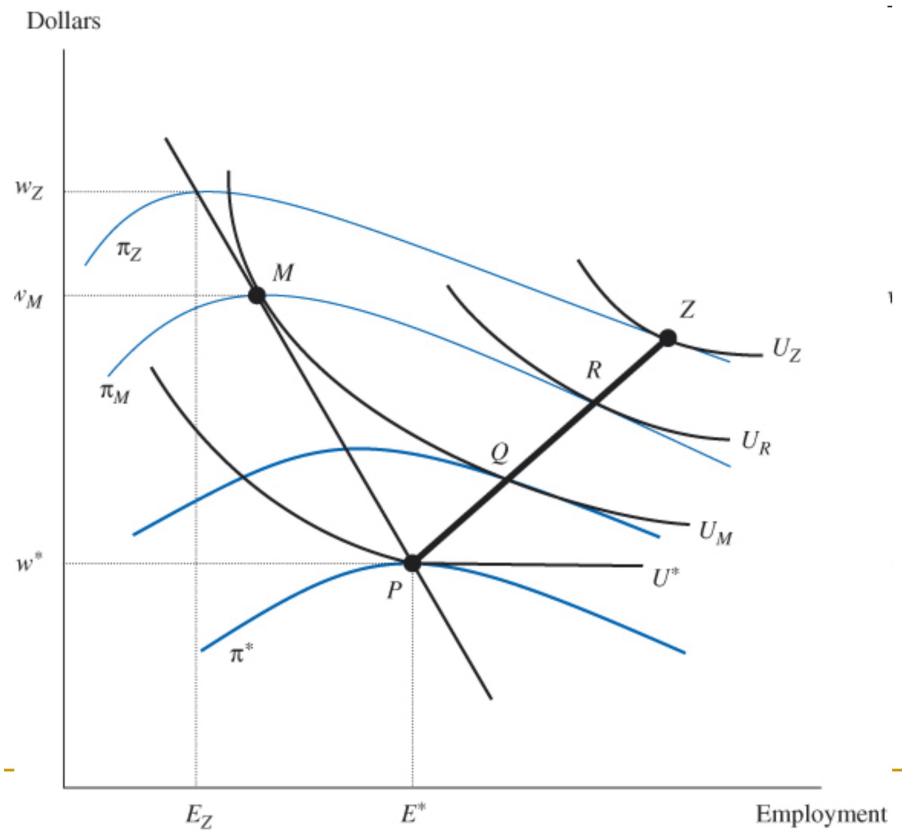
- An **isoprofit curve** gives the various wage-employment combinations that yield the same level of profits.
- A profit maximizing firm is indifferent among the various wage-employment combinations that lie on a single isoprofit curve.
- Lower isoprofit curves are associated with higher profits.



The Demand Curve and the Firm's Isoprofit Curves

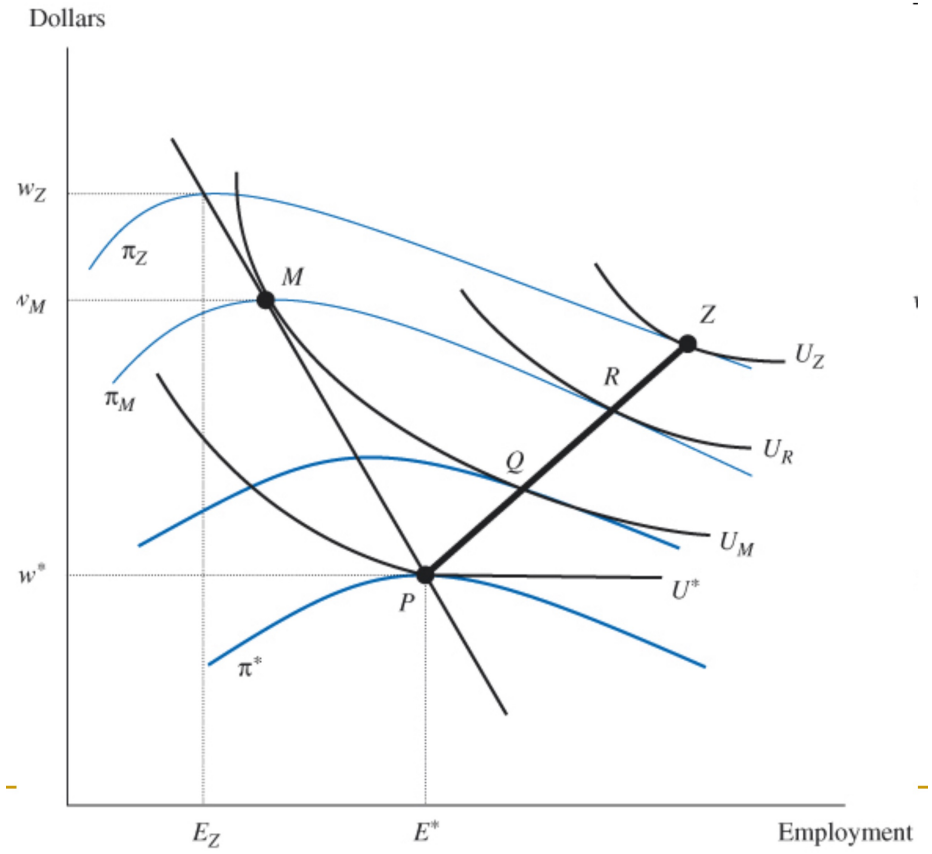
The Contract Curve

- The next figure shows why both firms and unions have an incentive to move off the demand curve.
- The competitive wage is w^*.
- At that wage, the firm would employ E^* workers (at point P) and earns π^* dollars in profits.
- If the union workers were to accept the wage employment offer at point P, the union would get U^* units of utility.



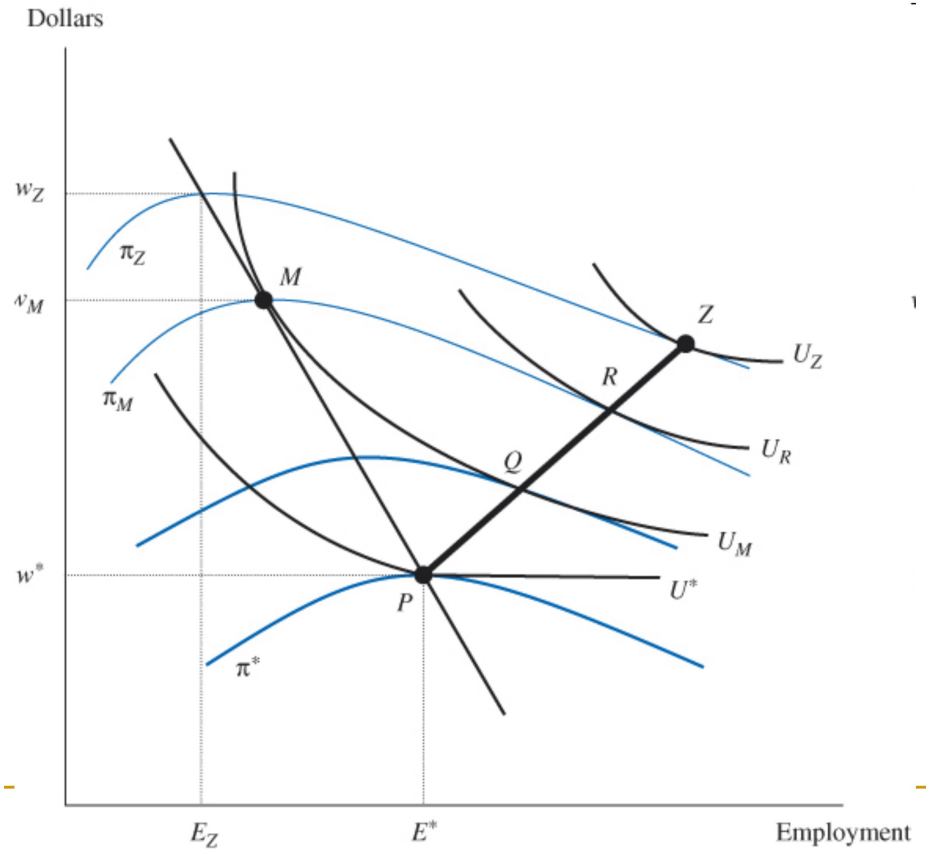
Efficient Contracts and the Contract Curve

- If the union were a monopoly union, it would pick point M on the demand curve (and get U_M utils).
- But the firm could try to talk the union into moving to point Q.
- The union would be indifferent between points M and Q, but the firm would be better off because Q is on a lower isoprofit curve.
- By moving off the demand curve to point Q, therefore, the union would not be worse off than at the monopoly solution M, but the firm would be better off.



Efficient Contracts and the Contract Curve

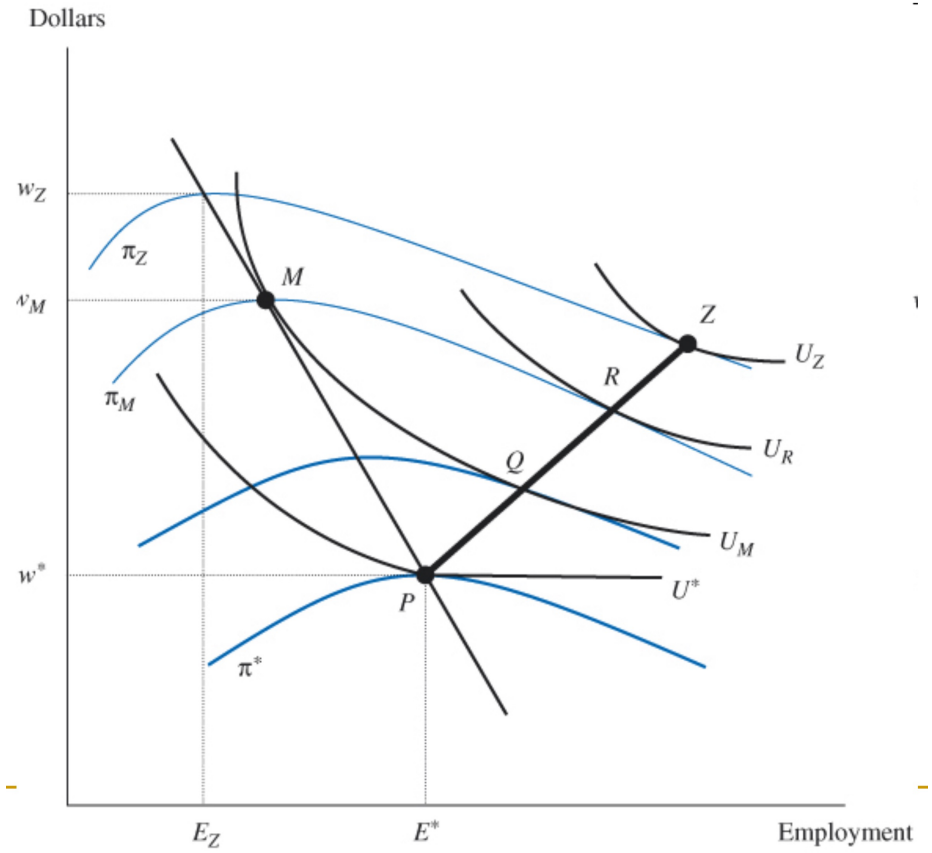
- The union could try to talk the firm into moving to point R.
- At this point, the firm would earn the same profits as at point M, but the union would be better off because it could jump to the higher indifference curve U_R.
- If the union and the firm could agree to move off the demand curve to any point between point Q and point R, then both the union and the firm would be better off than at the monopoly union solution M.



Efficient Contracts and the Contract Curve

Suppose that the highest wage the firm can pay without incurring a loss is w_Z. At that wage, the firm would hire E_Z workers.

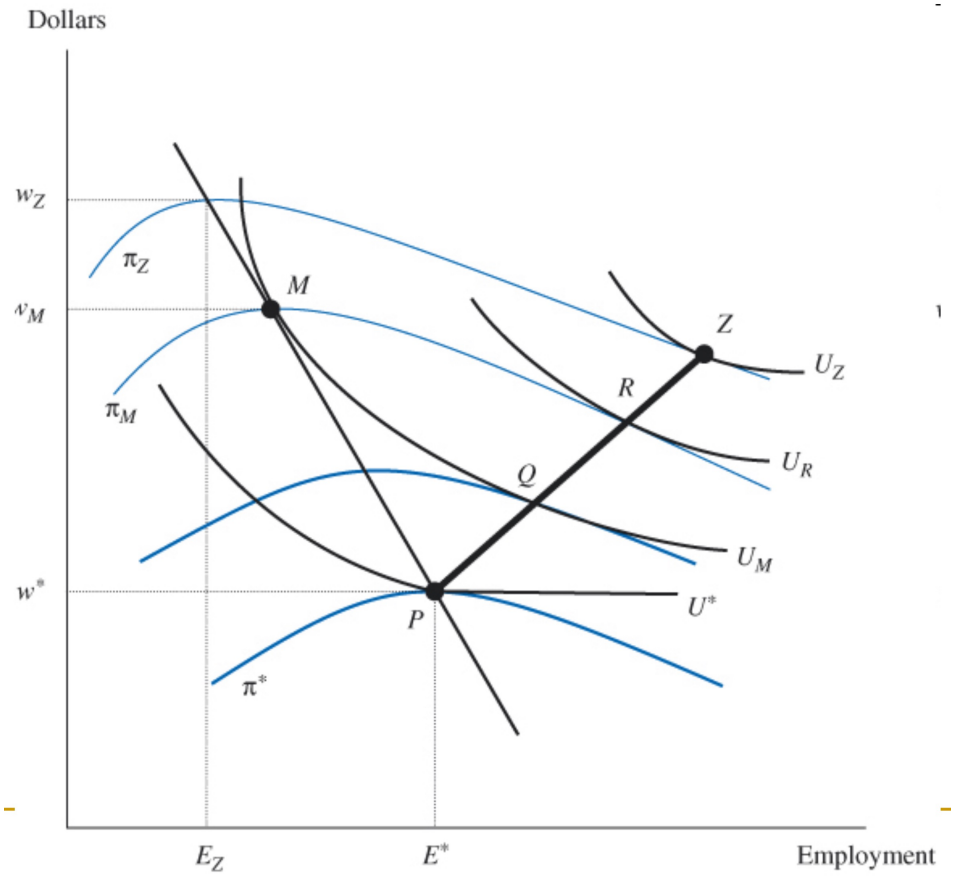
- The isoprofit curve going through this particular wage-employment combination is given by π_Z and gives all the wage-employment combinations that produce zero profits.
- This isoprofit curve provides the upper bound to the wage-employment combinations that the firm is willing to offer.
- If the firm chooses any point above the zero profit isoprofit curve, it would incur a loss and go out of business.
- There are many off-the demand curve wage-employment combinations that could be beneficial to both the union and the firm.



Efficient Contracts and the Contract Curve

The Contract Curve

- The curve PZ gives all the points where the union's indifference curves are tangent to the firm's isoprofit curves- these wage employment combinations are Pareto optimal.
- The curve PZ is called **the contract curve**.
- If the union and the firm agree to a wage-employment combination on the contract curve, the resulting contract is called an efficient contract.



Efficient Contracts and the Contract Curve

The two extreme points on the contract curve bound the range of possible outcomes of the collective bargaining process.

- At point P, the union workers get paid the competitive wage and the firm keeps all the rents.
- At point Z, all the rents are transferred to the workers and the firm makes zero profits.
- The contract curve, therefore, provides the basis for negotiations between the union and the firm.

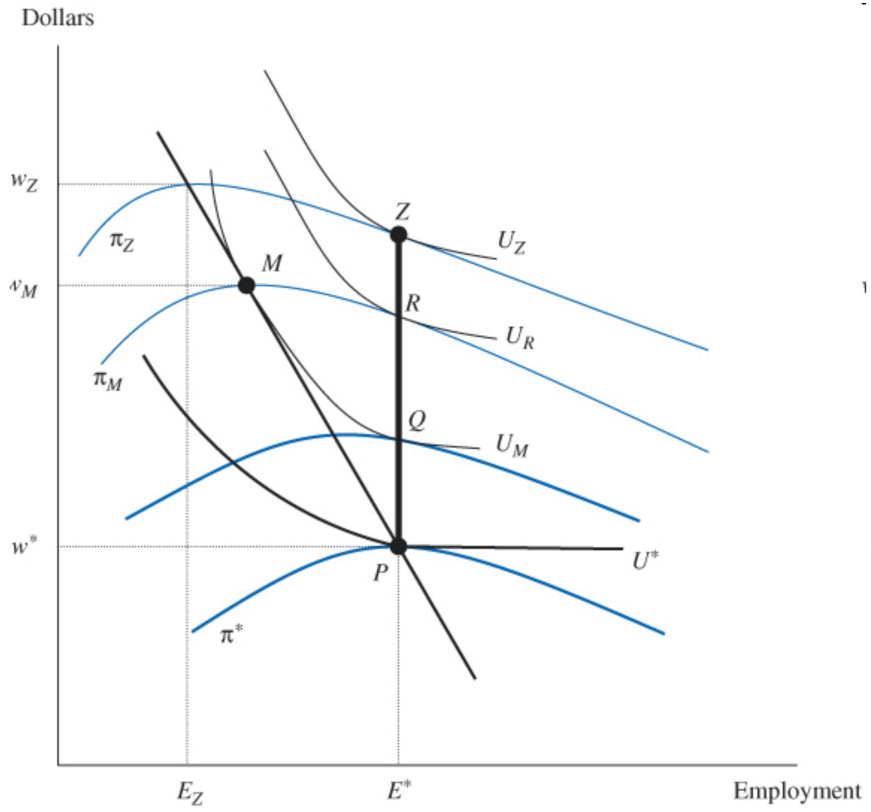
The contract curve lies to the right of the labor demand curve. For any given wage, an efficient contract leads to more employment than would be observed with monopoly unions.

- An efficient contract suggests that the employer-union relationship is not characterized by the union demanding a higher wage and by the firm responding by moving up the demand curve.
- Rather, efficient contracts imply that unions and firms bargain over both wages and employment.

An efficient contract also suggests that the unionized firm is overstaffed, hiring for more workers than it otherwise would at the “going” wage.

Strongly Efficient Contracts

- The shape of the union's indifference curves generates a vertical contract curve PZ.
- The firm hires the same number of workers E*, regardless of whether it is unionized or not.
- If **the contract curve is vertical**, the deal struck between the union and the worker is called a strongly efficient contract because the unionized firm is hiring the competitive level of employment.
- Wage employment combinations on an upward-sloping contract curve are efficient only in the sense that they exhaust all bargaining opportunities between the employer and the union



Strongly Efficient Contracts: A Vertical Contract Curve

Evidence on Efficient Contracts

- Empirical studies have found that wage-employment outcomes in unionized firms do not lie on the labor demand curve, which supports the standard union bargaining model.
- There is disagreement over whether the contract curve is vertical.

THE EFFICIENCY WAGE HYPOTHESIS

The efficiency wage hypothesis

- A worker's wage positively affects his or her productivity.
- The more a worker is paid, the more he or she will produce, all else equal.
- The wage at which workers earn enough to be productive is known as the efficiency wage.
- To make sure their workers are productive, employers must pay the efficiency wage, even if it is above the economy's equilibrium wage.

- Employers may consider it necessary to pay above the average wage in a certain industry in order to recruit high-quality labor.
- Some economists argue that this practice explains why there is always some unemployment in the economy; by paying an above-market wage, employers cause the supply of workers to exceed demand, resulting in a surplus of labor, or employment (Ehrenberg & Smith, 2000).
- When applied to teacher labor markets, the efficiency wage hypothesis could explain why in some cases teacher salaries increase over time while teacher quality does not.

TEACHER CAREER PATHS AND MOBILITY

- Teachers make many important decisions that influence the quality and quantity of teachers in a nation’s schools.
- What we know about how teachers decide to go into teaching, how long they stay, and where they choose to teach.

Who becomes a teacher?

If you think about the people you know who have become teachers, are they different in any way from your friends and acquaintances in other occupations?

If you do not see any significance differences, then you will recognize the difficulty that educational researchers have in determining what types of people go into teaching.

TEACHER ATTRITION

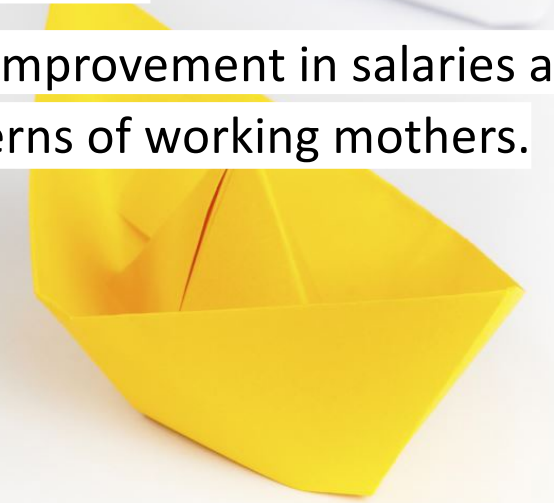
- The length of time that a teacher remains in the profession has an important effect on the size and quality of the supply of teachers.
- If the attrition rate is high, more replacements are needed every year.
- If the replacement teachers have little experience, high attrition rates may lead to a reduction in quality of the teaching workforce.
- The departure of younger teachers, every year many experienced teachers retire and leave the profession for good – a U-shaped curve of teacher attrition.

- The U-shaped curve illustrates that the age of current teachers is an important determinant of teacher attrition rates.
- If most teachers in the labor force are older, then regardless of the behavior of new teachers, there will be high attrition rates as many teachers retire every year.
- Conversely, if most teachers in the labor force are inexperienced, there will also be very high attrition rates as many of these new teachers leave for other professions.
- Consequently, it is important for policy makers to consider the age of current teachers when calculating the future demand for teachers.

THE TEACHER RESERVE POOL

- There are many qualified teachers in a society who are outside of the teacher workforce; these teachers constitute what is referred to as a "reserve pool" of potential teachers.
- One potential explanation for this large reserve pool concerns the size of the student population.
- When the population of school-aged children is large, there are many jobs available to teachers and many young people earn teaching licenses.
- However, if student population decrease, many of these young people cannot find jobs in teaching and go into other occupations.
- Many practicing teachers may also lose their jobs.
- Another explanation – many women leave the teaching force to have and raise children.

- The important question for policy makers is how to lure teachers in the reserve pool back to teaching during times of teacher shortages.
- The solution is likely to be a combination of improvement in salaries and working conditions, as well as sensitivity to the concerns of working mothers.



HOW DO TEACHERS DECIDE WHERE TO TEACH?

Salaries.

Working conditions – availability of instructional materials, the working environment, and the nature of their students.

Teacher sorting – teachers are systematically distributed in a way that disproportionately concentrates teachers with certain attributes in schools or classrooms with specific characteristics.

E.g. if teachers with high levels of education are more concentrated in schools with economically advantaged students than in schools with disadvantaged students.

MAIN LESSONS

Incentives matter in determining teacher behavior – teachers respond to salaries in deciding whether to teach and how long to teach; they also respond to working conditions, such as the availability of instructional materials, administrative support, and the characteristics of their students

Demographics are important in determining the composition of teacher work force and whether prepared teachers find jobs – in times of large student populations, there tend to be shortage of teachers, but when the size of the student population decreases, teacher surpluses often result

- While it is important to discuss the overall supply and demand for teachers, policy makers and educational planners must devote more attention to more focuses issues, such as the supply of teachers of certain subjects, the quality of people entering and staying in teaching, and the willingness of high-quality teachers to work in certain geographical area.