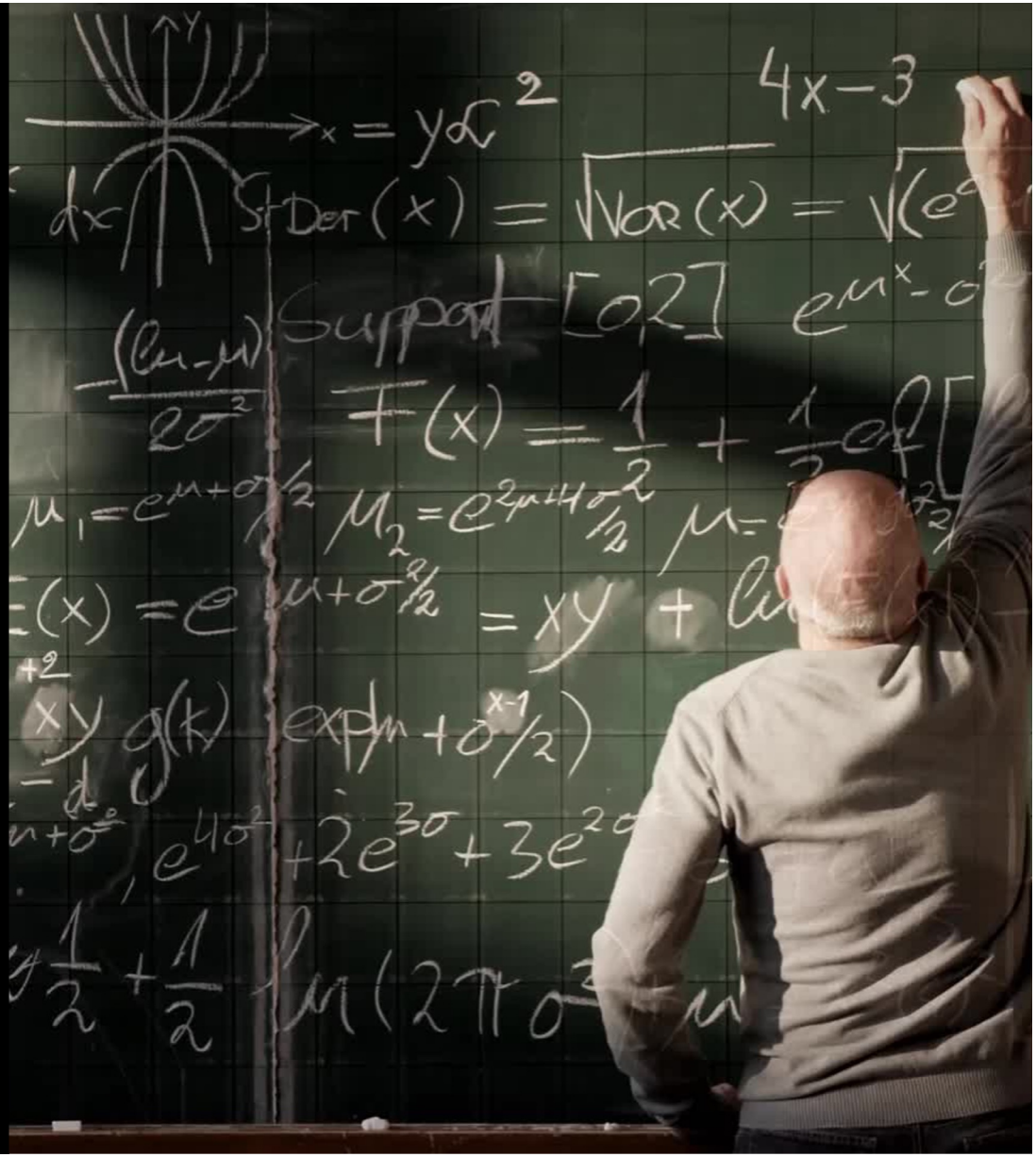
TEACHER LABOR MARKETS PART I

EE473



INTRODUCTION

- Economists of education use markets to explain the demand and supply of teachers, to make predictions about the future teacher workforce, and to examine the behavior of teachers in selecting schools, entering and exiting the profession, and teaching their classes.
- The school's demand is based on the teaching services that the teacher produces.
- The demand and supply of teachers adjust much more slowly to changes in the underlying market.

- Various factors often prevent the market for teachers from reaching “equilibrium,” meaning that there are often shortages or surpluses of teachers.
- Understand and explain how teacher labor markets are distinct from other types of labor markets.
- Identify and describe the factors that influence the demand and supply of teachers.
- Calculate surpluses and shortages of teachers based on simple algebraic examples.
- Describe how monetary and non-monetary incentives affect the behavior of teachers throughout their careers.

IMPORTANT ISSUES IN THE STUDY OF TEACHER LABOR MARKETS

TEACHER LABOR MARKET

- The service that is bought and sold is human labor.
- The individual is the supplier, while the firm (or school) demands the labor.
- The demand for labor is derived from the goods and services that the labor produces rather than the actual laborer.
- E.g. schools do not demand ownerships of teachers; instead, school's demand for teachers is derived from the act of teachers teaching students – economists refer to the demand for labor as "derived demand".

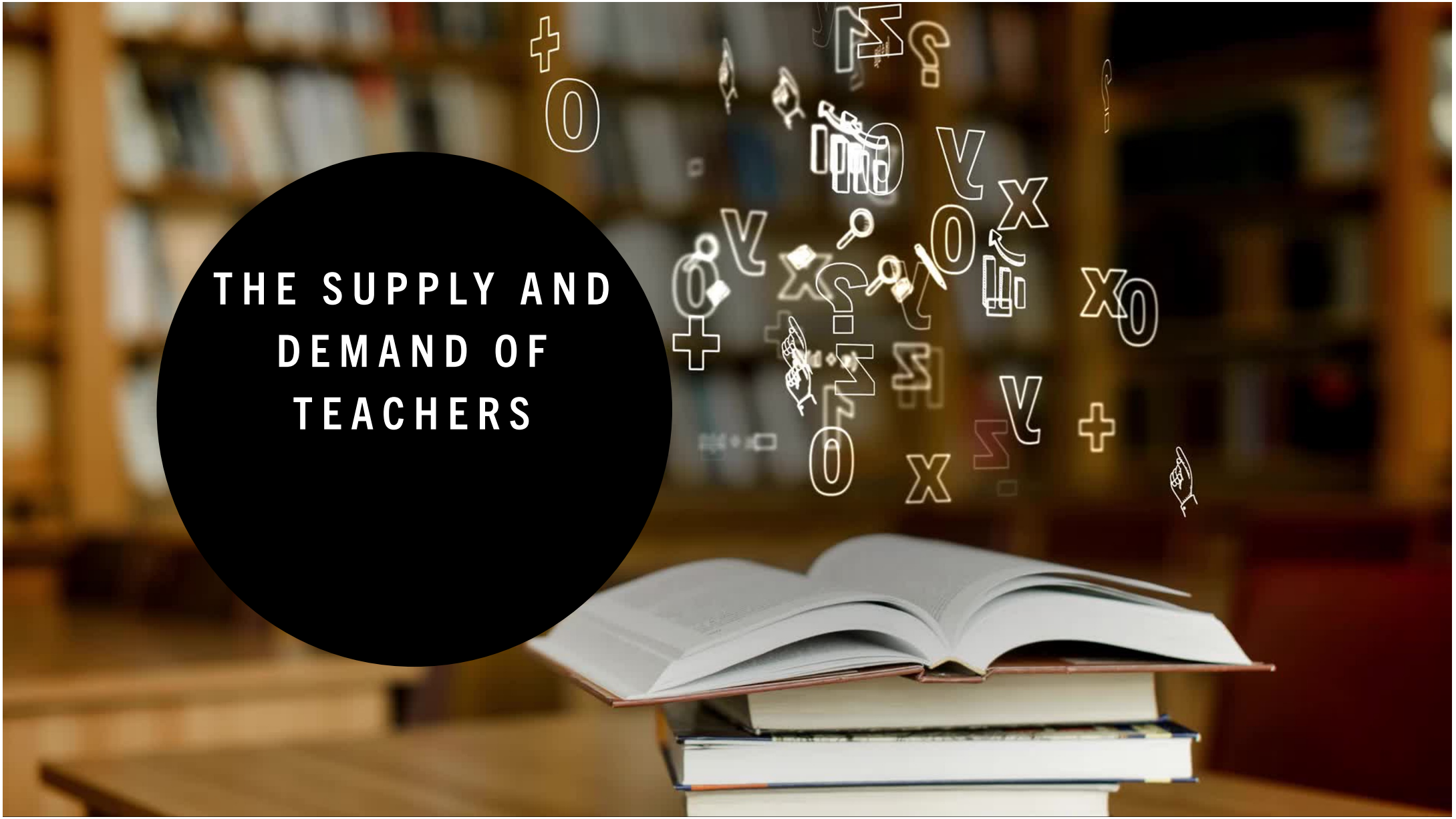
- Working conditions are an important consideration in how much compensation the worker will demand.
- A teacher cares a great deal about the conditions where she will produce her teacher services.
- She cares about such things as her personal safety, the general environment, the availability of instructional materials, and the personalities of her students, and collegues.
- All of these factors play a part in how much compensation she demands to teach at a particular school.
- While she is likely to demand greater salary compensation at a school with less favorable working conditions, if the conditions are very pleasant, she will probably settle for a lower salary.

HOW ARE TEACHER LABOR MARKETS DIFFERENT FROM OTHER LABOR MARKETS?

- Teachers produce what is commonly considered to be a **public good**.
- Technically, **Education is a private good because it is possible to exclude individuals from schools and the consumption of education is bounded by the size of the class, number of materials available, and other factors.**
- However, **education is often seen as a "semi" public good because everyone benefits from the advantages of a well-educated population.**
- **Education is an excludable and rival good, but its societal benefits are non- excludable and non-rival** – these benefits include occupational mobility, a society's knowledge of common civic values, socialization, political stability, and an informed citizenry.

- The public good aspects of education prompt government to provide free education, usually through the level of secondary education.
- The provision of free public education means that, unlike traditional firms, the school employing teachers does not attempt to maximize profits.
- As discussed in EPF chapter, while schools may differ according to their central objectives, whether it is attendance, discipline, educational attainment, or learning.
- School must try to reach these objectives using a fixed set of resources.
- School must aim for efficiency in producing the greatest amount of output with a given set of inputs.

- As a school principal, you would face another challenge quite different from the situation of a private firm.
- Uniform salary schedule.
- To recruit potential teachers, your only bargaining tool would be the excellent working conditions at your school such as the abundant instructional materials, high-achieving students, or pleasant collegial environment.
- However, if you were the principal at a school with limited instructional materials, shoddy infrastructure, and low-achieving students, you would have very little bargaining power to attract excellent teachers, even if you could identify who these teachers were.


THE SUPPLY AND DEMAND OF TEACHERS

THE SUPPLY AND DEMAND OF TEACHERS

- Partial equilibrium analysis
- Assumption ”all else is equal” (Ceteris paribus)
- If we discuss the effect of teacher salaries on the supply of teachers, the all-else equal assumption means that no other factors that could potentially affect teacher supply are changing.

THE DEMAND FOR TEACHERS

- Its price
- The price of substitutes and complements
- The incomes of individual consumers
- Consumer tastes

TEACHER SALARIES

- The price of teachers is the salary that they earn in the educational market.
- The consumers paying these salaries are schools or school districts.
- The demand curve for teachers slopes downward.
- The demand for teachers is inversely related to their salaries.
- The downward sloping demand curve means that policies that increase the cost of hiring teachers such as licensing requirements, entrance examinations, and extensive training – should reduce the demand for teachers resulting in a reduction in overall employment in teaching.

PRICES OF OTHER GOODS AND SERVICES

- The prices of these substitutes affect the demand for teachers – the demand for teachers is positively related to the prices of substitute good and services.
- As the prices of substitutes increases, demand for teachers also increases, and vice versa.
- E.g. If prices of computers and instructional software increased dramatically, schools might choose to hire more teachers instead of purchasing instructional technology, thereby increasing demand for teachers.

- Other goods and services act as complements to teaching services.
- These include classroom or teacher benefits such as health insurance and retirement pensions.
- The demand for teachers is negatively related to the prices of these complementary goods.
- E.g. if the price of providing health care to teachers increased, schools would have to decrease their consumption of teachers to maintain the same level of expenditures on teaching personnel.

INCOME

- As income increase, the demand for teachers should also increase.
- As a society becomes wealthier, it is likely to increase access to education by building more schools and classrooms, reduce class sizes, and attempt to recruit better teachers for its school.
- Income should be positively related to the demand for teachers.

TASTES

- Society's tastes might apply to the quality, nature, and number of teachers that schools employ.
- E.g. If a society places a high priority on public education for all children, it is likely to have a larger demand for skilled teachers than a society in which children's education is considered the responsibility of the individual family.
- If a society determines that it must have small class sizes so that every child will receive individualized instruction, this change in tastes will increase the demand for teachers.

OTHER DETERMINANTS OF THE DEMAND FOR TEACHERS

- Size of the school-aged population
- The student-teacher ratio
- The number of students and hours that teachers must teach

THE SUPPLY OF TEACHERS

- The price that producers can receive for good or service.
- The costs of inputs required to produce the good or service.
- The technology involved in producing the good or service.

TEACHER SALARIES

- The supply of teachers is positively related to salaries, the supply curve for teachers slopes upward.
- However, if salaries in all other fields increase at the same time and by the same proportion as salaries in teaching, then increases in teacher salaries may have little effect on the supply of teachers.
- This is because teachers face the same tradeoffs in salaries that they did before salaries increased.
- **For this reason, when discussing how teachers react to salaries, we must consider relative salaries rather than absolute salaries.**

- A relative salary is the salary that a teacher earns in comparison to salaries in similar fields.
- To make relative salaries truly comparable, we must compare the salaries of workers of the same age and level of experience in different professions requiring similar qualifications.
- Although relative salaries are extremely important in determining the supply of teachers, they are only relevant if potential teachers have access to many different occupations.
- If occupational barriers restrict the choices available to certain groups of workers, relative salaries will be less important in their decisions because salaries in other fields are not available to them.

Evidence suggests that relative salaries influence teachers' decisions at various points in their careers. According to the quality of the teaching workforce (OECD, 2004), the relative pay of teachers can influence

- Whether someone decides to become a teacher
- A teacher's decision to remain in teaching
- A teacher's decision to return to teaching after an interruption in his or her career.

Policy makers must make teacher wages attractive not only for new teachers, but for teachers throughout their careers.

THE IMPORTANCE OF WOMEN IN THE TEACHER WORKFORCE

- According to Education at a glance (OECD, 2004), women made up, on average, more than two-thirds of university-level graduates in humanities, arts, education, health, and welfare, areas of study that commonly lead to teaching careers (OECD, Education at a glance 2004).
- The decisions and opportunities of college-educated women have a profound effect on the nature of the teacher workforce.

COSTS OF REQUIRED INPUTS

- While training to become teachers, young people face both direct and indirect costs.
- Direct costs include tuition, books, and transportation to classes. As these costs increase, earning a teacher license becomes more expensive.
- Higher expenses negatively affect the number of young people who decide to become teachers – the cost of becoming a teacher is negatively related to the supply of teachers.
- As with salaries, it is important to consider not only absolute costs faced by prospective teachers, but also relative costs – how do the costs of becoming a teacher compare to the costs of becoming a journalist, nurse, lawyer, or engineer?
- If relative costs of becoming a teacher increase, then all else equal, fewer young people will become teachers.

- Countries varies in terms of the requirements that they impose on teachers in order to obtain a license to teach. These requirements could include several years of formal education, specific training or pre-service programs, or passing a test of pedagogical or subject matter knowledge – increase the costs of becoming a teacher.
- They reduce the supply of young people willing to become teachers.
- They shift the teacher supply curve to the left.
- E.g. the requirement that teachers receive a minimum score on teacher licensing test eliminates from the potential supply of teachers those who are unable to pass the test, as well as those who are afraid to take the test for fear of not passing – this diminishes the overall pool of prospective teachers, thereby reducing the supply of teachers.

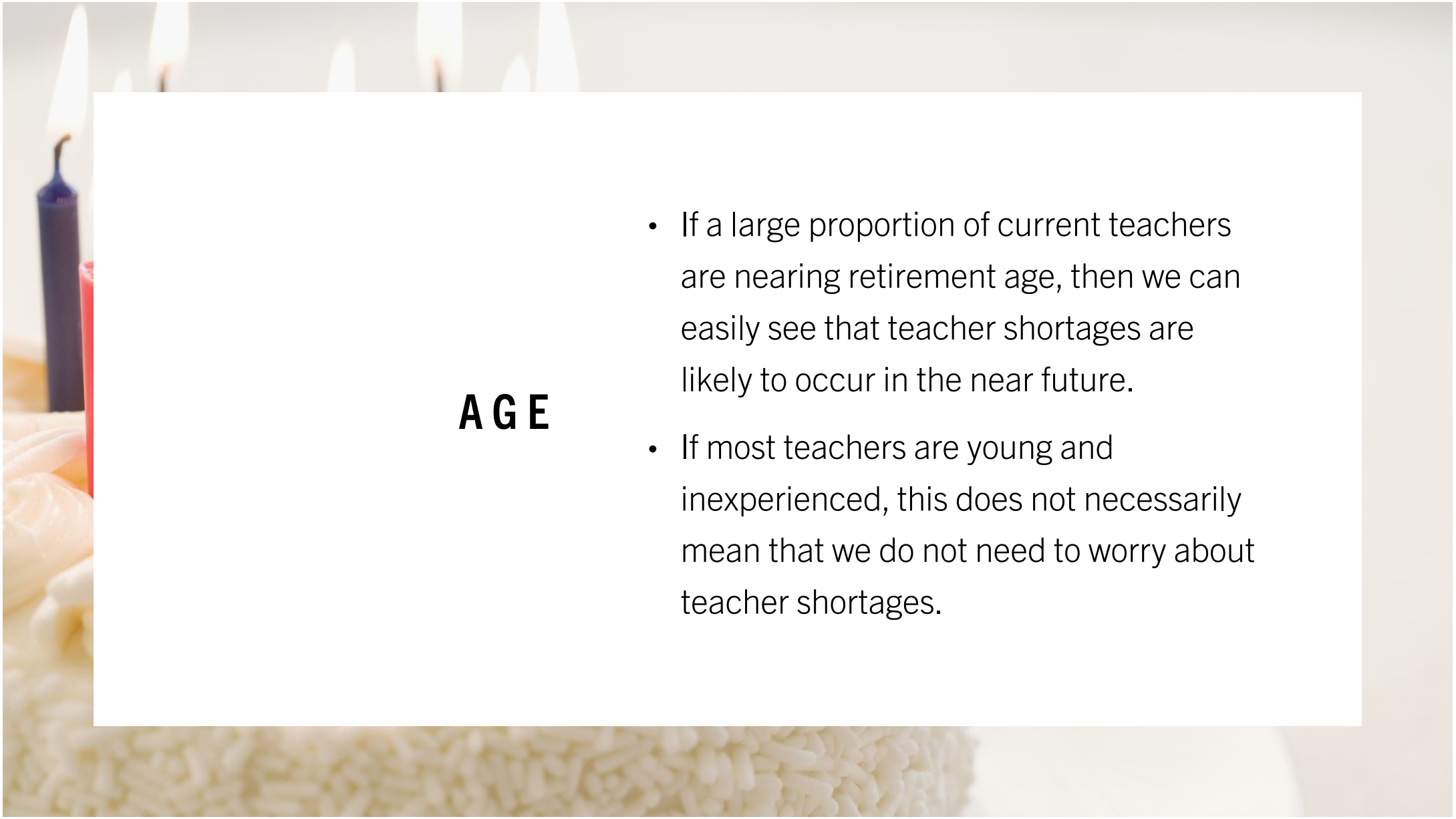
TECHNOLOGY

- If software engineers develop a computer program that can teach multiplication to third grade students, the overall supply of teaching services will increase.
- But this technology will not necessarily increase the supply of teachers – in fact, technological advances in education – if they act as substitutes for classroom teachers – may actually reduce the demand for teachers, which could, in the long run, reduce teachers' salaries.

OTHER DETERMINANTS OF THE SUPPLY OF TEACHERS

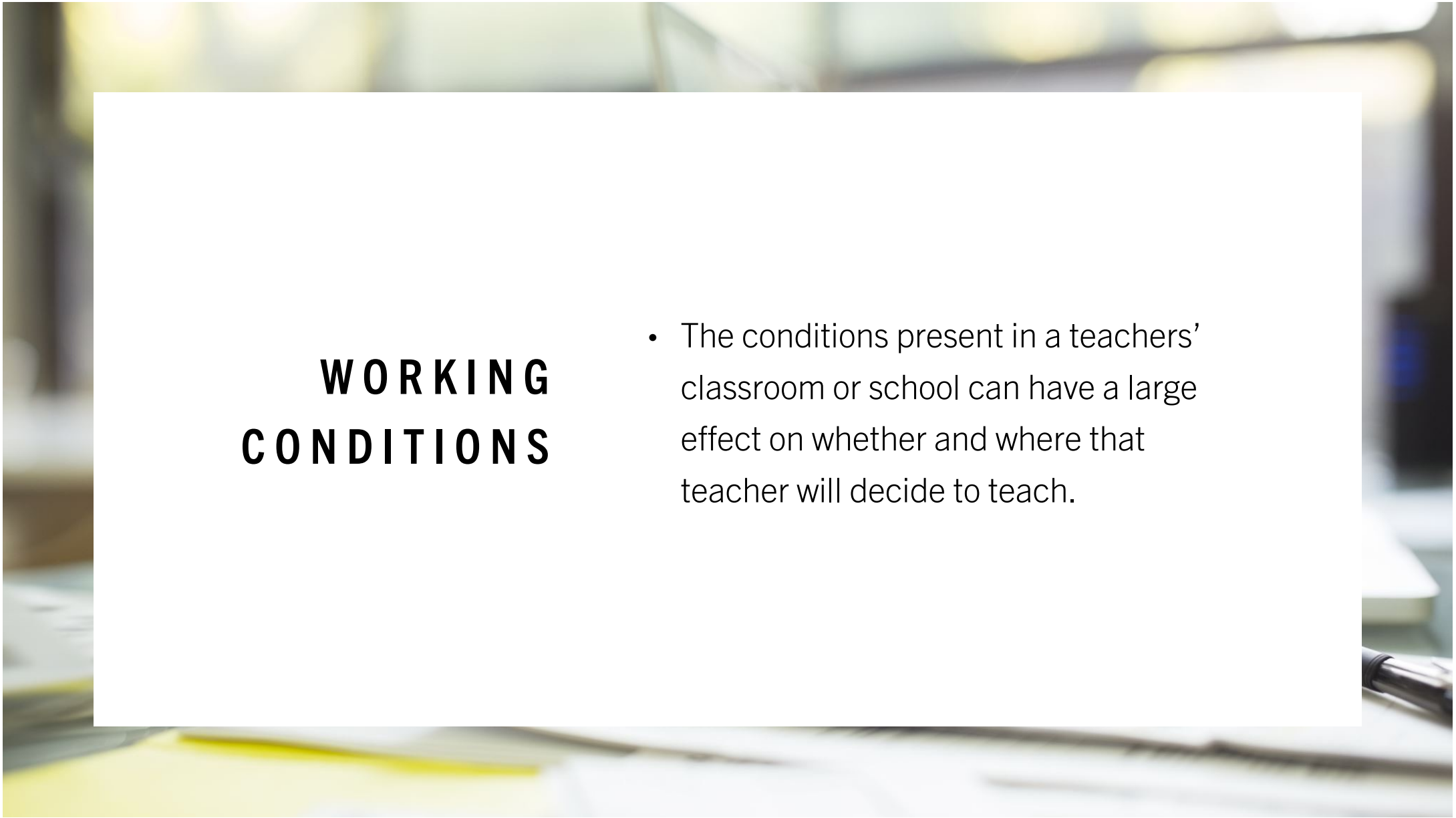
THE CURRENT AGE OF THE TEACHING WORKFORCE

WORKING CONDITIONS IN CLASSROOMS AND SCHOOLS



AGE

- If a large proportion of current teachers are nearing retirement age, then we can easily see that teacher shortages are likely to occur in the near future.
- If most teachers are young and inexperienced, this does not necessarily mean that we do not need to worry about teacher shortages.



WORKING CONDITIONS

- The conditions present in a teachers' classroom or school can have a large effect on whether and where that teacher will decide to teach.

WORKING CONDITIONS AND THE THEORY OF COMPENSATING WAGE DIFFERENTIALS

- Conditions important to teachers could include the climate of the school where they teach, the relationships they have with their supervisors and colleagues, the availability of instructional resources, the size of their classes, and the "teachability" of their students.
- The salary difference that workers demand to work at less desirable locations is known as a compensating wage differential (Loeb &Page, 2000).

EXAMPLE

Consider two schools in the same city, Good School and Bad School. Both schools pay the same salary, but in other respects, the two schools are very different. At Good school, classrooms are clean and orderly, there are no shortage of classroom equipment or textbooks, and students are respectful and hard working. Bad school provides a contrast: classrooms are dirty and in bad repair, there are not enough textbooks for all the students and students are often unmotivated and disrespectful. If both schools offered the same salary, most teachers would probably prefer to work in Good School. In fact, according to the theory of compensating wage differentials, the two schools actually have two different supply curves.

- The teacher supply curve for Good School is labeled S^{GS} .
- The teacher supply curve for Bad School is labeled S^{BS} .
- S^{GS} is located to the right of S^{BS} because at any given salary, more teachers would prefer to work at Good School than Bad School.
- Good School can hire more high-quality teachers for the same salary than Bad School.
- If Bad School does not offer higher salaries than Good School, it is likely to have teachers of lower quality.

We must make several assumptions for this example to be valid.

1. The horizontal axis measures the supply of high-quality teachers—we assume that schools can recognize teacher quality which is not always the case.
2. We assume that the quantity of teacher is unlimited ,but the quantity of high-quality teachers is not.

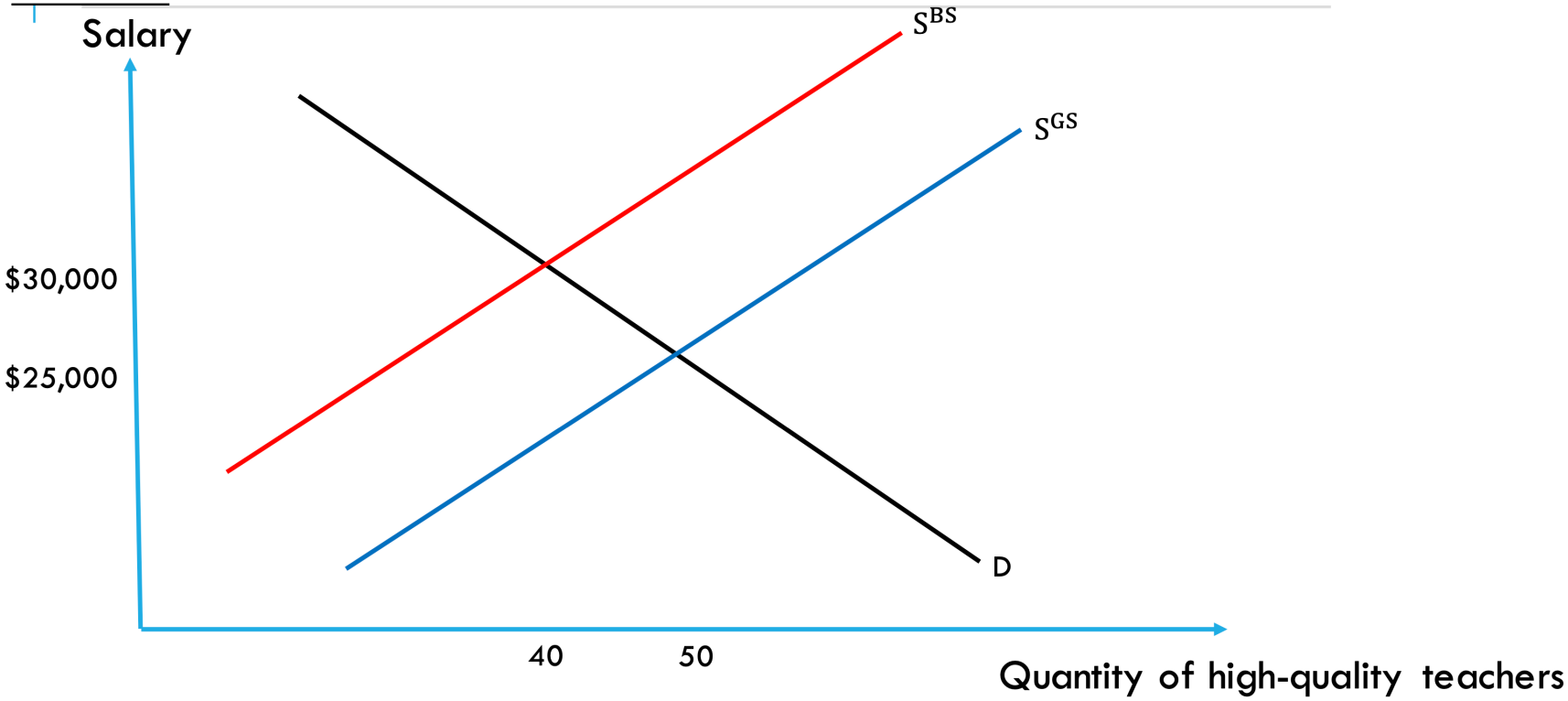
There are a fixed number of high-quality teachers available and willing to teach in Good School and Bad School.

There is only one demand curve for teachers.

We assume that Good School and Bad School have the same demand for high-quality teachers.

The only difference between the two schools is the working conditions.

TEACHER SUPPLY IN TWO DIFFERENT SCHOOLS



- Notice that at any salary, more high-quality teachers are willing to work at Good School than at Bad School.
- At a salary of $25,000, 50 high-quality teachers would work at Good School but only 40 high-quality teachers would work at Bad School.
- If Bad School wanted to hire 50 high-quality teachers, it would have to pay a salary of $30,000 for each teacher.
- The difference between the individual teacher salary that Bad School must pay and the salary that Good School must pay to hire the same number of high-quality teachers is the compensating wage differential. In this case, it is $5,000.

EQUILIBRIUM

- When the demand for teachers is exactly equal to the supply of teachers, the market for teachers is in equilibrium.
- At equilibrium, every school fills all of its classrooms and every teacher who wants a job has one.
- At this point, there is no market pressure to either increase or decrease salaries because everyone is consuming or producing an amount that fits their individual preferences.
- The salary at this point is the equilibrium or market-clearing salary, and the quantity of teachers is the equilibrium quantity.

TEACHER SHORTAGE

What might cause teacher shortage?

- The student population could experience rapid growth, there could be a large influx of immigrant children to a certain area, or lawmakers could decide to reduce the size of public-school classes.

  Demand for teachers shifts to the right.

  If teacher salaries did not change, the increase in demand would result in a teacher shortage.

- A large number of teachers retiring or leaving the profession for other jobs.

  A drop in teacher supply.

  If teacher salaries did not change, the result would be a teacher shortage.

TEACHER SURPLUS

What might cause a teacher surplus?

- A sharp reduction in the number of school-aged children would reduce the demand for teachers.
- If salaries did not fall to adjust to this reduced demand, the supply of teachers would be greater than demand, resulting in a teacher surplus.
- There could be laws in place to prevent schools from firing teachers or reducing salaries.
- Teacher unions could also resist attempts to lower wages by threatening to strike.

TEACHER QUALITY

- The quality of teachers varies from school to school and classroom to classroom.
- Many studies have found that enhancing the quality of teachers is the single most important thing that schools can do to improve student outcomes.

For numbers of reasons, schools and districts have had difficulties recruiting, hiring, and retaining sufficient numbers of high-quality teacher.

- Not easy to identify high-quality teachers.
- Costly to administer tests to teachers and teachers with high scores are not necessarily skilled at interacting or communicating with children.
- Schools have difficulty hiring and retaining high-quality teachers is that young people with good training and excellent knowledge of their subject are also more likely to have greater opportunities in other fields.
- Policy makers often respond to teacher shortages by opening up the pool of applicants to less qualified prospective teachers – quantity rather than quality.

RAISING TEACHER QUALITY THROUGH EDUCATION AND TRAINING

Why can’t schools improve the quality of the existing teacher work force through education and training?

- Teacher certification
- Licensing
- Pre-service training (undertaken prior to entering the classroom)
- In-service training (undertaken by practicing teachers)
- Graduate education
- Many economists of education question the value of teacher certificate programs, arguing that these programs have little effect on teacher quality and that, by raising the costs of becoming a teacher, they actually discourage potentially effective teachers from entering the teaching profession.

CLASS ACTIVITY

1. The event listed below could have an effect on either the demand or supply of teachers. For each factor, describe (1) whether the event is likely to affect supply or demand and (2) if the event will result in either an increase or decrease of supply or demand. Explain your reasoning for each answer.

A. A shortage of nurses causes hospitals to increase nurses' salaries by 50% and to offer large bonuses to pay for nursing education classes.

B. A popular television program depicts public school teaching as a glamorous and exciting profession.

C. The Spanish government allows thousands of political refugees to enter the country. The children of these refugees enroll in Spanish schools.

D. Two years later, all of the refugees return to their countries of origin, taking their children with them.

2. According to the *Anuario Estadistico de Espana 2004*, there were almost 4.3 million students enrolled in Spanish primary schools (both public and private) during the 1993-1994 school year. By the 2000-2001 school year, the number of primary students had decreased to less than 2.5 million. During the same period, the number of young people enrolled in teacher preparation programs in Spain increased from 68,748 to 95,550. If the population of students shrinks while the population of prospective teachers grows, what is likely to happen to teacher salaries? Assume that the market was in equilibrium in 1994. To answer this question, show your work and explain in detail. What has happened to the price and quantity of teacher employed in 2001?