

PRINCIPLES OF MICROECONOMICS
LECTURE PLAN:

COMPENSATING WAGE DIFFERENTIALS

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1 Lecture Objective

Students are exposed to the meaning behind the oft-cited phrase TANSTAAFL [There Ain't No Such Thing as a Free Lunch].

The real wage of a job is a combination of monetary and nonmonetary compensation. Nonmonetary compensation such as job satisfaction, level of fun, safety, etc. affect the supply of workers for a particular job.

Employees may be heterogeneous in their preferences for compensation bundles.

An important driver of safe working conditions is a firm's profit motive/incentives. As employees and countries grow wealthier, they "buy" more job safety.

Government regulation is important when prospective and current employees don't know about on-the-job risks. However, government intervention is usually unable to address longer-term risks from jobs. (e.g., increased risk of cancer, Alzheimer's etc.)

Compensating wage differentials may be connected to or partially explain other concepts such as wage discrimination.



2 Pre-Class Assignment

Before watching the compensating wage differentials videos, students read about [Netflix offering its employees a year of paid maternity/paternity leave](#) and hypothesize why Netflix would offer this benefit.

Alternate Exercises

Students find the craziest non-monetary perk any company offers [e.g., allowing pets at work] and write about why an employer would offer such a benefit.

Students should watch the following videos before class:

-  **Video: The Tradeoff Between Fun and Wages** | Marginal Revolution University | [Principles of Microeconomics course](#)
-  **Video: Compensating Differentials** | Marginal Revolution University | [Principles of Microeconomics course](#)

3 Lecture Plan

Review Compensating Wage Differentials

- 1 Exercise:** Show compensating wage differentials in action. Create two different job profiles that hold skill and education levels relatively constant but vary in job benefits (i.e., one is clearly better in the nonwage benefits such as safety, flexible work schedule, good work environment, prestige, etc). In the tradeoff video, the two job examples are sewage inspector and lifeguard, but you can choose any two jobs that would work best for your students. Set the starting salary of both jobs at \$40K and assume there are an equal number of positions for both jobs. Have students line up on either side of the room or raise their hands indicating which job they would want given equal salaries. Vary salaries until there is roughly an even number of students selecting each job.
- 2** Post-discussion should highlight the wages in the two jobs compared to the working conditions. Ask students how much was required to compensate the (marginal) worker for the worse working conditions? Ask students to define compensating wage differentials. Note that not all the students moved jobs at the same time so some students are willing to move jobs for a smaller increase in wages—thus workers differ in their willingness to trade wages with safety, fun or other working conditions. Have students identify the tradeoffs between the jobs. Remind them of TANSTAAFL: the “nicer” job comes at a price.
- 3** This leads into the discussion of all sorts of factors that affect a job’s wage compensation. The first video focused on the fun and wages tradeoff and the second video explored safety and wages tradeoff, but have students identify other factors that could affect aggregate demand for a job: [job satisfaction/fulfillment](#), job security, good coworkers/boss/atmosphere, autonomy, location, prestige/status, fringe benefits, etc. After asking for student input, you can mention some of the [unusual perks/unusual perks](#) offered by tech companies in Silicon Valley such as nap pods, dogs at work, etc. ([More on perks](#))

You can bring up your own example of choosing to be in academia. While wages may be higher outside of academia given your level of education, the nonwage benefits in academia are superior. In academia, for example, you get to choose your own topics of research—many people like this freedom but not all! (Which will become professors?) You may wish to bring up tenure as another example. Tenure gives professors job stability but ask your students what the predicted effects are on salaries? Tenure is a desirable non-wage benefit which means that universities can pay professors less. How much more would you have to be paid to accept a non-tenured job outside of academia?

- 4** Ask students to imagine two executive assistant jobs performing roughly the same tasks and requiring the same level of skill/education: one position is at a movie studio and the other is at a debt-collection agency. Holding geographic location constant, would you expect wages to be the same for the two jobs? (Answer: probably not. The debt-collection agency would likely have to offer higher wages to attract workers.)

Discuss reasons why. Though the movie studio position likely has added perks of star sightings etc., this can be extended in other directions. Ariely et. al. (2008) and Chandler & Kapelner (2013) show that infusing meaning in a job increases worker quality and/or quantity holding wages constant. As an example, Chandler & Kapelner (2013) hire Mechanical Turks to label medical images and vary the message (and therefore the meaning) of the task. For the group that was told that they were identifying cancer cells in patients, worker quality increased (with no change in quantity).

- 1 You may wish to bring up a few different, related examples. In theory, wages should be slightly higher for a temporary job than for its analogous full-time counterpart because it is a dead-end job. If you've already discussed the future of work and the potential increase in automation, how will this change wages, if at all, for some jobs threatened with extinction? For example, if a job has a high probability of being eliminated by automation in the next five years, what should theory predict about the wage of these jobs? Should they increase or decrease? (Answer: in theory, wages should increase to force workers to enter these dead-end jobs, albeit temporarily, assuming potential workers know about this risk.)

Also point out that marginal rates of substitution between wage and nonwage compensation vary as individuals grow wealthier. Reference [Stumbling and Mumbling's blog](#) post for additional points about changing marginal rates of substitution based on wealth.

- 6 Discuss how historical events could also alter some individuals' compensating wage differential preference. Give the example of the 2007 recession. After such an event, how might an individuals' preference for monetary and non-monetary compensation bundle change? (Answer: some individuals may become more interested in job stability- e.g., jobs in the public sector.) Ask students if they can think of other events that would alter a person's monetary and non-monetary compensation bundle.

Deeper Diver into Wage-Safety Tradeoff

- 1 Have students identify risky jobs: students will likely identify obvious ones such as coal miner, police officer, HAZMAT management, etc. but push them to identify ones that we may not readily associate with risk such as fisherman and football players (and a few other professional sports).

Ask students whether job risk varies by football position (provide [stats](#) if students do not know). Should there be a compensating wage differential amongst various positions in football now that we know of the long-term risks? Is there? Discussion could touch on opportunity costs of football players and noncompeting groups concept (specialization happens at an early age?), aggregate supply of professional football players well exceeds demand. Discuss. You might also reference, as an aside, [the paper \(unpublished, speculative\)](#) that claims NHL player's concussion history does not affect his future contract negotiation salaries. You could also explore whether the [coach's short-run objectives of keeping players healthy](#) for the season is enough to protect players from some long-run health risks and whether greater awareness of concussion

risk will change wages.

- 2 Another topic to consider with the tradeoff between job safety and wages is varying marginal rates of substitution. As individuals grow wealthier, their preference for safety increases. That is, as workers grow wealthier, they demand higher wages to take on risk, which in turn incentivizes more employers to increase safety. (Compensating Differentials video; p.338 from Modern Principles of Economics, Cowen & Tabarrok)

Explore the concept from the ‘compensating differential’s video “rich workers buy more job safety.” Since 1970, workplace fatality rates have been reduced by more than 66 percent and occupational injury and illness rates have declined by 67 percent. At the same time, U.S. employment has almost doubled.¹ It may be helpful to dive into which jobs have decreased/increased in risk over time. Across countries as well, countries with higher GDP per capita tend to have lower rates of workplace injuries.²

Compensating Wage Differentials and Heterogeneous Preferences

- 1 It’s worth emphasizing that not everyone’s preferences are the same. The world is made of heterogeneous workers. Some people are more risk averse than others, like to work outside, etc. Reference the results from the class exercise. Even within the class, individuals have different preferences for the two job compensation packages. If you multiply these preferences over billions of people and jobs, you get quite a variety of preferences.
- 2 Students often find the idea of compensating differentials confusing because in their experience dangerous and unpleasant jobs like assembly line butcher often have low wages while safe and pleasant jobs like architect have high wages. Thus, in each example repeat that the comparison always holds other factors like skill or education constant. Another way to convey the idea is to ask for predictions. Ask the students to predict what would happen to the wages of professors if tenure were abolished? What would happen to the wages of ice road truckers in Alaska if global warming makes Alaska green and warm?

Alternate Exercises

Wage discrimination vs compensating wage differentials

NPR’s Planet Money Podcast on compensating wage differential could lead to a discussion about gender pay differentials. If women have a greater willingness to trade money for better working conditions including greater safety, shorter commutes, and more flexible work schedules then we would expect to see more women in jobs with more safety, shorter commutes and more flexible work schedules but also lower wages.

1. <https://www.osha.gov/oshstats/commonstats.html>

2. E.g. Shin et al. find that a 10% increase in GDP per capita is associated with a 8.3% decrease in fatal workplace accidents, controlling for other factors. Shin, I., Oh, J.-B., & Yi, K. H. 2011. Workers’ Compensation Insurance and Occupational Injuries. *Safety and Health at Work*, 2(2): 148–157.

Continued...

Excerpt: “I chose a lower-paying field before marriage or kids. I never felt excluded in a male-dominated workplace. So what’s my excuse? I love my job. Oftentimes...passion for work trumps money and skills.”

The BLS has a job series with breakdowns by gender: <http://www.bls.gov/cps/cpsaat11.htm>. Consider some of the jobs in this series with the fewest and most female representation. Only 1.5% of the mining machine operators are female, for example, and just 2.4% of the electricians – note that these are relatively dangerous jobs with, especially in mining, unpleasant working conditions. In contrast, 95% of hairdressers and 98.4% of speech language pathologists are female. Be careful to note that there are multiple potential explanations for these data. Why, for example, are only 1.4% of locomotive engineers female? Is this because boys like to play with locomotives or is it because there is gender socialization at an early age?

4 Post-Class Assignments

Student Exercises:

Students revisit their essay (on Netflix or another company perk) after class and add new thoughts based on the discussion of compensating wage differentials.

Alternate Exercises

Listen to the following Q&A segments from [an interview with Peter Thiel](#): (Segments 23:32-24:56 and 52:50- 54:32. A transcript of the excerpts are at the end of this lecture plan.) First, ask students to connect Thiel’s answers/observations to the concept of compensating wage differentials and comment whether or not they agree with his general advice. Next, ask students to fact check his claim: does the average plumber make about as much as the average medical doctor? Then, ask students to provide an answer for whether or not a career in petroleum engineering remains under-pursued in our society today. Finally, ask students to find another example of an ‘uncool/untrendy’ job that pays a relatively good salary compared to other jobs requiring an equal degree of skill/education. You can direct students to the [BLS website on wage data](#). Regardless of where they find their information, ensure students cite their source.

Alternate Exercises

140 character value-add: Students should imagine they are going to retweet Netflix's big announcement with the goal of appealing to the economically astute. Share best in show.



Teacher Reflection:

Reflect on what worked in the lecture/assignments. Where did students lose interest/have trouble? Was there anything you would change next time?

Reflect on the class discussion and student exercises. When were students most engaged? Confused? Bored? What could you do to change/improve the discussion?

5 Supplemental Resources



Textbook:

Any principles of economics textbook. The videos are based on the section titled *The Wealth of Nations and Economic Growth* in [Modern Principles of Economics](#) (3rd ed.) by Tyler Cowen and Alex Tabarrok but are appropriate for use by any teacher using any textbook.

The Economic Naturalist's chapter on compensating wage differentials (“Why Equally Talented Workers Often Earn Very Different Salaries and Other Mysteries of the World of Work”) is also a good reference.



Podcasts

- NPR's Planet Money: [Why Women Like Me Choose Lower Paying Jobs](#)
- NPR's Planet Money: [Hard Work is Irrelevant](#)



Articles/books/blogs:

- [Netflix to offer unlimited parental leave](#)
- [See How Several Silicon Valley Tech Companies Pamper Their Employees](#)
- [Football player variation in concussion incidence/brain trauma](#) (for discussing compensating wage differentials among various football positions)

- Moneyball 2.0: Keeping Players Healthy
- Changing MRS for job's wage and non-wage benefits
- Helliwell, John F., and Haifang Huang. "How's the job? Well-being and social capital in the workplace." *Industrial & Labor Relations Review* 63.2 (2010): 205-227.
- Ariely, Dan, Emir Kamenica, and Dražen Prelec. "Man's search for meaning: The case of Legos." *Journal of Economic Behavior & Organization* 67.3 (2008): 671-677.
- Chandler, Dana, and Adam Kapelner. "Breaking monotony with meaning: Motivation in crowdsourcing markets." *Journal of Economic Behavior & Organization* 90 (2013): 123-133.



Key Words

- Compensating differential
- Real wages
- Opportunity cost
- Heterogeneous
- Law of one price



Fast Facts

- Since 1970, workplace fatality rates have been reduced by more than 66 percent and occupational injury and illness rates have declined by 67 percent. At the same time, U.S. employment has almost doubled.
- It is estimated that firms must pay American workers roughly \$245B extra to take on risk at their jobs. (p.338, Principles)
- OSHA [Occupational Safety and Health Administration] levies roughly \$150M in fines on American firms each year for safety violations. (p. 338, Principles)



Conversations with Tyler, Peter Thiel Interview (Transcript Excerpt):

(23:32-24:56)

Tyler Cowen Q: I had some[one] email me a question; let me read it off and tell us what you think. This is a quotation. "What do you think a well-educated but zero marginal product worker in his mid-30s should do to remake himself for the next 30 years?"

Peter Thiel A: If I give you some general answer, and everybody could follow it, then if everybody followed that answer, it would be the wrong thing to do. Certainly, there still seems to be strangely a shortage of people in IT, broadly. If you're reasonably talented, you can get training in software and coding in a fairly

short period of time, and get in an employable job. It's sort of an odd cultural thing in our society where we still think of computer programming as such a geeky, bad career choice for people that even after a decade in which it's worked surprisingly well, there probably are still far too few people going into it. I think that's a safe general one. Petroleum engineering, that's the other amazing one that has not yet attracted more people into it, in spite of a decade-long boom.

(52:50- 54:32)

Audience Member Q: In an age increasingly dominated by intellectual ability, what should a person of modest cognitive ability do with his life, to find meaning or make a contribution?

Peter Thiel A: There are a lot of things that people can do, that are strikingly underexplored. There are certainly all these vocational careers where people can do quite well. They are somehow considered not cool, not prestigious. The average plumber makes about as much as the average medical doctor. I do think this idea of what's unfashionable is very important as an initial anchor. There's no reason that people of average ability are going to be more pushed towards what's fashionable than people who are very smart. I think often the smarter people are more prone to trendy, fashionable thinking because they can pick up on things, they can pick up on cues more easily, and so they're even more trapped by it than people of average ability.



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