

Chapter 1

Introduction to Labour Economics

McGraw-Hill/Irwin
Labor Economics, 4th edition

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Some General Course Information

- Discussion of class handouts:
 - Course information sheet.
 - Supplementary reading list.
 - New Zealand Official Yearbook 2008, Chapter 14 “Labour Market”.
- Paper pre-requisites:
 - 1st year micro (basic demand & supply curves etc.).
 - Basic understanding of econometrics helpful (brief intro given at end of chapter 1).
- The textbook emphasizes theory and facts.

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Why Study Labour Economics?

- Most humans allocate substantial time and energy to the labour market.
- Labour economics studies how labour markets work. It is, therefore, important for all of us! The functioning of the labour market(s) also important for economy as a whole (i.e. at macro level).
- Labor economics helps us understand and address many social and economic problems facing modern societies (see p. 1-2).

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Basics of the Labour Market

- We start with a simple neo-classical labour market (workers and firms want to maximize their objectives; the market clears; 'homogenous' labour).
- Participants are assigned motives:
 - Workers look for the best job.
 - Firms look for profits.
 - Government. It uses regulation to achieve goals of public policy.
 - Minimum wages
 - Occupational safety

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Three “Actors”

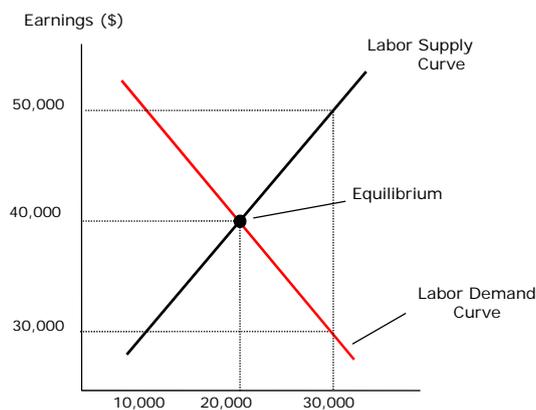
- Workers:
 - The most important actor; without workers, there is no “labour”.
 - Desire to optimize (to select the best option from available choices) to **maximize well-being**.
 - Workers decide: Whether to work or not; how many hours to work; how much effort to put into work; which skills to acquire and when; which occupation to enter; when to quit a job; etc.
 - Workers will want to supply more time and effort for higher payoffs, (usually) causing an **upward sloping labor supply curve**.

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Three “Actors”

- Firms:
 - Decide who to hire and fire; the length of the workweek (?); how much capital to employ (thereby affecting worker productivity); whether to offer a risky or a safe working environment, etc.
 - Motivated to maximize profits (at least that’s the standard story). A firm decides how much to produce to maximize profits. This determines how much labour it hires (therefore demand for labour is **derived demand**).
 - Relationship between price of labour and the number of workers a firm is willing to hire generates the **labour demand curve**. It has a negative slope, i.e. workers and firms enter the labour market with conflicting interests (see simple labour market diagram FIGURE 1-1, p. 4).

FIGURE 1-1: Supply and Demand in the Engineering Market



Three “Actors”

- The third major player in the labour market is the government.
 - Imposes taxes (e.g. income tax), subsidizes education and training, imposes regulations (hours worked, minimum wage, equal opportunity, health and safety, migration etc.).
 - The government’s actions provide the ground rules that guide exchanges made in labour markets.

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Summary: the Three “Actors”



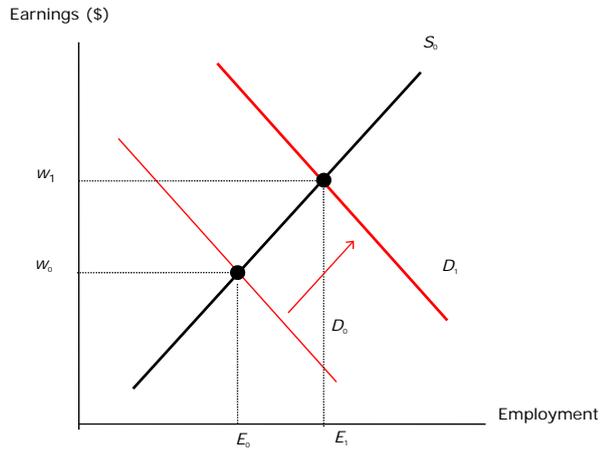
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The Alaskan Labour Market and Construction of the Oil Pipeline:

- **A Case Study for Finding Oil off Southland?**
- FIGURE 1-2: Temporary increase in labour demand. **Labour supply curve** fixed; **labour demand curve** shifts out. Theory predicts that **equilibrium wage and employment** first increase, and then both fall back to original levels.
- FIGURE 1-3: What happened confirms our simple theory:
 - Wage ↑: More local workers willing to work, PLUS workers from other parts of the country moved to Alaska to take up the new jobs created by the economic boom.
 - Once project finished: Wage ↓ again to pre-project levels and return to normal (i.e. long-run) employment and population growth trends.

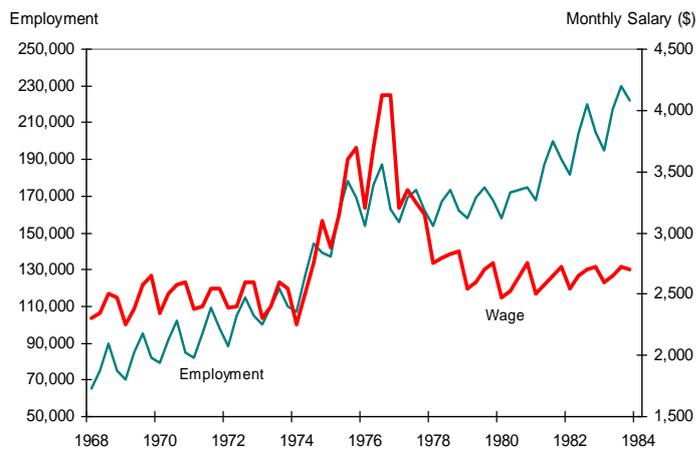
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FIGURE 1-2: The Alaskan Labour Market and Construction of the Oil Pipeline



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Wages and Employment in the Alaskan Labour Market, 1968-1983



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Why Do We Need a Theory?

- Explain and understand how labour markets work.
- Focus on the essential variables while leaving out other, less crucial, factors. See discussion of Alaska example, p. 7/8.
- Create a model that helps explain the theory.
 - The 'art' of (labour) economics: To find the correct balance between too much and too little detail and realism of model assumptions to explain a particular phenomenon.
 - The supply-demand framework is often very useful or at least a good starting point for building a more complex model of the labour market.

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Positive vs. Normative Economics

- **Positive economics**
 - Addresses the facts.
 - Focus on "what is" (e.g. temporary increase in wage and employment) without value judgment (i.e. whether this is good or bad, whether the project should have been undertaken at all).
 - Questions answered with the tools of economists. It tells us who the winners and losers of a policy or economic event are, and how much they are likely to lose or win.

Positive vs. Normative Economics

- **Normative economics**
 - Addresses values (about what type of society we want to live in).
 - Focus on “what should be”.
 - Requires value judgments. Cannot be decided by economic theory alone.
 - Economic policies require value judgments because they usually create both winners and losers (in that sense positive economics can help in making policy decisions; they are **one** of the inputs into policy making).
 - Migration example p. 9/10. Apply to NZ: 1 million immigrants?

At end of chapters:

- Summary (VERY RELEVANT)
- Key Concepts (VERY RELEVANT)
- Review Questions (USEFUL)
- Problems (from chapter 2 onwards) (I WILL COVER SOME IN CLASS)
- Selected Readings (from chapter 2 onwards)
- Web Links (some are relevant, many others are too US specific). For NZ web-links see the Supplementary Reading List.

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APPENDIX TO CHAPTER 1: An Introduction to Regression Analysis

- **Econometrics:** the application of statistical techniques to study relationships in economic data.
- Econometrics is used a lot in labour economics. Labour economics is a very empirical subject (close interaction and feedbacks between labour economic theory and empirics).
- Examples (p. 12): What are the relationships between:
 - Higher unemployment benefits and length of unemployment?
 - Level of welfare benefits and work incentives?
 - Years of schooling and subsequent earnings?
 In each case: Sign and size of correlation of the variables? Use regression analysis to find out.

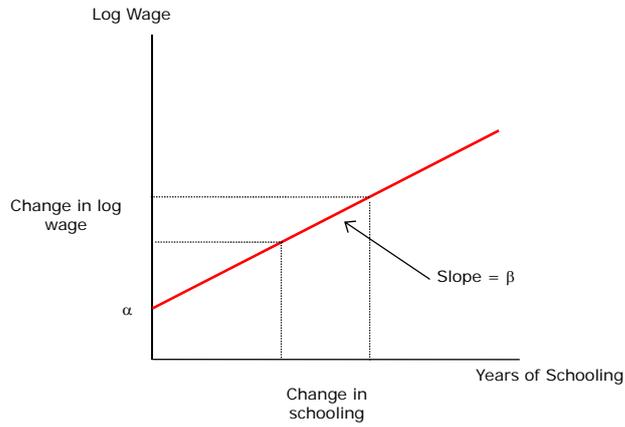
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An Introduction to Regression Analysis: Example

- Why do some occupations pay more than others (p. 13 ff.)?
- A (very simple, i.e. oversimplified) model: $\log w = \alpha + \beta s$
 - $\log w$ (average log wage of an occupation) – the **dependent variable**.
 - s (average years of schooling by occupation) – the **independent variable**.
 - α is the **intercept** of the equation (and linear regression line).
 - β is the **slope** of the equation (and linear regression line): Change in log wage divided by change in years of schooling. This indicates the percent change in earnings resulting from a one-year increase in schooling.
 - Regression analysis: put in numbers for log wages and years of schooling for a number of occupations and obtain estimates of the regression coefficients α and β . Linear regression.

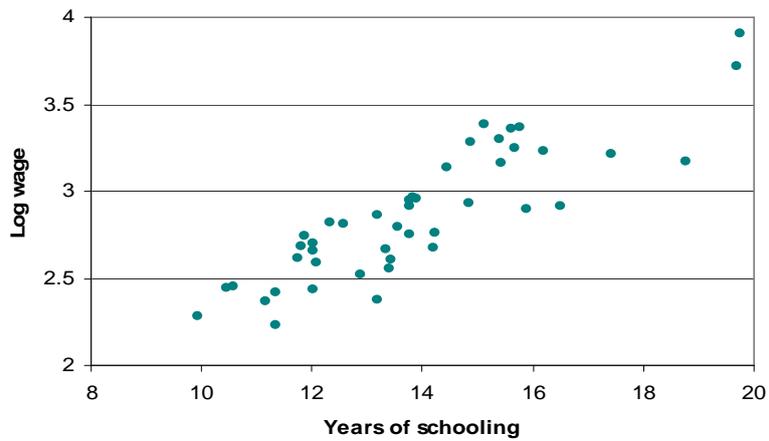
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The Regression Line: Figure 1-4



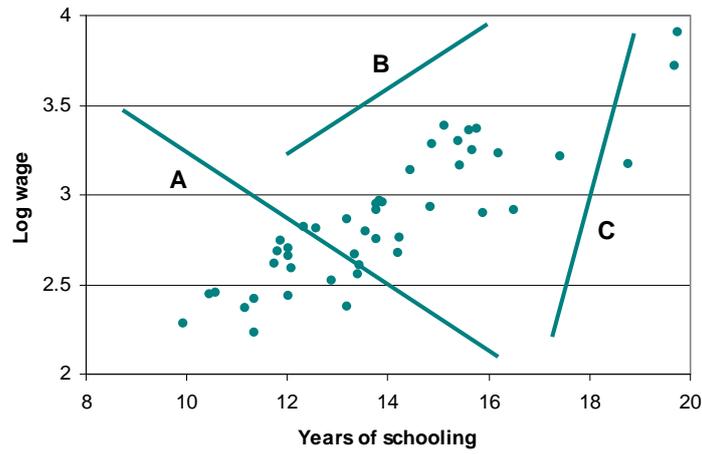
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Scatter Diagram (showing the 'raw data'): Wages and Schooling by Occupation, 2001 (Figure 1-5)



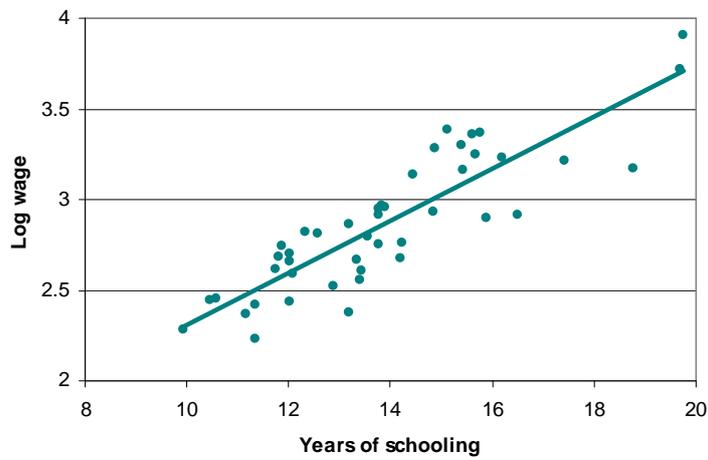
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Choosing Among Lines Summarizing Trends in the Data: Figure 1-6



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The Scatter Diagram and the Regression Line: Figure 1-7



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Interpreting the regression results in our example

- Regression result (Eq. 1.3): $\log w = 0.869 + 0.143s$ and FIGURE 1-7.
- Why don't we get a perfect fit on a straight line?
 - Our model is not complete. There are missing variables (e.g. average age of workers, other training besides 'schooling', whether an occupation is mostly male or female dominated, etc.).
 - Measurement error (data are not measured perfectly accurate).

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Interpreting the regression results in our example

- Using regression analysis, we try to find the BEST line that goes through the scatter diagram (can be linear or non-linear; here linear example for simplicity), i.e. that best summarizes the data (and therefore the correlation between the two variables).
- NOTE: Correlation is not causation. We imposed the direction of causation!
- Also note that we have to be very careful when predicting out of sample range (e.g. for zero years or 25 years of schooling). It might be non-sensical.

Interpreting regression results

- “Margin of Error” and Statistical Significance
 - Regression output usually includes many ‘diagnostics’, i.e. statistics that provide information about how good a particular regression is (not only in terms of explanatory power of the chosen technique but also whether the chosen regression technique is appropriate or not).
 - **Standard errors** are reported for the regression coefficient estimates [they are the square roots of the variances of the coefficient estimates]. They indicate the degree of statistical precision with which the coefficients are estimated.
 - Standard errors enable us to calculate the ‘margin of error’ of the estimates (to calculate a ‘confidence interval’ within which our estimate lies with a certain degree of likelihood, e.g. 95%).
 - Common margin of error used: twice the standard error, i.e. the estimate lies within an interval of the estimate plus/minus the standard error.

Interpreting regression results

- To assess the statistical significance of a particular coefficient estimate, standard errors and/or t-statistics are used.
 - Rule of thumb: If the coefficient estimate is twice the size of the standard error, the estimate is ‘statistically significant at the 5% level’.
 - $t\text{-statistic} = \frac{\text{Absolute value of regression coefficient}}{\text{standard error of regression coefficient}}$. If $t > 2$, the coefficient estimate is said to be significantly different from zero (i.e. the two variables in our model are correlated).
- **R-squared:** Gives the percentage of the dispersion of the dependent variable that is explained by the dispersion of the independent variable (the degree of goodness of fit, the explanatory power of the regression).
 - E.g.: R-squared value of .6 means the independent variable can explain 60% of the variation in the dependent variable.

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Interpreting regression results: Multiple regression

- Multiple regression is a regression model with more than one independent (i.e. explanatory) variable!
- Textbook example: The coefficient estimate for the first independent variable give the change in the log wage resulting from a one-year increase in mean schooling, holding constant the value of the other independent variable.
- The other independent variable in the example is the percent of workers in an occupation that are women ('p').
- Also note how to interpret the intercept in this case (p. 19).

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Interpreting regression results: Multiple regression

- Estimated regression (1-6):

$$- \log w = 0.924 + 0.150s - 0.003p ; \quad R^2 = 0.816$$

$$(0.154) \quad (0.011) \quad (0.001)$$
- Note: the values in brackets are standard errors. Try to understand the interpretation of the coefficient estimates (see p. 20).
- Ideally, all relevant independent variables that affect the dependent variable should be included in a regression model, otherwise the estimates are biased (omitted variable bias). **Do we ever achieve this ideal? Like economic theory, econometrics is as much an art as it is a science!**
- Labour economists tend to use lots of independent variables in their regressions!

Start on chapter 2: Class Handout

- Copies of the explanatory notes (32 pages) of the Statistics New Zealand publication “**Labour Market Statistics 2008**”, published in March 2009, were handed out in class. They explain the major sources of NZ labour market statistics, e.g. the Household Labour Force Survey, the Labour Cost Index, the Linked Employer-Employee Data, the New Zealand Income Survey, and the Quarterly Employment Survey.
- Students should **note the definitions** used which sometimes differ from those used in the textbook and refer to this document when appropriate during the course.