Announcement:

Office hour:

1. Wednesday 4-5 pm
2. Friday 11am-12pm

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INEQUALITY

EE461 Sem 2/2019

Questions

- What are the theories that can explain the level of economic inequalities and its dynamic?

- How do policies affect inequalities?

❖Understanding inequality

Capital

- **Inequality, capital markets, and development (Ray, Chapter 7.2.8)**
- Inequality, saving , and growth(Ray, Chapter 7)
- Capital-labor inequality (The economics of inequality chapter 2, Thomas Piketty)

Inequality, capital markets, and development

- What make transactions between different parties in the market possible?
  - How can we be sure that when we pay money for goods and services, those goods and services will be delivered?
  - How can merchants be sure that when they deliver their goods and services, they will receive payment?

➢ People are generally honest and will not cheat each other.

➢ An enormous amount of **social conditioning** that permits such simultaneous exchange.

➢ A legal mechanism that encourages conformity to the social norm of exchange.

Inequality, capital markets, and development

- What do we do to make transactions **that are separated in long period of time, like borrowing and repaying**, possible?
  - Screening for the ability to repay
  - Signals for willingness to repay
  - Sanction mechanism of various kinds if default
  - Social mechanisms if default
- BUT, there is a possibility that if individuals can default on credit arrangements under the existing social and legal rules, then they well might.

Inequality, capital markets, and development

- Markets cannot function unless there is:

  - a clear statement of the underlying **social contract** involved, and
  - a clear and well-defined mechanism **for punishing deviations from the norm.**

- Having collateral is one mechanism that enable (imperfect) capital market to function, because the collateral is needed to **insure the lender against the possibility of default.**
- **Successful borrowing contract is built based on the expectation that borrower will not decide to default.**

Inequality, capital markets, and development

- Accordingly, for capital market,
  - what you have as collateral and
  - the perceived extent to which you value the future relative to the present

  determine the degree to which you have access to the credit market.

- In unequal societies, the poor may lack access to credit markets for precisely the reason that they lack collateral.

- A missing or imperfect credit market for the poor is a fundamental characteristic of unequal societies.

An example

- Imagine that you wish to become an entrepreneur and start a business.

- Suppose that you have personal assets worth $100,000.

- The investment required to start up the business is $200,000

An example

- Business:
  - 50 workers paid at $5,000/worker
  - Total revenue = $500,000
  - Lifetime of business = 1 year, must repay the loan at the end of the year

- Loan:
  - 10% interest rate
  - Need 100% of initial wealth as collateral

An example

- If default:
  - Collateral will be forfeited
  - 50% chance of getting caught
    - Go to jail which can monetized to $50,000
    - Profit from business will be confiscated

Costs for each alternative

Items	If I pay back the loan	If I default
Principal	\$200,000	
Interest	\$20,000	
Collateral		\$100,000+\$10,000 (10% additional value of collateral)
Expected cost of going to jail		\$50,000
Seizure of profits		0.5(\$500,000-\$250,000)=\$125,000
Total	\$220,000	\$285,000

The costs of default outweigh the benefits in this example, so I will repay the loan.

A model with occupational choice and the credit constraint

- A missing capital market might influence economic outcomes by **affecting the ability to freely choose occupations or investments,** thereby the process of inequality and output.

- A simple economy

- 3 occupations: subsistence producer, industrial worker, and entrepreneur

A model with occupational choice and the credit constraint

- Subsistence producers can produce some fixed amount z with their labor. z is the subsistent income.

- An industrial workers can earn a wage w

- An entrepreneur with endowment W runs a business that needs startup capital $I > W$, and hires m industrial workers to produce an output q.
  - ➢ Profit for entrepreneur is $q - wm - (1 + r)I$.

A model with occupational choice and the credit constraint

- Entrepreneur's decision to default or to pay back the loan
  - Wealth W is put up as collateral to get loan $I > W$.
  - Loan repayment is $(1 + r)I$.
  - If default, then lose collateral $(1 + r)W$
  - Expected cost of default:
    - Expected cost from facing capture and punishment is denoted by F.
    - Fraction λ of profit

A model with occupational choice and the credit constraint

- The entrepreneur will pay back the loan if:
- The cost from not repaying the loan $\geq$ The cost from repaying the loan

$$(1+r)W + F + \lambda(q - w(t)m) \geq (1+r)I$$

$$W^* \geq I - \frac{F+\lambda(q-w(t)m)}{1+r} \qquad (*)$$

- The lender can figure out this entrepreneur's decision and hence will loan the entrepreneur only if this condition is met, that is Banks or moneylenders will provide loans to an individual whose initial wealth is "high enough".

A model with occupational choice and the credit constraint

- The Individuals who start out with wealth lower than this critical level are, therefore, unable to be entrepreneurs whether they want to be or not.

- The smaller the value of F and λ, the higher the value of collateral W^*.

A model with occupational choice and the credit constraint

- If $F = 0$ and $\lambda = 0$, then $W^* \geq I$.
  - If you have that kind of wealth, you can finance your own investment.
  - The credit market breaks down completely

- If $w(t)$ decreases, W^* decreases.
  - If wages are relatively low, the profits from entrepreneurship are high, and you would expect it to be easier to get a loan to go into business. Therefore, the minimum wealth threshold required to obtain a loan should decline.

Wealth distributions and equilibrium

- At any date, wealth is unequally distributed in the economy. Wealth is carried over from the previous period.

- This distribution determines the fraction of people who have access to entrepreneurship; the remainder join the subsistence sector or become workers.

- These determine demand and supply of labor, hence the wage rate at time t.

- New wealth is created from this process, we move to the next date, and the entire process repeats itself.

Wealth distributions and equilibrium

- At any date t, given $w(t)$, the fraction of the population that is shut out of entrepreneurship is determined from equation (*).

- Using the starting distribution of wealth, we obtain the fraction of the population starting out at wealth levels lower than this required minimum.

$$\underline{W} = I - \frac{F + \lambda(q - w(t)m)}{1 + r}$$

- The minimum wealth threshold is increasing in the wage rate.

Wealth distributions and equilibrium

- The higher wage rate, the higher is the fraction of the population that is shut out of entrepreneurship. This is because the minimum wealth required for access to credit goes up

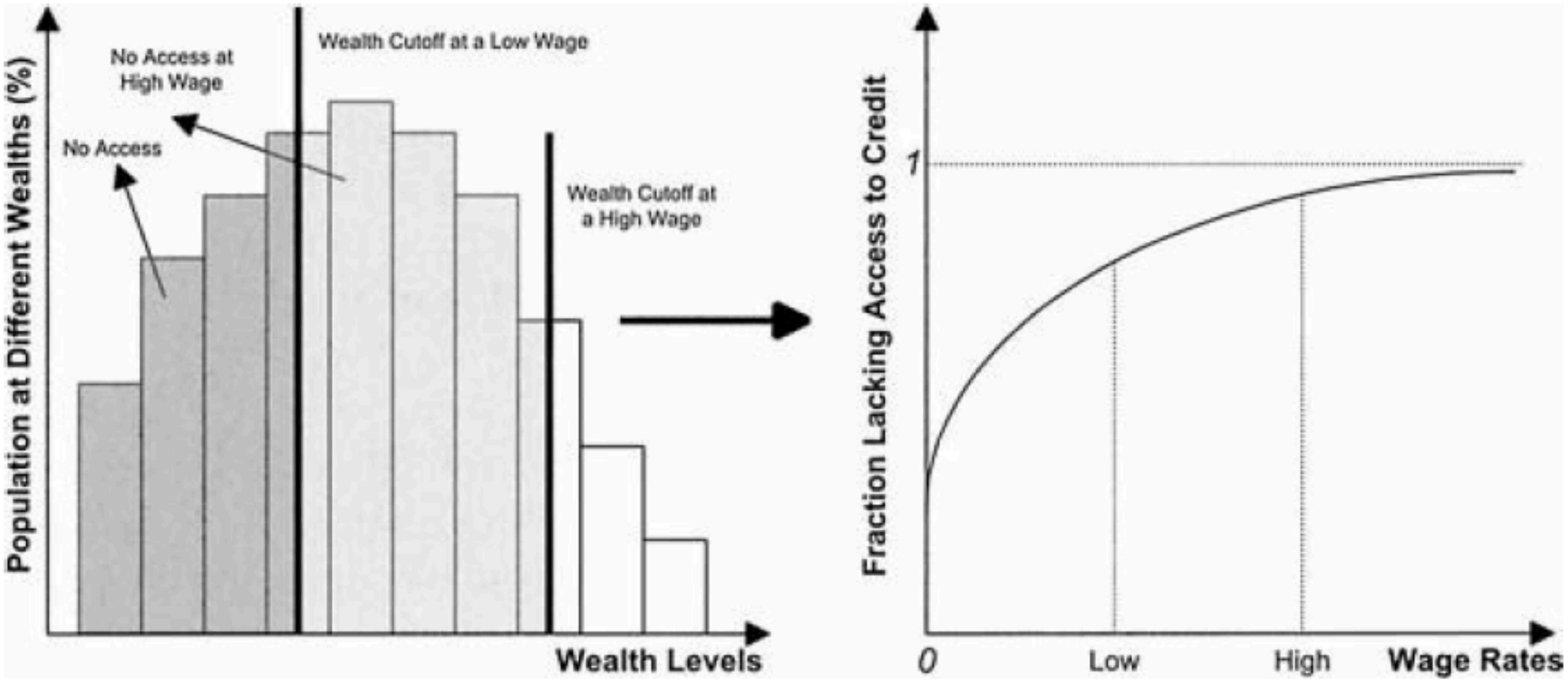


Figure 7.7. Wage rates and fractions of people lacking access to credit.

Wealth distributions and equilibrium

- These individuals must then choose between subsistence and market labor, and the choice depends on the wage rate $w(t)$ and z.

- If $w(t) < \mathrm{z}$, there is zero participation in the labor market, everyone who is not entrepreneur, will be subsistent producers.

Wealth distributions and equilibrium

- If $\mathrm{z} < w(t) < \bar{w}$, for higher wages, the labor supply steadily increases, as more and more people get shut out of entrepreneurship and must now switch their occupational choice to labor. This process continues until we reach a high enough wage, call it $\bar{w}$, such that the profit from running a business becomes exactly the same as labor income.

- $q - \bar{w}m = \bar{w}$

Wealth distributions and equilibrium

- If $w(t) > \overline{\mathrm{w}}$, everyone, whether they can be entrepreneurs or not, will jump into the labor market. Labor income exceeds profit income, so no one will want to be an entrepreneur.

Wealth distributions and equilibrium

- Since we know the relation between $w(t)$ and the willingness to participate in labor market, we have a supply curve of labor: a description of the number of individuals who enter the labor market as the wage rate changes.

- The change in the labor supply as wage rate changes depends on the distribution of wealth and the way in which credit market works.

Wealth distributions and equilibrium

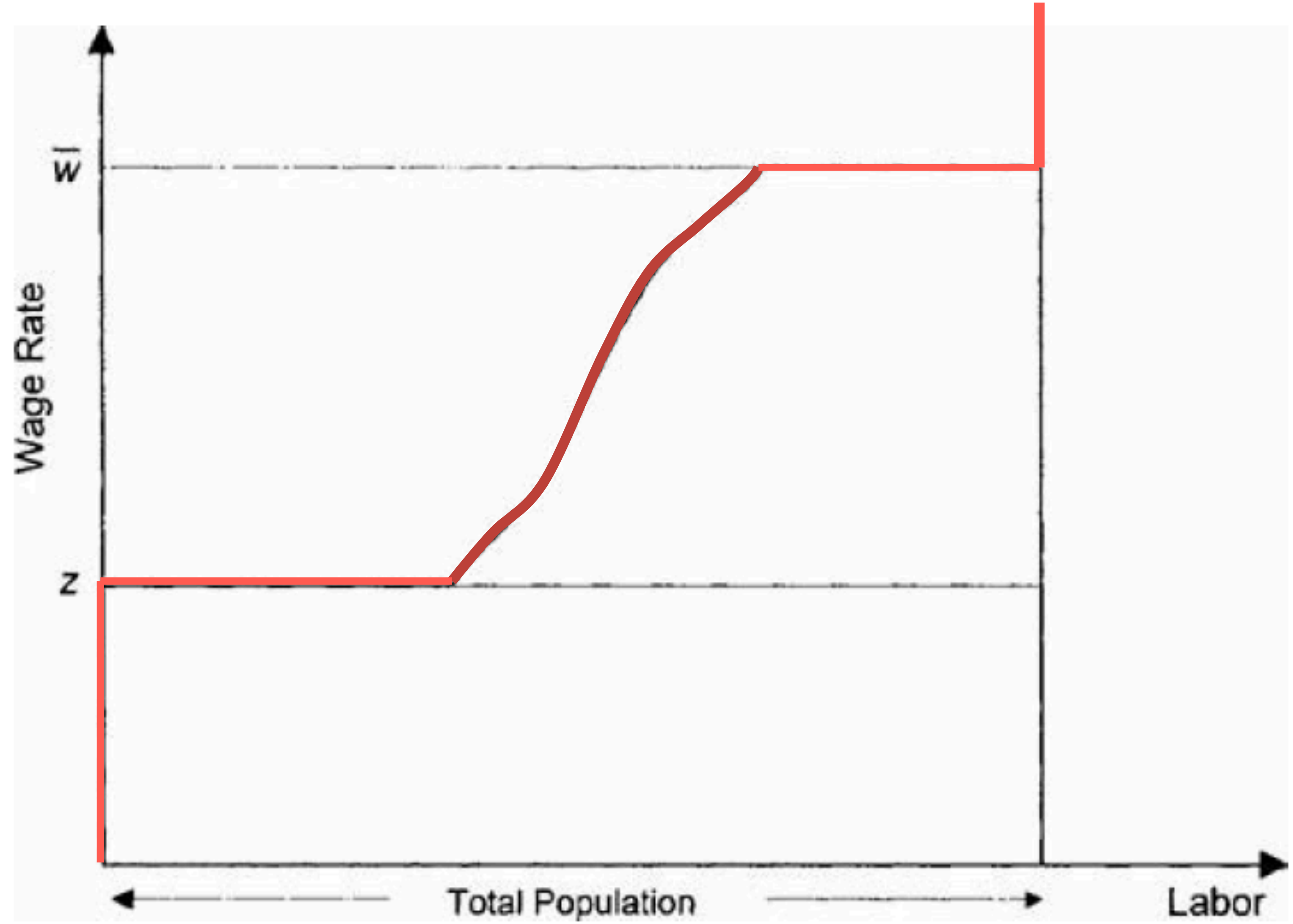


Figure 7.8. The supply curve of labor. Note the jumps at z and at $\bar{w}$.

Wealth distributions and equilibrium

- What's about a demand for labor?
- If $w(t) > \mathrm{\overline{w}}$, there is no demand for labor at all, because no one wants to be an entrepreneur.

- If $\mathrm{z} < w(t) < \overline{w}$, as wage decrease, there will be more demand for labor as people now enter entrepreneurship more.

Wealth distributions and equilibrium

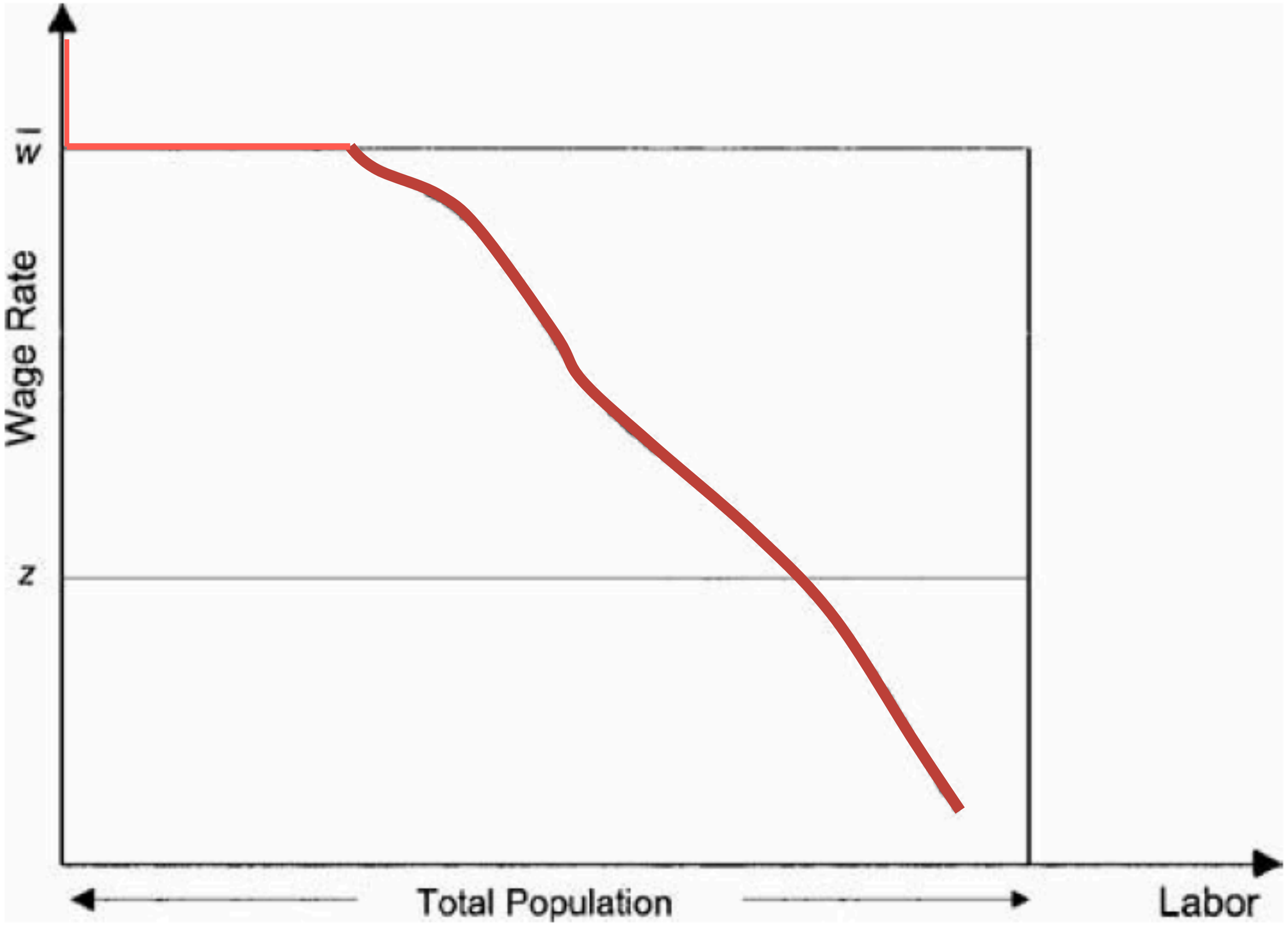


Figure 7.9. The demand curve for labor. Note the jump at $\bar{w}$.

Wealth distributions and equilibrium

- At each date t, the prevailing distribution of wealth feeds into the choice of occupations and therefore determines the shape of these supply and demand curves, and consequently the wage rate.

Wealth distributions and equilibrium

- **If the distribution of income is highly unequal (or if the economy is extremely poor)**, so that there are a large number of individuals with very low wealth.

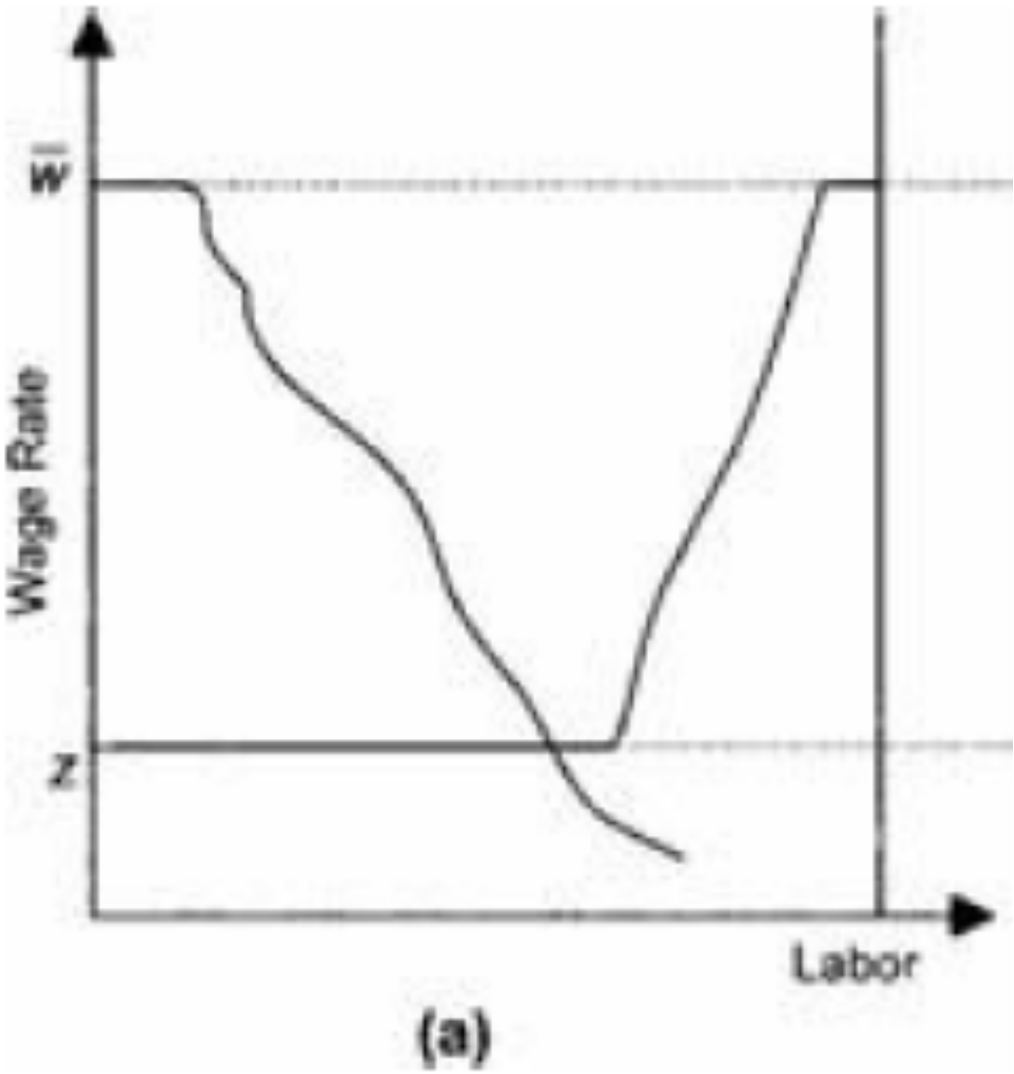
- This situation has the effect of creating a sizable supply of labor at any wage exceeding subsistence levels, simply because there are a greater number of individuals barred from entrepreneurship.

- The demand curve for labor is low, at any wage rate. The result is an intersection of the two curves at the minimum subsistence wage z.

- For the lucky few who are entrepreneurs, however, profits (and so income and wealth) are high.

Wealth distributions and equilibrium

$w^*(t) = z$



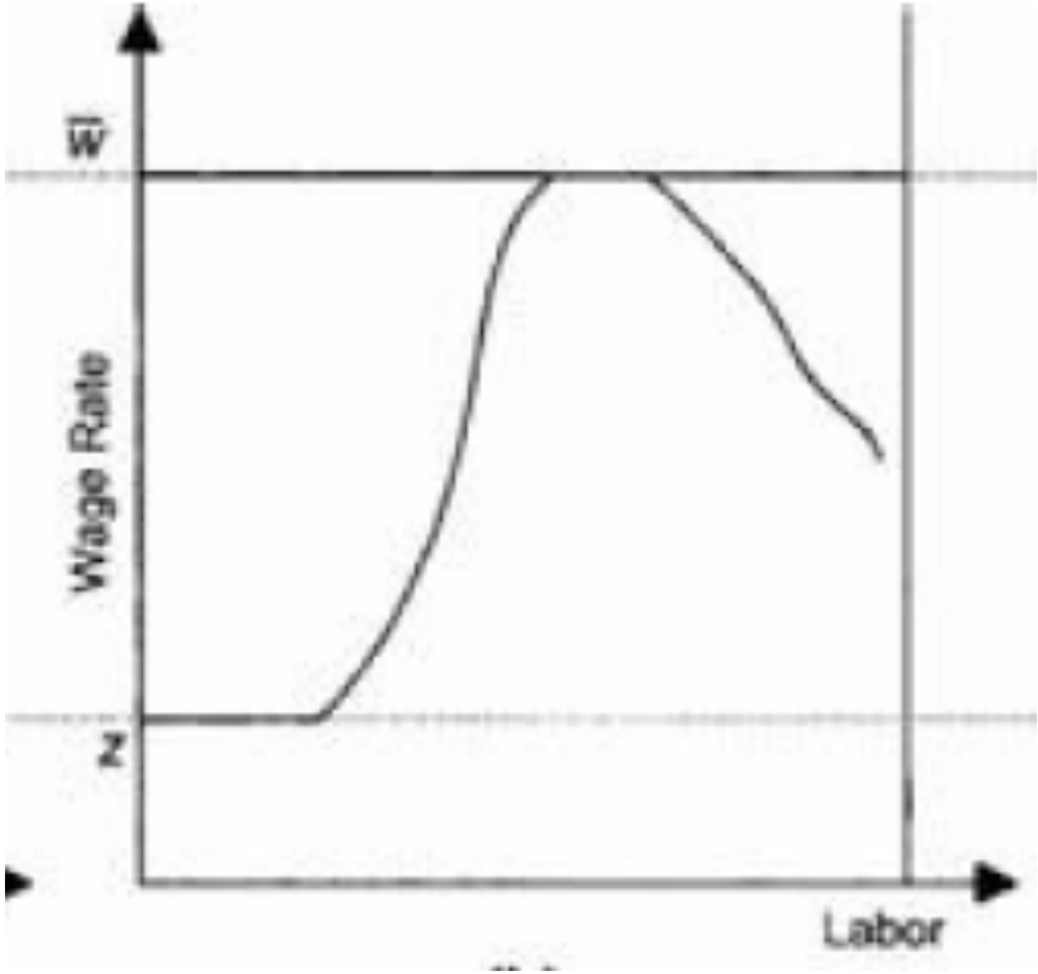
Wealth distributions and equilibrium

- **If there is a great deal of equality (or if the economy is very rich),** relatively few people are barred from entrepreneurship.

- The supply curve of labor shifts inward, and the demand curve shifts outward, leading to an equilibrium wage of $\overline{w}$.

Wealth distributions and equilibrium

$w^*(t) = \bar{w}$



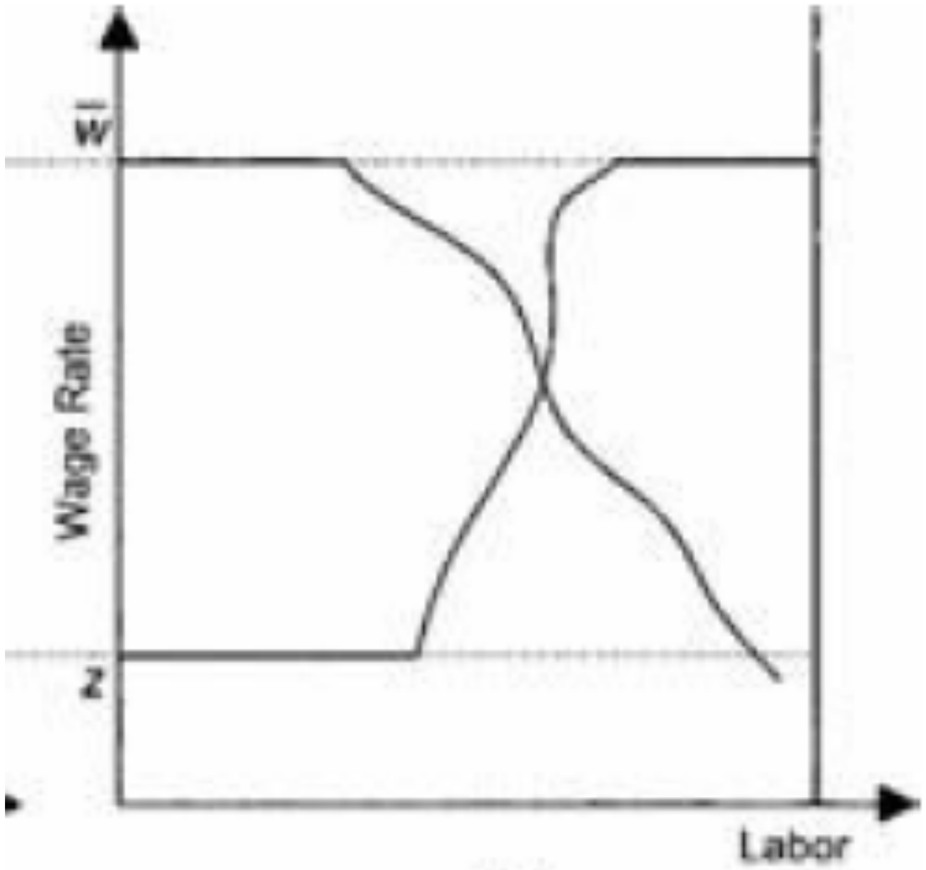
Wealth distributions and equilibrium

- If there is an intermediate situation of moderate inequality or average wealth, there are sizable numbers of people are shut out of credit markets, while another sizable fraction are not.

- Demand and supply curves intersect at some wage rate that lies between subsistence z and the high wage $\overline{w}$.

Wealth distributions and equilibrium

$z < w^*(t) < \bar{w}$



(c)

The inefficiency of inequality

- In case of high inequality with extreme poverty, if there was additional access to credit, and such access is not barred because of the inequality in wealth**, a fraction of these individuals could have become entrepreneurs**.

- They would then have generated profits for themselves, which exceed the subsistence level of income to be sure, and then would have pulled more workers into the industrial sector.

- This scenario creates an efficiency improvement, a Pareto improvement.

- Because we can make pareto improvement, this is a sign of having inefficiency.

Inequality begets inequality

- In case of high inequality with extreme poverty, people earning subsistence wages are unable to acquire wealth, while wealthy entrepreneurs make high profits off the fact that labor is cheap.

- The next period’s wealth distribution therefore tends to replicate the wealth distribution that led to this state of affairs in the first place.

- Inequality is history dependence.