

Freimut Kahrs

# Uncertainty on Job Markets and its implication on wage and unemployment

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# The Liberty Delusion

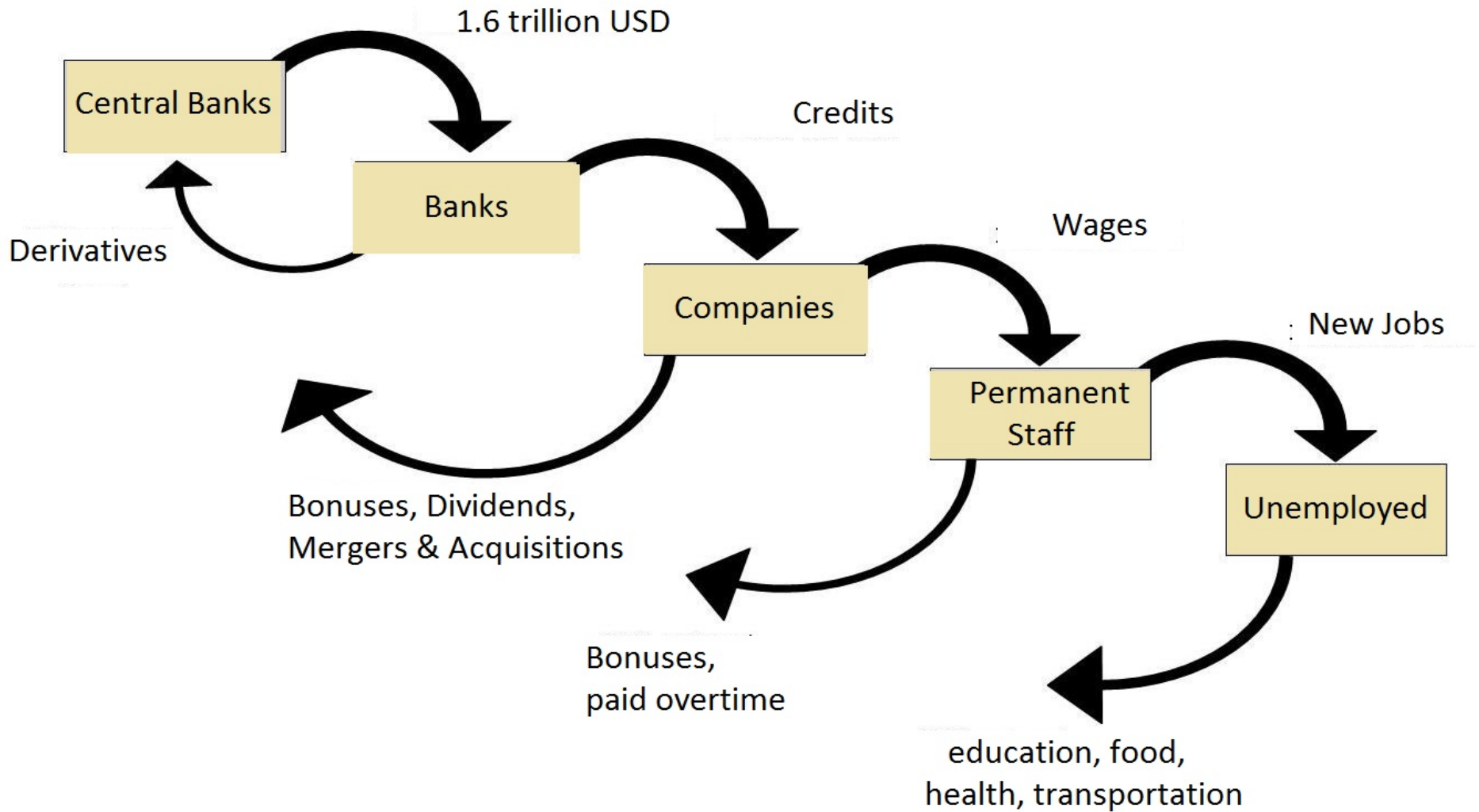


- Freimut Kahrs
- Educational background
  - Statistics
  - Economics
  - Engineering
- Author of  
The Liberty Delusion  
(„Lebenslüge Freiheit“)
- Published in 2008

# Wage is Credit

Wage is a credit  
the employer is willing  
to lend to an employee  
in exchange for repayment  
and excess profit

# The Credit Cascade



Job is a risky Investment

On the job market,  
each employer has to  
estimate the  
productivity of each  
applicant

# Uncertainty of Job Performance

## Job Performance (estimated)

- Wage (known)

- Taxes (known)

- Equipment (known)

- Overhead (known)

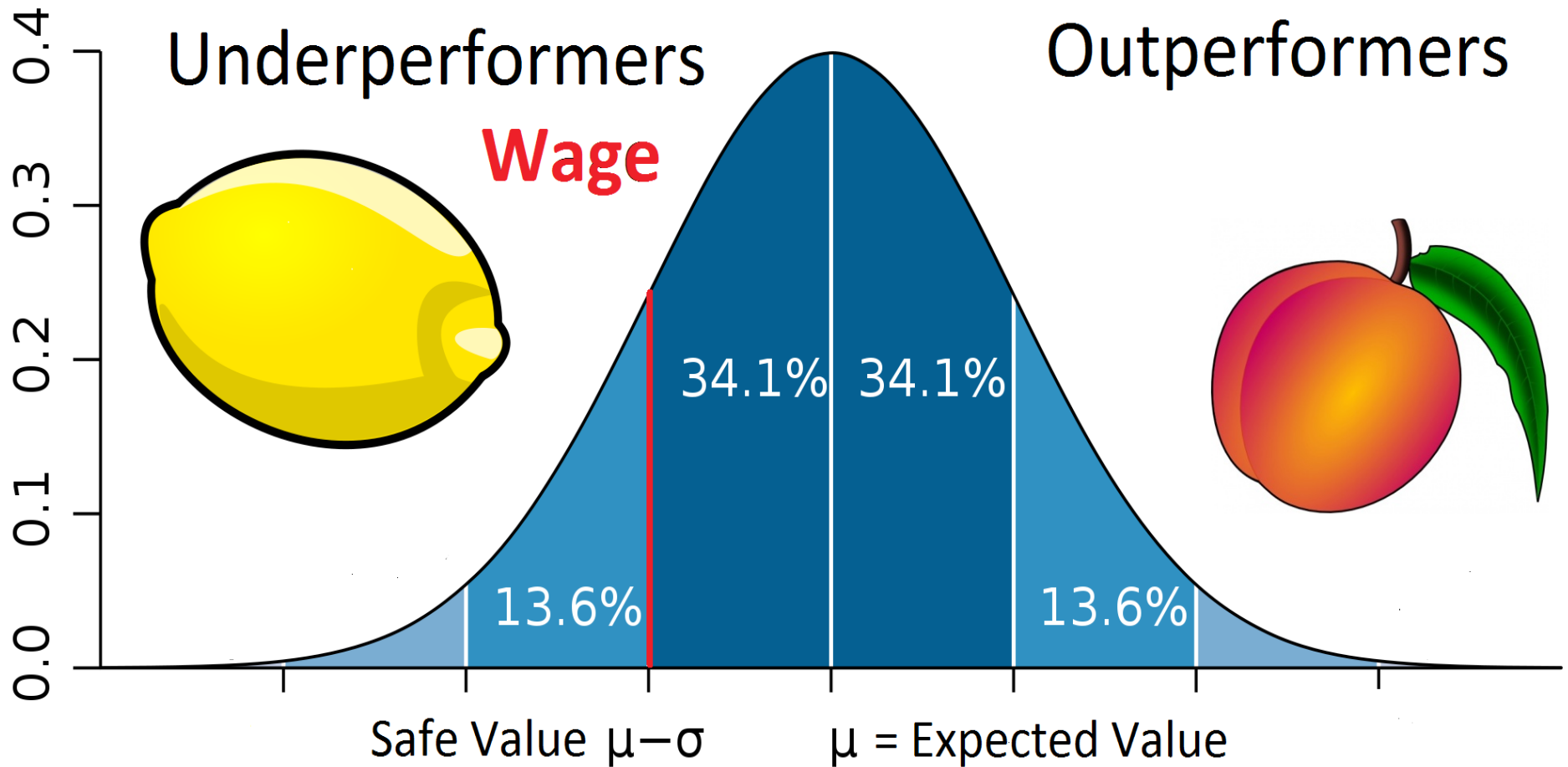
= Net Earnings per Employee

# Uncertain Job Performance

This is a verbal description of the following slide

Let's assume that job performance is normally distributed with an expected average and with a variance. 50% of all employees will be outperformers and 50% will be under-performers. For psychological reasons, the employer is biased – he evaluates one loss equal to four profits. Thus, he wants to make a profit with 80% probability. In order to reach this, he has to pay the expected average performance minus one standard deviation. This wage is drawn as a red line.

# Uncertain Job Performance





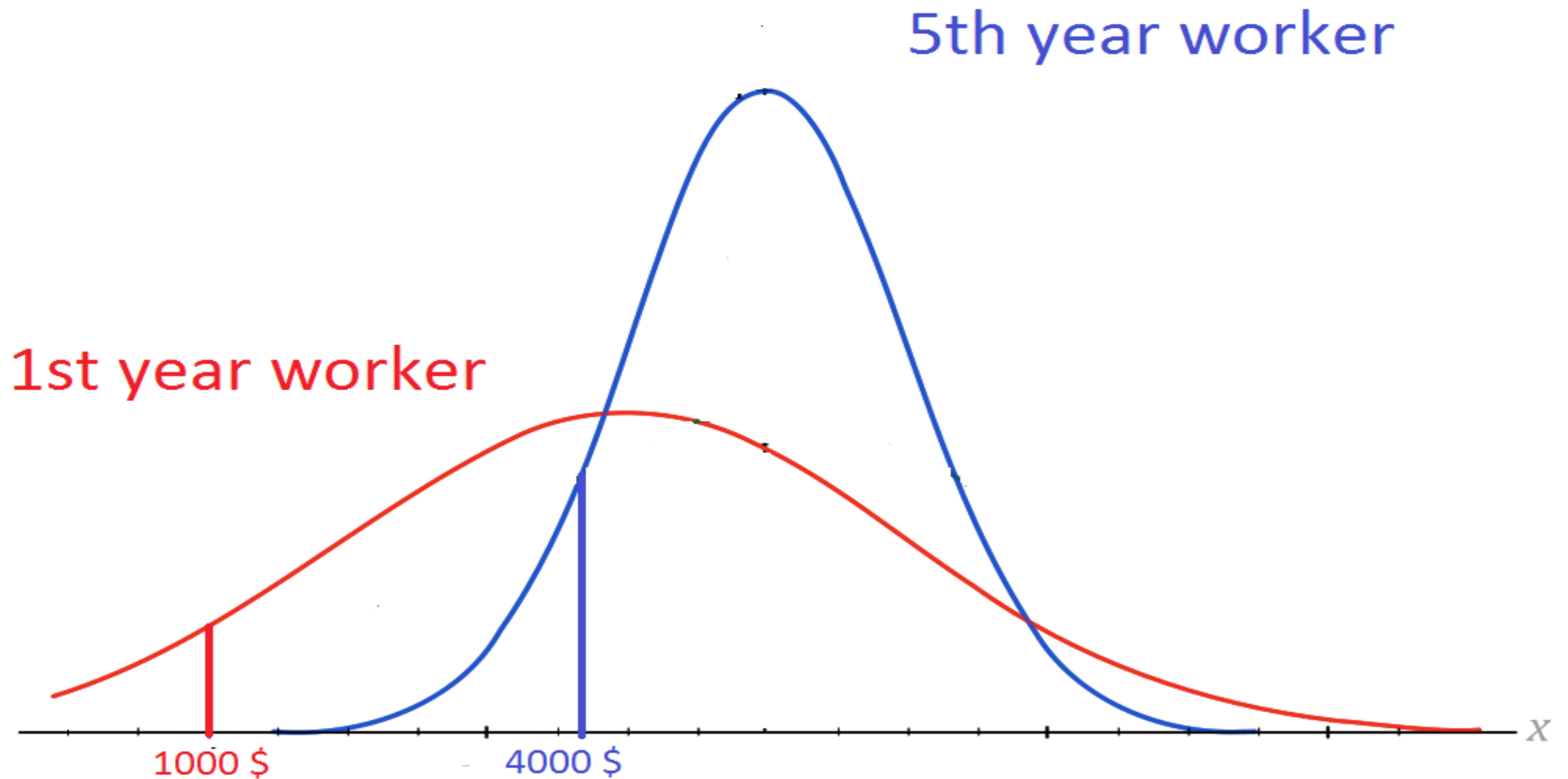
# Job Experience and Wage

This is a verbal description of the following slide

With increasing job experience, job performance will increase and uncertainty will diminish. So it makes sense to pay higher wages for experienced long-term professionals.

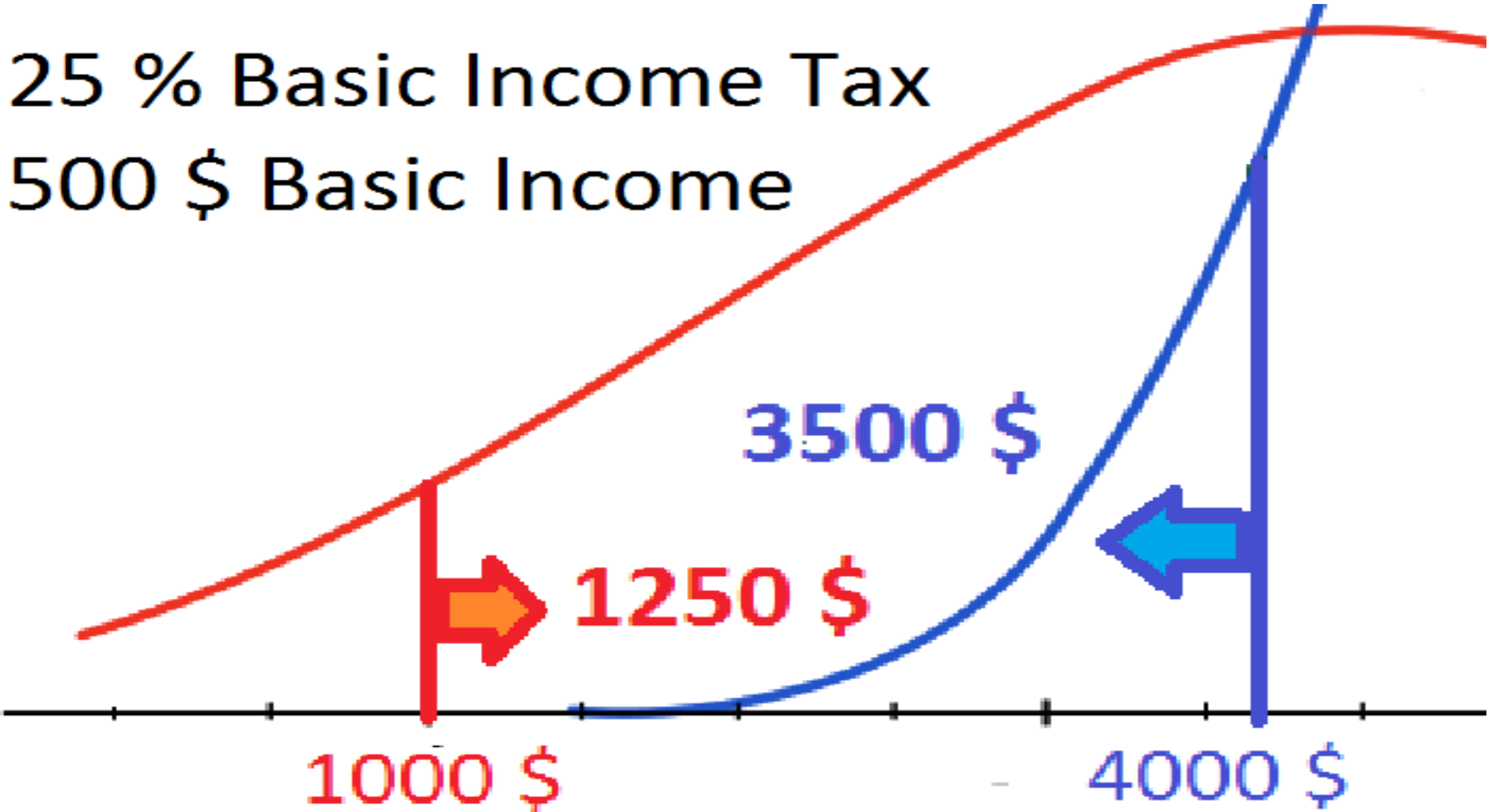
As soon as your company cuts jobs, you will be once again a job starter with high uncertainty and low wage.

# Job Experience and Wage



# Wage with Basic Income

25 % Basic Income Tax  
500 \$ Basic Income



# Technological Change and Wage

This is a verbal description of the following slide

Does technological progress increase productivity and wages? There is an imaginable case where technological progress results in lower wages!

With new technology, the average job productivity of an average worker will be higher, but the variance of output will be bigger. In order to handle this uncertainty, wages for job starters will be lower.

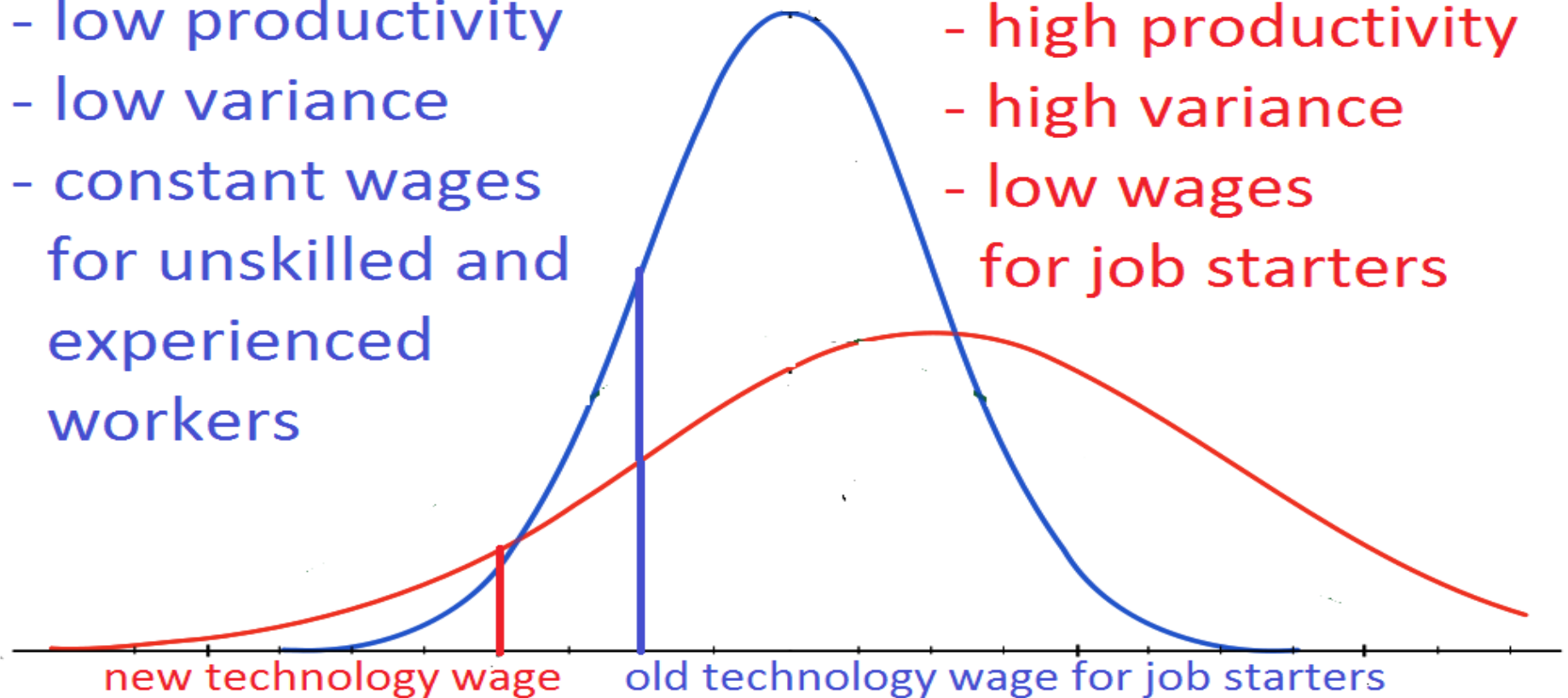
# Technological Progress and Wage

## Old Technology

- low productivity
- low variance
- constant wages for unskilled and experienced workers

## New Technology

- high productivity
- high variance
- low wages for job starters



# High Risk Activities



**Research** is an example for a high-risk activity

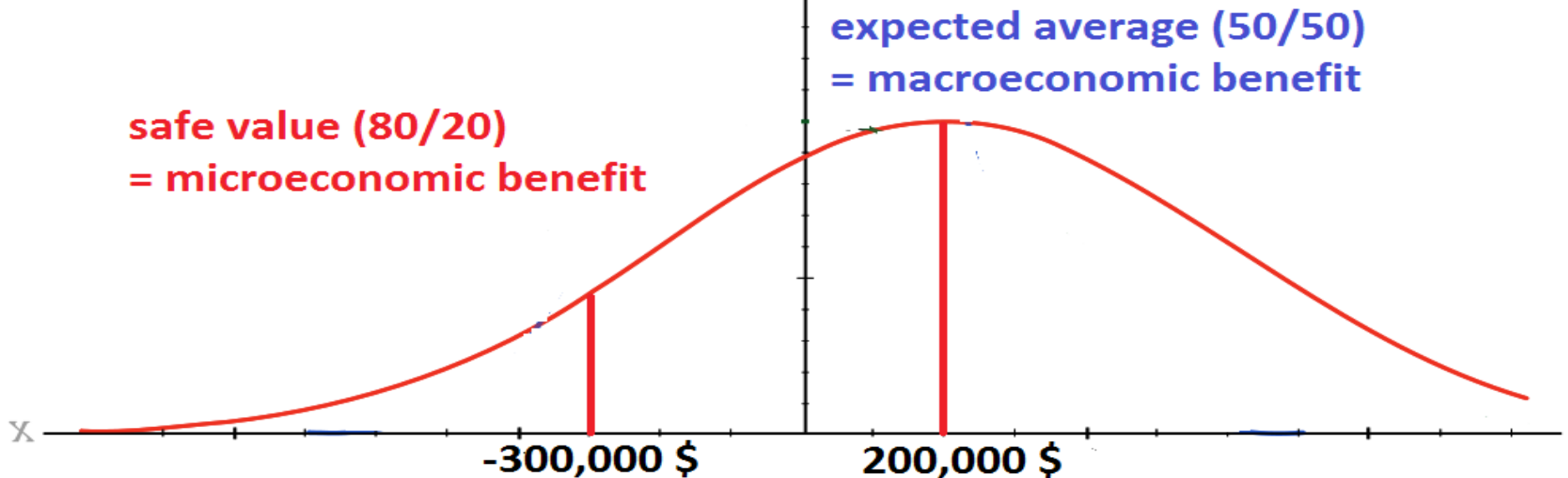
- 10 researchers pursue to find a new medicine
- 9 of 10 will fail, each one causes a loss of **100,000 \$**
- Only 1 of 10 will succeed, generating a profit of **1,000,000 \$**

# Research Profitability

Researchers (#)	Success (%)	Total Wage (\$)	Loss (\$)
1	10 %	100,000 \$	0 \$
2	19 %	200,000 \$	-10,000 \$
3	27 %	300,000 \$	-30,000 \$
4	34 %	400,000 \$	-60,000 \$
5	41 %	500,000 \$	-90,000 \$
6	47 %	600,000 \$	-130,000 \$
7	52 %	700,000 \$	-180,000 \$
8	57 %	800,000 \$	-230,000 \$
9	61 %	900,000 \$	-290,000 \$
10	65 %	1,000,000 \$	-350,000 \$
15	79 %	1,500,000 \$	-710,000 \$
20	88 %	2,000,000 \$	-1,120,000 \$

# High-risk Activities

- High-risk activities with a big variance in job productivity may result in wages equal to zero or even lower at least for some employees (e.g. young job starters)





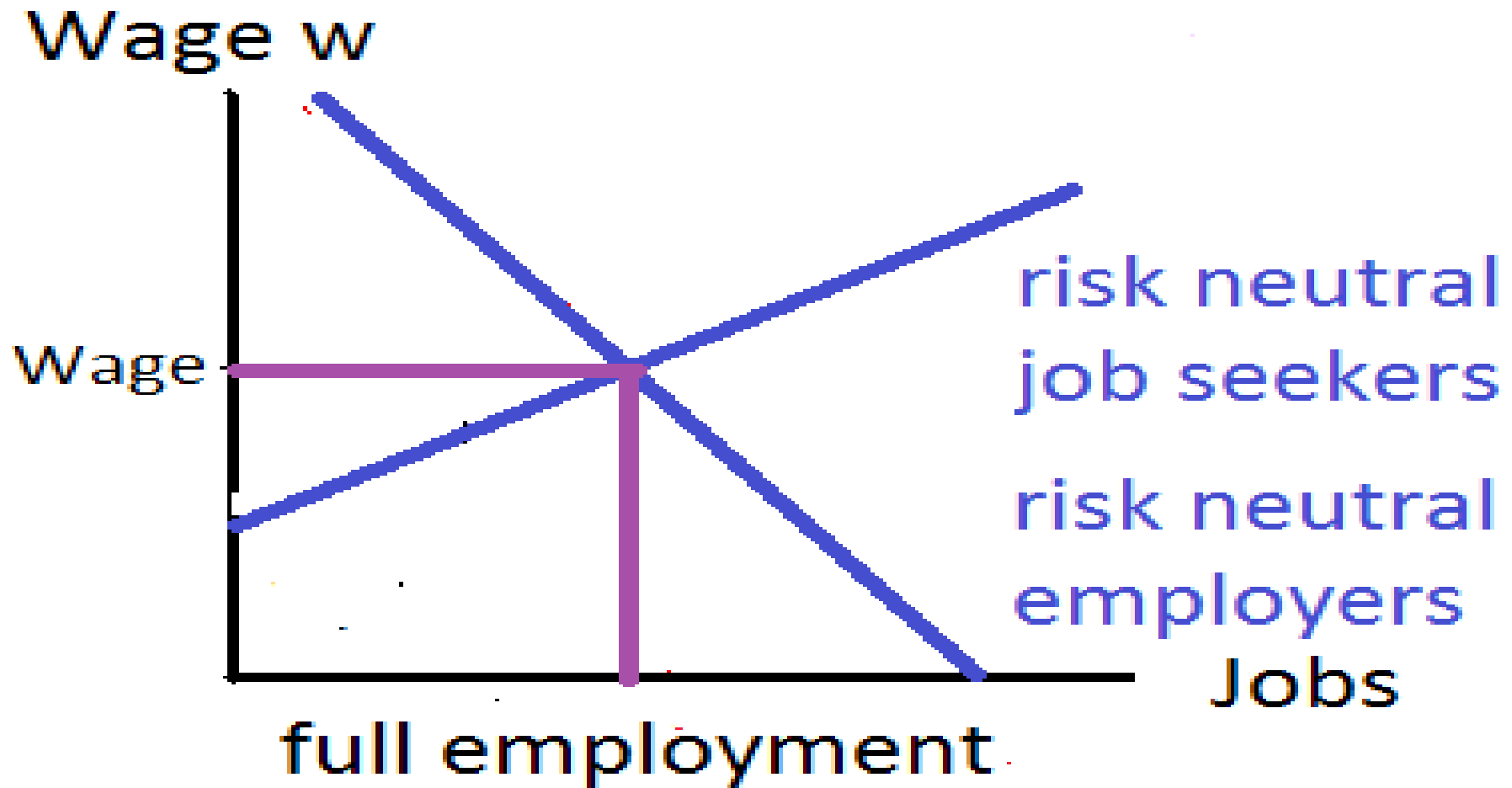
# Job Market without Risk

This is a verbal description of the following slide

Let's look at the standard job market without any risk, without any variance and with perfect knowledge, as it is usually presented in microeconomic lectures.

Without risk, labour supply and labour demand would meet at an equilibrium wage and there would be no unemployment.

# Job Market without Risk



# Job Market with Risk

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If we assume to have a diversity in job performance, employers will try to minimize their risk. They are trying to exclude all applicants without references or without job experience.

As a result, they would hire less employees and they pay lower wages than on a risk-free labour market. Labour demand curve would be lower because it contains a discount for potential disabilities.

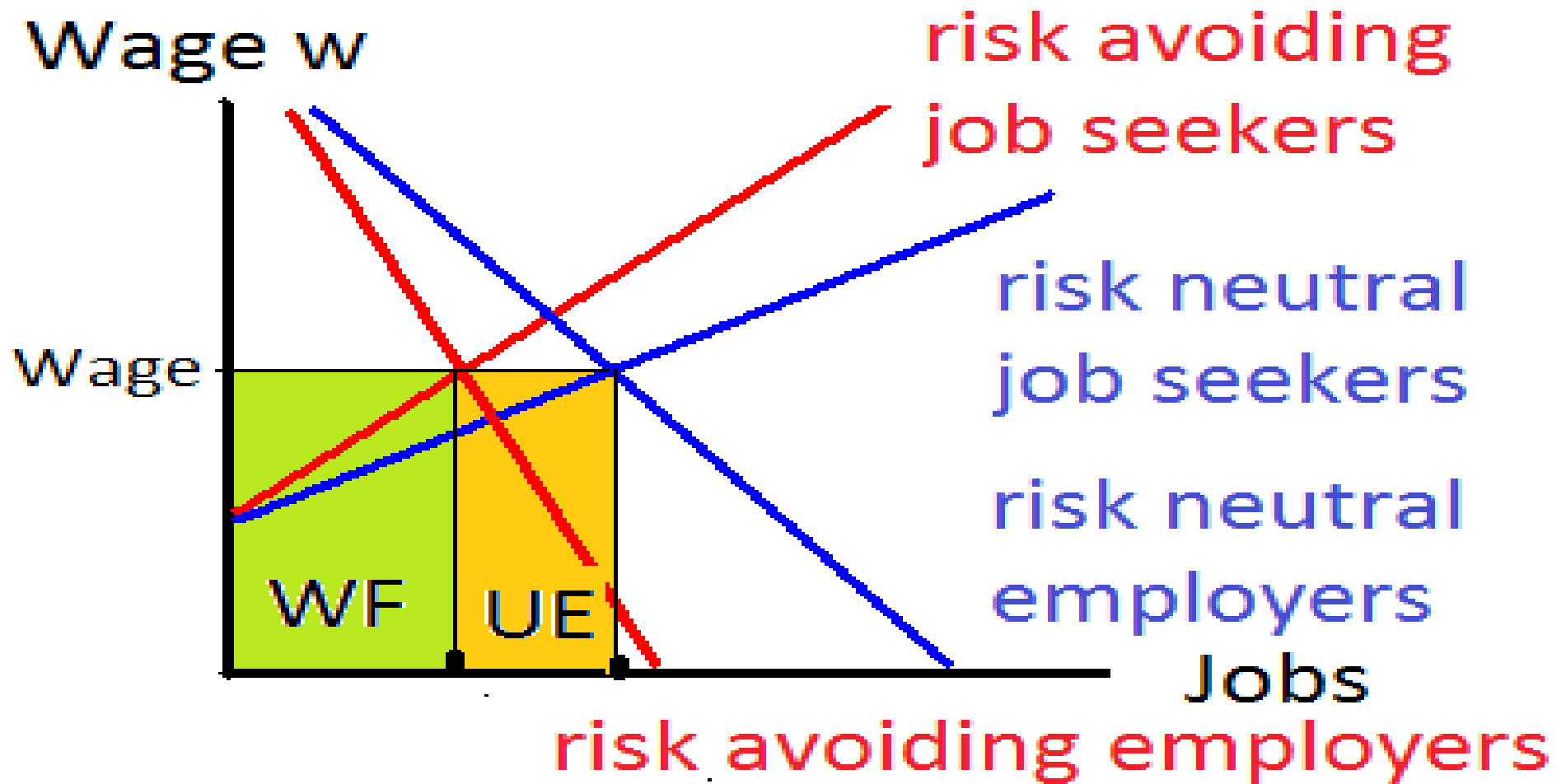
# Job Market with Risk

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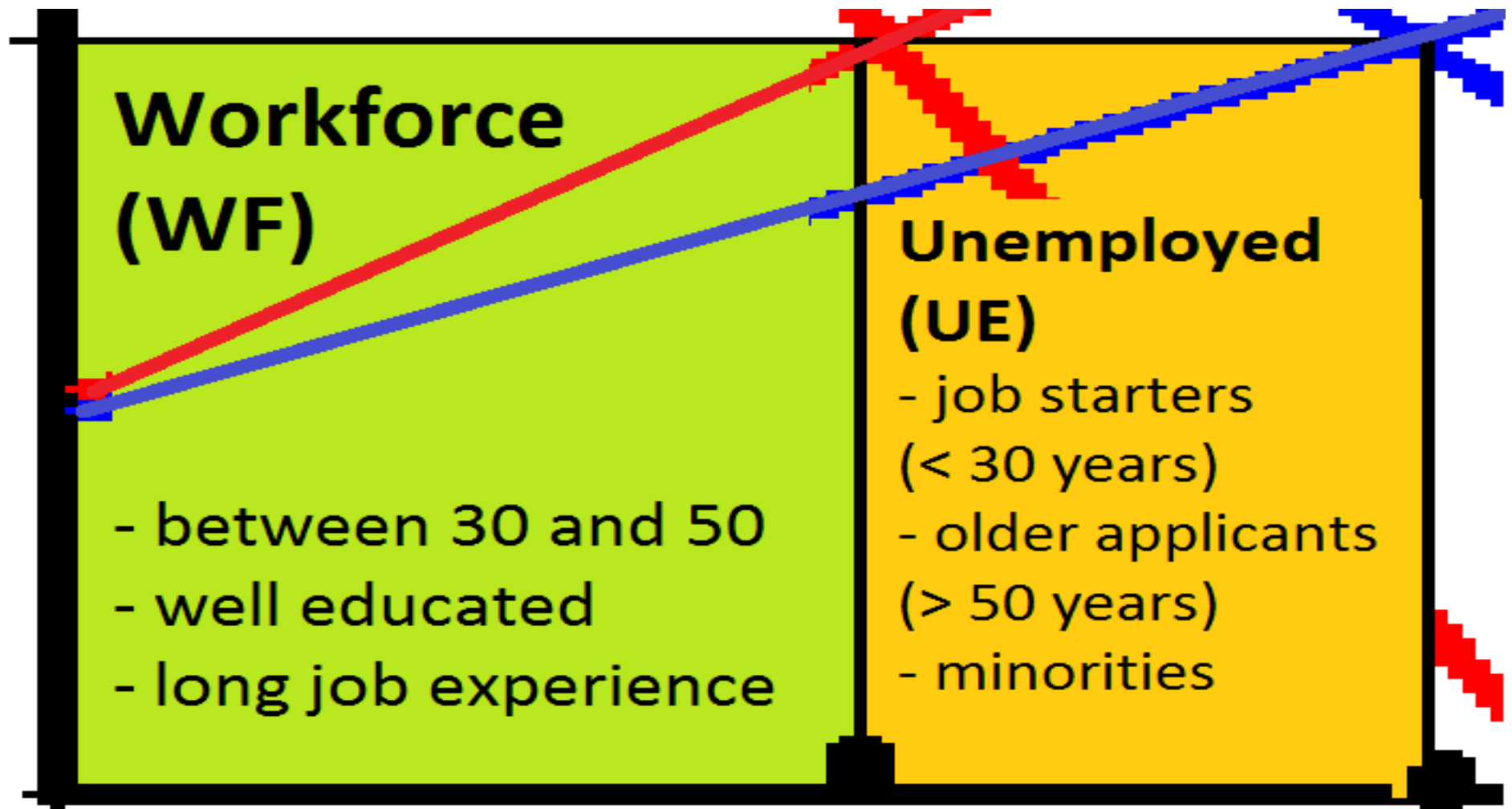
Applicants are forced to meet increasing demands and so they are trying to exaggerate their resume. Labour supply curve would be higher because of applicants' self-presentation abilities.

The interaction of distrusting employers and overdoing applicants results in a high unemployment even if wages were the same as on a risk-free job market.

# Job Market with Risk



# Discrimination on the Job market



# Discrimination on the Job market

- Discrimination on the Job market reduces uncertainty costs for employers, **but**
- **Human brain perceives exclusion (e.g. on the Job market) as torture**
- Health impacts on underemployed people may exceed economic savings of lower training costs

What is Work?

Work is human  
interaction in order to  
produce something



# Four Products of Work

- producing and distributing **physical goods**
  - farmers, manufacturers, truck drivers
- producing and distributing **knowledge**
  - artists, journalists, teachers, software engineers
- producing **trust**
  - judges, managers, policemen, clergymen
- producing **debt**
  - bankers, executives

# Digital Revolution:

Shift from goods to knowledge production

Producing and distributing **goods**

- **Manufacturing** (as % of GDP) reached its peak in 1978
- Limited **linear** output
- Wage is based on Input-Output-Relation

Producing and distributing **knowledge**

- In 2006, 57 percent of Germans worked with a **computer**
- **Non-linear** output
- Wage cannot be calculated

# Digital Revolution:

Shift from goods to knowledge production

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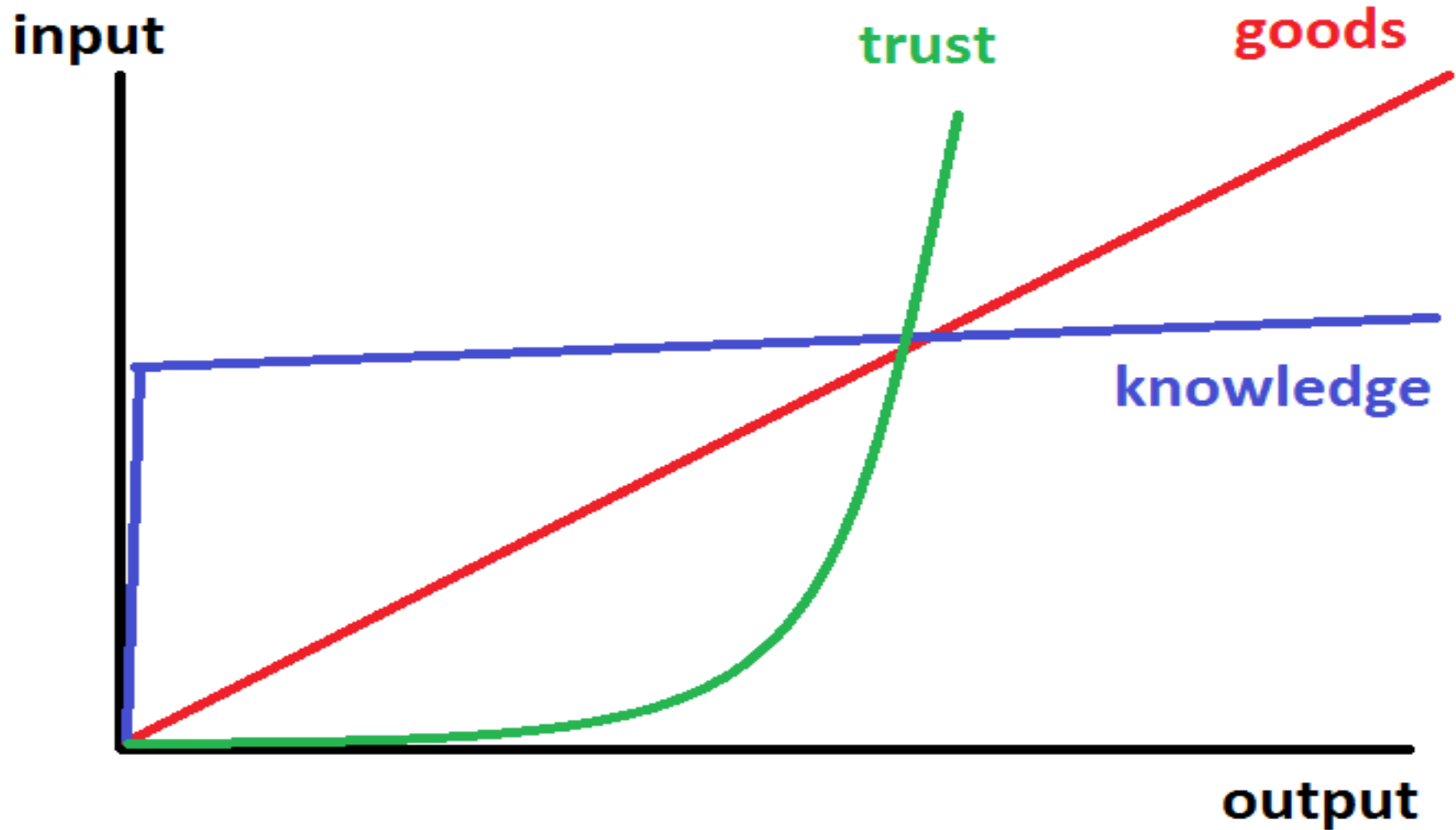
Manual manufacturing of physical goods has a nearly linear relation between input and output – if we ignore economies of scale, which are important.

Knowledge production with a computer causes high fixed and low marginal costs.

Trust production – an election campaign is a typical example of trust production – has a rather unknown marginal output relation.

# Digital Revolution:

Shift from linear to non-linear production



# Digital Revolution:

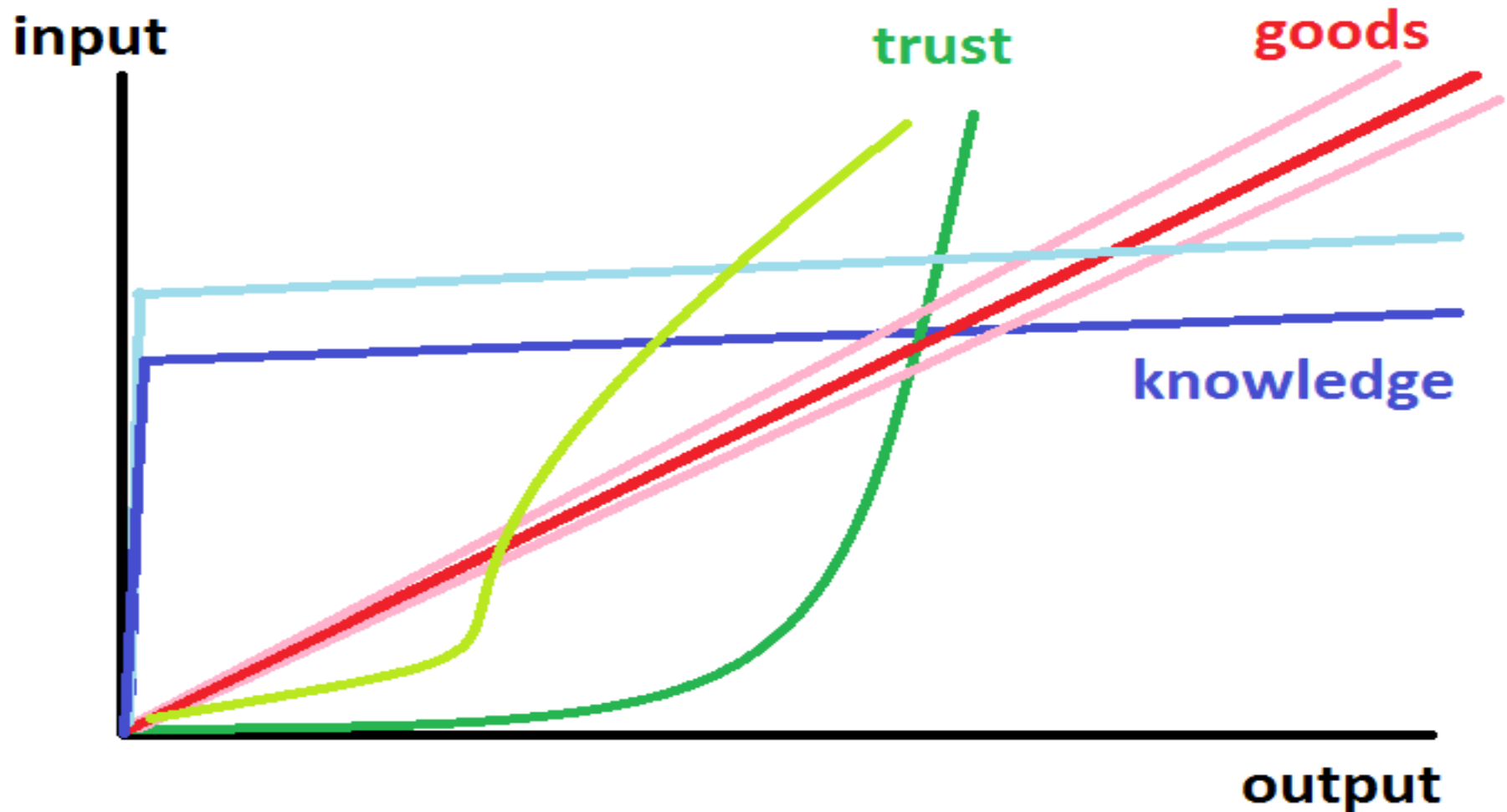
Shift from goods to knowledge production

This is a verbal description of the following slide

Today, I have often talked about variance and it's still valid here. Even if we allow some variance, it does not change the finding that the digital revolution has turned our economy into a non-linear system.

# Digital Revolution:

Shift from goods to knowledge production



# Conclusion

- Wage is **credit**
- Hiring is always associated with **risk**
- Wages include a **discount** for risk adjustment
- Job market has to deal with **increasing** risk due to technological progress
- Creating **knowledge** and creating **trust** have replaced manufacturing physical goods
- Knowledge and trust production are **non-linear** and thus not covered by traditional solutions

# Uncertainty on Job Markets and its implication on wage and unemployment

Thank you very much for listening!  
I am looking forward for your feedback!

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