

On the value of labour market information: risk preferences and occupational choice

Thomas Dohmen

Maastricht 23 October 2008



Future plans for the development of the labour market forecasting model

- *Where we stand*
- *What we want to improve*
- *Why we want to augment the model*



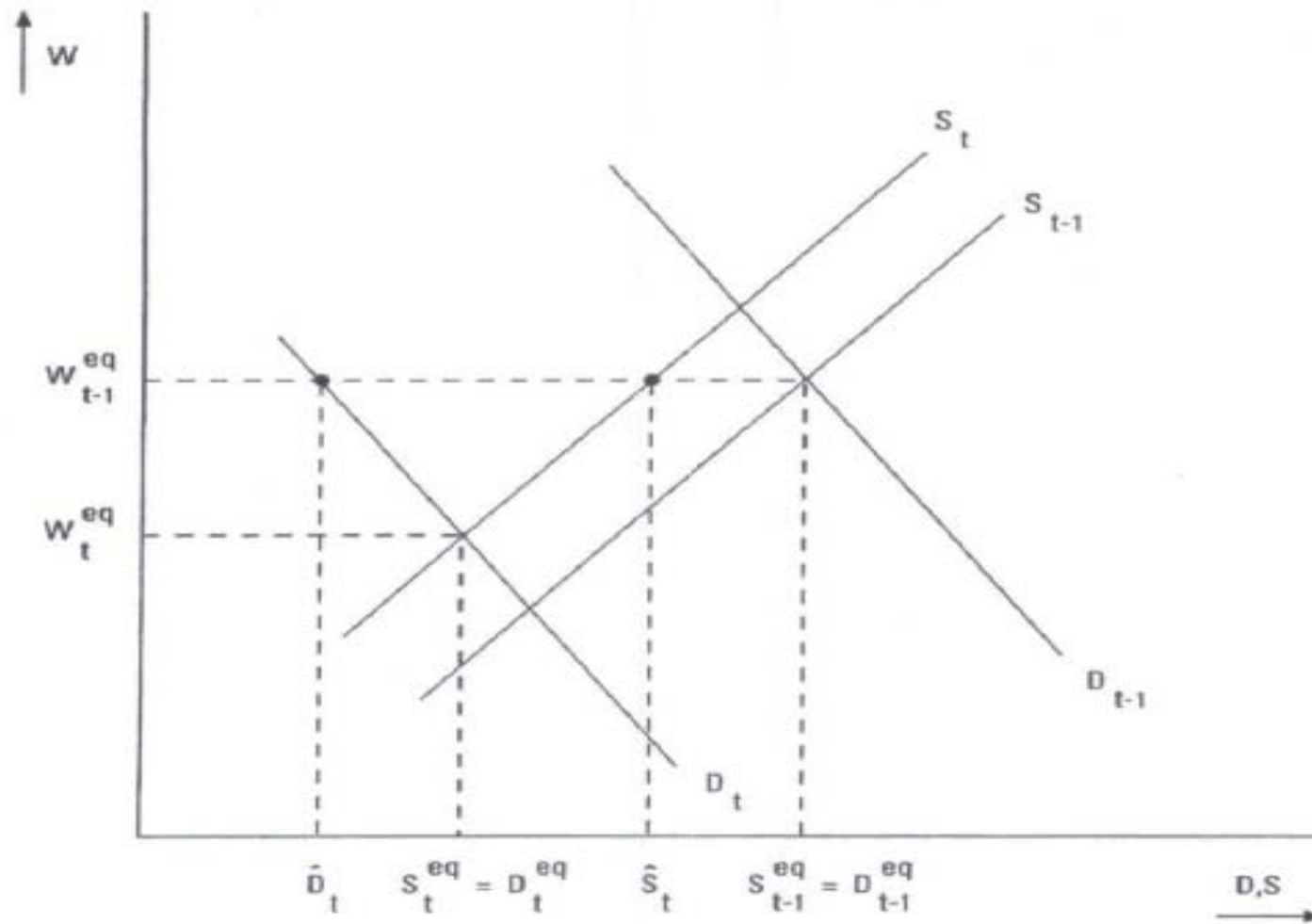
Where we stand...

Identifying future labour market imbalances

- Confronting future labour demand and supply
- Measure labour market imbalances or skill gaps
- Match of occupations and types of education
- Interpretation: Relevance of adjustment processes

Example I: confronting future labor demand and supply to measure labour market imbalances

Figure 1. The relationship between gaps between supply and demand in manpower forecasts and wage adjustments



Match of occupations and types of education

Interpretation:

Relevance of adjustment processes

Costs of adjustment



| | Occ. 1 | Occ. 2 | Occ. 3 | Inactive | Total Edu. |
|--------------------------|--------|--------|--------|----------|------------|
| Current Situation | | | | | |
| Edu. 1 | 90 | 20 | 0 | 0 | 110 |
| Edu. 2 | 10 | 140 | 100 | 40 | 290 |
| Edu. 3 | 0 | 40 | 200 | 60 | 300 |
| Total Occ. | 100 | 200 | 300 | 100 | 700 |
| Forecast | | | | | |
| Edu. 1 | 90 | 20 | 0 | 0 | 110 |
| Edu. 2 | 10 | 140 | 100 | 40 | 290 |
| Edu. 3 | 0 | 40 | 200 | 60 | 300 |
| Total Occ. | 150 | 150 | 300 | 100 | 700 |
| Predicted Gaps | | | | | |
| Edu. 1 | 90 | 20 | 0 | 0 | 110 |
| Edu. 2 | 10 | 140 | 100 | 40 | 290 |
| Edu. 3 | 0 | 40 | 200 | 60 | 300 |
| Total Occ. | 150 | 150 | 300 | 100 | 700 |
| Shortage | 50 | -50 | 0 | 0 | |
| Pot. Reallocation | | | | | |
| Edu. 1 | 105 | 5 | 0 | 0 | 110 |
| Edu. 2 | 45 | 140 | 85 | 20 | 290 |
| Edu. 3 | 0 | 5 | 230 | 65 | 300 |
| Total Occ. | 150 | 150 | 315 | 85 | 700 |
| Shortage | 0 | 0 | 0 | 0 | |



Forecasts as an information system

- Forecasts provide indicators for the future labour market situation
 - Employment opportunities
 - expansion demand
 - replacement demand
 - inflow on the labour market, skill gap
 - Expected wages
 - Risk indicators
 - broad or narrow occupational domain on the labour market
 - substitution possibilities for employers within occupations
 - wage distribution



An illustration

Example: Upper secondary vocational education
in electro-technics

- Inputs for the information system
 - Current labour market situation of graduates
 - Forecast of labour demand and supply

- Output/elements of the information system
 - Indicator for future labour market situation
 - Dispersion on the labour market
 - Sensitivity to the business cycle



Employment opportunities

Current situation

Characterization

| | | |
|---------------------------|-----|---------|
| Unemployment | 2% | Average |
| Fixed term contract | 52% | Average |
| Working outside own field | 27% | Average |
| Below skill level | 25% | Average |

Forecast till 2012

% of empl. per year

Characterization

| | | |
|---------------------|-----|---------|
| Expansion demand | 0.6 | Average |
| Replacement demand | 4.5 | Large |
| Inflow of graduates | 5.0 | Small |

Future perspectives for 0.88 Good

Recruitment problems for 0.88 Big



Wages

Current situation

Characterization

Average gross wage

€ 1.710 High for secondary education

Forecast till 2012

% of empl. per year

Characterization

Average gross wage

tendency to rise given shortage

High

Future perspectives for graduates

Good

Risk indicators

| <i>Indicator</i> | <i>Magnitude</i> | <i>Characterization</i> |
|---|------------------|-------------------------|
| Dispersion in different occupations | 9.13 | Average |
| Sensitivity of employment to business cycle | 1.11 | High |
| Wage dispersion | To be developed | |

What we want to improve...

- Information about the distribution of wages
 - within an education
 - within an occupation
 - within an education-occupation cell

Why we want to augment the model

- Information is heavily used, e.g. by students and entrants to the labor market
 - Summaries in trade journals or websites for the different sectors of industry
 - Brochures, journals and books for guidance and career counseling
 - Various websites, e.g. national labour market agency and website for students in higher education (www.studychoice123.nl)



Information on wage dispersion is relevant for...

- Education choices
- Occupational choices

... in particular if information affects decisions and helps to make better decisions

- Better alignment of career outcomes and preferences
- Increased job and life satisfaction



Scope for wage dispersion to affect occupational choice

- Theory of compensating wage differentials predicts that more risk-averse agents select less risky jobs
- So far hardly any empirical evidence...
- ... based on proxies for risk preferences



The following study

- uses a direct measure of individuals' willingness to take risk
(experimentally validated subjective risk measure)
- uses a direct measure of economic risk
(unexplained earnings variance in Mincerian regression)
- studies sorting in full range of occupations



Key findings

- Highly significant positive correlation between occupational risk and individual preference for risk
- Risk preferences have a significant positive impact on individual wages

Why are these findings important?

- Example that preferences, attitudes and personality are relevant factors in explaining wages
- Potential explanation for the gender wage gap
- Occupational pay structures may attract a specific portfolio of workers



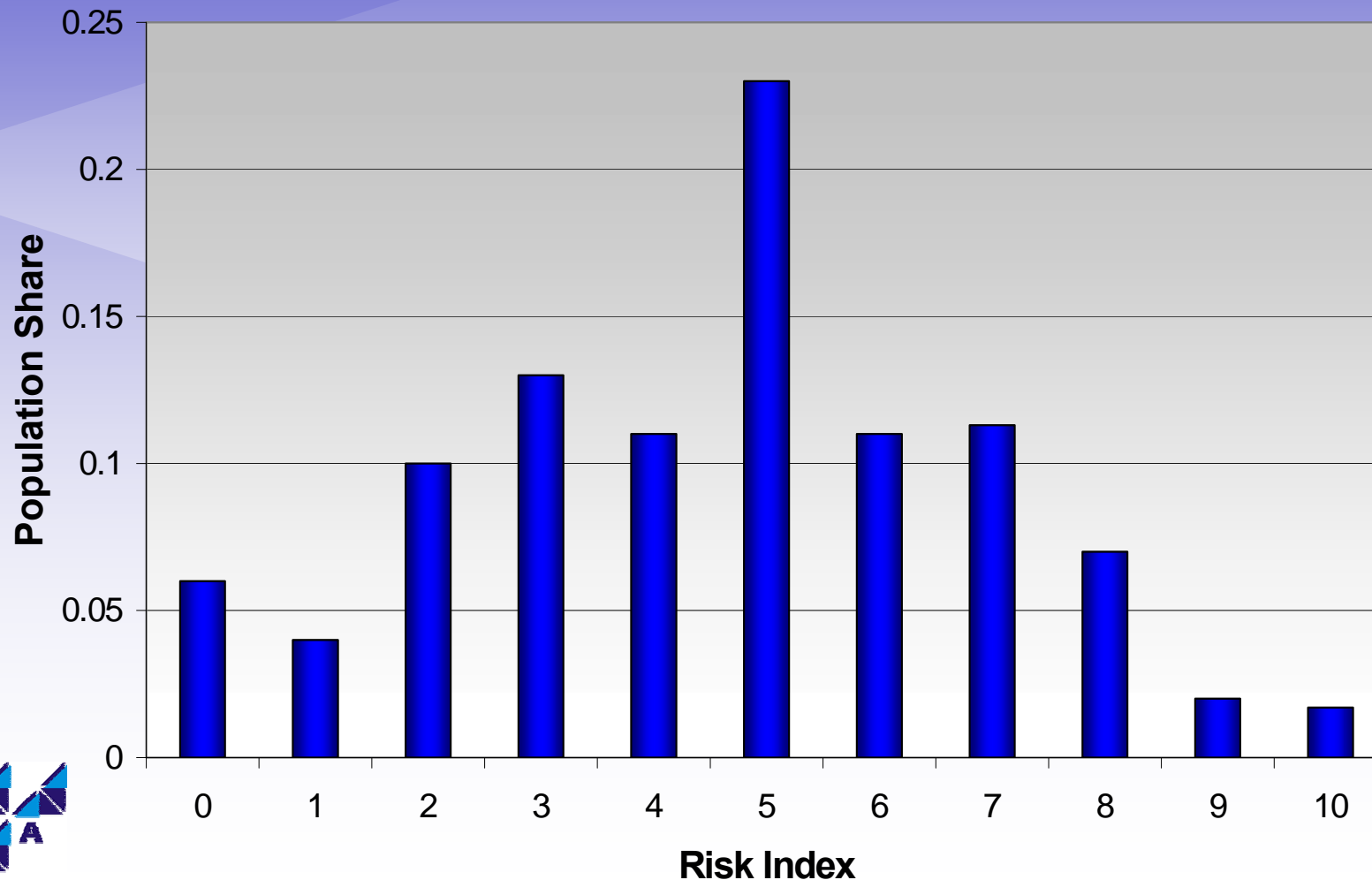
Measure of risk attitudes

How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please tick a box on the scale, where the value 0 means: 'unwilling to take risks' and the value 10 means: 'fully prepared to take risks'.



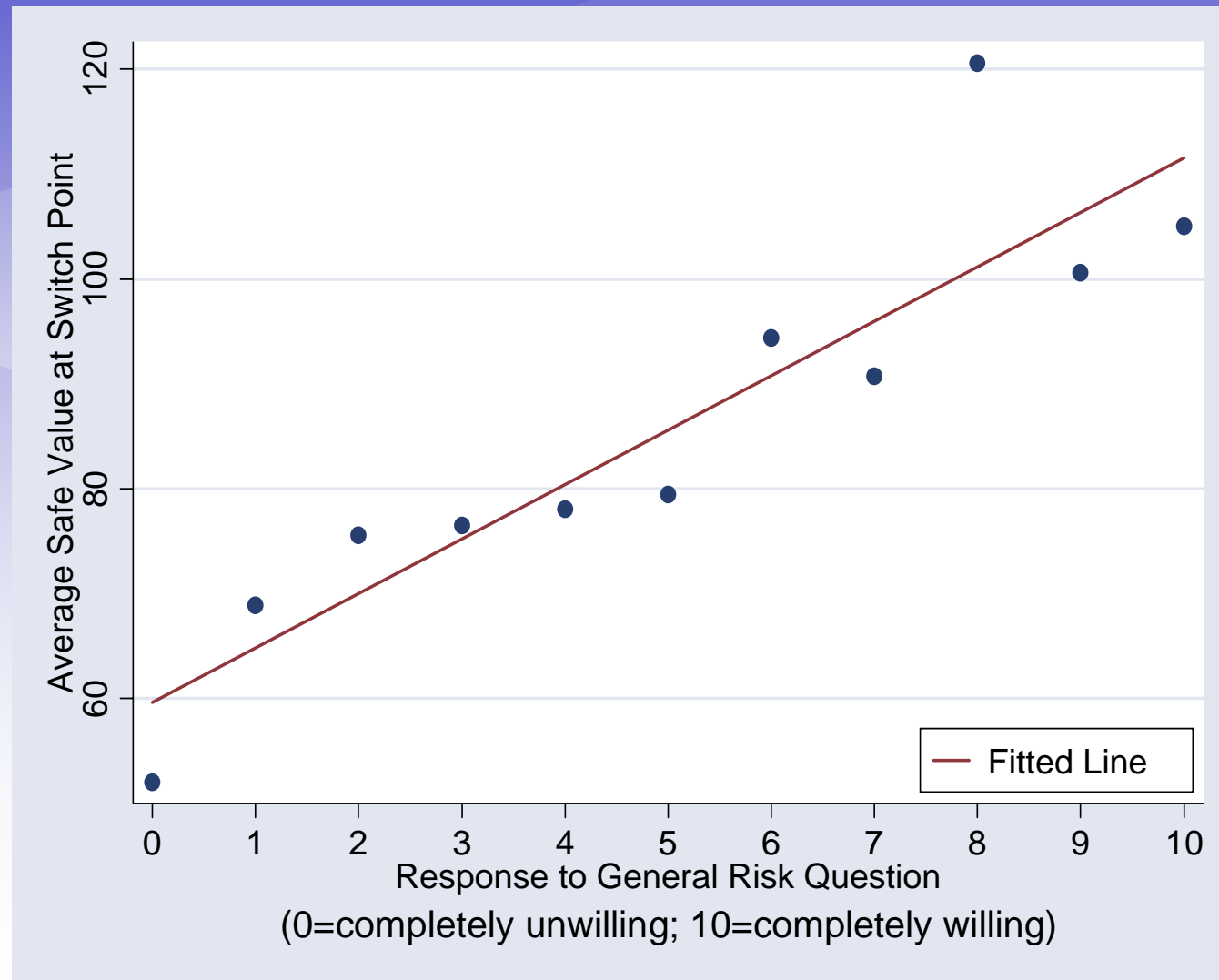
Measurement of Risk Preferences

How do you see yourself: Are you generally a person who is fully prepared to take risks or do you try to avoid taking risks? Please tick a box on the scale, where the value 0 means: 'unwilling to take risks' and the value 10 means: 'fully prepared to take risks'.



Reliability of Risk Preference Measure?

Experiment with real lottery choice



Measure of earnings risk

- Earnings variation unrelated to human capital
- Earnings variation at the occupation level, not at the individual level
- Cross-sectional earnings variability

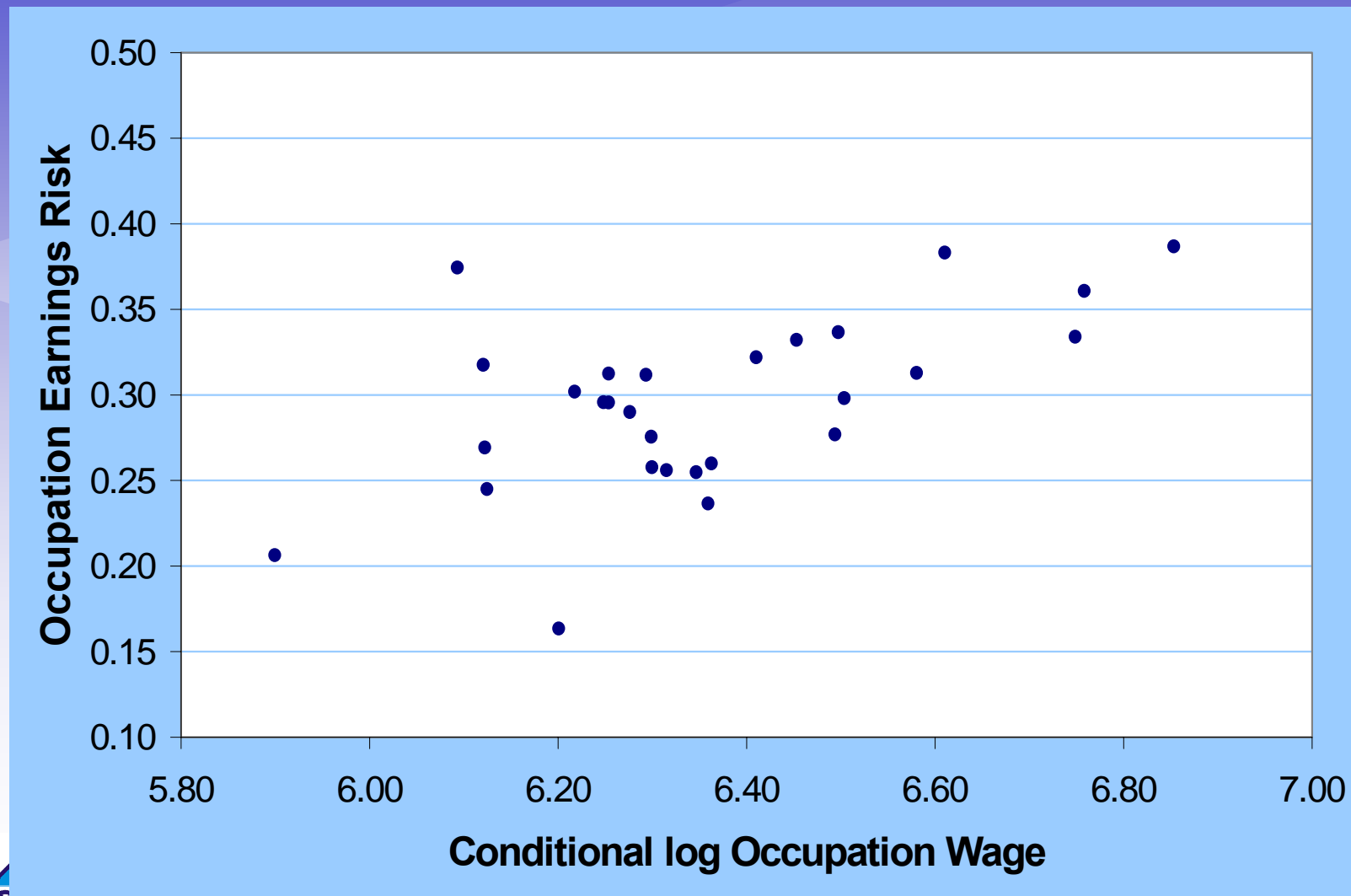


First Step: Mincerian Wage Regression

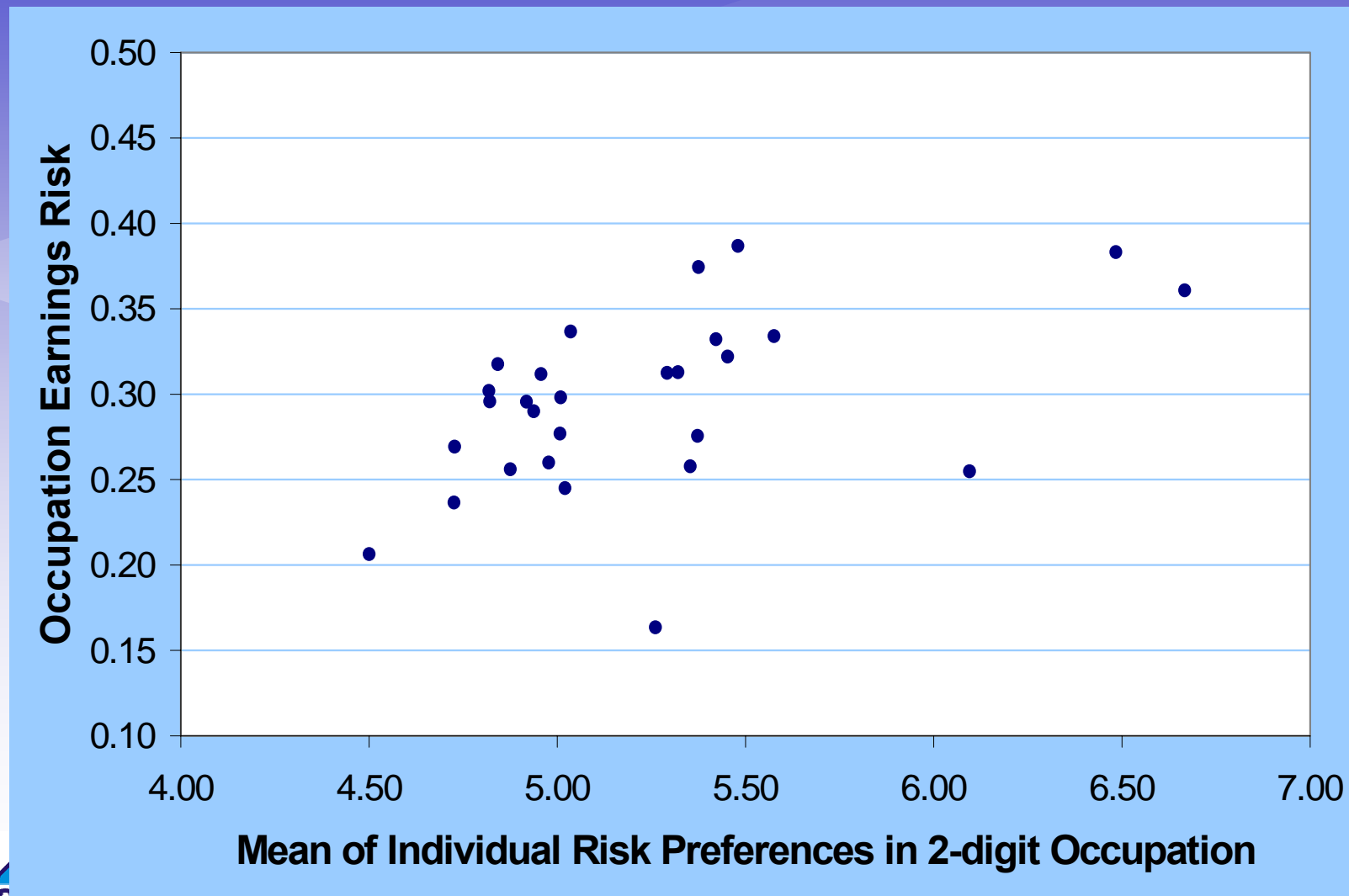
| | |
|----------------------------|-----------|
| Years of Education | 0.049*** |
| East Germany | -0.276*** |
| Public Sector | -0.093*** |
| Risk Preferences | 0.013*** |
| Constant | 6.392*** |
| Occupation Dummies | 102 |
| Experience/Tenure Profiles | Yes |

| | |
|--------------|------|
| Observations | 3621 |
| R-squared | 0.58 |

Second Step: Occupational Earnings Risk



Third Step: Occupational Sorting



Occupational Sorting Individual Level Regression

| | OLS | Ordered Probit |
|--------------------------|----------|----------------|
| Risk Preferences | 0.001** | 0.021** |
| Experience | 0.000 | 0.004 |
| Tenure | -0.000 | -0.002 |
| Years of Education | 0.002*** | 0.110*** |
| Married | -0.002 | -0.100 |
| East Germany | 0.002 | 0.040 |
| Public Sector Employment | -0.002 | 0.035 |
| Log Monthly Wage | 0.014** | 0.548*** |
| Constant | 0.143*** | |
| Observations | 3605 | 3605 |
| R-squared | 0.13 | |



Robustness Check

I. Public vs. Private Sector Employment

| | Definition of Occupation | | |
|--------------------------|---------------------------|-----------------|------------------|
| | ISCO2 x Private/Public | ISCO2 Public | ISCO2 Private |
| Risk Preferences | 0.024*** | -0.002 | 0.035*** |
| Experience | 0.002 | 0.011 | 0.005* |
| Tenure | -0.007* | -0.007 | -0.008* |
| Years of Education | 0.123*** | 0.146*** | 0.113*** |
| Married | -0.121* | 0.085 | -0.191** |
| Log Monthly Earnings | 0.451** | 0.205 | 0.437** |
| Public Sector Employment | -1.977*** | | |
| Observations | 3601 | 812 | 2789 |
| Log-Likelihood | -10,808 | -2,151 | -7,408 |

Robustness Check

II. Analysis by Gender

| | Men | Women |
|--------------------------|----------|----------|
| Risk Preferences | 0.021** | 0.026*** |
| Experience | 0.004 | 0.004 |
| Tenure | -0.002 | -0.012* |
| Years of Education | 0.110*** | 0.390 |
| Married | -0.100 | -0.081* |
| Log Monthly Earnings | 0.548*** | 0.182 |
| Public Sector Employment | 0.035 | -0.178 |
| Observations | 3605 | 1879 |
| Log-Likelihood | -10,102 | -5,061 |

Summary of findings

- The correlation between occupational risk and individual preference for risk is positive and highly significant
- Risk preferences impact individual wages through two channels
 - as a productive factor (Mincer regression)
 - via occupational sorting
- Risk preferences – typically unobserved – are a relevant driving force of economic behavior



Implications

- Information on the distribution of wages can provide valuable information to those who make educational and occupational choices,
- The wage structure also informs employers about the type of employees that feel attracted to the sector