The Dutch Labour Market Forecasting Model

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Maastricht University

The idea:

- Investors want to know about their (expected) returns

- Also true for human capital investments

- **ROA** forecasts since 1986
- Evidence that information improves allocation (Fouarge et al. 2016)

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ROA

Plan of the talk

- Basic principles of the ROA forecasting model
- Data sources, classifications, level of disaggregation
- Uncertainties in employment projections
- Regional/local employment forecasts
- Conclusion

Basic principles of the ROA forecasting model

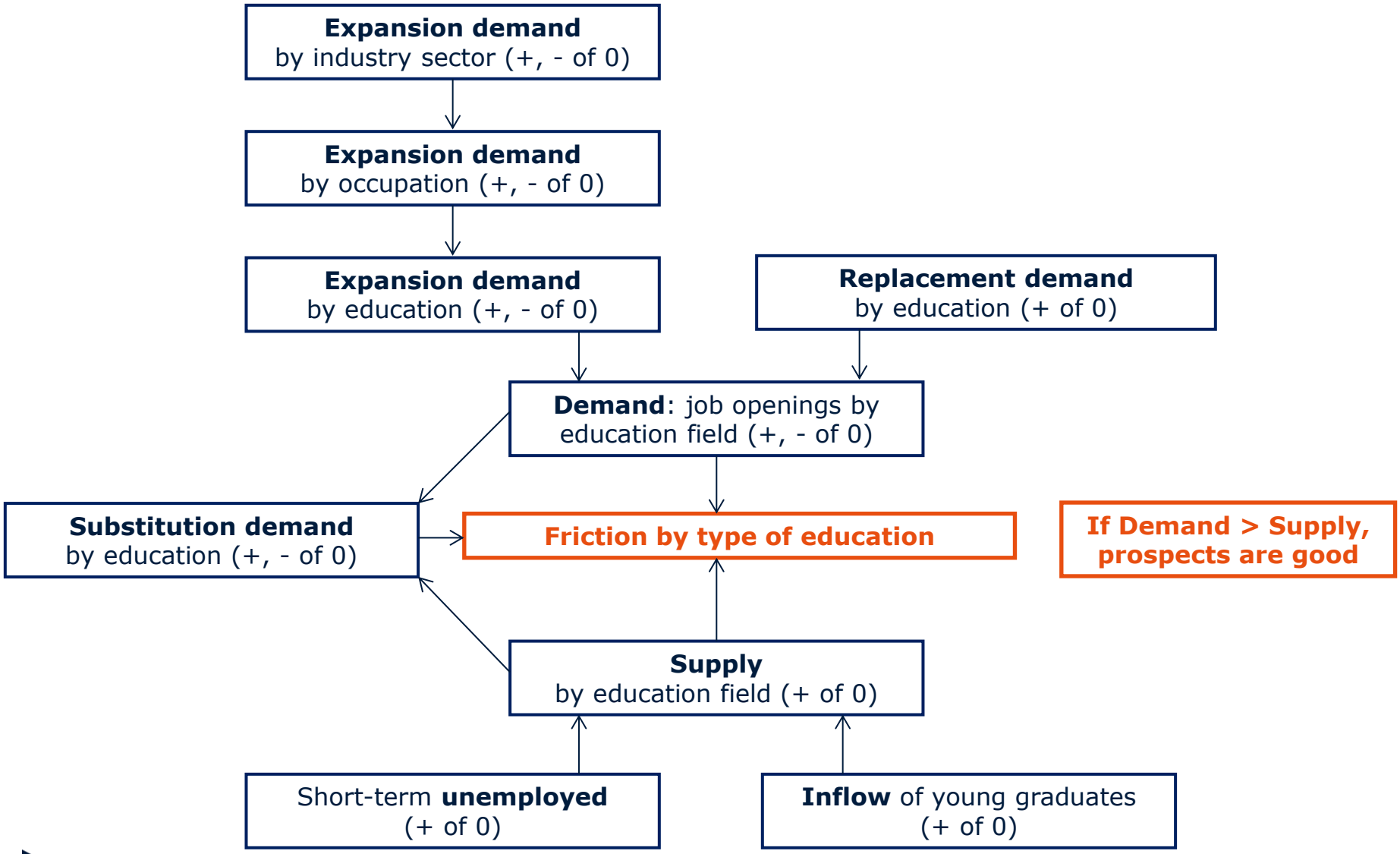
Basic principles

- Whole labour market taken into account: no partial analyses
- Independent estimation of expected labour demand and supply
  - Demand:
    - Expansion (job creation/destruction)
    - Replacement (occupational mobility, pensioning, …)
    - Substitution (ex-ante) (interdependencies on the market)
  - Supply:
    - Inflow of graduates (new inflow)
    - Short-term unemployment
- (Explanatory) econometric models
- Estimate quantitative gap → translate into qualitative indicator (5 levels: very good … poor prospects)
- Forecasts by occupation, education and region
- Employers shape their demand in terms of occupations: demand by occupation derived from demand by occupation

Basic principles

- Forecast model based on quantities of labour (no wage information used) → interpretation of friction!
- Forecasts every 2 year → look 5 years ahead
- Make use of available authoritative forecasts of e.g. macroeconomic and sector developments and student outflows
- Output:
  - Reports, research papers…
  - Online tool with key indicators for current labour market and forecasts
- Forecasts are widely used:
  - Public information to prospective students
  - Unemployment office
  - Accreditation of new fields of study
  - Education policy
  - Press

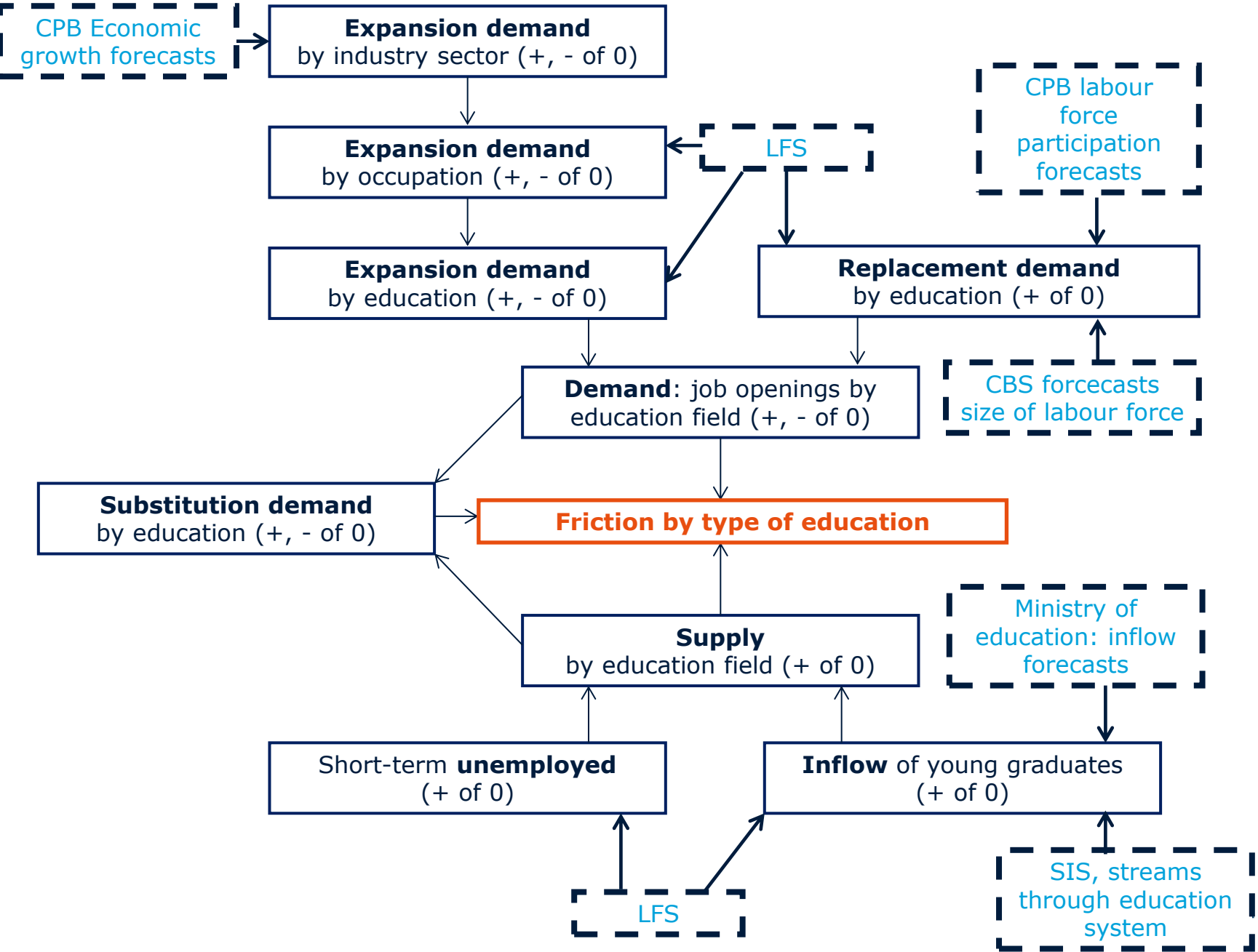
Basic principles: Friction by type of education



Data sources, classifications, level of disaggregation

Data sources

- Main data input:
  - Labour Force Survey 1996-2016
  - Only source with detailed **occupation** and **education** field
- Authoritative forecasts:
  - Economic growth forecasts (CPB, Netherlands Bureau for Economic Analysis)
  - (Inter)sectoral employment forecasts (Panteia)
  - Labour force participation forecasts, by age, gender and education level (CPB)
  - Forecasts for size of labour force (CBS, Statistics Netherlands)
  - Inflow forecasts of graduates (Ministry of Education)
- Other data input
  - Dutch school-leavers survey (streams through education system)
  - Administrative data of graduates by field of study


CPB Economic growth forecasts
Expansion demand by industry sector (+, - of 0)
Expansion demand by occupation (+, - of 0)
LFS
CPB labour force participation forecasts
Expansion demand by education (+, - of 0)
Replacement demand by education (+ of 0)
Demand: job openings by education field (+, - of 0)
CBS forcecasts size of labour force
Substitution demand by education (+, - of 0)
Friction by type of education
Supply by education field (+ of 0)
Ministry of education: inflow forecasts
Short-term unemployed (+ of 0)
Inflow of young graduates (+ of 0)
LFS
SIS, streams through education system

Definitions, classifications, disaggregation

- Employed (ILO):
  - Salaried or self-employed person, 15-74, works > 1 hour per week
- 21 industry sector of Statistics Netherlands (=NACE)
- 114 occupations:
  - Based on 4 digit ISCO2008
  - Classification developed by ROA in collaboration with Statistics Netherlands
  - ISCO fields grouped to match reality of Dutch labour market
- 97 types of education:
  - Based on ISCED1997
  - Classification developed by ROA to reflect Dutch educational structure
  - Clustering for homogeneous groups in terms of occupation
- We face a major trade-off:
  - increasing demand for details >< cell-size requirements

Uncertainties

Accommodate for uncertainties

Economic uncertainty

- Transfer quantitative gaps into qualitative statements:
  - 5 categories from ‘very good’ to ‘poor’
- Add risk indicators:
  - Sensitivity for cyclical fluctuations
  - Occupational flexibility potential of types of education
  - Wage risk by occupation/education
- Work with alternative growth scenarios
  - (but at the cost of having a less clear message)

Quality of the forecasts

- Evaluation studies
- Fundamental research
- Transparent documentation

Regional forecasts

Regional forecasts

- Increasing demand for regional labour market information
- ROA regional forecasts since 2013, 35 regions
- Basic principles:
  - Derived from national forecasts!
  - By education only
  - Region = region of residence
  - Regions differ a lot in terms of industry composition: use region-specific industry growth forecasts for expansion demand
  - Use national outflow coefficients to estimate replacement demand using region-specific educational composition
- The big trade-off: details by region come at the cost of details by field of education

Some concluding remarks

- **Success and relevance of ROA forecasts:**
  - Good contacts with stakeholders
  - Good cooperation with statistical office
  - Combine data-work with evaluations and fundamental research

- **Future developments:**
  - Increase level of details (administrative data; Small Area Estimation techniques)
  - Skills and tasks forecasts
  - Improve data-visualisation for a larger circle of users
  - Field experiments for effect of information on study choice

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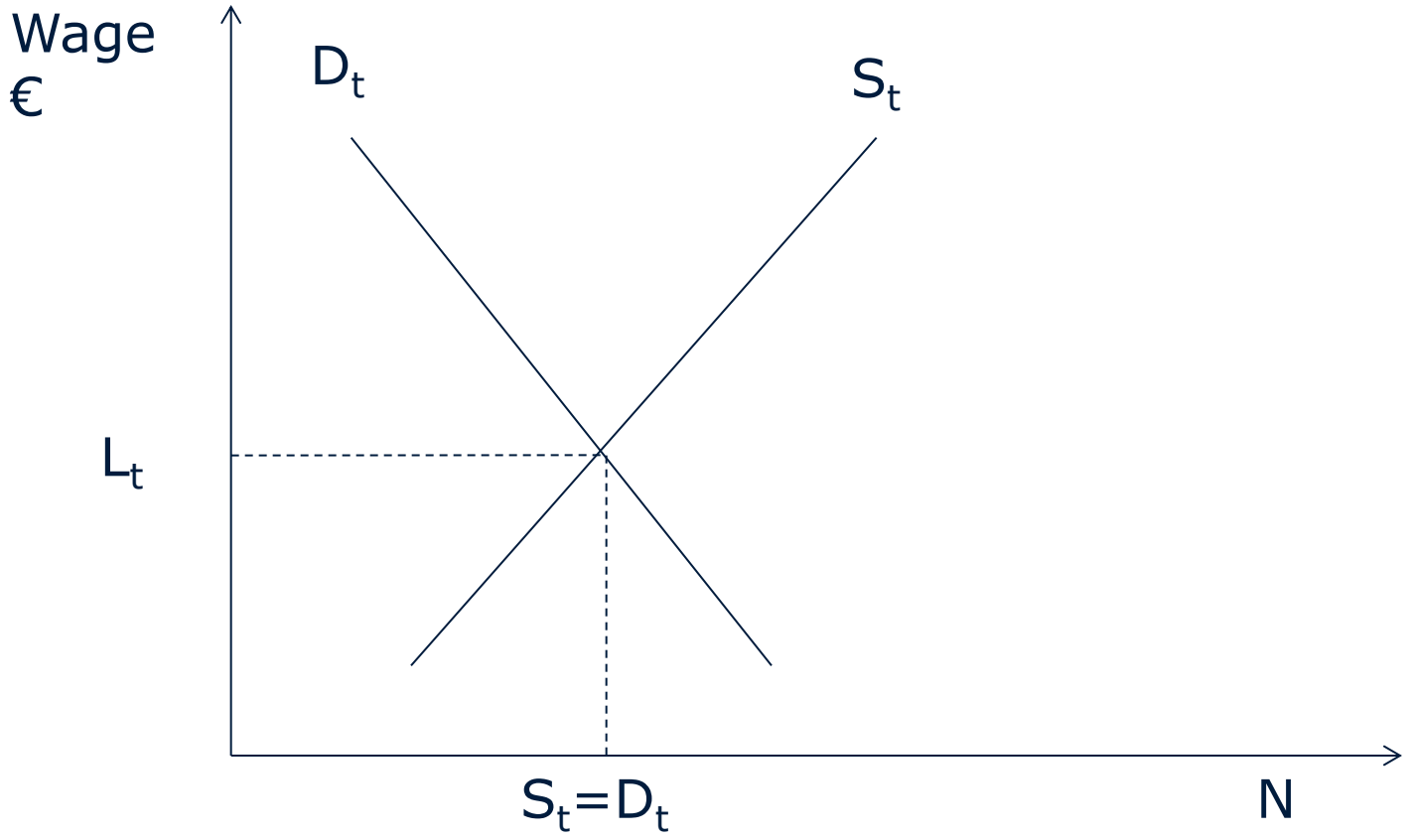
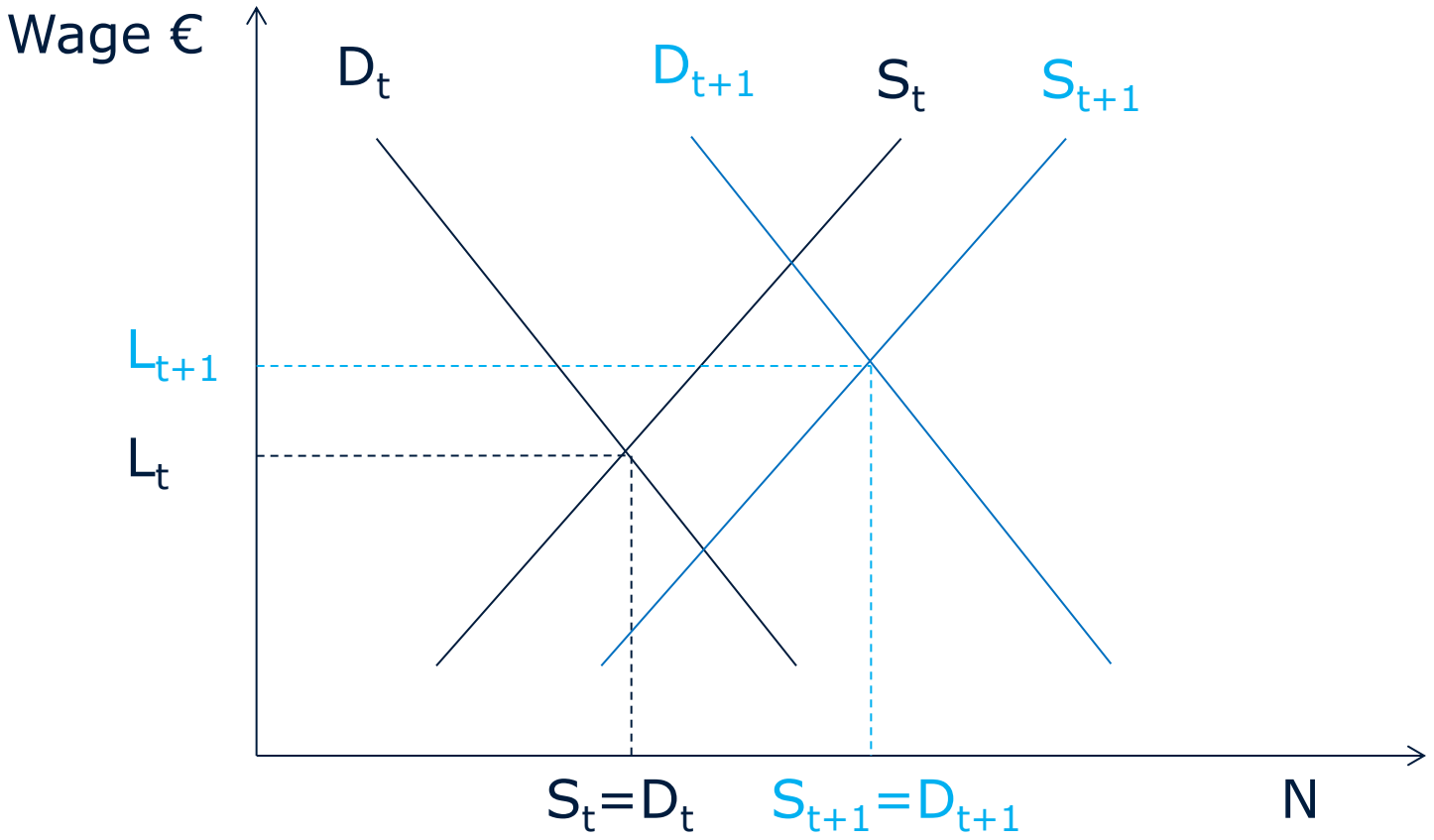
Interpretation of employment gaps

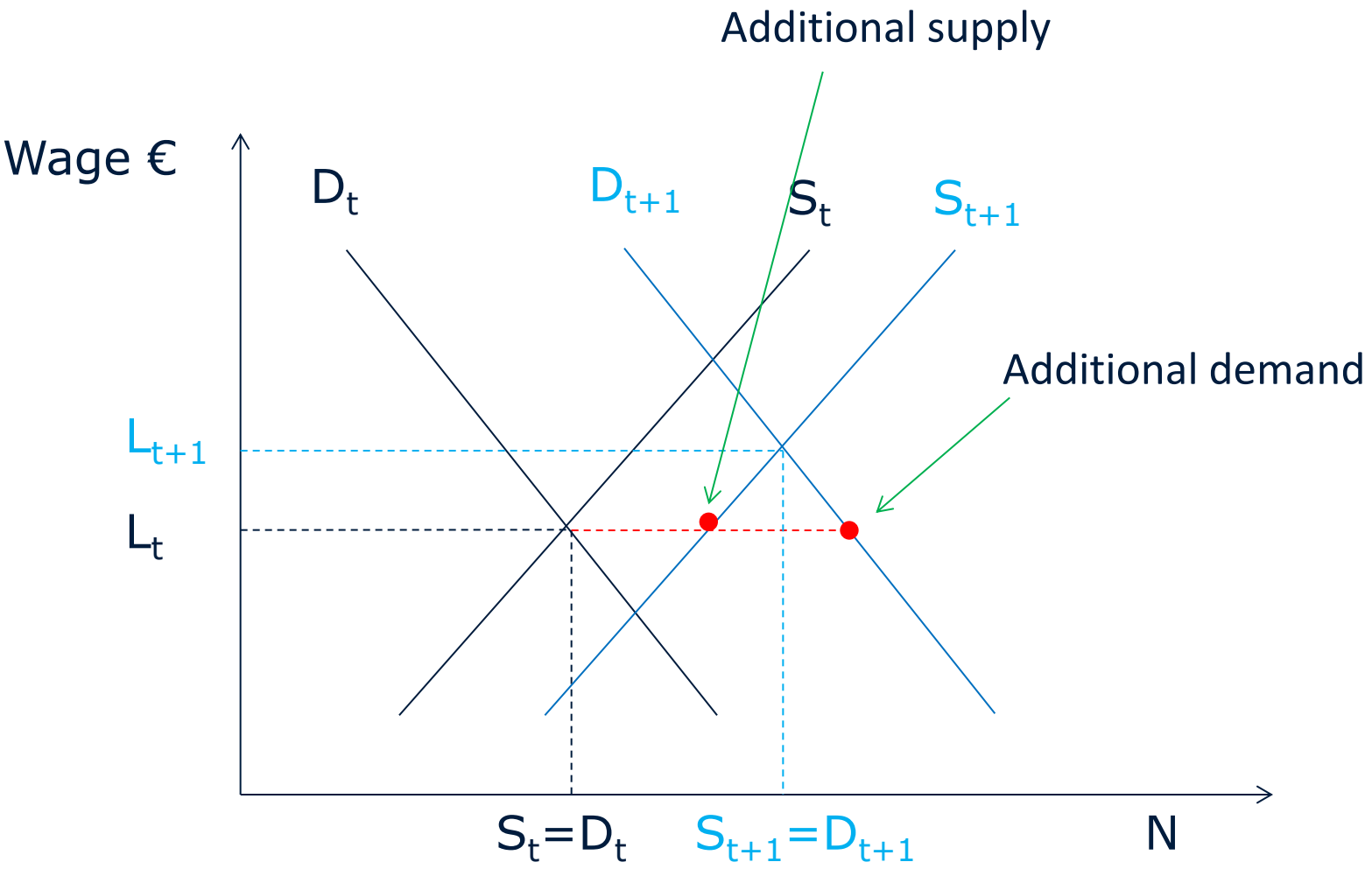
Demand and supply



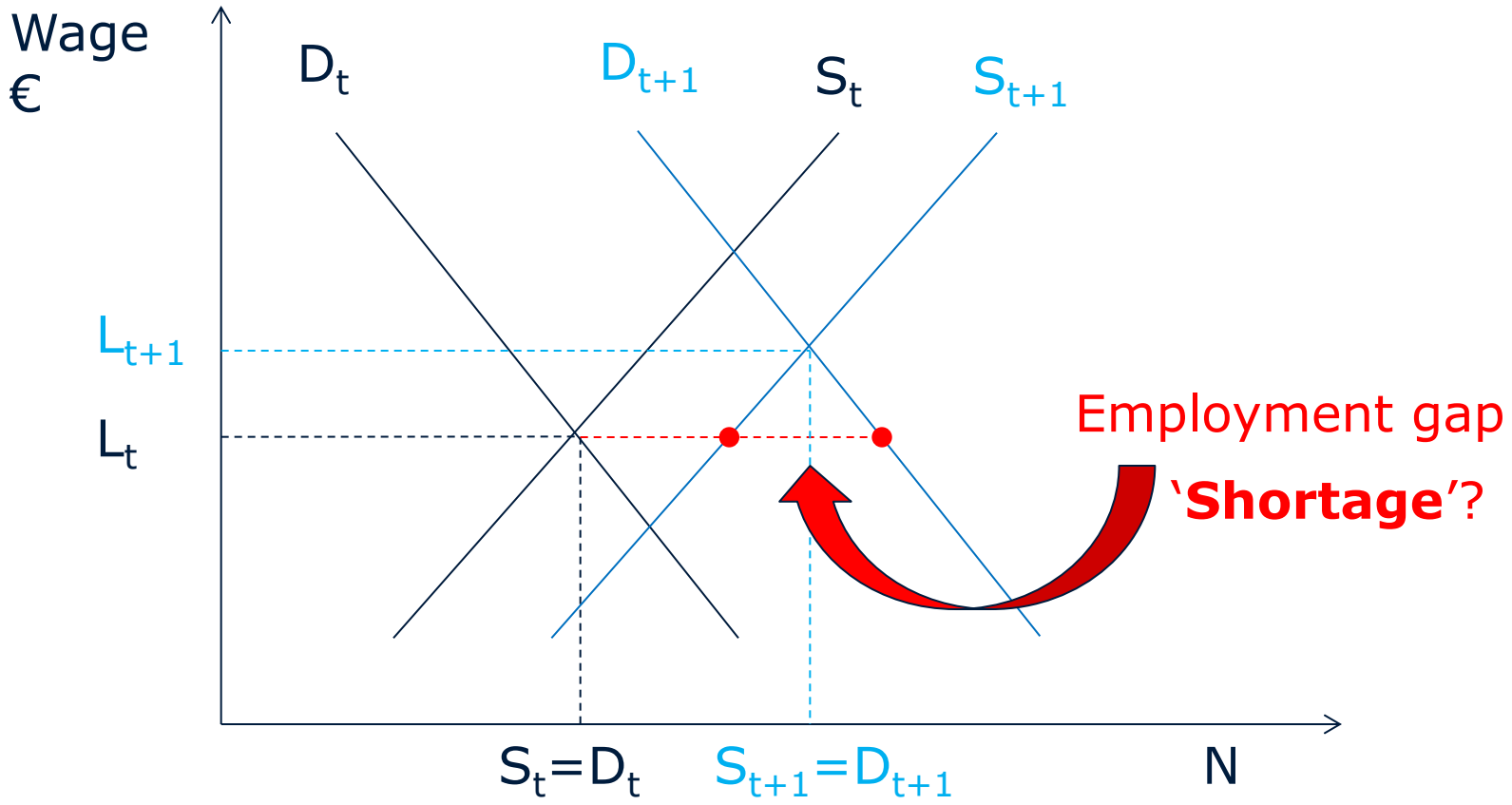
Demand and supply



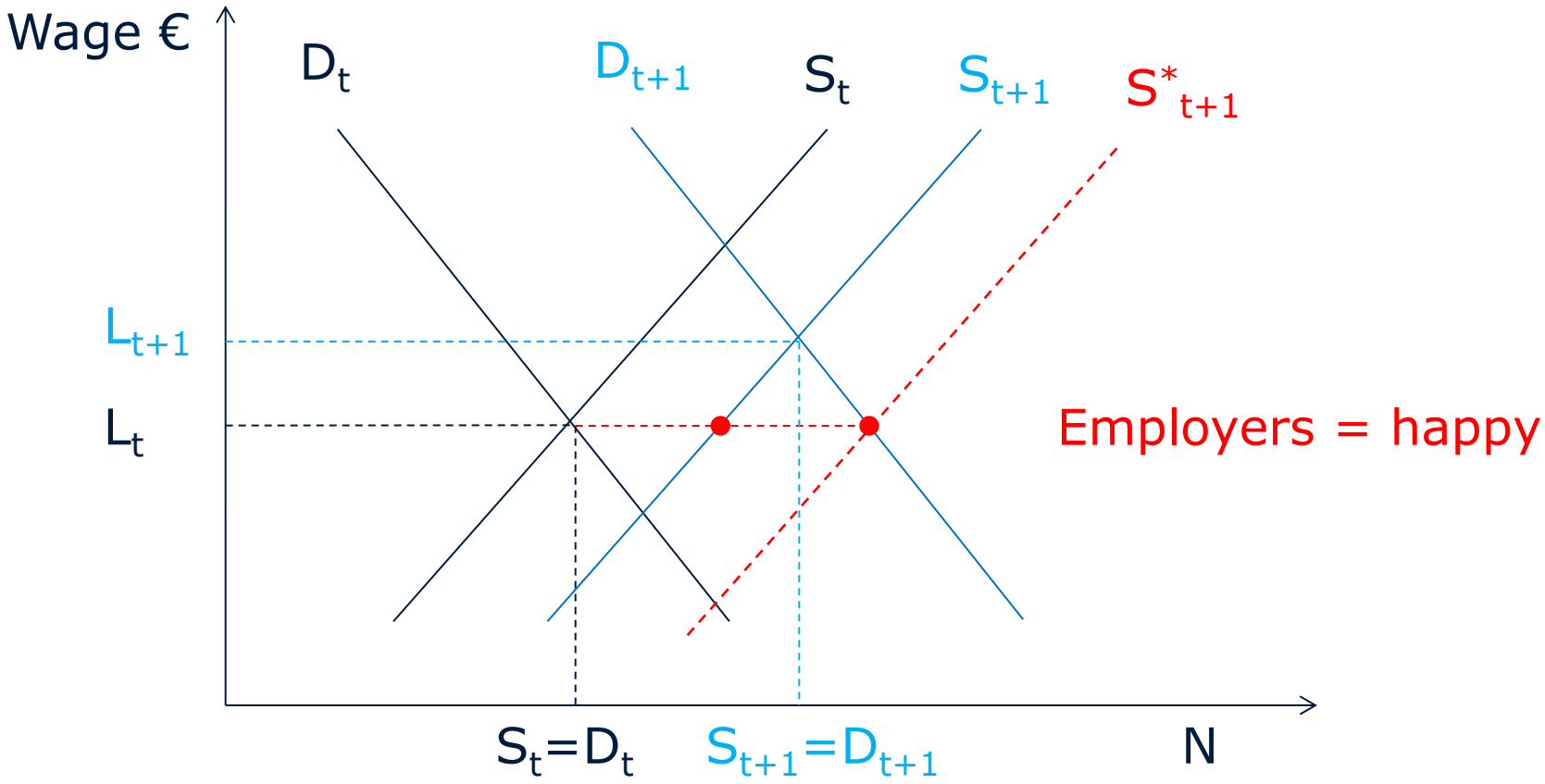
Demand and supply



Demand and supply



Stimulate supply in case of `shortage'?



Shortage ?

- Too simplistic!
- Model is based on quantities and does not use information about price (wage)
- But results are good indication of adaptations (in price and/or quantity) that should take place (Borghans/Willems 1998)
- Size of adaptations depends on wage elasticity of demand and supply
- Real adaptation (in quantity) < ‘shortage’

Demand and supply