

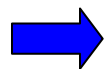
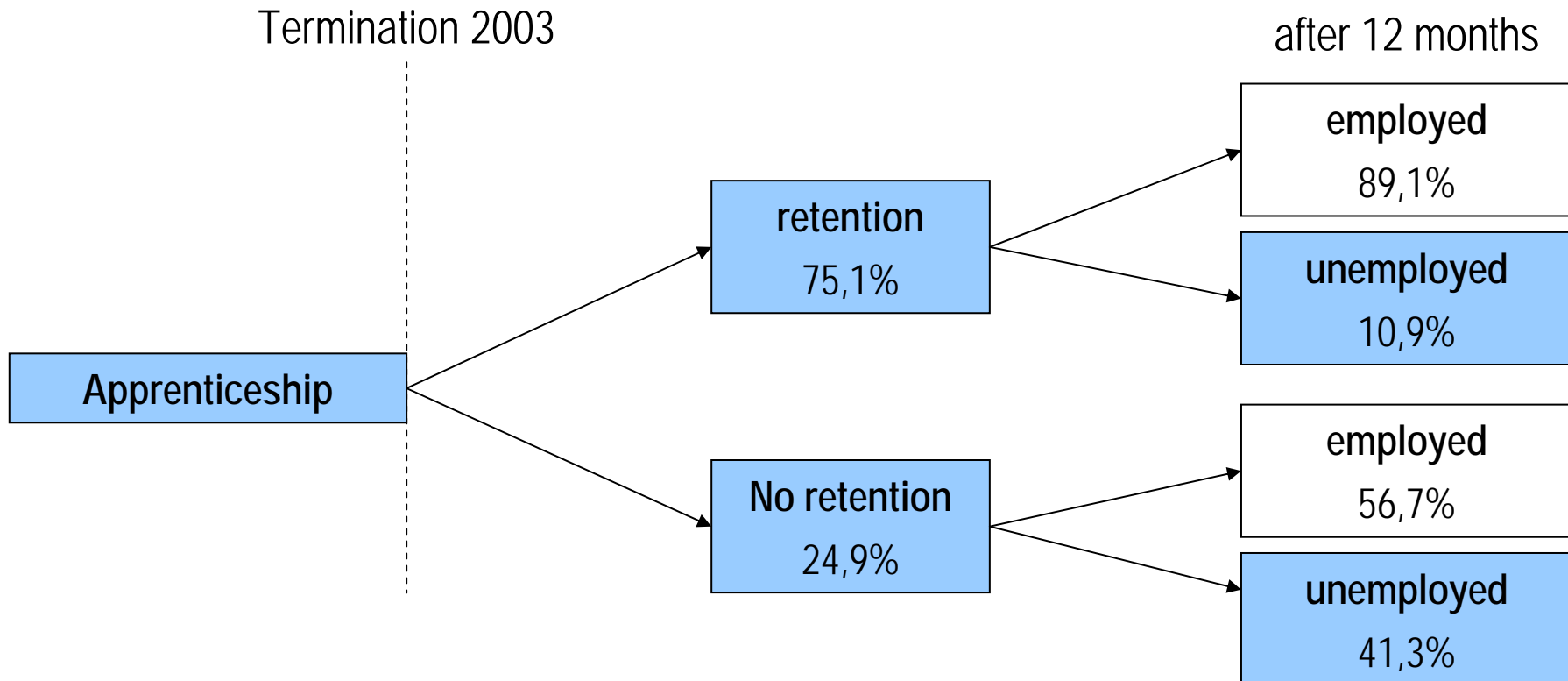
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Willing to train, but not to employ?  
-An analysis of the unemployment after apprenticeship-

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Displaced apprentices are more likely to get unemployed one year after apprenticeship than (time-limited) retained apprentices

- Theoretical background
  - » Approach of providing training
  - » Determinants of displacement
  - » Displacement and unemployment after apprenticeship
- Deduction of hypothesis
- Empirical proceeding
  - » Methods
  - » Results
- Summary

## Human Capital theory of Becker (1962)

$$\sum_{t=0}^{n-1} \frac{R_t}{(1+i)^{t+1}} = \sum_{t=0}^{n-1} \frac{E_t}{(1+i)^{t+1}}$$

Production-based

$$\sum_{t=0}^{n-1} \frac{R_t}{(1+i)^{t+1}} \geq \sum_{t=0}^{n-1} \frac{E_t}{(1+i)^{t+1}}$$

- Provision of general human capital
- Trainee as Worker
- **Low** total human capital after apprenticeship

➡ high displacement probability

Investment-based

$$\sum_{t=0}^{n-1} \frac{R_t}{(1+i)^{t+1}} < \sum_{t=0}^{n-1} \frac{E_t}{(1+i)^{t+1}}$$

- Provision of general and specific human capital
- Trainee as future worker
- **High** total human capital after apprenticeship

➡ low displacement probability

## ➤ Economic situation

- Firm level: external labour market influenced strongly by economic changes
- Individual level: general and low level of human capital in comparison to other apprentices
  - ➔ Less educated apprentices with general human capital

## ➤ Institutional frameworks



- Retaining of the apprentices for a limited period after apprenticeship
  - ➔ Well educated apprentices with general and specific human capital

## ➤ Worker's preferences

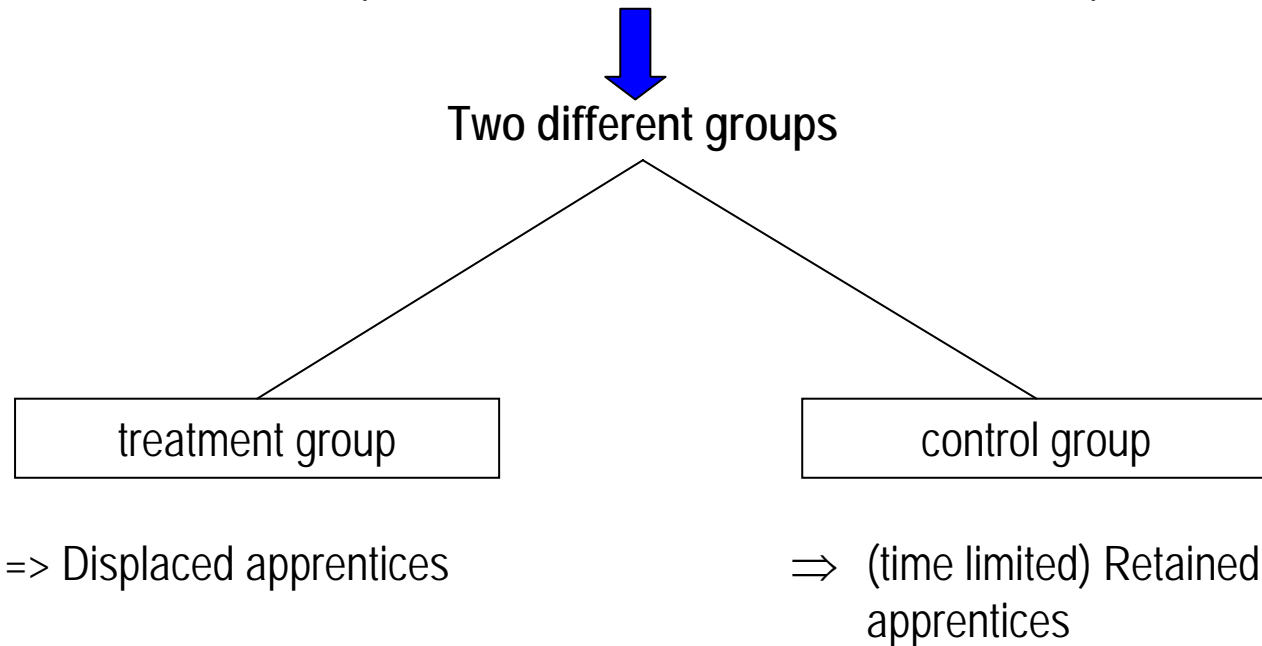
- Retained workers
- Quit in order to improve their occupational situation
  - ➔ Best educated apprentices with high share of specific human capital

# Displacement and unemployment after apprenticeship

	High level with more specific human capital	Low level with more general human capital
Displacement probability	-	+
Risk of unemployment period	-	+
Duration of unemployment	+	-

1. The probability not being retained, is higher for finished apprentices with a lower level of human capital than for finished apprentices with a high level of human capital.  
 Impact of determinants on displacement
2. Finished apprentices, who are displaced, are characterized by a higher probability of being unemployed one year after finished apprenticeship than apprentices, who are retained for a limited time.  
 Impact of displacement on lagged unemployment

- » Estimation of the impact of a displacement on a lagged unemployment
- » Observation of the same person in two different circumstances not possible



$$Y_i = Y_i(D_i) \begin{cases} Y_i(0) = & \text{if } D_i = 0 \\ Y_i(1) = & \text{if } D_i = 1 \end{cases}$$



- Impact of the displacement on the displaced apprentices (Average Treatment Effect on the Treated)

$$ATT = E(\Delta_i | D = 1) = E(Y_1 | D = 1) - E(Y_0 | D = 1)$$

- Observation of the status of all displaced apprentices on year after having finished the apprenticeship
- Identification of the Matching-pair for estimating the ATT
- Regression as basis for calculating the Propensity Score

$$Y_i = \alpha + X_i' \beta_2 + \varepsilon_{it}$$

- Displacement as dependent variable

$$Y_i = \alpha + \tau D_i + X_i' \beta_2 + \varepsilon_{it}$$

- Process of selection of the firm at the beginning of apprenticeship
- Process influenced by unobservable factors
- Determination of the displacement already at the beginning of the apprenticeship
- Assumption of exogeneity not valid

$$E(Y_0 | D = 1) \neq E(Y_0 | D = 0)$$

## ➤ Application

- Variable of displacement as proxy variable which is not influenced by  $\varepsilon_i$ :
  - » Change in unemployment directly after apprenticeship
- Separate Estimation of sub-groups with identical feature which influence the displacement

Mean standardised Bias (in %)  
Apprentices with ‚Haupt-/Realschule‘

Economic Sector	Before Matching	After Matching
Agriculture, hunting, forestry, fishing	17,440	11,083
Mining and quarrying	48,666	12,918
manufacturing	9,606	1,397
Electricity, gas and water supply	17,804	23,123
Construction	8,824	3,206
Wholesale and retail trade	8,235	2,782
Public administration, services	15,229	6,112
Transport and communication	12,086	11,230
Financial intermediation, Real estate, business activities	20,704	9,345

- By economic Sectors
- Apprentices with 'Realschulabschluss'

	ATT	S.E.	N
Agriculture, hunting, forestry, fishing	0,000	0,113	204
Mining and quarrying	0,000	0,456	22
manufacturing	0,278	0,010	23845
Electricity, gas and water supply	0,000	0,180	130
Construction	0,253	0,027	2999
Wholesale and retail trade	0,288	0,026	2523
Public administration, services	0,276	0,045	1054
Transport and communication	0,404	0,080	408
Financial intermediation, Real estate, business activities	0,260	0,082	475

Mean standardised Bias (in%)

Apprentices with ‚Haupt-/Realschule‘

Year of finishing apprenticeship	Before Matching	After Matching
1992	7,389	3,136
1993	10,368	3,709
1994	7,913	2,352
1995	13,859	5,211
1996	11,441	3,816
1997	10,284	3,589
1998	11,793	3,775
1999	11,886	3,745
2000	12,331	3,839
2001	12,593	3,217
2002	12,969	3,339
2003	14,144	5,836

# Impact of the displacement on unemployment

- By year of finishing apprenticeship
- Apprentices with 'Realschulabschluss'

Year of finishing apprenticeship	ATT	S.E.	N
1992	0,346	0,035	2607
1993	0,239	0,032	2682
1994	0,266	0,028	2715
1995	0,339	0,031	2609
1996	0,291	0,029	2483
1997	0,280	0,029	2535
1998	0,297	0,030	2702
1999	0,245	0,030	2711
2000	0,233	0,032	2393
2001	0,327	0,032	2388
2002	0,248	0,034	2146
2003	0,296	0,032	1936

source: IABS 1975- 2004, own calculation

## Hypothesis 2:

### » By economic Sector:

- › Different effects of displacement within economic sectors
- › Huge difference in the economic sector „Transport and Communication“
  - signal for a investment-based training
- › Hardly differences in the economic sector „Agriculture, hunting, forestry“ and „Electricity, gas and water supply“
  - signal for production-based training

### » By year of finishing apprenticeship

- › Displacement impacts the probability of getting unemployed one year after apprenticeship similar over the years
- › Probability of getting unemployed one year after apprenticeship for displaced people in year with deterioration of the economic situation higher
  - economic effects

## ➔ Verified

## Conclusion:

- » Time limited retention:
  - › reduce unemployment
  - › but: probability of getting unemployed after a time limited retention still high.
  - › supports the entry of work life by gaining the work experience

# Back -up



## ➤ According to motivation to train

### » Firms without any or with small net costs

> Not willing to take over at the beginning of apprenticeship

### ➡ Displaced trainees are characterised by

- General human capital
- Small loss of productivity by changing firm
- Low level of human capital

### » Firms with net costs

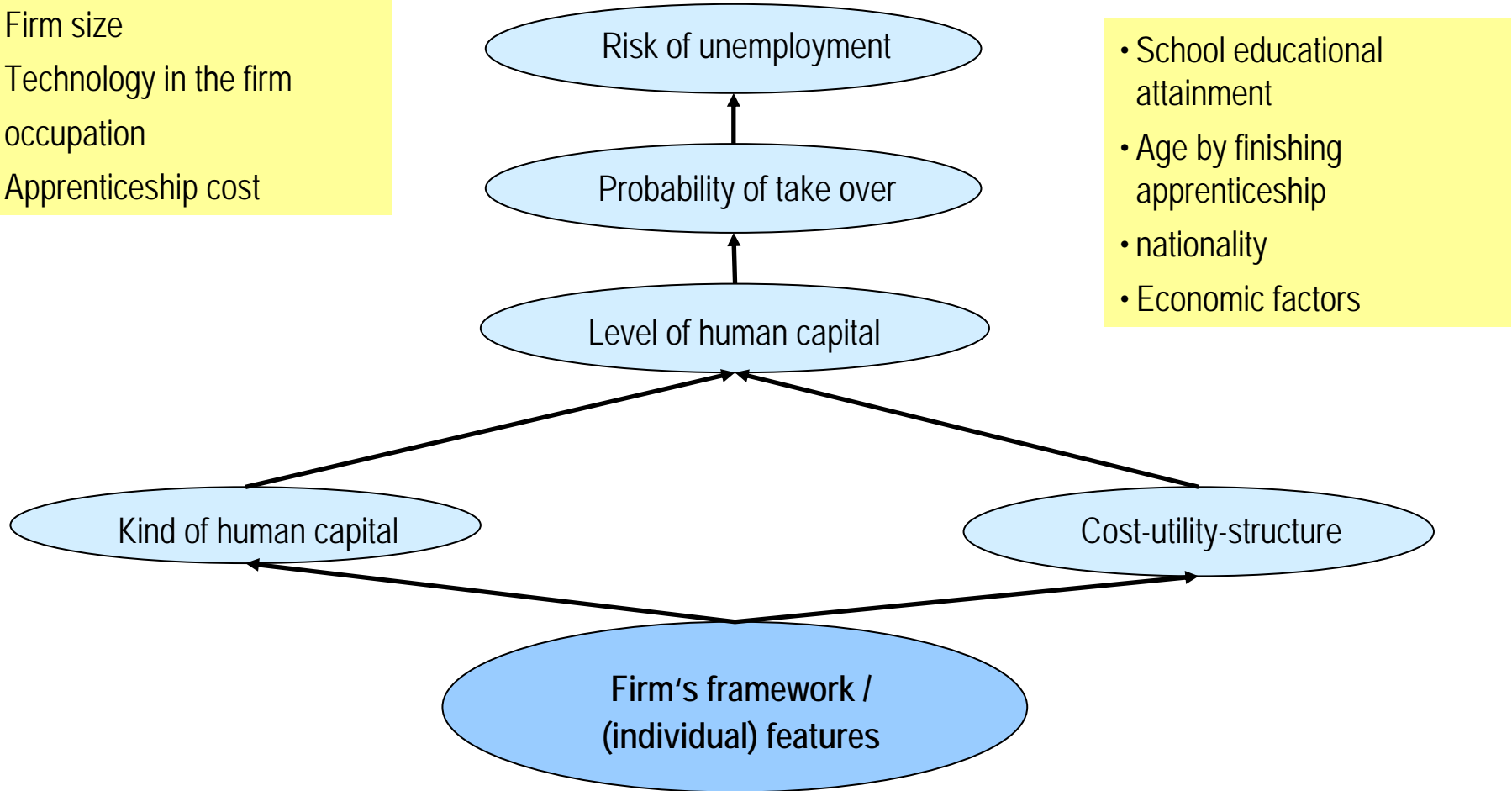
> willing to take over at the beginning of apprenticeship

> Need to attain the minimum requirements of firm's human capital

### ➡ Displaced trainees are characterised by

- General and specific human capital
- High productivity loss by changing firm
- High level of human capital

- Firm size
- Technology in the firm
- occupation
- Apprenticeship cost



- School educational attainment
- Age by finishing apprenticeship
- nationality
- Economic factors

## Mean standardised Bias „Abitur“

Economic Sector	Before Matching	After Matching
Agriculture, hunting, forestry, fishing	34,450	55,316
Mining and quarrying	0,000	0,000
manufacturing	2,969	9,606
Electricity, gas and water supply	0,000	0,000
Construction	16,229	8,509
Wholesale and retail trade	15,868	5,653
Public administration, services	17,556	10,428
Transport and communication	24,777	21,662
Financial intermediation, Real estate, business activities	14,796	8,013

- By economic Sectors
- Apprentices with 'Abitur'

	ATT	S.E.	N
Agriculture, hunting, forestry, fishing	0,286	0,184	23
Mining and quarrying	0,000	0,000	0
manufacturing	0,206	0,021	5
Electricity, gas and water supply	0,000	0,000	0
Construction	0,083	0,137	156
Wholesale and retail trade	0,143	0,066	420
Public administration, services	0,289	0,099	210
Transport and communication	0,231	0,159	122
Financial intermediation, Real estate, business activities	0,079	0,041	726

Mean standardised Bias

(Abitur')

Year of finishing apprenticeship	Before Matching	After Matching
1992	20,948	11,183
1993	15,799	12,125
1994	11,961	12,065
1995	13,207	7,529
1996	12,816	10,859
1997	22,983	7,104
1998	17,104	7,989
1999	16,001	12,492
2000	12,459	9,344
2001	15,806	12,680
2002	16,143	8,530
2003	17,909	9,438

# Impact of the displacement on unemployment

- By year of finishing apprenticeship
- Apprentices with 'Abitur'

Year of finishing apprenticeship	ATT	S.E.	N
1992	0,289	0,079	420
1993	0,259	0,065	489
1994	0,169	0,053	517
1995	0,281	0,074	424
1996	0,203	0,062	428
1997	0,247	0,067	451
1998	0,241	0,065	461
1999	0,174	0,064	494
2000	0,105	0,068	469
2001	0,175	0,073	418
2002	0,051	0,070	447
2003	0,253	0,056	377

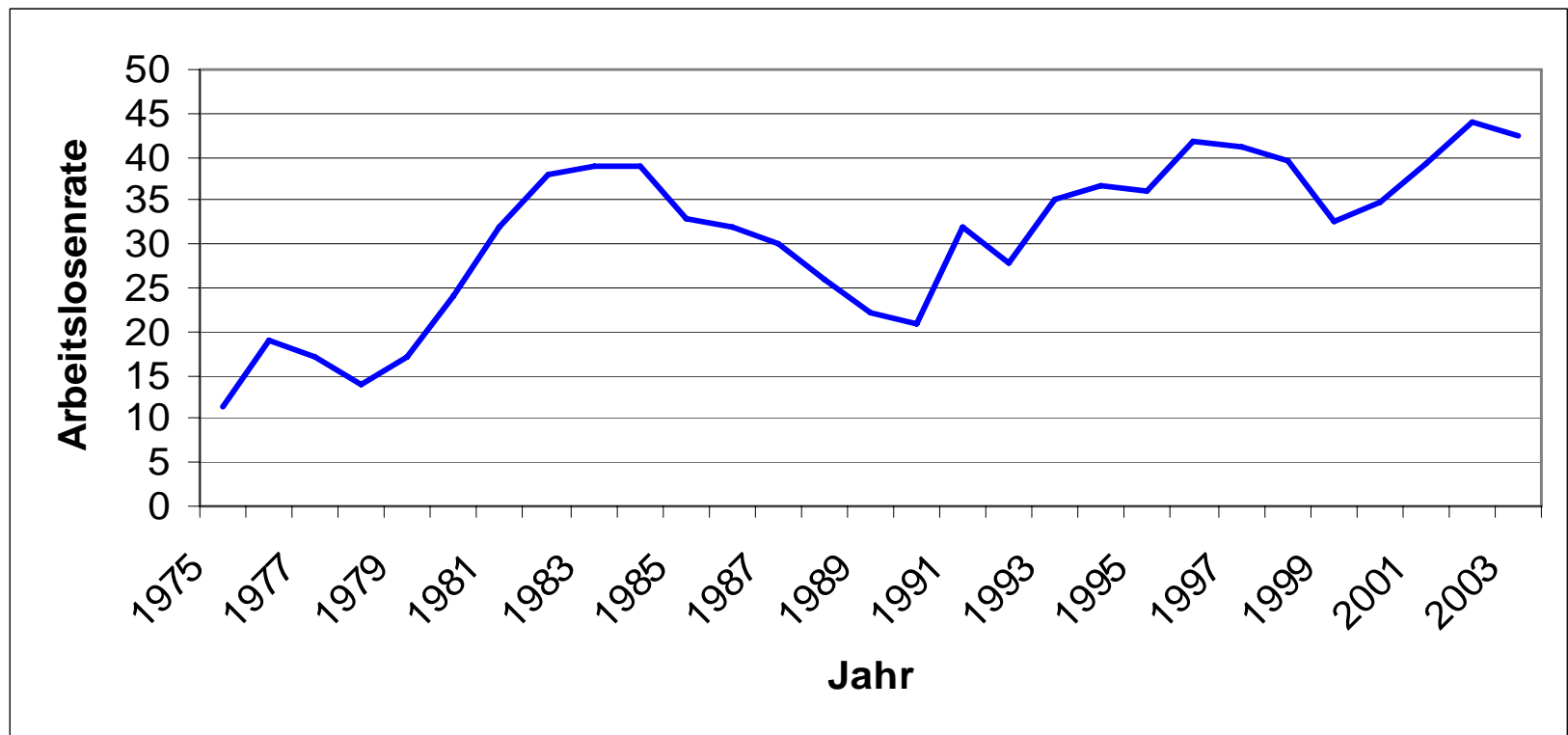
source: IABS 1975- 2004, own calculation

## Nicht übernommene Absolventen nach Ausbildungsbereichen

Ausbildungsbereiche	keine Übernahme	arbeitslos innerhalb der ersten 12 Monaten (in % von nicht übernommenen Absolventen)
Land- und forstwirtschaftliche sowie Montanberufe	47,36	55,8
Chemie-, Papier-, Keramik- & Holzverarbeitende Berufe	33,7	67,84
Metallverarbeitende Berufe	29,6	63,51
Textilberufe	31,3	58,99
Nahrungs- und Genussmittelerzeugende Industrien	41,5	50,48
Berufe des Elektrofaches & feinmechanische Berufe	33,79	58,08
Bauberufe	31,67	73,78
Infrastruktur-Transportdienstleistungen	41,46	42,02
ökonomische Dienstleistungsberufe	32,64	51,64
Verwaltungs-, Organisations- & Kommunikationsdienstleistungsberufe	31,33	57,33
produktionsnahe Dienstleistungsberufe	32,42	60,97
haushaltsnahe & personennahe Dienstleistungsberufe	46,61	64,64
Sonstige	44,12	65,23

Quelle: IABS 1975- 2004, eigene Berechnungen

Development of the unemployment rate of male trainees aged between 17 and 25 after apprenticeship between 1975 and 2003 in West-Germany



source: IABS 1975- 2004, own calculation



- IAB- Employment Sample Version 1975 -2004
- 2 % random sample taken from the Employee and Benefit Recipient History of the IAB
- Socio-demographic and employment-related characteristics
- Notifications of trainees as person covered by social security
- Database of Event history and survival analysis\_
  - » employment biographies on on a day-to-day basis
  - » Information about the entry in and the duration of unemployment