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SPINTAN smartpublicintangibles

Organisational Capital: How long does it live?

– Analysing Micro Level Data for Germany

Bernd Görzig and Martin Gornig

Smart Public intangibles. This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no: 612774.

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Why service live matters

- The **E**uropean **S**ystem of **A**ccounts (ESA) suggests the **P**erpetual **I**nventory **M**ethodology (PIM) to estimate **C**onsumption on **F**ixed **C**apital (CFC) and capital stocks
- Applying this methodology the chosen **S**ervice **L**ife (SL) has a severe impact on level and development of
  - Capital stock and
  - CFC
- Impact on public sector
  - Value added for non market producers is defined as the sum of costs, one of which is depreciation (ESA 2010)
  - Prospective changes in the National Accounts (SPINTAN, WP?)
    - Additional capital compensation for return on public capital affects value added

Asset‘s service life is an economic notion

- Neither ESA nor the OECD handbooks on measuring capital give direct hints, how to assess the SL for **O**rganisational **C**apital (OC)
- Principally, economists share the view that
  - For national accounts purposes, service lives are economic service lives which may be different from physical service lives. (OECD, 2009)

The role of depreciation

- Depreciation on a fixed asset is measured by the decline in its value over time (OECD, 2001)
  - Loss of value = Consumption of Fixed Capital (ESA)
- Mainstream economic theory:
  - The loss of the assets‘ ability to generate profit
- A common & pragmatic procedure to consider depreciation in an accounting framework is to assumme a - mostly - constant depreciation rate (CHS, EU KLEMS, INNODRIVE, ….)
- The **depreciaten rate** is defined as the relation between depreciation and net capital stock

What exactly is organisational capital?

- Frequent question, no simple answers
- Diverting definitions and measurement methods exist
- Most researchers agree on the
  - tacid,
  - team related, and
  - firmspecific

  nature of organisational capital

Understanding OC

CHS (2009): Firm specific ressources

SPINTAN (2015): Organisational capital of public sector is
- Knowledge capital and
- part of the societal competences

Chen (2012): …this firm-embodied concept of organizational capital enjoys popular support among scholars

O'Mahony (2015): Production in the knowledge economy is often team based. Tacit knowledge resides in people.

Statistics Netherland (2008): The profitability of companies may rise as a consequence of their well managed organizational structure

Wikipedia: Organizational capital is the value to an enterprise which is derived from organization philosophy and systems which leverage the organization's capability in delivering good or services.

Focus of this study: The team (value)

- We assume no abstract firm specific team value without the people
- Team value is determined by the knowledge on the behaviour of the other members of the team (societal knowledge)
- The interaction of the team members creates a capital value

  "..the match between employees working in teams" (Prescott and Visscher, 1980)
- The team value is more than the sum of capital values of the individuals
- Organisational capital resides in the people who constitute the team that is governing the unit in question

Who wins the UEFA cup 2015?

- The team with highest transfer sum for all players?

Forbes Rank	Team	Transfer value ($mil)
1	Real Madrid	3 440
2	Barcelona	3 200
3	Manchester United	2 810
4	Bayern Munich	1 850
5	Arsenal	1 331
6	Chelsea	868
7	Manchester City	863
8	AC Milan	856
9	Juventus	850
10	Liverpool	691

- The team with best interaction among the players?

The quit rate in the Squicciarini/Le Mouel (2012) approach

- If people quit the team, organisational structures change
- The value of the team will be reduced twofold:
  - The societal knowledge
    - on the behaviour of the quitting team member gets lost
    - of the other members of the team becomes partly obsolete
  - Result: Depreciation of the team value
- The **quit rate**, the relation of quits to the total staff can be seen as a proxy for the depreciation rate
- Some of the challenges
  - Are all team member to be valued equal?
  - Which personnel constitutes the team?

The Eukleed Data Base to assess quit rates

- EUKLEED database
  - developed for INNODRIVE market sector approach
  - firm level LEED data for 5 years: 1999 - 2003
- Compiled from
  - German Social Insurance System (SIS)
    - Administrative data at establishment level (local KAUs in ESA)
    - roughly 1.8 mill. establishments
      - 300 Thousand units in SPINTAN relevant industries

Characteristics of Eukleed

- Employment and income data for
  - individual employees, and
  - establishments
- Exact entry and exit dates for employees
- High coverage (40% to 80% of total employment in Nace 1 SPINTAN related industries)
- Relevant shortcomings
  - Certain types of civil servants are not included
  - No distinction between market and non market producer
  - Nace 1 classification

Nace 2 conversion for SPINTAN related industries

based on 5-digit classification in Nace 1

Activities	EU KLEMS Nace 2	AO	I	K	L	M	N	O	All industries (EU KLEMS)
"All other activities"	(AO)	100.0	99.6	89.2	1.6	-	0.5	85.7	76.6
Scientific research and development	MB	-	-	4.8	-	-	-	-	0.5
Public administration, defence; compulsory social security	O	-	-	-	96.4	-	-	-	6.3
Education	P	-	0.4	6.0	-	100.0	-	0.8	4.5
Human health activities	QA	-	-	-	-	-	58.8	-	6.7
Residential care, social work activities	QB	-	-	-	0.1	-	40.7	-	4.6
Creative, arts, entertainment activities; libraries, archives museums, other cultural	R (1)	-	-	-	1.9	-	-	6.0	0.4
Gambling, betting activities; sports, amusement, recreation	R (2)	-	-	-	-	-	-	7.5	0.3
All industries (Nace 2)		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Defining the team

- Standard methodology (CHS, Innodrive,..)
  - Employees in certain occupations and with an attributed education are defined as **management staff** (see table)
  - The classification as developed in INNODRIVE serves as an initial definition for the members of the team (Basic staff)
    - Alternative team compositions are calculated
    - INNODRIVE has been directed to the market economy. Non market management will have to be added in some cases

Definition of management staff

BKdl88[1]	description[2]	Educational level
31-32	Agricultural engineers and administrators, a.s.	All
601-612	Engineers, physicists, mathematicians, a.s.	High
681	Wholesale, retail trade agents, purchasing agents, a.s.	High
682-688	Sales assistents, a.s.	High
691-692	Banker, a.s.	High
703	Advertising specialists, a.s.	High
751-763	Chief executives, consultants, tax adviser, a.s.	All
771-773	Financial officers, chief accountants, a.s.	High
781-782	Office executives, a.s.	High
784-794	Office clerks, a.s.	High
862-863	Chief executives, consultants of social institutions, a.s.	High
911	Directors of hotels, restaurants, a.s.	High
921	Home economy administrators, a.s.	High

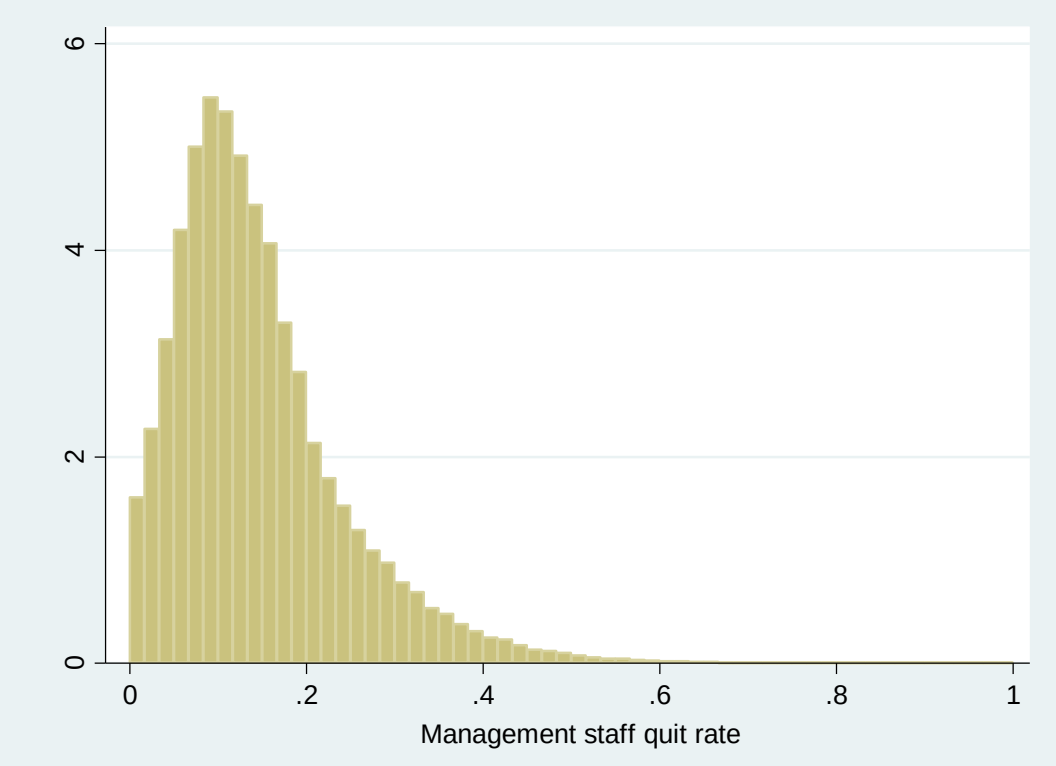
[1]German classification of occupations (IAB 2008; chapter 5). - [2]Translated from German. - All: All employees. - High: Employees with higher education (code numbers 4 to 6 in IAB 2008). - Low: Employees without higher education (all other code numbers)

Sources: IAB 2008, INNODRIVE 2010

Management staff characteristics for SPINTAN related industries

	Averages 1999-2003	SPINTAN related industries	All other industries
Establishments	million	0.301	1.473
Employees	million	5.641	18.492
Management staff	million	0.462	2.259
Annual quits of management staff	million	0.059	0.295
Establishment size	employees	19	13
Management share in employment	per cent	8	12
Quit rate of management staff	per cent	13	13

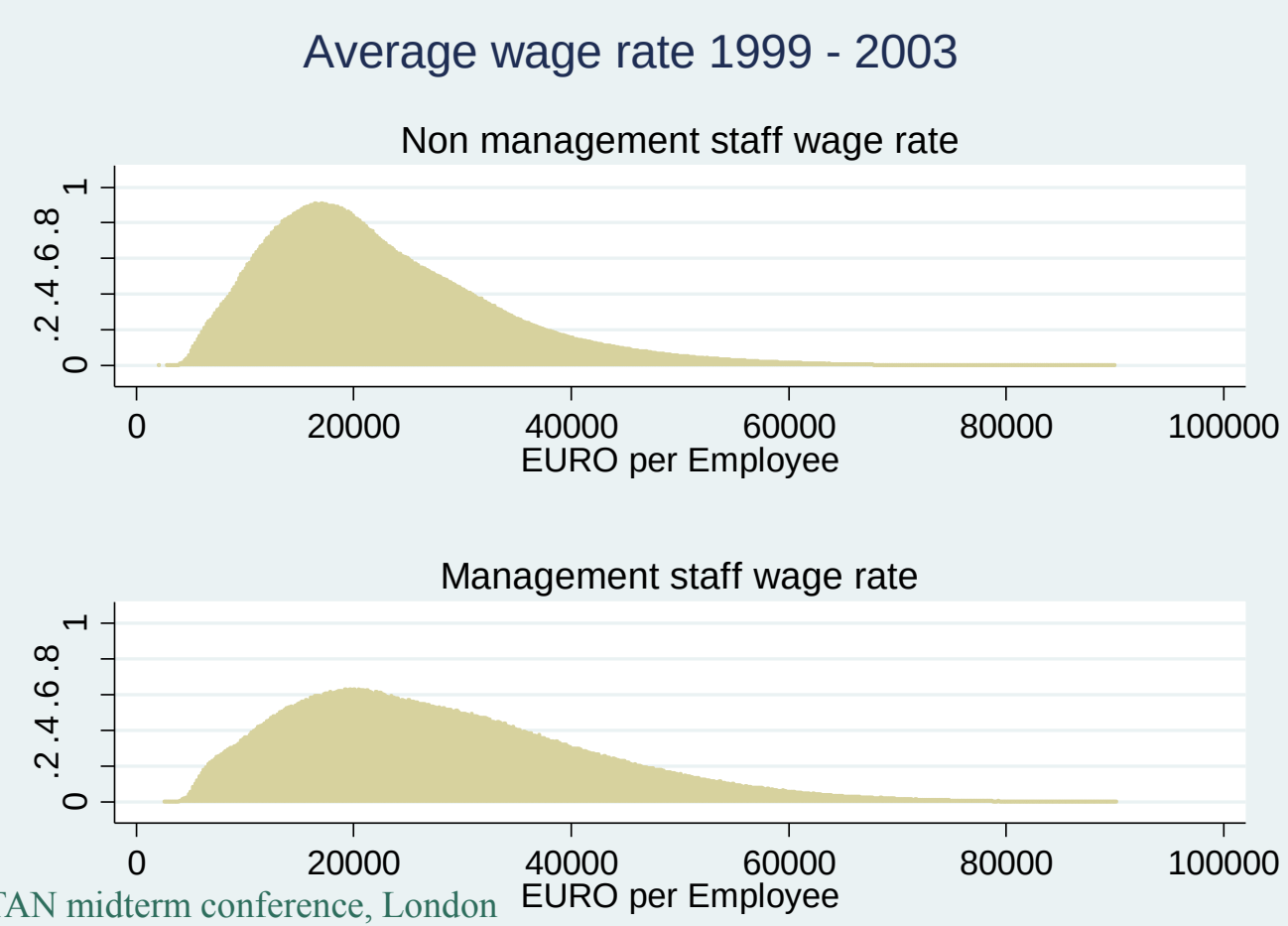
Density distribution of quit rates in SPINTAN related industries – 1999 - 2003



Micro data evidence

- In the average, management wages are 20 % higher than those of non-management employees
- However: Many employees of the management staff have an income below that of non-management employees
- More than 5% of the management staff consists of people that stay only less than a year in the same unit
- Many small units do not
  - have any management employees
  - exist over the total observation period

Density distribution of annual wage rates – 1999 - 2003



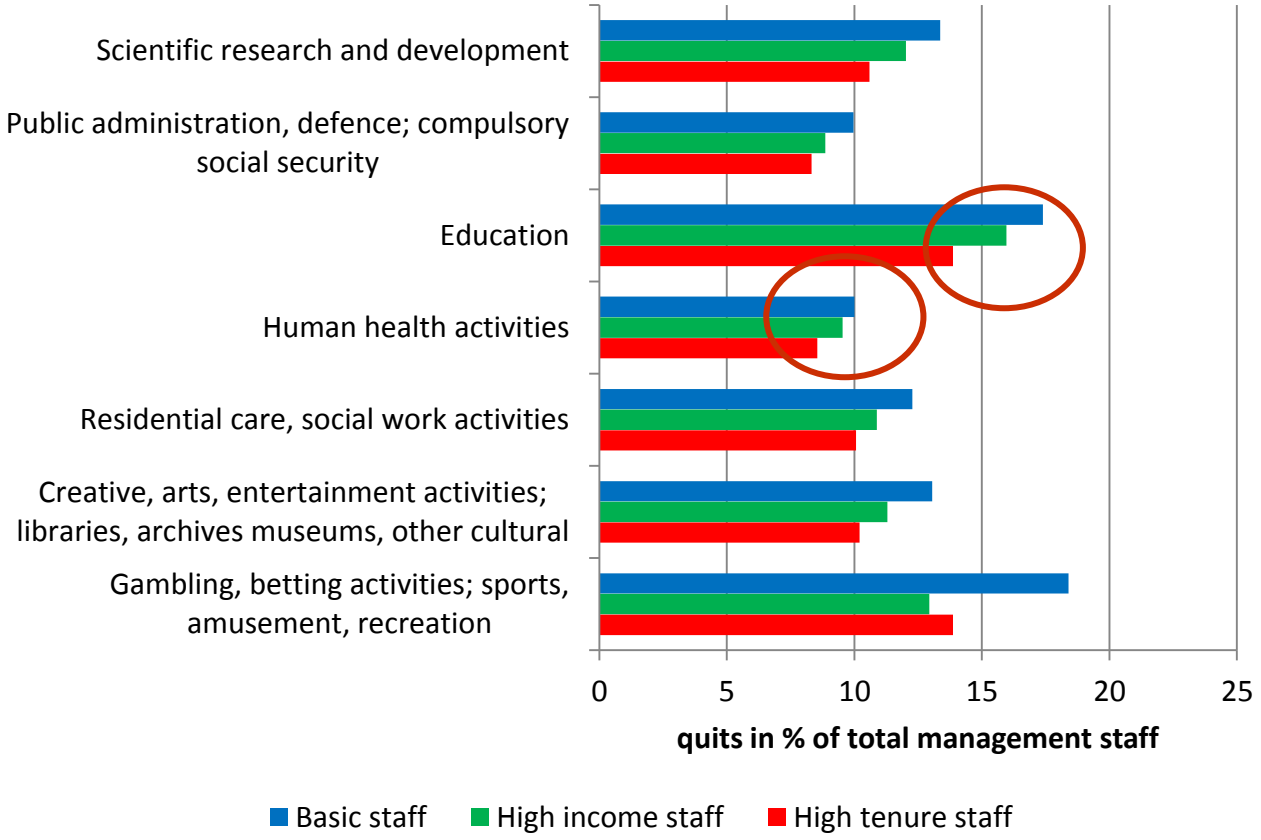
Alternative team constellations

- Only those „Basic“ staff members that earn a higher income per day than the average daily income (High wage staff)
- Only those „Basic“ staff members that work for more than one year in an establishment (High tenure staff)
- Team either defined by employment or by income shares
  - Employees with higher income contribute more to the team value

Average quit rates in SPINTAN related industries for alternative team definitions

	Employees	Wage sum
	million	million €
Management staff		
Basic management staff	0.462	17 020
High wage staff	0.297	12 176
High tenure staff	0.426	15 912
Quits		
Basic management staff	0.059	2 008
High wage staff	0.034	1 367
High tenure staff	0.044	1 566
Quit rates		
Basic management staff	0.13	0.12
High wage staff	0.12	0.11
High tenure staff	0.10	0.10

Management quit rates in SPINTAN related industries
weighted averages – 1999-2003



Weighted and not weighted management quit rates

Conclusions

- Average quit rates for SPINTAN related industries range between 10% to 18% for the Basic management staff
- Alternative assumptions on the composition of the team do marginally influence the general structure of the quit rates
- It seems that differences in quit rates are more determined by the industry than by the the team composition
- Further research is necessary

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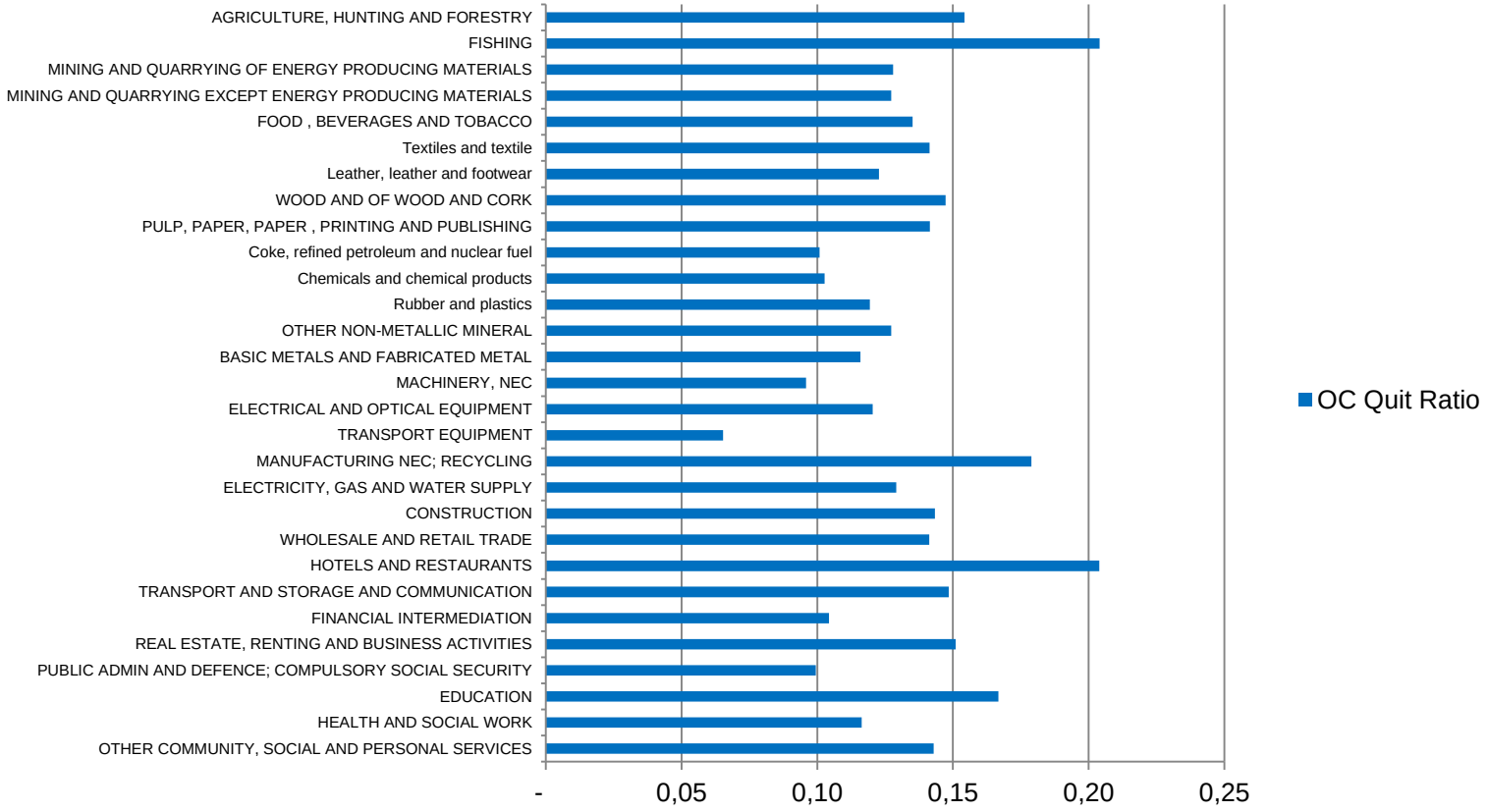
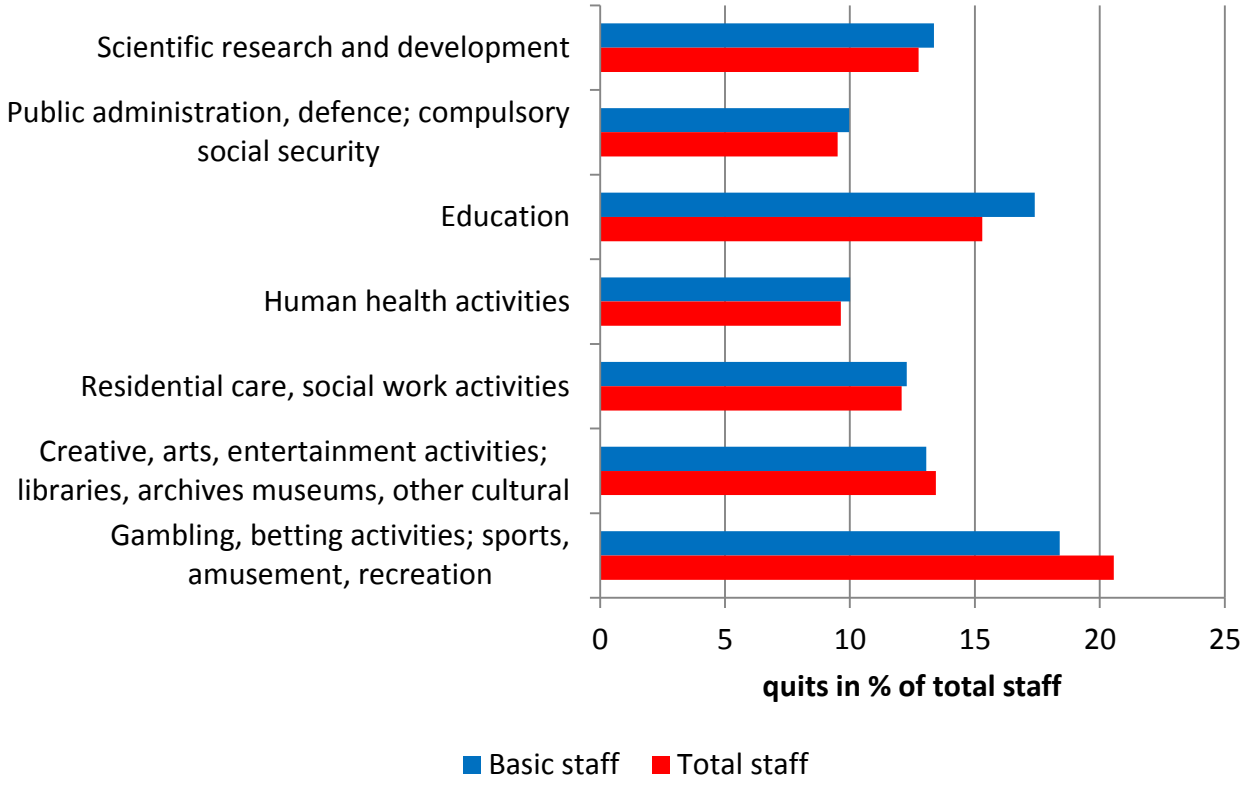
References

Chen, Wen (2012), The Size and Sign of a Spillover Effect of Organization Capital, Paper Prepared for the 32nd General Conference of The International Association for Research in Income and Wealth.
Commission of the European Communities, 'European System of Accounts - ESA 1995', Eurostat (Luxemburg), 1996.
Commission of the European Communities, 'European System of Accounts - ESA 2010', Eurostat (Luxemburg), 2013.
Corrado, C., C. Hulten, and D. Sichel (2009), "Intangible Capital and US Economic Growth", Review of Income and Wealth 55, 661–685.
Görzig, Bernd (2011), Eukleed - An establishment level comprehensive data base for Germany, INNODRIVE Working Paper, 5.
Ker, Daniel (2013), Service Lives of R&D Assets: Background and Comparison of Approaches, Office for National Statistics
Lev, B., and S. Radhakrishnan (2005), "The Valuation of Organization Capital," in Carol Corrado, John Haltiwanger and Dan Sichel, editors Measuring Capital in the New Economy, University of Chicago Press, 73-110.
Li, Wendy (2014), Organizational Capital, R&D Assets, and Offshore Outsourcing,Paper Prepared for the IARIW 33rd General Conference, Rotterdam.
O'Mahony, Mary (2015), Measuring Own Account Organisational Capital, presentation at SPINTAN workshop, Brussels
OECD (2001), Measuring Capital (first edition). Paris: OECD.
OECD (2009), Measuring Capital. Paris: OECD.
Piekkola, Hannu (2010), Intangibles: Can They Explain the Unexplained? INNODRIVE Working Paper, 2.
Prescott, E. and M. Visscher, (1980), "Organization Capital", Journal of Political Economy, 88, 446–61.
Rooijen-Horsten, Myriam van, Dirk van den Bergen, Mark de Haan, Angelique Klinkers and Murat Tanriseven (2008), Intangible capital in the Netherlands: Measurement and contribution to economic growth, Discussion paper (08016), Statistics Netherland.
Squicciarini, Mariagrazia, Marie Le Mouel (2012), Defining and Measuring Investment in Organisational Capital Capital: Using US Microdata to Develop a Task-based Approach", OECD Science, Technology and Industry Working Papers, 2012/05, OECD Publishing.

Management quit rates by Nace 1 industries



Quit rates of „Basic“ staff compared with total staff




SEVENTH FRAMEWORK
PROGRAMME

- Note:
  - This implies no estimate on the level of OC
  - No OC, no depreciation
  - Indicator for a potential depreciation rate