Depreciation on Organisational Capital - A Micro Level Analysis for Germany

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Abstract

Already in 1980, Prescott and Visscher noted that organizational capital is related to the fact that people in the production units are working as a team. Since then, a number of authors have emphasized that the team value represents a dominant part of organisational capital. If such a team value exists, it is related to the employees who form the team. This paper assumes that a loss in the team value of a production unit will occur if members of the team are leaving it. Hence, we calculate unit specific quit rates that can be taken as proxies for the depreciation rate of the team value. In the simplest model, the quit rate is calculated as number of employees leaving the unit related to the stock of employees in the unit. In more demanding models we use wage weighted quit rates.

Key Words: Organisational capital, depreciation, team value

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1. Introduction

A number of studies deal in detail with the creation of organisational capital. The majority of the empirical work is concerned with the correct identification and definition of expenditures for investment in organisational capital. However, many economic theories are based on stocks rather than investments. This implies that beside investment, depreciation has to be tackled with a similar intensity. So far, the literature is dealing with rather rough estimates on depreciation rates for organisational capital.

The aim of the present work is to broaden the empirical basis for an assessment of depreciation rates for organisational capital. For this purpose, we focus on a special variant of organisational capital, the capital value of a team. It is discussed, to what extend the team value can be considered as an element of organisational capital. We answer the question whether conventional depreciation rules for tangible assets can also be applied on organisational capital and why depreciation rates for organisational capital cannot be unique across production units and industries. In particular, we compare the depreciation rates for public influenced industries[1] with the ones for the private sector of the economy.

A nearly comprehensive micro-level data set for Germany is applied to calculate production unit specific quit rates for employees. These quit rates are taken as proxies for depreciation rates of the team value. In the aggregate, the depreciation rate on the team value for the "public" influenced sector does not differ notably from the one calculated for the corresponding "private" sector. However, differences in the depreciation rate across the public industries can be observed. For the industries of the "public" influenced sector, the depreciation rates found for the team value are considerably lower than depreciation rates applied on organisational capital in other studies conducted for the market sector.

A comparison with a study for the US shows that the depreciation rates for Germany seem to be lower than in the US, while the differences between the analysed "public" industries are similar.

2. Background

What is organisational capital?

Newspaper analysts frequently seem to assume organisational capital as a wildcard if they cannot explain the positive or negative performance of a company by its balance sheet data. However, also in the scientific community it does not seem that there is a convincing agreement on the nature of organisational capital. Correspondingly, a wide variety of definitions exists in the scientific debate. Researchers acknowledge that organisational

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[1] The public influenced industries are: Scientific research (MB), Public administration (O), Education (P), Human health (QA), Social work (QB), Culture (R1) and Recreation (R2). In the following called "public" industries.

capital as a special variant of knowledge capital can be an important asset but hitherto it has not been included into the asset boundary defined by National accounting systems as ***E**uropean **S**ystem of **A**ccounts (ESA) 2010*[2].

Corrado et al. (2009) see organisational competencies as part of the firm specific resources. For the public sector, it is argued to consist as knowledge capital and part of the societal competencies (Corrado et al., 2015). More general, researchers seem to agree on the tacit, team related, and firm specific nature of organisational capital. Chen (2012) argues that the "firm-embodied concept of organizational capital enjoys popular support among scholars", referring to Evenson and Westphal (1995):

> *"…it is an agglomeration of knowledge that is used to combine human skills and physical capital into systems for producing and delivering want-satisfying products"*

Other approaches rely on the economics and management literature, where organisational capital is defined as a "firm-specific knowledge asset embedded in a firm's employees" (Squicciarini/Le Mouel, 2012).

Corrado et al. (2009) refer to microdata evidence by Abowd (2005) suggesting that organisational practices (proxied by firm-level distributions of human capital) are strongly related to outcomes such as revenue per worker and market valuation. Chen (2012) discusses the question to what extend organisational capital can be seen to be embodied either in people or in firms. Because of the strong relation between organisational capital and the firms' outcome, he relies on the firm specific aspect of organisational capital.

The capital value of a team

We concentrate in this study on a specification of organisational capital, which we call the "team value". Other specifications of organisational capital are not excluded but not dealt with. We assume that for a team a capital value exists, but we do not develop a methodology how to measure it. The team value is assumed to be determined by the knowledge on the behaviour of the other members of the team as part of the societal knowledge (Corrado et al., 2015) in a production unit. The interaction between the team members creates a capital value that develops from

> *"..the match between employees working in teams"*

as Prescott and Visscher (1980) noted. It has been emphasized that the capital value of a team represents a dominant part of organisational capital (O'Mahony et al., 2014). It is mostly part of the own account produced assets of a production unit. If such a team value exists, it is related to the employees who constitute the team. We understand that the capital value of a team is more than the sum of capital values of the individuals in the team, since there is a kind of complementarity between the members of the team. For instance, the team value of a soccer team is not the sum of the individual transfer values of the players.

[2] In the following abbreviated as ESA.

Moreover, the team value is part of the competitive power, which resides in the people who constitute the team that is governing the unit in question.

Depreciation and asset's service life

The broadly accepted methodology to assess capital stock and hence capital services is the perpetual inventory methodology (PIM). This methodology is proposed by ESA (3.141) as the standard methodology to be applied in the National Accounts. It calculates the current value of the stock by adding up the value of new assets - ESA: "gross fixed capital formation (GFCF)" - to the previous years' stock and deducting the loss of value - ESA: "consumption of fixed capital (CFC)" - of the previous years' stock.

A capital stock model based on PIM with geometric depreciation pattern is commonly applied by many researchers for tangibles as well as for intangibles. A widely known application of this model is described in the EU KLEMS (2007, 6.1) methodology volume. Applying this methodology, stocks can be calculated as follows.

The opening stock K_t, for a production unit is given with:

2-1 $$K_t = K_{t-1}(1-\delta) + I_t ,$$

with I_t the capital formation of the current year t and a constant depreciation rate, δ. Given the depreciation rate and the stock, depreciation can be calculated:

2-2 $$D_t = K_{t-1}\delta .$$

With respect to intangible capital, this application can be found in Corrado et al. (2009), Piekkola et al. (2011), and Corrado et al. (2012). The depreciation rate δ can be seen as a descriptive number, which is calculated as the relation between the value of depreciation and the value of net capital stock. In addition, in PIM models currently applied, the depreciation rate frequently is used as a parameter in a theory based depreciation model.

Different methodologies are applied to assess the depreciation rate. All have in common that they are related to the service life of the asset in question. Depreciation rates are inversely related with the service life of an asset. ESA suggests that consumption of fixed capital (CFC), which is the National Accounts notion of depreciation, the *"… decline in value " is estimated on the basis of the*

- *expected <u>average economic life</u>*

It is known (OECD, 2001) and easy to demonstrate that service life assumptions have a strong influence on capital stock and consumption of fixed capital. OECD (2009, p. 106) notes that

> *"the accuracy of capital stock estimates derived from a PIM is crucially dependent on service lives - i.e. on the length of time that assets are retained in the capital stock".*

Why service lives differ?

If we could assume the same service life for all types of assets, applying PIM, we would not need any breakdown by asset type or by industry to assess the amount of depreciation for an economic unit or the economy as a whole. The level of overall depreciation would not be different if we make the calculations for the aggregate or for the different types of asset. Since this is not a realistic assumption, the question arises, to what extent one can assume different service lives for organisational capital in different units or industries and in particular in the public sector?

Based on a model developed by Bliss (1967), Görzig (1973) demonstrates that for a given production unit the service life of an asset depends on the market conditions on output and input markets, which can differ across the individual production units if perfect competition does not prevail. Therefore, service lives could differ even across the smallest observable decision units, in particular if the use and the costs of organisational capital are different in the production units in question.

Empirical studies for different types of tangible assets show a rather wide spread of service lives. An idea of the magnitude of different service lives applied by firms might be given by the fact that the German tables for tax service lives cover more than 2 000 different types of assets (BMF, 2006). The asset breakdown in the BEA (1999) estimates is about 150. For Germany, the statistical office is using more than 200 different types of assets. A survey on asset service lives (Cope, 1998) is asking for more than two hundred different types of assets.

A general practice seems to be that service lives of assets are assumed to differ across different type of assets but should be the same for all units for a given type of asset. This is line with the ESA suggestion that the *average economic life* of a specific asset should be the regular case for **all** units of the economy (ESA, 3.141). The underlying idea is that there exists some kind of homogeneous type of asset, whose loss of value is always the same independent of the surrounding of its use as this would be the case in a model of perfect competition.

If one would apply this methodology directly on organisational capital, there should be no difference in service lives between the public and private sector for a given type of asset. However, for tangible assets an UNECE (2004) survey shows, that some of the old EU 15 countries are reporting to assume different service lives for the same type of asset depending on the industries in which the asset is used. For some industries, this is also assumed in EUKLEMS (2007), which practises a rather small asset breakdown of 10 assets. Reasons for an additional industry breakdown for service live assumptions can be twofold:

a) *The applied asset classification is not deep enough to cover homogeneous types of asset, or*

b) *Different market structures in the industries will induce different economic service lives for the same type of asset.*

In the case of tangible assets, there is a trade-off between the level of asset breakdown and the necessity to distinguish between different service lives by industry. The lower the asset breakdown the more might it be a necessity to apply different service lives for a given type of asset.

Looking at organisational capital, clarification is needed whether the defined type of organisational capital can a) be seen as a homogeneous good and b) whether the market conditions are different in different uses of this asset. With respect to the first question, one can conclude that different specifications are discussed by researchers. Organisational assets are not seen as a unique homogeneous good. With respect to the second question, most researchers are arguing that a rather big share of organisational capital is cumulated from own account production, which is assumed to be firm specific (Corrado et al., 2009; Chen, 2012). Market conditions can be assumed to differ between individual production units and industries. If these assumptions hold, service lives for organisational capital can be different in the public sector compared with the private sector and across industries. The assumed service lives for aggregated units as assumed in Corrado et al. (2015) can only be understood as a mean value of the factual values.

The decline in value of organisational capital

Another point to clarify is the questions what invokes the "loss of value" of organisational capital. According to ESA (3.139), consumption of fixed capital (CFC) "*… is the decline in value of fixed assets ….. as a result of*

- *normal wear and tear and*
- *obsolescence."*

While wear and tear is a relevant process for the physical conditions in the case of tangible assets, the notion of obsolescence can be applied to both tangible and intangible assets. Subsuming organisational capital under the broad heading of knowledge capital, the OECD (2001, p.117) argues that the physical service life of knowledge is infinite. The only reason for retiring intangible assets is that there is no longer any demand for their services. If they have only limited service life in practice, it must be due to obsolescence. No wear and tear and no damages occur. The only impact, which shortens the service life of knowledge, comes from obsolescence. This opinion is shared by Ker (2013) with respect to R&D assets.

The notion of obsolescence is not discussed uniquely. Diewert/Wykoff (2006) define the case of disembodied obsolescence as a result of demand shifts. An asset is not any longer needed in the production process if the demand ceases for the products that can be produced with it. Given a putty clay production function, Bliss (1965) shows that the optimal service life of an asset depends on the expected increase in real cost of operating the specific asset.

Embodied obsolescence occurs if new knowledge deteriorates current knowledge. The impact of new knowledge on the depreciation of current knowledge is articulated by Alston et al. (1998). According to Grubler/Nemet (2012) obsolescence occurs either as technological obsolescence by innovation or

"..due to turnover of the holders of that knowledge".

Knowledge can get lost by staff turnover is argued by Arnulf/Nemet (2013). This is also the position of Squicciarini/Le Mouel (2012) who derive depreciation rates of organisational capital from job turnover data. This paper follows the basic concept of Squicciarini/Mouel (2012) in assuming that a loss in the team value of a production unit will occur if members of the management team are leaving it. The capital value of the team will be reduced twofold.

- *First:* *the societal knowledge of the quitting team member gets lost.*
- *Second:* *the societal knowledge of the other members of the team with respect to the leaving member becomes obsolete.*

We calculate unit specific quit rates that describe the loss of the capital value of a team. These quit rates can be taken as proxies for the depreciation rate of the team value. In the simplest model, the quit rate is calculated as number of employees leaving the unit related to the stock of employees in the unit. In more demanding models we use wage weighted quit rates.

3. Data

The team

A crucial question in assessing the team value is the composition of the team. Mello/Ruckes, (2006) distinguish between homogeneous teams with similar characteristics and heterogeneous teams with different characteristics. A frequent type of team work is that of a production team, where the members of the team do complementary work and have accordingly different qualifications.

This kind of team can be found in many production processes. Examples for health related production units are given in O'Mahony/Beghelli/Stokes (2016) and Schulz/Beckmann (2016) where a close collaboration between managers, doctors, and nurses can be observed. In particular, in non-market industries analogue situations can be found (Squicciarini/Le Mouel, 2012). Different from this kind of complementary team work across several characteristics, Piekkola et al. (2011), follows Corrado et al. (2009) in arguing that a team associated with organisational capital is related to the management employees in a production unit. In this paper, we follow this suggestion, clearly acknowledging that this can only be seen as a starting definition for the team, which we call basic staff. It should be is subject to further variations.

In Piekkola et al. (2011), all employees, who are working in one of the occupations described in table 1 by BKdl88, are principally producers of organisational capital if they have a higher education. A higher education is assumed if these employees have visited a secondary school with vocational training, or if they have a college or university degree. Exemptions from this are agricultural engineers and administrators, chief executives, consultants, tax advisers, and similar occupations, where all employees are treated as management staff. All other employees are assumed non-management staff.

Table 1: Basic Team - management staff definition in INNODRIVE

BKdl88[1]	description[2]	Management staff
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 2011

Public influenced industries

One of the objectives of this paper is to compare depreciation in the public and private sector. As Corrado et al. (2015) describe, the distinction between public and private sector is not a trivial task. Public production can be associated with non-market production of General Government (GG) and Non-Profit Institutions Serving Households (NPSIH). On the other hand, production can be market production being under control of the General Government. Before this background, public influenced NACE rev. 2 industries, are selected, which can be assigned to the public sector for two reasons:

a) The majority of production units in these industries are either non-market production units or

b) Units with production under control of governmental institutions.

All other industries are labelled private sector industries.

Table 2: Industry breakdown

Activities	Nace 2
"All other activities"	**(AO)**
Scientific research and development	**MB**
Public administration, defence; compulsory social security	**O**
Education	**P**
Human health activities	**QA**
Residential care, social work activities	**QB**
Creative, arts, entertainment activities; libraries, archives museums, other cultural	**R (1)**
Gambling, betting activities; sports, amusement, recreation	**R (2)**

Different from Corrado et al. (2015) we additionally distinguish between the two subgroups Culture R(1) and Recreation R(2) for industry R.

Eukleed data

Calculations are based on the Eukleed database that has originally been applied in the INNODRIVE project (Piekkola et al., 2011) to assess organizational capital for the market sector of the economy. Here, the analysis is extended to cover also the units of the public influenced industries.

Eukleed is a comprehensive integrated micro data set on employment, investment, and output for about 1.6 million German establishments, with around 40 million employment cases per year. Its panel structure allows that for every unit the exact entry and exit days for each individual employee is available.

The units of the database are establishments, the local Kind of Activity Units (ESA,1.56). Divergences between Eukleed and National Accounts data with respect to the industry's employment figures are caused by the fact that National Accounts data refer to enterprises, the legal units as the smallest entity. For some industries, the number of employees in production units is higher than for the enterprises of these industries because these industries consist mainly of local production units of enterprises, whose main activity is in other industries. Eukleed does not cover certain types of civil servants in institutional sectors S.14/S.15 with an impact for NACE rev.2 industries O, P, and Q. Therefore, the results for these industries are biased and have to be judged cautiously. As mentioned before, we are not able to distinguish between market and non-market production units. With respect to all employed people, the coverage is around 70%. A relation that is valid within certain margins also for the wage data. For the general government, the degree of coverage is lower, since certain types of civil servants who do not pay social security contributions are not included.

Eukleed is a true panel. It covers all days between 1999 and 2003. The first day is January 1st 1999 and the last day is December 31th 2003. Note that 2002 is a leap year and has 366 days instead of 365 days.

Calculating quit rates

ESA describes employment as the average stock of employed persons over the year. In the Eukleed database for each person, information is available on the first day and on the last day of the persons' employment. Here, this fact is called employment case. An employment case can be a person that works only for one day or it could be a person that works all the days of the year (figure 1). The same person may cover several employment cases. To make this information on employment cases comparable, they are converted into individual employee days as the difference between exit and entry date (+1). The employee days can be summed up to higher aggregates as the production units in question or the public influenced industry levels.

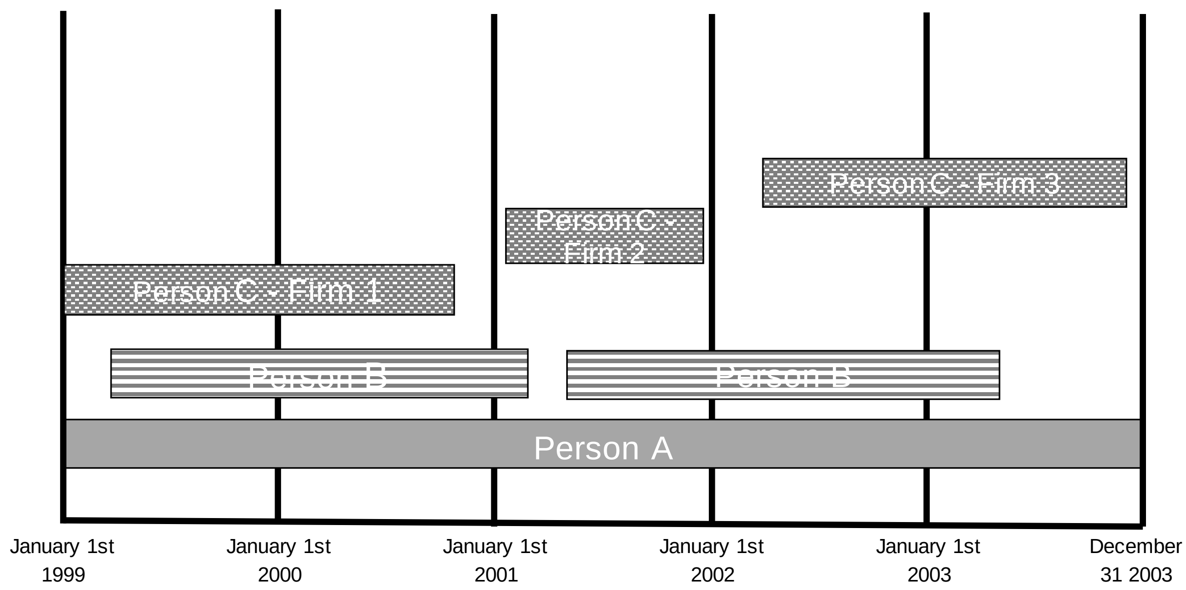
In figure 1, person A is an employment case working the full observation period of 5 years. This accounts to 365x4 employee days plus 366 employee days for 2002, which is a leap year. No quits can be observed.

Person B constitutes two employment cases working with interruptions in the same unit. B contributes to the employee days total of the unit of occupation in five different years and twice to the number of total quits of the unit.

Person C covers three employment cases working in three different production units. C contributes to the employee days total of three different units and to the number of quits calculated for these units.

Given the different possible profiles for the employment cases, we distinguish between employees, who entered the unit during the year, left the unit before the end of the year, entered and left the unit during the year, and those who stayed in the unit for all the days of the year.

Figure 1: Employment patterns over the year



In the example of figure 1, we have no quits in 1999 and in 2002, 1 quit in 2000, two quits in 2001, and two quits in 2003[3].

Quits are calculated with the Eukleed database from those employed persons j of a unit i who have been observed during the year and are not anymore observable at the end of the year. All employee days of a unit i for a year can be described in figure 1 as the sum over the year of either

- pure entries into the unit i ($EntDays_{j,i}$), [person B two times at different years for the same unit] or
- pure exits ($ExDays_{j,i}$), [person C for three different units; person B two times for the same unit but in different years] or
- entries and exits ($TempDays_{j,i}$), [person C for unit 2] or
- or permanent staff ($PermDays_{j,i}$). [person A]

A units' i total employment in a year measured in employee days then is given as

3-1 $E_i = \sum_j EntDays_{j,i} + \sum_j ExDays_{j,i} + \sum_j TempDays_{j,i} + \sum_j PermDays_{j,i}$ Dividing E_i by the number of days a year has, yields a person equivalent of the total employee days in the observed unit.

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[3] Quit rates per unit cannot be calculated for this demonstrative figure, since no information is given on the stock of the units.

In a given year the quit rate δ_i for a unit i then is calculated as

3-2 $$\delta_i = (\sum_j ExDays_{j,i} + \sum_j TempDays_{j,i}\ \ )/E_i$$

To exclude business cycle influences, we calculate the average quit rate for the years 1999 – 2003. The not weighted industry specific quit rate is the mean of the quit rates of all units in the industry i.

The weighted industry i specific quit rate δ_I is calculated as:

3-3 $$\delta_I = (\sum_{j.i} ExDays_{j,i} + \sum_{j,i} TempDays_{j,i}\ \ )/\sum_i E_i$$

Both rates will differ if the quit rates are different by size of the units in question.

The calculations for the wage determined quit rates are made in the same way. Additional aspects related to the firm specific wages are discussed in (Görzig, 2011).

4. Results

Calculations are made for all 300 thousand production units that are covered by the public influenced industries applying the same methodology as for the 1.5 mill. units of the Non-SPINTAN related industries. Note that although it can be assumed that the share of non-market sector units is above average in the public influenced industries, the results can only be a proxy for the public sector.

The average employment number of the units in the “public” industries, measured by the person equivalent of total employee days is 19, which is more than 50% higher than in the Non-SPINTAN related industries. The share of management employees on the other hand is with 8% only 2/3 of the value in the private sector industries (Table 3).

In the average, the (employment-) weighted quit rate of the team value for the units of the “public” industries results in 13%. This is the same magnitude as for the private sector industries. With 18%, the non-weighted quit rate is higher since in general smaller firms have higher quit rates.

Note that this paper only deals with own account produced assets and does not include purchased assets. Therefore, the results are not fully comparable with other findings, which include also the purchased parts of organisational capital. Furthermore, we believe that the concept of the team value can cover only one aspect of the notion of organisational capital. The depreciation rates found here for the team value, are considerably lower than depreciation rates for organisational capital in the market sector found by INTAN-Invest (Corrado et al., 2012, table 6: 40%) or in INNODRIVE (Piekkola et al., 2011, table 1: 25%). Rooijen-Horsten (2008) assume for the Netherlands a service life of 5 years for all organisational capital. This implies a depreciation rate between the values of INNODRIVE and those of INTAN-Invest.

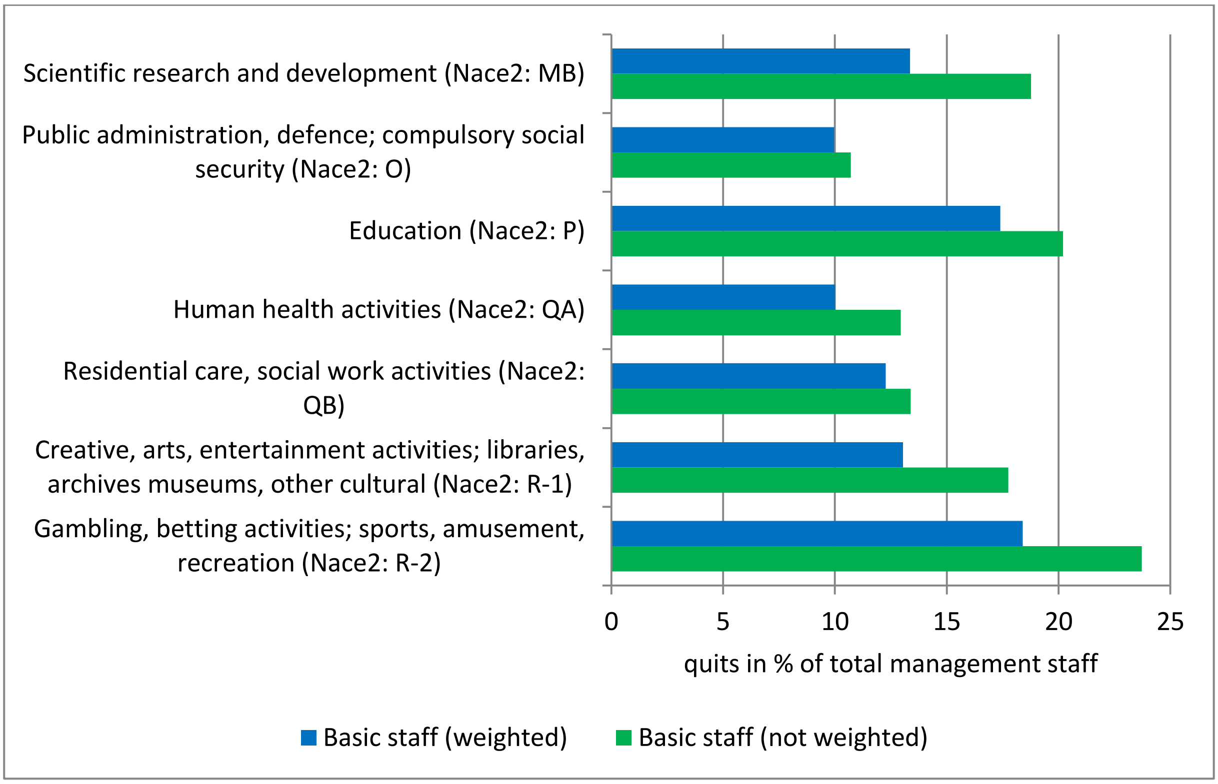
Table 3: Aggregated results

	Averages 1999-2003	SPINTAN related industries[1]	All other industries
Establishments	million	0,301	1,473
Employees	million	5,641	18,492
Management staff[2]	million	0,462	2,259
Management quits	million	0,059	0,295
Average establishment size	employees	19	13
Average management share	per cent	8	12
Average management quit rate	per cent	13	13

[1] Nace 2 industries MB, O, P, Q, R. - [2] As defined in INNODRIVE (see table 1). - *Sources:* Eukleed, Own calculations.

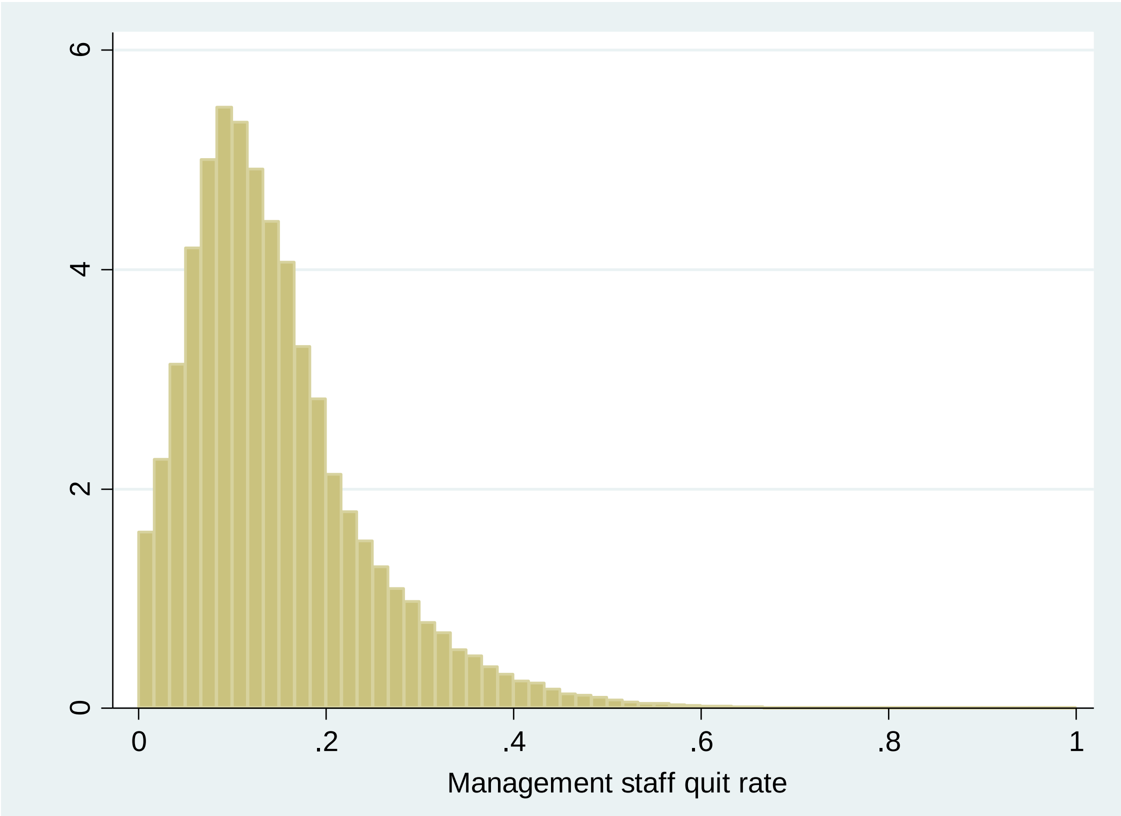
The quit rate of the team value varies considerably with respect to the industry in question. It is rather high in Education (17%) and low in Public administration (10%) and Human health (10%). The difference between the weighted and not-weighted quit rates is rather high in Scientific research and Culture (R1) and low in Public administration and in Social work (*Figure 2*). This indicates that the level of the quit rate in Scientific research and Culture depends to some extend on the size of the units, as measured by the number of employees and that the variation of the quit rate in these industries is comparatively high.

Figure 2: Quit rates for public influenced industries (weighted and not weighted)



In the average, management wages per head are 20% higher compared with those employees who are not managers. However, it is worth to note that there is a wide variation of the unit specific quit rates across all the units of the "public" industries (*Figure 3*). This supports the assumption that depreciation rates of organisational capital are to a high extend firm specific and any fixed rate used in modelling it can only be seen as a mean value across the wide spread of firm level depreciation rates. One could expect a scaling down of the observed spread if one could distinguish between several types of organisational capital.

Figure 3: Density distribution of quit rates in public influenced industries – 1999 – 2003



Many employees who are member of the management staff have a wage income per head below that of non-management employees as can be seen in *Figure 4*. The non-management wage rate is much more concentrated than the management wage rate. Nevertheless, the peak of the distribution of the management wages is just a bit to the right compared with the non-management distribution of wage rates. This suggests that not all employees, which have been formally defined as management staff in INNODRIVE can be classified as members of a team that is governing the unit in question. It might make sense to reduce the team definition to those employees who get a wage rate above the average.

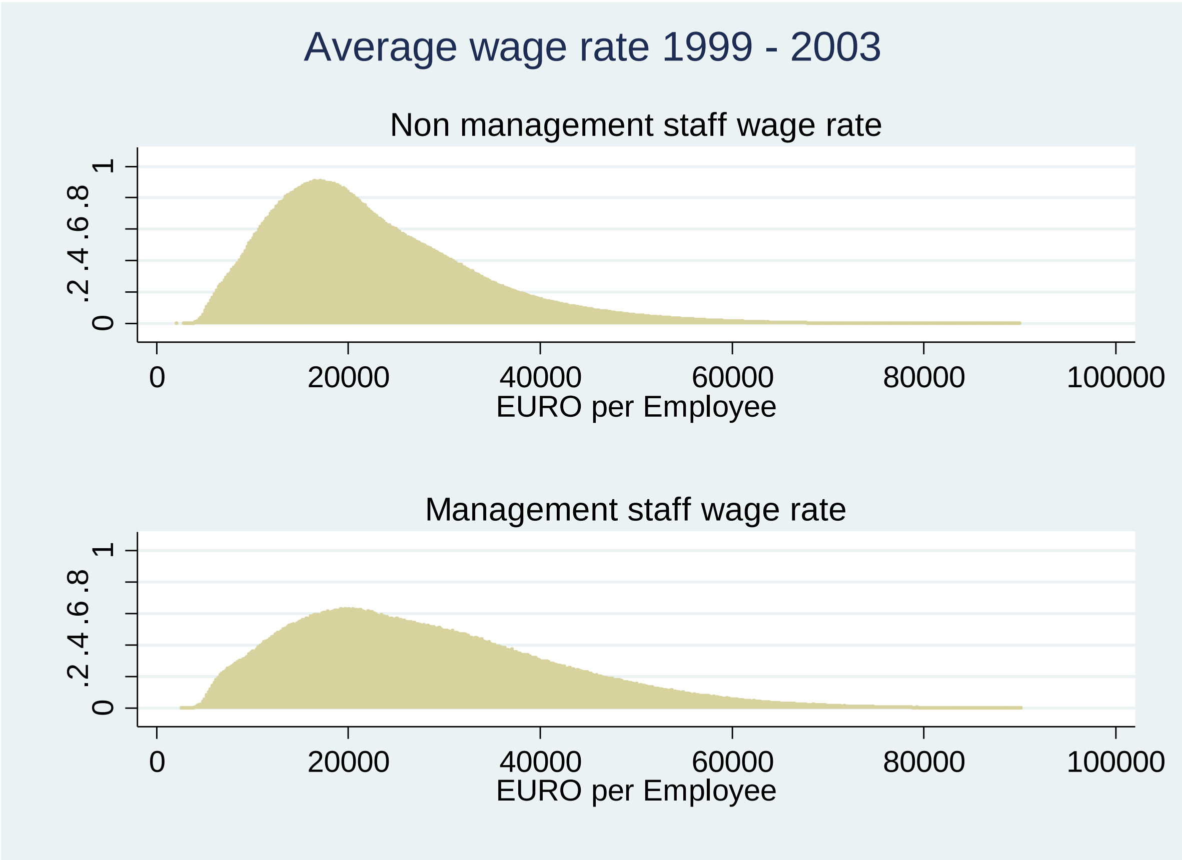
Another important result from the micro data analysis is that more than 5% of the management staff consists of people that stay only less than a year in the same unit. Many small units do not have any management employees at all and do not exist over the total observation period. We therefore tried another team definition where only employees are seen as members of the management team that stay at least one year in the unit in question.

We define two alternative constellations of the management team.

- *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)*

Assuming, that employees with higher income contribute more to the team value, we also investigated whether the results change if the team is defined either by employment or by income shares.

Figure 4: Density distribution of annual wage rates



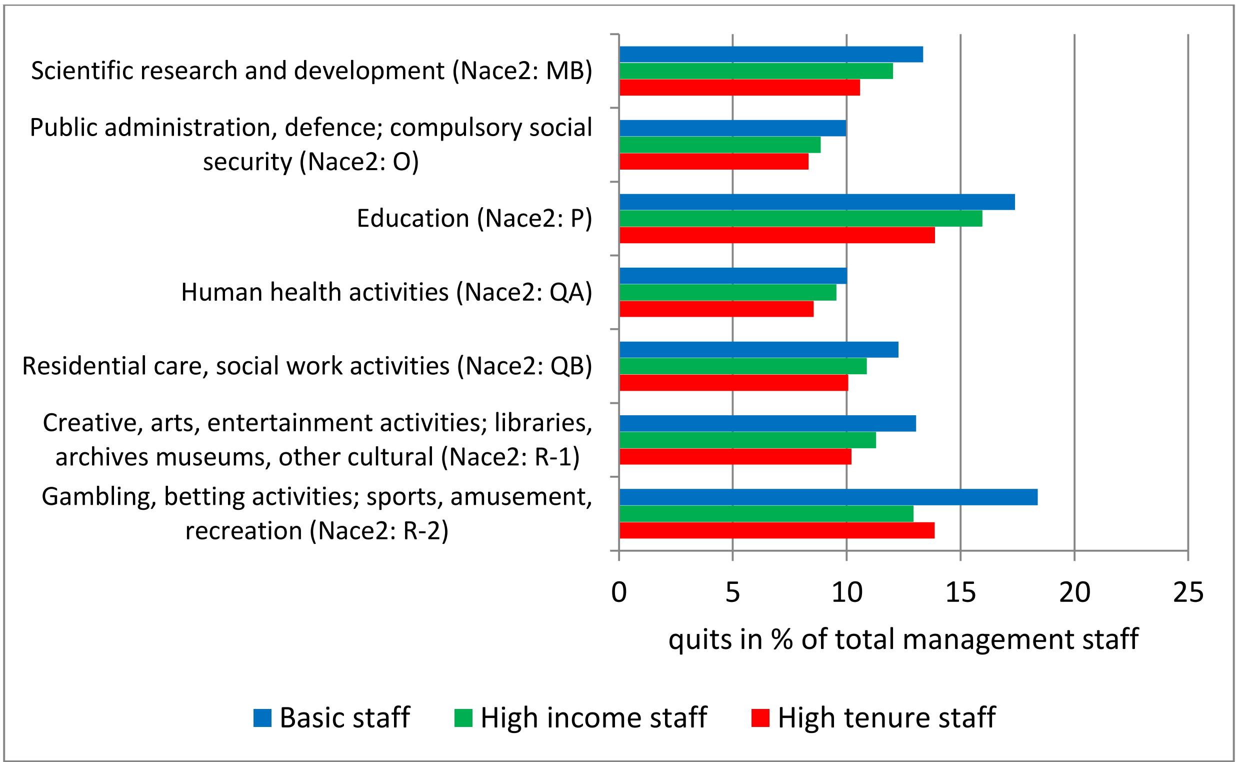
The impact from these revised definitions on the average quit rate is rather small. Defining the management staff to consist only by those employees who have an above average wage rate will reduce the quit rate from 13% to 12%. The same happens if the employees are weighted with their income. Including in the management team only those employees, who have stayed more than a year in the unit results in a stronger reduction of the quit ratio (10%) in the average. There are distinct differences in the results if we look at the “public” industries. Both alternative team definitions result in a strong effect in Recreation (R2), an industry where one can expect a higher share of private sector units.

Table 4: Results for alternative team definitions

	Employees	Wage sum
	million	million €
Management staff		
Basic management staff	0,462	17.020
High wage staff[2]	0,297	12.176
High tenure staff[3]	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

[1] As defined in INNODRIVE (see table 1). - [2] Basic management employees with an income above the average. - [3] Basic management employees who work more than a year in the same unit. - *Sources:* Eukleed, Own calculations.

Figure 5: Weighted quit rates for high tenure and high income staff



Results for the US published by Squicciarini/Le Mouel (2012) are displayed in an industry breakdown according to the US-NAICS classification. This classification is not directly comparable with the NACE 2 classification applied on the German data. According to Eurostat (2010), a rough concordance at the 2-digit level is possible if the *primary links* between these two classifications are considered. In Table 5, the not-weighted quit rates in the German public influenced industries are displayed side by side with the published findings for the US, considering all *primary links* between these two classifications, except for NACE industry 72, which covers only part of the primary links for US-NAICS industry 54.

Considering the well-known differences in labour market organisation between Germany and the US, higher depreciation rates in the US compared with Germany are not a surprise. The higher depreciation rates found for Germany in *Education* and *Public administration* can be explained that in Eukleed an important fraction of civil servants with a principally high tenure is not covered. Apart from this, it should also be considered that the applied database is different in structure.

Table 5: Comparison of depreciation rates for public influenced industries

Public influenced industries - Nace 2		Depreciation rates in % of the team value		US NAICS 2007 - NACE Rev. 2 CORRESPONDENCE TABLE AT TWO-DIGIT LEVEL - primary links only²	
		Ger-many¹	US²		
Scientific research and development	72	19	20	54	Professional & technical services
Public administration, defence; compulsory social security	84	11	9	92	Public administration
Education	85	20	18	61	Educational services
Human health activities	86	13	17-18	62	Heath care services, hospitals, and social asistance
Creative, arts, entertainment activities; libraries, archives museums, other cultural, gambling, betting activities; sports, amusement, recreation	90-93	24	25	71	Arts, entertainment & recreation

¹ Non-weighted averages across all production units. - ² Squicciarini/Le Mouel (2012), table 5. - ³ Commission of the European Communities (2010).- Own calculations.

5. Conclusion

If we want to apply the experience that has been collected for tangible assets also on intangible assets we have to consider that, according to most researchers, many types of intangible assets are much more unit specific than tangible assets are assumed to be. From this, we would expect an even bigger variation of the service lives for intangible assets, because of the unit-specific influences. Therefore, the assumed service lives for intangible assets can only be understood as the mean value of the factual values.

Given that a team of employees contributes positively to the success of a production unit, it is argued that a team does indeed have its own capital value: the team value. This team value has to be seen as an integral part of the overall organisational capital. It is also argued that the team value is embodied in the employees constituting the team. It loses value if members of the team are leaving it. Using micro data for Germany it can be shown that depreciation of the team value varies across production units and industries. On average, the depreciation rate for the team value in the public sector does not seem to differ from the one of the private sector. The depreciation rate found for the team value is considerably lower than the one currently assumed for organisational capital. Applied sensitivity calculations show that the assumed composition of the team has a rather low influence on the depreciation rate.

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