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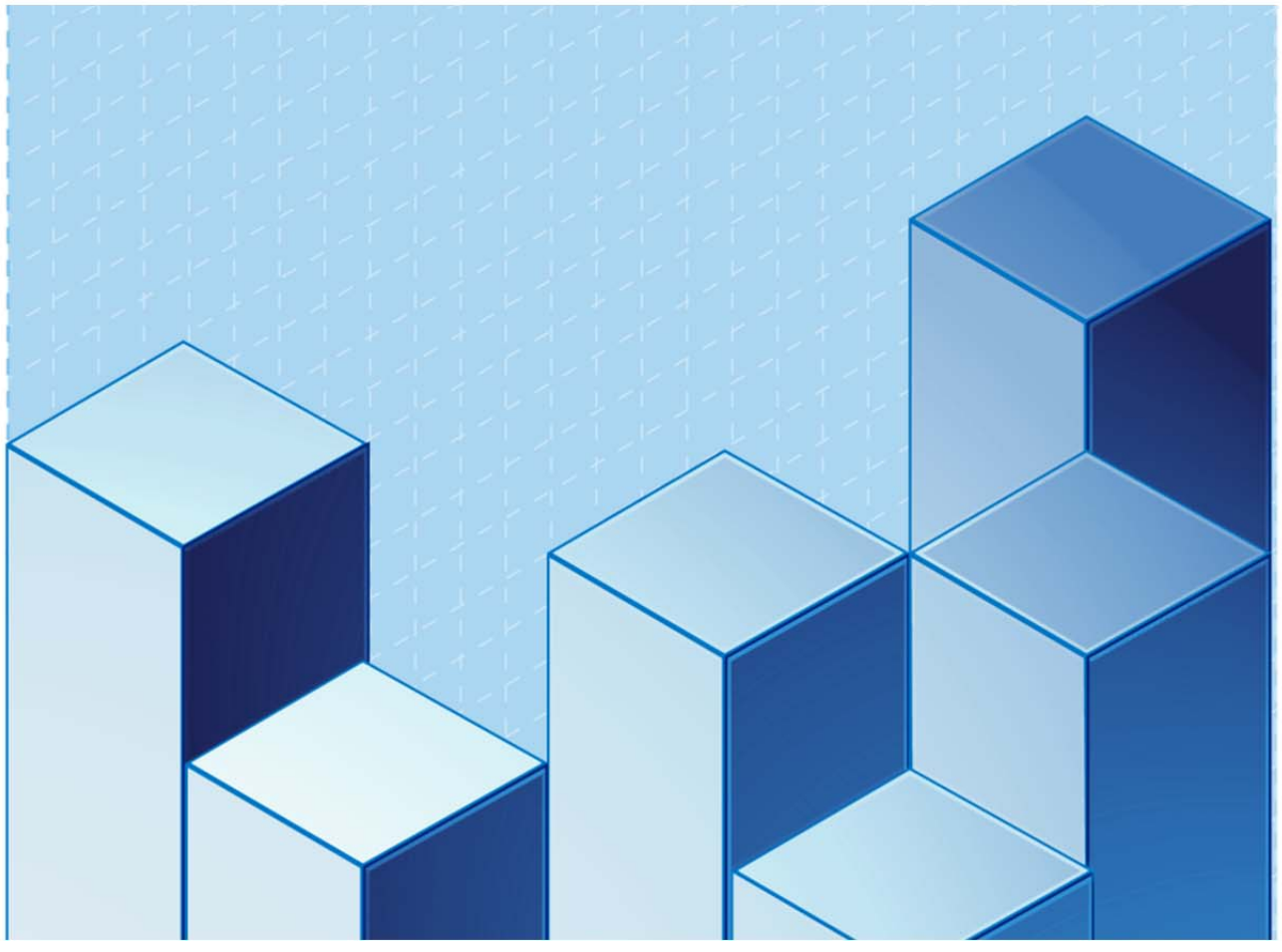

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Antónia Hüttl
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Abstract

The paper presents a case study exploring the possibilities to measure own-account organisational capital and its impact on hospital performance in Hungary. The comparable dataset consists of the time series 2010-2013 of 58 general hospitals owned by the government. Investment in own-account OC is measured both in a narrow and in a broad sense, depending on the range of employees contributing to OC. In the period according to our estimates, applying the narrow concept the average stocks of OC varied between 2,5-4,3% of the wages of all employees, and between 11,3-12,3% in the broad concept. The analysis has provided some evidence that the stocks of OC in broad sense has a slight positive effect on clinical performance, measured by the cost weighted number of activities. Applying OC in the narrow sense, a positive correlation could be detected only if higher values have been attached to DRGs of complicated interventions and of treatment of serious diseases.

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Contents

1. Introduction

The paper presents a case study exploring the possibilities how to measure organisational capital and its impact on health care performance in Hungary. Doing so it deals with four topics:

- Reviews the available micro data sources and the way to check and correct the primary data.
- Compiles estimates on the stocks of own account organisational capital based on two different criteria.
- Presents descriptive statistics examining data and also to show the relation between variables measuring organisation capital and hospital output.
- Performs several runs of regression model variants measuring to what extent different input components, and within them the use of organisational capital, explain the level and the changes of the output of hospitals.

When making experimental estimations the Hungarian research strived to follow the same method as applied by the UK and by the German study, in order to compare the results at international level, proving that organisational capital in health care and its impact on the health care performance can be measured in various EU countries.

The study uses the term organisational capital as adopted in the mainstream literature. Organisational capital is considered to be an important part of the firm specific knowledge assets, a great part of it is own-account, produced by the employees. So investment in own account organisational capital could be measured by the compensation of employees, proportional to their working time engaged in creating OC. According to the CHS approach (Corrado, C., C. Hulten and D. Sichel, 2005, 2009), only managers and other executives are engaged in creating organisational capital, and it is assumed that 20% of their time (valued by the compensation received) is spent on creating organisational capital. In the study of OECD Directorate for Science, Technology and Industry (Squicciarini, M. and M. Le Mouel, 2012) a broader concept was suggested, according to which employees in several non-managerial positions – in various degrees – also may contribute to producing OC.

As it is widely cited, the main contribution of organisational capital as an enterprise-specific intangible asset is thatit extends the production possibilities of the enterprise. Concerning health care it means, hospitals owning more organisational capital can supply – with the same inputs – a higher volume of health services. Organisational capital is a special kind of intangible asset in the sense that it is not marketable. Some component can be acquired on the market, for example in the forms of employees' training, but the majority is own produced and as firm-specific, it has no market value separately, its value is imbedded in the

value of the enterprise as a whole. The costs, expenditure for the acquisition, is the only way to estimate the value of the asset.

The production of own account organisational capital is a secondary activity of the enterprise, presently not included in the macroeconomic aggregates. It is assumed, it is an activity without any capital and intermediate inputs the value of the output is equal to the payments to the employees engaged in the creation of OC. On the current accounts, one should make estimates on the creation of the assets both as a secondary productive activity of the enterprise concerned, and as an investment on the use side. To measure the impact of organisational capital on the performance, the volume of stocks of the asset should be estimated. As widely assumed, applying geometric depreciation profile, the changes in the capital input is proportional to the changes of the stocks in constant prices. To estimate the value of stocks of assets with a PIM model, long term investment series are required, and one should make assumptions about the life cycle of the asset.

2. Data sources to measure OC and its impact

The analysis relies on a micro dataset at hospital level build up from various sources. In Hungary there are abundant data at hospital level, collected for different purposes by different government agencies. Compiling statistics, especially economic statistics is in most cases only a secondary use of the available data. So the contents and the classifications are not tailored according to statistical needs. In addition, not all the data collected are also used regularly for administrative purposes, and so a considerable part of the primary data are not checked and corrected properly.

The main characteristics of the impatient care facilities are presented in Table 2.1.

Table 2.1: Inpatient care facilities in Hungary (financed by NHIF)

	2003	**2005**	**2010**	**2013**
Number of service providers	180	184	178	172
Number of hospital beds	79 715	79 394	71 183	68 995
Number of hospital beds per10 000 of population	78.7	78.7	71.18	69.7
Number of patients discharged, thousand	2 749	2 800	2 458	2 385
Number of nursing days, million	23.1	22.7	19.9	19.1
Occupancy rate of beds, %	79.41	78.48	76.44	75.79
Average length of stay, days	8.36	8.09	8.06	7.90
Mortality rate, %	2.86	2.81	3.23	3.36

Notes: Some small size inpatient facilities, not financed by NHIF may exist, for instance in cosmetic surgery.

Source: HCSO and NHIF statistics

The vast majority of the inpatient care facilities, as Table 2.2 shows, are owned by the government.

Table 2.2: Inpatient care facilities by types of owners and their characteristics in 2012

	Number of inpatient care facilities	Number of hospital beds	Number of patients discharged, (000)	Occupancy rate of beds, %	Average length of stay, days	Mortality rate, %
Total	174	69 920	2 371.70	74.74	7.98	3.41
of which:						
Central government	102	54 475	1 800.60	74.17	8.29	3.7
Local government	12	83	7.5	108.32	4.17	0.25
University	4	7 363	375.3	72.3	5.17	1.95
Churches	9	1 437	28.5	74.53	13.8	4.71
Other (private) companies	47	5 082	154.3	82	9.81	3.53

Source: HCSO and NHIF statistics

To have comparable data we selected government owned general hospitals. We consideras general hospitals those inpatient care facilities which have at least a department of surgery, gynaecology and general internal medicines. It should be noted that the selected hospitals do no constitute a random sample. They cover the total population of those general inpatient care providers where output can be measured by DRGs, and all the necessary input data are also available.

The Hungarian database consists of 58 general hospitals functioning through the whole period of 2010-2013. The database was compiled relying on the following data sources:

- The annual financial report of budget institutions submitted to the State Treasury. This is a very detailed report. But as it is uniform for all budget units, sometimes it is not straightforward,what is the content of some categories on the questionnaire in the context of health care provision. (For instance, on the questionnaire employment in the health sector is classified according to the standard posts in public administration. This may be less relevant in the health care provision.) Most of the data on inputs derive from this source. This is the source from which the production account of general government in the national accounts is compiled.

- Statistical tables presented on the website of NHIF. They provide information for example on the size of hospitals (number of beds), main composition and financing of services provided. The sources of these data are partly a statistical report on the hospital beds and patient turnover, partly monthly reports for the NHIF on the performance of the hospitals' inpatient care.

- Data on activities by DRGs at hospital level received from the National Health Insurance Fund. This source contains data on number of cases, sum of DRG-points, length of nursing days, mortality rate, etc.

- Statistical data collected by the Health Secretariat, mainly on employment and wages in the health sector presented on the website of a Secretariat's agency.
- To substitute missing values we made use of various statistical surveys conducted by the Statistical Office.

According to Hungarian legislation all these data on hospitals are public.

Tables 2.3-2.4 compare the main characteristic features of Hungarian inpatient care facilities (financed by NHIF) and those of the selected hospitals. As the figures demonstrate, the selected set covers about two thirds of the total hospital population.

Table 2.3: Number of active beds in inpatient facilities

YEARS	Number of beds in total active care	Beds of active care in the selected hospitals	Selected/Total. %
2010	44 179	31 878	72.2
2011	44 137	31 894	72.3
2012	42 211	31 006	73.5
2013	42 258	32 018	75.8

Source: NHIF

Table 2.4: Number of cases and sum of DRG-points

YEARS	Number of DRG cases. '000			Sum of DRG-points, '000		
	Total	In the selected hospitals	Selected/ total, %	Total	In the selected hospitals	Selected/ total, %
2010	2179.3	1506.6	69.1	2266.1	1455.2	64.2
2011	2210.9	1530.9	69.2	2314.3	1485.3	64.2
2012	2191.1	1547.0	70.6	2191.1	1503.0	68.6
2013	2199.0	1602.6	72.9	2319.8	1565.6	67.5

Source: NHIF

To measure investment in own account organisational capital, data on employment and salaries by responsibilities, positions are required. The Hungarian data sources provide an opportunity to measure own account organisational capital both in a narrow and in a broad sense, as discussed later.

a.) In the financial report of the budget units the position of the employees are classified in three dimensions:

- level of education(primary, secondary, tertiary),
- leading/executive or not leading positions,
- types of activity within the organisation (principal, auxiliary, ancillary)

It is worth to mention that each budget unit has to report employment figures in the same structure. This may facilitate to measure OC in other government activities as well.

b.) The State Secretariat of Health conducts annually a full scope employment survey on all inpatient health care institutions. In the questionnaire medical doctors, other professional staff and other employed are distinguished. Number of employedand wages are inquired.

Employment figures are collected in head counts.Comparing the figures to full time equivalents the difference in inpatient care in Hungary may not be significant.

3. Measuring organisational capital

As available data permit, the Hungarian case study measures own account organisational capital in two different approaches. According to the narrow criteria it is assumed that only employees being in executive/managerial positions produce organisational capital. We refer to this as the **title-based approach**. According to the broad criteria organisational capabilities are not limited to managers. All employees may perform tasks in course of which organisational capital is also created, to a different degree depending on the content of the task. It is called **task-based approach**.In order to provide comparable and plausible size of the investment and stocks of OC in the two approaches, we assumed that if a broader set of employees are able to create it, they spend less time on doing it (mainly in a parallel way with the provision of health care).

In the narrow title-based approach we applied the CHS concept strictly, and measured the investment in own account organisational capital as 20% of the compensation of employees of managers, assuming that this is the proportion of the working time spent on organisational work. We distinguished leading clinical professionals and general managers. In the broad, task-based approach it was assumed that doctors spent 9%, other health professionals 6% of their working time on creating OC. In some runs we also included other

employees, assuming that they spent 2%of their working time on producing OC. These ratios are similar as those applied in the German case.In the past decades, no survey was conducted in Hungary on time use in health care, so actual time spent to perform administrative task is not known. We had to “borrow” the ratios from the German case. (Schulz, E., L. Beckmann, 2016, p. 7.).

Our title-based variant is similar to the UK-approach (O’Mahony, M., S. Beghelli and L. Stokes, 2016) and the Task-based is close to the German one (Schulz, E., L. Beckmann, 2016).

As an average, in 2013 in the Hungarian hospital 5% of the staff were employed in managerial/executive positions, in our selected hospitals the figure is about 4.5%. These proportions refer to complete hospitals, active care is not reported separately.

Table 3.1: Title-based approach: Number of employees in the selected hospitals

	2010	2011	2012	2013
Clinical executives	2 217	2 256	2 314	2 359
General managers	533	560	580	582
Other employees	60 651	61 493	61 672	66 264
Employees total	63 401	64 309	64 566	69 205

Source: Reports to the State Treasury

In 2013 in the selected hospitals the number of doctors accounted for 15% and the number of qualified staff accounted for 54% of the total number of employees. Table 3.2 presents their numbers and proportions.

Table 3.2: Task-based approach: number of employees in the active care of the selected hospitals

Profession	**2 010**	**2 011**	**2 012**	**2 013**
	yearly average			
Doctors	6 794	7 060	6 769	7138
Other health professionals	22846	24309	24047	25521
Other employees	18886	17781	20894	17429
Total	48 526	49 150	51 710	50088
	shares in totals, %			
Doctors	14.0	14.4	13.1	14.3
Other health professionals	47.1	49.5	46.5	51.0
Other employees	38.9	36.2	40.4	34.8
Total	100.0	100.0	100.0	100.0

Source: Statistical reports on employment and wages in the Health care sector

To estimate **stocks of OC**, a **simplified PIM model** was applied. We estimated several versions, with different depreciation rates. The core estimates apply a depreciation rate of 40 per cent (in the case of general managers) and 30 per cent, in the case of clinical executives. The latter may be too high concerning the frequency of voluntary separation, especially as leading clinical professionals in Hungary are concerned.

Investment time series in constant prices are calculated following the changes in the number of employees creating OC and the changes in their real wages (deflated by the GDP deflator). To estimate an opening stock at the beginning of 2010, the investment series have been back-casted, assuming that in each hospital the average growth rate of OC in the period 2010-2013 is valid also for the previous years.

Table 3.3: Stocks of OC as percentage of total compensation of employees in the selected hospitals

	2010	2011	2012	2013
Title-based approach	2.48	3.75	3.86	4.33
Task-based approach	11.24	11.98	11.27	12.34

Source: own calculation based on reports to the State Treasury and on statistical reports to the Health Secretariat on employment and wages in the Health care sector.

Concerning the size of the OC stocks, considerable differences resulted between the two approaches. At first glance it seems hardly acceptable. The OECD study (Squicciarini, M. and M. Le Mouel (2012) estimated for the US, at national level an about twofold difference between occupations included in title-based and in Task-based approaches. But inpatient health care is an exception. Figure 4 in the OECD study shows that in the US, the largest difference between managers and other organisational occupations occurs in the health care – their ratio may be even larger than in the Hungarian case. Nevertheless the broad classification of occupations applied in the public Hungarian health statistics by hospitals is not really appropriate to select the staff contributing to OC creation. If a more specified categorisation would be available, the coverage of the staff engaged in OC creation could be restricted.

Using the title-based method, the stocks of OC show a sharp increase, in an average 35.3 % per year. According to the task-based method the increase is much more moderate, annually 12.6% only. The difference may be explained partly by the fact that the institutional reorganisation during the examined period could affect heavily the number of the managers and less the coverage of the complete professional staff as such.

The volume levels of investment and stocks of OC are presented in Tables 3.4-3.6. The figures compiled at hospital levels were adjusted to active care proportionally to the cost shares financed by health insurance.

Table 3.4: Title-based approach: OC investment in the selected hospitals

Investment rate: 0.2 of the real compensation of managers

Years	Hospital level			Active care of the hospital		
	Clinical	General	Total	Clinical	General	Total
	million HUF (2010 price level)					
2010	1 676.8	433.1	2 109.8	1 180.1	304.6	1 484.7
2011	1 841.7	478.2	2 319.8	1 305.8	338.8	1 644.6
2012	2 023.5	528.4	2 551.9	1 435.6	375.0	1 810.6
2013	2 256.8	593.1	2 849.9	1 618.1	426.0	2 044.1

Source: own calculation based on reports to the State Treasury

Table 3.5: Title-based approach: Stocks of OC in the selected hospitals and in the active care of the selected hospitals

PIM method: investment rate 0.2 of the real compensation of managers, depreciation rate clinical managers 0.3, general managers 0.4, geometric profile

Years	Hospital level			Active care of the hospital		
	Clinical	General	Total	Clinical	General	Total
	million HUF (2010 price level)					
2010	1892.2	487.2	2379.5	1332.4	342.8	1675.3
2011	3166.2	770.5	3936.7	2247.4	546.6	2793.9
2012	4239.9	990.7	5230.5	3010.8	703.9	3714.7
2013	5224.7	1187.5	6412.2	3745.9	853.1	4599.0

Source: own calculation based on reports to the State Treasury

Table 3.6: Task-based approach: OC investment and stocks in the active care of the selected hospitals

OC investment: 9% of compensation of medical doctors, 6% in case of other professional staff.

OC stocks: PIM method: depreciation rate 0,35, geometric profile

Year	Investment in OC	Stock of OC	Total earnings	Employees in active care	Investment in OC /earnings	Stock of OC /earnings
	Million HUF			head	%	%
2010	5 368	11 920	106 018	48 526	5.1	11.2
2011	5 715	12 867	107 426	49 150	5.3	12.0
2012	7 121	14 841	131 696	52 622	5.4	11.3
2013	8 124	17 029	138 019	50 088	5.9	12.3

Source: own calculation based on Health Secretariat statistical reports on employment and wages. Data used on employment and earnings refer to the employees in active care.

4. Measuring the impact of OC on hospital performance

As it is widely accepted, capital input is proportional to the volume of the stocks, we concentrated to measure the impact of the organisational capital on the hospital performance with the correlation between the stocks of OC and hospital output. Correlations between investment in OC and clinical performance were not calculated.

In the basic specification, hospital output was measured by the case-mix index multiplied with the number of cases, the same way, as it is done in the German study (Schulz, E., L. Beckmann, 2016).

The core model specification is the following:

$$Y_{it} = \alpha + ß\, L_{it} + {}^{\gamma} M_{it} + \pi INT_{it} + \delta_n Z_{nit} + e_{it}$$

where:

Y_{it} denote the level of services provided by hospital i in year t. Level of service output is measured by the number of activities/cases * cmi of the hospital, the same way as in the German model. Such output measure is correct mainly in cross sectional analysis. If there is a change in the weights attached to various DRGs, this may distort the comparison in time series.The secondary output of own account OC is not included;

L_{it} is the labour input, measured by the number of employees;

M_{it} is intermediate input, purchased materials and services;

INT_{it} denote stocks of own account organisational capital, either in the narrow, title-based, or in the broad, task-based concept). In some title-based model variants we distinguished clinical executives and general managers;

Z_{nit} are control variables, namely

Number of beds in active care
Average length of stay
Age of patients over 70
Share of females
GDP per capita by counties
Unemployment rate by counties.

The general characteristics of the variables:

1. The variables are levels: the level of hospital performance is explained by the amount of labour input, other running costs and the services provided by own-account organisational capital. (Control variables are expressed in various units of measurement).

2. All inputs recorded in values are deflated to 2010 price level. We applied the GDP deflator for all variables.

3. The output/performance figures (based on DRGs) refer to active care, input data refer to total costs of the hospital. For instance we know the number of managers of the hospital as such, not the number of managers working in active care. To eliminate the differences in the share of active care provided by hospitals, we divided the input figures proportionally, using the cost shares financed by NHIF. (NHIF reports how much was spent on financing active care, long term care, outpatient care etc. at hospital level.)

4. If variables are specified in levels, the size effect influences heavily the significance of the estimates. To counterbalance the size effect, in of the regression analysis we normalized all output and input variables by the number of beds. Both the dependent variable and also the predictors (except control variables) are divided by the number of beds in active care (or the number of DRG-cases).

5. Output is adjusted by the hospital mortality rate.

Originally we used a more sophisticated specification, but we decided to simplify it, because the effect of the following variables proved to be not considerable:

- measuring the quality of labour, using wage shares as weights;
- using purchased professional services as an indicator of purchased organisational capital. The size of the variable was negligible.

5. Results

5.1 Cross sectional regression 2010-2013

5.1.1 Correlations between OC stocks and total clinical performance

It is evident that OC stocks are strongly positively correlated with clinical performance indicating, that larger hospitals having larger staff are providing a larger volume of care. In all the years 2010-2013, the Spearman coefficient of correlation in case of the title-based approach was over 0.72, in case of the task-based approach over 0.95.

When the size effect is eliminated, and both the stocks of OC and output active care are normalised (divided by the number of activities/cases or by the number of beds), the results are less clear cut. Applying the broad, task-based approach we could detect a moderate, positive correlation between the volume of OC stock and the volume of hospital output. Further investigations are required how to find a conceptually justified way to separate the impact of labour input and that of own account organisational capital.

Table 5.1: Spearman rank correlation between OC stocks and clinical performance

(Data normalised by the number of DRG-cases or by the number of active beds)

Years	**Title-based OC stocks** in active care, normalised		**Task-based OC stocks** in active care, normalised	
	by number of DRGs	by number of active beds	by number of DRGs	by number of active beds
2010	-0.378*	0.124	0.277*	0.551*
2011	-0.387*	0.116	0.279*	0.561*
2012	-0.349*	0.204	0.357*	0.527*
2013	-0.373*	0.022	0.262*	0.489*

* Correlation is significant at the 0.01 or 0,05 level (2-tailed).(As our dataset cannot be treated as a random sample, the results of the significance tests may be ignored.)

Applying the narrow, title-based approach, no positive correlation could be detected between the volume of OC and hospital output. This is not surprising, at least in the case of the Hungarian health care. It is widely known that the Hungarian DRG points underfinance the DRGs of complicated, serious interventions. To manage such departments more executive capabilities are required, but this is not recognised in the points according to which the output is evaluated.

5.1.2 Correlation between OC stocks and complex-care

The distortion in the points-system, used as weights to value clinical output may be a reason, why no positive correlation can be found between OC stocks in title-based approach and clinical performance. To eliminate the distortion, we selected the DRGs with more than 2 points, assuming that this set of activities covers the most complicated interventions and the treatment of serious diseases. We refer to this subset of activities as complex cases. We assumed that such complex cases can be treated in team work only, and usually executives are empowered to instruct team members. The organisation of the team work is considered to be part of the investment in organisational capital.

To eliminate the size effect, both the stocks of OC and the costs of performance were normalised, divided by the number of DRGs (with over 2 points). In this version the title-based OC indicated a moderate positive correlation with the selected performances. If, in a similar way the connection between complex activities and task-based OC is measured, positive correlation can be proved only in that case, when the figures are normalised by the number of beds in active care.

Table 5.2: Spearman rank correlation between OC stocks and clinical performance with high DRG-points

Years	Title-based OC normalised by the number of DRGs	Task-based OC normalised by the number of active beds
2010	0.290*	0.420*
2011	0.341*	0.380*
2012	0.371*	0.437*
2013	0.347*	0.354*

* Correlation is significant at the 0.01 or 0.05 level (2-tailed).

5.1.3 The results of the regression model

To reveal the explanatory strength of the predictors, firstly we calculated pairwise the Pearson coefficients of correlations between the clinical performance and the explanatory variables. Two basic variants are presented in Table 5.3. In variant A all variables (except control variables) are normalised, divided by the number of DRGs (at hospital level). In variant B the number of beds in active care was used to transform the variables in a normalised form. As our dataset cannot be treated as a random sample, the results of the significance tests indicated in the correlation tables may be ignored (Wasserstein, R. L. and N. A. Lazar (2016).

5.3: Pearson's coefficients of correlation between clinical performance and explanatory variables

A: Normalised by cases	**2010**	**2011**	**2012**	**2013**
Clinical performance/cases	1	1	1	1
Labour input in active care/cases	0.266(*)	0.268(*)	0.206	0.264(*)
Material costs in active care/cases	0.655(**)	0.605(**)	0.682(**)	0.681(**)
Title-based: OC in active care/cases	**-0.282(*)**	**-0.265(*)**	**-0.236**	**-0.22**
Task-based: OC in active care/cases	**0.303(*)**	**0.297(*)**	**0.374(**)**	**0.301(*)**
Active beds	0.715(**)	0.708(**)	0.768(**)	.710(**)
Average length of stay (days)	-0.039	-0.05	0.031	0.004
% female	-0.626(**)	-0.594(**)	-0.626(**)	-.698(**)
% aged 70+	-0.233	-0.231	-0.175	-0.164
Unemployment rate	-0.122	-0.166	-0.204	-0.173
GDP/capita	0.261(*)	0.194	0.275(*)	0.287(*)
B: Normalised by beds in active care	**2010**	**2011**	**2012**	**2013**
Clinical performance/active beds	1	1	1	1
Labour in active care/active beds	0.588(**)	0.553(**)	0.407(**)	0.532(**)
Material costs in active care/active beds	0.703(**)	0.661(**)	0.609(**)	0.669(**)
Title-based: OC in active care/active beds	**0.109**	**0.109**	**0.288(*)**	**0.039**
Task-based: OC in active care/active beds	**0.470(**)**	**0.458(**)**	**0.494(**)**	**0.375(**)**
Active beds	0.568(**)	0.538(**)	0.385(**)	0.534(**)
Average length of stay (days)	-0.395(**)	-0.411(**)	-0.302(*)	-0.400(**)
% female	-0.297(*)	-0.245	-0.147	-0.393(**)
% aged 70+	-0.259(*)	-.290(*)	-0.119	-0.273(*)
Unemployment rate	-0.164	-0.25	-0.202	-0.176
GDP/capita	0.389(**)	0.349(**)	0.352(**)	0.369(**)

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

The results show that labour input and material costs are both significantly correlated with clinical performance, normalised either by the number of activities/cases, or by the number of beds. In variant A and B, not the same control variables proved to be significant. As already mentioned, if clinical performance is measured by the sum of all DRGs, weighted with the points as financed by the health insurance, this variable is not correlated with OC defined in a narrow sense. It indicates that the organisational work performed by the executives and managers is not appreciated in the value fixed by the health insurance. Applying the broad, task-based definition for OC, significant correlation with clinical performance can be proved in each year. In this case it can cause a problem that a relatively strong correlation exists between labour input and organisational capital. (The Pearson coefficients are between 0,518-0,601.)

Similar findings are shown in the cross sectional regression analysis. (See Table 5.4 and 5.5)

Table 5.4: Cross sectional regression analysis, title-based OC stocks

B: unstandardised coefficients, Beta: standardised coefficients

A: Normalised by cases								
	2010		2011		2012		2013	
	B	Beta	B	Beta	B	Beta	B	Beta
(Constant)	0.696		0.477		0.508		0.716	
Labour in active care/ DRG-cases (log)	0.084	0.096	0.015	0.021	0.002	0.003	0.079	0.080
Material costs in active care/ DRG-cases (log)	0.101	0.336	0.099	0.341	0.111	0.377	0.120	0.341
OC in active care/ DRG cases (log)	**-0.017**	**-0.041**	-0.016	-0.041	-0.019	-0.047	-0.021	-0.053
Active beds	0	0.367	0.000	0.379	0.000	0.378	0.000	0.371
Average stay in hospital	-0.006	-0.034	-0.012	-0.068	-0.017	-0.103	-0.017	-0.093
% female	-0.017	-0.291	-0.016	-0.272	-0.019	-0.307	-0.018	-0.279
% aged 70+	0	0.011	0.000	-0.001	0.002	0.051	0.000	0.002
Unemployment rate	0.001	0.017	-0.002	-0.040	0.000	-0.003	-0.001	-0.013
GDP/capita	0	0.099	0.000	0.045	0.000	0.086	0.000	0.154

B: Normalised by beds in active care								
	2010		2011		2012		2013	
	B	Beta	B	Beta	B	Beta	B	Beta
(Constant)	3.027		3.298		1.808		3.026	
Labour in active care/ active beds (log)	0.373	0.319	0.194	0.187	0.234	0.206	0.462	0.347
Material costs in active care/ active beds (log)	0.081	0.192	0.077	0.183	0.152	0.358	0.113	0.232
OC in active care/ active beds (log)	**0.021**	**0.037**	**0.025**	**0.044**	**0.109**	**0.214**	**-0.068**	**-0.122**
Active beds	0	0.435	0.000	0.434	0.000	0.419	0.000	0.385
Average stay in hospital	-0.076	-0.285	-0.104	-0.367	-0.068	-0.270	-0.109	-0.416
% female	0	0.004	0.003	0.034	0.008	0.089	0.006	0.065
% aged 70+	0	-0.007	-0.003	-0.066	-0.001	-0.013	-0.001	-0.012
Unemployment rate	0.002	0.029	-0.008	-0.124	-0.006	-0.082	0.001	0.015
GDP/capita	0	0.155	0.000	0.125	0.000	-0.001	0.000	0.282

Table 5.5: Cross sectional regression analysis, task-based OC stocks

B: unstandardised coefficients, Beta: standardised coefficients

A: Normalised by cases								
	2010		**2011**		**2012**		**2013**	
	B	**Beta**	**B**	**Beta**	**B**	**Beta**	**B**	**Beta**
(Constant)	0.628		0.410		0.492		0.681	
Labour in active care/ DRG-cases (log)	0.083	0.095	0.009	0.013	-0.009	-0.012	-0.018	-0.019
Material costs in active care/ DRG-cases (log)	0.104	0.346	0.102	0.351	0.109	0.372	0.126	0.359
OC in active care/ DRG cases (log)	**-0.015**	**-0.025**	**-0.007**	**-0.011**	**0.016**	**0.028**	**0.072**	**0.115**
Active beds	0	0.379	0	0.395	0	0.406	0	0.4
Average stay in hospital	-0.004	-0.025	-0.011	-0.062	-0.018	-0.106	-0.019	-0.107
% female	-0.018	-0.301	-0.016	-0.276	-0.018	-0.291	-0.017	-0.266
% aged 70+	0.001	0.016	0	0.005	0.002	0.049	0	-0.012
Unemployment rate	0	0.009	-0.002	-0.053	-0.001	-0.026	-0.004	-0.064
GDP/capita	0	0.094	0	0.032	0	0.06	0	0.074

B: Normalised by beds in active care								
	2010		**2011**		**2012**		**2013**	
	B	**Beta**	**B**	**Beta**	**B**	**Beta**	**B**	**Beta**
(Constant)	3.224		3.563		2.439		2.741	
Labour in active care/ active beds (log)	0.342	0.292	0.139	0.134	0.164	0.145	0.345	0.259
Material costs in active care/ active beds (log)	0.073	0.173	0.065	0.153	0.136	0.321	0.129	0.266
OC in active care/ active beds (log)	**0.067**	**0.079**	**0.135**	**0.156**	**0.254**	**0.286**	**0.017**	**0.016**
Active beds	0	0.423	0.000	0.423	0.000	0.355	0.000	0.418
Average stay in hospital	-0.08	-0.298	-0.108	-0.382	-0.085	-0.335	-0.105	-0.400
% female	0.001	0.016	0.006	0.061	0.015	0.167	0.005	0.051
% aged 70+	-0.001	-0.016	-0.004	-0.071	-0.001	-0.029	-0.001	-0.027
Unemployment rate	0.002	0.036	-0.009	-0.131	-0.007	-0.102	-0.002	-0.028
GDP/capita	0	0.151	0.000	0.079	0.000	-0.076	0.000	0.229

Pooled data regression analysis

In order to increase the number of observations, we carried out regression analysis using pooled data. We focused on the task-based OC only. The coefficient of OC stocks is in both variants positive, but there is a significant difference in the levels. The impact OC is larger in case of the B variant when the number of active beds is used for normalisation.

Table 5.6: Model Summary – Task-based OC, normalised by the number of active beds

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
All variables entered in a single step	0.853(a)	0.727	0.712	0.115403

(a) Predictors(Constant), Labour in active care/active beds (log), Material costs in active care/active beds (log). **OC in active care/active beds (log),** Active beds, Average stay in hospital (days), % female, % aged 70+, Unemployment rate, GDP/capita, year 2010, year 2011, year 2012

Model Summary – Task-based OC, normalised by cases

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
All variables entered in a single step	0.866(a)	0.749	0.736	0.0722862

(a) Predictors: (Constant), Labour in active care/DRG-cases (log), Material costs in active care/DRG-cases (log). **OC in active care/DRG-cases (log),** Active beds, Average stay in hospital (days), % female, % aged 70+, Unemployment rate, GDP/capita, year 2010, year 2011, year 2012

Pooled data regression coefficients, task-based OC stocks

B: unstandardised coefficients**, Beta**: standardised coefficients

2010-2013					
A: Normalised by cases			**B: Normalised by beds**		
	B	**Beta**		**B**	**Beta**
(Constant)	0.556		(Constant)	3.128	
Labour in active care/DRG-cases (log)	0.011	0.014	Labour in active care/active beds (log)	0.216	0.189
Material costs in active care/DRG-cases (log)	0.109	0.357	Material costs in active care/active beds (log)	0.102	0.232
OC in active care/cases (log)	**0.007**	**0.014**	**OC in active care/beds in active care (log)**	**0.115**	**0.149**
Active beds	0	0.380	Active beds	0.000	0.385
Average length of stay	-0.012	-0.067	Average length of stay	-0.097	-0.361
% female	-0.018	-0.305	% female	0.004	0.044
% aged 70+	0.001	0.017	% aged 70+	-0.002	-0.034
Unemployment rate	-0.001	-0.023	Unemployment rate	-0.003	-0.045
GDP/capita	0	0.078	GDP/capita	0.000	0.107
year 2010	-0.001	-0.003	year 2010	0.027	0.054
year 2011	0.006	0.017	year 2011	0.026	0.053
year 2012	0.013	0.041	year 2012	0.051	0.103

6. Summary and conclusions

The Hungarian case study measures own account organisational capital according to twoapproaches.In the narrow sense itis assumed that only employees being in executive/managerial positions produce organisational capital. According to the broad criteria all employees may perform tasks in course of which organisational capital is created, to a different degree depending on the content of the task. We refer to the narrow approach as title-based, to the broad approach as task-based.

In order to provide comparable and plausible size of OC in both approaches, it is assumed that in the task-based approach the employees spend less time doing organisational work. In the title-based approach we applied the CHS recommendations, and measured the investment in own account organisational capital as 20% of the compensation of employees of executives/managers. In the broad, task-based approach it was assumed that doctors spent 9%, other health professionals 6% of their working time on creating OC. In case of Hungary these ratios are not specific to that country but instead are based on research for Germany.

Our database consists of 58 general hospitals, having comparable data for the period 2010-2013. Almost three quarters of the active care beds belong to these hospitals.

The research firstly estimated the stocks of OC in both approaches. Considerable differences resulted between the two approaches: in 2013 the stocks of OC in the task-based approach were nearly three times higher than in the title-based approaches. In 2013, in the selected hospitals, the value of the OC stocks came up to about 12% of the compensation of employees, total.

Then we analysed the impact of organisational capital on the clinical performance of the hospitals. Several cross sectional statistics have been compiled. In case of the task-based approach, we could identify a slight positive correlation between the OC stocks and the overall clinical performance. Concerning the title-based approach, no positive correlation could be found. We assumed that better results could be achieved, if the clinical performance variable would put more value on DRGs of complicated interventions and the treatment of serious diseases. Measuring clinical performance with DRGs over 2 points, a moderate positive correlation could be found between OC stocks and clinical performance.

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(Number of patients and number of beds in hospitals – by years and hospitals. Data in Hungarian are available at http://oep.hu/felso_menu/szakmai_oldalak/publikus_forgalmi_adatok/gyogyito_megelozo_forgalmi_adat/korhazi_agyszam_es_betegforgalom_2013.html

Gyógyító-megelőző ellátások finanszírozási adatai
(Financing data of curative-preventive health care – by years and hospitals. Data are downloadable at http://oep.hu/felso_menu/szakmai_oldalak/publikus_forgalmi_adatok/gyogyito_megelozo_forgalmi_adat?pagenum=2)

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Annex 1: Data problems

To set up a consistent database for the research, we had to reconcile several data sources, substitute missing values etc.

During the period 2010-2013 in the Hungarian health care a massive reorganisation went on, the ownership and the reporting obligations have changed significantly.

Table 1: Number of inpatient facilities by type of owners

OWNER	2010	2011	2012	2013	2010	2011	2012	2013
	at the year's end				%			
Local government	113	112	12	13	64.6	64.7	6.9	7.7
Central government	12	12	102	99	6.9	6.9	58.6	58.9
(Central government owned) Universities	4	4	4	4	2.3	2.3	2.3	2.4
Other types*	46	45	56	52	26.3	26.0	32.2	31.0
Total	175	173	174	168	100.0	100.0	100.0	100.0

*Churches, foundations, private companies partly financed by NHIF

Concerning the data we had to manage to following main problems:

- During the period 2010-2013 the control/ownership of most hospitals has been changed. Previously most government owned hospitals were controlled by the local governments, in 2012 nearly all of them have been centralised. For the year 2012 two partial financial reports (covering the period before and after the centralisation) are available on their inputs, these have to be matched and merged.
- Before 2010, for experimental reasons the management of some government owned hospitals (even large ones) were privatised. They were functioning mostly as non-profit institutions and were not obliged to submit the same financial reports that are obligatory for budget units. As the experiment failed, the hospitals were brought again under government management. We tried to substitute the missing data from a survey conducted by the Statistical Office on NPIs.
- Different data collections rely on different identification codes. In course of the reorganisation the codes may change. We had to match the codes used by Health Insurance, used by the State Treasury and used by the Statistical Office. In several cases the names of hospitals were the only possibility to identify the units. But in some cases the names of the hospitals changed also.
- It took a lot of time to compile a sufficiently consistent data base, matching data derived from several sources. In some cases missing or not plausible figures (mainly as employment figures are concerned) have been substituted by data coming from data collections managed by the Statistical Office. There may be some conceptual differences in the classification applied by the Statistical Office and by the Treasury.

Annex 2: Detailed tables of regression analysis: Model summary, ANOVA, coefficients with significance and correlations.

1. Cross sectional regression analysis

1.a: Title-based approach, factors normalised by cases

2010

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,861(a)	,742	,694	,07830

a Predictors: (Constant), GDP/capita 2010, LNAS1ESCLGE10 LnStock of OC/cases in active care 2010, atlapnap10 Average days of stay in hospital 2010, LNAL1ES10, aktagy10 Active beds 2010, mnrata10Unemp rate 2010, % aged 70+ 2010, % female 2010, LNAM1ES10

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	,847	9	,094	15,343	,000(a)
	Residual	,294	48	,006		
	Total	1,141	57			

a Predictors: (Constant), GDP/capita 2010, LNAS1ESCLGE10 LnStock of OC/cases in active care 2010, atlapnap10 Average days of stay in hospital 2010, LNAL1ES10, aktagy10 Active beds 2010, mnrata10Unemp rate 2010, % aged 70+ 2010, % female 2010, LNAM1ES10

b Dependent Variable: LNyy1ESET10 Ln Output by cases 2010

Coefficients(a)

Model	**2010**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	,696	,463		1,503	,139			
	Ln Labour in active care by cases	,084	,089	,096	,941	,351	,281	,135	,069
	Ln Material in active care by cases	,101	,034	,336	2,971	,005	,697	,394	,218
	LnStock of OC/cases in active care 2010	**-,017**	**,034**	**-,041**	**-,490**	**,627**	**-,324**	**-,070**	**-,036**
	aktagy10 Active beds 2010	,000	,000	,367	3,003	,004	,714	,398	,220
	Average days of stay in hospital	-,006	,015	-,034	-,402	,689	-,039	-,058	-,029
	% female	-,017	,006	-,291	-2,765	,008	-,628	-,371	-,203
	% aged 70+	,000	,003	,011	,104	,918	-,230	,015	,008
	Unemp rate	,001	,004	,017	,186	,853	-,130	,027	,014
	GDP/capita	,000	,000	,099	,855	,397	,258	,122	,063

a Dependent Variable: LNyy1ESET10 Ln Output by cases 2010

2011

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,832	,692	,634	,08383

a Predictors: (Constant), GDP/capita 2011, LNAS1ESCLGE11LnStock of OC/cases in active care 2011, atlapnap11 Average days of stay in hospital 2011, LNAL1ES11, aktagy11 Active beds 2011, mnrata11Unemp rate 2011, % aged 70+ 2011, % female 2011, LNAM1ES11

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	,757	9	,084	11,975	,000a
	Residual	,337	48	,007		
	Total	1,095	57			

a Predictors: (Constant), GDP/capita 2011, LNAS1ESCLGE11LnStock of OC/cases in active care 2011, atlapnap11 Average days of stay in hospital 2011, LNAL1ES11, aktagy11 Active beds 2011, mnrata11Unemp rate 2011, % aged 70+ 2011, % female 2011, LNAM1ES11

b Dependent Variable: LNyy1ESET11 Ln Output by cases 2011

Coefficients(a)

Model	**2011**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	,477	,529		,901	,372			
	LNAL1ES11 Ln Labour in active care by cases	,015	,081	,021	,187	,852	,238	,027	,015
	LNAM1ES11 Ln Material in active care by cases	,099	,038	,341	2,574	,013	,660	,348	,206
	LNAS1ESCLGE11 Ln Stock of OC/cases in active care 2011	**-,016**	**,038**	**-,041**	**-,417**	**,679**	**-,326**	**-,060**	**-,033**
	Active beds 2011	,000	,000	,379	2,884	,006	,704	,384	,231
	Average days of stay in hospital 2011	-,012	,017	-,068	-,734	,466	-,056	-,105	-,059
	% female 2011	-,016	,007	-,272	-2,358	,022	-,593	-,322	-,189
	% aged 70+ 2011	,000	,004	-,001	-,010	,992	-,232	-,001	-,001
	Unemp rate 2011	-,002	,004	-,040	-,379	,706	-,177	-,055	-,030
	GDP/capita 2011	,000	,000	,045	,340	,735	,191	,049	,027

a Dependent Variable: LNyy1ESET11 Ln Output by cases 2011

2012

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,888a	,789	,750	,06972

a Predictors: (Constant), GDP/capita 2012, LNAS1ESCLGE12LnStock of OC/cases in active care 2012, LNAL1ES12, atlapnap12 Average days of stay in hospital 2012, % female 2012, mnrata12Unemp rate 2012, % aged 70+ 2012, LNAM1ES12, aktagy12 Actibe beds 2012

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	,873	9	,097	19,962	,000a
	Residual	,233	48	,005		
	Total	1,107	57			

a Predictors: (Constant), GDP/capita 2012, LNAS1ESCLGE12LnStock of OC/cases in active care 2012, LNAL1ES12, atlapnap12 Average days of stay in hospital 2012, % female 2012, mnrata12Unemp rate 2012, % aged 70+ 2012, LNAM1ES12, aktagy12 Actibe beds 2012

b Dependent Variable: LNyy1ESET12 Ln Output by cases 2012

Coefficients(a)

Model	**2012**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	,508	,412		1,233	,223			
	LNAL1ES12 Ln Labour in active care by cases	,002	,064	,003	,031	,975	,207	,005	,002
	LNAM1ES12 Ln Material in active care by cases	,111	,029	,377	3,863	,000	,741	,487	,256
	LNAS1ESCLGE12 Ln Stock of OC/cases in active care	**-,019**	**,031**	**-,047**	**-,596**	**,554**	**-,319**	**-,086**	**-,040**
	Active beds 2012	,000	,000	,378	3,252	,002	,763	,425	,216
	Average days of stay in hospital 2012	-,017	,013	-,103	-1,389	,171	,030	-,197	-,092
	% female 2012	-,019	,006	-,307	-3,000	,004	-,632	-,397	-,199
	% aged 70+ 2012	,002	,003	,051	,561	,577	-,174	,081	,037
	Unemp rate 2012	,000	,004	-,003	-,040	,968	-,223	-,006	-,003
	GDP/capita 2012	,000	,000	,086	,788	,435	,278	,113	,052

a Dependent Variable: LNyy1ESET12Ln Output by cases 2012

2013

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,891a	,794	,756	,07234

a Predictors: (Constant), GDP/capita 2013, % female 2013, LNAS1ESCLGE10 LnStock of OC/cases in active care 2013, atlapnap13 Average days of stay in hospital 2013, mnrata13Unemp rate 2013, % aged 70+ 2013, LNAM1ES13, aktagy13 Active beds 2013, LNAL1ES13

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	,969	9	,108	20,581	,000a
	Residual	,251	48	,005		
	Total	1,220	57			

a Predictors: (Constant), GDP/capita 2013, % female 2013, LNAS1ESCLGE13 LnStock of OC/cases in active care 2013, atlapnap13 Average days of stay in hospital 2013, mnrata13Unemp rate 2013, % aged 70+ 2013, LNAM1ES13, aktagy13 Active beds 2013, LNAL1ES13

b Dependent Variable: LNyy1ESET13Ln Output by cases 2013

Coefficients(a)

Model	**2013**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	,716	,485		1,478	,146			
	LNAL1ES13 Ln Labour in active care by cases	,079	,115	,080	,683	,498	,246	,098	,045
	LNAM1ES13 Ln Material in active care by cases	,120	,032	,341	3,705	,001	,734	,472	,243
	LNAS1ESCLGE13 Ln Stock of OC/cases in active care	**-,021**	**,040**	**-,053**	**-,536**	**,594**	**-,324**	**-,077**	**-,035**
	Active beds 2013	,000	,000	,371	3,559	,001	,713	,457	,233
	AVG days of stay in hosp 2013	-,017	,016	-,093	-1,058	,295	,005	-,151	-,069
	% female 2013	-,018	,007	-,279	-2,587	,013	-,704	-,350	-,169
	% aged 70+ 2013	,000	,003	,002	,025	,980	-,168	,004	,002
	Unemployment rate 2013	-,001	,005	-,013	-,154	,878	-,186	-,022	-,010
	GDP/capita 2013	,000	,000	,154	1,456	,152	,288	,206	,095

a Dependent Variable: LNyy1ESET13 Ln Output by cases 2013

1.b: Title-based approach, factors normalised by beds in active care

2010

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,870(a)	,758	,712	,11665

a Predictors: (Constant), GDP/capita 2010, LNSA1AGYCLGE10, atlapnap10 Average days of stay in hospital 2010, % female 2010, mnrata10Unemp rate 2010, LNAL1AGY10, % aged 70+ 2010, aktagy10 Active beds 2010, LNAM1AGY10

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	2,042	9	,227	16,675	,000(a)
	Residual	,653	48	,014		
	Total	2,695	57			

a Predictors: (Constant), GDP/capita 2010, LNSA1AGYCLGE10, atlapnap10 Average days of stay in hospital 2010, % female 2010, mnrata10Unemp rate 2010, LNAL1AGY10, % aged 70+ 2010, aktagy10 Active beds 2010, LNAM1AGY10

b Dependent Variable: LNyy1agy10 Ln Output by beds 2010

Coefficients(a)

Model	**2010**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	3,027	,692		4,375	,000			
	LNAL1ES10 Ln Labour in active care by beds	,373	,124	,319	3,017	,004	,598	,399	,214
	LNAM1ES10 Ln Material in active care by beds	,081	,050	,192	1,610	,114	,727	,226	,114
	LNAS1ESCLGE10 Ln Stock of OC/beds in active care	**,021**	**,051**	**,037**	**,414**	**,681**	**,102**	**,060**	**,029**
	aktagy10 Active beds 2010	,000	,000	,435	3,881	,000	,563	,489	,276
	AVG days of stay in hospital 2010	-,076	,023	-,285	-3,256	,002	-,445	-,425	-,231
	% female 2010	,000	,009	,004	,046	,964	-,305	,007	,003
	% aged 70+ 2010	,000	,005	-,007	-,074	,941	-,279	-,011	-,005
	mnrata10Unemp rate 2010	,002	,006	,029	,325	,747	-,181	,047	,023
	GDP/capita 2010	,000	,000	,155	1,327	,191	,363	,188	,094

a Dependent Variable: LNyy1agy10 Ln Output by beds 2010

2011

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,844(a)	,712	,658	,12700

a Predictors: (Constant), GDP/capita 2011, aktagy11 Active beds 2011, atlapnap11 Average days of stay in hospital 2011, LNAL1AGY11, mnrata11Unemp rate 2011, LNSA1AGYCLGE11, % aged 70+ 2011, % female 2011, LNAM1AGY11

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	1,917	9	,213	13,205	,000(a)
	Residual	,774	48	,016		
	Total	2,691	57			

a Predictors: (Constant), GDP/capita 2011, aktagy11 Active beds 2011, atlapnap11 Average days of stay in hospital 2011, LNAL1AGY11, mnrata11Unemp rate 2011, LNSA1AGYCLGE11, % aged 70+ 2011, % female 2011, LNAM1AGY11

b Dependent Variable: LNyy1agy11 Ln Output by beds 2011

Coefficients(a)

Model	**2011**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	3,298	,840		3,927	,000			
	LNAL1ES11 Ln Labour in active care by beds	,194	,119	,187	1,632	,109	,520	,229	,126
	LNAM1ES11 Ln Material in active care by beds	,077	,058	,183	1,328	,190	,678	,188	,103
	LNAS1ESCLGE11 Ln Stock of OC/beds in active care	**,025**	**,058**	**,044**	**,424**	**,673**	**,090**	**,061**	**,033**
	aktagy11 Active beds 2011	,000	,000	,434	3,558	,001	,525	,457	,275
	Average days of stay in hospital 2011	-,104	,027	-,367	-3,828	,000	-,475	-,484	-,296
	% female 2011	,003	,010	,034	,322	,749	-,249	,046	,025
	% aged 70+ 2011	-,003	,006	-,066	-,602	,550	-,314	-,087	-,047
	Unemp rate 2011	-,008	,007	-,124	-1,225	,227	-,270	-,174	-,095
	GDP/capita 2011	,000	,000	,125	,914	,366	,319	,131	,071

a Dependent Variable: LNyy1agy11 Ln Output by beds 2011

2012

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,809(a)	,654	,589	,13340

a Predictors: (Constant), GDP/capita 2012, LNSA1AGYCLGE12, % female 2012, atlapnap12 Average days of stay in hospital 2012, mnrata12Unemp rate 2012, % aged 70+ 2012, LNAL1AGY12, LNAM1AGY12, aktagy12 Actibe beds 2012

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	1,616	9	,180	10,091	,000(a)
	Residual	,854	48	,018		
	Total	2,470	57			

a Predictors: (Constant), GDP/capita 2012, LNSA1AGYCLGE12, % female 2012, atlapnap12 Average days of stay in hospital 2012, mnrata12Unemp rate 2012, % aged 70+ 2012, LNAL1AGY12, LNAM1AGY12, aktagy12 Actibe beds 2012

b Dependent Variable: LNyy1agy12 Ln Output by beds 2012

Coefficients(a)

Model	**2012**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	1,808	,869		2,080	,043			
	LNAL1ES12 Ln Labour in active care by beds	,234	,137	,206	1,708	,094	,457	,239	,145
	LNAM1ES12 Ln Material in active care by beds	,152	,054	,358	2,784	,008	,674	,373	,236
	LNAS1ESCLGE12 Ln Stock of OC/beds in active care	**,109**	**,056**	**,214**	**1,940**	**,058**	**,207**	**,270**	**,165**
	aktagy12 Actibe beds 2012	,000	,000	,419	2,818	,007	,394	,377	,239
	atlapnap12 Average days of stay in hospital 2012	-,068	,027	-,270	-2,564	,014	-,385	-,347	-,218
	% female 2012	,008	,011	,089	,730	,469	-,168	,105	,062
	% aged 70+ 2012	-,001	,006	-,013	-,109	,913	-,165	-,016	-,009
	mnrata12Unemp rate 2012	-,006	,007	-,082	-,774	,443	-,222	-,111	-,066
	GDP/capita 2012	,000	,000	-,001	-,005	,996	,324	-,001	,000

a Dependent Variable: LNyy1agy12 Ln Output by beds 2012

2013

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,905(a)	,820	,786	,09839

a Predictors: (Constant), GDP/capita 2013, % female 2013, atlapnap13 Average days of stay in hospital 2013, LNSA1AGYCLGE13, mnrata13Unemp rate 2013, LNAM1AGY13, % aged 70+ 2013, aktagy13 Active beds 2013, LNAL1AGY13

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	2,115	9	,235	24,268	,000(a)
	Residual	,465	48	,010		
	Total	2,579	57			

a Predictors: (Constant), GDP/capita 2013, % female 2013, atlapnap13 Average days of stay in hospital 2013, LNSA1AGYCLGE13, mnrata13Unemp rate 2013, LNAM1AGY13, % aged 70+ 2013, aktagy13 Active beds 2013, LNAL1AGY13

b Dependent Variable: LNyy1agy13 Ln Output by beds 2013

Coefficients(a)

Model	**2013**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	3,026	,687		4,402	,000			
	LNAL1ES13 Ln Labour in active care by beds	,462	,134	,347	3,440	,001	,556	,445	,211
	LNAM1ES13 Ln Material in active care by beds	,113	,044	,232	2,554	,014	,711	,346	,157
	LNAS1ESCLGE13 Ln Stock of OC/beds in active care	**-,068**	**,053**	**-,122**	**-1,275**	**,209**	**,012**	**-,181**	**-,078**
	Active beds 2013	,000	,000	,385	4,080	,000	,527	,507	,250
	AVG days of stay in hospital 2013	-,109	,021	-,416	-5,128	,000	-,471	-,595	-,314
	% female 2013	,006	,008	,065	,758	,452	-,403	,109	,046
	% aged 70+ 2013	-,001	,004	-,012	-,134	,894	-,314	-,019	-,008
	Unemp rate 2013	,001	,007	,015	,182	,856	-,187	,026	,011
	GDP/capita 2013	,000	,000	,282	2,907	,006	,321	,387	,178

a Dependent Variable: LNyy1agy13 Ln Output by beds 2013

1.c: Task-based approach, factors normalised by cases

2010

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,861(a)	,741	,693	,07844

a Predictors: (Constant), GDP/capita 2010, LNAL1ES10, atlapnap10 Average days of stay in hospital 2010, aktagy10 Active beds 2010, mnrata10Unemp rate 2010, LNS1ESETOC2WAGE10, % aged 70+ 2010, % female 2010, LNAM1ES10

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	,846	9	,094	15,269	,000(a)
	Residual	,295	48	,006		
	Total	1,141	57			

a Predictors: (Constant), GDP/capita 2010, LNAL1ES10, atlapnap10 Average days of stay in hospital 2010, aktagy10 Active beds 2010, mnrata10Unemp rate 2010, LNS1ESETOC2WAGE10, % aged 70+ 2010, % female 2010, LNAM1ES10

b Dependent Variable: LNyy1ESET10 Ln Output by cases 2010

Coefficients(a)

Model	**2010**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1 All variables entered in one step	(Constant)	,628	,494		1,273	,209
	LNAL1ES10 LnEmployees in active care/cases	,083	,093	,095	,892	,377
	LNAM1ES10 LnMaterials in active care/cases	,104	,034	,346	3,020	,004
	LNS1ESETOC2WAG10 Ln Stock of OC in active care/cases	**-,015**	**,057**	**-,025**	**-,258**	**,798**
	Beds in active care	,000	,000	,379	3,181	,003
	AVG days of stay in hosp	-,004	,015	-,025	-,289	,774
	% female	-,018	,006	-,301	-2,858	,006
	% aged 70+	,001	,003	,016	,157	,876
	Unemployment rate	,000	,004	,009	,099	,921
	GDP/capita	,000	,000	,094	,813	,420

a Dependent Variable: LNyy1ESET10 Ln Output by cases 2010

2011

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,831(a)	,691	,633	,08397

a Predictors: (Constant), GDP/capita 2011, LNAL1ES11, aktagy11 Active beds 2011, atlapnap11 Average days of stay in hospital 2011, mnrata11Unemp rate 2011, % aged 70+ 2011, LNS1ESETOC2WAGE11, % female 2011, LNAM1ES11

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	,756	9	,084	11,916	,000(a)
	Residual	,338	48	,007		
	Total	1,095	57			

a Predictors: (Constant), GDP/capita 2011, LNAL1ES11, aktagy11 Active beds 2011, atlapnap11 Average days of stay in hospital 2011, mnrata11Unemp rate 2011, % aged 70+ 2011, LNS1ESETOC2WAGE11, % female 2011, LNAM1ES11

b Dependent Variable: LNyy1ESET11 Ln Output by cases 2011

Coefficients(a)

Model	**2011**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1 All variables entered in one step	(Constant)	,410	,550		,745	,460
	LNAL1ES11 LnEmployees in active care/cases	,009	,083	,013	,110	,913
	LNAM1ES11 LnMaterials in active care/cases	,102	,039	,351	2,636	,011
	LNS1ESETOC2WAG11 Ln Stock of OC in active care/cases	**-,007**	**,069**	**-,011**	**-,097**	**,923**
	Beds in active care	,000	,000	,395	3,150	,003
	AVG days of stay in hosp	-,011	,017	-,062	-,641	,525
	% female	-,016	,007	-,276	-2,306	,025
	% aged 70+	,000	,004	,005	,042	,967
	Unemployment rate	-,002	,004	-,053	-,510	,612
	GDP/capita	,000	,000	,032	,241	,811

a Dependent Variable: LNyy1ESET11 Ln Output by cases 2011

2012

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,888(a)	,788	,748	,06993

a Predictors: (Constant), GDP/capita 2012, LNAL1ES12, aktagy12 Actibe beds 2012, atlapnap12 Average days of stay in hospital 2012, mnrata12Unemp rate 2012, % aged 70+ 2012, LNAM1ES12, LNS1ESETOC2WAGE12, % female 2012

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	,872	9	,097	19,810	,000(a)
	Residual	,235	48	,005		
	Total	1,107	57			

a Predictors: (Constant), GDP/capita 2012, LNAL1ES12, aktagy12 Actibe beds 2012, atlapnap12 Average days of stay in hospital 2012, mnrata12Unemp rate 2012, % aged 70+ 2012, LNAM1ES12, LNS1ESETOC2WAGE12, % female 2012

b Dependent Variable: LNyy1ESET12 Ln Output by cases 2012

Coefficients(a)

Model	**2012**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1 All variables entered in one step	(Constant)	,492	,425		1,157	,253
	LNAL1ES12 LnEmployees in active care/cases	-,009	,070	-,012	-,128	,899
	LNAM1ES12 LnMaterials in active care/cases	,109	,029	,372	3,769	,000
	LNS1ESETOC2WAG12 Ln Stock of OC in active care/cases	**,016**	**,063**	**,028**	**,255**	**,800**
	Beds in active care	,000	,000	,406	3,747	,000
	AVG days of stay in hosp	-,018	,013	-,106	-1,345	,185
	% female	-,018	,007	-,291	-2,670	,010
	% aged 70+	,002	,003	,049	,535	,595
	Unemployment rate	-,001	,004	-,026	-,303	,763
	GDP/capita	,000	,000	,060	,528	,600

a Dependent Variable: LNyy1ESET12 Ln Output by cases 2012

2013

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,893(a)	,797	,759	,07177

a Predictors: (Constant), GDP/capita 2013, % female 2013, atlapnap13 Average days of stay in hospital 2013, mnrata13Unemp rate 2013, LNAL1ES13, % aged 70+ 2013, LNAM1ES13, aktagy13 Active beds 2013, LNS1ESETOC2WAGE13

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	,973	9	,108	20,990	,000(a)
	Residual	,247	48	,005		
	Total	1,220	57			

a Predictors: (Constant), GDP/capita 2013, % female 2013, atlapnap13 Average days of stay in hospital 2013, mnrata13Unemp rate 2013, LNAL1ES13, % aged 70+ 2013, LNAM1ES13, aktagy13 Active beds 2013, LNS1ESETOC2WAGE13

b Dependent Variable: LNyy1ESET13 Ln Output by cases 2013

Coefficients(a)

Model	**2013**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1 All variables entered in one step	(Constant)	,681	,436		1,560	,125
	LNAL1ES13 LnEmployees in active care/cases	-,018	,106	-,019	-,170	,865
	LNAM1ES13 LnMaterials in active care/cases	,126	,031	,359	4,100	,000
	LNS1ESETOC2WAG13E Ln Stock of OC in active care/cases	**,072**	**,070**	**,115**	**1,024**	**,311**
	Beds in active care	,000	,000	,400	3,874	,000
	AVG days of stay in hosp	-,019	,016	-,107	-1,221	,228
	% female	-,017	,007	-,266	-2,486	,016
	% aged 70+	,000	,003	-,012	-,127	,899
	Unemployment rate	-,004	,005	-,064	-,742	,462
	GDP/capita	,000	,000	,074	,672	,505

a Dependent Variable: LNyy1ESET13 Ln Output by cases 2013

1.d: Task-based approach, factors normalised by beds in active care

2010

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,872(a)	,760	,715	,11607

a Predictors: (Constant), GDP/capita 2010, atlapnap10 Average days of stay in hospital 2010, % female 2010, LNS1AGYOC2WAGE10, mnrata10Unemp rate 2010, % aged 70+ 2010, LNAL1AGY10, aktagy10 Active beds 2010, LNAM1AGY10

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	2,048	9	,228	16,893	,000(a)
	Residual	,647	48	,013		
	Total	2,695	57			

a Predictors: (Constant), GDP/capita 2010, atlapnap10 Average days of stay in hospital 2010, % female 2010, LNS1AGYOC2WAGE10, mnrata10Unemp rate 2010, % aged 70+ 2010, LNAL1AGY10, aktagy10 Active beds 2010, LNAM1AGY10

b Dependent Variable: LNYY1AGY10 Ln Output by beds 2010

Coefficients(a)

Model	**2010**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	3,224	,692		4,657	,000			
	LNAL1AGY10 Ln Employees in active care/beds	,342	,131	,292	2,617	,012	,598	,353	,185
	LNAM1AGY10 Ln Materials in active care/beds	,073	,050	,173	1,445	,155	,727	,204	,102
	LNS1AGYOC2WAGE10 Ln Stock of OC in active care/beds	**,067**	**,083**	**,079**	**,805**	**,425**	**,514**	**,115**	**,057**
	Active beds	,000	,000	,423	3,860	,000	,563	,487	,273
	AVG days of stay in hosp	-,080	,023	-,298	-3,498	,001	-,445	-,451	-,247
	% female	,001	,009	,016	,171	,865	-,305	,025	,012
	% aged 70+	-,001	,005	-,016	-,167	,868	-,279	-,024	-,012
	Unemployment rate	,002	,006	,036	,408	,685	-,181	,059	,029
	GDP/capita	,000	,000	,151	1,311	,196	,363	,186	,093

a Dependent Variable: LNYY1AGY10 Ln Output by beds 2010

2011

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,850(a)	,722	,670	,12478

a Predictors: (Constant), GDP/capita 2011, aktagy11 Active beds 2011, atlapnap11 Average days of stay in hospital 2011, LNAL1AGY11, mnrata11Unemp rate 2011, % aged 70+ 2011, % female 2011, LNS1AGYOC2WAGE11, LNAM1AGY11

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	1,944	9	,216	13,871	,000(a)
	Residual	,747	48	,016		
	Total	2,691	57			

a Predictors: (Constant), GDP/capita 2011, aktagy11 Active beds 2011, atlapnap11 Average days of stay in hospital 2011, LNAL1AGY11, mnrata11Unemp rate 2011, % aged 70+ 2011, % female 2011, LNS1AGYOC2WAGE11, LNAM1AGY11

b Dependent Variable: LNYY1AGY11 Ln Output by beds 2011

Coefficients(a)

Model	**2011**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1 All variables entered in one step	(Constant)	3,563	,777		4,585	,000			
	LNAL1AGY11 Ln Employees in active care/beds	,139	,123	,134	1,136	,262	,520	,162	,086
	LNAM1AGY11 Ln Materials in Active care/beds	,065	,057	,153	1,140	,260	,678	,162	,087
	LNS1AGYOC2WAGE11 Ln Stock of OC in active care/beds	**,135**	**,098**	**,156**	**1,382**	**,173**	**,500**	**,196**	**,105**
	Active beds	,000	,000	,423	3,676	,001	,525	,469	,280
	AVG days of stay in hosp	-,108	,026	-,382	-4,197	,000	-,475	-,518	-,319
	% female	,006	,010	,061	,584	,562	-,249	,084	,044
	% aged 70+	-,004	,005	-,071	-,666	,509	-,314	-,096	-,051
	Unemployment rate	-,009	,006	-,131	-1,356	,181	-,270	-,192	-,103
	GDP/capita	,000	,000	,079	,587	,560	,319	,084	,045

a Dependent Variable: LNYY1AGY11 Ln Output by beds 2011

2012

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,814(a)	,663	,600	,13165

a Predictors: (Constant), GDP/capita 2012, % female 2012, atlapnap12 Average days of stay in hospital 2012, LNAL1AGY12, mnrata12Unemp rate 2012, % aged 70+ 2012, LNAM1AGY12, LNS1AGYOC2WAGE12, aktagy12 Actibe beds 2012

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1 All variables entered in one step	Regression	1,639	9	,182	10,505	,000(a)
	Residual	,832	48	,017		
	Total	2,470	57			

a Predictors: (Constant), GDP/capita 2012, % female 2012, atlapnap12 Average days of stay in hospital 2012, LNAL1AGY12, mnrata12Unemp rate 2012, % aged 70+ 2012, LNAM1AGY12, LNS1AGYOC2WAGE12, aktagy12 Actibe beds 2012

b Dependent Variable: LNYY1AGY12 Ln Output by beds 2012

Coefficients(a)

Model	**2012**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
All variables entered in one step	(Constant)	2,439	,839		2,907	,006			
	LNAL1AGY12 Ln Employees in active care/beds	,164	,144	,145	1,141	,260	,457	,162	,096
	LNAM1AGY12 Ln Materials in Active care/beds	,136	,055	,321	2,490	,016	,674	,338	,209
	LNS1AGYOC2WAGE12 Ln Stock of OC in active care/beds	**,254**	**,112**	**,286**	**2,270**	**,028**	**,479**	**,311**	**,190**
	Active beds	,000	,000	,355	2,536	,015	,394	,344	,212
	AVG days of stay in hosp	-,085	,026	-,335	-3,229	,002	-,385	-,422	-,270
	% female	,015	,011	,167	1,353	,182	-,168	,192	,113
	% aged 70+	-,001	,006	-,029	-,251	,803	-,165	-,036	-,021
	Unemployment rate	-,007	,007	-,102	-,963	,340	-,222	-,138	-,081
	GDP/capita	,000	,000	-,076	-,503	,617	,324	-,072	-,042

a Dependent Variable: LNYY1AGY12 Ln Output by beds 2012

2013

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
All variables entered in one step	,902(a)	,814	,779	,10002

a Predictors: (Constant), GDP/capita 2013, % female 2013, atlapnap13 Average days of stay in hospital 2013, mnrata13Unemp rate 2013, LNAL1AGY13, % aged 70+ 2013, LNAM1AGY13, aktagy13 Active beds 2013, LNS1AGYOC2WAGE13

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
All variables entered in one step	Regression	2,099	9	,233	23,315	,000(a)
	Residual	,480	48	,010		
	Total	2,579	57			

a Predictors: (Constant), GDP/capita 2013, % female 2013, atlapnap13 Average days of stay in hospital 2013, mnrata13Unemp rate 2013, LNAL1AGY13, % aged 70+ 2013, LNAM1AGY13, aktagy13 Active beds 2013, LNS1AGYOC2WAGE13

b Dependent Variable: LNYY1AGY13 Ln Output by beds 2013

Coefficients(a)

Model	**2013**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
All variables entered in one step	(Constant)	2,741	,661		4,148	,000			
	LNAL1AGY13 Ln Employees in active care/beds	,345	,128	,259	2,705	,009	,556	,364	,168
	LNAM1AGY13 Ln Materials in Active care/beds	,129	,043	,266	3,006	,004	,711	,398	,187
	LNS1AGYOC2WAGE13 Ln Stock of OC in active care/beds	**,017**	**,102**	**,016**	**,166**	**,869**	**,346**	**,024**	**,010**
	Active beds	,000	,000	,418	4,416	,000	,527	,538	,275
	AVG days of stay in hosp	-,105	,022	-,400	-4,866	,000	-,471	-,575	-,303
	% female	,005	,008	,051	,561	,577	-,403	,081	,035
	% aged 70+	-,001	,004	-,027	-,307	,760	-,314	-,044	-,019
	Unemployment rate	-,002	,007	-,028	-,345	,732	-,187	-,050	-,021
	GDP/capita	,000	,000	,229	2,052	,046	,321	,284	,128

a Dependent Variable: LNYY1AGY13 Ln Output by beds 2013

2. Regression analysis with pooled data

2a. Task-based OC in active care by cases

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
All variables entered in one step	,866(a)	,749	,736	,0722862

a Predictors: (Constant), year2012 2012, gdp1fpp GDP/capita, LNAL1ES Ln Employees in active care/cases, aktagy Active beds , atlapnapAVG days of stay in hosp, year2011 2011, mnrata Unemployment rate , year2010 2010, eset75p_sh % aged 70+ , nokeset_sh % female, LNAM1ES Ln Materials in active care/cases, LNS1ESETOC2WAGE Ln Stock of OC in active care/cases

ANOVA(b)

Model		Sum of Squares	df	Mean Square	F	Sig.
All variables entered in one step	Regression	3,420	12	,285	54,535	,000(a)
	Residual	1,144	219	,005		
	Total	4,564	231			

a Predictors: (Constant), year2012 2012, gdp1fpp GDP/capita, LNAL1ES Ln Employees in active care/cases, aktagy Active beds , atlapnapAVG days of stay in hosp, year2011 2011, mnrata Unemployment rate , year2010 2010, eset75p_sh % aged 70+ , nokeset_sh % female, LNAM1ES Ln Materials in active care/cases, LNS1ESETOC2WAGE Ln Stock of OC in active care/cases

b Dependent Variable: LNyy1ESET LnOutput/cases

Coefficients(a)

Model	2010-2013	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
All variables entered in one step	(Constant)	,556	,222		2,505	,013			
	LNAL1ES LnEmployees in active care/cases	,011	,039	,014	,286	,775	,239	,019	,010
	LNAM1ES LnMaterials in active care/cases	,109	,015	,357	7,117	,000	,703	,433	,241
	LNS1ESETOC2WAGE Ln Stock of OC in active care/cases	**,007**	**,029**	**,014**	**,251**	**,802**	**,273**	**,017**	**,009**
	Beds in active care	,000	,000	,380	7,180	,000	,723	,437	,243
	AVG days of stay in hospital	-,012	,007	-,067	-1,631	,104	-,014	-,110	-,055
	% female	-,018	,003	-,305	-6,067	,000	-,639	-,379	-,205
	% aged 70+	,001	,002	,017	,350	,727	-,198	,024	,012
	Unemployment rate	-,001	,002	-,023	-,544	,587	-,174	-,037	-,018
	GDP/capita	,000	,000	,078	1,443	,150	,254	,097	,049
	year2010	-,001	,017	-,003	-,055	,957	-,009	-,004	-,002
	year2011	,006	,016	,017	,348	,728	,016	,024	,012
	year2012	,013	,014	,041	,929	,354	-,003	,063	,031

a Dependent Variable: LNyy1ESET LnOutput/cases

2b. Task-based OC by beds in active care

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
All variables entered in one step	,853(a)	,727	,712	,115403

a Predictors: (Constant), year2012 2012, gdp1fpp GDP/capita, nokeset_sh % female, atlapnapAVG days of stay in hosp, year2011 2011, LNAL1AGY Ln Employees in active care/beds, mnrata Unemployment rate , eset75p_sh % aged 70+ , year2010 2010, aktagy Active beds , LNAM1AGY Ln MaterialsActive care/beds, LNS1AGYOC2WAGE Ln Stock of OC in active care/beds

ANOVA(b)

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
All variables entered in one step	Regression	7,776	12	,648	48,657	,000(a)
	Residual	2,917	219	,013		
	Total	10,693	231			

a Predictors: (Constant), year2012 2012, gdp1fpp GDP/capita, nokeset_sh % female, atlapnapAVG days of stay in hosp, year2011 2011, LNAL1AGY Ln Employees in active care/beds, mnrata Unemployment rate , eset75p_sh % aged 70+ , year2010 2010, aktagy Active beds , LNAM1AGY Ln Materials in active care/beds, LNS1AGYOC2WAGE Ln Stock of OC in active care/beds

b Dependent Variable: LNYY1AGY LnOutput/beds in active care

Coefficients(a)

Model	**2010-2013**	Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Correlations		
		B	**Std. Error**	**Beta**			**Zero-order**	**Partial**	**Part**
1. All variables entered in one step	(Constant)	3,128	,354		8,836	,000			
	LNAL1AGY Ln Employees in active care/beds	,216	,061	,189	3,509	,001	,543	,231	,124
	LNAM1AGY Ln Materials in active care/beds	,102	,025	,232	4,169	,000	,688	,271	,147
	LNS1AGYOC2WAGE Ln Stock of OC in active care/beds	**,115**	**,046**	**,149**	**2,478**	**,014**	**,461**	**,165**	**,087**
	Active beds	,000	,000	,385	7,134	,000	,494	,434	,252
	AVG days of stay inhosp	-,097	,012	-,361	-8,316	,000	-,450	-,490	-,293
	% female	,004	,004	,044	,908	,365	-,270	,061	,032
	% aged 70+	-,002	,002	-,034	-,699	,485	-,241	-,047	-,025
	Unemployment rate	-,003	,003	-,045	-1,015	,311	-,224	-,068	-,036
	GDP/capita	,000	,000	,107	1,799	,073	,332	,121	,063
	year2010	,027	,028	,054	,970	,333	-,119	,065	,034
	year2011	,026	,026	,053	1,024	,307	-,051	,069	,036
	year2012	,051	,022	,103	2,273	,024	,106	,152	,080

a Dependent Variable: LNYY1AGY LnOutput/beds in active care