Supplementary File 5 - Overview of the empirical studies' main results (chronological order)

Reference	Year of publication	Country	Main focus[a]	Descriptive results
(44)	2011	Germany	1,2	Public hospitals tend to exhibit a probability of default that is significantly above an average and persistently higher than nonprofit and for-profit private hospitals. Private ownership is associated with significantly lower probability of defaults than public.
(40)	2011	UK	3	Hospitals merger resulted in the increasing deterioration of the financial position of the hospitals involved both in the short and in the long run.
(45)	2011	Germany	1,2,3	There is higher profit efficiency of private than of publicly owned hospitals.
(46)	2013	UK	2	The percentage doctors at the board level is positively associated to the rating achieved for the financial management of resources.
(47)	2014	Germany	2	Board's strategy-setting role positively affects hospital financial performance.
(48)	2014	Poland	2	There is positive relationship between the hospital's income per bed and financial liquidity ratios (yet only to certain thresholds of income per ped values).
(49)	2015	Germany	2	The depth and breadth of horizontal administrative cooperation positively affect FP (when there is no vertical cooperation), vertical cooperation positively affects FP (when there is no horizontal administrative cooperation) only when cooperation is broad (rather than deep).
(50)	2015	UK	2	High female presence among executive and non-executive directorships does not result in significant differences in financial return.
(51)	2016	Germany	2	There is a negative correlation between the share of physicians on supervisory boards and hospitals FP. The is no positive effect between economist participation and FP. Private for-profit owners seemed to be able to design supervisory boards to maximize FP.
(41)	2016	Germany	3	There is an increase in hospital profitability only 1 year after a health system entry.
(52)	2017	Portugal	1,2	Private hospitals have better FP than public ones. The results do not showed impact of innovation of FP.
(53)	2018	Hungary	1	Hospitals that participated in the pilot accreditation had lower means of debt per bed number and per the number of discharged patients than those that did not join the program, but the differences were not statistically significant.
(54)	2018	Germany	1,2	*High performance in hospitals can be the result of governance logics, which, compared to simple board characteristics, are associated with better financial outcomes.*
(55)	2018	Spain	1,2	There is a significant relationship between hospital return on assets and short-term solvency, debt and population density. On the contrary, the business size does not influence economic profitability.
(30)	2018	multicountry	2	Increasing the length of the cash conversion cycle for hospitals with high financial leverage decreases profitability. On the contrary, increasing the length of the cash conversion cycle for the ones having low leverage boosts profitability
(56)	2019	Spain	1,2	There is a significant and negative relationship between reporting corporate social responsibility activities and profitability, as well as a significant and positive relationship between management exercised by women and profitability, however, neither of these relationships are causal. *There is a causal relationship between being located in the autonomous regions of Madrid and Andalusia and profitability, in the first case it is positive and in the latter negative.*

(37)	2019	Romania	4	There are instances of incoherent policy design and misaligned or contradictory incentives that contribute to poor hospital FP in Romania.
(57)	2019	Poland	1	In years 2013-2017, the total revenue of hospitals with more than 250 beds increased by 22%, whereas the revenue of hospitals with less than 250 beds increased by 36%.
(58)	2019	Poland	1	*Hospitals operating in big cities are featured by better financial condition than their counterparts operating in smaller towns (in the case of most financial ratios).* The statistically significant differences between the agglomeration and no agglomeration groups occur in the case of the several financial ratios.
(59)	2019	Poland	1,2	*There is no difference in financial condition between rural and urban hospitals (based on financial indicators). However, If we employ the synthetic measure the financial health of rural hospitals is better.*
(60)	2019	UK	1,2	There is significant association between worsened operating margin and deteriorating process measures (...) but not between operating margins and either readmission rate or inpatient satisfaction.
(61)	2019	Spain	2	*Hospitals with insurance companies as controlling shareholders are less profitable and have a lower operating margin than do those controlled by banks, firms, or individuals/families.*
(62)	2019	UK	3	The are no significant differences in ratios values before and after the reform
(16)	2020	Poland	1,2	There are statistically significant differences in FP between hospital groups, with university hospitals and those owned by counties being in the most disadvantageous situation. Corporatized public hospitals have worse FP than functioning in the classic legal form of independent health care units. *Results of the logistic regression model confirmed that both the ownership status and the organizational form, as well as the hospital size (measured by the value of total assets/revenues/costs) can be statistically significant predictors of the hospital's financial standing.*
(63)	2020	Poland	4	The rankings of large hospitals is most sensitive to changes in importance of ROE and contract with public payer criteria, while rankings of medium-sized hospitals are most sensitive to changes in the weight of ROA.
(64)	2020	Germany	2	Institutions led by managers with economics or business degrees have better FP (the probability to achieve poor financial performance is about 10.7 percentage points higher in hospitals with a physician-CEO, compared to hospitals with a manager-CEO)
(65)	2020	Spain	2	Good business communication has a positive impact on hospital FP. The implementation of social responsibility actions is also beneficial at economic and financial levels.
(66)	2020	Poland	1,4	Marshal hospitals are in better financial conditions than university hospitals. Most hospital groups have the financial liquidity level (quick ration below 0.62) that indicates a severe threat to paying off current liabilities.
(67)	2021	Poland	1	Majority of hospitals are indebted, but their ownership structure does not affect their financial condition. *The study did not confirm a significant relationship between size (Large vs Medium-Sized Hospitals) or ownership (Marshal vs Poviat-Commune Hospitals) and the financial status of the hospital.*
(42)	2021	Spain	1,2	Contract with public payer improves the FP of private hospitals. *This effect varies depending on hospital size and type (hospital specialization), the advantage being more relevant for general hospitals and particularly for hospital with at least 50 beds.*
(68)	2021	Poland	2	There is no relationship between indicators characterising hospitals financial liquidity and profitability. There is positive and statistically significant relationship between return on sales, return on equity and return on assets and liquidity. There is also

				statistically significant and negative correlation between short-term liabilities and the return on sales, assets and equity.
(69)	2021	Poland	2	FP of hospital companies is worse than other entities of the SME sector. *A significant number of the studied hospital generate negative operating results. There is a negative but moderate correlation of CR and QR with FDR, which confirms the idea that as liquidity increases, the level of debt in these units decreases and vice versa.*
(70)	2021	Poland	2	Public hospitals manage their working capital differently than, commercial (production and service) companies. The is statistically significant relationship between the length of CCC and hospital profitability .
(71)	2021	Portugal	4	Financial performance is, in general, higher than quality, raising social concerns about the way that public hospitals have been managed.
(72)	2022	Poland	3	The COVID-19 pandemic contributed to the deterioration of the FP of public hospitals owned territorial self-government. *However, the impact was not dramatic, but only intensified the financial difficulties experienced by Polish hospitals before.*
(73)	2022	Poland	3	Compared to pre COIVD- pandemic year, hospitals recorded improvements in FP indicators: profitability (ROS, ROA, ROE), EBIT and EBITDA margins; and net financial results.
(38)	2022	UK	3	FP after the merger has improved.
(74)	2022	Croatia	4	*In three years, the total liabilities of CHCs increased from 2,8 in 2018 to 4,9 billion HRK in 2020 (76 %), with overdue and unpaid liabilities growing 56 %, from 1,5 billion to 2,3 billion HRK. Almost all due liabilities relate to material expenses.*
(75)	2023	UK	2	Hospital FP is related to how their boards of directors are structured.
(76)	2023	Hungary	1	There is mixed evidence on the association between localization and hospital FP. *With NUTS2 classification, the closeness of the relationship is of medium strength for most indicators, but with post-hoc tests, no significant difference was found for any indicator about any region.*
(43)	2023	UK	2,3	*Benefits of foundation trust (FT) status significantly led hospitals to engage in upward DA (discretionary accruals) manipulation prior to applying for the status. This practice was negatively associated with the future financial performance of FTs*
(77)	2023	Spain	2,3	COVID-19 had a negative influence on profitability, with the highest significance level. Gender diversity also showed a negative relationship with ROA but with a low significance level. The profitability of socially responsible hospitals exceeds those that do not have this social and environmental concern by 1.77%
(78)	2023	Spain	2,3	Public health expenditure (EXP) is negatively and significantly correlated with the profitability of private hospitals (ROA). The COVID-19 pandemic caused a sharp drop in hospital profitability.
(79)	2023	Italy	2,4	Hospital FP is significantly negatively influenced by the Region's financial characteristics (financial recovery plans) and the complexity of treatment. Medium-sized and specialized hospitals show significantly better FP levels. *For the variables: size (absolute), teaching/scientific function, occupancy, and non-medical staff rate, no significant influence could be found.*
(39)	2023	The Netherlands	3	There are no clear differences in trends of solvency ratios and profit margins in relation to the program implementation.
(80)	2024	Poland	1,2	The was a change over time (between 2007 and 2017) on the regions with most indebted hospitals. The increase in hospital debt level was most affected by the number of hospital beds. *Hospitals' indebtedness is related to ratios qualified to four groups: financial economic, hospitals' localization, founding body, and hospitals' specialization*
(81)	2024	Germany	2	A one percentage point EBITDA margin increase is associated with a 0.359 points DR (digital maturity)-score increase ($p<0.01$).

(82)	2024	UK	2	Board expertise, meetings, diversity, CEO gender, board academic directors have statistically significant and negative association with FP.

[a]1- measuring and comparing FP between different hospitals (e.g. studies without statistical analyses or with simple statistical methods for group comparison); 2 - identifying association between FP and other hospital characteristics (e.g. with when regression models were applied with FP as dependent or independent variable or correlation analyses); 3- impact of an event on FP (e.g. pre- and post- analyses); 4 – other (e.g. application of hospital performance matrix including financial performance dimension);