



SMALL HOSPITALS BETWEEN THE CONFLICTING PRIORITIES OF MEDICAL SPECIALISATION AND REGIONAL SERVICE PROVISION

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Abstract

Background

Such as in many countries worldwide, hospitals in Germany and Austria are facing economic difficulties, and often result in insolvencies. With the introduction of the DRG system, competition was introduced and the pressure on hospitals further increased. Furthermore, patients value high quality care as highly important. Small hospitals have in general to resources to provide more specialised care. Additionally, small hospitals face such as small firms in other countries difficulties to make use of economies of scale and scope. Consequently, insolvency and hospital closures can occur. If not controlled, this can lead to huge inequalities of care.

Objectives

The objective of this thesis is to investigate the impact of the macroeconomic environment on hospitals in Germany and Austria. Furthermore, the paper is aimed at identifying whether and how small hospital can secure their market position and what measures are needed to maintain the functioning of the healthcare systems.

Methods

The thesis used both, qualitative and quantitative data. The used quantitative data was gathered from publicly accessible statistics, such as Eurostat or the countries statistical databases. Qualitative data was gathered in an output-oriented manner. Laws and regulations were used as reference for the political dimension of the research and studies supported the statistical findings.

Results

The analysis was structured around a PESTLE analysis. Hospitals are financed by a dual scheme and are planned by the states. However, in Austria a recent reform introduced need-based planning criteria on a national level which need to be implemented on a state and regional level. In Germany this is not the case and hospital structures are often not reflecting the real needs. Furthermore, a significant amount of hospitals does not perform well financially and more specifically are at risk to go insolvent. While in Germany private hospitals have a greater market share, in Austria public hospitals are more common. Specialisation on a certain disease or service seem to help some hospitals. Both countries undergo similar epidemiological and technical trends which support the ongoing trend

towards ambulatory care. Although, the number of hospitals has decreased in the past years in both countries, the bed occupancy rates clearly show that hospitals are still operating below their capacities, meaning that too many beds and too much care is provided in both systems.

Conclusion

The situation in both countries makes it difficult for small hospitals to adapt their services in order to improve financially. Specialisation is oft not possible due to the state planning's'. Thus, it is crucial for healthcare system to respond. The huge amount of hospitals and hospital beds is not responding anymore to the needs of a countries health system. Patients value high quality care and are consequently more prone to longer journeys as long as they receive good care. A centralization and primary care strengthening strategy as launched in Austria, is expected to be of high value in Germany as well. On their own, small hospitals can improve their costs matters or enter larger hospital networks in order to save money.

1 Introduction

In the last 20 years, most European countries had to face increasing health care expenditures. As hospitals represent one of the major components of health care systems around the world, both in their function to provide health care services and in terms of financial weight, their performance and management is of special interest when investigating healthcare expenditures. Besides the fact that they receive on average 50% of healthcare budgets, many western countries are facing huge oversupplies in inpatient care (Nolte, Pitchforth, Miani, & McHugh, 2014). Therefore, cost containing and restructuring measures in the hospital sector have become the focus of attention of health policy makers and economists.

In order to yield to contain costs and increase efficiencies in the hospital sector, many developed countries gradually introduced diversified versions of the Diagnosis-Related Groups System (DRG). Originally, DRGs were intended to be a tool for case classification aimed at increasing efficiency, transparency and quality in hospital (Scheller-Kreinsen, Geissler, & Busse, 2009). With different classification criteria, cases can be conflated into medical and economic homogenous groups, allowing for comparisons between hospital and cases in terms of resource use, length of stay or amount of treated cases (Busse et al., 2013). Beside the classification of provided services, sickness funds use DRGs as a tool for price setting and reimbursement (Scheller-Kreinsen et al., 2009). Besides, increasing transparency, quality and efficiency, the DRG system was expected to reduce the average length of stay (ALOS) by setting incentives for early discharge and avoiding unnecessary services as well as shifting services if possible to primary care providers. The latter was particularly emphasised in Austria, where a promotion and expansion of ambulatory care was describable. Moreover, a reduction of ALOS and the promotion of primary care should ultimately result in a reduction of beds and hospitals. (HOPE European Hospital and Healthcare Federation, 2009)

Although the reduction of ALOS was one of the intended consequences, the introduction of the DRG system is associated as well with a number of negative effects. Clinicians might be incentivised to too early discharge, which is likely to result in bad outcomes, readmissions and a loss of quality. Furthermore, hospitals are stimulated for wrong coding behaviours, over treatment or selection of the most profitable patients to increase their revenues. (Busse, Reinhard, Geissler, Quentin, & Wiley, 2011). Another consequence resulting from the pressure to achieve efficiency is specialisation. Hospitals specialised on a certain range of services, have generally less complications rates, which reduce the ALOS, and thus the

overall costs (Lindlbauer & Schreyögg, 2014). Since specialised hospitals are expected to provide higher quality in their services, patients actively choose clinics rated best in the service they seek. The described benchmarking behaviour is especially increased due to the simplified process of obtaining information about quality and performance of hospitals and doctors (Klauber, Geraedts, Friedrich, Wasem, & Augurzky, 2017).

This is particularly pressuring small and medium sized hospitals, which cannot offer a sufficient specialisation in all medical specialities and cannot perform highly complex treatments on a regular basis (PWC, 2017). As a consequence, hospital specialisation, closing and concentration is observable in urban areas where the demand for services is higher. Although, this development is oriented to ensure the existence of hospitals, it is at the same time creating the risk of medical undersupply (Bormann et al., 2013). Particularly in rural areas, where general hospitals are responsible for ensuring regional service provision, this development has serious consequences (Hanneken et al., 2010). A reduction in the service catalogue or closing would result in gaps in the supply structure and patients would need to travel longer distances for adequate treatment. While this is acceptable in the case of elective services, it is not ethical in emergency cases (Beivers & Dodt, 2014).

Within Europe, this trend is especially noticeable in Germany and Austria. Both countries have the highest share of hospital beds per 100 000 inhabitants which can partly be attributed to the large amount of small hospitals. In both countries more than half of the hospitals have fewer than 200 beds (BMASGK, 2017; Statistisches Bundesamt, 2017). Moreover, the oversupply of hospitals is reflected in the extremely high amounts of consumed medical services in both countries. Compared to other European countries or regions in which the oversupply is less present, it becomes clear that the amount of hospitals correlates with the amount of services provided (Habimana et al., 2015). This is not only affecting state budgets but as well the individual hospitals which are increasingly facing survival problems. Therefore, the need for hospitals to develop successful business strategies and for policies facilitating a restructuring of the healthcare sector is evident.

In both countries, the introduction of the DRG payment scheme was another attempt to contain costs and to create a more efficient system. Even though, it has led to a more transparent system in which the allocation of resources is more efficient, the problem was not solved. In fact, it facilitates benchmarking, fosters competition and increases the difficulties to survive in the market. Combined with current demographic and technological trends, as well as patient expectations and demand for high quality services, hospitals are increasingly facing

problems of cost containment, financial losses and in the long run, the difficulty of surviving (European Hospital and Healthcare Federation, 2017). Although, these developments are relatively new in the healthcare sector, they are well-known pressuring factors in other industries. Considering developments in other markets, economies of scale, product differentiation and mergers and acquisitions (M&As) are strategies to improve the market power, contain costs and ensure survival (Peng, 2009). In recent years, these strategic developments have become as well observable in the hospital market. Another lesson that can be learned from other industries is that small firms are generally facing more problems to contain costs and secure their market share, due to limited economies of scale and resources, and are thus more likely to go bankrupt (Unger et al., 2016) This is especially a problem in Germany and Austria where the concentration of hospitals and beds within a region is remarkably higher due to the prevalence of many small hospitals (< 200 beds) and the application of strategies such as specialisation is as controversial as closure. With respect to their public health obligation, both closing and extreme specialisation of services can result in inequalities in regional service provision and access to care. Furthermore, they serve the function of supporting the national or regional economy by providing jobs, and bankruptcy would consequently increase unemployment (Mckee & Healy, 2002).

Whilst the health care supply structure, geographical distribution and resulting inequalities have been of interest for researchers and policy makers for some time in the US, the issue is of growing concern in the European countries only since the early 2000s (Nolting et al., 2012). Research interest has grown, and emphasis has been played on either supply structures or cost containment measures and productivity raising measures in hospitals. However, studies bringing together both aspects and considering the particular consequences for small hospitals are lacking.

The objective of this thesis is to investigate the effect of macroeconomic trends in Germany and Austria on small hospitals as well as the resulting implications on their management, market position and the health care system in general. With regard to hospital financing mechanisms, both countries are organised in a similar way. Hospital services are structured according to shared responsibility planning of the federal and state governments and reimbursed with the DRG system. Furthermore, both countries are dealing with the issue of over- and undersupply of medical services. Historically, the hospital density is too high and the introduction of benchmarking and competition in the hospital sector resulted in economic difficulties and consequential closing or the need for specialisation. With respect to the

characteristics and size measures of the countries, it needs to be considered that Austria is smaller when compared to Germany. The former has 8.77 million inhabitants (Statistik Austria, 2017a) and 273 hospitals (Bundesministerium für Gesundheit, 2015), whereas the latter has 82,7 million inhabitants (Statistisches Bundesamt, 2018) and 1,951 hospitals (Statistisches Bundesamt, 2018). Further, it is important to consider that the population density in Austria is lower than in the Germany, but the hospital density is higher (Statistisches Bundesamt, 2018 and Statistik Austria, 2017). Both countries face comparable trends in their market developments. The increased share of elderly and disease complexity is expected to amplify the demand for in- and outpatient care and new care models and health expenditures are growing (HOPE European Hospital and Healthcare Federation, 2009). Furthermore, consumerism behavior is gaining importance due to more transparency and easier access to information, and results in an increased demand for elective treatments (Schoenstein & Kumar, 2013). Another observable trend is the (stipulated) development towards consolidations and cooperation, both between hospitals and hospitals and outpatient service providers (Nolte et al., 2014).

The thesis aims to answer the following questions:

- How are small hospitals in Germany and Austria affected by macroeconomic trends, health system planning and financing decisions?
 - To what extend are small hospitals capable of securing their market position?
 - What measures are necessary to maintain the functioning of healthcare system?

The first section of the thesis will introduce the theoretical framework called PESTLE, used to structure and analyse the macroeconomic factors affecting small hospitals and the functioning of a health system. After a description of the applied methods, the results are presented in chapter four and clustered according to the six dimensions of the framework. Subsequently, the results will be summarized and discussed in light of the research questions in chapter five.

2 Theoretical Framework – PESTLE Analysis

Comparably to other industries, competition on customer and market share as well as cost containment measures, are increasingly emphasised in the hospital sector. Thus, the development of a successful business strategy has gained importance in the management of hospitals, which is highly dependent on macroeconomic trends and developments. With the

help of a PESTLE analysis it is possible to assess these external factors and to draw conclusions needed for a successful market oriented strategy (Theobald, 2016) . The PESTLE Framework is composed of six dimensions of the microenvironment (1) political (2) economic (3) social (4) technological (5) legal aspects (6) environmental which are displayed in Figure 1. The framework is often referred as extended and more comprehensive SWOT analysis and is used strategic management and marketing. Different versions exist depending on the depth, the analyst aims to achieve. For the purpose of this analysis the classic PESTLE framework is chosen (Jurevicius, 2013). The framework can be applied to a wide range of business fields, since it can be easily adapted to individual needs. Applications range from an analysis of the Real-World Data Landscape in European healthcare system (Miani et al., 2014) to an analysis of Starbucks (Morais et al., 2014).

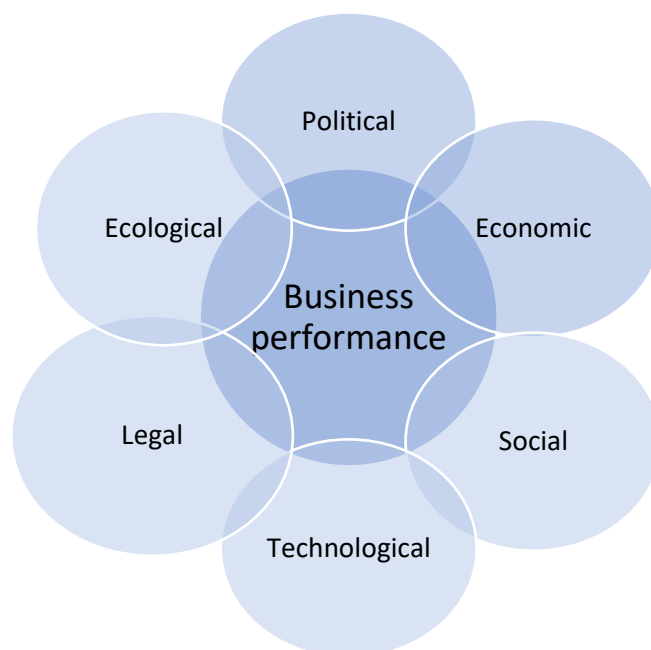


Figure 1 - Pestle Framework (Theobald, 2016)

Figure 1 - Pestle Framework (Theobald, 2016)

One question which can arise when applying a classic business framework on hospitals, is the discussion whether the healthcare sector can be classified as a regular market. According to the definition of a market, the features of information symmetry, homogenous products, many sellers and buyers and entry restrictions are perquisites for a market to be efficient. However, some of these are argued not to apply to the health care market. The problem described is that professionals have more knowledge than their patients and therefore the customer is not able to engage in rational decision making, products and services are not homogenous but heterogenous at an individual level and government regulation is needed due to much

uncertainty on the demand and supply side. However, opponents of this argumentation state that rational decision-making is in fact applicable since most of the treatments are today elective. Furthermore, it is argued that although patient individual characteristics might differ, the general kind of service and its procedure (hip replacement, appendectomy) is the same for everyone (Folland, Goodman, & Stano, 2004). This view is further supported by the classification into reimbursement categories. Moreover, considering the purpose of this analysis, it is obvious that competition and cost containment is as present as in any other industry. In the past, hospitals were often not considered as business, which might be one of the reasons why strategies have failed, and bankruptcy was the consequence (Mckee & Healy, 2002). Therefore, it is argued that the PESTLE analysis can be applied to a hospital setting.

2.1 Political factors

Political factors and the degree to which government behaviour and regulation intervene with the business of interest is captured in the first dimension. Of interest are factors such as government stability, corruption level of a country, regulations affecting the market of interest and the degree to which a government is involved in a certain marketplace (Theobald, 2016).

With respect to the research questions, this dimension will handle aspects such as the financing mechanism, federal state planning of hospitals in Niedersachsen and Austria, as well as the recent health reform aimed at restructuring the hospital sector, supporting primary health care and establishing ambulatory medical centres. Further drivers such as the role of town councils and mayors are considered in the analysis.

2.2 Economic Dimension

The economic dimension is deals with factors affecting a company's performance and profitability. It captures influences such as inflation and growth rates, labour costs, taxation or price fluctuations (Theobald, 2016).

When applied to the hospital industry, economic growth, financing and reimbursement schemes, average income as well as price elasticity will be discussed. With regard to financing mechanisms it is further crucial to consider the role of state investments and to distinguish between non-for profit and for-profit hospitals.

2.3 Social Dimension

The social dimension captures population growth rates and population densities, age profiles, trends in population health, education and mobility. Moreover, lifestyle choices, public

perceptions towards waiting times, willingness to travel to hospitals and to pay for services as well as the demanded quality of services are important influences. Another aspect to consider is the growing issue of lacking health care professionals (Theobald, 2016).

2.4 Technological Dimension

Commonly the technological dimension analyses developments and emerges of new and existing technologies and their consequences. For the purpose of this analysis scientific innovation will be considered besides technological advancements. With the development and advances of internet and ICT new treatment and service opportunities evolve. Long-distance and ambulatory health services are facilitated through the development of telemedicine and the use of electronic health care records. Further, the shift towards personalised medicine is emphasising patient empowerment and health literacy which is expected to increase the demand for high quality services and transparency. Moreover, hospitals will come under pressure to offer more preventive care and to make use of highly technological innovations such as robots (Theobald, 2016).

2.5 Legal Dimension

The legal dimension is often divided into the internal and external situation. It covers for example consumer and safety law or privacy and competition laws.

With respect to this analysis, this dimension is in many aspects overlapping with the political dimension. Therefore, this dimension will only shortly discuss the situation of mergers and acquisitions (Theobald, 2016).

2.6 Environmental Dimension

The environmental dimension describes the condition and infrastructure of a company. Depending on the kind of industry, this dimension describes factors such as the availability of raw materials, pollution targets, weather or geographical location.

With respect to an analysis of hospitals, this dimension will capture geographical aspects related to access, population density, size of target population, bed occupancy rates and hospital concentration. In this regard, a geoinformation system for regional planning and the need for a care provision monitor is of particular interest to ensure an exhaustive medical service provision. Determining aspects are the distribution of medical departments and their care facilities such as stroke units, PCI labs and emergency care units. Furthermore, the

presence of medical care centres, cross-sectoral cooperation and the use of telemedicine is affecting the optimal geographic distribution of hospitals (Theobald, 2016).

3 Methods

Aimed at developing an understanding of how small hospitals are affected by macroeconomic trends, health system planning and financing decisions in Germany and Austria and make prediction of how the healthcare sector will develop in response, a configurative mix-method literature review will be performed. In both countries hospitals operate under the national and federal state planning and services are reimbursed based on DRGs and negotiation with statutory sickness funds. With respect to the theoretical framework, data is collected in a twofold approach.

3.1 Data collection

First, quantitative data in the economic, social and ecological dimension, such as economic growth, population demographics and market characteristics are collected from publicly accessible databases and data collections from national institutes or non-profit federations such as the European hospital and healthcare federation. Hospital data is gathered for all public and private (for- and non-profit) hospitals in Germany and Austria, except for military hospitals and sanatoria. Furthermore, specific emphasis is put on the role of small hospitals with less than 200 beds. The relevant study period is defined from 2003 until 2017, since a DRG system as payment mechanism was then introduced in both countries. With respect to the political and legal dimension of the framework, data on policies, health reforms and laws are retrieved from publications by the national and federal state, as well as publications from institutes by order of the states.

Second, an output-oriented literature search is conducted to support and complement the retrieved data, as well as to gather further data. It was decided to use “Google scholar” for the literature search, since other databases and searching tools such as “EBSCO host” or “medline” did not provide a sufficient amount of literature responding to the research question. Due to the fact that, the respective official language in both countries is German, the search is conducted with search terms in English and German. A list of the used search terms is displayed in Table 1.

<i>Term category</i>	<i>German</i>	<i>English</i>
<i>strategic</i>	Krankenhaus	Hospital
	Stationär	Inpatient
	Kleinstkrankenhaus	small hospital
	Versorgungszentrum	Medical centres
	Spezialisierung	Specialisation
	Bedarfsorientiert	Demand-driven
	Mergers & Acquisition	Mergers & Acquisition
	Schließung	Closure
	Economies of scale	Economies of scale
	Economies of scope	Economies of scope
<i>Geographical</i>	Krankenhausplanung	Hospital planning
	Effektiv	Effective
	Effizienz	Efficient
<i>Organisational/political</i>	Regional	Regional
	Ländlich	Rural
	Kommunal	Community
<i>Outcome</i>	DRG	DRG
	Ökonomie	Economic
	Grundversorgung	Primary/basic healthcare
	Finanzierung	Financing
	Strukturwandel	Structural change/restructuring
<i>Technological</i>	Über/Unterversorgung	Over/undersupply
	Wettbewerb	Competition
	Qualität	Quality
	Telemedizin	Telemedicine
	Ferndiagnose	Long-distance
	Patientenorientiert	Patient empowerment/centeredness
	Personalisierte Medizin	Personalised medicine

Table 1 - Search Terms

Articles are selected based on eligibility and exclusion criteria. Studies are considered as beneficial for the thesis, when they:

- are relevant to the research questions
- are published in German or English in the time frame from 2003 – 2017
- are empirical studies, literature reviews or working papers
- are referring to the German or Austrian hospital/healthcare sector
- are data from other countries can be applied to it, meaning that they deal with factors such as technological advancements, socio-demographical factors or macro-economic trends likely to affect the functioning or structure of health facilities, services and the system as a whole

Articles are excluded when they are not referring to the research question, are published in another language than German or English, and were published before 2003. Furthermore, studies and working papers published by interest organisations/groups or ordered by them, need to be handled with caution, since their viewpoint might be biased. In order to decide on which data is included, the title and abstract are scanned. If the paper is still eligible, the full text will be critically assessed. In total 33 studies and reports are included in this analysis. The

various reports account for most of the included literature and were identified based on screening publications of the publishers.

3.2 *Data analysis*

The data analysis is founded on statistical data, political documents and previously published studies gathered or published by the previous mentioned institutes. The findings are firstly mapped in light of the theoretical framework – PESTEL, and then interpreted with respect to the research questions.

Quantitative data will be directly assigned to the belonging category, as outlined by the framework, whereas qualitative data will be analysed utilizing methods stemming from classical quantitative research. Literature will be analysed with a within and between study analysis approach. For the within literature analysis, content of political, legal and research papers will be reviewed, and concepts and key messages clustered. Subsequently, the extracted results will be contextualised in a between study analysis and findings will be presented in the respective dimension of the framework.

To be able to draw conclusions, data will be handled through the lenses of the theoretical framework. As the PESTLE analysis facilitates the identification of opportunities and threats, important factors and changes that can affect small hospitals can be outlined more easily. Once the PESTEL analysis is performed, resulting strategic options will be developed and the impact on the functioning of health system will be assessed.

3.3 *Ensuring reliability and validity*

To ensure reliability and validity of the study findings, data is critically examined according to prior determined criteria. With respect to the quantitative findings, data needs to be obtained from official organisations, such as the *Statistics Bundesamt*, the European Hospital and Healthcare Federation or Statistic Austria. Furthermore, emphasis is put on how the data was assessed, how categories were defined and the unit of measurement to ensure comparability. Similarly, findings collected from the literature are regarded as more reliable when stemming from educational, political and national authorities. Findings of research papers are checked on consistency and relevance to the country situation. In addition, all findings are tested on currency, to ensure the use of recent data. To reduce the risk of bias, data originating from private foundations or interest groups, or data assessed on behalf of them, is handled with caution until consistency could be proven.

4 PESTLE-Analysis

The results section is structured according to the previously described PESTLE-framework. With the exception of the legal indicator, each determinant is discussed for both countries separately.

4.1 *The Political Dimension*

The political dimension can be regarded as the most important indicator in this analysis since the healthcare sector in both countries is highly regulated. Therefore, the scope of action for hospitals is often predetermined by politics (Jeurissen, Duran, & Saltman, 2016).

4.1.1 Germany

Hospital care in Germany is a highly regulated environment. The magnitude of the influence of politicians and the state however differs according to the hospital ownership. Just as in every publicly owned facility, publicly owned hospitals are to a greater extent influenced by (local) politicians. With hospitals being a major employer and economic driver in local communities, politicians are interfering with hospitals politics. In privately owned hospitals, achieving profitability is the most important aim, and thus drives the management decisions of hospitals (Jeurissen et al., 2016).

4.1.1.1 *Hospital Financing*

In Germany the DRG system was implemented in 2002, in line with the Statutory Health Insurance Reform Act of 2000, and is based on self-regulation and decentralization. Hospitals are financed according to the ‘duality principle’ as outlined in the Hospital Financing Act from 1972. The individual budget of the 16 states (*Bundesländer*) covers infrastructural investments which are determined in hospital requirement plans defining hospital capacities and range of services. Sickness funds of the mandatory Social Health Insurances and Private Health insurances are providing the financial means for operating costs of a hospitals. These costs are captured in the DRGs. In contrast to other countries, such as the Netherlands, in- and outpatient care is still strictly separated within Germany. Therefore, the DRG system is only applicable to hospital care. With the exception of psychiatric care, psychosomatic medicine and psychotherapy, all inpatient care is reimbursed according to DRGs. The amount of reimbursement is negotiated retrospectively and on a yearly basis between hospitals and the sickness funds.

The classification of cases into the 1,292 DRGs, is done by a software called grouper. Cases are classified retrospectively after discharge based on major and secondary diagnosis, medical procedures, patient characteristics, length of stay, duration of ventilation, reason for hospital discharge and type of admission. The allocated DRG is then assigned to one of the 25 major diagnostic categories. Based on data of sample hospitals, a fixed cost weight is existent for each of these categories. The cost weight is determining the amount of reimbursement by interrelating the effort used to provide the service, whereas the case mix is representing the sum of all cost weights of all DRG present in one hospital. Thus, it is indicating the total amount of resources spend by a hospital on patients. The average case mix is equal to 1, therefore a hospital with a case mix below 1 has less resource waste than the average and is therefore able to produce benefits. The hospital-specific base rate indicates the calculated budget a hospital needs to perform their activities and is based on the case-mix of a hospital. During the implementation phase of the DRG system, hospitals received their budgets based on their individual base rate, however since 2009 state-wide base rates apply. As organizational differences are not considered in the state-base rates, hospitals with too high costs are pressured to lower their costs in order to prevent financial losses. Although, the implementation of the DRG system was aimed at improving quality through better transparency and efficiency, outcome quality is not adjusted within the DRG. In contrast, the pressure to contain costs sets incentives for early discharge and less services, which can negatively affect the outcome. To account for this, hospitals are obliged to provide quality reports about their cases for national comparisons. Furthermore, a minimum volume threshold for specific elective treatments is defined (Busse et al., 2011). Several studies have shown that the outcome of certain services is related to the amount of services delivered by the physician or hospital. If the minimum volume threshold is not reached, the service should not be delivered (Bundesministeriums der Justiz und für Verbraucherschutz, 1972).

The second component of the hospital financing in Germany is clustered around investment costs which are subsidised by the states. Here it is differentiated between individual grants and lump-sum grants. The former needs to be approved individually and refers to investments for the building of hospitals, the initial equipping and launching costs for huge changes. The latter is intended for replacements and small construction measures (Bundesministeriums der Justiz und für Verbraucherschutz, 1972).

4.1.1.2 Hospital Planning

Based on the Hospital Financing Act, the sixteen German states are obliged to formulate Hospital planning agreements (*Krankenhausplan*) on a regular basis. The time intervals are however not defined and differ between the states. The planning agreements are aimed to ensure the economic maintenance while providing high quality and need-based care (Bundesministerium, 1972).

Together with hospital society and the insurances, the states define which hospitals are needed to ensure a regional care provision. In addition, the agreements define which medical specialty is needed in a certain location and how many beds will be in the speciality and location are required. Registered hospitals are entering into reimbursement agreements with the insurances. However, hospitals are only reimbursed for the supply mandate stated in the *Krankenhausplan*. Hospitals which are considered as essential are recorded in the plans and receive subsidies from the states (Bundesministeriums der Justiz und für Verbraucherschutz, 1972).

An important indicator for the planning is the bed occupancy rate per medical speciality. The indicator describes how many beds are used on average. It is calculated by dividing the number of occupied beds by the number of total beds. If the rate of a hospital is below reference value in a certain speciality, it means that the demand is too low, and the hospital is not operating at its optimal capacity. Consequently, in the updated version of the *Krankenhausplan* the state will assign the hospital either less beds in that speciality or the speciality will be dropped in that location. Especially, the latter is undesired by politicians. The defined reference values for a speciality differ between the states. However, for most specialities the reference value ranges between 80% and 90%. Exceptions are the psychology specialities where the bed occupancy rate should be between 90% and 95% and paediatrics with a rate between 75% and 80%. Defining the appropriate reference value is crucial to public health because it impacts over long term the capacity to respond to health crisis. In a scenario where the reference value is set too high the hospitals would have either from beginning onwards or after adjustments fewer beds to ensure an almost 100% occupation of the beds. Although, this is profitable for the hospital, it reduces the ability to respond the epidemics because all beds are already occupied. However, in a scenario where the reference value is too low, hospitals waste their capacities and are consequently less profitable (Aktiva, 2017).

4.1.1.3 Hospital structure reform

In respond to the demographic trends and the current challenges in the German hospital sector, the German government launched in 2016 a new hospital reform aimed at supporting structural changes (*Krankenhausstrukturgesetz KHSG*)(Bundestag, 2015).

The reform is adjusting the corridor of the state-wide base rates. In the past, the base rate was in most of the states at the lower level, meaning that procedures were reimbursed with less money than in other states. To account for these differences, the corridor is narrowed.

Furthermore, nursing care is supported with subsidies in order to set incentives for hospitals to improve their nursing care. Moreover, the reform aims to reduce the incentives to deliver unnecessary care with introducing the fix-costs-degression-discount. Since 2017, the cost weight for services for which in the past increasing cases due to economic reasons were visible is reduced. Moreover, a committee was founded to develop a reimbursement system in which quality is incorporated. Additionally, the minimum service threshold for certain services was introduced to ensure the doctor is experienced enough to deliver highly specialised services. However, this threshold and the fact that some hospitals are from an economic point of view to not able to perform some services, developed the risk for under provision of services in some regions. To account for this and to ensure need-based care provision, the reform introduced a safety measure. Hospitals which are essential for the care provision but are due to low bed occupancy rate in a speciality too able to operate some treatments receive extra funds (Bundestag, 2015).

4.1.1.4 The impact of the structural reform on small hospitals

With respect to the purpose of this thesis and the focus on small hospital, the political situation in Germany has majorly contributed to cleavage between specialisation and regional service provision. Firstly, the DRG system has introduced the strive for shorter ALOS, adherence to cost-reduction measure, while at the same time achieving high health outcomes. Therefore, the importance of high bed occupancy rates to generate more profits has increased. However, small (rural) hospitals, which are mostly providing general care, have difficulties to achieve high bed occupancy rates, since their catchment area is smaller than for hospitals providing specialised care. Moreover, care givers are not experienced in providing a wide range of services, since complex cases are less prevalent compared to large hospitals in agglomeration areas.

With the introduction of minimum volumes for specialised treatments, small hospitals are have become under even greater pressure. According to this, hospitals and doctors are required to perform the specific service on a regular level in order to receive reimbursement. Primarily this was aimed at increasing the quality of services by ensuring patients receive care from experienced doctors. However, at the same time, it has further increased the pressure on small hospitals. Specifically, small general hospitals in rural areas have difficulties achieving the required minimum services. While in other industries, companies are able to develop strategies to comply to quality standards and to preserve their market position, hospitals lack the freedom to do so. Their offered scope of services is predetermined by the supply mandate indicated in the hospital plans. By restricting certain medical performances, hospitals are not able to offer patients the full range of care within the medical department. Is a patient for example admitted to the vascular surgery of a hospital, it might happen that he or she needs to be transferred to another hospital in order to receive the needed care. The transfer is not only a risky undertaking with respect to the patients' health, but as well administratively complex. Not reaching the minimum threshold is rooted in a too low demand. Either the epidemiology in this region is not matching the offered services or too many competitors are on the market. Both cases are a sign for lacking specialisation.

4.1.2 Austria

The democratic country Austria is comparably structured as Germany. The national state is composed of nine states (*Länder*), which are broken down into political subdivisions. The Austrian healthcare system is similarly to the German system based on a compulsory statutory health insurance system (Hofmarcher-Holzhacker, 2013).

4.1.2.1 Hospital financing

The financing and planning of the system is the shared responsibility of the federal government and the nine states. On the federal level, the health ministry decides on nationwide planning and adopts legislations. The states are obliged to implement those and to ensure that the standards are met by translating them into regional plans. Hospitals are mainly of public or non-profit nature and financed by the states. In 1997, Austria introduced a performance-oriented hospital financing framework (LKF), as means to allocate resources. Within the LKF framework it is distinguished between the general LKF and the patient classification system (PCS). Whereas the LKF is applicable to all inpatient care, the PCS is only referring to acute inpatient care and does not determine the reimbursement for special

care such as psychotherapy. Patients are classified according to the procedure, main diagnosis, age class, secondary diagnosis and treatment at specialist departments into one performance-oriented diagnosis groups (LDF). In contrast to Germany, the Austrian catalogue contains only 3,967 LDFs. To account for cost variations, in case the patient was treated in specialised departments or received one or more extremely expensive services, add-on scores can be added, and the patient is classified into the higher LDF groups. Furthermore, it is distinguished between main diagnosis groups (HDG) and medical single diagnosis (MEL) groups. Cases are classified as MEL, if certain, expensive medical services were performed. If this not the case, the patient is covered under the HDG group. Irrelevant of the group, LDFs are weighted according to their severity. This allocation is based on age, principal diagnosis or secondary diagnosis. The final score of the LDF is determined based on a performance and day component. The performance component comprises all the resources used to provide the service such as personnel costs, costs of expensive services, equipment costs and fixed procedure related costs. The day component captures all the remaining costs of a hospital stay, for which so far is not accounted.

Hospital budgets are allocated based on the LDF scores by the state health fund. To account for regional and state level differences, it is differentiated between the LFK core area covering the nationwide uniform LDF score classification and the LKF steering area. The amount of reimbursement based on the core area is determined by the total sum of all LDF scores within a state and the hospital specific sum of all LDF scores. The steering area acts as control range which is differently enforced by the states. It offers the possibility to account for structural characteristics of hospitals and regional differences (Busse et al., 2011).

4.1.2.2 Hospital planning

In Austria hospital planning is based on the national structural plan (ÖSG) the responsibility of the states. The state planning determines the supply mandate of each hospital as expressed in number of beds per medical specialty per hospital. While the minimum volumes were introduced in Germany in line with the structural reform, Austria developed this tool earlier as mean to promote specialisation. Over long-term the minimum volume was expected to create centres of excellence, which provide specialized care, whereas basic care is provided by hospitals not reaching the required amount of cases. The ÖSG was firstly formulated in 2006, by the national state, the regional states and the statutory insurances. In 2017, the plan was fully reformulated, accounting for the overprovision of inpatient services and an insufficient primary health care. The ÖSG is laying down the planning principles and goals, which each

state has to implement in their planning's. Besides, the planning of the inpatient sector, the ÖSG determines the planning of primary health care and the distribution and prevalence of specialised medical equipment. The reformulated ÖSG is aimed at strengthening the primary health care and decreasing hospital frequency and beds. The underlying principle for the new ÖSG, is the idea of integrative regional care provision, which takes into account all players in the healthcare system and analyses their relationship to each other. According to this principle care, should be easily accessible, medically and economically reasonable, coordinated at a regional and supra-regional level and utilize modern information and communication technology (GÖG, 2017).

With respect the primary care, care units should be increased to a total number of 75 by 2020. The care units respond to the medical speciality of general practitioners. The care units need to be reachable with public transport and their location has to respond to the geographic distribution of the population, the age distributions, prior utilization levels as well as the amount of cases in emergency rooms. The same principles apply for the location planning of specialised ambulatory care. Moreover, the ÖSG defined guiding values for the density of care units and travel times. Furthermore, quality is used as an planning instrument to identify the 'best point of service' for patients (Zielsteuerungskommission, 2017).

With regard to in-patient care, the ÖSG aims to reduce the frequency of hospitals and the bed occupancy rate by 2% per year until 2020. The overall goal is to shift care from inpatient care towards primary and ambulatory care units. The supply mandates of hospitals should be based on the same criteria as for primary care (Zielsteuerungskommission, 2017).

4.1.3 Hospital planning in Germany and Austria: A comparison

In contrast to Austria, decision makers in Germany are reluctant to structural reforms. They fear the risk of an under-provision of care. Currently, almost all hospitals in all states are underrunning the reference values as indicated by the hospitals plans. Furthermore, the geographic distribution in many regions is not efficient. Currently, the hospital density on a regional level is so high, that 99,6% of the population is able to reach the next hospital within 30 minutes (Augurzky et al., 2014).

Investigating the hospital planning in Austria indicates, that the need for a reachability-oriented hospital planning instead of a location-oriented hospital planning was already recognized. In contrast to Germany, the criteria upon which hospital planning is done, are determined in the federal hospital plan and need to be adopted by the states. The plan

specifies, the reachability in car driving minutes and a reference value for the needed amount of beds per 1000 inhabitants per medical speciality. With respect to the car driving minutes it need to be ensured, that 90% of the population is able to meet these reference value (GÖG, 2017). In Austria, the new planning is leading to a reduction of hospital beds and closing of a few hospital locations. However, due to the fact hospital closing is strictly controlled by hospital planning contracts, it is not expected to cause regional under-provisions. Furthermore, the gradually reduction of hospitals, is accompanied by measures aimed at strengthening primary health care. Considering the extremely high hospital density in Germany, a comparably planning system would help to shift hospital planning towards reachability criteria. Instead of simply prolonging hospital plans, a need- and accessibility analysis should be performed in tighter and country wide standardized intervals. Although, the basic structure of hospital planning and financing in Germany is resembling the one in Austria, the recent reform of the Austrian system seems to have shifted hospital planning towards a more adequate method to ensure an efficient and sustainable healthcare and hospital sector. The main difference is the on a national level standardized planning method, which need to be adopted by the states. By this, a homogenous hospital landscape is produced, and substantial regional differences are eliminated. The planning method is not only instrumenting demographics to determine the demand but as well traffic and infrastructure. With respect to demographics, the population density of a care region, the epidemiology and the amount of foreign patients is considered (Zielsteuerungskommission, 2017). In the past years, several voices have raised the need for such a planning in Germany (Beivers & Dodt, 2014).

4.2 *Economic Dimension*

The economic situation of a country, the healthcare system and hospitals are important factors in the hospital planning and in the maintenance of a functioning and effective healthcare system. The overall challenge which can be observed in Germany and Austria is the increasing strive for profitability and efficient processes within hospitals which was introduced by the DRG-system, and the resulting increasing competition between care providers. These changes have caused politicians and business managers to overthink business management strategies. Cost-containment and strategic decisions to secure market positions are no longer reserved to businesses outside the public sector (Aktiva, 2017). Although, there is a common understanding that new approaches are needed in order to secure the survival of hospitals, there are no best practice solutions so far. In order to identify possible solutions for hospitals and the healthcare system, the underlying situation needs to be analysed. **Error! Reference source not found.** summarizes the economic situation of Germany and Austria.

4.2.1 Germany

The GDP is a measure used by politicians to demonstrate the economic performance of a country. In Germany the GDP was in 2017 3,263 billion € with an annual growth rate of 1,9%. The GDP per capita ranged in 2017 at 36 €, which is clearly above the European average. This is also reflected in the average income. A German citizen earns on average 3.380€ a month (Statista, 2015). Consequently, the purchasing power in Germany is higher compared to other countries. A well-functioning economy and high incomes are impacting the price elasticity of services and thus as well of healthcare services. A service is price elastic when a higher income results in an increased use of a service. Although, in the past it was argued that healthcare services are inelastic, this view has changed with the increased amount of elective care. Researchers such as Duarte (2012) have proven that a higher welfare is positively correlated with elective care. Consequently, it can be concluded that Germanys welfare is one explanatory factor for the high use of services.

With respect to the healthcare system, the state's expenditures reflect the well-being of the economy. With a yearly spending of 338.207 million € for the healthcare system and 98,777 million € for hospitals in 2015, Germany ranges at the top within Europe and world-wide (Eurostat, 2018). Despite the high healthcare expenditures, hospitals face tremendous difficulties to maintain their costs in order to be able to provide services. According to a

Roland Berger study, 36% of all hospitals in Germany perceive their cash position as at risk (Roland Berger, 2015). Driving factors are the pressure to operate in a way that patients receive the care they need, while at the same time sticking to the DRG-system to get fully reimbursed for the delivered care. Moreover, the subsidies for single investments have decreased in the past years due to the financial crisis. Especially with respect to the increasing demand of patients and the demographic changes which will be elaborated in more detail in the societal dimension, the decreasing subsidies further burden the hospitals.

In the German healthcare system, hospital ownership is a strong determining factor when analysing profitability. Hospitals in Germany can be either in public, private for profit, private not for profit or charity-based ownership. While in the past public and charity-based hospitals were dominating the market, the situation started to change with the introduction of competition. Today, the market share for public and charity-based hospitals is shrinking. Bad performances have resulted in insolvencies and affected hospitals were more and more brought by private companies such as Helios and Sana (Augurzky & Schmitz, 2010). To compare the profitability of hospitals, the EBITDA and EBITDA margin are commonly used by economist and business managers. EBITDA indicates the earnings before interest, taxes, depreciation and amortization and the EBITDA margin demonstrates the operating profitability as a percentage of a business's revenue. What is visible when analysing German hospitals, is that small public hospitals have lower EBITDA margins than medium and large hospitals (Aktiva, 2017). Furthermore, there are differences between the ownerships. These differences stem from the differences in operating strategies and leaderships. Especially, public and charity-based hospitals lack standardisation and automatization processes. To add more value to operating processes businesses need to be able to offer a certain range of services at low costs and high frequency without too many variations. Private hospitals are generally more successful in implementing those strategies. Firstly, this originates from their leadership. The shareholders are commonly highly experienced in business and execute pressure towards the hospitals to adhere to business strategies and to generate profits. In publicly and charity owned hospitals, leadership and business strategies are subject to the interest of politicians. The resulting challenges are besides to adhere to the strict regulations, to identify business strategies which respond to changing demands of the hospital sector and are approved by politicians. Historically, politicians have been reluctant to change, and thus complicate the already challenging task to operate cost-effectively (Jeurissen et al., 2016).

4.2.2 Austria

With a GDP of 369 billion € and a GDP per capita of 37.200 € in 2017, the economic situation of Austria is comparable to Germany better than the European average (Destatis, 2018a). Thus, the above described consequences for the price elasticity can be as well applied in Austria. With respect to the health care expenditures, Austria is spending more than the European average, especially with respect to inpatient care. The annual growth rate of health care expenditures has increased faster than the GDP (Statistik Austria, 2017b). The average income in Austria is with 2.994€ a month lower than in Germany (Statista, 2015). Although, the income is lower compared to Germany, the previously described price elasticity mechanism applies as well to the situation in Austria.

There are two types of hospital ownership – public and private. While the private hospitals can be either for- or non-profit oriented, the public hospitals, which belong to holdings owned by the states have to be non-profit. In addition to the DRG system, public hospitals are financed by federal, regional and local taxes, whereas private hospital investments are bore by the hospital owners (Bundesministerium für Gesundheit und Frauen, 2003).

In contrast to Germany, public hospitals still have the greater market share. They account for 54,2% of the hospitals, whereas private hospital owners have a market share of 45,8%. Whereas in Germany, the average EBITDA margin is with 8,5% indicating that hospitals are able to generate profits, the situation in Austria is tensed. The average EBITDA margin of -4% demonstrates that overall hospitals are operating in the red (Accenture, 2013).



Table 2 Summary economic situation in Germany and Austria

4.2.3 Entrepreneurial scope of action

With respect to the in section 4.1 described regulations and hospital organisation in both countries, it becomes clear that the planning in both countries is currently not compensating the increasing economic pressures on hospitals, but rather increasing. Hence, competition in the healthcare sector is fostered in both countries. Although, competition in the healthcare sector can be observed in several countries, experiences have shown that competition should introduced and controlled by the state such as in the Netherlands to ensure equal access (Varkevisser & Schut, 2018). Consequently, hospitals in Germany and Austria, developed

strategies to contain costs and gain market share in an uncontrolled competition environment. The two main strategies for hospitals to contain costs and improve profitability are specialisation and mergers and acquisitions (M&As) or collaborations. Specialisation assumes that a small range of services, which are frequently produced generate benefits by the making use of economies of scale. Specialisation can either reached by focusing on the product line such as a small set of certain diseases, or by providing highly specialised care which need specialised equipment (Kobel & Theurl, 2013). Applied to small hospitals this means that instead of providing a range of general care, it is most plausible to providing specialised care for a specific disease such as cancer. Patients would benefit from excellence centres where they receive the highest possible care.

With respect to M&As Büchner, Hinz, & Schreyögg (2016) have identified two explanation theories. The transaction cost theory states that hospitals chose for M&As because cooperation or entering a larger network of hospitals can reduce the costs of monitoring, controlling and coordination. The resource dependency theory suggest that hospitals can reduce the dependence on external parties such as suppliers by entering larger networks. The latter is increasing the bargaining power, and thus cost-savings and efficiency can be improved (Postma & Roos, 2016). Since M&As have become more common in the hospital sector, researchers have tried to identify whether there is a real benefit. Pelletier et al. (2016) have investigated this relationship. The problem they faced is that success is more difficult to measure in the healthcare system than in other industries. Profitability as only indicator is not sufficient because adherence to guidelines, innovation and workplace attractiveness are further important indicator and those are hardly measurable. They concluded that especially for public hospitals financial constraints, improving access and quality are the only realistic goals of M&As. However, they found no economic benefits of collaborations.

Both, specialisation and M&As are extensive in their implementation, and thus more difficult for a hospital to achieve. Therefore, the first action point for hospitals is generally to optimize their matters of expenses. Staff costs and material costs are the biggest burden for hospitals and leave the most room for improvement. Thus, a first strategy to contain costs is to analyse and optimize the controlling instruments of a hospital. In practice, this is mostly done in cooperation with a consulting company (Aktiva, 2017).

4.3 Societal Dimension

Hospital planning as well as strategic management of hospitals is nowadays strongly dependent on the societal environment. The offered medical specialities and the amount of beds need to respond to the population needs in the hospital's region (Beivers & Dodt, 2014).

4.3.1 Germany

Germany has 82.5 million inhabitants (Destatis, 2018b) on a total country surface of 357.4km² (Wirtschaftskammer Österreich, 2018). The population density per km² is 232. However, there are high deviations per state and per region. The population density is the highest in the city states and North-Rhine-Westphalia and the lowest in Mecklenburg-Vorpommern. The indicator is essential for hospital planning because it impacts the needed hospital density. Although, hospitals need to respond to the current needs of population, future developments need to be considered in strategic planning to ensure a sustainable and efficient healthcare system. Firstly, life expectancy is increasing in Germany. In 2016, the life expectancy for women was 83.5 years and for men 78.9. The life expectancy in Germany is according to the average life expectancy in Europe (Destatis, 2018b). The demographic change in Germany responds to an ageing population with increasing life expectancy and shrinking birth rates. Both trends are impacting the requirements on hospitals. An increasing life expectancy is associated with multi-morbidities and chronic diseases. As the amount of elderly is increasing, the demand for chronic and complex diseases care is growing. A second trend which can be observed within Germany is the population centralisation. Especially the younger generation prefers living in urban areas close to their job (Beivers & Dodt, 2014).

Furthermore, the demand for care is changing, resulting from technological advancements and a well-functioning economy. With the rise of social media, people are exposed to ostensible perfect lifestyles and beauty ideals. Specifically, in adolescents and young adults, comparisons and resulting dissatisfaction with their body are nowadays more common. In combination with increasing income and welfare, this has resulted in an increase in elective care. However, the hospital report suggest that education serves as protective factor for elective or unnecessary care (Klauber et al., 2017).



Table 3 Key figures of the population in Germany and Austria

4.3.2 Austria

In 2017 Austria had 8.8 million inhabitants (Destatis, 2018b) on a surface of 83.9km². The population density is with 106 inhabitants per square kilometre less than in Germany (Wirtschaftskammer Österreich, 2018). The highest population density can be found in Vienna, whereas in Burgenland it is the lowest (Statista, 2018). Austria is undergoing a similar demographic trend as Germany. The life expectancy is with 84.1 years for women and 79.3 for men slightly higher than in Germany and the European average (Destatis, 2018b).

Furthermore, in both countries the role of good quality services has become a determining factor for which hospital patients choose. Gathering and exchanging information is facilitated by the internet. As a consequence, patients do value hospitals close to their residence as much as they did in the past. Instead they accept longer journeys as long as the quality of care is good (Beivers & Dodt, 2014).

4.3.3 The impact on small hospitals

Especially, for small (rural) hospitals, it is crucial to adapt to the demographic trends. On the one hand the agglomeration trend decreases the demand for care in rural areas, and thus the needed amount of hospitals. On the other hand, a reduction of hospitals would mean that some patients have longer journeys which might result in inequality in access to care. Furthermore, an ageing population results in a changed demand for care since multi-morbidities require a more complex but at the same time specialised care. While in agglomeration areas, this care can be provided in large hospitals, the situation is different in rural areas. The consequences of specialisation of small hospitals is that doctors of several specialisations are no longer operating in one hospitals, and thus patients need to undergo treatments in different hospitals. However, this fragmented care can be partly compensated by a strong integrated and primary care which will be described in chapter 4.9 (Beivers & Dodt, 2014).

4.4 *Technological Dimension*

Multi-morbidities and more complex diseases have altered the demand for technical equipment in hospitals. Furthermore, hospitals need to be able to continuously adjust their equipment to the latest standards and make use of new techniques. Although, specialised equipment is needed in order to deliver high quality care to patients, the presence of it is not a matter of course. Specialised equipment is highly cost-intensive and can often not be afforded by small public hospitals. However, it is important to consider that the distribution of the most

equipment is determined in both countries in combination with the hospital planning. The acquisition of the in the plans assigned equipment for a location is supported by state and the insurances. Nevertheless, equipment such as robotics are not supported in those plans.

Patients however receive the presence of those as quality indicator. Consequently, hospitals are pressured to acquire additional equipment to have strategic advantages in the competition (Aktiva, 2017). Besides the trend towards more advanced and specialised equipment for the inpatient sector, new technologies have been developed as well for the outpatient sector. The two most promising tools for the future are telemedicine and ehealth (European Hospital and Healthcare Federation, 2017).

Telemedicine is a tool which utilization will most likely show benefits in the ambulatory/primary care and for hospital/emergency care in rural areas. Its intention is to facilitate simple medical consultations which do not require medical diagnostics. For example, these could be first consultations to identify if a treatment is needed or the discussion of diagnostic results. Furthermore, in the case of emergency care it can support first-aid providers until medical specialist arrive (European Hospital and Healthcare Federation, 2017).

In the age of digitalisation ehealth is gaining importance. In most health systems, patient records are so far not digitalised, meaning that every doctor and each hospital is storing the information separately. This makes it difficult for doctors to have a complete overview about a patient's medical history and the prescribed medication. However, in light of high quality care this information is essential. To date, care givers often need to rely in the beginning of the treatment on the information given by the patient which creates information asymmetry. Electronic health records can help to overcome this problem, by offering a system which can be accessed by all care givers involved in a patients' treatment. In general, the same information are stored as in the conventional records, but the information are now transparent for all stakeholders involved including the patient (European Hospital and Healthcare Federation, 2017).

4.4.1 Germany

The situation which can be observed in Germany is that many small hospitals are not sufficiently equipped with large technical equipment. The resulting consequence is that small hospitals need to transfer patient to larger hospitals, which is a burden and health risk for the patient and negatively affects the hospital. If hospitals lack diagnostic equipment, they might

as well overlook certain diseases and thus miss the correct diagnosis (Statistisches Bundesamt, 2017).

Furthermore, it is crucial to consider new technologies and trends in hospital planning. Technologies are changing rapidly due to better understanding of molecular pathways and disease mechanisms. To date, the use of robotics, telemedicine and nanotechnology for personalised medicine are seen as promising means to change healthcare (European Hospital and Healthcare Federation, 2017).

4.4.2 Austria

In the past Austrian hospitals were with respect to huge specialised technology better equipped compared to other European countries (Habimana et al., 2015). Comparably to the determination of needed hospital beds per speciality and the reachability, criteria for the distribution of medical equipment is defined on a federal level. The distribution is based on car driving minutes and the amount of inhabitants (GÖG, 2017). In practice, only 55 of the 179 hospitals have one or more specialised technology (BMASGK, 2017).

In 2015 Austria has introduced the use of electronic health records system (ELGA). Patients can create their electronic health record only and provide doctors, hospitals, care facilities and pharmacies involved in their care access. So far information about medication, diagnostic procedures and hospital discharge reports can be stored (Bundesgesetzblatt für die Republik Österreich, 2012). The impact of advanced technology for the healthcare system will be discussed in relation to integrated and primary care in chapter 4.9.

4.5 *Legal Dimension*

The legal dimension is closely linked to the political dimension. For the purpose of this analysis, this section will serve as addition to the political dimension. Especially, with respect to the ongoing privatization trend in Germany, antitrust laws are gaining importance. The intention of competition laws is to prevent certain companies to gain the absolute market share, hence to form a monopoly or oligopoly. While this is a major concern in the regular market, the situation is different for hospitals. In order to apply antitrust laws, a market need to be defined. This is however difficult in the hospital sector. The for mergers control responsible organisation in Germany (BKA) defines a market according to the patient flows in the for the hospital relevant geographic location. In the past, some mergers have been prohibited to prevent a hospital owner from gaining a too high market share and to ensure

competition. However, the BKA is only intervening when the sale value exceeds 500€ million. Furthermore, at least one involved firm has to realise 25€ million in the German market. Hence, only deals involving huge private companies come to the attention of the BKA (Varkevisser & Schut, 2018).

However, in Austria M&As and privatization had hardly occurred. In contrast to Germany, it was not possible to identify prohibited M&As (Papouschek, 2011). Therefore, this factor was considered as not decisive in this analysis.

4.6 Ecological Dimension

The ecological perspective describes the hospital sector in both countries. Furthermore, it considers the primary care sector as well as the model of integrated care.

4.6.1 Germany

In the German hospital setting, 1951 hospitals were operating in 2016. These hospitals account for 498 718 beds. In comparison to other European countries, the amount of hospitals and beds is extremely high. Reason for this are the high amount of small hospitals. With 1097 hospitals, more than half the hospitals in Germany have less than 200 beds (Statistisches Bundesamt, 2017). Thus, the hospital density in Germany is considerably higher than in other countries. Such as in other industries, a high amount of service providers fosters competition. However, with respect to the political and legal background, it is not possible to close the hospitals once they are insolvent. Although, the amount of hospitals and beds has decreased in the past years, the bed occupancy rate indicates that an overprovision is still prevalent. On average the bed occupancy rate is 78,1%, which is clearly below the target value. Although, the number of cases is increasing, fewer beds are needed due to a decrease in ALOS (Statistisches Bundesamt, 2017). This development is rooted in the medical advancements, faster recovery and ambulatory services. Today the ALOS for the most common treatment procedures is 6,8 days (Beivers & Dodt, 2014). As described previously, a reduction of ALOS is leading to a higher available capacity of beds, and thus a higher demand for patients. Therefore, hospital locations and services need to be planned need-based to be able to generate profits. Considering the previously described optimal length of journey, it means that hospitals not meeting the demand, should either transform their range of care provision meeting the demand or closing in regions where an oversupply can be identified. One way to facilitate the identification process of the required amount of hospitals and medical equipment per region as done in Austria is a geoinformation system (Beivers & Dodt, 2014).

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Table 4 - Hospital sector in Germany

4.6.2 Austria

In Austria, 273 hospitals were operating in 2016 which accounted for 64.838 beds. Similarly, to Germany, the amounts of beds per 100.000 inhabitants is much higher than in other European countries. This situation is as well caused by too many small hospitals, leading to a high hospital density. In Austria 94 of the hospitals have fewer than 200 beds. Thus, the situation is less extreme than in Germany. However, as previously described, Austria records higher amounts of hospitals operating in the red. The amount of inpatient cases has increased in the past years. In 2016, 2,87 million cases were counted. At the same time the ALOS decreased to 5.30 days. In 2016, the average bed occupancy rate was 78.27%, which is similar to Germany not fulfilling the target value as outlined in the hospital planning. (BMASGK, 2017). Considering the recent hospital reform, it becomes clear that Austria is following a centralization strategy as solution to the high hospital density. The effectiveness of such a reform is for example proven by Denmark. In 2007, the country launched a centralization reform of health and hospital care. The amount of hospitals was reduced, and specialised care is now only provided in one or two hospitals in a region. Hospitals which had to be closed were in some cases transformed into health care centres. Although, the issue of access to healthcare and more specifically emergency care was raised in the beginning, so far it seems as this issue is handled well. Firstly, emergency helicopters are used to ensure fast access to care in the whole country. Secondly, all emergency care department are linked with a telephone guidance to provide medical help at in an efficient and low costs manner. Ten years after the reform, it is evident that productivity has improved significantly in Danish hospitals, as well as the quality of services (Christiansen & Vrangbæk, 2018).

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Table 5 - Hospital sector in Austria

4.6.3 The role of primary care and cross-sectional collaboration

Although, the primary focus of this thesis is on small hospitals, it is crucial to take into account primary and integrated care, since it is closely linked to the discussed problem. A well developed and functioning primary care sector, is increasingly gaining importance due to shorter ALOS and higher demand for ambulatory care. While the primary care sector in Germany was in the past well developed, it is currently facing a downward trend, mainly caused by a lack of specialists (Bundesärztekammer, 2017). On the contrary, the primary care sector in Austria was underdeveloped in the past and its structure is now promoted.

To optimize care in both countries, improved cross-sectional care is needed. A stronger and more effective collaboration between the in- and outpatient sector is expected to not only improve health outcomes, but as well to improve efficiency and to result in an overall cost reduction. Although, the advantages of cross-sectional collaborations is recognized in both countries (Bundestag, 2015; Zielsteuerungskommission, 2017), both countries are operating below their capacities. With the advancement of technology, hospitals and ambulatory care offices but as well emergency care has opportunities to optimize their services. The use of telemedicine and electronic health records are regarded as the most promising tools (European Hospital and Healthcare Federation, 2017). Especially, the use of telemedicine facilitates the provision of need-based care and is of specific use in rural areas. Although, the above described hospital planning should ensure the easy access to hospital care for everyone, people in some extremely rural areas, might have longer driving ways to seek their care than indicated in the planning. In areas with a specifically low population density, the concentration of hospitals, primary and special care facilities will be considerably lower than in areas with a higher population density. Hence, the determined travelling time of 30 min to general and 60 min to specialised hospitals might be exceeded. Moreover, the closet primary care facility might be further away than in other regions. Telemedicine is tool to facilitate access to care for patients with longer travelling times. Doctors consultations which do not require the presence of the patient can take place by using video conference tools. Although, these conversations could happen as well over the phone, patients prefer to have visual contact with their doctor (Rashid, Patheymüller, & Müller, 2017). In case of emergencies this tool can further support patients and first-aid workers to bridging the time until medical specialists arrive. Electronic health record is the second tool to facilitate an efficient cross-sectoral collaboration. To date, there is no homogenous tool used by all doctors in the in- and outpatient sector to store their patients history or a platform allowing information exchange.

While such a platform seems worrying for data protection activists, it would be of substantial use for patients and doctors. It would allow doctors of different specialities who are treating the same patient to access all relevant medical information. Currently, doctors often rely in the beginning on information communicated by the patient, which introduces the risk of false or inaccurate data. Even though, a doctor can request the health record from another doctor, this process takes more time and is administratively complex. Furthermore, the completeness is not ensured since the patient might see a third doctor and has not communicated this. Electronic health records accompanied by a platform would eliminate these difficulties. Hence, doctors would be able to draw better informed conclusion and treatment quality would improve. In a time where the ALOS is reducing and GPs are often continuing the after care, it is likely that readmission could be reduced by the improved treatment quality (Menachemi & Collum, 2011).

5 Discussion

The thesis was aimed at investigating the consequences of increased cost-containment pressure and increased competition of small hospitals in Germany and Austria. A PESTLE analysis was performed to analyse the market situation in both countries and to determine relevant factors influencing the future development of the hospital market. Data was collected in a result-oriented mixed method approach, using quantitative statistics, political papers and a few studies to complement the data. By means of this analysis, consequences of specialisation in small hospitals for the healthcare sector were outlined.

Both, Germany and Austria are facing similar challenges with respect to their inpatient care provision. The health care sector is characterized by high concentration of small hospitals and utilization of outpatient and primary care below its capacities. With the introduction of the DRG system, hospitals in both countries were set under tremendous pressure to work efficiently and to maintain profitable. The pressure to maintain profitable, as well as the changed demand for high quality services, has introduced competition in the hospital sector. The increased competition as well as the strive for high quality services have raised the demand for more specialisation in the hospital sector. While in other industries, specialisation as a mean for small companies to gain market share, can be implemented comparably easy, state-controlled hospital planning makes this difficult. Small hospitals have in both countries only a limited range of freedom to act. Consequently, it is fundamental for states to recognize the current problematics and future chances, in order to create a well-functioning, effective

and need-based health and hospital sector. Whereas in Germany, privatization as free market tool has become for many public hospitals a mean to survive, the Austrian government launched a centralization strategy. The example of Denmark shows clearly that a demand-oriented centralization strategy is not necessarily negatively impacting access and quality of care. Internationally, patients value high quality care as more important than short journeys to the hospital. Furthermore, the rapidly advancing technologies such as electronic health records and telemedicine provide new opportunities for long-distance, as well as primary and integrated care. As a consequence, to the changed demand, hospital planning's need to be adjusted. In both countries the hospital bed density is certainly exceeding the demands. Especially, in Germany where more than half of the hospitals have less than 200 beds, a transformation of the hospital sector is needed. Small hospitals in regions where an oversupply of general care is visible, could for example be redesigned in care units specialised on a certain disease or treatments. Furthermore, the continuously growing number of ambulatory cases and decreasing ALOS allow to predict an increasing importance of the ambulatory sector. Therefore, small hospitals could as well be transformed in some regions into ambulatory care centres. However, closings of some locations seem to be inevitable. While in Austria, the need to reduce beds and to strengthen primary care has been recognized by policy makers and translated into an adjusted version of the hospital structure plan ("Zielsteuerungsvertrag"), the development in Germany is reluctant. Yet, neither hospital planning nor the structural reform in Germany, is capable of supporting a transformation of the hospital sector. However, it is crucial to develop coherent planning criteria, to ensure equal access to (hospital) care. Currently, serious under provision seems unlikely when considering the high density of care. Nevertheless, closings or defuse specialisation as consequence to the macroeconomic trends might change this in future.

Overall, it can be concluded that the recent introduced demand-oriented hospital planning in Austria is as well a promising tool for the German hospital sector. Overcoming the current planning process would not only lead to a coherent hospital planning in all German states but would as well help to overcome the current overprovision of care in many countries. With a need-based planning procedure, it is unlikely that under-provision of care would occur. Although, the experiences from countries such as Denmark proves its feasibility, it is at the moment not possible to conclude that this tool will prove as effective in Austria. Therefore, future evaluations are necessary. Moreover, it is of fundamental importance to strengthen the

primary care sector in line with such a hospital reform, in order to prevent inequalities in access to care.

With respect to healthcare systems in other countries, both in a European and global context, it is evident that hospitals in many countries face similar economic difficulties and that overall the basic epidemiological trends are present in other countries as well. Therefore, it is possible to make use of other countries experiences in order to improve the hospitals' performance. However, it is crucial to consider that there are huge differences between healthcare systems and the countries initial situation. Nevertheless, hospital centralization and primary care strengthening are likely to happen in most of the countries to different extends. Furthermore, privatization of healthcare is expected to increase globally (KPMG AG, 2017)

The current study results are limited by the fact that only publicly available information was used. Especially with respect to profitability, only general on average index numbers were available, and might thus distort the situation. Furthermore, the literature search was conducted in a result-oriented manner, which might have led to overlooking of previous studies. However, a systematic literature review would have been of limited used, since the databases do not provide a wide range of studies responding to the topic of interest. Moreover, the thesis was carried out in line of an internship at a German hospital consulting company, and consequently data on the German hospital sector was gathered in a more extensive manner when compared to Austrian data. Future research should be carried out on the impact of centralizing health care and strengthening primary care on the financial situation of hospitals, the quality of care, the populations' health status and perceptions of the population towards this. To be able to use the results in more than one country, research should be carried out in different health systems.

6 References

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