KEY ECONOMIC PARAMETERS FOR AN OPTIMAL PHARMACY NETWORK IN A REGULATED ENVIRONMENT

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Abstract

Pharmacies are an integral part of the modern healthcare system which strives for a holistic and efficient care. General practitioners and pharmacists are held in high esteem among local communities as they are the first point of contact when people have health issues. However, a strong demand for health services in developed countries and its present financing schemes undermined the sustainability of the whole health system (8.9% of GDP in 2013 and growing). According to WHO and EU recommendations, the whole healthcare system shall accept a holistic approach and focus on education, prevention and proper medicine consume. Part of this strategy is a seamless care concept, where medical doctors and pharmacists build a team around the well-being of a patient. Financing scheme incentives and KPI's (key performance indicators) will be focused on keeping people healthy, instead of paying for procedures. The future healthcare ecosystem obliges pharmacists to optimize network coverage and to extend health services. Nevertheless, their growth strategy needs to be gradual, considering the present level of network coverage, the low pace of private and public expenditures for medicine and services, and the fact that a new financing model for pharmacies is still unknown. Thus, we expect the development of pharmacy network in regulated environment to be financed predominantly from retained earnings in publicly owned pharmacies and by awarding pharmacy concessions.

Keywords: financial health, financing pharmacy growth, pharmacy network coverage, healthcare outcomes.

1. Introduction

Healthcare expenditures in developed countries follow an unsustainable growth pattern for over two decades. De la Maisonneuve and Martins (2013) estimate a 3.3 to 7.7 % increase in public health and long-term care spending for OECD countries for the period 2010-2060. The main reasons for this trend lie in low healthcare market efficiency and demography.

A seminal work by Kenneth Arrow (1963) was the first attempt to describe healthcare market inefficiencies which arise from specific market circumstances: (i) individual demand is irregular and unpredictable, but mostly urgent, (ii) strong information asymmetry in health triangle (patient-physician-insurance), (iii) uncertainty in diagnosis and cure outcomes, (iv) solidarity based health insurance systems, (v) most people underestimate the benefits of preventive measures, (vi) entry barriers, and (vii) externalities. Moreover, consistently inelastic demand for healthcare services (price elasticity around -0.2 and income elasticity between 0 and 0.2) is reported by Liu *et al*. (2006).

In most countries healthcare services are treated as a human right, therefore economizing is limited to cost-containment and cost-benefit analysis. Complex healthcare systems are dominated by public facilities operating as closed professional silos with minimum information exchange, concentrated mainly on technical and financial parameters of provided services. The result is a fragmented and uncoordinated supply of health services, dissatisfied patients and sub-optimal health and results. Aging population, growing numbers of chronic conditions, various new therapies and drugs caused present solutions to become ever more obsolete.

A paradigm change is inevitable in order to rebuild health services around the user (customer). Preventive measures like health education, information campaigns, life-long monitoring, etc. shall dominate in the near future. Thus, a self-improving, interconnected and customizable healthcare system, based on specialists cooperation and big data crunching will be evolving. Finally, the new health system will be enabled to exploit hidden reserves in healthcare value-chain, and pharmacists are perfectly positioned to help boost financial and health outcomes.

First results from better care coordination in US and Canada were evaluated by Hofmarcher *et al.* (2007), arguing that targeted programs appear to improve quality but evidence on cost-efficiency is inconclusive. Unfortunately, fragmentation of services and skewed financial incentives still lead to poor care quality due to repeated testing, multiple prescriptions and adverse drug interactions. The Slovene Ministry for Health (2015) estimate showed that only polypharmacotherapy (the use of multiple pharmaceuticals to treat diseases) accounts for approximately € 25 million in annual economic damages or 3-4% of all hospitalizations. Consequently, our discussion will be focused on benefits which can be provided by an optimal pharmacy network, as well as on optimal allocation of human resources and capital in a regulated environment.

2. Pharmacy role in the health policy

Health policy is a global issue demanding for coordinated vision and effective strategies which are adjusted at least once a decade. The most relevant policy documents are published by the World Health Organization (WHO) and the European Commission (EC):

– WHO: Health 2020 – An European policy framework and strategy for the 21st century (2013).
– EC: Europe 2020 - A strategy for smart, sustainable and inclusive growth (2010); Investing in health - Commission Staff Working Document (2013).

Among various health policy issues our attention was concentrated on the role of pharmacies. The EC documents are mainly devoted to strategic issues like the system's sustainability, human capital, social cohesion and proper financial support for health systems from EU funds.

In the WHO policy framework (2013), pharmacies are a key instrument for efficiency gains by using medicine and technologies more wisely. The most beneficial effects are expected from:

– an efficient pharmacy network coverage for the whole population;
– strict cost-containment measures (reference pricing, tenders, generic medicines);
– evidence-based introduction of new and expensive health technologies such as pharmacotherapy, devices and procedures;
– rational use of medicines helped by a coordinated team of experts; and
– efficient information exchange and financial incentives based on health outcomes.

In December 2015 the Slovene Government approved the 'Resolution on the national healthcare plan 2016-2025 – Together for a healthy society', which is aligned with EC and WHO policy documents. It exhibits the latest trends in healthcare policies and finally exposes the important role of primary care with special emphasis on pharmacists. It addresses all key challenges of a modern healthcare system, but for the first time accentuates the growing trend of chronic conditions and the financial sustainability goal.

The Ministry of Health initiated a thorough analysis of Slovene health system in 2015, cooperating with WHO experts and the European Observatory on Health Systems and Policies to provide a solid base for further reforms. Thus, the Resolution 2016-2025 (MH, 2015) acknowledges the main issues like medicine consumption growth, lack of uniform information support, information asymmetry on EU medicine market, polypharmacotherapy risks and environmental risks due to unused old drugs.

Clear healthcare strategy and sound situation report enabled the ministry to formulate precise reform activities in the field of pharmacy services. The so-called 'Activity no. 7' (MH, 2015) is focused on providing accessibility, proper and safe medicine consumption and cost-efficiency. Additionally, this activity is supported by five measures which shall provide the minimal operating conditions (centralized public

tender system for medicine, information support for seamless care as well as for evaluating cost efficiency of expensive innovative drugs, active cooperation between clinical pharmacists, amending the Pharmacy Law).

3. European trends in market regulation

EU pharmacy and healthcare markets are probably most distant from the idea of common markets. They are predominately limited to national borders for various reasons: language barriers, public funding rules, professional fiefdoms (doctors and pharmacists associations), etc. National pharmacy markets in EU stem from diverse traditions stretching from highly regulated markets (e.g. Austria) to relatively liberalized versions (e.g. UK). Most of high-income markets in EU develop in the more regulated direction, although some reversed the course (e.g. Norway and Sweden). The level of market liberalization is most commonly observed by three criteria:
– establishment rules for new pharmacies and branches;
– ownership limitations; and
– OTC medicine sale outside pharmacies.

The discussion regarding the liberalization of the pharmacy market is not just an academic one, but a primary policy concern about accessibility, quality and economics. In a survey-based study for the Association of Danish Pharmacies (GOE, 2012) the authors compared a group of countries with deregulated community pharmacy sector (England, Ireland, the Netherlands, Norway, and Sweden) with a group of regulated pharmacy sector (Austria, Denmark, Finland, and Spain). This study confirmed the limitations of a liberalized pharmacy market. According to GO (2012) the overall effect of liberalization is negative, because it leads to an uneven spread of community pharmacies within a country, provides bigger market power to some players like wholesalers, and produces economic pressure to increase pharmacy turnover through the sale of OTC (over the counter) medicine and non-pharmaceuticals. Moreover, the restrictive market access measures in EU countries are supported even by the European Court of Justice due to public health significance.

Most EU countries (16) regulate pharmacy market entrance by setting demographic (number of people serviced by a pharmacy) and geographic (minimum distance between pharmacies) criteria. For instance, in Spain the minimum distance is 250 meters to the next pharmacy and at least 2,800 potential customers to service. In Austria the minimum distance is 500 meters and the number of potential customers must be at least 5,500 (counting inhabitants, people working in the area and tourists).

Ownership regulation is the next pillar of regulated pharmacy markets in 12 EU markets. Most restrictive versions allow only pharmacists to own a pharmacy. In some countries (Austria and Spain) some forms of co-ownership with non-pharmacists are tolerated. Additionally, some specific stakeholders like medical doctors are excluded to prevent conflict of interest (similar with manufacturers and wholesalers). Regulated environments often prohibit multiple ownership, although under certain conditions a branch might be allowed.

Medicine prices are highly regulated; consequently the most financially interesting segment is OTC medicine. According to OECD (2014) only 10 of 28 European countries hold a pharmacy monopoly on the sale of OTC medicine. Nevertheless, among the 18 other EU countries the drugs sold outside pharmacies vary a lot. They include mainly pain-killers and medicine for relieving cold symptoms, which can be obtained in supermarkets, drugstores or petrol stations.

4. Key elements of Pharmacy Law and network evolution in Slovenia

Slovene Pharmacy Law dates back to 1992. The sector has always been highly regulated and predominantly served by (regionally bound) community owned entities, supported with some licensed private pharmacists. Pharmacies provide a public service and can be managed only by someone with a master degree in pharmacy after a professional examination. Pharmacy license can't be awarded to a private legal person. A private pharmacy owner can run only one unit with some exemptions in the case of a branch. For that reason, publicly owned pharmacies always had a clear competitive advantage.

First guidelines for pharmacy network coverage came to life in the Resolution 2008-2013 and were loosely based on the number of people living within the pharmacy gravity area. Minimum number of people was set at 7,000 (on average) and no less than 5,000 people. In order to improve coverage, some additional criteria were used (minimum road distance between pharmacies in bigger towns (400 m) and the presence of at least one GP (general practitioner) in the outpatient unit on the spot). Additionally, a pharmacy could have been established in a gravitation area with at least 5,000 people, if the nearest pharmacy was more than 6 km away.

The new Pharmacy Law is being drafted for many years and the 2016 version might be acceptable for the parliamentary majority and aligned with the Resolution 2016-2025. The latest draft did not touch any fundamental pillars like limited private ownership, profession regulations or the basic role of the Slovene Chamber of Pharmacies. The most important novelties for pharmacies are:
  – broad and precise definition of pharmacy services, which are now separated on basic services (pharmaceutical treatment is included) and on additional pharmaceutical services;
  – implementation of a 'seamless' healthcare approach;
  – empowered role in the healthcare system;
  – a standardized licensing and educational process according to EC standards will be implemented for pharmacists who are members of the chamber;
  – a prohibition of diverting financial surpluses from community owned pharmacies towards health unrelated activities of the owners;
  – clearly defined new criteria for pharmacy network coverage, which should guarantee an even access for all citizens in Republic of Slovenia; and
  – individual membership in the Chamber shall be voluntary.

Institutional changes are expected to yield positive short and long-term effects. Nevertheless, Slovene pharmacy sector will remain highly regulated and predominantly publicly owned, following a broader EU trend. Considering the peculiarities of health markets and the development stage of domestic healthcare system, such solutions might be the best ground to improve accessibility and quality of pharmacy services.

It seems that the healthcare reform follows a consistent strategy for the pharmacy sector. However, a key question arises from the economic point of view: How are the main players in the regulated market prepared for changes, and what will be their response to these quite fundamental modifications? At the same time we have to accentuate that a highly regulated pharmacy sector limits its access to private financial resources. Private sector is partly excluded and less interested in regulated business models. In order to answer this question, we will continue our analysis with a brief situation report about pharmacy coverage, market trends and network characteristics.

4.1. Pharmacy network evolution

Pharmacy network coverage has been improving steadily through the last decade, both in regulated and liberalized environments. Variety of national rules in EU countries leads to a diverse landscape in terms of pharmacy network coverage. Using the number of inhabitants per pharmacy in 2015, we can observe a wide range of results. On the top of this range we find Denmark with 16,667 inhabitants/pharmacy, and Greece at the other extreme with 1,010 inhabitants/pharmacy.

Diverse traditions make it almost impossible to evaluate which level of pharmacy coverage might be close to an optimum. We can observe some regional similarities for Nordic countries plus Austria and Slovenia, which kept the lowest coverage ratio (twice the EU28 average). Leading economic powers in EU (Germany, Italy and France) are hovering around the average, however many transition countries are close or under the EU28 average, which means they have much better coverage, but most probably worse financial results.

Considering the new prevailing paradigms in holistic healthcare systems, we assume that the 'low coverage' countries will have to increase the number of pharmacies. On the other side, a consolidation among pharmacies will be needed in countries with a coverage ratio under 3,000 inhabitants/pharmacy. Proper access to pharmaceutical services is a special challenge in thinly populated areas and hilly landscape. Liberalization can make this problem even bigger, because private pharmacists avoid such areas and prefer clustering in urban areas. This logical consequence can be observed among mid-income as well as in high-income countries.

Establishing a new pharmacy unit demands a certain amount of capital to be invested in land, building, equipment, minimum inventory and people. Even if we resign a bit from standard market capital costs, we still need to collect some critical amount of margins to guarantee business solvency and a proper service quality level. Depending on national models of price controls for medicine and models for phar-
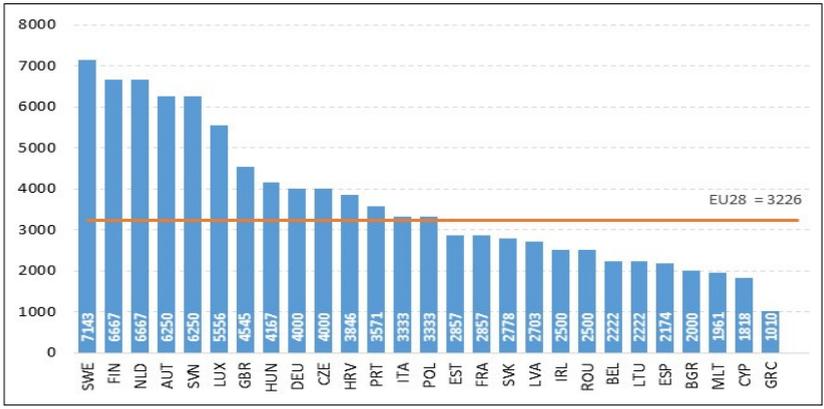
Figure 1: Pharmacy network coverage ratio

Source: ABDA (2015)

Note: Denmark with 16,667 inhabitants per pharmacy is not included

macy service remuneration, the existence of a pharmacy is defined by the minimum amount of customers in the nearby area.

According to ABDA (2015), the number of main German pharmacies declined to 16,269 from 17,963 in 2010. The average sale for a pharmacy in Germany (without value added tax -VAT) was around € 2.02 million, but around 60% of them were not able to reach the average sale amount. Consequently, such pharmacies are leaving the sector since 2010.
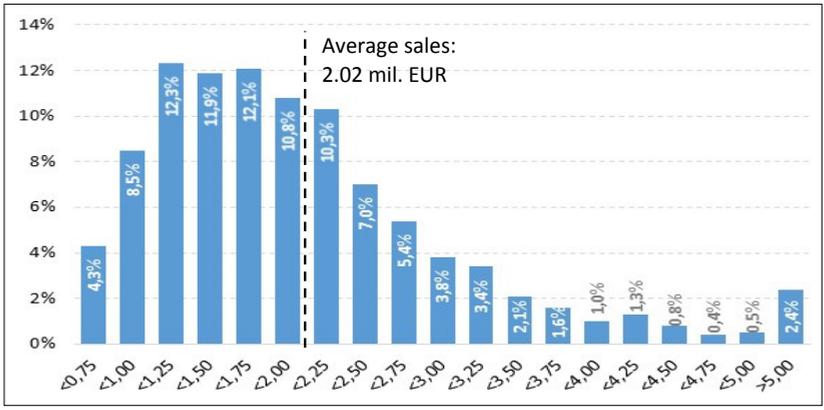

Figure 2: Percentage of pharmacies according to revenue category in Germany

Source: ABDA (2015)

Note: Horizontal axis represents sales bracket boundaries in € million

The stronger financial health of bigger pharmacy market players (due to economy of scale effects and bigger negotiating power) is also confirmed by the sample of British pharmacies which operate in a liberalized environment. A.T. Kearney (2012) reports that independent pharmacies achieve around 7.4% EBIT (earnings before in-

terest and taxes) margin and will suffer most under the more competition and public budget squeeze. In the same circumstances, bigger players reach up to 10.8% EBIT margin.

4.2. Market trends in Slovenia

The domestic economic situation, the more restrictive prescribing policy and the increased VAT influenced medicine accessibility in the past years. State health insurance managed to build pressure on pharmaceutical companies in order to decrease medicine costs. Additionally, the range of refundable pills was limited, which forced patients to switch to cheaper generics. Consumers became very price sensitive, especially in the preventive care segment.

Marketing activities are increasingly focusing on elderly people (65+) who represent 18% of total population (a 3% gain since 2003) and will be growing with around 0.4% per year (SORS, 2015). Comparing the age pyramids for Slovenia, we can easily predict a stable demand for pharmacy products and services in the foreseeable future. Gender age gap is shrinking slowly and was at 6.3 years in 2015 to the benefit of women. They are the key target customers with comparably higher health awareness and broader range use of pharmaceutical products, and they are the key initiators and decision makers of health related expenditures in their families.
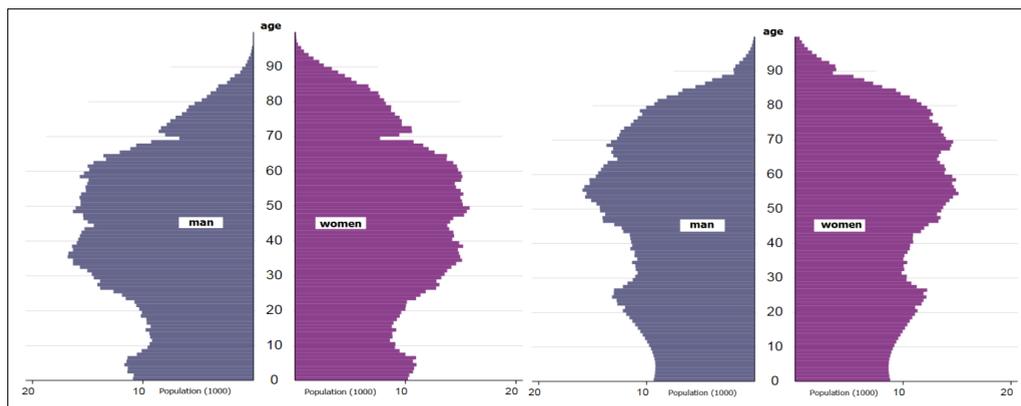

Figure 3: Age pyramid in Slovenia 2015 and projection for 2035

Source: SORS (2015)

Modern life-style causes ill-health due to more stationary work, sugar and fat rich diets, cigarettes and alcohol consumption, and inactive spending of free time. Obesity is becoming the most important health challenge in developed economies, even among children and teenagers. In 2005 there were 19.2% obese people in the whole population, but in 2013 already 22.4%. Among children this numbers jumped to 25% for boys and 24% for girls in 2013 (SORS, 2015). Competitive work place and higher personal expectations contribute to higher levels of stress and anxiety, which cause sleep, digestion and similar problems.

Effective demand for pharmacy services depends strongly upon the financing models for medicine and pharmacy services. Most developed countries use a mix of public and private-out-of-the-pocket approaches. The latest data for Slovenia showed that 1.8% of GDP is used for pharmaceutical products, which is above the OECD average of 1.4%, and only half of these expenses are publicly funded. According to the Health Insurance Institute of Slovenia (2015), some € 38.9 million EUR or 19 EUR/capita were devoted solely for pharmacy program.
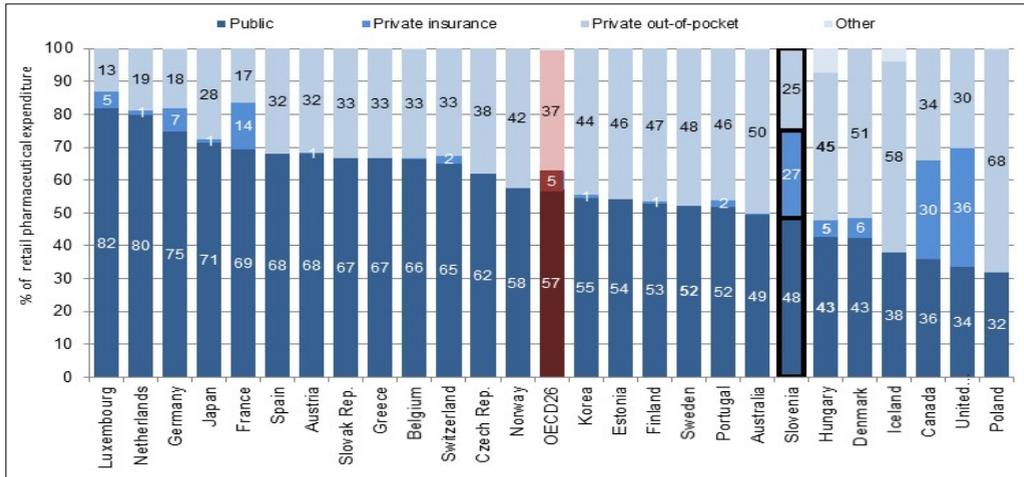

Figure 4: Expenditure on retail pharmaceuticals by type of financing

Source: OECD (2015)

Note: Data for 2013 or nearest year

In Slovenia, expenditures for health products and medical services stood at € 780 million EUR in 2011, but the market grew by 16% till 2015 and reached 904.4 million EUR (GMID, 2015). The data also show almost proverbial stability of this sector even during the severe economic crisis.

4.3. Pharmacy network characteristics in Slovenia

Domestic pharmacy services were provided by 24 publicly owned community pharmacies with 184 main pharmacies and 44 branches. Additionally, 87 privately owned pharmacies with 9 branches and 2 hospital pharmacies existed. In total 326 pharmacy units provided care for around 2,064,600 people or 6,333 inhabitants per pharmacy.

Despite the steady growth of pharmacy units, the coverage gap to EU28 average is still high. The latest data for 2015 show that Slovene pharmacy coverage improved to 6,251, but there are considerable variations among statistical regions (an east/west gap). In Littoral-Inner Carniola region the coverage ratio is just 7,505 and in Mura region is already 4,861. Within statistical regions there are many local communities where deviations are even bigger.
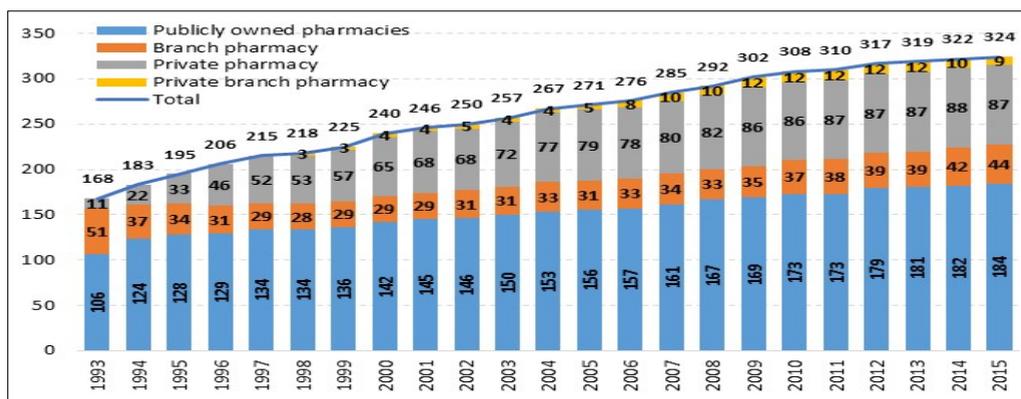
Figure 5: Pharmacy network growth in Slovenia

Source: SCP (2015)

Note: 2015 data are based on unofficial estimates

Even without precise local community data, a sustainable growth path for additional pharmacy units is expected under the new Resolution. Nevertheless, the likely growth needs to consider business model sustainability issues within expected economic circumstances. Consequently, pharmacy coverage ratio shall improve at a moderate pace, reflecting economic conditions and the healthcare reform speed. A reckless growth pace of pharmacy units towards the EU28 average would just scatter existing revenues on more pharmacies and cause the accumulation of operational losses in the mid-term.

5. Pharmacy sector financial health

The pharmacy sector is supposed to be non-cyclical due to constant and inelastic demand. Nevertheless, our comparative revenue growth analysis of publicly owned pharmacies with macroeconomic data appears to witness something else for Slovenia after the global economic crisis. Data since 2008 showed a decrease in revenues for pharmacies in four consecutive years, whereas total consume growth became negative only in two years. These results might implicate that patients rationalized their privately financed medicine consumption and that the public health insurance managed to achieve better prices from pharmaceutical companies. In total, an 8.3% decrease in pharmacy revenues between 2011 and 2014 caused a decrease in net income by 17.6%. With the macroeconomic situation improving in 2015 and with optimistic forecasts, we assume the pharmacy sector will stabilize as well. Therefore, we expect revenue growth to finally become positive starting with 2015 at the level of 1.2% p.a.

The financial health of the pharmacy network is a key factor for growth sustainability. Only efficiently run pharmacies can establish secure working places, support professional development of pharmacists and accumulate capital for future growth in order to support the Resolution's goals. Our financial analysis is based only on

Table 1: GDP, consumption growth and revenue growth in publicly owned pharmacies

	2008	2009	2010	2011	2012	2013	2014	2015*	2016**
GDP/cap. (EUR)	18,420	17,415	17,694	17,973	17,498	17,435	18,093	18,680	19,179
Consumption (g)	2.3%	0.1%	1.3%	0.0%	-2.5%	-4.1%	0.7%	1.7%	2.1%
Pharmacy revenue (g)		1.26%	1.21%	-1.16%	-3.42%	-1.49%	-3.66%		

Note: *Estimate for 2015. ** Forecast for 2016.

Source: IMAD (2016), AJPES (2016) and own calculations

the data from publicly owned pharmacies[1] which collect the majority of revenues and populate the most interesting locations. Private pharmacies accumulate around 20% of total revenues in the pharmacy sector. Key financial parameters for the period 2011-2014 show declining revenues (partly in line with private consume) and a shift in revenue structure towards market services. Despite a decline in revenues (-8.3%), the number of employees was increasing (4.2%) and the monthly labor costs were decreasing by 6.5%.

Table 2: Key financial performance parameters for publicly owned pharmacies

	2011	2012	2013	2014
No. of reporting units	211	218	220	224
BASIC FINANCIAL DATA				
Revenues	463,063,351	447,248,280	440,577,744	424,433,031
Average revenue/unit	2,194,613	2,051,598	2,002,626	1,894,790
Revenues from public service	78.3%	78.1%	78.5%	77.9%
Revenues from the market	21.7%	21.9%	21.5%	22.2%
Total expenditures	452,838,048	438,085,944	432,747,996	416,073,825
Tax	1,118,093	845,440	685,314	850,907
Net income	9,107,210	8,316,896	7,144,434	7,508,299
COST STRUCTURE				
Goods, material and services				87.41%
Labor costs				11.29%
Amortization				0.80%
Other costs				0.51%
EMPLOYEES				
Monthly labor costs	2,248	2,167	2,188	2,100
Full time employees	1,426	1,442	1,453	1,486
Revenues/employee	324,729	310,158	303,219	285,621
NET MARGIN				
Public services				0.269%
Market services				7.040%
NI CONTRIBUTION				
Public services				11.85%
Market services				88.15%
Effective tax rate	12.3%	10.2%	9.6%	11.3%

Source: AJPES (2016) and own calculations

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1 Privately owned pharmacies are not obliged to report their data to a public database.

The cost structure is dominated (87.4%) by costs of goods, material and services. Due to state medicine price controls and the pharmacy service remuneration model a pharmacy can hardly find any reserves in this area. No bigger reserves can be found in labor costs either, because they are mainly influenced by the employee age structure and required education levels.

The net margin analysis for publicly refunded services (88% of total) exposed a meagre net margin of 0.269%, which amounted to € 0.9 million surplus in 2014. However, the so-called market services (privately paid) provided € 6.6 million surplus in the same year (7.04% net margin). A comparably high net value-added is generated just with 12% of revenues, which are the key financial source for future pharmacy network coverage growth. Additionally, € 3.3 million derive from amortization which can be also partly used for new investments. Unfortunately, some local communities started to channel their pharmacy's profits into local budgets, but the new Pharmacy Law draft aims at preventing such practices in the future.

6. Pharmacy network optimization

Following our research conclusions, WHO recommendations and EU strategies, we can claim that diminishing information asymmetry in the health markets as well as raising people's health awareness are the key areas where pharmacy network can help release an underused potential and relieve GPs. The pharmacy is the most trusted first-contact location for a patient which shall become an active healthcare team member concentrated on the patient's well-being.

Comparative analyses for EU28 countries demonstrated a diverse picture of pharmacy network but the tendency is to move more health related services to the pharmacy level, requiring more and better educated pharmacists. Pharmacy coverage ratio is a crude measure of basic infrastructure for establishing better accessibility. Combined with motivated and educated pharmacists, it should become the new pillar of efficient and holistic healthcare solutions.

Improving the pharmacy coverage is a long-term infrastructure investment. It will work at full capacity in a few years after the new 'ecosystem' of healthcare providers and highly aware patients starts to function. Pharmacies need additional investments into physical presence in low-coverage areas. Definition of low-coverage area should depend upon uncovered healthcare service needs of potential patients, but this kind of data is costly to collect. Consequently, we used a 'step-by-step' approach in the direction of improved coverage which considers the actual GDP/capita level as well as public health insurance and patient's financial limitations.

At this point the crucial question is whether the average EU28 coverage ratios of 3,226 people per pharmacy are actually worth following. We can be quite sure that doubling the number of pharmacies (even if we had the human and capital resources in Slovenia) wouldn't improve the healthcare outcomes by the same amount, because the rest of the healthcare system also needs to adjust over time to harvest the full benefits.

Nobody can reliably foresee how the whole healthcare system will adjust in reality after the reform process is concluded. Thus, it is advisable to be more cautious and progress in smaller steps. The present rush for improving coverage ratios in some countries can be also proven wrong in 10-15 years when patient monitoring, efficient communication, increased mobility and new medicine distribution models decrease the need for physical presence of pharmacies.

Our 3-steps growth model takes into account that neither public health insurance nor patients will be able or willing to increase their pharmacy spending by considerable amounts in the foreseeable future. Accordingly, a quick coverage ratio adjustment towards EU28 average in the case of Slovenia would be simply reckless. It would just divide the sector's revenues on almost twice the number of pharmacies, which already operate at a low average net profit margin of 1.77%. Consequently, many pharmacies would start accumulating losses, hence endangering current operations as well as the undermining capex growth.

Based on present facts and inherent uncertainty about future healthcare system optimization models for Slovenia, we suggest a gradual approach:
- Step A – aims at equalizing present divergence in accessibility: target coverage ratio around 6,300 inhabitants/pharmacy.
- Step B – aims at a minor improvement in overall accessibility: target coverage ratios around 6,000 inhabitants/pharmacy.
- Step C – aims at a major improvement in accessibility after step B delivers persuasive improvements in health outcomes and financial sustainability: target coverage ratios around 5,000 inhabitants/pharmacy.

The following table shows the pharmacy network coverage ratio in Slovene statistical regions to demonstrate the differences which range from a high coverage of 4,861 in Mura region to 7,505 in Littoral-Inner Carniola region which is the most sparsely populated. However, the most densely populated region of Central Slovenia holds the second place among least covered areas. In order to improve the coverage in the two extreme cases and bring it closer to the Slovene average of 6,251, Step A demands for 10 additional pharmacy units in Central Slovenia region, 1 unit in Littoral-Inner Carniola and 2 units in Upper Carniola (13 in total). Assuming an initial investment outlay of roughly € 250,000 and around 3 employees per pharmacy unit in Slovenia, the Step A would require € 3.25 million of capital and some 39 employees with appropriate qualifications. Considering the net income of publicly owned pharmacies in Slovenia and the human resources, Step A is highly viable over a short period of time.

Step B should be interpreted as a cautious move towards an improved coverage to support the new healthcare paradigm which puts additional services into the pharmacy sector. Its implementation has to be aligned with changes in the whole healthcare system to properly monitor the effects. The target coverage level of 6,000 can be a low-risk experiment which is still close to the coverage ratios in Scandinavian countries and Austria. In Slovenia's case Step B would demand for additional 25 pharmacy units in comparison with the present situation. Using the same assumptions for estab-

Table 3: Three pharmacy network coverage steps for Slovene statistical regions

	Actual (2015)		Step A		Step B		Step C	
	Population density	Coverage	New units	Coverage	New units	Coverage	New units	Coverage
Central Slovenia	229.4	7,223	10	6,363	14	6,074	33	4,995
Drava	148.6	5,575	0	5,575	0	5,575	6	5,052
Savinja	110.5	6,195	0	6,195	1	6,047	9	5,080
Upper Carniola	95.4	6,795	2	6,370	4	5,996	10	5,096
Southeast Slovenia	53.2	6,190	0	6,190	1	5,932	5	5,085
Gorizia	50.8	5,372	0	5,372	0	5,372	1	5,139
Mura	87.1	4,861	0	4,861	0	4,861	0	4,861
Coastal-Karst	108.2	6,265	0	6,265	1	5,935	4	5,126
Lower Sava	78.2	6,302	0	6,302	1	5,817	3	5,041
Carinthia	68.4	5,942	0	5,942	0	5,942	2	5,093
Central Sava	118.7	6,412	0	6,412	1	5,771	2	5,246
Littoral-Inner Carniola	36.1	7,505	1	6,567	2	5,838	3	5,254
Total	**101.8**	**6,251**	**13**	**6,014**	**25**	**5,811**	**78**	**5,056**

Source: SORS (2016), SCP (2016) and own calculations

lishing a pharmacy unit, Step B would demand € 6.25 million of capital and 75 new employees, and could be fulfilled in a few years.

Step C assumes a major improvement in pharmacy network coverage ratio by targeting the value of 5,000 inhabitants/pharmacy. Such target demands additional pharmacy units in every statistical region, except one (Mura), totaling at 78 new units. It would engage € 19.5 million of capital and 234 new employees. Steep increase in demand for specialist human resources and capital (which is not available in short-term) would not be economically viable due to slow revenue growth pace and the cost structure characteristics in pharmacy sector. It would be imprudent to accept this strategy at present situation and thus sacrifice the valuable option of postponing capital intensive investments.

Finally, we suggest a gradual approach in developing the physical and human infrastructure for delivering pharmacy services in the case of Slovenia, where coverage ratio stood at 6,251 in 2015. Despite the fact that the coverage ratio is among 'the lowest' in the EU area, it cannot be used as the only quantitative goal without considering achievable benefits in terms of healthcare outcomes and financial sustainability. Therefore, we suggest to start with coverage improvement in most underserved areas (Step A), establishing additional pharmacy units only if economic viability is guaranteed (at least within the community pharmacy group). Afterwards, Step B is the next crucial reform step when the whole healthcare system becomes ready for transferring additional services towards pharmacies and provides adequate financing to support operations and capex growth. Inherent uncertainty in healthcare system reform process will diminish with time, therefore a new optimal coverage ratios will be established, but they are elusive from the present point of view. Thus, Step C can be only a rudimentary orientation point with no clear deadline for achieving it (if at all).

7. Conclusions

Health services are an important economic factor since people with health problems suffer from twice higher unemployment rate and demand 2-2.5% of GDP for disability and sickness benefits (Oortwijn *et al.*, 2011; EC, 2013). Thus, economic growth can be boosted by sustaining population's good health and improving workforce participation rate. Healthcare is an interconnected and highly complex system consuming an increasing share of GDP in developed countries. Aging population, expensive new drugs, professional silos and obstacles for information sharing will be the main challenges of the health system for the next two decades, but upgraded pharmacy network is expected to play a crucial role at the primary level.

The latest paradigm based on WHO and EU recommendations aims to optimize healthcare systems by accepting a holistic approach and focusing on education, prevention and proper medicine consumption. Part of this strategy is a seamless care concept, where medical doctors and pharmacists build a team around the well-being of the patient. Thus, financing scheme incentives and KPIs will be focused on keeping people healthy, instead of paying for procedures. This paradigm change needs some time, a new legal framework and integrated IT solutions to support the patient and his healthcare providers. Modern healthcare systems will have to focus on multiple layers of information asymmetry, promote higher efficiency in curative operations and deploy considerable resources towards primary care (including pharmacy network).

A clear benchmark for efficient pharmacy network coverage in Europe is still a mystery to be uncovered in a few years. Although, we argue it shall be well above the actual EU average of 3,226 inhabitants/pharmacy in order to contribute towards reasonable health outcomes and guarantee financial sustainability. The present rush for improving coverage ratios in some countries can also be proven wrong in the next decade when patient monitoring, efficient communication, increased mobility and new medicine distribution models might decrease the need for physical presence of pharmacies. If our prediction is confirmed, it means that we can expect a consolidation wave among pharmacies and new delivery models all around EU. At the same time we need to consider that pharmacies are a part of a complex healthcare system which needs to be fundamentally reformed in order to harvest the full benefits. It is a herculean task which needs to follow a clear long-term plan and precise milestones on the way.

We suggest a 3-step pharmacy coverage plan: Step A – improving the coverage in most underserved areas; Step B – establishing additional pharmacy units only if economic viability is guaranteed; Step C – upgrading the whole pharmacy network when the healthcare system becomes ready for transferring additional services towards pharmacies and it provides adequate financing to support business operations and capex growth. Inherent uncertainty in healthcare system reform process will be diminishing over time; therefore a new optimal coverage ratio will be established.

Thus, Step C can be only a rudimentary orientation point with no clear deadline for achieving it (if at all).

In our opinion, a sustainable coverage growth for publicly owned pharmacies anywhere in developed countries should be based on the following key economic parameters: (i) minimum revenue/pharmacy amount based on actual pharmacy users (local inhabitants together with other users like tourists or seasonal workers); (ii) pharmacy group financial health; (iii) economically evaluated improvements in health outcomes; (iv) mid-term sustainable growth rate for pharmacy revenues; (v) future financial accumulation potential and (vi) reinvestment of financial surpluses into justified network growth, employee education and prevention.

Properly organized and permitted to deliver a broader scope of pharmaceutical services, pharmacies could become the new star of efficient healthcare systems. Their extensive clinical skills, trustworthiness, unmatchable access, cost effectiveness and consequent financial potency make them a natural champion in the new healthcare paradigm. According to some estimates (A.T. Kearney, 2012) pharmacy has the lowest cost per intervention in comparison with GP and nurses measured with following proportions 3.2: 1.6: 1. Hence, we need to urge the policy makers to keep the pace of health system reforms despite resistance and to communicate more persuasively the benefits to various interest groups.

Further research should be focused on issues connected with a possible consolidation wave in high coverage countries and on the system of KPIs which should monitor the actual impact of empowered pharmacies on health and financial outcomes in the near future.

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