TRADE MARGINS OF PRESCRIPTION MEDICINES IN LIBERALISED AND NON-LIBERALISED PHARMACY MARKETS (EU 28 + NORWAY)

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Abstract

Objectives: To analyse the pharmacy margin in the EU 28 and Norway. To determinate a correlation between margin, GDP and the percentage of chain pharmacies (degree of liberalisation of pharmacy market). **Methods:** Systematic review of the margin regulations applicable to community pharmacies. Calculation the margin for the medicine at the ex-manufacturer price of CZK 150 (€ 5.92). Visualization and comparison of information obtained in MS Excel. Regression analysis (general linear model) of processed data. **Results:** The Czech pharmaceutical distribution market is fully liberalised and horizontally and vertically integrated. 35% of the Czech community pharmacies are associated in chains. Pharmacy chains are active in 18 EU countries. In six EU countries, chains operate more than 50% of community pharmacies (Sweden, the Baltic States, the UK and Croatia). Norway currently has 86.6% of pharmacies associated with vertically integrated companies controlled by the three largest pharmacy chains (and wholesalers) in Europe. In nine other EU countries, at least one of these companies (Walgreens, Phoenix and McKesson) operates one of the three largest pharmacy chains. Walgreens, Phoenix and McKesson own over 7,000 pharmacies in the countries surveyed. Pharmacy chains are not legally permitted in eight EU countries, where 42% of all EU pharmacies operate. The average margin is 27.2% in the monitored countries. The minimum margin is 7% (Croatia), and the maximum is 59.8% (Germany). The mean of margins for countries with chains is 25.6% and for countries without chains is 29.7%. The statistical model indicates the positive correlation between margins and GDP. We did not find a clear association between the margin and the degree of liberalisation. **Conclusion:** A reduction in margins does not follow the deregulation of pharmacy market. The hypothesis that liberalisation brings lower costs to the healthcare payers was not confirmed.

Key words: pharmacies, margin, EU 28, liberalisation

JEL Code: H51, I11, O19

Introduction

The 'four freedoms' of the European Union (EU) are the freedom of movement of goods, people, services and capital across borders. The Single Market Strategy is the European Commission's (EC) plan to unlock the full potential of the Common Market. Services account for over 70% of all economic activity in the EU; they also provide the majority of jobs. The EC commissioned an extensive study on the economic effects of regulating the professional services in the areas of law (notaries and lawyers), accounting (accountants, auditors and tax advisers), technical consultancy (architects and technical consultants) and pharmacy (pharmacists). There are two areas of regulation. The first includes market entry criteria, typically the professional qualification required. The second area relates to professional regulations, such as fixed pricing, marketing restrictions, and territoriality. The authors state that pharmacy is the most strictly regulated service of all those monitored in the study. The most robust regulation was founded in Sweden, where the government-controlled monopoly organised the pharmaceutical distribution system (Paterson, Fink & Ogus, 2003).

Referring to this study, some British authors emphasise that the high level of regulation prevents competition among pharmacies and does not allow them to join or create a new form of service (e.g. a pharmacy as part of a supermarket). Limiting pharmacy operations to a pharmacist prevents the formation of large controlled chains that are typical of Great Britain and the United States. Consolidation and reduction of margins are occurring in countries where vertical distribution integration and pharmacies are allowed (Taylor, Mrazek, & Mossialos, 2004).

The regulation of the liberal professions, such as lawyers, notaries, doctors, and pharmacists, is a widespread phenomenon in many countries. It consists of a variety of measures that restrict both entry and conduct. Whereas U.S. courts have already started to apply more consistently antitrust laws to many professional services after a Supreme Court decision in 1975, EU countries have only recently shown an interest in liberalising professional regulations (Schaumans & Verboven, 2008). Regulation/accreditation in health care was found to be both beneficial and unfavourable (Zsarnoczky, 2016).

"As a result of the relevant role that pharmacists play in the delivery of health care, community pharmacies in the majority of the cases are highly regulated in most Member States of the European Union. Critical areas of regulation relate not only to ownership issues but also to the establishment of pharmacies (for example, a needs assessment or demographic/geographic regulations); registration and licensing issues; distribution of

pharmaceutical products outside a pharmacy; opening hours; and pricing, remuneration and incentives issues, given that government-backed health insurance or general taxation is the key payer of these services" (Lluch, 2009) .

Deregulation in the pharmacy sector follows the expectation that liberalisation will increase competition and lower public costs, while access to quality pharmacy services will remain stable, if not improved. Deregulation claims to make the market more efficient while crucial areas like equity and access are not compromised (Lluch, 2009). "In the long-run, this may run the risk of oligopoly, given that a small number of chains would be the principal players in the field. It would mean that pharmacists as professionals would lose their monopoly, but another type of monopoly would appear" (Lluch, 2009).

Another study based on the EC requirement of Kanavos, Schurer and Vogler (2011) states that higher efficiency in drug distribution can be achieved by forming a horizontally or vertically integrated structure (Kanavos, Schurer, & Vogler, 2011).

The study of Llunch and Kanavos (2010) compared the UK and Spain as examples of the liberalised and regulated market. According to their conclusions, the improved operational efficiency of pharmacies is the result of appropriate incentive structures, the liberalisation of property and the freedom of OTC in prices, as is the case for the United Kingdom. Equality and access seem to be better achieved by establishing geographic, demographic or necessary criteria for the opening of new pharmacies (as is the case for Spain). There are useful lessons for both countries: the United Kingdom could address policies that promote access, while Spain could adopt some of the strategies that would increase the effectiveness of the system (Lluch & Kanavos, 2010).

The European Commission reports market failures for generic drugs prices. It is essential to regularly compare generic drug prices in countries with similar income levels. The impact of distribution margins and taxes on generic drug prices has been under-explored. Studies indicate that those costs can account for more than 90% of the retail price of a generic drug (the amount charged by pharmacists to patients or third-party payers). Denmark and Sweden had the lowest ex-manufacturer prices. The French and Italian ex-manufacturer prices were among the highest (Wouters & Kanavos, 2017).

Pharmacists report financial pressure on the pharmacy margin across the countries. "However, data on the average pharmacy margin could only be obtained for few countries and were not comparable since they related to different market segments. In response to economic pressure pharmacies reportedly increased their turnover through the sale of OTC medicines and non-pharmaceuticals, which accounted for considerable shares of a pharmacy's turnover

in a few countries (e.g. around 25% for non-pharmaceuticals in Norway and Ireland). These shares rose in some, but not all countries. In Sweden pharmacies were criticised in public debate for their share of body and beauty products in their product range while fewer prescription-only medicines were reported to be on stock" (Vogler, Habimana, & Arts, 2014).

Twenty-two EU states control pharmaceutical prices at all levels. Almost all of EU countries apply external price referencing, i.e., compares costs with other countries. While the wholesale remuneration by a statutorily regulated linear mark-up is implemented in several EU countries, the pharmacy compensation for dispensing reimbursable medicines in the form of a flat rate service fee is rare among EU countries, which usually apply a linear or regressive pharmacy mark-up scheme. Majority of EU countries reimburse specific medicines at 100%, whereas patients are charged co-payments for reimbursable other drugs. Criteria for reimbursement include the medicine's importance from the public health perspective, its therapeutic value, and relative effectiveness (Vogler, Habl, Bogut, & Voncina, 2011).

Seven EU Member States opted for regulating the wholesale remuneration via a linear add-on, whereas 14 countries apply a regressive mark-up scheme for wholesale. No statutory wholesale mark-up is in place at all in Cyprus (only for locally-produced medicines), Denmark, Finland, the Netherlands, Sweden, and the United Kingdom (Vogler et al., 2011).

All EU countries have implemented a statutory remuneration scheme in the pharmacy sector. The remuneration in the form of a regressive mark-up is the most common scheme, but a few authorities have decided for the policy option of dispensing fees or charges for the services which a pharmacy performs. Croatia, the Netherlands, Slovenia and the United Kingdom reward pharmacy in the form of service fees (Vogler et al., 2011).

1 Data and methods

This study aims to analyse the margin of pharmacies in the EU 28 and Norway (as a dependent variable) about the GDP and the market share of chain pharmacies. We try to find out whether there is a relationship between the margin and the GDP, and the margin and the degree of pharmacy market liberalisation.

We performed a systematic review of the margin regulations applicable to community pharmacies within the EU countries and Norway (Písek & Pícha, 2018). We included Norway as a particular case because the three companies almost entirely control its pharmaceutical distribution. The Czech pharmaceutical distribution market is fully liberalised, and horizontally and vertically integrated. The two most significant pharmacy chains are vertically

integrated with distributors, and control 63% of the chain pharmacies. 35% of the Czech community pharmacies are part of chains. Pharmacy chains are active in 18 EU countries. In six EU countries, chains operate more than 50% of community pharmacies (Sweden, the Baltic States, the UK and Croatia). In nine EU countries, at least one of these companies (Walgreens, Phoenix and McKesson) operates one of the three largest pharmacy chains. Together these companies own more than 7,000 pharmacies in the countries surveyed. Pharmacy chains are not legally permitted in eight EU countries, where 42% of all EU pharmacies operate.

We calculated the pharmacy margin for the value of CZK 150 (€ 5.92)[1], which is the upper limit of the first price range, where the highest surcharge is applied in the Czech Republic. According to the statistics (SÚKL, 2017), the share of pharmaceuticals in the price range from CZK 0 to 150 delivered to pharmacies was on average 76.88% in 2010 - 2014.

Tab. 1: Source Data – EU 28 and Norway

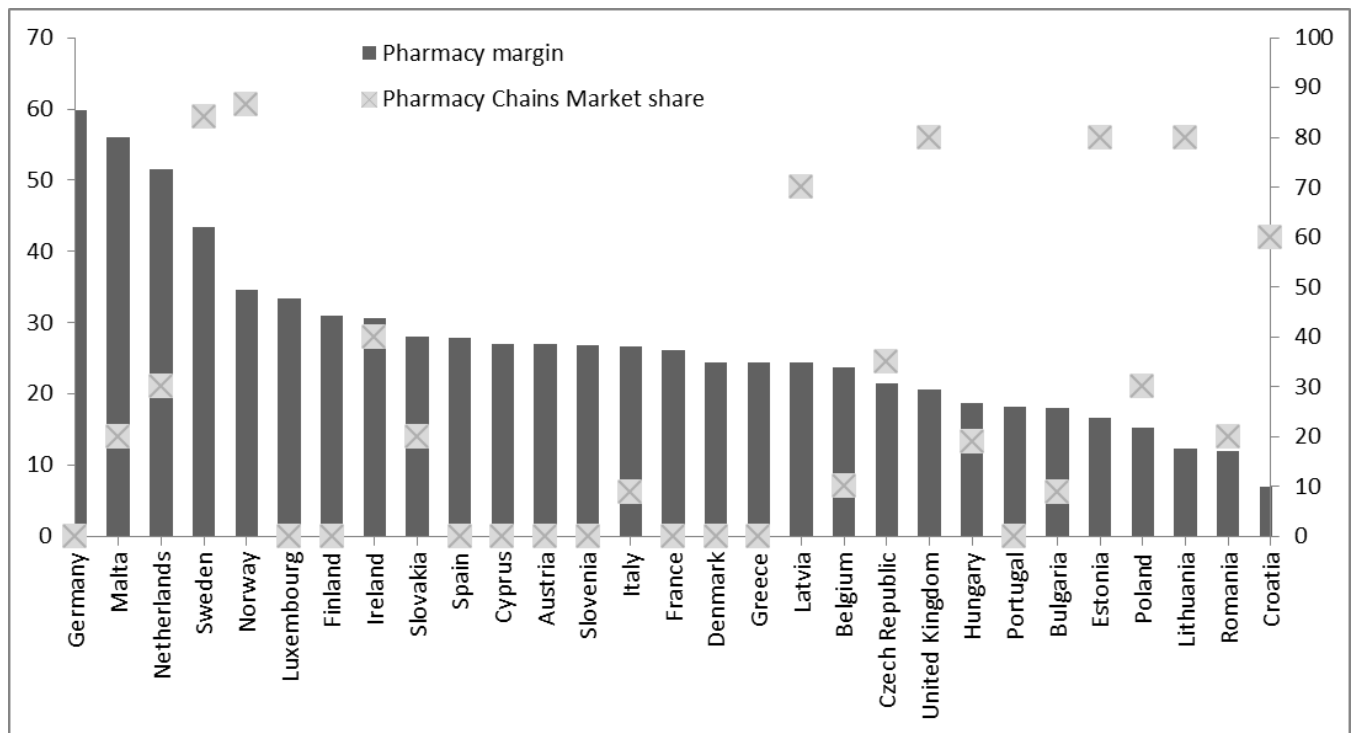| State	No of inhabitants	No of pharmacies	Pharmacy margin	GDP per capita Index (2016)	MS of chain pharmacies	Interval MS of chain pharmacies
Austria	8 690 076	1 380	27.0	126	0	A (0-8%)
Belgium	11 311 117	5 017	23.7	118	10	B (9-34%)
Bulgaria	7 153 784	3 627	18.0	48	9	B (9-34%)
Croatia	4 190 669	960	7.0	59	60	C (35-100%)
Cyprus	848 319	520	27.0	81	0	A (0-8%)
Czech Republic	10 553 843	2 788	21.5	88	35	C (35-100%)
Denmark	5 707 251	314	24.5	125	0	A (0-8%)
Estonia	1 315 944	478	16.7	74	80	C (35-100%)
Finland	5 487 308	810	31.0	109	0	A (0-8%)
France	66 759 950	22 655	26.2	105	0	A (0-8%)
Germany	82 175 684	20 249	59.8	123	0	A (0-8%)
Greece	10 783 748	10 500	24.5	67	0	A (0-8%)
Hungary	9 830 485	2 334	18.7	67	19	B (9-34%)
Ireland	4 724 720	1 836	30.6	177	40	C (35-100%)
Italy	60 665 551	18 549	26.7	96	9	B (9-34%)
Latvia	1 968 957	899	24.4	65	70	C (35-100%)
Lithuania	2 888 558	1 546	12.3	75	80	C (35-100%)
Luxembourg	576 249	95	33.4	267	0	A (0-8%)
Malta	434 403	251	56.0	95	20	B (9-34%)
Netherlands	16 979 120	2 000	51.6	128	30	B (9-34%)
Norway	5 213 985	868	34.6	149	87	C (35-100%)
Poland	37 967 209	13 685	15.3	69	30	B (9-34%)
Portugal	10 341 330	2 900	18.3	77	0	A (0-8%)
Romania	19 760 314	7 220	12.0	59	20	B (9-34%)
Slovakia	5 426 252	1 931	28.1	77	20	B (9-34%)
Slovenia	2 064 188	346	26.9	83	0	A (0-8%)
Spain	46 440 099	21 458	27.9	92	0	A (0-8%)
Sweden	9 851 017	1 339	43.4	124	84	C (35-100%)
United Kingdom	65 382 556	14 405	20.7	108	80	C (35-100%)

Source: Sources Eurostat, national authorities and WHO Collaborating Centre (WHOCC, 2017).

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1   25,319 CZK/€ is the average monthly exchange rate of the Czech National Bank for February 2018.

Analysis of covariance is a method that combines the properties and use of the scattering analysis (ANOVA) and the regression analysis (RA). ANOVA and RA are two forms of a general linear model, both of which assume that the dependent variable is a contiguous random variable and differs in the assumption of independent variables. In the case of ANOVA, it is a categorical variable (e.g. sorting into specific "groups", "factor level", etc.); in the case of RA, it is also a continuous variable. The basic idea of the covariance analysis is to extend the scattering analysis model with one or more certain factors to the model, which additionally contains controllable (preferably quantitative) variables that also affect the values of the explained variables. The objective of the covariance analysis is to purify the studied dependence of the explained (measured) variable on the chosen factors from the "misleading" effect of the accompanying results (referred to as covariates). The impact of the accompanying variables on the explained variables is significant but is not a direct subject of interest in a given task (Hebák, Hustopecký, Jarošová, & Malá, 2005).

2   Results

Fig. 1: Overview of the countries surveyed (margin and % of chain pharmacies)

Source: Písek and Pícha (2018), Author's elaboration

The average margin is 27.2%. The minimum margin is 7% (Croatia), and the maximum is 59.8% (Germany). The mean of margins for countries with chains is 25.6% and for countries

without chains is 29.7%. The statistical model indicates the positive correlation between margins and GDP. We did not find an apparent link between the margin and the degree of liberalisation.

Tab. 2: General linear model (Analysis of covariance)

Effect	Univariate significance tests, size effects and strengths for pharmacy margins. Sigma-limited parameterisation. Decomposition of the effective hypothesis.							
	SS	Degrees freedom	MS	F	p	Partial Eta-squared	Eccentricity	Observed power (alpha=0,05)
Intercept	760,314	1	760,31	5,86244	0,02305	0,189954	5,862446	0,643403
GDP per Capita Index	892,898	1	892,89	6,88474	0,01460	0,215926	6,884741	0,712971
Pharmacy chains MS	212,595	2	106,29	0,81961	0,45209	0,061534	1,639226	0,174217
Error	3242,30	25	129,69					

Source: TIBCO Statistica 12

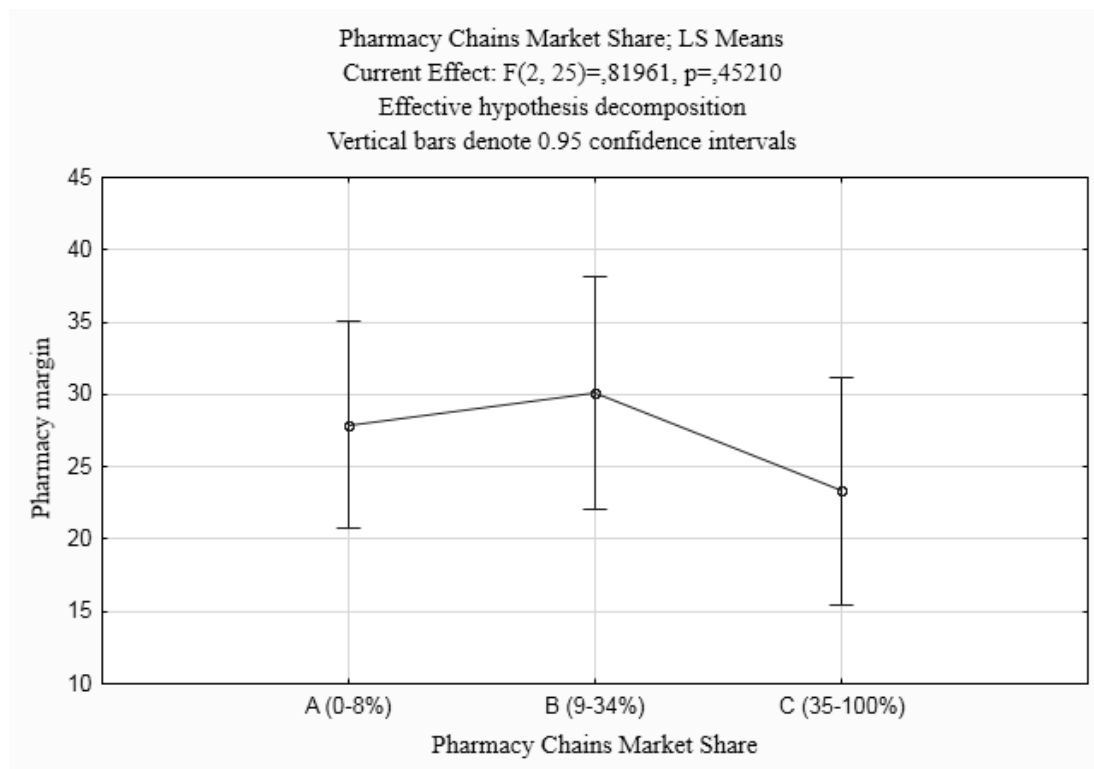**Tab. 3: Simple regression (the GDP PC index is an independent variable)**

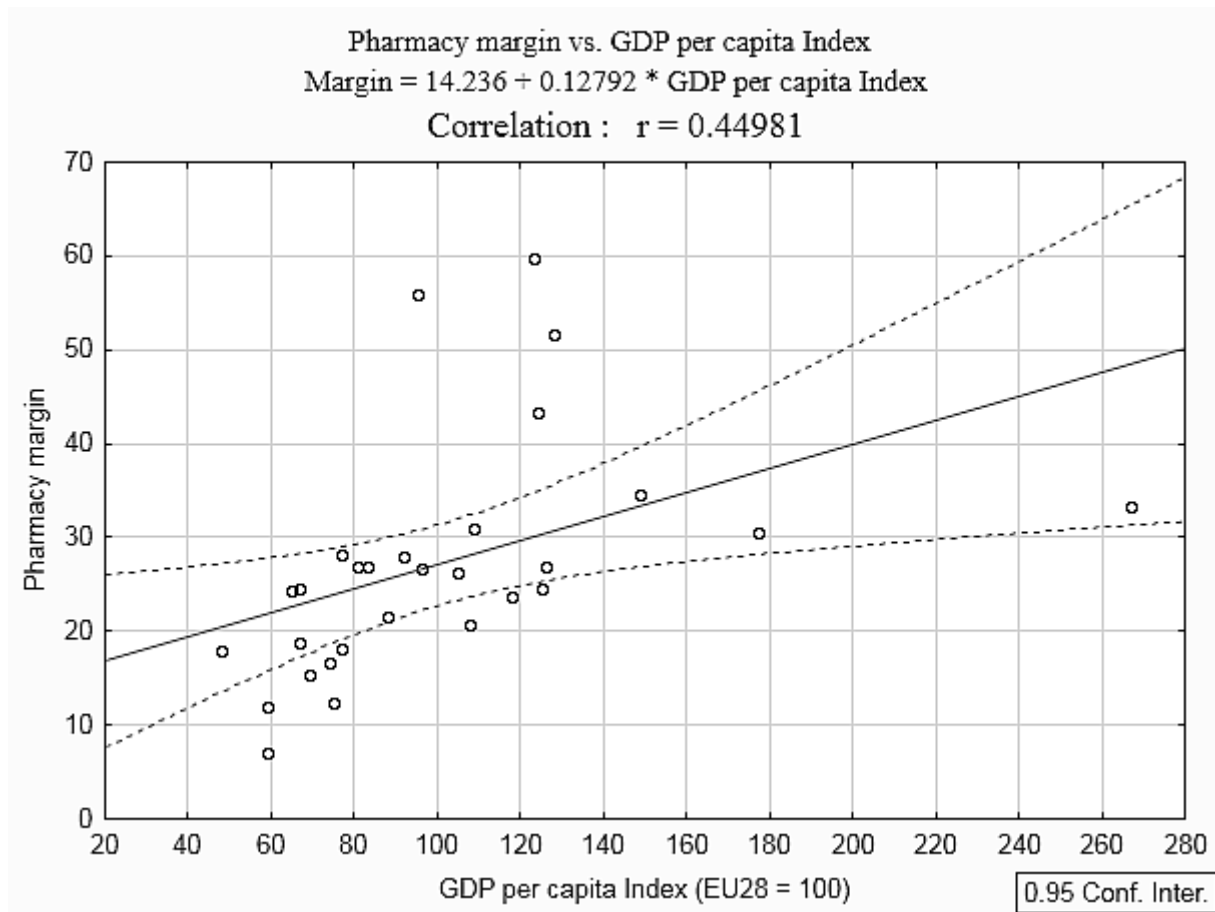| Dependent Variable	Test of SS whole model vs SS Residual										
	Multiple R	Multiple R2	Adjusted R2	SS Model	df Model	MS Model	SS Residual	df Resid.	MS Resid.	F	p
Pharm. margin	0,449809	0,202328	0,172785	876,3317	1	876,3317	3454,903	27	127,9594	6,848516	0,014357

Source: TIBCO Statistica 12

Normality of data was checked by the graphical analysis of residual (Q-Q plots).

Fig. 2: General linear model (Analysis of covariance)

Source: TIBCO Statistica 12

Fig. 3: Result of margin and GDPPCI regression

Source: TIBCO Statistica 12

The equation "margin = 14,236 + 0,13792 * GDP PC Index" probably characterizes the relationship between pharmacy margin and GDP PC Index.

Conclusion

The claim of some studies that deregulation of the pharmacy market leads to a reduction in margins has not been proven. The hypothesis that liberalisation brings lower costs to health care payers has not been confirmed.

Different values of the means of liberalised and regulated markets are likely to be determined by the division of countries. The higher margin (29.7% in non-liberalised markets) correlates with/is linked to the larger number of developed countries.

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