

***Distribution profile and efficiency of the
European pharmaceutical full-line
wholesaling sector***



Wolfengasse 4/7, A-1010 Vienna
Tel: (+43 1) 513 20 07
ipf@ipf-ac.at

This report has been commissioned by the European Association of Pharmaceutical Full-line Wholesalers (GIRP).

Vienna, January 2012

Authors: Evelyn Walter[§], Aline Dragosits[§], Monira Said[§]
§ all authors contributed equally to this work

Imprint

Edited and Published by Institut für Pharmaökonomische Forschung
 (Institute for Pharmaeconomic Research)
 A-1010 Vienna, Wolfengasse 4
 Tel.: +43-1-513 20 07
 E-mail: ipf@ipf-ac.at

© Institute for Pharmaeconomic Research, 2011

This study was prepared by the Institute for Pharmaeconomic Research (IPF) Vienna for the European Association of Pharmaceutical Full-line Wholesalers (GIRP). The information in this study was compiled with the utmost care. However, IPF cannot be held responsible for the consequences of errors arising from the use of the study.

This publication may be reproduced, stored in any informational retrieval system or transmitted in whole or in part by any means – electronic, mechanical, photocopying, recording or otherwise so long as source is mentioned.

Contents

CONTENTS	I
TABLES	III
FIGURES	V
LIST OF ABBREVIATIONS	VII
EXECUTIVE SUMMARY	I
1 INTRODUCTION	1
2 APPROACH AND METHODOLOGY	3
3 PHARMACEUTICAL DISTRIBUTION IN EUROPE	6
3.1 THE ROLE OF THE PHARMACEUTICAL WHOLESALE SECTOR	6
3.2 MARKET STRUCTURE	9
3.2.1 <i>Pharmaceutical distribution models</i>	9
3.2.2 <i>European pharmaceutical distribution landscape</i>	12
3.3 DEVELOPMENT OF MARKET SHARE AND MARGINS	13
3.3.1 <i>Market share</i>	13
3.3.2 <i>Development of the wholesale margins</i>	14
4 PHARMACIES' PERCEPTION OF THE DISTRIBUTION SECTOR	16
4.1 PHARMACISTS' MAIN CONCERNS	17
4.1.1 <i>Pharmaceutical full-line wholesalers</i>	17
4.1.2 <i>Pharmaceutical short-line wholesalers</i>	19
4.1.3 <i>Direct sales from manufacturers</i>	19
4.1.4 <i>DTP</i>	20
4.1.5 <i>RWA</i>	20
4.2 SATISFACTION WITH DIFFERENT DISTRIBUTION MODELS	21
5 EFFICIENCY OF PHARMACEUTICAL FULL-LINE WHOLESALING	27
5.1 EFFICIENCY INDICATORS	27
5.1.1 <i>Full supply function</i>	27
5.1.2 <i>Immediate availability</i>	28
5.1.3 <i>Stock keeping function</i>	29
5.1.4 <i>Delivery function</i>	29
5.1.5 <i>Pre-financing function</i>	31
5.2 ADDED VALUE SERVICES	32
5.3 BENEFITS FOR THE HEALTHCARE SYSTEM	34
5.3.1 <i>Industry</i>	34
5.3.2 <i>Pharmacies</i>	34
5.3.3 <i>Public</i>	35
5.4 THE MACROECONOMIC IMPACT OF PHARMACEUTICAL FULL-LINE WHOLESALERS	35
5.4.1 <i>Multiplying effects</i>	37
5.5 THE DISTRIBUTION CHAIN WITH AND WITHOUT PHARMACEUTICAL FULL-LINE WHOLESALERS	38
6 STRUCTURAL CHANGES IN THE PHARMACEUTICAL WHOLESALING SECTOR	42

6.1	PHARMACISTS' FUTURE CONCERNS ABOUT THE CONTINUITY OF SUPPLIES OF MEDICINAL PRODUCTS	42
6.2	ANSWERING THE RESEARCH QUESTIONS.....	43
6.3	OUTLOOK AND CONCLUSION.....	46
GLOSSARY		48
	SOURCES USED IN THE GLOSSARY.....	55
BIBLIOGRAPHY		57
ANNEX 1.....		60
	COUNTRY-SPECIFIC RESULTS	60
ANNEX2.....		68
	WORKING CAPITAL	68
	INPUT-OUTPUT ANALYSIS.....	68
	BALIGH-RICHARTZ EFFECT.....	71
	PROCESS COSTS	71
ANNEX 3.....		74
	SURVEY FINDINGS	74
ANNEX 4.....		91
	PHARMACY QUESTIONNAIRE	91
ANNEX 5.....		102
	COMPANY QUESTIONNAIRE	102

Tables

TABLE 1: OVERVIEW OF KEY FEATURES OF THE PHARMACEUTICAL DISTRIBUTION SYSTEMS IN DE, ES, FR, IT, NL, UK, 2011	12
TABLE 2: MULTIPLYING EFFECTS ON VALUE ADDED AND EMPLOYMENT (FTE) IN DE, ES, FR, IT, NL, UK, 2010	37
TABLE 3: POOLED MANUFACTURERS/DELIVERY AND DELIVERIES/DAY OF THE PHARMACEUTICAL FULL-LINE WHOLESALER IN DE, ES, FR, IT, NL, UK, 2011	64
TABLE 4: COST DIFFERENCES BETWEEN A DELIVERY FROM A PHARMACEUTICAL FULL-LINE WHOLESALER COMPARED TO DELIVERIES FROM DIFFERENT MANUFACTURERS IN DE, ES, FR, IT, NL, UK, 2011	65
TABLE 5: CONCERNS REGARDING THE DISTRIBUTION – PHARMACEUTICAL FULL-LINE WHOLESALERS DE	74
TABLE 6: CONCERNS REGARDING THE SERVICE LEVEL – PHARMACEUTICAL FULL-LINE WHOLESALERS DE	74
TABLE 7: CONCERNS REGARDING THE SAFETY – PHARMACEUTICAL FULL-LINE WHOLESALERS DE	75
TABLE 8: CONCERNS REGARDING THE DISTRIBUTION – PHARMACEUTICAL SHORT-LINE WHOLESALERS DE	75
TABLE 9: CONCERNS REGARDING THE SERVICE LEVEL – PHARMACEUTICAL SHORT-LINE WHOLESALERS DE	75
TABLE 10: CONCERNS REGARDING THE SAFETY – PHARMACEUTICAL SHORT-LINE WHOLESALERS DE	76
TABLE 11: CONCERNS REGARDING THE DISTRIBUTION – DIRECT SALES FROM MANUFACTURERS DE	76
TABLE 12: CONCERNS REGARDING THE SERVICE LEVEL – DIRECT SALES FROM MANUFACTURERS DE	76
TABLE 13: CONCERNS REGARDING THE SAFETY – DIRECT SALES FROM MANUFACTURERS DE	77
TABLE 14: CONCERNS REGARDING THE DISTRIBUTION – PHARMACEUTICAL FULL-LINE WHOLESALERS ES	78
TABLE 15: CONCERNS REGARDING THE SERVICE LEVEL – PHARMACEUTICAL FULL-LINE WHOLESALERS ES	78
TABLE 16: CONCERNS REGARDING THE SAFETY – PHARMACEUTICAL FULL-LINE WHOLESALERS ES	78
TABLE 17: CONCERNS REGARDING THE DISTRIBUTION – DIRECT SALES FROM MANUFACTURERS ES	79
TABLE 18: CONCERNS REGARDING THE SERVICE LEVEL – DIRECT SALES FROM MANUFACTURERS ES	79
TABLE 19: CONCERNS REGARDING THE SAFETY – DIRECT SALES FROM MANUFACTURERS ES	79
TABLE 20: CONCERNS REGARDING THE DISTRIBUTION – PHARMACEUTICAL FULL-LINE WHOLESALERS FR	80
TABLE 21: CONCERNS REGARDING THE SERVICE LEVEL – PHARMACEUTICAL FULL-LINE WHOLESALERS FR	80
TABLE 22: CONCERNS REGARDING THE SAFETY – PHARMACEUTICAL FULL-LINE WHOLESALERS FR	81
TABLE 23: CONCERNS REGARDING THE DISTRIBUTION – DIRECT SALES FROM MANUFACTURERS FR	81
TABLE 24: CONCERNS REGARDING THE SERVICE LEVEL – DIRECT SALES FROM MANUFACTURERS FR	81
TABLE 25: CONCERNS REGARDING THE SAFETY – DIRECT SALES FROM MANUFACTURERS FR	82
TABLE 26: CONCERNS REGARDING THE DISTRIBUTION – PHARMACEUTICAL FULL-LINE WHOLESALERS NL	83
TABLE 27: CONCERNS REGARDING THE SERVICE LEVEL – PHARMACEUTICAL FULL-LINE WHOLESALERS NL	83
TABLE 28: CONCERNS REGARDING THE SAFETY – PHARMACEUTICAL FULL-LINE WHOLESALERS NL	83
TABLE 29: CONCERNS REGARDING DISTRIBUTION – SHORT LINE WHOLESALERS NL	84
TABLE 30: CONCERNS REGARDING SERVICE LEVEL – PHARMACEUTICAL SHORT-LINE WHOLESALERS NL	84
TABLE 31: CONCERNS REGARDING THE SAFETY – PHARMACEUTICAL SHORT-LINE WHOLESALERS NL	84
TABLE 32: CONCERNS REGARDING DISTRIBUTION – DIRECT SALES FROM MANUFACTURERS NL	85

TABLE 33: CONCERNS REGARDING SERVICE LEVEL – DIRECT SALES FROM MANUFACTURERS NL	85
TABLE 34: CONCERNS REGARDING THE SAFETY – DIRECT SALES FROM MANUFACTURERS NL	85
TABLE 35: CONCERNS REGARDING DISTRIBUTION – WHOLESALERS UK	86
TABLE 36: CONCERNS REGARDING SERVICE LEVEL – WHOLESALERS UK	86
TABLE 37: CONCERNS REGARDING THE SAFETY – WHOLESALERS UK	87
TABLE 38: CONCERNS REGARDING DISTRIBUTION – DTP UK	87
TABLE 39: CONCERNS REGARDING SERVICE LEVEL – DTP UK	87
TABLE 40: CONCERNS REGARDING THE SAFETY – DTP UK	88
TABLE 41: CONCERNS REGARDING DISTRIBUTION – RWA UK	88
TABLE 42: CONCERNS REGARDING SERVICE LEVEL – RWA UK	88
TABLE 43: CONCERNS REGARDING THE SAFETY – RWA UK	89
TABLE 44: CONCERNS REGARDING DISTRIBUTION – DIRECT SALES FROM MANUFACTURERS UK	89
TABLE 45: CONCERNS REGARDING SERVICE LEVEL – DIRECT SALES FROM MANUFACTURERS UK	89
TABLE 46: CONCERNS REGARDING THE SAFETY – DIRECT SALES FROM MANUFACTURERS UK	90
TABLE 47: FUTURE CONCERNS – OPEN QUESTION	90

Figures

FIGURE 1: PERCENTAGE OF MEDICINAL PRODUCTS (QUANTITY) DISTRIBUTED BY PHARMACEUTICAL FULL-LINE WHOLESALERS IN DE, ES, FR, IT, NL, UK*, 2010	6
FIGURE 2: DIMENSIONS OF PHARMACEUTICAL FULL-LINE WHOESALING, 2010	8
FIGURE 3: PHARMACEUTICAL DISTRIBUTION IN THE PHARMACEUTICAL FULL-LINE WHOESALING MODEL 9	
FIGURE 4: PHARMACEUTICAL DISTRIBUTION IN THE DTP VS. DIRECT SALES MODEL	10
FIGURE 5: PHARMACEUTICAL DISTRIBUTION IN THE DTP VS. RWA MODEL	11
FIGURE 6: TURNOVER (UNITS) BY DISTRIBUTION CHANNEL – RETAIL MARKET IN DE, ES, FR, IT, NL, UK, 2007 & 2010	14
FIGURE 7: DEVELOPMENT OF AVERAGE WHOLESALE MARGIN ON PHARMACY PURCHASE PRICE AND PHARMACY MARGIN ON PHARMACY RETAIL PRICE EXCLUDING VAT IN DE, ES, FR, IT, NL, UK, 2001-2010.....	15
FIGURE 8: SATISFACTION WITH THE DISTRIBUTION SYSTEM – PHARMACEUTICAL FULL-LINE WHOESALERS IN DE, ES, FR, NL, UK, 2011	21
FIGURE 9: SATISFACTION WITH THE DELIVERY TIME – PHARMACEUTICAL FULL-LINE WHOESALERS IN DE, ES, FR, NL, UK, 2011	22
FIGURE 10: SATISFACTION WITH THE DISTRIBUTION SYSTEM – PHARMACEUTICAL SHORT-LINE WHOESALERS IN DE, NL, 2011	22
FIGURE 11: SATISFACTION WITH THE DELIVERY TIME – PHARMACEUTICAL SHORT-LINE WHOESALERS IN DE, NL, 2011.....	23
FIGURE 12: SATISFACTION WITH THE DISTRIBUTION SYSTEM – DIRECT SALES FROM MANUFACTURERS IN DE, ES, FR, NL, UK, 2011	23
FIGURE 13: SATISFACTION WITH THE DELIVERY TIME – DIRECT SALES FROM MANUFACTURERS IN DE, ES, FR, NL, UK, 2011	24
FIGURE 14: SATISFACTION – DIRECT TO PHARMACY IN UK, 2011	25
FIGURE 15: SATISFACTION – REDUCED WHOLESALE ARRANGEMENT IN UK, 2011	25
FIGURE 16: ITEMS ON STOCK HELD BY PHARMACEUTICAL FULL-LINE WHOESALERS IN DE, ES, FR, IT, NL, UK, 2010	28
FIGURE 17: INVENTORY TURNOVER IN DE, ES, FR, IT, NL, UK, 2010.....	29
FIGURE 18: DELIVERY TIME IN DE, ES, FR, (IT), NL, UK, 2011	30
FIGURE 19: PRE-FINANCING* DE, ES, FR, IT, NL, UK, 2010	32
FIGURE 20: ADDED VALUE SERVICES OFFERED BY PHARMACEUTICAL FULL-LINE WHOESALERS.....	33
FIGURE 21: MACROECONOMIC EFFECTS	36
FIGURE 22: AGGREGATE MULTIPLYING EFFECTS ON EMPLOYMENT (FTE) AND VALUE ADDED IN DE, ES, FR, IT, NL, UK, 2010	37
FIGURE 23: DISTRIBUTION CHAIN WITH AND WITHOUT INTERMEDIARIES	39
FIGURE 24: PROCESS COSTS IN THE PHARMACY PER ORDER (PHARMACEUTICAL FULL-LINE WHOESALER VS. DIRECT SALES FROM MANUFACTURER) DE, ES, FR, IT, NL, UK, 2011	39
FIGURE 25: SCENARIO: IMPACT ON PROCESS COSTS PER PHARMACY PER YEAR (PHARMACEUTICAL FULL-LINE WHOESALERS VS. DIRECT SALES FROM MANUFACTURERS) IN DE, ES, FR, IT, NL, UK, 2011	40
FIGURE 26: DELIVERY TIME IN HOURS (PHARMACEUTICAL FULL-LINE WHOESALER VS. PHARMACEUTICAL SHORT-LINE WHOESALER VS. DIRECT SALES FROM MANUFACTURER) IN DE, ES, FR, (IT), NL, UK, 2011	60
FIGURE 27: REPORTED DELIVERY TIME OF THE PHARMACEUTICAL FULL-LINE WHOESALERS IN HOURS IN DE, ES, FR, IT, NL, UK, 2011.....	61

FIGURE 28: DELIVERIES PER WEEK (PHARMACEUTICAL FULL-LINE WHOLESALER VS. PHARMACEUTICAL SHORT-LINE WHOLESALERS VS. DIRECT SALES FROM MANUFACTURER) IN DE, ES, FR, (IT), NL, UK, 2011	61
FIGURE 29: REPORTED DELIVERIES PER WEEK OF THE PHARMACEUTICAL FULL-LINE WHOLESALERS IN DE, ES, FR, IT, NL, UK, 2011	62
FIGURE 30: PRE-FINANCING* IN MILLION €, DE, ES, FR, IT, NL, UK, 2011	62
FIGURE 31: PROCESS COSTS IN THE PHARMACY PER ORDER (PHARMACEUTICAL FULL-LINE WHOLESALER) IN DE, ES, FR, IT, NL, UK, 2011	63
FIGURE 32: PROCESS COSTS IN THE PHARMACY PER ORDER (DIRECT SALES FROM MANUFACTURER) IN DE, ES, FR, IT, NL, UK, 2011	64
FIGURE 33: IMPACT ON PROCESS COSTS PER PHARMACY, COUNTRY AND YEAR, DE, ES, FR, IT, NL, UK 2011	65
FIGURE 34: DIRECT, INDIRECT AND INDUCED EFFECTS ON VALUE ADDED (IN MILLION €) IN DE, ES, FR, IT, NL, UK, 2010	66
FIGURE 35: DIRECT, INDIRECT AND INDUCED EFFECTS ON EMPLOYMENT IN DE, ES, FR, IT, NL, UK, 2010	67

List of abbreviations

B2B	business to business
bn	billion
DE	Germany
DIO	Days Inventory Outstanding
DPO	Days Payable Outstanding
DSO	Days Sales Outstanding
DTP	Direct to Pharmacy
e.g.	for example
EC	European Commission
ES	Spain
EU	European Union
FR	France
FTE	Full-time equivalent
GIRP	The European Association of Pharmaceutical Full-line Wholesalers – Groupement International de la Repartition Pharmaceutique
IPF	Institute for Pharmaeconomic Research
IT	Italy
min	minute
NL	The Netherlands
PASW	Predictive Analysis Software
PSO	Public Service Obligation
RWA	Reduced Wholesale Arrangement
RX	Prescription drug
SKU	Stock Keeping Unit
UK	The United Kingdom
VAT	Value Added Tax

EXECUTIVE SUMMARY

This paper presents the results of an independent study conducted by IPF – the Institute for Pharmaeconomic Research – and commissioned by the European Association of Pharmaceutical Full-line Wholesalers (GIRP).

The aim of the study is to analyse the role and functions of the pharmaceutical full-line wholesalers, as the main providers of medicinal products in comparison to alternative distribution systems such as pharmaceutical short-line wholesalers, direct sales or selective distribution systems such as Reduced Wholesale Arrangements (RWA) and the Direct to Pharmacy (DTP) models. Thus, the significance of the full-line wholesaling model has been analysed not only from an economic viewpoint, but also from the perspective of the role it plays in the public health system as a whole. Based on primary and secondary data, this study uses qualitative and quantitative research to illustrate the performance of the pharmaceutical full-line wholesale sector.

Key findings

- ▶ Pharmaceutical full-line wholesalers ensure a safe, rapid, continuous and cost-effective supply of medicinal products throughout Europe.
- ▶ The services offered by pharmaceutical full-line wholesalers, such as high delivery frequency or full product range, ensure that even the most isolated patients can receive the most specialized medicinal products in a safe and timely manner.
- ▶ Pharmaceutical wholesalers pre-finance nearly the entire medicinal product market and secure the cash flow of social insurers.
- ▶ Added value services are among the key competitive advantages of the pharmaceutical wholesaling sector.
- ▶ The satisfaction of pharmacists varies greatly between different distribution models and so does the delivery time.
- ▶ The lack of pharmaceutical full-line wholesalers would lead to a dramatic increase in the number of transactions as well as to high additional costs for pharmacies.
- ▶ Therefore, the existence of pharmaceutical full-line wholesalers is essential for the European healthcare sector.

The role of the pharmaceutical wholesale sector

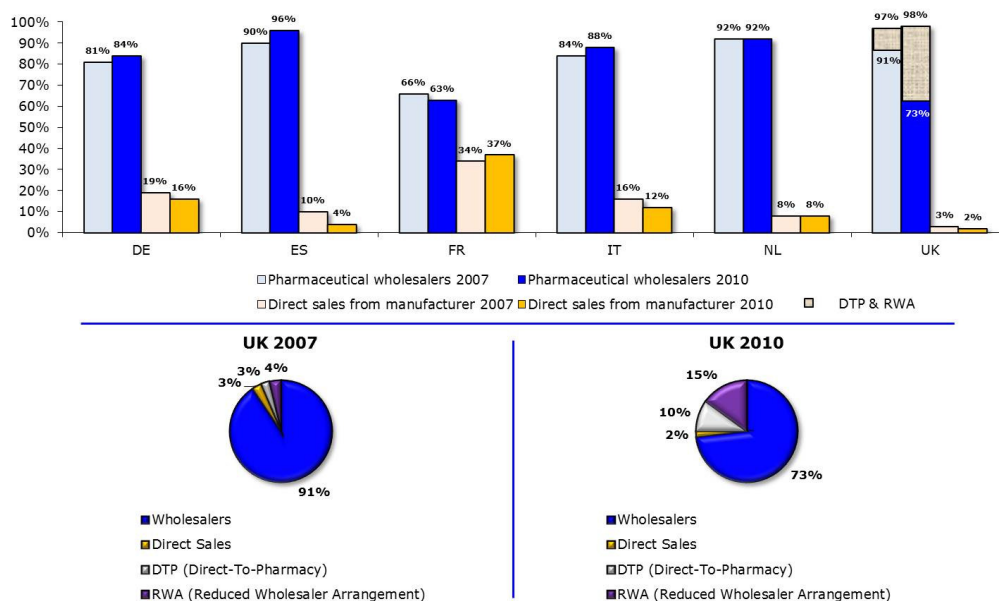
- ▶ Though the pharmaceutical wholesale industry is relatively small, it is a vital branch within the pharmaceutical sector. In 2010, 772 pharmaceutical full-line wholesalers throughout the European Union¹ + 2 countries met the challenge to supply medicinal products safely, rapidly and continuously, serving 172,709 retail pharmacies as well as hospitals and dispensing doctors, supplying 513 million people in the EU-25 + 2 countries with medicinal products.
- ▶ Pharmaceutical full-line wholesalers carry the complete assortment of medicinal products required by patients in their country and provide a wide range of added value services to manufacturers, pharmacies and patients.
- ▶ A tight distribution network of 2,019 warehouses is the foundation of a continuous, safe and rapid supply of medicinal products within the EU-25 + 2.
- ▶ In the six European key markets (France, Germany, Italy, the Netherlands, Spain and the United Kingdom), 176 pharmaceutical full-line wholesalers operate 730 warehouses. Furthermore, 104,300 dispensing points are served, supplying more than 332 million citizens in 2010. In total, 67% of all pharmaceutical wholesale sales were generated in the countries observed.
- ▶ Other distributors, like short-line wholesalers and manufacturers engaging in direct sales, only carry a limited product range of mostly fast turning, high margin lines and do not offer added value services to their customers. Furthermore, they do not deliver with the same frequency and operate without public service functions.
- ▶ Direct sales from manufacturers have been gaining more and more importance in recent years. Pharmaceutical manufacturers sell their products directly to the pharmacies in addition to using the pharmaceutical full-line wholesaling route.
- ▶ The DTP (Direct to Pharmacy) distribution model was implemented in the UK in 2007. In the DTP model manufacturers deliver their medicinal products directly to pharmacies through one or more wholesalers who are used as logistic service providers.
- ▶ Another model introduced in the UK shortly after the DTP model is the Reduced Wholesale Arrangement (RWA), where manufacturers use wholesal-

¹ The figures cover all countries of the European Union plus Norway and Switzerland, except Cyprus and Malta. These two countries have been excluded from the analysis, since their distribution system is different (it relies on agents).

ers in their role as wholesalers, but do not supply their medicinal products to all of them.

- ▶ Due to the growing importance of alternative distribution systems such as DTP and RWA in the UK, the market growth rates of wholesalers have been constantly decreasing in the past years.
- ▶ Furthermore, the turnover of the wholesale sector has been negatively affected by reduced margins. In 2010, pharmaceutical full-line wholesalers generated a total turnover of €136 billion in the EU-25 + 2, 67% (€91 billion) of which in the six key markets.

A: Turnover (units) by distribution channel – retail market in DE, ES, FR, IT, NL, UK, 2007 & 2010

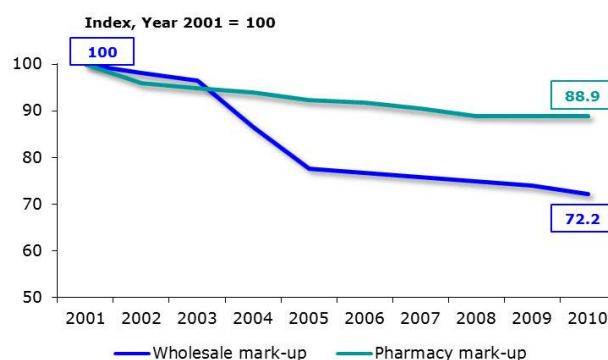


* Currently, there are no pharmaceutical wholesalers in UK, carrying the full range of products as none of the operators receives the full range of medicinal products due to market conditions.

Source: BG Pharma written information 2011, GIRP data 2007-2010, IMS health 2007-2011, CSRP written information 2011, IPF research 2011

- ▶ Since 2001, measures influencing margins directly and indirectly reduced wholesalers' margin dramatically by 27.80% on average. For example, a margin of 10% in 2001 had decreased by 3 percentage points to 7% until 2010.

B: Development of average wholesale margin on pharmacy purchase price and pharmacy margin on pharmacy retail price excluding VAT in DE, ES, FR, IT, NL, UK, 2001-2010



Source: IPF research 2011

Pharmacies' perception of the distribution sector

- ▶ Responding pharmacists from France, Germany, the Netherlands, Spain and the UK receiving their medicinal products through pharmaceutical full-line wholesalers showed overall satisfaction with this distribution system.
- ▶ When ordering their medicinal products via direct sales from manufacturers, the majority of French pharmacists who took part in the survey complained about increasing stock effort.
- ▶ Pharmacists in Germany, who took part in the survey, expressed concerns and showed therefore dissatisfaction with regard to order conditions offered by manufacturers in case of direct sales. Furthermore, they criticized the decreased discounts. As a result of the reforms of the healthcare system, which led to a reduction of the wholesale margin, pharmaceutical full-line wholesalers were forced to cut down their discounts.
- ▶ In the Netherlands, among the major concerns reported was the increase of out of stocks and the reduced availability of medicinal products respectively. The reason is that the Netherlands is – compared to its neighbour countries – a low price country with a high amount of exports.
- ▶ The respondent Spanish pharmacists were very satisfied with their pharmaceutical full-line wholesalers. When ordering products through direct sales from manufacturers, they were unsatisfied regarding shortages of medicinal products, a result of supply problems.
- ▶ In the UK, the respondents were unsatisfied and concerned about the increasing order and stock effort resulting from the current changes in the distribution system.

- ▶ Distribution through the RWA has also been criticised, due to the increased pharmacy stock levels and order efforts. Furthermore, the respondent pharmacists complained that they do not have enough time to provide services to the patients. They criticized the ordering system, the range of products and the cut-off time offered.
- ▶ Despite the fast growth of RWA and DTP models in the UK, the respondent pharmacists mentioned an elevated level of discontent. Pharmacists explained the high degree of dissatisfaction with unrealistic quotas, which result in a lack of supply, reduced the availability of medicinal products and increased their stock problems. As a consequence the respondent pharmacists could not meet the patients' needs and therefore were unable to provide high-quality service.
- ▶ The findings of the pharmacists' survey can only be considered as a trend, as the results represent a snap shot of the respondent pharmacists' opinions.

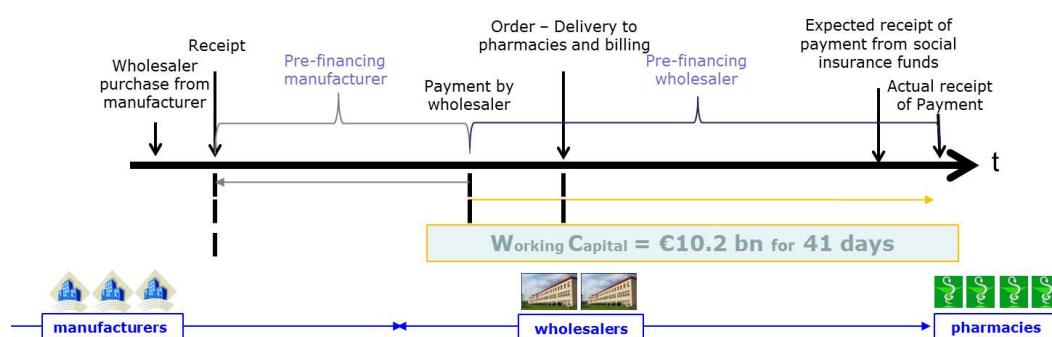
Efficiency of pharmaceutical full-line wholesaling

- ▶ To evaluate an industry's efficiency, a variety of core indicators such as market structure, working capital and inventory turnover are being used.
- ▶ The importance of the different functions offered by the pharmaceutical full-line wholesalers are highlighted on the basis of these core indicators. For example with the full-supply function, pharmaceutical full-line wholesalers carry and distribute the complete assortment of products in range and depth to meet the needs of those with whom they have normal business relations. Items on stock held by pharmaceutical full-line wholesalers ranged from 23,500 to 100,000, depending on the size of the market and the number of products authorized to be marketed.
- ▶ Pharmaceutical full-line wholesalers deliver the medicinal products needed in the required quantity and just-in-time and thereby carry out a public service function in the countries where they have no legal public service obligation.
- ▶ Pharmaceutical full-line wholesalers operate a close-knit distribution network with high delivery frequencies from their warehouses to guarantee short-term availability. They also assume a quantity-based buffer function, stock medicinal products in large quantities and deliver them in the required amounts pack by pack. As demand for specific medicinal products varies considerably, pharmaceutical full-line wholesalers have to manage a complex flow of medicinal products. Inventory turnover differs from product to product as well as from country to country, ranging from 29.80 days in Italy to 19.35 days in the Netherlands. The six countries' average is

23.68 days, which means stock turnover takes place on average 15 times a year.

- ▶ A just-in-time delivery of medicinal products is essential to guarantee that patients can start their therapy on time. According to the pharmacists' survey carried out in five countries, the respondent pharmacists perceived the delivery time of pharmaceutical full-line wholesalers to be on average 4.53 hours, with perceived 14.51 deliveries per week (based on national pharmacies opening hours (weekend and nights), including remote areas. The perceived delivery time and frequency of deliveries per week is similar to the delivery time and deliveries per week reported by GIRP's member organisations. According to their records, pharmacies are supplied on average 15.88 times per week within 2.66 hours on average. The consequences of lack of immediate availability of medicinal products may have serious consequences on various levels, starting with the patients' health and concluding with the necessity to revise a large number of clinical guidelines, due to the fact that they are based on short term availability of medicinal products.
- ▶ Pharmaceutical wholesalers pre-finance nearly the entire market of medicinal products, guarantee the continuous supply of all medicinal products and secure the cash flow of social insurers. In France, Germany, Italy, the Netherlands, Spain and the UK alone they pre-finance on average €10.2bn over a period of 41 days. In total, this sum is pre-financed approximately nine times per year.

C: Pre-financing* DE, ES, FR, IT, NL, UK, 2010



*As pharmaceutical full-line wholesalers can claim to be representative for all wholesalers in the markets observed, the calculation of the pre-financing is based on a national pharmaceutical full-line wholesale basis.

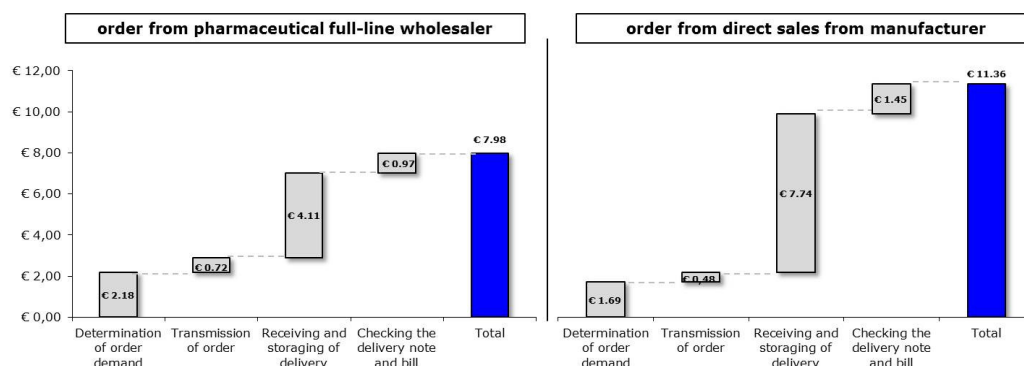
Source: GIRP data 2010, IPF research 2011

- ▶ The added value created by pharmaceutical full-line wholesalers offers manufactures, retail pharmacies and other healthcare providers, as well as patients, in addition to their core services, benefits which comprise securing product safety, product recalls, product quality, patient compliance, special handling, quality management system and many more.

- ▶ Pharmaceutical full-line wholesalers fulfil a seasonal, quantitative, financial, regional and geographical buffer function for the pharmaceutical industry. They bridge seasonally occurring bottlenecks in peak demand times, distribute medicinal products in adequate quantities and guarantee a nationwide short-term availability of medicinal products.
- ▶ For pharmacies, pharmaceutical full-line wholesalers act as external warehouses that reduce their stocks as pharmacies receive their ordered products on average within 2.66 hours of the orders given in the six countries analysed.
- ▶ Pharmaceutical full-line wholesalers have a significant macroeconomic impact. Each Euro invested by the pharmaceutical wholesale industry generates a further €2.02 in the economies of the six countries analysed.
- ▶ By creating 2.08 additional jobs in the economy for each working place created in the pharmaceutical wholesale industry, the multiplying impact of full-line wholesalers on employment exceeds the industry's impact on value added.
- ▶ The pooling of orders is a very important function. If all medicinal products were supplied directly by manufacturers, each pharmacy would have to contact each manufacturer in order to obtain a complete assortment of medicinal products. In the six countries observed, the continuous supply of medicinal products involves more than 703 million transactions² between pharmaceutical full-line wholesalers, pharmacies and manufacturers each year. Without pharmaceutical full-line wholesalers, this number would increase dramatically to 97.9 billion transactions per year.
- ▶ The comparison of process costs in pharmacies associated with the different distribution systems show the difference in time expenditure and monetary cost (with respect to a single delivery):

² Calculation is based on national pharmaceutical full-line wholesalers.

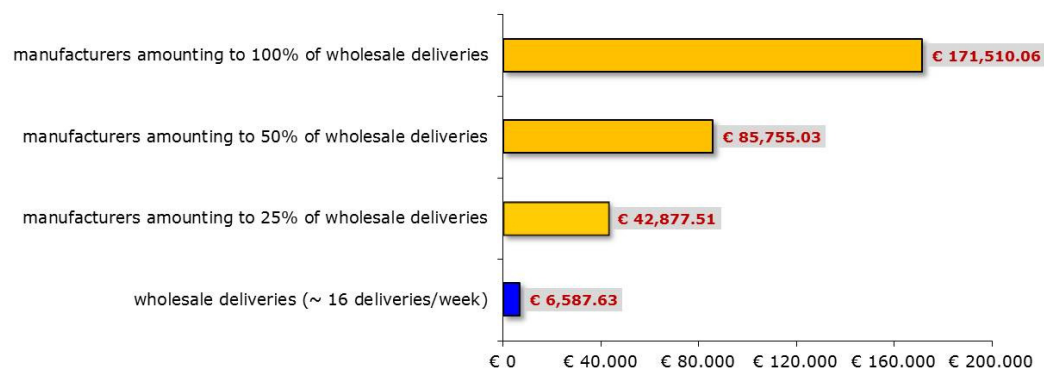
D: Process costs in the pharmacy per order (pharmaceutical full-line wholesaler vs. direct sales from manufacturer) in DE, ES, FR, IT, NL, UK, 2011



Source: De Grip et al. 2003, IfH 2008, Instituto Nacional de Estadística 2008, Istat (oral information), NHS careers 2010, Statistisches Bundesamt Deutschland 2010, WK Pharma 2011, IPF research 2011

- ▶ On a weighted average, pharmaceutical full-line wholesalers are pooling products of 18.28 manufacturers per delivery.
- ▶ The cost difference of **one** delivery from a manufacturer is €3.38 compared to **one** delivery from a pharmaceutical full-line wholesaler.
- ▶ The cost difference based on **18.28** deliveries from different manufacturers is €199.71 compared to **one** delivery from a pharmaceutical full-line wholesaler, where products of 18.28 manufacturers are bundled.

E: Scenario: Impact on process costs per pharmacy per year (pharmaceutical full-line wholesaler vs. direct sales from manufacturers) in DE, ES, FR, IT, NL, UK, 2011



Source: Bureau of Labor Statistics 2010, Center for Healthcare supply chain research 2007, De Grip et al. 2003, Instituto Nacional de Estadística 2008, Istat 2009, IPF research 2011 (questionnaires), OECD 2008, Statistisches Bundesamt Deutschland 2010

- ▶ The process costs for pharmacies will increase without pooling from €6,587.63 to €42,877.51 per year, resulting in a cost difference of €36,289.88, if 25% of wholesale deliveries are delivered by the manufacturers directly.
- ▶ Direct distribution with deliveries amounting to 50% of wholesale deliveries would increase the process costs by €79,167.40 per year and pharmacy.

In conclusion:

- ▶ The effective and efficient functioning of the healthcare industry in Europe is guaranteed as pharmaceutical full-line wholesalers are funding and holding buffer stocks and therefore provide the necessary working capital.
- ▶ Pharmaceutical full-line wholesalers help reduce transaction costs, secure a safe, rapid and continuous supply of medicinal products and help generate value along the pharmaceutical supply chain by providing additional services.
- ▶ Furthermore, pharmaceutical full-line wholesalers are vital and reliable partners for policy makers. They help to find strategies and solutions for the current and future challenges in the European pharmaceutical sector together with policy makers, pharmaceutical manufacturers, pharmacies, other healthcare professionals, insurers, members of mutual health funds and patient representatives.

1 Introduction

The starting point of our discussion rests on the well-known principle that medicinal products are developed, tested and ultimately produced by pharmaceutical companies and subsequently made available to patients through pharmacies and other persons/outlets authorised to supply medicinal products to the public.

The pharmaceutical supply chain focuses on the needs of the patients. The continuous availability of medicinal products is therefore essential. This is why a sophisticated network of pharmaceutical full-line wholesalers has been put in place to ensure the continuous supply of all medicinal products to pharmacies and other healthcare professionals whenever and wherever needed. The pharmaceutical full-line wholesalers have proven to be an essential part of the supply chain, securing a vital and reliable link between pharmaceutical manufacturers, pharmacists, dispensing doctors and hospitals.

The pharmaceutical full-line wholesaling sector has experienced great transformations in the past decades due to the influences wielded by national and European legislation, associated with the constant pressure of reductions of prices and margins. Due to a process of market consolidation, the number of pharmaceutical full-line wholesalers has reduced, thereby increasing market concentration. The sector has constantly fought to maintain the customer satisfaction at a very high level by delivering the products in a safe and timely manner, as well as offering to both manufacturers and pharmacies a wide range of services. These additional services created added value for supply chain partners, which in turn enhanced the efficiency of the pharmaceutical distribution sector (Clement et al. 2005).

At the same time, pharmaceutical full-line wholesalers strived to build and maintain a cost-effective business model. Thus, they adopted new strategies, such as vertical integration (up and down) in the supply chain and regional expansion.

Against this background, the study commissioned by GIRP seeks to analyse the structures, characteristics, efficiency and performance of pharmaceutical full-line wholesalers as the main providers of medicinal products in the context of alternative distribution systems such as pharmaceutical short-line wholesaling, direct sales or Reduced Wholesale Arrangements (RWA) and Direct to Pharmacy (DTP) arrangements. The study attempts to present a comprehensive picture of the pharmaceutical wholesale sector, focusing on a variety of different functions (stock-keeping, pre-financing / working capital, carrying the debtors risk, delivery, full-supply function and the immediate availability of medicines), its benefits for the industry, pharmacies and the public as well as its macroeconomic impact (input-output-integration and multiplying effects).

Why pharmaceutical full-line wholesalers are called upon for the distribution of medicinal products and their role in the economy are main facets considered in this study.

The existence of pharmaceutical full-line wholesalers enables the supply chain participants to focus on their core tasks: pharmaceutical companies on the development, production and marketing of medicinal products, pharmacies on dispensing and counselling and doctors on diagnostics and prescriptions of treatments, all this to the benefits of patients.

2 Approach and Methodology

Purpose of the study

The aim of this study is to analyse the role and functions of the pharmaceutical full-line wholesalers as the main provider of medicinal products in comparison to alternative distribution systems such as pharmaceutical short-line wholesaling, direct sales or other selective distribution systems like Reduced Wholesale Arrangements (RWA) and the Direct to Pharmacy (DTP) arrangement. The importance of the full-line wholesaling model is analysed not only from an economic viewpoint, but also from the perspective of the role it plays in the public health system as a whole. This study uses qualitative and quantitative research based on primary and secondary data to illustrate the performance of the pharmaceutical full-line wholesale sector.

Six research questions were developed in order to prove the value of the pharmaceutical full-line wholesaling model:

- ▶ What is the role of pharmaceutical full-line wholesalers in the European pharmaceutical distribution sector and how can it be reflected by core indicators?
- ▶ What functions do pharmaceutical full-line wholesalers offer towards their supply chain partners and in which way do they contribute towards their efficiency?
- ▶ What services do pharmaceutical full-line wholesalers provide and what is the created added value for stakeholders (up and down) of the pharmaceutical supply chain and for the public?
- ▶ How satisfied are pharmacists with the distribution systems they use and where do they identify potential risks and problems with regard to the distribution process?
- ▶ What is the pharmaceutical full line wholesale sector's contribution to the overall economy – how much value added and jobs are created by pharmaceutical full-line wholesalers?
- ▶ What are the challenges faced by the pharmaceutical wholesale sector and how could future trends affect the pharmaceutical distribution landscape?

Data source

The study considers core indicators representative for all countries of the European Union plus Norway and Switzerland, with the exception of Malta and Cyprus. The latter two Member States have been excluded from the analysis, because their distribution systems are different from the rest of the EU. The medicinal products in these countries are distributed through an agency-based arrangement. As the markets excluded from the scope of observation are rather small, the results of the analysis claim to be representative for all 27 countries of the EU plus

Norway and Switzerland. Due to the fact that France, Germany, Italy, the Netherlands, Spain and the United Kingdom (UK) represent the biggest European pharmaceutical markets, in-depth analyses for these countries were made. Moreover, these countries are defined as key markets in this study.

The necessary data were obtained from primary and secondary sources:

- ▶ First, an online questionnaire addressing pharmacists of five out of the six European major markets (France, Germany, the Netherlands, Spain and the UK) was designed and translated into the national languages. Due to the lack of response, Italy has been excluded from analysis. From March to October 2011, 473 pharmacists from the above-mentioned countries participated in the survey. The systematic empirical investigation was carried out with the analysis software PASW (Predictive Analysis Software). The English version of the questionnaire is included in Annex 4.
- ▶ Second, an additional questionnaire addressing GIRP full-member associations and direct-member companies (or groups) active in Germany, France, Italy, the Netherlands, Spain and the United Kingdom was created to obtain detailed information about core indicators such as the percentage of safety stock in % of total stock value, the number of different product references (SKU's) stocked, the inventory turnover rate in days, etc. This survey was conducted by e-mail from May to June 2011. A return rate of 86% was achieved. The analysis of the data was carried out with Microsoft Excel (for questionnaire template see Annex 5).
- ▶ Third, additional data was provided by the European Association of Pharmaceutical Full-line Wholesalers (GIRP), consisting of GIRP's annual report and key statistical data gathered from its members.
- ▶ Further data has been sourced from IMS Health and systematic literature research, which verified the empirical findings.

The following notes have to be considered when reading the study:

- ▶ The wholesale sector's sales are computed on a pharmacy purchase price level before discounts and without value added tax.
- ▶ The findings of the pharmacist's survey have to be considered as a snapshot of the individual's opinion at a particular moment in time. Moreover, the results are illustrating a trend.
- ▶ Due to calculation in Microsoft Excel 2010, please note that possible rounding differences may occur.

The company data as well as the data from the pharmacies are presented on an aggregated level and therefore none of the statements in this report can be attributed to any of these companies or pharmacies individually.

Course of the Analysis

The study was structured in four different key chapters aiming to answer the aforementioned research questions. To reach this aim the following analyses have been conducted:

- ▶ The first chapter presents a general description and overview of the European pharmaceutical distribution landscape, focusing on the six biggest pharmaceutical markets.
- ▶ The structure of the sector and its development are described by the core indicators, market structure and sales.
- ▶ The efficiency of pharmaceutical distribution as a whole is observed, focusing on wholesaling. The analysis investigates the function of the pharmaceutical full-line wholesalers with the help of efficiency indicators.
- ▶ Qualitative research and the findings of the pharmacy and company surveys demonstrate the benefit for the pharmaceutical full-line wholesalers' supply chain partners (industry, pharmacy and public).
- ▶ The contribution of the pharmaceutical full-line wholesale sector to the overall efficiency of the pharmaceutical distribution chain was examined by a model based on the hypothesis that the number of transactions in a vertical distribution system depends on the presence or absence of intermediaries in the distribution chain.
- ▶ Finally, the study provides a forecast on future trends and challenges, which may influence the development of pharmaceutical distribution.

3 Pharmaceutical Distribution in Europe

This chapter gives a brief overview of the European pharmaceutical distribution landscape. First, the role of the pharmaceutical wholesale sector in the context of the distribution system is described. Second, the market structure is highlighted by showing the different ways to obtain pharmaceutical products. Finally, the impact of alternative distribution systems on the pharmaceutical full-line wholesalers' turnover is presented.

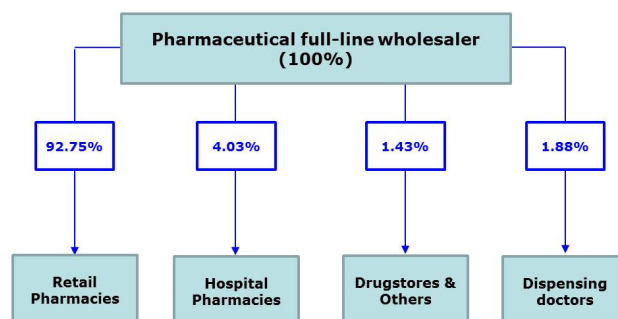
3.1 The role of the pharmaceutical wholesale sector

In Europe, the majority of medicinal products reach the patient through the traditional distribution pathway: manufacturer → (pre-wholesaler) → pharmaceutical full-line wholesaler → retail pharmacy → patient. In some cases, a pre-wholesaler is part of the supply chain, linking the manufacturer and the pharmaceutical full-line wholesaler (GIRP oral information 2011).

Although the pharmaceutical distribution landscape is undergoing changes, pharmaceutical full-line wholesalers still occupy a central position in the supply chain (Bünthe et al. 2007). Some of the most significant changes such as the increase of direct sales or the development of new pharmaceutical distribution models in the UK are discussed later on in this chapter.

Nearly three-quarters of all medicinal products which are sold in Europe are distributed through pharmaceutical full-line wholesalers. Most of the medicinal products, namely 93%, distributed by pharmaceutical full-line wholesalers are sold to retail pharmacies, followed by hospital pharmacies with four per cent (figure 1) (Bünthe et al. 2007, GIRP data 2010).

Figure 1: Percentage of medicinal products (quantity) distributed by pharmaceutical full-line wholesalers in DE, ES, FR, IT, NL, UK*, 2010



* Please note that in UK no wholesaler stocks all medicinal products due to market conditions

Source: GIRP data 2010, IPF research 2011

The main aspect distinguishing pharmaceutical full-line wholesalers from other distributors in the supply chain is the fact that they carry the full range of medicinal products (Clement et al. 2005, Roland Berger 2010). France, Germany, Italy and Spain have national Public Service Obligations (PSOs). The aim of these obligations is to guarantee that through a permanently available, adequate range of medicinal products, the requirements of a specific geographical area – no limitation of “logistical easy” areas – are met and requested medicinal products can be delivered immediately over the whole area in question. Under ‘normal’ market conditions, this is not guaranteed (GIRP 2009).

Moreover, pharmaceutical full-line wholesalers make no difference between fast-moving or seldom used, but equally vital medicinal products. By holding the full range of medicinal products on stock, full-line wholesalers ensure for example that manufacturers’ supply problems in the event of an emergency (e.g. pandemics) do not compromise a critical situation (Clement et al. 2005, Roland Berger 2010).

Given their critical role, it is not surprising that pharmaceutical full-line wholesalers operate under strict legal frameworks, such as the Community Code 2001/83/EC relating to medicinal products for human use, recently updated by the Falsified Medicines Directive - Directive 2011/62/EU – (European Parliament 2010) as well as the Good Distribution Practice Guidelines of Medicinal Products for Human Use published in 1994.

Pharmaceutical full-line wholesalers have to guarantee an economical and efficient distribution network. Their role is to ensure the continuous supply of medicinal products to pharmacies and other dispensing points. Furthermore, they have to simplify the pharmacies’ restocking by providing an efficient order and supply service. These functions are described in detail in chapter 5.1.

According to the European Commission Guidelines on Good Distribution Practice of Medicinal Products for Human Use (94C63/03), which are currently submitted for revision, pharmaceutical wholesale distributors must comply with regulation in the following areas:

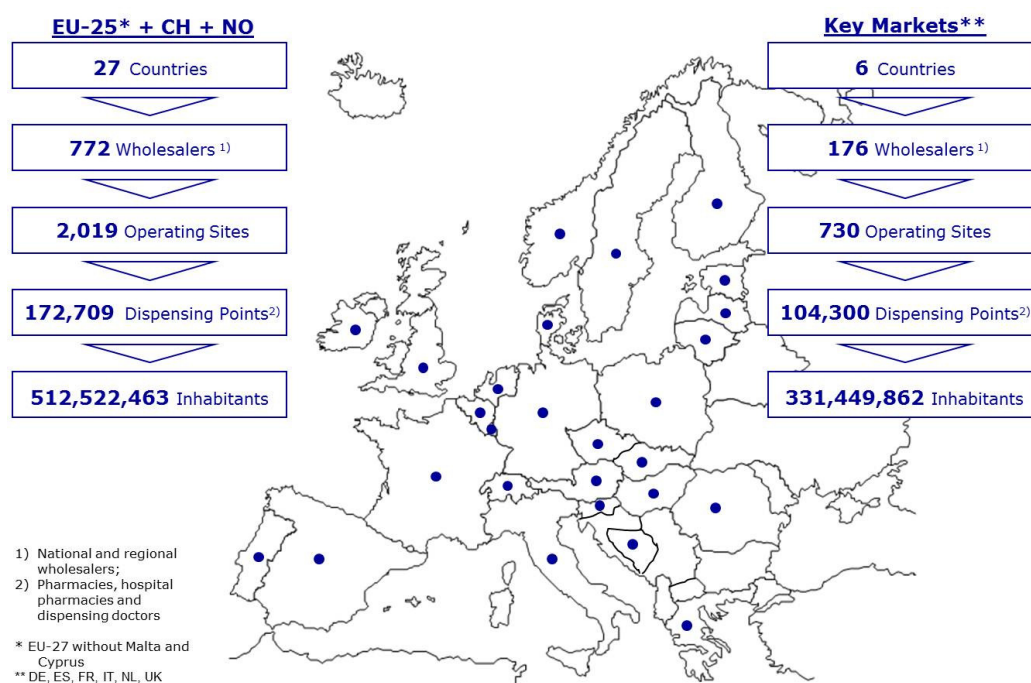
- | | |
|--|--|
| ▶ personnel (training, etc.) | ▶ returns (non-defective medicinal products, recalls, counterfeits, etc.) |
| ▶ documentation (orders, procedures, records) | ▶ self-inspections |
| ▶ premises and equipment (receipt, storage, temperature) | ▶ provisions of information to Member States in relation to wholesale activities |
| ▶ deliveries to customers | |

Source: European Economic Community 1994 (GDP Guidelines 94C63/03)

In France and Italy for example, pharmaceutical full-line wholesalers must hold more than 9/10 of medicinal products in stock, regardless of their reimbursement status. Furthermore, pharmaceutical full-line wholesalers must be able to deliver within a very short time frame, which varies by country between 12 and 24 hours. In some countries, it is legally required to have a two-week supply capacity for usual consumption and to hold minimum quantities of medicinal products on stock (e.g. France) (CSRP 2010, GIRP 2011).

772 pharmaceutical full-line wholesalers ensured a safe, rapid, continuous and cost-effective supply of medicines and medical products for the 25 countries of the European Union plus Norway and Switzerland in 2010 (figure 2).

Figure 2: Dimensions of pharmaceutical full-line wholesaling, 2010



Source: EUROSTAT, GIRP data, IPF research 2011

Figure 2 highlights the dimension of the pharmaceutical full-line wholesalers in the EU-25 + 2 in 2010, where 772 pharmaceutical full-line wholesalers operate 2,019 warehouses, serve 172,709 retail and hospital pharmacies and dispensing doctors and supply 513 million people in the European Union + 2 with medicinal products (EUROSTAT 2011, GIRP data 2010).

In total, 67% of the pharmaceutical wholesale sales were generated by full-line wholesalers in the observed six countries. In these countries 176 (21 of them on a

national basis) pharmaceutical full-line wholesalers operated 730 operating sites and served 104,300 dispensing points which supplied more than 332 million citizens (EUROSTAT 2011, GIRP data 2010).

3.2 Market structure

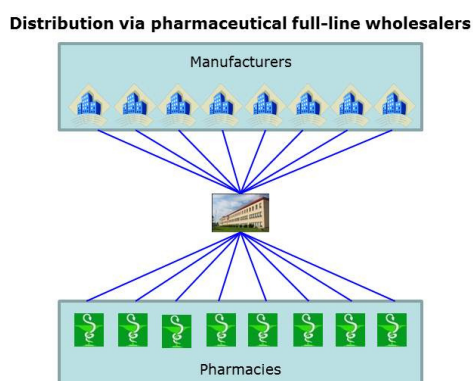
This section analyses the different distribution models and gives a brief overview of the country-specific distribution systems of the key markets observed.

Pharmacies obtain their medicinal products through different distribution channels. They buy their medicinal products from pharmaceutical full-line wholesalers, pharmaceutical short-line wholesalers and/or directly from pharmaceutical manufacturers. In recent years, new distribution models have emerged, especially in the UK, where pharmaceutical full-line wholesalers are no longer operating as a one stop shop (Bünthe et al. 2007, GIRP oral information 2011).

3.2.1 Pharmaceutical distribution models

Pharmaceutical full-line wholesalers play a vital role in the supply chain of medicinal products. They carry the complete assortment of medicinal products marketed in the countries in which they operate. Through their activities they provide a wide range of added value services to manufacturers, pharmacies and the patients. In the context of the pharmaceutical full-line wholesaling model, pharmaceutical manufacturers sell their products to all pharmaceutical full-line wholesalers established in the particular markets. Pharmaceutical full-line wholesalers compete on service level as well as on price to become pharmacies' main suppliers (figure 3) (Bünthe et al. 2007, OFT 2007a, OFT 2007b).

Figure 3: Pharmaceutical distribution in the pharmaceutical full-line wholesaling model



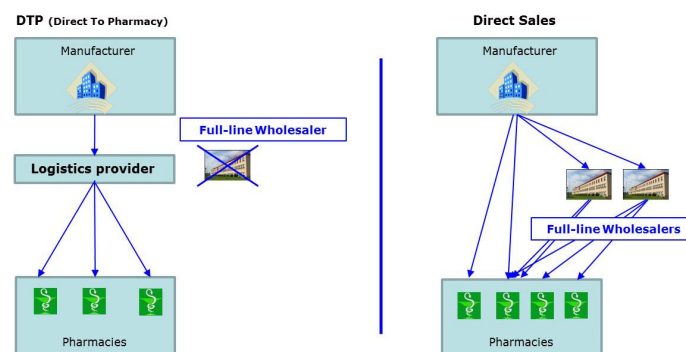
Source: IPF research 2011

Other distributors, such as short-line wholesalers or manufacturers through direct sales, carry only a limited product range (their own products) of mostly fast turning, high margin lines and typically do not offer added value services to their customers. Moreover, in most of the cases, pharmaceutical short-line wholesalers do not deliver with the same frequency as pharmaceutical full-line wholesalers. They also operate mostly outside the context of public service functions. For example: around 1,675 wholesale distribution licenses have been issued in the UK. Nevertheless, only nine wholesalers (six regional and three national) are active in the UK market and operate in the closest possible way to the manner in which pharmaceutical full-line wholesalers operate (BAPW written information 2011, GIRP oral information 2011, OFT 2007b).

Direct sales from manufacturers have gained momentum in recent years. As shown in the right part of figure 4, pharmaceutical manufacturers, in using their direct sales system sell their own medicinal products directly to the pharmacies, however in parallel they also supply to pharmaceutical full-line wholesalers (GIRP oral information 2011).

In 2007, Pfizer UK introduced a new model of distribution, referred to as the Direct to Pharmacy (DTP) model. Under DTP, pharmaceutical manufacturers deliver their medicinal products directly to pharmacies using the services of one or more logistic service providers. Within the context of the DTP model, pharmaceutical full-line wholesalers operate as the logistic service providers and however they do not take ownership of the medicinal products they distribute (figure 4) and are remunerated on a fee for service basis. In DTP models only those logistic providers are able to distribute the products falling under the DTP contracts (GIRP oral information 2011, OFT 2007a).

Figure 4: Pharmaceutical distribution in the DTP vs. direct sales model



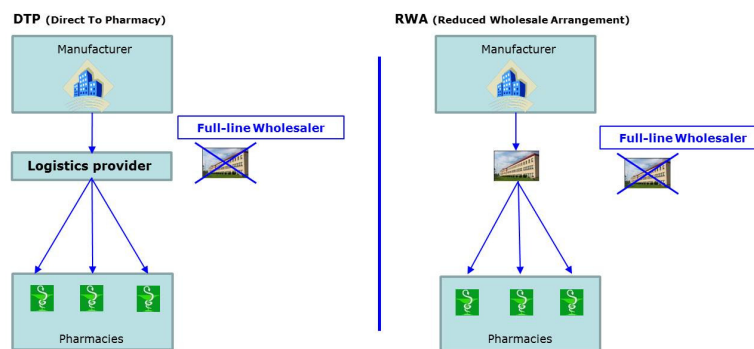
Source: GIRP data 2010, IPF research 2011

Today, as a direct result of the DTP distribution model, no wholesaler in the UK carries the full assortment of medicinal products. The wholesalers which are not contracted by manufacturers for the distribution of their products falling with the

scope of the DTP model are prevented from accessing these products and thus prohibited from fulfilling their core role and function in the typical sense of operating as a pharmaceutical full-line wholesaler (GIRP oral information 2011).

Subsequent to the introduction of the DTP model pharmaceutical manufacturers in the UK also introduced another restrictive distribution approach. This other model is referred to as Reduced Wholesale Arrangements (RWA). Under RWA, pharmaceutical manufacturers limit the number of wholesalers to which they provide their medicinal products and as such do not supply to all wholesalers – for example they restrict supplying their medicinal products to only two or three wholesalers which results in other wholesalers not being in a position to provide those products as part of their product range of stock and reducing them in their role as pharmaceutical (full-line) wholesalers. In the RWA model, pharmaceutical manufacturers sell the stock to selected wholesalers thus pharmaceutical full-line wholesalers still become the owners of the medicinal products falling with RWA agreements, whereas other (full-line) wholesalers do not have access to those products (figure 5). According to GIRP, a full-line wholesaler ensures the purchase, warehousing, storage, order preparation and delivery of medicines. Pharmaceutical full-line wholesalers carry and distribute the complete assortment of products in range and depth within the framework set by the authorities and the market to meet the needs of those with whom they have normal business relations. In addition to delivering all medicines in their geographical area of activity on the same day/with less than 24 hours, pharmaceutical full-line wholesalers provide working capital and extended financing services, funding of stock and receivables of pharmacies and health care professionals (GIRP oral information 2011).

Figure 5: Pharmaceutical distribution in the DTP vs. RWA model



Source: GIRP data 2010, IPF research 2011

Due to the fact that pharmaceutical manufacturers are globally rethinking their distribution channels, the distribution of medicinal products in Europe has seen many changes in recent years (Bünthe et al. 2007). As discussed above and in chapter 3.3, different models of direct distribution are emerging in the market place. Moreover, the market share of medicinal products being distributed through

direct sales is increasing. However, referring to the considerations taken into account in this study one can conclude the new approaches are not the best way forward in terms of efficiency and societal benefits as out of the five distribution models described above, only pharmaceutical full-line wholesaling offers special features such as a high delivery frequency of the full product range of medicinal products available on any given market when no market restrictions are imposed.

3.2.2 European pharmaceutical distribution landscape

This section analysis the distribution system of the key European markets under consideration in this study.

Most of the distribution systems in the European Union are multichannel systems with full-line wholesaling, short-line wholesaling and direct sales (GIRP oral information 2011).

Pharmaceutical full-line wholesalers operate on a national or regional level. In the case of national distribution, pharmaceutical full-line wholesalers have established nationwide distribution networks, with strategically placed warehouses. Regional wholesalers only serve retail pharmacies, hospitals and other dispensing sites in a limited geographical area (Clement et al. 2005).

Due to the fact that neither European nor national legislation offers clear definitions or classifications of the operators in the distribution chain, most national authorities grant a high number of distribution licenses. As a result, a wide and diverse range of different operators are active in the supply chain, even in markets where their activities are theoretically prohibited (for example in France and Spain) (GIRP 2008).

Table 1 gives an overview of key features of the pharmaceutical distribution systems in the key markets observed.

Table 1: Overview of key features of the pharmaceutical distribution systems in DE, ES, FR, IT, NL, UK, 2011

	DE	ES	FR	IT	NL	UK
type of distribution system	multichannel	multichannel	multichannel	multichannel	multichannel	multichannel
distribution through	full-line wholesaling short-line wholesaling direct sales	full-line wholesaling short-line wholesaling* direct sales	full-line wholesaling short-line wholesaling* direct sales	full-line wholesaling direct sales	full-line wholesaling short-line wholesaling direct sales	full-line wholesaling** short-line wholesaling direct sales DTP RWA
wholesale licenses	4,000	300	25	650	300	1,675
regional full-line wholesalers	8	55	3	83	0	6
national full-line wholesalers	5	3	3	2	5	3
national PSO's	Yes	Yes	Yes	Yes	No	No
wholesaler deliver to hospitals	No	Yes	No	No	Yes	Yes
Ø deliveries/day	3.3	3	2	3	1	2

* Theoretically, there are no pharmaceutical short-line wholesalers in ES, FR (as mentioned above)

** Currently, there are no wholesalers in the UK carrying the full range of products as none of the operators receive the full range of medicinal products, due to market conditions.

Source: GIRP, Megía, OFT

3.3 Development of market share and margins

This section deals with the development of the market share of pharmaceutical full-line wholesalers in the key markets observed and the development of wholesale and pharmacy margin over the last nine years. Furthermore, the impact of alternative distribution systems will be considered.

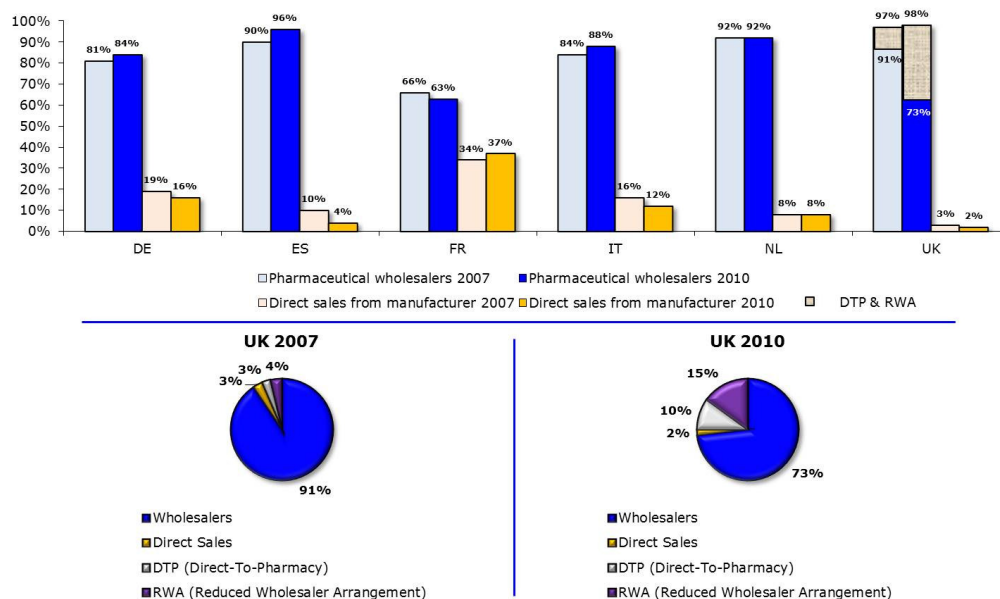
3.3.1 Market share

The market growth rates of the full-line wholesaling sector in some observed countries are decreasing due to the growing importance of alternative distribution systems such as DTP and RWA in the UK, as well as the increase of direct sales in many other countries (figure 6) (Thormann et al. 2007).

Due to new regulations curbing pharmaceutical expenditure, the turnover of the wholesale sector has been negatively affected by reduced margins, which were due to legal impacts, (see point 3.3.2) and the increasing number of patents expiring, leading to a growing number of cheaper products. At the same time, highly innovative products are distributed increasingly through alternative distribution channels, negatively affecting the wholesale turnover (GIRP 2011 – oral information).

An important factor influencing the market growth rate of the pharmaceutical full-line wholesale model versus the direct sales model is the difference in pharmaceutical portfolios. Due to their public service function, pharmaceutical full-line wholesalers have to handle all medicinal products, whereas pharmaceutical short-liners and direct sales distributors can decide to predominantly distribute specialty, high volume and high margin products ("cherry picking") (GIRP 2009, GIRP 2011).

Figure 6: Turnover (units) by distribution channel – retail market in DE, ES, FR, IT, NL, UK, 2007 & 2010



* Currently, there are no wholesalers in the UK carrying the full range of products.

Source: BG Pharma written information 2011, CSRP written information 2011, GIRP data 2007-2010, IMS health 2007-2011, IPF research 2011

In 2010, pharmaceutical full-line wholesalers generated a total turnover of €136 billion in the EU-25 + 2.

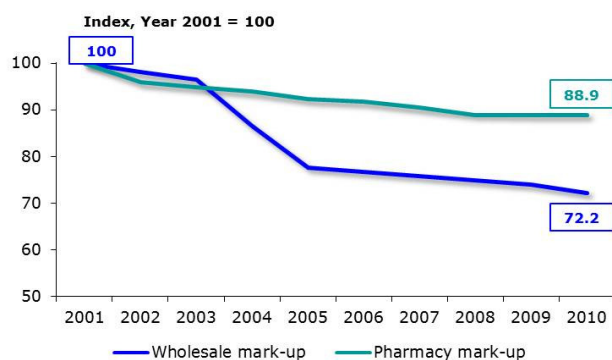
In the six analysed countries the enormous turnover of €91 billion was generated by only 176 wholesale companies, which hold 730 operating sites. They guarantee the continuous supply of 104,300 dispensing points and for the 332 million citizens of the observed key markets (GIRP 2010, EUROSTAT 2011).

3.3.2 Development of the wholesale margins

Generally, price changes of recent years had a negative impact on wholesalers' margin. Pharmaceutical full-line wholesalers have almost no possibility to control their profits as their margins are regulated (with the exception of the Netherlands, where this is not the case) and they cannot influence the demand of medicinal products, nor their prices, which are mostly regulated by national authorities (Clement et al. 2005).

Pharmaceutical full-line wholesaling has a B2B (business to business) function, meaning that wholesalers not only suffer from the reduction of their own margin, but also feel the knock-on effect of a reduction in pharmacy margin or a reduction in the prices of medicinal products (GIRP 2011 – oral information).

Figure 7: Development of average wholesale margin on pharmacy purchase price and pharmacy margin on pharmacy retail price excluding VAT in DE, ES, FR, IT, NL, UK, 2001-2010



Source: IPF research 2011

The decrease in the pharmacy margin is not as high as the wholesalers' margin. The pharmacy margin decreased since 2001 by 11.1%, as shown in figure 7. The average drop of percentage points was 2.88.

Measures influencing margins directly and indirectly reduced wholesalers' margins dramatically since 2001 by 27.8% on average. As an example this means, that a wholesalers' margin of 10% in 2001 would have decreased by 3 percentage points to 7% until 2010.

4 Pharmacies' perception of the distribution sector

The online questionnaire aimed to obtain detailed information about pharmacists' satisfaction with the pharmaceutical distribution system and to detect potential concerns associated with the different distribution channels. The survey has been carried out electronically from March to October 2011 and the target respondents were pharmacists in France, Germany, the Netherlands, Spain and the UK. Italy could not be included in the analysis due to the lack of responses. The total number of pharmacists who participated in the study is 473.

The pharmacist's questionnaire was divided into four major parts:

- ▶ general information
- ▶ problems associated with the distribution systems in use
- ▶ concerns about the future
- ▶ satisfaction with the distribution systems in use

The results of the online questionnaires are presented in the following section, starting with the current issues. Concerns the respondent pharmacists expressed about the future are discussed in point 6.1.

Please note the following when reading the results:

To guarantee a better readability of the text, the results of the survey are presented in rounded figures. Detailed results are shown in the graphics and in Annex 3.

Due to the fact that the results represent a snap shot of the respondent pharmacists' opinion, the findings can only be considered as a trend. Moreover, it can be noticed that the satisfaction level as well as the services provided by the different distribution systems are difficult to compare, because different expectations may be subject to the respective satisfaction level.

An inevitable feature of any survey is the bias that self-selection may introduce, which is not easily quantifiable. A second source of potential bias concerns leading questions.

To minimise the bias from the leading questions, the questionnaire was designed in a balanced way and aimed to be of relevance to all respondents. The questions were formed in a neutral way. Furthermore, a number of open-ended questions were included to allow respondents to write comments.

The answers given by the respondent pharmacists on the open questions (see Annex 4) were clustered, whereas the most frequent statements are presented in the following and in Annex 3 respectively.

The results were interpreted as pharmacists being satisfied, if the majority of the respondents expressed no concerns.

4.1 Pharmacists' main concerns

With the aim of obtaining detailed information on issues associated with the different distribution models and the issues faced by the pharmacists in obtaining their supplies, the section of the questionnaire on the "problems associated with the distribution system in use" was divided into three main sections:

- ▶ General concerns with the distribution system (e.g. increased pharmacy stock effort, order effort like extra staff time or time needed for an order)
- ▶ Problems concerning the service level (e.g. cut-off time offered, orderlines like minimum orders, provide service to patients such as waiting times to receive their medicinal products)
- ▶ Problems concerning the safety of medicinal products during distribution (e.g. safety of transport and protection against falsified medicinal products)

For each section respondents were invited to select a list of potential answers. Furthermore, in order to collect as much information as possible on the viewpoints of pharmacists, respondents also had the opportunity to elaborate on additional problems not suggested in the range of possible answers.

In the following section, the major key viewpoints collected from the pharmacists' questionnaire are presented. The original questionnaires as well as the detailed study findings are presented in Annex 3 and 4.

4.1.1 Pharmaceutical full-line wholesalers

Generally speaking, the findings arising from the input provided by the respondents show that there is an overall high level of satisfaction with pharmaceutical full-line wholesalers. No major problems were reported. A minority of 5-6% of respondents in the Netherlands and the UK mentioned concerns about stock shortages and the availability of medicinal products in the market place. Respondents in the UK were dissatisfied and concerned with the increasing stock and order effort involved when ordering their supplies of medicinal products due to changes in the overall distribution system.

A clear majority of 71% of French pharmacists who took part in the survey faced no problem and were therefore satisfied with the process of obtaining their supplies through pharmaceutical full-line wholesaler with regard to the stocking and order efforts involved. 76% of the respondent French pharmacists hardly expressed any concerns and were therefore satisfied with the possibility to provide service to patients when ordering their medicinal products through this distribution model. Nearly all respondents (88-94%) had no concerns with regard to the safety of medicinal products received. Only a minority of 8% referred to issues of supply quotas and delivery mishaps such as damaged products as being problematic. Moreover, 6% of the respondents complained about the availability of products (out of stocks).

Most of the respondent German pharmacists were satisfied with obtaining their supplies through pharmaceutical full-line wholesalers and raised no major concerns with this distribution model. In this regard, 74% did not see any issue related to the stock effort and 64% did not see any problems related to the order effort involved. Again, only 1% of the German respondents mentioned financial constraints or damaged products as being problematic and 2% of the respondents indicated the discounts as a problem.

The majority of the respondents from the Netherlands indicated no problem with obtaining their supplies of medicinal products through pharmaceutical full-line wholesalers. Most of the Dutch respondents expressed no concerns and were therefore satisfied with the service level such as financial support, delivery arrangements or the possibility to provide service to the patients. A small number of respondents (6%) complained about the availability of products. Other problems faced by 1% of the participants were for example unreliable deliveries.

68% of the respondents from Spain did not raise any issues related to the pharmacy stock effort and 87% did not mention any problem related to the order effort connected with obtaining supplies from pharmaceutical full-line wholesalers. While a minority of 4% perceived problems and therefore indicated dissatisfaction with deliveries, no details were given. The overall majority of the respondents expressed no concerns either about the service level or the safety of transport.

As mentioned earlier, due to changes introduced by manufacturers, the distribution system in the UK has changed dramatically. As a result of the changes no wholesaler in the UK carries the full range of medicinal products hence it is not possible to define UK wholesalers as full-line wholesalers. Therefore, the results related to pharmaceutical full-line wholesalers and pharmaceutical short-line wholesalers have been pooled together and collectively assessed (for the purposes of presenting the result for the UK) as 'wholesalers' (GIRP 2011 oral information). Interestingly, when compared to other countries which have not witnessed radical changes to their national distribution system, 45% of the respondents from the UK, which received their medicinal products from wholesalers, referred to increased problems with pharmacy stock effort and 47% with the order-effort. The inference here indicates that there is a correlation between increased distribution complexity and obtaining supplies. Furthermore, 5% complained about supply quotas, due to the fact that manufacturers refuse to fill order for the required supplies, if they believe that a pharmacy has ordered an excessive amount of products. The majority of the pharmacists in the UK, who took part in the survey, did not complain about the service level or the safety of transport provided by wholesalers. 5% of respondents mentioned that they had concerns about out of stocks and 2% indicated fuel surcharge as a problem with regard to the service level.

4.1.2 Pharmaceutical short-line wholesalers

As mentioned in section 3.2.2, pharmaceutical short-line wholesalers only operate in Germany, the Netherlands and in the UK. Due to the fact that the results for wholesalers (full-line and short-line) in the UK were pooled together, this section only represents the findings of Germany and the Netherlands.

In Germany 38% of the respondents mentioned an increased pharmacy stock effort, arising from the process of obtaining supplies from short-line wholesalers as a problem. Concerning the service level offered by these operators, half of the respondents complained about the limited range of products.

In the Netherlands, more than half of the respondents (56%) expressed concern about the order effort, referring to the extra time required by staff to deal with the ordering process and 39% complained about the increasing stock effort involved in obtaining supplies from pharmaceutical short-line wholesalers. 39% of the respondents raised certain concerns about the service level of pharmaceutical short-line wholesalers when referring to the convenience of and the ease of access to the order system, the amount of products available and the predictability of delivery times.

4.1.3 Direct sales from manufacturers

While there was an overall fairly high level of satisfaction with direct sales from manufacturers, respondents from France, Germany, the Netherlands, Spain and the UK raised concerns about the possibility to provide service to patients when receiving medicinal products from this distribution system.

The majority of the French respondents (61%) complained about the increasing stock effort involved in ordering medicinal products through the direct sales model. 46% referred to increased order effort such as extra staff-time or the time needed for an order. Concerning the service level offered by direct sales from manufacturers and the safety of the transported medicinal products no major concerns were reported by the respondents.

According to the survey, more than half of the responding German pharmacists complained about increased pharmacy stock (61%) and order-effort (54%) when ordering medicinal product through the direct sales model. The majority of respondents (56%) expressed concerns about the possibility to provide service to patients.

From the Dutch respondents, 41% expressed no concerns about and were therefore satisfied with the pharmacy stock effort in comparison to 27%, who expressed concerns. 36% of the respondents complained about the order-effort related to extra staff time or time needed for an order. Furthermore, 41% of the respondents in the Netherlands complained about the inconvenience and access to the order system used in the direct sales model.

About one third of the respondents from Spain complained about the increasing stock and order effort involved in ordering medicinal products through direct sales. More than half of the respondents (53%) mentioned that they had problems concerning the possibility to provide service to patients when receiving their pharmaceutical products through direct sales from manufacturers.

Nearly all of the respondents from the UK expressed concerns with both the increased pharmacy stock (83%) and order effort (86%) involved when ordering medicinal products through the direct sales model. The vast majority (90%) mentioned that they face constraints regarding the possibility to provide service to patients. Further major concerns mentioned include the lack of predictability of the delivery time (85%), the delivery arrangements (76%), the inconvenience and difficult access to the ordering system of the operators (76%), the frequency of delivery (73%) as well as the cut-off time offered (68%).

4.1.4 DTP

Direct to Pharmacy (DTP) is one of the two distinctive new distribution models which have developed in recent years in the UK. According to an Office for Fair Trade (OFT) market study (2007) experts highlighted concerns that this type of distribution model may not be able to meet the actual demand for medicinal products, largely due to the fact that manufacturers are in a position to restrict access to supplies of their medicinal products if they believe that a pharmacy has ordered an excessive amount of products (PSNC 2007). The current study supports these indicated concerns which are presented in the following section. Recent changes in pharmaceutical distribution in the UK triggered numerous complaints by pharmacists in connection with the increasing effort to store, order and deliver medicinal products. Moreover, pharmacists worry about the availability of medicinal products. These findings are comparable to those of a British study, carried out in 2010 (Kietzmann 2010).

An overwhelming 99% of the respondents complained about the increased order-effort involved in ordering through the DTP model. Increased pharmacy stock efforts cause major problems to 97% of the respondents. 92% of respondents face restraints in providing service to the patients, 74% indicated problems with the cut-off times, 69% with predictability of delivery time and 63% with the low frequency of delivery.

4.1.5 RWA

Respondents from the UK faced problems with and were therefore dissatisfied with the Reduced Wholesale Arrangements (RWA) as a distribution model. 95% of the respondents criticised the increased pharmacy stocks and order efforts involved in ordering medicinal products through RWA models. 86% of respondents faced constraints in providing service to patients when the products concerned are delivered through RWA models; 74% mentioned problems with inconvenience and access to the ordering systems. 71% of respondents indicated problems with the range of

products, 59% with delivery arrangements and 42% with the frequency of delivery.

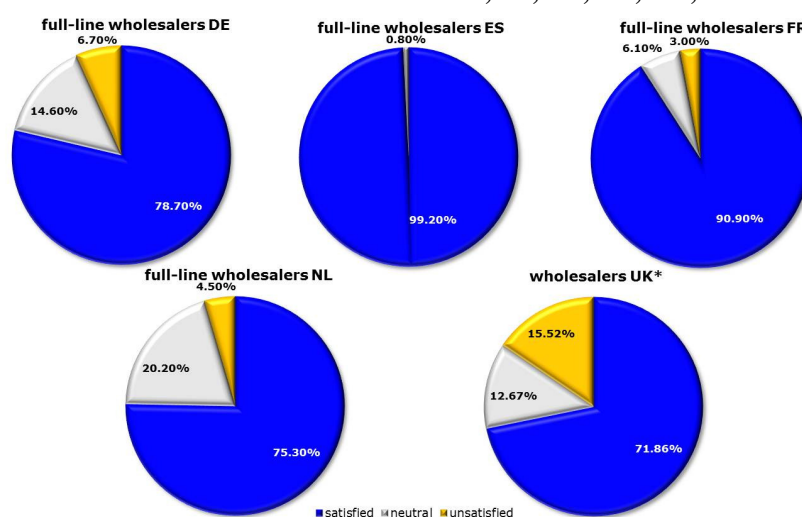
4.2 Satisfaction with different distribution models

Despite the fast growth of RWA and DTP models in the UK, the respondent pharmacists mentioned a high degree of discontent. Some of the reasons mentioned were additional workload/paperwork, bottlenecks, low delivery frequency, lack of invoicing transparency and logistic hurdles.

The results concerning the satisfaction with regard to the distribution system are presented below:

Figure 8 shows the results concerning distribution through the pharmaceutical full-line wholesalers.

Figure 8: Satisfaction with the distribution system – pharmaceutical full-line wholesalers in DE, ES, FR, NL, UK, 2011

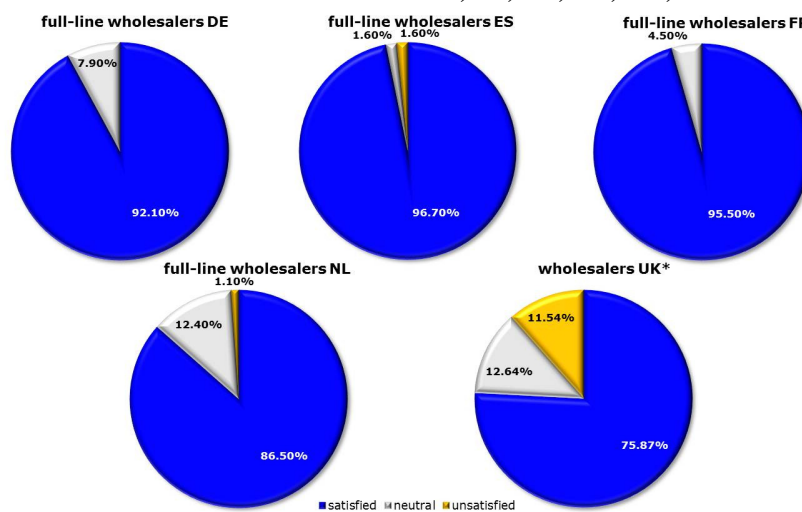


* Currently, there is no pharmaceutical wholesaler in the UK, carrying the full range of medicinal products. Therefore, the results of pharmaceutical full-line wholesalers and short-line wholesalers are pooled as wholesalers.

Source: IPF research 2011, Pharmacy questionnaires

In most of the countries considered more than three quarters of the respondent pharmacists were satisfied with the distribution through pharmaceutical 'full-line' wholesalers. The satisfaction of the pharmacists ranged from 99% in Spain to 72% in the UK.

Figure 9: Satisfaction with the delivery time – pharmaceutical full-line wholesalers in DE, ES, FR, NL, UK, 2011



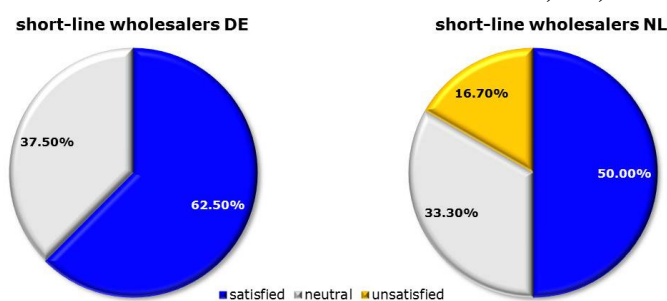
* Currently, there is no pharmaceutical wholesaler in the UK, carrying the full range of medicinal products. Therefore, the results of pharmaceutical full-line wholesalers and short-line wholesalers are pooled as wholesalers.

Source IPF research 2011, Pharmacy questionnaires

The majority of the pharmacists who took part in the survey were satisfied with the delivery time offered by pharmaceutical full-line wholesalers in the five countries observed. The satisfaction ranged from 97% in Spain to 76% in UK. A consolidated view of the study findings indicates that pharmacists are very satisfied with the distribution through their pharmaceutical full-line wholesalers.

In the following, the results concerning the satisfaction with the distribution of medicinal products through pharmaceutical short-line wholesalers are presented.

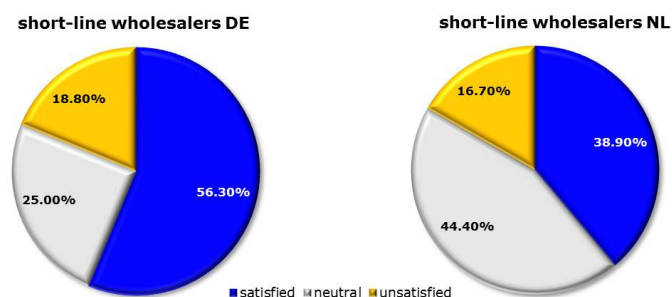
Figure 10: Satisfaction with the distribution system – pharmaceutical short-line wholesalers in DE, NL, 2011



Source: IPF research 2011, Pharmacy questionnaires

More than half of the respondent German pharmacists were satisfied with the pharmaceutical distribution through their pharmaceutical short-line wholesalers, whereas less than half of the Dutch participants showed satisfaction.

Figure 11: Satisfaction with the delivery time – pharmaceutical short-line wholesalers in DE, NL, 2011

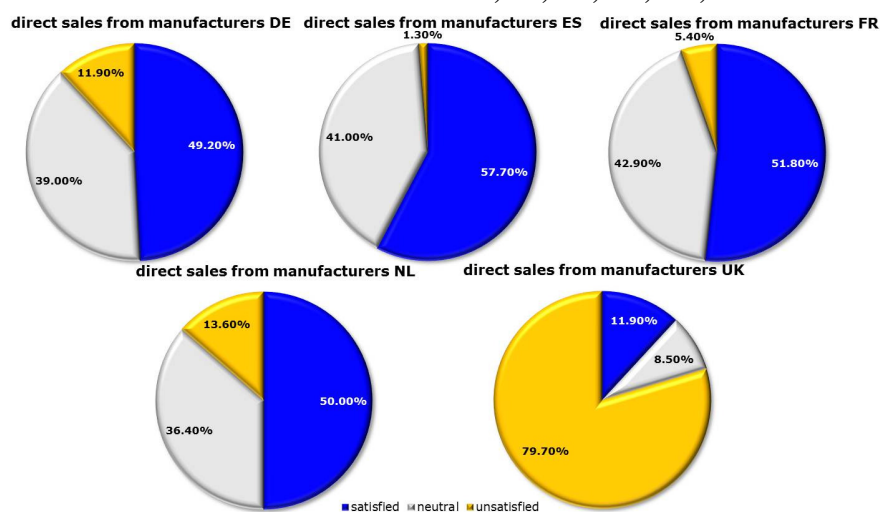


Source: IPF research 2011, Pharmacy questionnaires

A slight majority (56%) of the German pharmacists who took part in the survey were satisfied with the delivery time offered by pharmaceutical short-line wholesalers. Whereas less than half (44%) of the respondents in the Netherlands reported their satisfaction with the delivery time of pharmaceutical short-line wholesalers as “neutral”; 39% were satisfied and 17% showed dissatisfaction.

In the following the results concerning the satisfaction with the distribution through direct sales from manufacturers are presented:

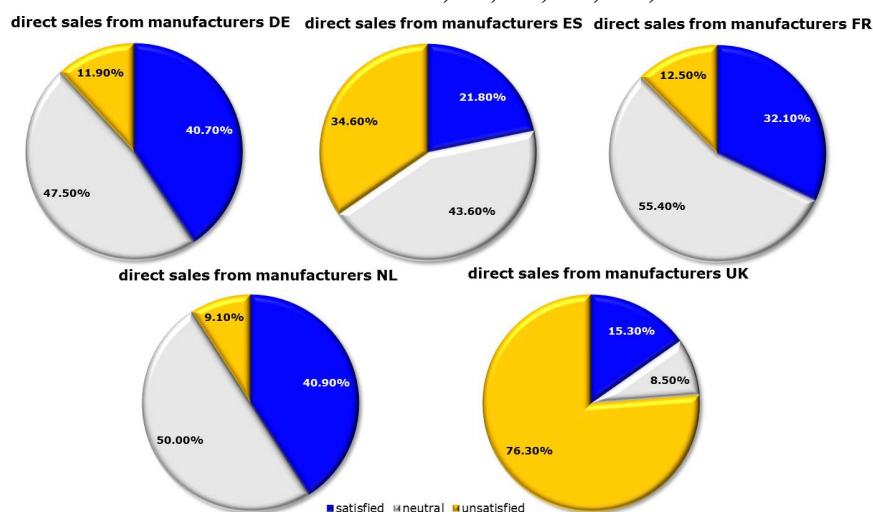
Figure 12: Satisfaction with the distribution system – direct sales from manufacturers in DE, ES, FR, NL, UK, 2011



Source: IPF research 2011, Pharmacy questionnaires

Less than half of the respondents in four out of the five countries observed were satisfied with the distribution through direct sales from manufacturers. The satisfaction ranged from 58% in Spain to 12% in UK. The majority (80%) of the pharmacists in the UK who took part in the survey, were unsatisfied with this kind of distribution system.

Figure 13: Satisfaction with the delivery time – direct sales from manufacturers in DE, ES, FR, NL, UK, 2011



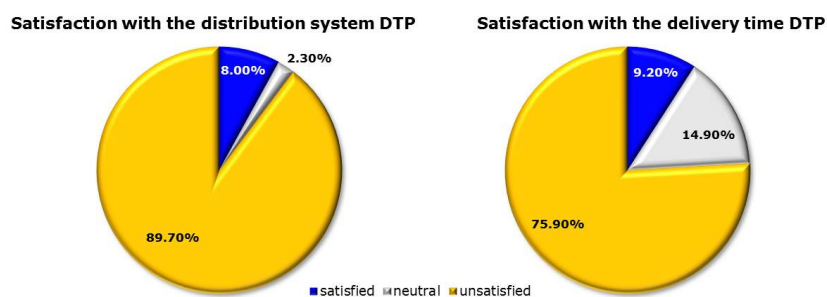
Source: IPF research 2011, Pharmacy questionnaires,

The majority of the respondents in four out of the five countries answered the question concerning the satisfaction with the delivery time for direct sales with "neutral". The satisfaction ranged from 41% in Germany and the Netherlands to 15% in the UK; whereas the dissatisfaction ranged from 76% in UK to 9% in the Netherlands.

Pharmaceutical distribution through direct sales from manufacturers is associated with concerns about the ability to provide service to patients (Germany, UK, Spain) as well as increasing stock and order effort (Germany, UK).

Finally, the results concerning the satisfaction with the UK specific distribution systems (DTP and RWA) are presented:

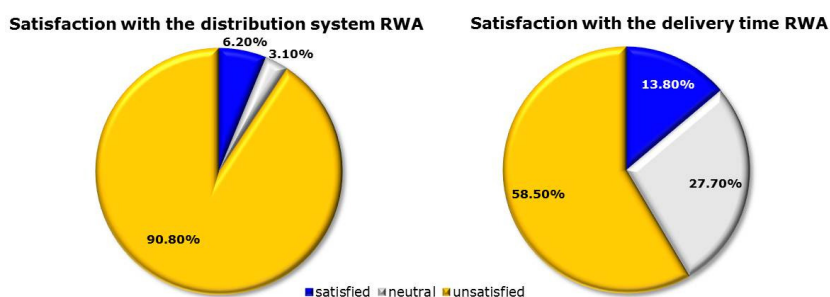
Figure 14: Satisfaction – Direct to Pharmacy in UK, 2011



Source: IPF research 2011, Pharmacy questionnaires

Regarding the satisfaction with the distribution through DTP and the delivery time offered by this kind of distribution system, the majority of the pharmacists in the UK, who took part in the survey, were unsatisfied.

Figure 15: Satisfaction – Reduced Wholesale Arrangement in UK, 2011



Source: IPF research 2011, Pharmacy questionnaires

More than half (59%) of the respondent pharmacists in UK showed discontent with RWA's delivery time.

In the following paragraphs country-specific problems will be briefly summarised and analysed.

With the introduction of DTP in 2007, experts predicted their concerns about quotas (see chapter 4.1.4) which currently lead to a lack of supply, lack of availability of medicinal products and stock problems. As a consequence, pharmacists are more and more unable to meet the patients' needs and to provide good service (Pharmacy questionnaire 2011, PSNC 2007).

A further country-specific concern which occurred was the increasing problem of out of stocks (availability of medicinal products) in the Netherlands. This can be

attributed to the fact that the Netherlands is - compared to its neighbour countries - a low price country with a high amount of export (Österreichische Apothekerkammer 2011, Pharmacy questionnaire 2011).

Spanish pharmacists also complained about shortages of medicinal products and as a result about supply problems when ordering products via direct sales from manufacturers as well as long delivery times (see Annex 1). Therefore, pharmacists faced problems to provide service to patients as usual (Pharmacy questionnaire 2011).

Pharmacists in Germany complained about order conditions offered by direct sales from manufacturers. In general pharmacists complained about the decrease in discount rates. 13% of the pharmacists who took part in this survey believe that these decreased discounts will lead to financial problems. The reason why German pharmacists are confronted with this problem may lie in the recent reforms of the healthcare system (GKV-ÄndG, AMNOG, GMG). According to these changes, the wholesale margin will be reduced and pharmaceutical full-line wholesalers are forced to reduce their discount rates (Groth et al. 2011, Pharmacy questionnaire 2011, Thormann et al. 2007).

5 Efficiency of pharmaceutical full-line wholesaling

To focus on the role of pharmaceutical full-line wholesalers, it is reasonable to examine how the sector achieves the complex task of distributing medicinal products whenever and wherever needed. The industry's performance will be evaluated by its ability to maintain a nation-wide, rapid and continuous supply of medicinal products.

5.1 Efficiency indicators

A variety of indicators can be used to evaluate an industry's efficiency. This study focuses on the main functions of pharmaceutical full-line wholesalers, namely the full supply function, the immediate availability of medicinal products, the stock-keeping function, the delivery function and the financing function because the funding and holding of buffer stocks, the resulting working capital and ownership that goes with wholesaling services are vital for an effective and efficient functioning of the healthcare industry in Europe.

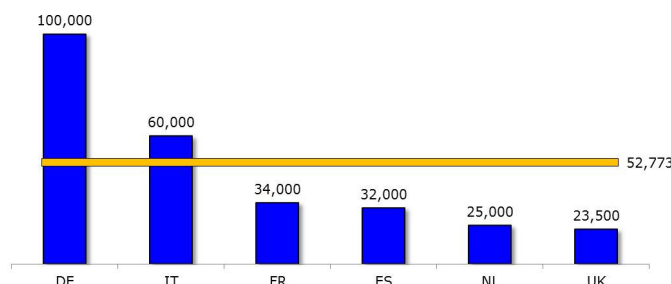
5.1.1 Full supply function

Pharmaceutical full-line wholesalers carry and distribute the complete assortment of products in range and depth within the framework set by the authorities and the market to meet the needs of those with whom they have normal business relations (Stern et al. 1992).

Items on stock range from 23,500 to 100,000, depending on the size of the market and the number of products authorized to be marketed. The share of medicinal products within the stock range differs considerably from country to country, depending on the number of medicinal products marketed.

Figure 16 gives an overview of the range of products held in France, Germany, Italy, the Netherlands, Spain and the UK.

Figure 16: Items on stock held by pharmaceutical full-line wholesalers in DE, ES, FR, IT, NL, UK, 2010



Source: Company questionnaire 2011, GIRP data 2010, IPF research 2011

Compared to other countries, Germany has the largest number of registered medicinal products.

The next chapter explains the interplay between the medicinal products on stock and the immediate availability of those products.

5.1.2 Immediate availability

Optimal outcomes in citizens' health require both, efficacious treatments and adherence to those treatments, involving taking medication properly, making and keeping healthcare appointments as well as self-management of health and other behaviours that influence the course or prognosis of an illness. However, empirical studies have consistently shown that levels of compliance or adherence are often far from optimal (WHO 2003).

Due to a lack of health resources and inequities in access to healthcare, in developing countries for example, the magnitude and impact of poor adherence is assumed to be even higher. However, in developed countries pharmaceutical full-line wholesalers deliver the needed medicinal products in the required quantity and just-in-time.

Expressing non-adherence to medicinal products in terms of value, the cost to the UK's NHS could run as high as £196 million, according to a costing report published by the National Institute for Health and Clinical Evidence (NHS n.d.).

The storage and delivery of medicinal products within a framework that ensures above everything else immediate availability, is of crucial importance.

The fact that pharmaceutical full-line wholesalers are holding the full range of products and are also able to provide them immediately is the result of the optimised warehouse management, which is discussed in the following section.

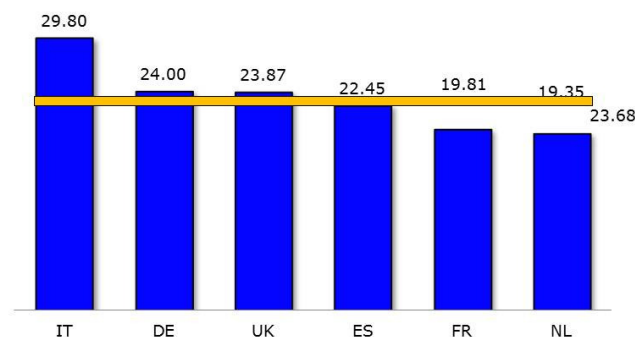
5.1.3 Stock keeping function

To guarantee short-term availability of medicinal products, pharmaceutical full-line wholesalers rely on close-knit distribution networks and high delivery frequencies of their warehouses. They assume a quantity-based buffer function, stocking medicinal products in large quantities and delivering them in the required amount. Pharmacies therefore receive their orders, which usually include products from different manufacturers, in time. Pharmaceutical manufacturers are incapable to offer this delivery frequency as their warehouses are generally further away from pharmacies and they only hold their own products on stock (IfH 2008).

Pharmaceutical full-line wholesalers hold a safety stock to meet unexpected peaks in normal demand patterns as well as unforeseen events that lead to increased demand in medicinal products like pandemics. On average, this safety stock measures 31% of total stock value.

Furthermore, pharmaceutical full-line wholesalers manage complex flows of medicinal products, since demand for specific medicinal products varies considerably. Inventory turnover therefore differs from product to product, ranging from a month to only a few days, but also changes during specific time periods (e.g. the use of medicinal products in the treatment of influenza varies seasonally) (figure 17).

Figure 17: Inventory Turnover in DE, ES, FR, IT, NL, UK, 2010



Source: Company questionnaire 2011, IPF research 2011

Inventory turnover is fastest in the Netherlands with just 19.35 days on average, whereas it is slowest in Italy with 29.80 days. The countries' average is 23.68 days, which means stock turnover takes place on average 15 times per year.

5.1.4 Delivery function

Generally, medicinal products can only be used for therapy if they are available in time. A prompt delivery of medicinal products is therefore essential. According to

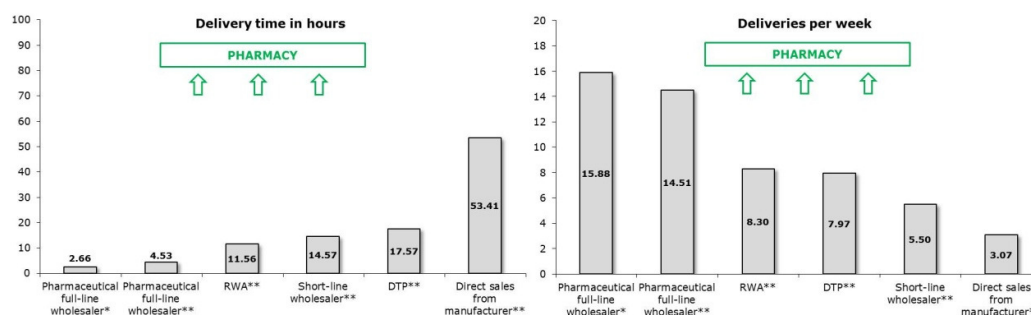
the survey conducted among pharmacists in the five out of the six observed countries, the perceived delivery time of pharmaceutical full-line wholesalers is on average 4.53 hours, with perceived 14.51 deliveries per week (based on national pharmacies opening hours (weekend and nights), including remote areas).

Comparing the reported delivery time from the pharmaceutical wholesalers (2.66 hours) with the perceived one from pharmacists (4.53 hours) it has to be considered that the night-time, as well as Sundays are excluded.

Therefore, the perceived frequency of deliveries per week is similar to the deliveries per week reported by GIRP's member organisations. According to their records, pharmacies are supplied on average 15.88 times per week. If medicinal products were not available within a few hours, a large number of clinical guidelines would have to be revised, as they are based on short term availability of medicinal products (Wilke 2011). Currently, only pharmaceutical full-line wholesalers achieve this delivery speed and frequency (figure 18).

Please note that the weighted delivery time and deliveries per week reported from GIRP pharmaceutical full-line wholesale members include the key markets with Italy as well, whereas the perceived one by the respondent pharmacists include France, Germany, the Netherlands, Spain, and the UK.

Figure 18: Delivery time in DE, ES, FR, (IT), NL, UK, 2011



* this figure represents the weighted delivery time and deliveries per week reported from GIRP pharmaceutical full-line wholesale members

** this is the weighted delivery time as well as the deliveries per week perceived by the respondent pharmacists in the five countries observed

Source: IPF research 2011, Pharmacy questionnaire

The time discrepancy between deliveries from pharmaceutical full-line wholesalers and direct sales from manufacturers can be explained by the latter employing a logistics model, which is based on centralised warehousing and the relatively infrequent deliveries to pharmacies from manufacturers (Wilke 2011).

A further important indicator to evaluate the efficiency of pharmaceutical distribution is the order fill rate, which is the ability to immediately execute orders re-

ceived. Pharmaceutical full-line wholesale companies achieve an order fill rate from 97% to 100%. Though, several pharmaceutical full-line wholesalers execute almost 100% of all orders received immediately.

Pharmaceutical full-line wholesalers ensure that even the most isolated patients can receive the most specialized medicinal products via their pharmacist in a safe and timely manner.

5.1.5 Pre-financing function

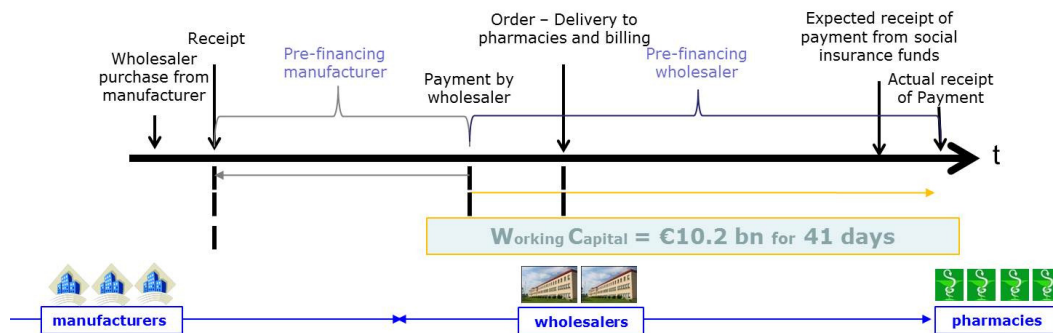
Pharmaceutical full-line wholesalers assume a pre-financing function towards manufacturers and pharmacies that is not offered by other distribution models. Pharmaceutical full-line wholesalers also acquire ownership over the medicinal products when purchasing them from the manufacturers and pass on ownership to pharmacies when they are delivered. However, payments by the pharmacies are usually delayed, often until after reimbursement from the Statutory Health Insurance (SHI). Pharmaceutical full-line wholesalers assume in this way a significant contribution to hedge the cash flows in the social security system. In the context of warehousing, capital commitment incurred, and risks, such as spoilage, breakage and loss are also covered (IfH 2008).

This function can be expressed in terms of working capital. The working capital is affected by:

- The time frame within which incoming invoices are paid (pharmaceutical full-line wholesalers to manufacturers)
- The time frame within which the pharmaceutical wholesalers' stock is pre-financed by them
- The time frame within which outgoing invoices are paid

Pharmaceutical wholesalers pre-finance nearly the entire medicinal product market, guarantee the continuous supply of all medicinal products and secure the cash flow of the social insurers (GIRP oral information 2011). In Germany, France, Italy, Spain the Netherlands and UK alone they pre-finance on average **€10.2 bn** over a period of **41** days. In total, this sum is pre-financed approximately nine times per year (figure 19).

Figure 19: Pre-financing* DE, ES, FR, IT, NL, UK, 2010



* As pharmaceutical full-line wholesalers can claim to be representative for all wholesalers in the markets observed, the calculation of the pre-financing is based on a national pharmaceutical full-line wholesale basis

Source: IPF research 2011

5.2 Added value services

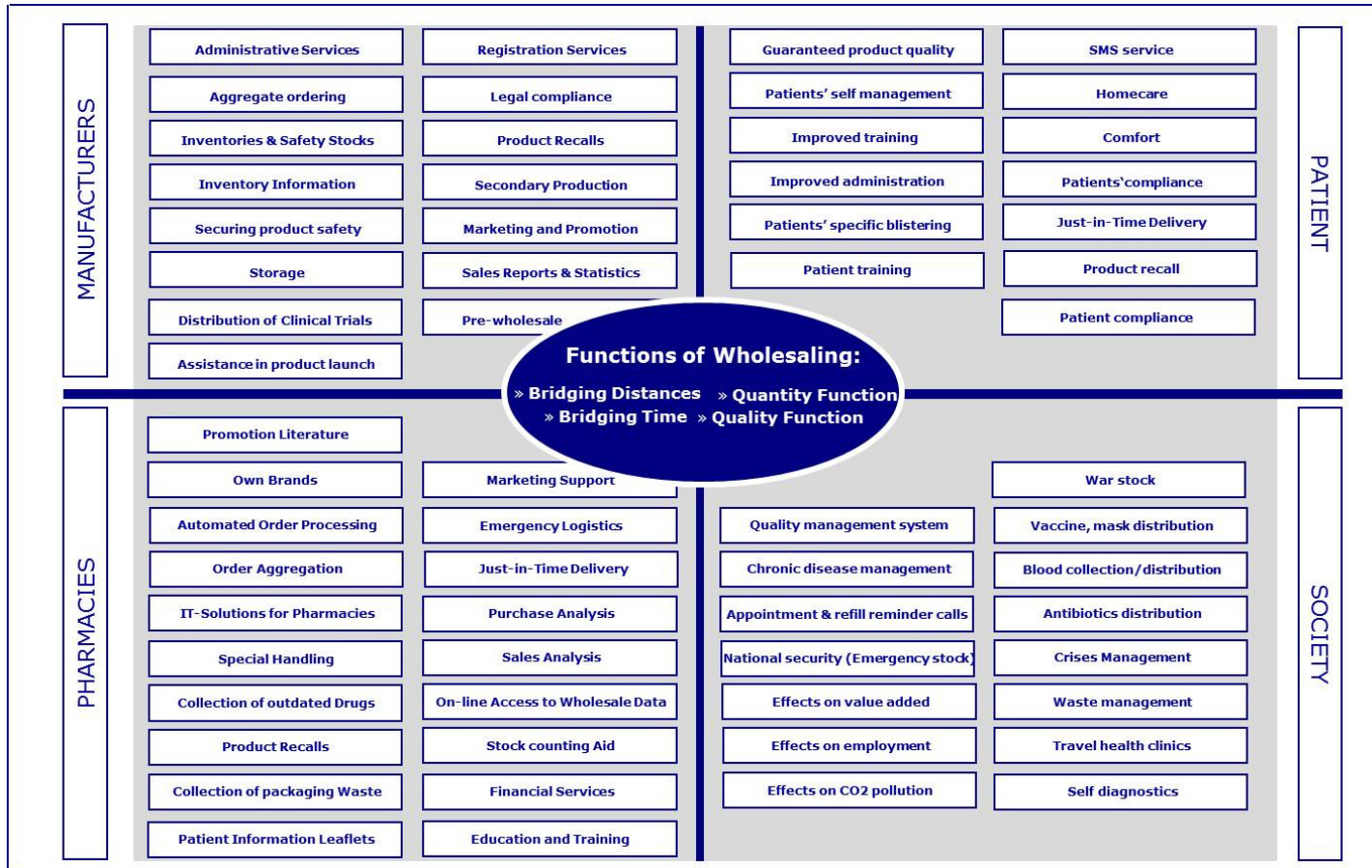
The traditional logistics functions, or primary services, of bridging time and space are the core business of the pharmaceutical full-line wholesale sector. Furthermore, they also fulfil a quantity function, namely buying medicinal products in bulk, then selling them in single units, pooling of orders for products of all manufacturers and thereby improving the efficiency of the pharmaceutical distribution chain by a digression of costs. Mandatory secondary services are supplementing these primary services. They are related to securing the high quality standards of the products distributed. Furthermore, the Guidelines on Good Distribution Practice of Medicinal Product for Human Use specifies requirements for staff qualification, documentation, goods receipt, storage and delivery of medicinal products as well as how to handle returns (European Economic Community 1994). Patients also benefit from these services, because all medicinal products distributed through pharmaceutical full-line wholesalers meet high quality standards (Clement et al. 2005).

Offering the above described primary and secondary functions is an expression of the legal and moral obligation of pharmaceutical full-line wholesalers to deliver medicinal products wherever and whenever they are needed. Manufacturers, retailers and the patients benefit from the added value created by pharmaceutical wholesalers, who have long ago evolved from merely transporting goods from A to B, while maintaining product quality to overall healthcare providers (Clement et al. 2005).

Figure 20 illustrates the exclusive, on-demand services of full-line wholesalers.

The European Pharmaceutical Wholesale Sector

Figure 20: Added value services offered by pharmaceutical full-line wholesalers



Source: GIRP data 2010, IPF research 2011

The services provided by pharmaceutical wholesalers create added value for their customers because they help them to focus exclusively on their core business. For the pharmaceutical manufacturers this is the development, production and marketing of medicinal products, for pharmacies the dispensing of medicines and the advice to patients and for doctors diagnosing and prescribing therapies to their patients (Clement et al. 2005).

Added value services are one of the most important competitive elements in pharmaceutical wholesaling, giving pharmaceutical full-line wholesalers the possibility to stand out from their competitors.

Having illustrated the many advantages of the pharmaceutical full-line wholesale model, the next section analyses the resulting benefits for the pharmaceutical industry, pharmacies and the public.

5.3 Benefits for the healthcare system

The biggest beneficiaries of the advantages associated with the full-line wholesale model are pharmacies, because they can rely on a continuous supply of all medicinal products from one single source and in the shortest possible time. Furthermore, pharmaceutical full-line wholesalers take over the majority of the storage costs of manufacturers and pharmacists and carry the debtor's risk (pre-financing function). The following section further highlights the benefits for the supply chain participants that result from the pharmaceutical full-line wholesale model.

5.3.1 Industry

As a hub for healthcare distribution, pharmaceutical full-line wholesalers fulfil a seasonal, quantitative, financial and geographical buffer function for the pharmaceutical industry. Wholesalers bridge seasonally occurring bottlenecks in peak demand times such as the flu season. They also break down bulk quantities received from the pharmaceutical industry and distribute them in adequate delivery sizes for further use by persons authorised to dispense medicinal products to the public. Finally, wholesalers fulfil a regional buffer function with their comprehensive net of warehouses. In addition, pharmaceutical full-line wholesalers guarantee a nationwide short-term availability of medicinal products (GIRP oral information 2011). Even small pharmaceutical manufacturers gain market access due to the fact that the pharmaceutical full-line wholesalers are vendor-neutral (Clement et al. 2005).

5.3.2 Pharmacies

Most pharmacies can only stock a small number of medicinal products. To distribute medicinal products whenever they are needed, pharmaceutical full-line wholesalers act as an external warehouse for their clients, reducing the pharmacies'

inventory turnover: pharmacies receive their ordered products within 2.66 hours of the orders given. This on-time delivery gives pharmaceutical full-line wholesalers a competitive advantage to other market players. Furthermore, pharmacies benefit from a bundling function carried out by pharmaceutical full-line wholesalers, who distribute per order products from several manufacturers, thereby decreasing pharmacies' transaction costs. Practically speaking, this effect is even greater, as wholesalers also bundle several orders of a pharmacy into one delivery. The time spent by an individual pharmacy on ordering, receiving and processing invoices would significantly increase in a system where pharmacies are supplied solely via direct sales instead of a system where they receive the medicines through wholesalers as a "one-stop-shop". Therefore, based on their optimized warehousing network and coverage of even remote regions, pharmaceutical full-line wholesalers ensure the constant supply of medicinal products for all pharmacies in a cost-effective way (GIRP oral information 2011).

5.3.3 Public

Pharmaceutical full-line wholesalers' timely and comprehensive distribution service is a guarantor for the high level of performance of any medicinal therapy and is therefore of paramount importance to physicians and patients. Given the broad range of medicinal products, patients receive exactly the medicinal products they need, with almost no delay (GIRP oral information 2011).

The pharmaceutical full-line wholesale model offers many advantages for the pharmaceutical industry, pharmacies and the public.

Patients also benefit directly from the efficient and low-cost network of distribution centres, securing a Europe-wide fast and continuous supply of medical products, even of slow moving products.

It has become apparent from the above analysis that the existence of pharmaceutical full-line wholesalers is essential for the European healthcare sector. The next section will show that the full-line wholesale model has furthermore an important macroeconomic impact.

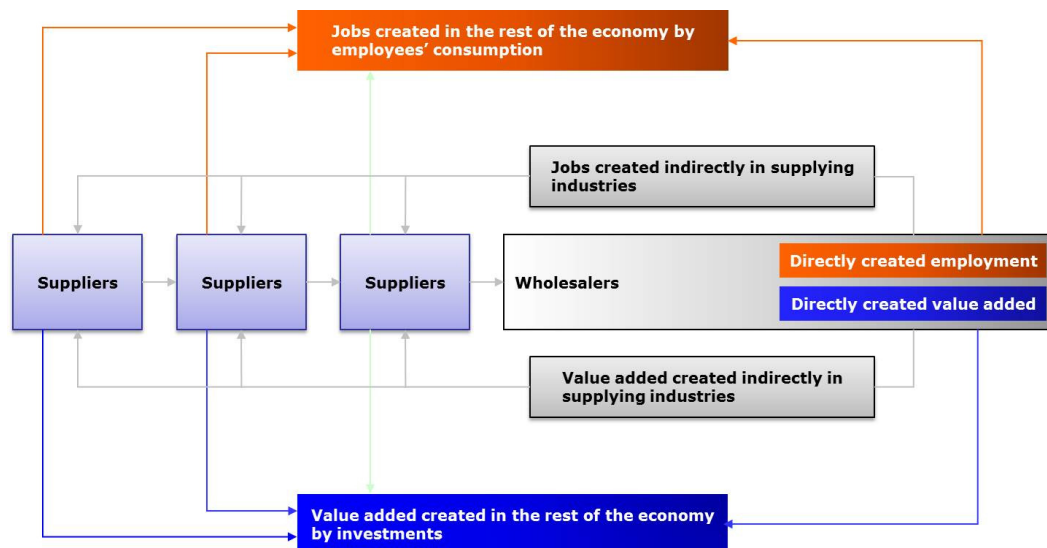
5.4 The macroeconomic impact of pharmaceutical full-line wholesalers

This section provides an examination of the macroeconomic impact of the pharmaceutical wholesale industry in addition to the analysis of economic core indicators. This impact is measured in terms of value added and jobs created by the industry in France, Germany, Italy, the Netherlands, Spain and the UK using Input-Output analysis by applying an extended Leontief-model.

The model is based on a national concept, e.g. the effects of imports and exports are not observed. It analyses economic effects generated on three different levels (Clement et al. 2005):

- Direct effects on value added and employment are created within the wholesale industry through its operations.
- To perform their tasks, pharmaceutical full-line wholesalers need electricity, conveyors, IT-services etc. and – of course – medicinal products. Because of the various links of the wholesale sector to its supplying industries, pharmaceutical wholesaling generates jobs and value added in these preliminary sectors. As these sectors are linked to other supplying industries (e.g. drug manufacturers need chemicals, production facilities, etc.), value added and jobs are also created. The sum of these economic effects is referred to as indirect effects.
- The third kind of effects to be analysed are induced effects. The first source of induced effects is consumption by employees of the wholesale sector and its supplying industries, e.g. they spend their salaries to finance their living, buy clothes, food, etc. Consumption therefore helps generate value added and jobs in business sectors apart from the wholesale industries, its suppliers and their suppliers. The second source of induced effects comes from investments made by pharmaceutical full-line wholesalers and preliminary industries (figure 21).

Figure 21: Macroeconomic Effects



Source: IPF research 2011

5.4.1 Multiplying effects

The use of multipliers helps to interpret the results, which were presented in the previous section. Generally, the multiplier gives information on the overall value added and number of jobs created by an industry in the economy as a whole, if one currency unit is invested and one job created in the sector regarded (Clement et al. 2005).

Therefore, €1 invested in the pharmaceutical wholesale sector generates on average €2.02 in the six countries observed. A detailed breakdown of the country multipliers reveals interesting results. In Spain and the UK, pharmaceutical full-line wholesalers had less impact on the economy in terms of value added, whereas the impact was highest in the Netherlands with a multiplier of 2.37 (table 2).

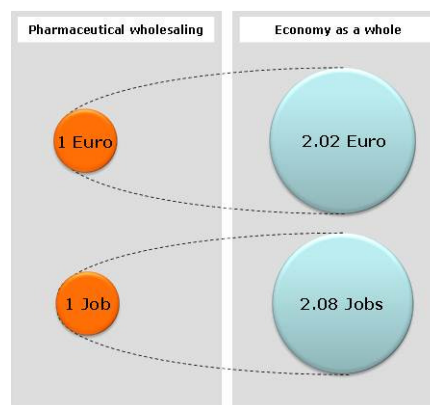
Table 2: Multiplying Effects on Value Added and Employment (FTE) in DE, ES, FR, IT, NL, UK, 2010

	DE	UK	FR	ES	IT	NL
Multiplying effects on Value Added	2.03	1.91	2.10	1.91	2.12	2.37
Total multiplying effects on Value Added	2.02					
Multiplying effects on Employment	2.24	2.27	1.94	2.26	1.75	2.25
Total multiplying effects on Employment	2.08					

Source: EUROSTAT, IPF research 2011

Each additional job offered by pharmaceutical full-line wholesalers generates 2.08 additional jobs in the economy as a whole (figure 22).

Figure 22: Aggregate multiplying effects on employment (FTE) and value added in DE, ES, FR, IT, NL, UK, 2010



Source: EUROSTAT, IPF research 2011

In the UK, Spain and the Netherlands the multiplying effect on employment is the highest.

5.5 The distribution chain with and without pharmaceutical full-line wholesalers

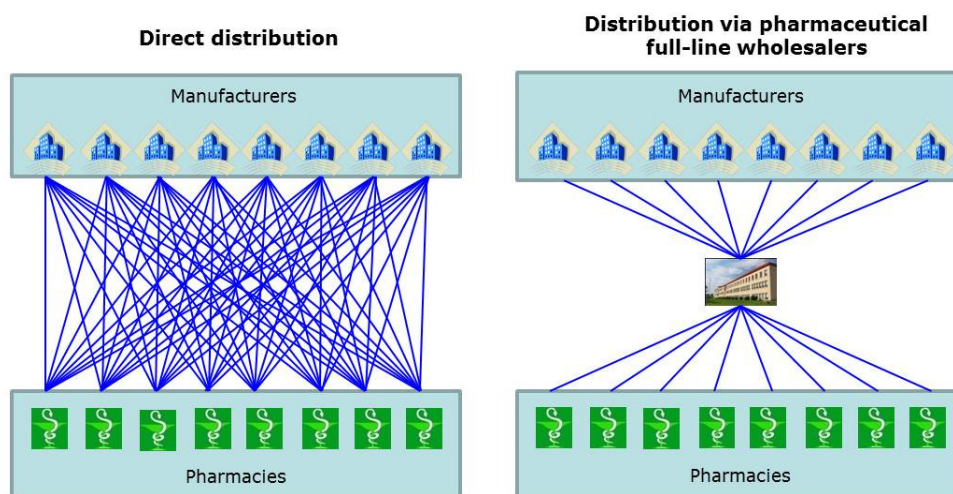
The distribution of medicinal products is the core business of pharmaceutical full-line wholesalers. As an essential ingredient of the medicine supply system, pharmaceutical full-line wholesalers help to supply the population with the needed medicinal products, fulfilling the requirements imposed on them by national law. Against this background, this chapter will firstly theorize about the distribution chain with and without pharmaceutical full-line wholesalers, and as a next step prove preliminary results using bundling and process costs.

The pharmaceutical full-line wholesale sector provides its benefits because it is cumulating many advantages: its strength in terms of procurement management is based on its vendor-neutrality and the supply of pharmacists with the full range of medicines. During storage, the wholesale sector is characterized by its high efficiency and quality of service. Their speed and efficiency in the logistics process are unsurpassed. Returns management, recalls (on a country average: five days) and crisis management are further strengths of the sector. Thus, customer service, the guaranteed supply of medicinal products and supply security are ensured through the full-line wholesale model (Clement et al. 2005).

Of particular relevance to pharmacies is the function of pooling orders. Thereby orders of slow moving, low margin products are pooled and delivered in exactly the same way and with the same speed as fast-moving and high margin products. If all medicinal products were supplied directly by manufacturers, all pharmacies would have to contact each manufacturer in order to obtain a complete assortment of medicinal products. In the six countries observed, the continuous supply of medicinal products involves more than 703 million³ transactions between pharmacies, pharmaceutical full-line wholesalers and manufacturers each year. Without pharmaceutical full-line wholesalers this number would increase dramatically to 97.9 billion transactions per year (figure 23).

³ Calculation based on national pharmaceutical full-line wholesalers.

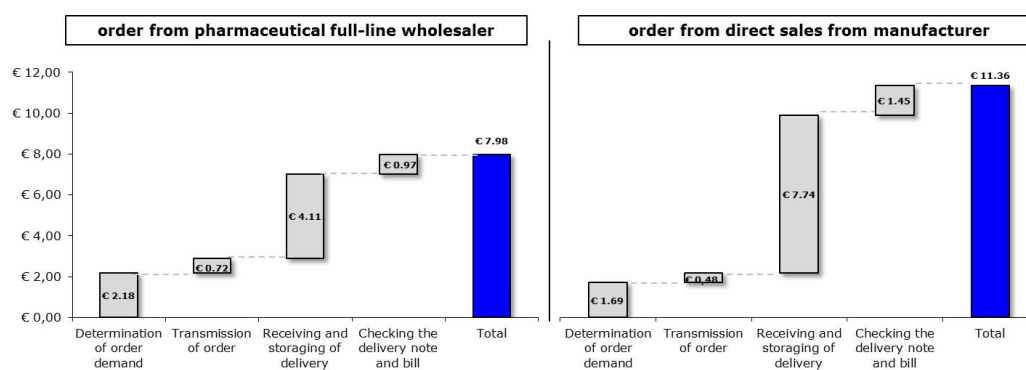
Figure 23: Distribution chain with and without intermediaries



Source: Gumbel 1985, IPF research 2011

The average individual process steps in pharmacies include determining of order demand, transmission of order, receiving and storage of delivery, checking the delivery note and invoice (IfH 2008). Comparing the process costs in pharmacies associated with the different supply routes shows the difference in time expenditure and monetary cost (with respect to a single delivery), as follows:

Figure 24: Process costs in the pharmacy per order (pharmaceutical full-line wholesaler vs. direct sales from manufacturer) DE, ES, FR, IT, NL, UK, 2011



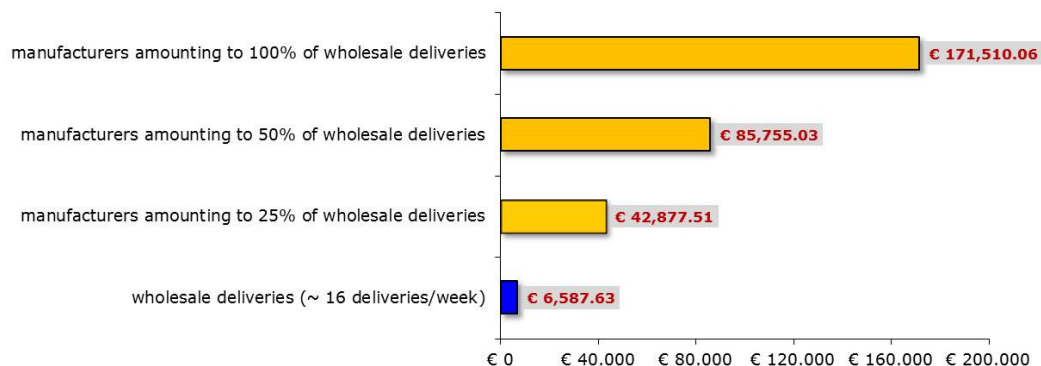
Source: De Grip et al. 2003, IfH 2008, Instituto Nacional de Estadística 2008, IPF research 2011, Istat (oral information), NHS careers 2010, Statistisches Bundesamt Deutschland 2010, WK Pharma 2011

On a weighted average, pharmaceutical full-line wholesalers are pooling products of 18.28 manufacturers per delivery.

- ⇒ The cost difference of one delivery from a manufacturer is **€3.38** compared to **one** delivery from one pharmaceutical full-line wholesaler.
- ⇒ The cost difference based on **18.28** deliveries from different manufacturers is **€199.71** compared to **one** delivery from a pharmaceutical full-line wholesaler, where products of 18.28 manufacturers are bundled.

The perceived frequency of deliveries per week from the pharmaceutical full-line wholesaler is comparable to the reported deliveries per week of the GIRP member organisation. According to their records, pharmacies are supplied on average 15.88 times per week. This average also includes deliveries to rural areas. Taking the average deliveries per week into account, the process costs accruing to pharmacies reveal the following picture:

Figure 25: Scenario: Impact on process costs per pharmacy per year (pharmaceutical full-line wholesalers vs. direct sales from manufacturers) in DE, ES, FR, IT, NL, UK, 2011



Source: Bureau of Labor Statistics 2010, Center for Healthcare supply chain research 2007, De Grip et al. 2003, Instituto Nacional de Estadística 2008, Istat 2009, IPF research 2011 (questionnaires), OECD 2008, Statistisches Bundesamt Deutschland 2010

The pharmacies in the six mentioned countries receive ~ 16 deliveries/week:

- ⇒ Without pooling, the cost will increase from €6,587.63 to €42,877.51 *per year*, resulting in a cost difference of €36,289.88, if 25% of wholesale deliveries/week are delivered by the manufacturers directly.
- ⇒ Direct distribution with weekly deliveries amounting to 50% of wholesale deliveries would increase the process costs by €79,167.40 *per year*.
- ⇒ Assuming the same delivery frequency, the process costs would increase by €164,922.43 to €171,510.06 *per year*, if there were no pharmaceutical full-line wholesalers.

Strictly speaking, the process costs of an average pharmacy would increase by €164,922.43 to €171,510.06 per year, if there were no pharmaceutical full-line wholesalers. For detailed information regarding the calculation please see Annex 2.

These additional costs would have to be paid by manufacturers, pharmacies and finally by the patients.

Many facets of pharmaceutical full-line wholesalers have now been observed, proving that they are an integral part of the medicines distribution chain.

The last chapter will focus on structural changes and challenges that pharmaceutical full-line wholesalers will have to face in the future.

6 Structural changes in the pharmaceutical wholesaling sector

The last decade has brought significant changes to the pharmaceutical full-line wholesaling sector in Europe. European and national regulations regarding the distribution of medicinal products have increased, bringing an increase of costs and a reduction of wholesale margin. Nevertheless, pharmaceutical full-line wholesalers continue to be a vital part of the pharmaceutical supply chain.

The first subchapter addresses problems in obtaining pharmaceutical supplies associated with the future, reported by pharmacists in the five observed countries. In the following the research questions of the study will be answered. Finally, this chapter will be rounded off with an outlook and conclusions.

6.1 Pharmacists' future concerns about the continuity of supplies of medicinal products

At present, the pharmaceutical sector is torn between the rapid and radical transformations taking place such as the rise of new distribution models. The interplay of fundamentally different types of key stakeholders such as manufacturers, wholesale distributors, retail pharmacies and hospitals makes the problem more complex (Clement et al. 2005).

Due to their B2B (business to business) function, the pharmaceutical full-line wholesalers are said to be one of the most exposed stakeholders regarding changes in the healthcare system. However, it has to be considered that these changes may have consequences for pharmacists as well. Based on the pharmacists' online questionnaire, future problems in obtaining pharmaceutical supplies are expected by the respondent pharmacies.

Regarding a decrease of delivery frequency, most concerns were raised in France. It should be noted that currently the French pharmacists receive two deliveries per day; some pharmaceutical wholesalers even deliver three times per day. Furthermore, 15% of the respondents complained about quotas, which force them to order directly from manufacturers. Therefore a reduction of distribution through pharmaceutical full-line wholesalers is feared by 9% of the respondents.

In Germany, 13% of the respondents were facing issues with decreasing discounts. The additional time and extra effort in the back-office when ordering directly from manufacturers bothered 6% of the pharmacists who took part in the survey.

The results from the Dutch respondents showed that 24% of the pharmacists were facing issues concerning the availability of medicinal products due to the fact that compared to its neighbouring countries, the Netherlands is a low price country

(Österreichische Apothekerkammer 2011). Due to associated export activities, pharmacists have to wait longer to obtain medicinal products. 6% of the pharmacists complained about the resulting extra work in sourcing medicinal products.

With regard to expected levels of dissatisfaction, 15% of the respondent pharmacists in the UK reported they expect problems associated with new distribution models such as DTP and RWA. Due to unrealistic quotas and quota restrictions, pharmacists who took part in the survey complained about the lack of supply and the availability of medicinal products (25%). 13% of the pharmacists had trouble obtaining and maintaining stock levels, which lead to the difficulty to provide a timely service to customers. Moreover, 8% of the respondents complained that in general the current situation is frustrating due to the changes in the supply chain. Accordingly, 9% of the pharmacists apprehend a reduction in the number of wholesalers.

Hence, for the five European countries observed, 20% of the pharmacists had problems with the availability of medicinal products. Reasons varied from country to country, but exporting was considered to be one of the main causes. Due to the fact that there are new distribution models like RWA or DTP in the UK, pharmacists are forced to have contact with several wholesalers to source their products. They complained about the additional time necessary and back-office problems. The respondent pharmacists in the five countries covered by the survey also fear a reduction in the number of pharmaceutical full-line wholesalers. They feel satisfied with the full-line distribution model due to the fact that it guarantees an effective delivery and ensures the availability and continuity of the supply.

Pharmacies rely heavily on a well-functioning distribution infrastructure. It is extremely important that the pharmacies can source their products from reliable providers, who can deliver the full range of medicinal products, in order to focus on their own core responsibilities (GIRP oral information 2011). During the course of the collection of data input for this study, respondents raised a number of concerns about the reliability of continued to supply of medicinal products. For instance, 31% of respondents from Spain complained about shortages and supply problems from their manufacturers.

The next chapter explicitly focuses on answering the research questions.

6.2 Answering the research questions

The study first gave an overview about the role of the pharmaceutical full-line wholesale sector in Europe by addressing its core indicators. Chapter four presented the perception of pharmacists on the distribution sector, gathered through the online questionnaire. Chapter five explained the efficiency of pharmaceutical full-line wholesalers, focusing on its main functions. As pharmaceutical full-line wholesalers are essential for the European healthcare sector, the macroeconomic impact was also taken into consideration. Furthermore, the importance of pharmaceutical

full-line wholesalers in the distribution of medicinal products was proven by comparing a distribution chain with and without full-line wholesalers (bundling and process costs).

Based on key findings of this study, this subchapter gives an overview of the findings to each of the research questions.

- ▶ What is the role of pharmaceutical full-line wholesalers in the European pharmaceutical distribution sector and how can it be represented by core indicators?

In Europe, medicinal products are generally distributed through the following distribution path: manufacturer -> (pre-wholesaler) -> pharmaceutical full-line wholesaler -> public pharmacy -> patient. By ensuring availability and continuity of the supply of all medicinal products to the citizens of Europe, pharmaceutical full-line wholesalers are the most essential link between Europe's pharmaceutical manufactures and medicinal product dispensing points. Furthermore, the effective and efficient functioning of the healthcare sector in Europe is also guaranteed, as pharmaceutical full-line wholesalers take the responsibility to fund and hold buffer stocks, therefore providing a financing function and offering logistics ownership that goes with wholesaling services. Additionally, the many added value services offered enable pharmaceutical full-line wholesalers to stand out from their competitors. Core indicators describing the efficiency of pharmaceutical full-line wholesalers are for example working capital, delivery time and process costs.

- ▶ What functions do pharmaceutical full-line wholesalers offer towards their supply chain partners and in which way do they contribute towards their efficiency?

Pharmaceutical full-line wholesalers provide functions, which are essential to the effective and efficient functioning of the healthcare sector in Europe, namely the full-supply function, immediate availability, stock-keeping function, delivery and recall function as well as the financing function.

With the full-supply function, pharmaceutical full-line wholesalers guarantee to be in possession of the complete assortment of products in range and depth, according to requirements which are set by the authorities and the market framework. This way, the needs of the pharmacists and patients can be met. With the stock keeping function, pharmaceutical full-line wholesalers make it possible that large quantities of medicinal products are stocked and orders are delivered in the required amount. Additionally, even the most isolated patient gets the most specialized medicinal products through their pharmacists in a timely manner. For defective products, an effective recall system is in place. Additionally, pharmaceutical full-line wholesalers pre-finance nearly the entire medicinal product market, guarantee the continuous supply of all medicinal products and also secure the cash flow of the social insurance funds. These functions towards manufacturers and pharmacies are not offered by other distribution models.

- ▶ What services do pharmaceutical full-line wholesalers provide and what is the created added value for stakeholders (up and down) the pharmaceutical supply chain and for the public?

The logistics function, or primary service, of bridging time and space is the central business of the industry. With the quantity function that consists of buying large quantities, breaking down the bulk and selling the products in small units, pharmaceutical full-line wholesalers improve the efficiency of the distribution chain by a digression of costs. To secure the high quality standards of the products distributed, this primary service is complemented by mandatory secondary services. The Commission consultation on the Guidelines on Good Distribution Practice of Medicinal Products for Human Use and the recently adopted Falsified Medicines Directive (Directive 2011/62/EU) are mainly focused on this quality function. However, pharmaceutical full-line wholesalers who have long ago evolved from just transporting goods from A to B, add value for manufacturers, retailers and the patients. These added value services are the most important competitive factor in pharmaceutical wholesaling, giving companies the possibility to stand out from their competitors.

- ▶ How satisfied are pharmacists with the distribution systems they use and where do they identify potential risks and problems with regards to the distribution process?

Despite the fast growth of RWA and DTP in the UK, results of the online pharmacists' questionnaire show that the respondent pharmacists were not satisfied with these new distribution models. Reasons mentioned were the additional workload/paperwork, bottlenecks and low delivery frequency, lack of invoicing transparency and logistic hurdles. Regarding the distribution system and the delivery time, the majority of pharmacists in the five observed countries (France, Germany, the Netherlands, Spain and the UK) were very satisfied with their pharmaceutical full-line wholesalers.

Regarding pharmaceutical short-line wholesalers, the respondents in Germany and the Netherlands were quite satisfied. Though, they were complaining about the increasing pharmacy stock- and order effort. Results of the questionnaire show that the respondent pharmacists in Germany, Spain and the UK had concerns about the possibility to provide service to patients when receiving medicinal products through this distribution channel.

The function of full-line wholesalers to pool orders is very important, because if medicinal products were supplied directly, each pharmacy would have to contact each manufacturer in order to obtain a complete assortment of medicinal products. In the six countries observed, the continuous supply of medicinal products involves more than 703 million⁴ transactions between pharmacies, pharmaceutical full-line wholesalers and manufacturers each year. Without pharmaceutical full-

⁴ Calculation based on national pharmaceutical full-line wholesalers.

line wholesalers this number would increase dramatically to 97.9 billion transactions per year, and this would automatically lead to a high level of dissatisfaction among pharmacists throughout Europe.

Hence, pharmacists in the five observed countries fear a reduction of pharmaceutical full-line wholesalers, because they are the only ones guaranteeing an effective provision delivery of added value services and ensuring the availability and continuity of the supply of all medicinal- and healthcare products.

- ▶ What is the pharmaceutical full line wholesale sector's contribution to the overall economy – how much value added and jobs are created by pharmaceutical full-line wholesalers?

The macroeconomic impact of the pharmaceutical wholesale industry in addition to the analysis of economic core indicators is measured in terms of value added and jobs created by the industry in France, Germany, Italy, the Netherlands, Spain, and the UK using Input / Output analysis by applying an extended Leontief-model (Clement et al. 2005). Results show that for every €1 invested, the pharmaceutical wholesale industry generates on average €2.02.

- ▶ What are the challenges faced by the pharmaceutical full-line wholesale sector and how could future trends affect the pharmaceutical distribution landscape?

Due to the rise of new business models the pharmaceutical wholesale sector was and still is heading for a period of rapid and radical transformations. Moreover the interplay of different types of key stakeholders like manufacturers, wholesale distributors, retail pharmacies, hospitals or managed care organizations and insurance companies make the current situation more complex (Clement et al. 2005).

Considering the importance of pharmaceutical full-line wholesalers in the European healthcare sector, the next chapter will give an outlook on the pharmaceutical full-line wholesaling model in the next few years. Finally, this study will be rounded off with a conclusion.

6.3 Outlook and Conclusion

The guaranteed availability and continuity of the supply of all medicinal products and healthcare products to all European citizens is ensured by pharmaceutical full-line wholesalers. Pharmaceutical full-line wholesalers are therefore the vital link in the European pharmaceutical distribution sector. They are vendor-neutral and should be entitled to get adequate supply from all manufacturers, which can then be distributed in adequate quantities to pharmacies. Furthermore, the funding and holding of buffer stocks, the resulting working capital and logistics ownership are part of wholesaling services and also vital to the effective and efficient functioning of the healthcare sector in Europe. Pharmaceutical full-line wholesalers stand out

from their competitors because they offer special features (e.g. aggregate ordering, product recalls, guaranteed product quality, just-in-time delivery, crises management, special handling etc.). Regarding satisfaction levels, pharmacists in different countries expressed that the existence of the full-line wholesalers is essential for the European healthcare sector.

In addition, pharmaceutical full-line wholesalers will be engaged more and more in the role of health service providers, which is already the case in the UK and in the Netherlands where pharmaceutical full-line wholesalers have become partners of Health Service Centres.

Furthermore, pharmaceutical full-line wholesalers help reduce transaction costs, secure a safe, rapid and continuous supply of medicinal products and help generate value along the pharmaceutical supply chain by providing complementary services to their supply chain partners. Nevertheless, the wholesale sector still offers more than that, namely information and market knowledge. Pharmaceutical full-line wholesalers can definitely support decision makers in their task because the sector generates and provides unique market and product related information as independent or integrative service provided to supply chain partners. The know-how gained is also of interest for healthcare providers. The pharmaceutical wholesale sector has proven to be a reliable partner to the pharmaceutical industry as well as to pharmacies and to patients. Moreover, pharmaceutical full-line wholesalers are prepared to become vital and reliable partners to policy makers, trying to find strategies and solutions for the current and future challenges in the European healthcare sector together with policy makers, all other stakeholders involved and the representatives of health funds and last but not least patients (Clement et al. 2005).

Glossary

The following definitions are intended for a general understanding of the terms used in this study and should not be considered as a complete definition, since some are written in the simplest form to allow a general understanding of the terms listed.

Added value	Added value is defined as an increase in the value of a product by adding an additional service. Usually by integrating the value with a customer's workflow, tailoring it to the customer's needs, making it more easily accessible etc. ¹
Adherence	Adherence is defined as the extent to which a person's behaviour corresponds with agreed recommendations from a healthcare specialist ²
Asset	Asset is defined as an item of property (e.g. capital, money, a share in ownership) ³
Buffer stock	The buffer stock is the stock held as a safety measure to cope with unforeseen demand ⁴
Business to Business (B2B)	In our study the term business to business is defined as the transactions between a business and another business
Cash flow	In finance the cash flow refers to the amount of cash, which is received and spent by a business during a defined time period ³
Compliance	Patient compliance describes the consistency and accuracy with which a patient follows a recommended medical regimen, usually referring to a pharmacotherapeutic regime ⁵
Core indicator	In our study a core indicator is an indicator of performance which is relevant for customers and stakeholders
Cut-off time	In our study the term cut-off time is defined as a period for a deadline set by a supplier for the acceptance of orders
Delivery time	Delivery time is defined as the timeframe between the placement of the order and the delivery through the customer (e.g. pharmacist) ⁶

Demand	A demand is the quantity of a good or service that a household or firm chooses to purchase at a given price ⁷
Direct sales	In case of direct sales the pharmaceutical manufacturer sells its medicinal products directly to the pharmacist, in addition to the pharmaceutical full-line wholesaling route ⁸
Direct to Pharmacy (DTP)	In the DTP distribution model pharmaceutical manufacturers deliver its medicinal products directly to the pharmacies through one or more logistic service providers. In some cases pharmaceutical full-line wholesaler operate as these logistic service providers ⁸
Discount	A discount is a price reduction which is granted to specified purchasers under specific conditions prior to purchase ²
Dispensing doctors	A dispensing doctor is a physician who is authorised to dispense medicinal products to his patients ²
Distribution channel	A distribution channel is defined as a system for moving goods from producers to buyers, as well as the people and organizations involved ⁹
Distribution model	In our study the term distribution model describes the way how medicinal products are moved from the manufacturer to the pharmacist.
EU 25 + 2	In our study this term is used for the European Union without Malta and Cyprus but including Norway and Switzerland
European Union	The European Union is a unique economic, political and social partnership between 27 independent European countries ¹⁰
Falsified Medicines Directive	The proposal for a Directive of the European Parliament and of the Council amending Directive 2001/83/EC as regards the prevention of the entry into the legal supply chain of medicinal products which are falsified in relation to their identity, history or source applies to medicinal

products for human use intended to be placed on the market in the Member States¹¹

Falsified medicinal product

A falsified medicinal product is defined as any medicinal product with a false representation of: its identity, including its packaging and labeling; its name or its composition as regards any of the ingredients including excipients and the strength of those ingredients; its source, including the manufacturer, its country of manufacturing, its country of origin or its marketing authorization holder; its history, including the records and documents relating to the distribution channels used. This definition does not include unintentional quality defects and is without prejudice to infringements of intellectual property rights⁹

Good distribution practice Guidelines (GDP)

GDPs are a set of rules that the European Commission has elaborated for the distribution of pharmaceutical wholesalers. According to these rules, pharmaceutical distributors must comply with the principles and guidelines of good distribution practice which include regulations about quality management, personnel, premises and equipment, documentation, deliveries to customers, returns, self inspections, etc.¹²

Hospital pharmacy

Hospital pharmacies are pharmacies that offer medicinal products to patients.² Moreover, a hospital pharmacy is the healthcare service, which describes the art, practice, and profession of choosing, preparing, storing, compounding and dispensing medicines and medical devices, advising healthcare professionals and patients on their safe, effective and efficient use¹³

Hub

A central point which collects, sorts, transports and distributes goods for a particular area¹⁴

Liability

The present obligations of an enterprise, which arise from past events are defined as liabilities. Strictly speaking, a settlement which is expected to result in an outflow of resources from the enterprise, embodying economic benefits³

Macroeconomics

Macroeconomics considers the economy as a

whole. Major aggregates are the household, business, and government sectors³

Margin

The profit – a percentage of the selling price – is defined as margin.

The gross profit of wholesalers, expressed as a percentage of the wholesale price is the whole-sale margin.

The pharmacy margin is the gross profit of pharmacies expressed as a percentage of the pharmacy retail price²

Medicinal product

The EC Directive on falsified medicines defines a medicinal product as follows:

- any substance or combination of substances presented as having properties for treating or preventing disease in human beings; or
- any substance or combination of substances which may be used in or administered to human beings either with a view to restoring, correcting or modifying physiological functions by exerting a pharmacological, immunological or metabolic action, or to making a medical diagnosis⁹

Multi-channel system

A multi-channel system is a distribution system at the wholesale level. Medicinal products of different manufacturers are distributed and supplied in parallel via different wholesalers²

Multipliers

The quantity equilibrium output gains when the aggregate expenditures register shifts by a dollar⁷

One stop shop

All medicinal products used in the geographical area, in which the wholesale distributor is active in are available from a single source¹⁵

Parallel trade

Parallel trade of medicinal products within the EU is a form of arbitrage in which medicinal products are acquired in one Member State, typically where the prices of the medicinal products are comparatively low, and sold in other Member States, where the prices are higher²

Peaks

A peak is the point in a business cycle where real output reaches its maximum level⁷

Pharmaceutical full-line wholesaling

The activity of pharmaceutical full-line wholesaling consists of the purchase, warehousing, storage, order preparation and delivery of medicines. Pharmaceutical full-line wholesalers carry and distribute the complete assortment of products in range and depth within the framework set by the authorities and the market to meet the needs of those with whom they have normal business relations. In addition to delivering all medicines in their geographical area of activity on the same day/within less than 24 hours, pharmaceutical full-line wholesalers provide working capital and extended financing services, funding of stock and receivables of pharmacies and health care professionals¹⁵

Pharmaceutical short-line wholesaling

The activity of pharmaceutical short-line wholesaling consists of the purchase, warehousing, storage, order preparation and delivery of medicinal products. Pharmaceutical short-line wholesalers carry and distribute only a selective assortment of products¹⁵

Pharmacist

A pharmacist is a person who has a university degree in pharmacy and who is licensed to practise pharmacy. Services provided by pharmacists include for e.g. the preparation of medicines according to prescriptions of medical and dental practitioners, or established formulae; checking prescriptions to ensure that recommended dosages are not exceeded, and that instructions are understood by patients²

Pooling (bundling)

In our study, pooling or bundling is a wholesale benefit, which involves the distribution of products from several manufacturers combined in one delivery

Pharmaceutical portfolio

A pharmaceutical portfolio is the collective of pharmaceuticals offered by a distributor¹⁶

Pharmaceutical pre-wholesaler

A pre-wholesaler is an agent acting on behalf of a manufacturer and is responsible for the storage and distribution of the manufacturer's products to other wholesalers and to hospitals¹⁷

Productivity	Productivity refers to the total output of goods and services in a defined period of time divided by work hours ³
Product recall	A product-recall is the process of withdrawing or removing a pharmaceutical product from distribution channels if a problem arises with a medicinal product (e.g. product integrity concerns) and returning it to the manufacturer ²
Public Service Obligation	The obligation placed on wholesalers to guarantee permanently an adequate range of medicinal products to meet the requirements of a specific geographical area and to deliver the supplies requested within a very short time over the whole of the area in question ⁹
Purchasing	Purchasing is defined as the activity of buying materials, stock, equipment etc. that a company needs to produce goods or services ¹⁰
Quotas	In the context of this study the term quotas is defined as limits on the quantity of ordered medicinal products
Reduced Wholesale Arrangement (RWA)	In the Reduced Wholesale Arrangement pharmaceutical manufacturers use only a small number of selected wholesalers in their traditional manner to distribute medicinal products
Reimbursement	Reimbursement relates to the percentage of the reimbursed price (for a service or medicinal product) which is paid by a third-party payer (e.g. Social insurance agency) ²
Retail (community) pharmacy	A retail pharmacy is a pharmacy which dispenses medicinal products to patients ²
RX products	In our study RX products are defined as Prescription only medicines
Safety stock	A safety stock is defined as extra units of inventory which is carried as protection against possible stock outs ⁴
Solvency	Solvency or solvent is defined as the condition of a company which is able to satisfy its obliga-

	tions ⁴
Stakeholder	Anyone who is affected by a company's activities and/or performance ⁴
Stock	A stock refers to goods manufactured or bought for re-sale by a business ⁴
Stock (inventory) turnover	The stock turnover is the number of times in a trading year in which a firm sells the value of its inventory ⁴
Supply chain	The supply chain is the system of organisations, people, technology, activities, information and resources involved in shifting a product or service from supplier to customer ²
Turnover	The turnover is defined as the income of a business over a period of time (usually a year) ⁴
Value added	The difference between the value of the output and the value of the inputs purchased from other business companies is defined as the value added ⁷
Vertical integration	The vertical integration is the combination of a parent firm and the suppliers of its raw materials or purchasers of its finished product ⁴
Warehouse	A warehouse is a branch office which is often decentralized and which is used to store, consolidate, age, or mix stock ³
Wholesale distribution of medicinal products	The wholesale distribution of medicinal products is based on all activities consisting of procuring, holding, supplying or exporting medicinal products, apart from supplying medicinal products to the public. Such activities are carried out with manufacturers or their depositories, importers, other wholesale distributors or with pharmacists and persons authorized or entitled to supply medicinal products to the public in the Member State concerned ¹¹

Sources used in the Glossary

- ¹ WOLTERS KLOWER, Glossary. Available online: <http://www.wolterskluwer.com/Investors/Pages/Glossary.aspx> Accessed November 2011
- ² PHIS (Pharmaceutical Health Information System), Glossary, July 2009 updated April 2011
- ³ STIGLITZ J., Outlines & Highlights for economics of the public sector by Stiglitz, cram 101 Textbook Reviews. Academic Internet Publisher, 2007
- ⁴ ITS Tutorial School, Accounting, Business Studies and Economics Dictionary. Available online: <http://www.tuition.com.hk/dictionary/a.htm> Accessed October 2011
- ⁵ BERGER M.L., BINGEFORS K., HEDBLUM E.C. et al., Health care cost, quality and outcomes, ISPOR book of terms. ISPOR, 2003
- ⁶ GLEISSNER H., FEMERLING J.C., Logistik, Grundlagen- Übungen- Fallbeispiele. 1. Auflage, GWV Fachverlage GmbH, Wiesbaden, 2008
- ⁷ STIGLITZ J. et al., economics. Fourth edition, Norton & Company, London, 2005
- ⁸ GIRP [unpublished presentation] Short line wholesaling, DTP (Direct-to-pharmacy) supply and direct sales, Introduction and Discussion, 2011
- ⁹ PEARSON PLC., Longman Business English Dictionary. 2nd edition, Pearson Longman, 2007
- ¹⁰ EUROPEAN PARLIAMENT [website], <http://europa.eu>, Accessed November 2011
- ¹¹ EUROPEAN PARLIAMENT, Directive 2001/83/EC of the European Parliament and of the Council of 6 November 2001, on the Community Code relating to medicinal products for human use, Proposal for a Directive of the European Parliament and of the Council amending Directive 2001/83/EC as regards the prevention of the entry into the legal supply chain of medicinal products which are falsified in relation to their identity, history or source (COD 2008/0261) as adopted on 16 February 2010. Brussels, 2001
- ¹² EUROPEAN ECONOMIC COMMUNITY, GDP Guidelines. Guidelines on Good Distribution Practice of Medicinal Products for Human Use (94/C63/03), Brussels, 1994. Available online: <http://ec.europa.eu/health/files/eudralex/vol-4/gdpguidelines1.pdf> Accessed November 2011
- ¹³ EAHP (European Association of Hospital Pharmacists) EAHP definition of hospital pharmacy. Available online: <http://www.eahp.eu/Hospital-Pharmacy> Accessed October 2011

¹⁴ OECD, Glossary of statistical terms. 2007. Available online <http://stats.oecd.org/glossary/download.asp> Accessed October 2011

¹⁵ GIRP, oral information, 2011

¹⁶ CLEMENTE M.N., The Marketing Glossary, Key terms, Concepts and Applications in Marketing Management, Advertising, Sales Promotion, Public Relations, Direct Marketing, Market Research, Sales. Clemente Communication Group, New Jersey, 2002

¹⁷ THE COMPETITION AUTHORITY, Merger Determination M/04/020, the proposed acquisition of Ammodo Limited by Uniphar plc. 2004. Available online: http://www.tca.ie/images/uploaded/documents/m_04_020_p2d.pdf Accessed October 2011

Bibliography

BÜNTE M., ERHARDT M., SAWAYA O., Getting to grips with the supply chain – how pharmaceutical companies can enhance patient safety and protect revenues by increasing their control of drug distribution. Booz, Allen, Hamilton, 2007. Available online:

<http://www.booz.com/media/uploads/GettingtoGripswiththeSupplyChain.pdf> Accessed January 2011

CLEMENT W., WALTER E., TUMA M., The European Pharmaceutical Wholesale Industry, Structure, Trends, and socio-economic Importance, Vienna, 2005

CSRP, La Repartition Pharmaceutique. Panorama, 2010. Available online: http://www.csrp.fr/opencms/export/sites/csrp/fr/data/documents/Brochure_CSRP_2010.pdf Accessed January 2011

DE GRIP A., SIEBEN I., The Effects of Human Resource Management on Workers' Wage and Firm Productivity. Research Center for Education and the Labour Market, Maastricht, 2003

EUROPEAN COMMISSION, Commission Guidelines on Good Distribution Practice of Medicinal Products for Human Use. Health and consumers directorate-general, Brussels, 2011

EUROPEAN ECONOMIC COMMUNITY, GDP Guidelines. Guidelines on Good Distribution Practice of Medicinal Products for Human Use (94/C63/03), Brussels, 1994. Available online: <http://ec.europa.eu/health/files/eudralex/vol-4/gdpguidelines1.pdf> Accessed November 2011

EUROPEAN PARLIAMENT, Directive 2011/62/EU of the European Parliament and the Council, amending Directive 2001/83/EC on the Community Code relating to medicinal products for human use, as regards the prevention of the entry into the legal supply chain of medicinal products. Office Journal of the European Union, Brussels, 2011

EUROSTAT, Population on 1 January by age and sex [database online]. Available online: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/> Accessed October 2011

GIRP, Impact of selective distribution arrangements. Position paper, Brussels, 2011

GIRP, Statistic data, 2007 – 2010

GIRP, The Role of Pharmaceutical Full-line Wholesalers in Europe. Position paper, Brussels, 2009

GIRP, GIRP response to the public consultation in preparation of a legal proposal to combat counterfeit medicines for human use, key ideas for better protection of patients against the risk of counterfeit medicines. 2008. Available online: http://ec.europa.eu/health/files/counterf_par_trade/doc_publ_consult_200803/86_polpharma_en.pdf Accessed February 2011

GROTH A., NEUMANN K., WILKE T., GKV-Änderungsgesetz, AMNOG und die Rendite, Ökonomische Auswirkungen und Optionen der betroffenen Apotheken. Deutsche Apotheker Zeitung, 151 (2), S. 56-61, 2011

GÜMBEL R., Handel, Markt, Ökonomie. Gabler-Verlag, Wiesbaden, 1985

HOFMANN E., MAUCHER D., RICHTER P. et al., Ways out of the working capital trap, empowering self-financing growth. Springer Verlag, Berlin, 2011

IMS Health, Executive Market Report, Year 2010. 2011

IMS Health, Executive Market Report, Year 2007, Europe World. 2008

INSTITUT FÜR HANDELSFORSCHUNG (IfH), Profil und Effizienz des vollversorgenden pharmazeutischen Großhandels, 2008

INSTITUTO NACIONAL DE ESTADISTICA, Annual Wage Structure Survey. Statistical Annex, Year 2008

KIETZMANN D., Apotheker bekommen keine Arzneimittel. Apothekeadhoc, 2010
Available online: <http://www.apotheke-adhoc.de/Nachrichten/Internationales/10642.html> Accessed February 2011

MEGIÁ G., La distribución farmacéutica en España, 2007

NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE (NHS), Costing statement, medicines adherence, involving patients in decisions about prescribed medicines and supporting adherence. N.d.

NHS careers, Pay for doctors, healthcare scientists [NHS careers web site]. Available online: <http://www.nhscareers.nhs.uk> Accessed November 2010

OESTERREICHISCHE APOTHEKERKAMMER: Apotheke in Zahlen, Wien, 2011

OFT, Medicines distribution, an OFT market study. 2007a. Available online: http://www.oft.gov.uk/shared_oftrreports/comp_policy/oft967.pdf Accessed January 2011

OFT, Distribution of medicines in the UK. Annexe C of the OFT market study. 2007b. Available online: http://www.oft.gov.uk/shared_oftrreports/comp_policy/oft967c.pdf Accessed January 2011

PISCHNER R., STA EGLIN R., Darstellung des um den Keynes'schen Multiplikator erweiterten offenen statischen Input-Output-Modells. Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, 9, 1976

PSNC, The Pharmaceutical Services Negotiating Committee's Response to OFT marketstudy, distribution of medicines in the UK Buckinghamshire, 2007

ROLAND BERGER, Medicine for full-line wholesalers. Final presentation, BG Pharma, 2010

Statistisches Bundesamt Deutschland [database online]. Available online: <http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Content/Statis-tiken/VerdiensteArbeitskosten/Tarifverdienste/TDB/TDB/TarifdatenbankIF,templateId=renderPrint.psm> Accessed November 2010

STERN L.W., EL-ANSARY A.I., Marketing channels Englewood Cliffs, NJ: Prentice-Hall International, 4th Edition, New Jersey, 1992

THORMANN P., LANGE K., Der pharmazeutische Großhandel, fit für einen veränderten Markt, die kontinuierliche Entwicklung des Geschäftsmodells erlaubt es dem pharmazeutischen Großhandel, auch in Zukunft die Arzneimitteldistribution zum Wohl aller professionell und effizient zu gewährleisten. Deloitte Consulting, 2007

WILKE T., Value creation by the pharmaceutical wholesaling industry by means of superior delivery capacity when compared with direct sales by the pharmaceutical industry. Short study, Institute for Pharmacoeconomics and Medication Logistics, Wismar, 2011

WHO, Adherence to long-term therapies, Evidence for action. World Health Organization, 2003

WILKE T., NEUMANN K.: Großhandel, Überweisergeschäft oder Direkteinkauf. In: DAZ, 147. Jg., Nr. 41, S. 54-66, 2007

WKPHARMA [WK-PHARMA website] Available online: www.wk-pharma.fr Accessed November 2010

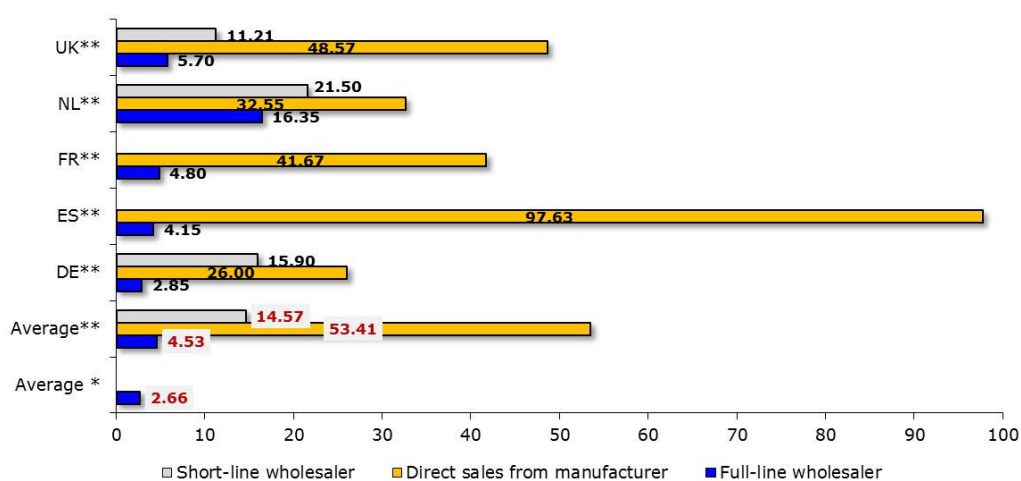
ANNEX 1

Country-specific results

This section highlights the country-specific results regarding delivery time, frequency of deliveries as well as the results for the working capital, process costs and the direct and indirect effects.

In France, 66 pharmacists took part in the survey, in Germany 100, whereas in Spain there were 124. In the Netherlands, 89 pharmacists answered the questionnaire and in the UK 94.

Figure 26: Delivery time in hours (pharmaceutical full-line wholesaler vs. pharmaceutical short-line wholesaler vs. direct sales from manufacturer) in DE, ES, FR, (IT), NL, UK, 2011



* this figure represents the weighted delivery time in hours reported from GIRP pharmaceutical full-line wholesale members

** this is the weighted delivery time in hours perceived by the respondent pharmacists in the five countries observed (based on national pharmacy open hours)

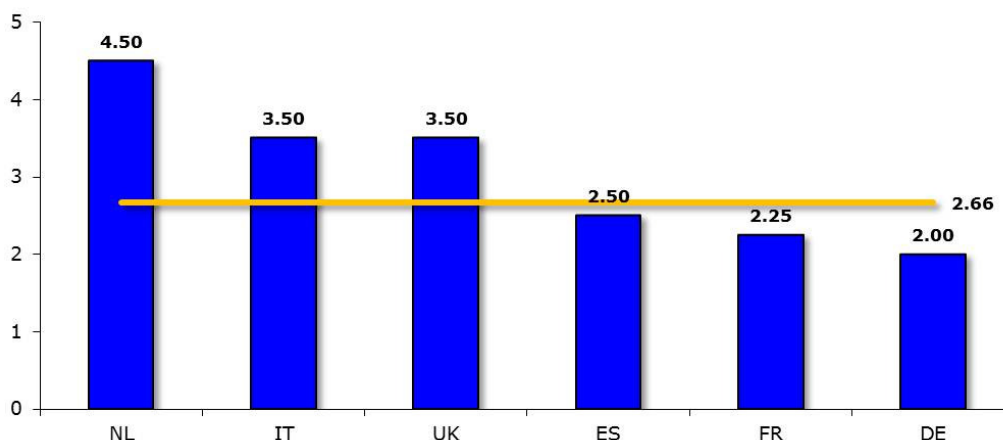
Source: IPF research 2011, Pharmacy questionnaires

As already mentioned, medicinal products can only be used for therapy if they are available on time. In Germany, pharmaceutical full-line wholesalers deliver the fastest, namely within 2.85 hours on average. Pharmacists in the Netherlands have to wait 16.35 hours on average to receive a delivery from their pharmaceutical full-line wholesalers. The country with the highest delivery time for direct sales from manufacturers is Spain with 97.63 hours on average. Germany has the lowest delivery time for direct sales from manufacturers (26 hours on average).

When comparing the perceived delivery time in hours with the reported one it can be mentioned that only in Germany the perceived and the reported delivery time are nearly the same, namely 2.85 hours perceived versus 2 hours reported. The

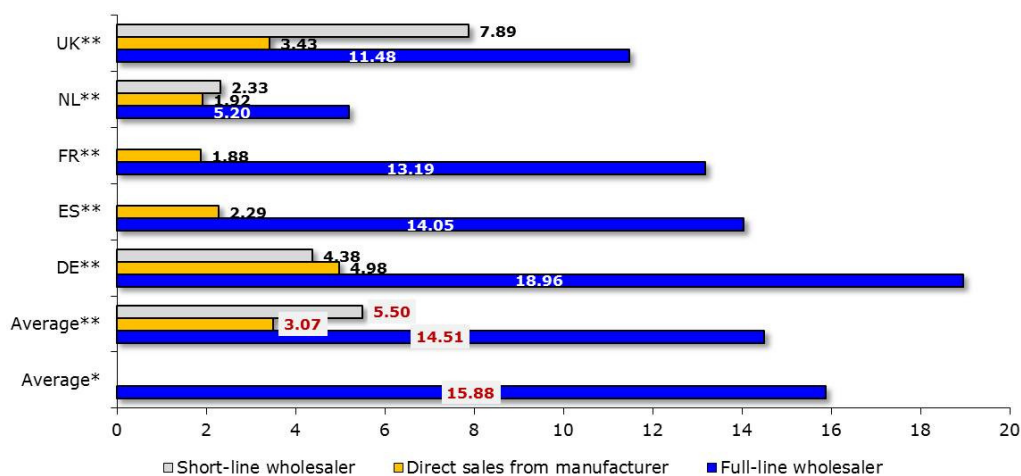
greatest difference is found in the Netherlands. Dutch pharmaceutical full-line wholesalers report a delivery time of 4.5 hours whereas Dutch pharmacists perceive 16.35 hours. This may result from the fact that the pharmacies in the Netherlands are only supplied once per day on average. As a result, the average delivery time perceived by respondent pharmacists in the six analysed countries differs slightly from the one reported by pharmaceutical full-line wholesalers – 4.53 hours versus 2.66 hours.

Figure 27: Reported delivery time of the pharmaceutical full-line wholesalers in hours in DE, ES, FR, IT, NL, UK, 2011



Source: GIRP 2011

Figure 28: Deliveries per week (pharmaceutical full-line wholesaler vs. pharmaceutical short-line wholesalers vs. direct sales from manufacturer) in DE, ES, FR, (IT), NL, UK, 2011



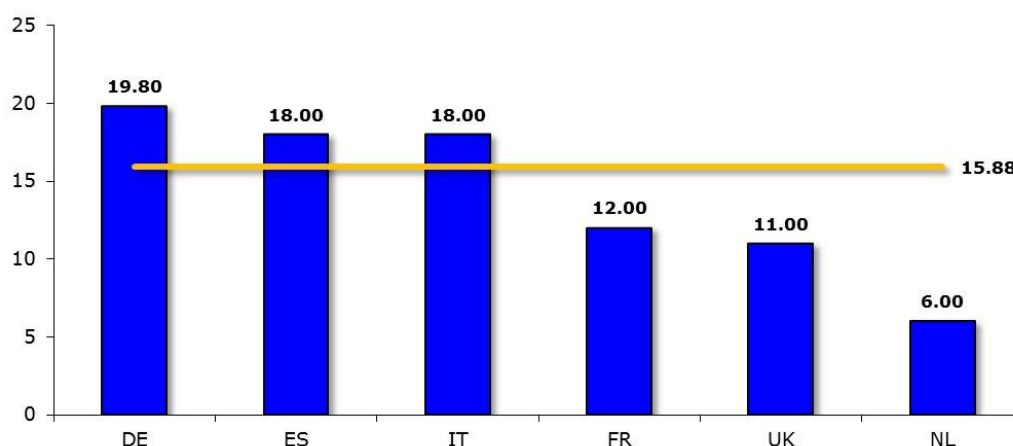
* this figure represents the weighted number of deliveries per week reported from GIRP pharmaceutical full-line wholesale members

** this is the number of deliveries per week perceived by the respondent pharmacists in the five countries observed (based on pharmacy opening hours)

Source: IPF research 2011, Pharmacy questionnaires

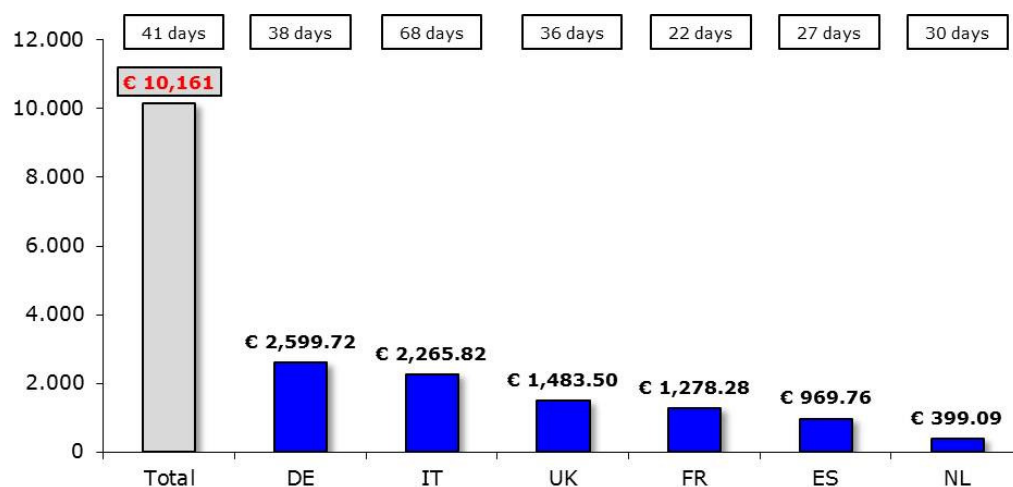
In most of the six countries, pharmacists receive deliveries from pharmaceutical full-line wholesalers three times per day on average. In Germany pharmacists receive 3.3 orders within 24 hours (delivery also during the night), whereas in the Netherlands, the pharmacies are supplied once daily on average. The perceived deliveries per week of the pharmaceutical full-line wholesalers are comparable to the reported deliveries per week by the GIRP member organisations (see figure 29).

Figure 29: Reported deliveries per week of the pharmaceutical full-line wholesalers in DE, ES, FR, IT, NL, UK, 2011



Source: GIRP 2011

Figure 30: Pre-financing* in million €, DE, ES, FR, IT, NL, UK, 2011



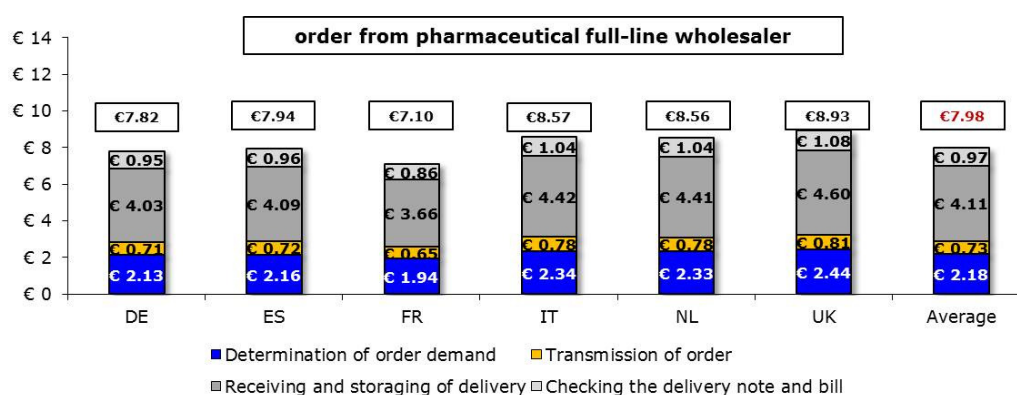
Source: Company questionnaires, GIRP data 2010, IPF research 2011

As pharmaceutical full-line wholesalers can claim to be representative for all wholesalers in the markets observed, the calculation of the pre-financing is based

on a national pharmaceutical full-line wholesale basis. On a weighted average, pharmaceutical full-line wholesalers in the six observed countries pre-finance €10.2 billion for 41 days. German pharmaceutical wholesalers pre-finance €2.6 billion for 38 days on average; whereas in Italy €2.3 billion are pre-financed for 68 days (figure 30).

The pharmaceutical wholesalers in the EU 25 + 2 pre-financed together on average €12.7 billion over a period of 35 days.

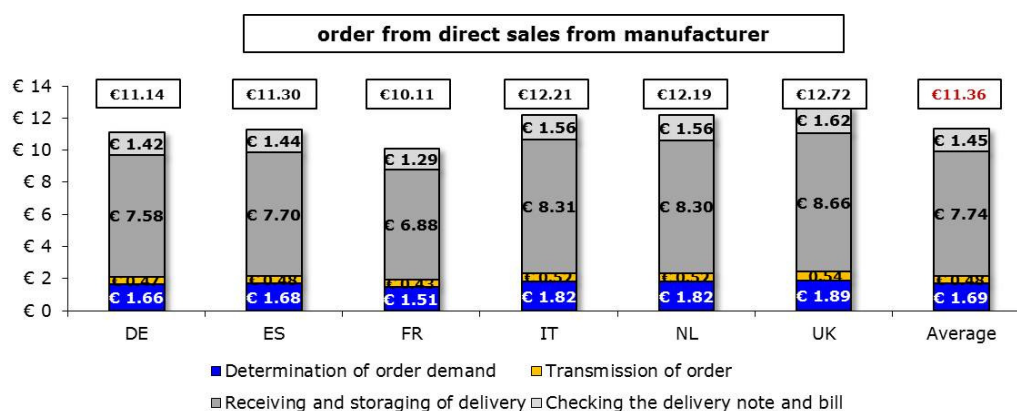
Figure 31: Process costs in the pharmacy per order (pharmaceutical full-line wholesaler) in DE, ES, FR, IT, NL, UK, 2011



Source: De Grip et al. 2003, IfH 2008, Instituto Nacional de Estadística 2008, IPF research 2011, Istat (oral information), NHS careers 2010, Statistisches Bundesamt Deutschland 2010, WK Pharma 2011

According to the average annual gross salary of pharmacy assistants per country, France has the lowest process costs (€7.10) generated by placing an order with a pharmaceutical full-line wholesaler. The highest process costs exist in the UK with €8.93. It is the same for placing an order through direct sales from a manufacturer, where in the UK is €12.72. The lowest process cost for direct sales orders exist in the Netherlands with €10.11

Figure 32: Process costs in the pharmacy per order (direct sales from manufacturer) in DE, ES, FR, IT, NL, UK, 2011



Source: De Grip et al. 2003, IfH 2008, Instituto Nacional de Estadística 2008, IPF research 2011, Istat (oral information), NHS careers 2010, Statistisches Bundesamt Deutschland 2010, WK Pharma 2011

According to the result of the pharmacists' questionnaire, the number of manufacturers whose products are pooled per delivery varies by country. Table 3 gives an overview of the collected data. The numbers were weighted according to the number of pharmacies per country.

Table 3: Pooled manufacturers/delivery and deliveries/day of the pharmaceutical full-line wholesaler in DE, ES, FR, IT, NL, UK, 2011

	Pooled manufacturers/delivery	Ø deliveries/day
DE	18.42	3.3
ES	23.31	3
FR	13.53	2
IT	20.00	3
NL	14.49	1
UK	16.01	2
Average	18.28	2.65

Source: GIRP data 2010, IPF research 2011, Pharmacy questionnaires

Pharmaceutical full-line wholesalers pool products of 18.28 manufacturers per delivery on a weighted average. The cost difference of 18.28 deliveries from manufacturers is €199.71 compared to one delivery from a wholesaler.

Pharmacists in the Netherlands receive a delivery from their pharmaceutical full-line wholesaler, where products of 14.49 manufacturers on average are pooled. This translates into a cost difference of €168.11 compared with 14.49 separate deliveries from manufacturers. A pharmaceutical full-line wholesaler in Spain bun-

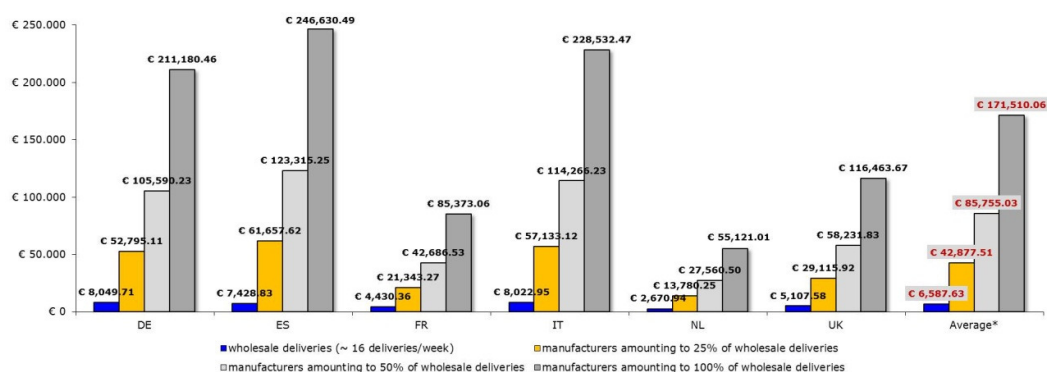
dles products of 23.31 manufacturers per delivery on average. Therefore, the cost difference is much higher than in the Dutch case, namely €255.56.

Table 4: Cost differences between a delivery from a pharmaceutical full-line wholesaler compared to deliveries from different manufacturers in DE, ES, FR, IT, NL, UK, 2011

	total (wholesaler)	total (different manufacturers)	difference
DE	€7.82	€205.11	€197.29
ES	€7.94	€263.49	€255.56
FR	€7.10	€136.82	€129.72
IT	€8.57	€244.16	€235.59
NL	€8.56	€176.67	€168.11
UK	€8.93	€203.61	€194.68
Average	€7.98	€207.69	€199.71

Source: IfH 2008, IPF research 2011, Pharmacy questionnaires

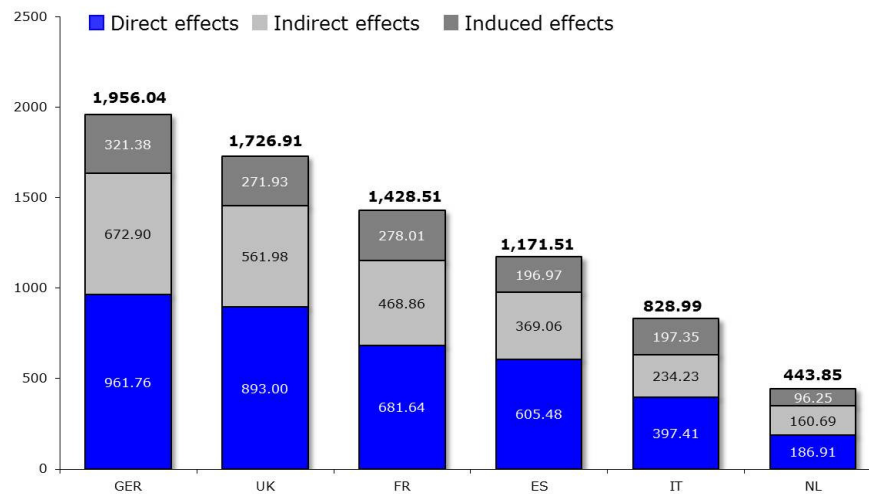
Figure 33: Impact on process costs per pharmacy, country and year, DE, ES, FR, IT, NL, UK 2011



Source: GIRP data 2010, IPF research 2011, Pharmacy questionnaire

The impact on process costs per country depends on the average number of deliveries per day and the number of products from different manufacturers pooled per order. The results show the impact on process costs per year. Firstly, the average process costs per pharmacy per year are illustrated if the pharmacy is supplied only by wholesalers. Furthermore, figure 33 gives an overview of the yearly process costs if 25, 50 or 100% of the wholesale deliveries were carried out by the manufacturers.

Figure 34: Direct, indirect and induced effects on value added (in million €) in DE, ES, FR, IT, NL, UK, 2010

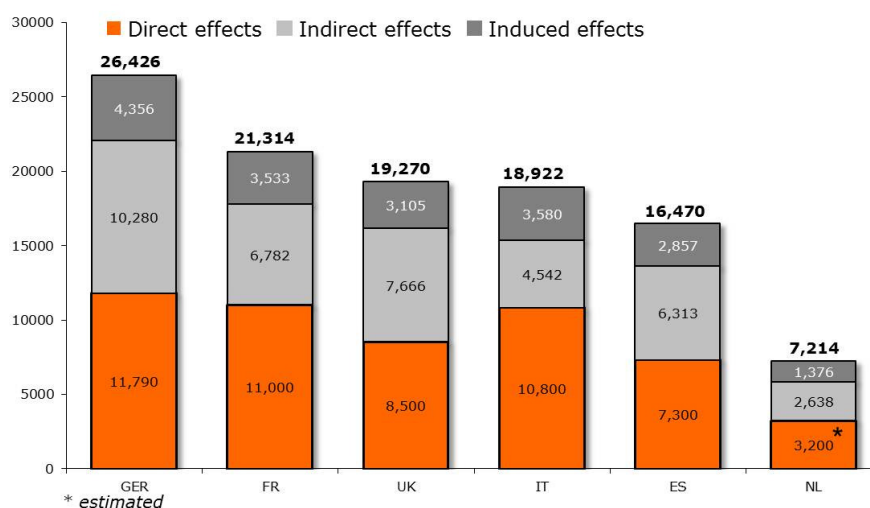


Source: IPF research 2011

Figure 34 presents the direct, indirect and induced effects on value added. These effects depend on the market size. The direct effects make up the biggest share of the value added and are created within the wholesale industry through its operations. Indirect effects are the sum of the pharmaceutical full-line wholesalers' intermediate inputs. The investments made by pharmaceutical full-line wholesalers and preliminary industries as well as the consumption by employees of the wholesale sector and preliminary industries, sum the induced effects up.

The value added is created in Germany with €1,956 million followed by UK and France with €1,727 and €1,429 million.

Figure 35: Direct, indirect and induced effects on employment in DE, ES, FR, IT, NL, UK, 2010



Source: IPF research 2011

Figure 35 illustrates the direct, indirect and induced effects on employment. Compared to figure 34 it has to be noticed that the share of the effects on employment can differ from the share of the effects on value added due to different distribution models in the countries as well as the different size of the companies.

In Germany, the biggest market, the effects on employment were the largest with the creation of 26,426 jobs, arising as a result of the direct employment and of the direct added value.

In the Netherlands, the smallest pharmaceutical market, still 7,214 jobs were created by the pharmaceutical wholesaling sector.

ANNEX2

The calculation of the quantitative efficiency indicators will be described in the following.

Working Capital

Working Capital Management can be used as an instrument to optimise a company's solvency and productivity. It focuses on analysing the problems which can arise in the course of planning, steering and regulating of the short-term working capital and liabilities and the interrelations between them (Hofmann et al. 2011).

Net Working Capital is a ratio of the Working Capital management and an efficiency indicator. Strictly speaking the Net Working Capital is defined as the difference between liabilities - from deliveries and performances and possible additionally current liabilities - and current assets (Hofmann et al. 2011).

Several ratios are needed to analyse and control the Net Working Capital:

$$\begin{array}{rcl} & \text{Days Sales Outstanding} - \text{DSO} & \\ & \text{(capital commitment from accounts receivable)} & \\ + & \text{Days Inventory Outstanding} - \text{DIO} & \\ & \text{(capital commitment from stock)} & \\ - & \text{Days Payable Outstanding} - \text{DPO} & \\ & \text{(pre-financing from suppliers)} & \\ = & \text{Net Working Capital Days} & \end{array}$$

A concept to measure and control the effectiveness of the Working Capital Management is the concept of the Cash to Cash Cycle. Within the concept the Cash to Cash Cycle time is the essential ratio of the Cash to Cash Cycle and is defined as the time period from payment outflow for resources to suppliers up to payment inflow from the customer (Hofmann et al. 2011).

Input-Output Analysis

Input-output analysis focuses on the examination of the flow of goods and services between industries and its impact on overall demand for labour and capital within an economy.

Within the concept a distinction between final demand and intermediate demand has to be made. Final demand embraces goods and services sold to the final customers, whereas intermediate demand refers to inter-industry trading. Together,

these two types of demand result in the total demand in various sectors of the economy.

Final demand directly creates value added and jobs in the specific industry. These effects are therefore called direct effects. Final demand also influences the level of intermediate-demand for goods and services provided by supplying industries, therefore stimulating investment and labour in these sectors. These effects are referred to as indirect effects. Direct and indirect effects only observe direct supplier-customer relations, but increase in employment also radiates in other sectors, due to consumption and investment (induced effects).

Value added is defined as the value of a company's output minus the value of the intermediate goods purchased from supplying industries. Therefore, the calculation of value added is closely related to the production value. For trading-industries, production value is computed as follows:

$$\begin{array}{rcl} & \textit{Turnover} & \\ + & \textit{Capitalized production} & \\ - & \textit{Goods and services for resale} & \\ +/- & \textit{Changes in stocks of finished products and work in progress} & \\ \hline = & \textbf{Production value} & \end{array}$$

In a second step, value added at factor cost is calculated using the following top-down scheme:

$$\begin{array}{rcl} & \textit{Production value} & \\ - & \textit{Carriage forward} & \\ - & \textit{Purchase of material for processing} & \\ - & \textit{Operating cost} & \\ - & \textit{Low value assets} & \\ - & \textit{Taxes and fiscal charges} & \\ + & \textit{Subsidies} & \\ \hline = & \textbf{Value added at factor cost} & \end{array}$$

Therefore, value added at factor cost embraces:

- Net operating surplus
- Wages and salaries
- Intermediate consumption
- Charges on production
- Depreciation

Leontief's input-output-model provides the methodological basis for the examination of the flow of goods and services between different sectors of the economy.

The model is based on an economy with n sectors of the economy. The total production value x of sector i comprises goods and services supplied by sector i to sector j (intermediate goods) and goods and services provided by sector i for final consumption (y) (Pischner et al. 1976).

$$(1) \quad x_i = \sum_{j=1}^n x_{ij} + y_i$$

Equation (1) may also be expressed by the matrix

$$(2) \quad x = \sum_{j=1}^n x'_j + y \quad \text{with } x'_j = (x_{1j}, x_{2j}, \dots, x_{nj})$$

The production functions of Leontief's model are given in equation:

$$(3) \quad x_{ij} = a_{ij} \cdot x_j \quad \text{with } i = 1, 2, \dots, n \\ j = 1, 2, \dots, n \\ a_{ij} \dots \text{input-coefficient}$$

The input-coefficients are put together in matrix A , resembling the cost-structure of the economy. Each element a_{ij} of matrix A displays the value of intermediate goods procured by sector j . Therefore, a_{ij} can be interpreted as direct effect of production generated in sector i by producing the quantities of intermediate goods demanded by sector j .

$$(4) \quad A \cdot x = \sum_{j=1}^n x'_j$$

The Leontief-equation is obtained by substituting equation (4) in (2).

$$(5) \quad x = A \cdot x + y \quad \text{with } 0 \leq a_{ij} \leq 1$$

Given the constraint in equation (5) the solution to the model is

$$(6) \quad x = (E - A)^{-1} \cdot y \\ x = C \cdot y$$

$E \dots$ Identity matrix
 $C \dots$ Leontief inverse

The Leontief-inverse C measures all production effects induced by final consumption. Any element c_{ij} shows how many units of intermediate goods of sector i need to be obtained to produce one unit in sector j .

By multiplying $(E - A)^{-1}$ with the vector of final consumption ΔC_0 the induced production ΔX_0 might be computed in addition.

$$(7) \quad \Delta X_0 = (E - A)^{-1} \cdot \Delta C_0$$

Baligh-Richartz Effect

By analysing vertical market structures Baligh and Richartz in the 1960s discovered a law, proving that the use of intermediaries is efficient even if they induce higher cost than a direct contact between manufacturers and retailers would (Gümbel 1985).

In an economy with m producers, n consumers and no intermediaries, the number of contacts is $m \cdot n$. Supposing that no matter how many producers and customers are in the market costs of contact are constant and equal 1, than total cost of contact is $C_T = m \cdot n$.

When introducing one intermediary in the distribution chain the number of transactions and costs are reduced to $C_T = m + n$. In an economy with 8 producers and 8 customers, the number of contacts would therefore be 64 whereas the number of contacts is reduced to 16 by introducing a single intermediary. Therefore costs also are reduced by $(m \cdot n) - (m + n)$.

Potential savings from the existence of intermediaries is growing dramatically with the number of producers and customers because of the multiplicative effects of direct distribution. Suggesting perfect competition, the benefits of introducing intermediaries are reduced with the installation of further middle-man until $m \cdot n = a \cdot (m + n)$ with a representing the number of traders. Therefore, with

$a = \frac{m \cdot n}{m + n}$ companies in the market as much costs occur as if the goods were traded directly.

Process Costs

The analysis of the process costs in the pharmacy focuses on the evaluation of the costs of the different purchasing processes and the time required for ordering medicinal products.

The time required for the different process steps depends on the distribution system used. All necessary process steps for ordering medicinal products are realised by a pharmacy assistant.⁵

Although the determination of the order demand is predefined by the inventory management system and supported by the amount available, additional and mainly externally controlled manual activities have to be done. For example: several orders from the pharmaceutical full-line wholesalers are affected by the need of the customers for particular, not stocked medicinal products. The time required for the determination of order demand amounts to 9 minutes for the pharmaceutical full-line wholesale order versus 7 minutes for the order from the manufacturer (direct sale) (IfH 2008).

Normally, pharmaceutical full-line wholesalers recall the order data electronically from the inventory management system from their pharmacies. Furthermore, it is possible that pharmacies contact their pharmaceutical full-line wholesalers once or several times per day for reorder or to clarify open questions via phone. It takes the pharmacy assistant 3 minutes to transfer an order to the pharmaceutical full-line wholesaler and 2 minutes to transfer it to the manufacturer (IfH 2008). The reason for this time discrepancy is that in the case of a pharmaceutical full-line wholesale order, pharmacy assistants usually order a higher amount of medicinal products, which is mostly not the case when ordering through direct sales from manufacturer.

Receiving and storage of the delivery include the original inspection, the booking of the incoming goods and the storage and removing of the goods. 17 minutes are needed for a delivery from a pharmaceutical full-line wholesaler and 32 minutes for a delivery from direct sale from manufacturer. The longer time for a delivery from the manufacturer is caused by the accumulation of transactions (IfH 2008).

Due to the fact that pharmacies receive single invoices, they have an additional expense regarding book-keeping, the time to check the delivery note and bill of up to 6 minutes whereas it is 4 minutes for deliveries from pharmaceutical full-line wholesalers. According to IfH (2008) pharmacies receive bills from pharmaceutical full-line wholesalers every two weeks, respectively per month.

⁵ The following data obtained from a study amongst selected pharmacies which took place between October 2005 and March 2006. The study was conducted by the "Institut für Pharmkoökonomie und Arzneimittellogistik" (IPAM) of the University of Wismar, Germany. The objective of this study was to find out which process costs are caused by the different distribution systems in different pharmacies. Therefore, five pharmacies which are different concerning their dimension and historical purchasing character but representative for the whole market, were selected. See Wilke T., Neumann K.: Großhandel, Überweisergeschäft oder Direkteinkauf?, in DAZ, 147. Jg. (2007), Nr. 41, S. 54-66. The calculations are based on the assumptions of the IfH. See Institut für Handelsforschung (IfH): Profil und Effizienz des vollversorgenden pharmazeutischen Großhandels, 2008.

The European Pharmaceutical Wholesale Sector

<i>Process step</i>	<i>Delivery from pharmaceutical full-line wholesaler</i>	<i>Delivery from direct sales from manufacturer</i>
<i>Determination of order demand</i>	Duration (min.): 9 Responsibility: pharmacy assistant	Duration (min.): 7 Responsibility: pharmacy assistant
<i>Transmission of order</i>	Duration (min.): 3 Responsibility: pharmacy assistant	Duration (min.): 2 Responsibility: pharmacy assistant
<i>Receiving and storage of delivery</i>	Duration (min.): 17 Responsibility: pharmacy assistant	Duration (min.): 32 Responsibility: pharmacy assistant
<i>Checking the delivery note and bill</i>	Duration (min.): 4 Responsibility: pharmacy assistant	Duration (min.): 6 Responsibility: pharmacy assistant

Based on the national gross salaries per minute in the six countries the process costs have been quantified and calculated.

	<i>Gross salary per minute (in €)</i>
<i>DE</i>	0.24
<i>ES</i>	0.24
<i>FR</i>	0.22
<i>IT</i>	0.26
<i>NL</i>	0.26
<i>UK</i>	0.27

Source: De Grip et al. 2003, Instituto Nacional de Estadística 2008, IPF research 2011, Istat (oral information), NHS careers 2010, Statistisches Bundesamt Deutschland 2010, WK Pharma 2011

Due to the fact that pharmaceutical full-line wholesalers pool a number of medicinal products from different manufacturers per order the process costs of a delivery from the manufacturer were multiplied with this number of different manufacturers to compensate the costs and to compare it with the costs per order from pharmaceutical full-line wholesalers.

To calculate the impact of process costs per year for pharmaceutical full-line wholesalers, the number of deliveries per week was multiplied with the process costs and 52 weeks.

ANNEX 3

Survey findings

In the following data gathered through the pharmacy questionnaires are explained in detail on a country level. As mentioned in Annex 4 the pharmacists' questionnaire collects data concerning the distribution of medicinal products, the service level offered by the different distribution models and the safety of transport perceived by the pharmacists.

Germany (DE)

Table 5: Concerns regarding the distribution – pharmaceutical full-line wholesalers DE

	problem	neutral	no problem
increased pharmacy stock effort	15.70%	10.10%	74.20%
order-effort (e.g. extra staff time, time needed for an order)	14.60%	21.30%	64.00%
Other:	damaged products		1.09%
	financial constraints		1.09%

Source: IPF research 2011, Pharmacy questionnaires

Table 6: Concerns regarding the service level – pharmaceutical full-line wholesalers DE

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	19.10%	16.90%	64.00%
order system (e.g. operator convenience, easy access)	6.70%	10.10%	83.10%
cut-off time offered	10.10%	15.70%	74.20%
amount of products (range of products)	9.00%	14.60%	76.40%
delivery arrangements	12.40%	25.80%	61.80%
orderlines	12.40%	14.60%	73.00%
frequency of delivery	5.60%	11.20%	83.10%
predictability of delivery time	3.40%	12.40%	84.30%
provide service to patients	2.20%	16.90%	80.90%
recall-time/recall service	11.20%	14.60%	74.20%
Other:	discounts		2.17%

Source: IPF research 2011, Pharmacy questionnaires

Table 7: Concerns regarding the safety – pharmaceutical full-line wholesalers DE

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	12.40%	5.60%	82.00%
safety of transport	9.00%	10.10%	80.90%
respecting cold chain	7.90%	5.60%	86.50%

Source: IPF research 2011, Pharmacy questionnaires

Table 8: Concerns regarding the distribution – pharmaceutical short-line wholesalers DE

	problem	neutral	no problem
increased pharmacy stock effort	37.50%	37.50%	25.00%
order-effort (e.g. extra staff time, time needed for an order)	31.30%	25.00%	43.80%

Source: IPF research 2011, Pharmacy questionnaires

Table 9: Concerns regarding the service level – pharmaceutical short-line wholesalers DE

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	31.30%	18.80%	50.00%
order system (e.g. operator convenience, easy access)	31.30%	18.80%	50.00%
cut-off time offered	25.00%	25.00%	50.00%
amount of products (range of products)	50.00%	43.80%	6.30%
delivery arrangements	6.30%	37.50%	56.30%
orderlines	31.30%	31.30%	37.50%
frequency of delivery	18.80%	18.80%	62.50%
predictability of delivery time	12.50%	31.30%	56.30%
provide service to patients	25.00%	18.80%	56.30%
recall-time/recall service	12.50%	37.50%	50.00%

Source: IPF research 2011, Pharmacy questionnaires

Table 10: Concerns regarding the safety – pharmaceutical short-line wholesalers DE

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	20.00%	20.00%	60.00%
safety of transport	18.80%	12.50%	68.80%
respecting cold chain	12.50%	6.30%	81.30%

Source: IPF research 2011, Pharmacy questionnaires

Table 11: Concerns regarding the distribution – direct sales from manufacturers DE

	problem	neutral	no problem
increased pharmacy stock effort	61.00%	25.40%	13.60%
order-effort (e.g. extra staff time, time needed for an order)	54.20%	32.20%	13.60%

Source: IPF research 2011, Pharmacy questionnaires

Table 12: Concerns regarding the service level – direct sales from manufacturers DE

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	45.80%	18.60%	35.60%
order system (e.g. operator convenience, easy access)	37.30%	37.30%	25.40%
cut-off time offered	40.70%	28.80%	30.50%
amount of products (range of products)	25.40%	23.70%	50.80%
delivery arrangements	18.60%	30.50%	50.80%
orderlines	50.80%	28.80%	20.30%
frequency of delivery	32.20%	28.80%	39.00%
predictability of delivery time	39.00%	40.70%	20.30%
provide service to patients	55.90%	28.80%	15.30%
recall-time/recall service	23.70%	22.00%	54.20%

Source: IPF research 2011, Pharmacy questionnaires

**Table 13: Concerns regarding the safety – direct sales from manufacturers
DE**

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	6.80%	8.50%	84.70%
safety of transport	13.60%	16.90%	69.50%
respecting cold chain	13.60%	13.60%	72.90%

Source: IPF research 2011, Pharmacy questionnaires

Spain (ES)

Table 14: Concerns regarding the distribution – pharmaceutical full-line wholesalers ES

	problem	neutral	no problem
increased pharmacy stock effort	10.60%	22.00%	67.50%
order-effort (e.g. extra staff time, time needed for an order)	7.30%	5.70%	87.00%
Other:	deliveries		1.60%

Source: IPF research 2011, Pharmacy questionnaires

Table 15: Concerns regarding the service level – pharmaceutical full-line wholesalers ES

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	4.90%	19.50%	75.60%
order system (e.g. operator convenience, easy access)	4.10%	5.70%	90.20%
cut-off time offered	0.80%	6.50%	92.70%
amount of products (range of products)	2.40%	17.90%	79.70%
delivery arrangements	2.40%	4.90%	92.70%
frequency of delivery	2.40%	8.90%	88.60%
predictability of delivery time	4.90%	8.90%	86.20%
provide service to patients	3.30%	9.80%	87.00%
recall-time/recall service	7.30%	18.70%	74.00%
Other:	delivery (defect levels)		0.80%

Source: IPF research 2011, Pharmacy questionnaires

Table 16: Concerns regarding the safety – pharmaceutical full-line wholesalers ES

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	0.80%	1.60%	97.60%
safety of transport	0.80%	4.90%	94.30%
respecting cold chain	4.90%	11.40%	83.70%
Other:	Delivery (damage)		0.80%

Source: IPF research 2011, Pharmacy questionnaires

Table 17: Concerns regarding the distribution – direct sales from manufacturers ES

	problem	neutral	no problem
increased pharmacy stock effort	32.10%	24.40%	43.60%
order-effort (e.g. extra staff time, time needed for an order)	28.20%	39.70%	32.10%
Other:	delivery (incomplete deliveries)		1.28%

Source: IPF research 2011, Pharmacy questionnaires

Table 18: Concerns regarding the service level – direct sales from manufacturers ES

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	28.60%	40.30%	31.20%
order system (e.g. operator convenience, easy access)	27.30%	36.40%	36.40%
cut-off time offered	39.00%	35.10%	26.00%
amount of products (range of products)	11.70%	31.20%	57.10%
delivery arrangements	14.30%	41.60%	44.20%
frequency of delivery	46.80%	39.00%	14.30%
predictability of delivery time	39.00%	40.30%	20.80%
provide service to patients	53.20%	29.90%	16.90%
recall-time/recall service	37.70%	35.10%	27.30%
Other:	delivery (loss of boxes)		1.28%

Source: IPF research 2011, Pharmacy questionnaires

Table 19: Concerns regarding the safety – direct sales from manufacturers ES

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	2.60%	13.00%	84.40%
safety of transport	15.60%	14.30%	70.10%
respecting cold chain	18.20%	28.60%	53.20%
Other:	delivery (damage)		2.56%

Source: IPF research 2011, Pharmacy questionnaires

France (FR)

Table 20: Concerns regarding the distribution – pharmaceutical full-line wholesalers FR

	problem	neutral	no problem
increased pharmacy stock effort	13.60%	15.20%	71.20%
order-effort (e.g. extra staff time, time needed for an order)	10.60%	18.20%	71.20%
Other:	quotas		4.55%
	delivery mistakes (e.g. damage)		3.03%
	out of stocks (availability of products)		3.03%

Source: IPF research 2011, Pharmacy questionnaires

Table 21: Concerns regarding the service level – pharmaceutical full-line wholesalers FR

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	15.20%	12.10%	72.70%
order system (e.g. operator convenience, easy access)	3.00%	7.60%	89.40%
cut-off time offered	9.10%	19.70%	71.20%
amount of products (range of products)	12.10%	16.70%	71.20%
delivery arrangements	3.00%	10.60%	86.40%
frequency of delivery	0.00%	19.70%	80.30%
predictability of delivery time	1.50%	10.60%	87.90%
provide service to patients	7.60%	16.70%	75.80%
recall-time/recall service	3.00%	13.60%	83.30%
Other:	delivery mistakes		4.55%
	quotas		3.03%
	out of stocks (availability of products)		3.03%

Source: IPF research 2011, Pharmacy questionnaires

Table 22: Concerns regarding the safety – pharmaceutical full-line wholesalers FR

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	1.50%	4.50%	93.90%
safety of transport	3.00%	9.10%	87.90%
respecting cold chain	6.10%	4.50%	89.40%

Source: IPF research 2011, Pharmacy questionnaires

Table 23: Concerns regarding the distribution – direct sales from manufacturers FR

	problem	neutral	no problem
increased pharmacy stock effort	60.70%	21.40%	17.90%
order-effort (e.g. extra staff time, time needed for an order)	46.40%	28.60%	25.00%

Source: IPF research 2011, Pharmacy questionnaires

Table 24: Concerns regarding the service level – direct sales from manufacturers FR

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	37.50%	17.90%	44.60%
order system (e.g. operator convenience, easy access)	21.40%	39.30%	39.30%
cut-off time offered	10.70%	19.60%	69.60%
amount of products (range of products)	17.90%	16.10%	66.10%
delivery arrangements	17.90%	33.90%	48.20%
frequency of delivery	21.40%	21.40%	57.10%
predictability of delivery time	28.60%	21.40%	50.00%
provide service to patients	28.60%	14.30%	57.10%
recall-time/recall service	39.30%	16.10%	44.60%
Other:	extortion		1.79%

Source: IPF research 2011, Pharmacy questionnaires

**Table 25: Concerns regarding the safety – direct sales from manufacturers
FR**

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	8.90%	16.10%	75.00%
safety of transport	21.40%	23.20%	55.40%
respecting cold chain	16.10%	16.10%	67.90%
Other:	extortion		1.79%

Source: IPF research 2011, Pharmacy questionnaires

The Netherlands (NL)

Table 26: Concerns regarding the distribution – pharmaceutical full-line wholesalers NL

	problem	neutral	no problem
increased pharmacy stock effort	29.20%	31.50%	39.30%
order-effort (e.g. extra staff time, time needed for an order)	22.50%	42.70%	34.80%
Other:	out of stocks (availability of products)		4.50%
	unreliable deliveries		1.12%

Source: IPF research 2011, Pharmacy questionnaires

Table 27: Concerns regarding the service level – pharmaceutical full-line wholesalers NL

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	12.40%	38.20%	49.40%
order system (e.g. operator convenience, easy access)	14.60%	20.20%	65.20%
cut-off time offered	10.10%	18.00%	71.90%
amount of products (range of products)	18.00%	20.20%	61.80%
delivery arrangements	12.40%	19.10%	68.50%
orderlines	6.70%	20.20%	73.00%
frequency of delivery	7.90%	20.20%	71.90%
predictability of delivery time	12.40%	13.50%	74.20%
provide service to patients	22.50%	27.00%	50.60%
recall-time/recall service	37.10%	25.80%	37.10%
Other:	out of stocks (availability of products)		1.12%

Source: IPF research 2011, Pharmacy questionnaires

Table 28: Concerns regarding the safety – pharmaceutical full-line wholesalers NL

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	6.70%	16.90%	76.40%
safety of transport	3.40%	13.50%	83.10%
respecting cold chain	4.50%	11.20%	84.30%

Source: IPF research 2011, Pharmacy questionnaires

Table 29: Concerns regarding distribution – short line wholesalers NL

	problem	neutral	no problem
increased pharmacy stock effort	38.90%	38.90%	22.20%
order-effort (e.g. extra staff time, time needed for an order)	55.60%	22.20%	22.20%

Source: IPF research 2011, Pharmacy questionnaires

Table 30: Concerns regarding service level – pharmaceutical short-line wholesalers NL

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	22.20%	44.40%	33.30%
order system (e.g. operator convenience, easy access)	38.90%	33.30%	27.80%
cut-off time offered	33.30%	38.90%	27.80%
amount of products (range of products)	38.90%	33.30%	27.80%
delivery arrangements	22.20%	50.00%	27.80%
orderlines	22.20%	38.90%	38.90%
frequency of delivery	22.20%	33.30%	44.40%
predictability of delivery time	38.90%	50.00%	11.10%
provide service to patients	38.90%	33.30%	27.80%
recall-time/recall service	44.40%	33.30%	22.20%

Source: IPF research 2011, Pharmacy questionnaires

Table 31: Concerns regarding the safety – pharmaceutical short-line wholesalers NL

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	11.10%	38.90%	50.00%
safety of transport	11.10%	38.90%	50.00%
respecting cold chain	11.10%	22.20%	66.70%

Source: IPF research 2011, Pharmacy questionnaires

Table 32: Concerns regarding distribution – direct sales from manufacturers NL

	problem	neutral	no problem
increased pharmacy stock effort	27.30%	31.80%	40.90%
order-effort (e.g. extra staff time, time needed for an order)	36.40%	31.80%	31.80%

Source: IPF research 2011, Pharmacy questionnaires

Table 33: Concerns regarding service level – direct sales from manufacturers NL

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	18.20%	40.90%	40.90%
order system (e.g. operator convenience, easy access)	40.90%	40.90%	18.20%
cut-off time offered	36.40%	40.90%	22.70%
amount of products (range of products)	22.70%	45.50%	31.80%
delivery arrangements	22.70%	54.50%	22.70%
orderlines	27.30%	40.90%	31.80%
frequency of delivery	31.80%	45.50%	22.70%
predictability of delivery time	27.30%	50.00%	22.70%
provide service to patients	36.40%	50.00%	13.60%
recall-time/recall service	40.90%	45.50%	13.60%

Source: IPF research 2011, Pharmacy questionnaires

Table 34: Concerns regarding the safety – direct sales from manufacturers NL

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	4.50%	36.40%	59.10%
safety of transport	4.50%	50.00%	45.50%
respecting cold chain	0.00%	40.90%	59.10%

Source: IPF research 2011, Pharmacy questionnaires

United Kingdom (UK)

Table 35: Concerns regarding distribution – wholesalers UK

	problem	neutral	no problem
increased pharmacy stock effort	45.41%	20.70%	33.94%
order-effort (e.g. extra staff time, time needed for an order)	47.10%	17.83%	35.07%
Other:	out of stocks (availability of products)		3.19%
	quotas		3.19%
	Patient confidentially due to faxing prescription		2.13%

Source: IPF research 2011, Pharmacy questionnaires

Table 36: Concerns regarding service level – wholesalers UK

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	16.70%	43.71%	39.64%
order system (e.g. operator convenience, easy access)	22.41%	22.43%	55.21%
cut-off time offered	13.22%	25.30%	61.53%
amount of products (range of products)	45.98%	18.96%	35.11%
delivery arrangements	18.94%	23.60%	57.50%
orderlines	15.51%	28.21%	56.33%
frequency of delivery	10.32%	20.74%	68.99%
predictability of delivery time	20.66%	18.42%	60.96%
provide service to patients	24.15%	22.99%	52.85%
recall-time/recall service	14.36%	37.95%	47.73%
Other:	quotas		2.13%
	out of stocks (availability of products)		1.06%
	unfair fuel surcharge		2.13%

Source: IPF research 2011, Pharmacy questionnaires

Table 37: Concerns regarding the safety – wholesalers UK

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	10.36%	27.02%	62.67%
safety of transport	4.63%	23.02%	72.40%
respecting cold chain	9.79%	19.55%	70.71%
Other:	out of stocks (availability of products)		1.06%

Source: IPF research 2011, Pharmacy questionnaires

Table 38: Concerns regarding distribution – DTP UK

	problem	neutral	no problem
increased pharmacy stock effort	96.60%	3.40%	0.00%
order-effort (e.g. extra staff time, time needed for an order)	98.90%	1.10%	0.00%
Other:	quotas		8.70%
	out of stocks (availability of products)		5.43%
	faxing details – patient confidentially		3.26%

Source: IPF research 2011, Pharmacy questionnaires

Table 39: Concerns regarding service level – DTP UK

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	32.20%	49.40%	18.40%
order system (e.g. operator convenience, easy access)	70.10%	13.80%	16.10%
cut-off time offered	73.60%	14.90%	11.50%
amount of products (range of products)	66.70%	23.00%	10.30%
delivery arrangements	74.70%	17.20%	8.00%
orderlines	37.90%	41.40%	20.70%
frequency of delivery	63.20%	25.30%	11.50%
predictability of delivery time	69.00%	18.40%	12.60%
provide service to patients	92.00%	4.60%	3.40%
recall-time/recall service	35.60%	42.50%	21.80%
Other:	out of stocks (availability of products)		4.35%
	quotas		4.35%

Source: IPF research 2011, Pharmacy questionnaires

Table 40: Concerns regarding the safety – DTP UK

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	12.60%	35.60%	51.70%
safety of transport	12.60%	34.50%	52.90%
respecting cold chain	12.60%	36.80%	50.60%
Other:	quotas		1.09%

Source: IPF research 2011, Pharmacy questionnaires

Table 41: Concerns regarding distribution – RWA UK

	problem	neutral	no problem
increased pharmacy stock effort	95.40%	3.10%	1.50%
order-effort (e.g. extra staff time, time needed for an order)	95.40%	3.10%	1.50%
Other:	quotas		9.23%
	out of stocks (availability of products)		4.62%

Source: IPF research 2011, Pharmacy questionnaires

Table 42: Concerns regarding service level – RWA UK

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	35.40%	46.20%	18.50%
order system (e.g. operator convenience, easy access)	73.80%	12.30%	13.80%
cut-off time offered	69.20%	15.40%	15.40%
amount of products (range of products)	70.80%	18.50%	10.80%
delivery arrangements	58.50%	23.10%	18.50%
orderlines	35.40%	36.90%	27.70%
frequency of delivery	41.50%	33.80%	24.60%
predictability of delivery time	52.30%	23.10%	24.60%
provide service to patients	86.20%	4.60%	9.20%
recall-time/recall service	21.50%	44.60%	33.80%
Other:	quotas		7.69%
	out of stocks (availability of products)		3.08%

Source: IPF research 2011, Pharmacy questionnaires

Table 43: Concerns regarding the safety – RWA UK

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	12.30%	32.30%	55.40%
safety of transport	10.80%	24.60%	64.60%
respecting cold chain	10.80%	21.50%	67.70%

Source: IPF research 2011, Pharmacy questionnaires P

Table 44: Concerns regarding distribution – direct sales from manufacturers UK

	problem	neutral	no problem
increased pharmacy stock effort	83.10%	13.60%	3.40%
order-effort (e.g. extra staff time, time needed for an order)	86.40%	10.20%	3.40%
Other:	faxing details – patient confidentiality		5.00%
	quotas		5.00%

Source: IPF research 2011, Pharmacy questionnaires

Table 45: Concerns regarding service level – direct sales from manufacturers UK

	problem	neutral	no problem
financial support (e.g. loan guarantee, extended credit)	30.50%	44.10%	25.40%
order system (e.g. operator convenience, easy access)	76.30%	16.90%	6.80%
cut-off time offered	67.80%	20.30%	11.90%
amount of products (range of products)	47.50%	40.70%	11.90%
delivery arrangements	76.30%	16.90%	6.80%
orderlines	40.70%	39.00%	20.30%
frequency of delivery	72.90%	18.60%	8.50%
predictability of delivery time	84.70%	11.90%	3.40%
provide service to patients	89.80%	8.50%	1.70%
recall-time/recall service	28.80%	42.40%	28.80%
Other:	quotas		1.67%

Source: IPF research 2011, Pharmacy questionnaires

**Table 46: Concerns regarding the safety – direct sales from manufacturers
UK**

	problem	neutral	no problem
protecting against counterfeited pharmaceuticals	8.50%	27.10%	64.40%
safety of transport	15.30%	30.50%	54.20%
respecting cold chain	16.90%	32.20%	50.80%

Source: IPF research 2011, Pharmacy questionnaires

Table 47: Future concerns – open question

Country	Statement	%	Statement	%	Statement	%	Statement	%	Statement	%
Spain	Shortages/supply problems	31.30%								
Germany	Additional work load	6.30%	Stock issues	5.10%						
France	Quotas	15.15%	Fear reduction of pharmaceutical wholesalers	9.09%						
Netherlands	Availability of medicinal products	24.30%	Additional work load	5.70%						
UK	Availability of medicinal products	25.40%	New models like DTP	15.20%	Stock problems	12.70%	Fear the reduction of pharmaceutical wholesalers	8.90%	Current situation	7.60%

Source: IPF research 2011, Pharmacy questionnaires

ANNEX 4

Pharmacy questionnaire

The online-questionnaire that addressed pharmacists in the five (Germany, France, the Netherlands, Spain and the UK) observed countries is attached below. Please note, that this is the questionnaire that was available in the UK. In the other countries, the models RWA and DTP were not considered, as they are just unique in the UK. Furthermore, at the section Service Line "order lines" was excluded in the Spanish and French questionnaire.

Questionnaire on "Distribution profile and efficiency of the full-line pharmaceutical wholesale industry"

On behalf of the European Association of Pharmaceutical Full-line Wholesalers (GIRP), the Institute for Pharmaeconomic Research (IPF), a scientific research institute based in Vienna, is conducting a study on the role of pharmaceutical full-line wholesaling in Europe.

In the course of this study, data on pharmaceutical distribution to pharmacies in six European countries will be collected to investigate the function of pharmaceutical full-line wholesalers in providing access to medicinal products in comparison to other distribution channels such as direct-to-pharmacy (DTP) and short-lining and to thereby assess its role for the healthcare system from a macroeconomic and microeconomic point of view.

For this purpose, the IPF has created a short questionnaire to elicit potential problems with the different distribution channels (e.g. additional labor costs, limited product range, increased stock capacity requirements, etc.) faced by the clients of pharmaceutical full-line wholesalers – the pharmacists.

We hope to enlist your expertise in support of this study and would kindly like to ask you to devote 4-6 minutes of your valuable time to complete the questionnaire www.equestionnaire.de/?q=8365. We are very grateful for your contributions.

For further information on the activities of our institute, we would like to refer you to our website www.ipf-ac.at.

The confidentiality of the information you provide is guaranteed, as is compliance with data protection regulations.

The IPF thanks for your cooperation and would kindly like to refer you again to the questionnaire www.equestionnaire.de/?q=8365.

For further questions please do not hesitate to contact us:

Ms.Aline Dragosits: a.dragosits@ipf-ac.at

Ms.Monira Said: m.said@ipf-ac.at

Phone: +43 1 513 20 07-12

www.ipf-ac.at

General Data

1. In which area is your pharmacy located?

- ☐ Wales ☐ England ☐ Scotland
☐ Northern Ireland

2. Inhabitants of the city/district where your pharmacy is located:

- ☐ 0-5,000 ☐ 5,001-20,000 ☐ 20,001-100,000
☐ >100,000 ☐ > 1 Mio.

Distributionsystem

3. Where do you buy Rx medicines from (Σ 100%)?

System	
Full-line Wholesaler	%
Short-line Wholesaler	%
Manufacturer (direct sales)	%
Reduced wholesale model*	%
DTP (direct-to-pharmacy)**	%
Other:	%
Total:	100 %

* p.e. Sanofi Aventis, Janssen-Cilag Ltd, Eisai, Abbot

** p.e. Pfizer, Astra Zeneca, Roche

a. How satisfied are you with your pharmaceutical distribution system/s in general?

Full-line wholesaler

- ☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

Short-line wholesaler

- ☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

Manufacturer

☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

Reduced Wholesale model

☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

DTP

☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

b. **How satisfied are you with the average Delivery Time** (= time between placing an order and receiving the delivery)?

Full-line wholesaler

☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

Short-line wholesaler

☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

Manufacturer

☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

Reduced Wholesale model

☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

DTP

☐ very satisfied ☐ satisfied ☐ neutral ☐ unsatisfied
☐ very unsatisfied

a. **How often do you receive delivery per day respectively per week on average?**

Full-line wholesaler

Ø delivery time in hours	OR	Ø delivery time in days
	OR	

How often do you receive deliveries?

Short-line wholesaler

Ø delivery time in hours	OR	Ø delivery time in days
	OR	

How often do you receive deliveries?

Manufacturer

Ø delivery time in hours	OR	Ø delivery time in days
	OR	

How often do you receive deliveries?

Reduced Wholesale model

Ø delivery time in hours	OR	Ø delivery time in days
	OR	

How often do you receive deliveries?

DTP

Ø delivery time in hours	OR	Ø delivery time in days
	OR	

How often do you receive deliveries?

- b. Which are the most frequent delivery problems (for e.g.: false pharmaceuticals)? Please count their frequency (in % of all deliveries):**

Full-line wholesaler

Delivery mistake	% of deliveries
	%
	%
	%

Short-line wholesaler

Delivery mistake	% of deliveries
	%
	%
	%

Manufacturer

Delivery mistake	% of deliveries
	%
	%
	%

4. **Please provide the average number of manufacturers, whose products are bundled in a delivery:**

Full-line wholesaler:

Short-line wholesaler:

Manufacturer:

Reduced wholesale model:

DTP:

5. **In which areas do you see problems in the distribution?**

a. Full-line wholesaler

	huge problem	problem	neutral	hardly a problem	No problem
Increased pharmacy stock effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order-effort (e.g. extra staff time, time needed for an order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b. Short-line wholesaler

	huge problem	problem	neutral	hardly a problem	No problem
Increased pharmacy stock effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order-effort (e.g. extra staff time, time needed for an order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

c. Manufacturer

	huge problem	problem	neutral	hardly a problem	No problem
Increased pharmacy stock effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order-effort (e.g. extra staff time, time needed for an order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d. Reduced wholesale model

	huge problem	problem	neutral	hardly a problem	No problem
Increased pharmacy stock effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order-effort (e.g. extra staff time, time needed for an order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

e. DTP

	huge problem	problem	neutral	hardly a problem	No problem
Increased pharmacy stock effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order-effort (e.g. extra staff time, time needed for an order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Service Level

6. In which areas do you see problems concerning the service level?

a. Full-line wholesaler

	huge problem	problem	neutral	hardly a problem	No problem
Financial support (e.g. loan guarantee, extended credit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order system (e.g. operator convenience, easy access)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cut-off time offered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of products (range of products)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivery arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order lines (e.g. minimum order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Predictability of delivery time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide service to patients (e.g. waiting times to receive medicines)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Recall-time/Recall-Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b. Short-line wholesaler

	huge problem	problem	neutral	hardly a problem	No problem
Financial support (e.g. loan guarantee, extended credit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order system (e.g. operator convenience, easy access)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cut-off time offered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of products (range of products)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivery arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order lines (e.g. minimum order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Predictability of delivery time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide service to patients (e.g. waiting times to receive medicines)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recall-time/Recall-Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

c. Manufacturer

	huge problem	problem	neutral	hardly a problem	No problem
Financial support (e.g. loan guarantee, extended credit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order system (e.g. operator convenience, easy access)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cut-off time offered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of products (range of products)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivery arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order lines (e.g. minimum order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Predictability of delivery time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide service to patients (e.g. waiting times to receive medicines)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recall-time/Recall-Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d. Reduced wholesale model

	huge problem	problem	neutral	hardly a problem	No problem
Financial support (e.g. loan guarantee, extended credit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order system (e.g. operator convenience, easy access)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cut-off time offered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of products (range of products)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivery arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order lines (e.g. minimum order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Predictability of delivery time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide service to patients (e.g. waiting times to receive medicines)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recall-time/Recall-Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

e. DTP

	huge problem	problem	neutral	hardly a problem	No problem
Financial support (e.g. loan guarantee, extended credit)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order system (e.g. operator convenience, easy access)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cut-off time offered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amount of products (range of products)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Delivery arrangements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Order lines (e.g. minimum order)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frequency of delivery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Predictability of delivery time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide service to patients (e.g. waiting times to receive medicines)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recall-time/Recall-Service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Safety

7. In which areas do you see problems concerning the safety of medicines?

a. Full-line wholesaler

	huge problem	problem	neutral	hardly a problem	No problem
Protecting against counterfeiting pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety of transport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respecting cold-chain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

b. Short-line wholesaler

	huge problem	problem	neutral	hardly a problem	No problem
Protecting against counterfeiting pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety of transport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respecting cold-chain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

c. Manufacturer

	huge problem	problem	neutral	Hardly a problem	No problem
Protecting against counterfeiting pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety of transport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respecting cold-chain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

d. Reduced wholesale model

	huge problem	problem	neutral	hardly a problem	No problem
Protecting against counterfeiting pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety of transport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respecting cold-chain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

e. DTP

	huge problem	problem	neutral	hardly a problem	No problem
Protecting against counterfeiting pharmaceuticals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety of transport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respecting cold-chain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final Question

- 8. Which future problems do you see in obtaining pharmaceutical supplies?**

ANNEX 5

Company questionnaire

Contribution of your company to the GIRP/IPF – study:

“Distribution profile and efficiency of the full-line pharmaceutical wholesale industry”

On behalf of the European Association of Pharmaceutical Full-line Wholesalers (GIRP), the Institute for Pharmaeconomic Research (IPF), a scientific research institute based in Vienna, is conducting a study on the role of pharmaceutical full-line wholesaling in Europe.

GIRP plans to produce an encompassing document providing evidence of the efficient performance of pharmaceutical wholesalers with regard to the stakeholders and the economy as a whole. Basic analytic work to support such a document should be elaborated with the aid of a study commissioned to the Institute for Pharmaeconomic Research (IPF).

The IPF study obviously has to rely on the good collaboration of the GIRP members. The following questionnaire seeks:

- relevant and somewhat detailed company data which – in aggregate form – can help painting the picture of the pharmaceutical wholesale branch beyond pure national statistics
- to elucidate the functions the branch is performing with outstanding efficiency

The purpose of the questionnaire is to obtain the data necessary to comprehensively describe and highlight the tasks and functions of pharmaceutical wholesaling within the pharmaceutical distribution chain and to measure its economic performance.

We hope to enlist your expertise in support of this study and would kindly like to ask you to devote 5-10 minutes of your valuable time to complete the questionnaire. We are very grateful for your contributions.

For further information on the activities of our institute, we would like to refer you to our website www.ipf-ac.at.

The confidentiality of the information you provide is guaranteed, as is compliance with data protection regulations.

Please return the completed questionnaire to a.dragosits@ipf-ac.at

For further questions please do not hesitate to contact us:

Ms.AlineDragosits: a.dragosits@ipf-ac.at

Ms.Monira Said: m.said@ipf-ac.at

Phone: +43 1 513 20 07-12

The IPF thanks for your cooperation.

1. Warehousing

- a. Wholesalers must carry a comprehensive stock of prescription products and also sufficient depth of stock to ensure continuity.

What are your safety and emergency stocks (stocks held to meet unexpected growth in demand and unexpected demand, like pandemics)?

	2010
Safety stock (in % of total stock value):	Ø %
Emergency stock (in % of total stock value):	Ø %

- a. Please indicate the average number of different product references (SKU's) stocked as well as the share of pharmaceuticals of the SKU's:

	2010
Number of SKU's (in thousands)	
Share of pharmaceuticals (in %)	%

- b. The Manufacturer or other competent authority can order a product recall.

What is your average recall time (time between the information of the customer and the collection of the isolated product)?

Ø recall time (in days)	
-------------------------	--

- c. What was your inventory turnover?

	2010
Inventory turnover (in days)	

- d. What was the total size of your storage capacities?

	2010
Total size (in square metres)	m ²

2. Distribution

- a. What is your company's order-fill rate (percentage of goods delivered in time)?

	2010
Order – fill rate (in %)	%

- b. Please indicate the average number of order-lines per day and the average line value in your currency (€/£):

	2010
Ø order-lines (per day)	
Ø line value	

Please specify currency

cy(€/£)

c. Please indicate the average weight of one delivery in kg:

	2010
Ø weight (per delivery)	kg

3. Company profile:

a. To create a valid picture of the financing function of the pharmaceutical wholesaler please indicate the following key financial ratios or enclose your balance sheet, respectively your financial statement which includes this ratios.

	2010
Total sales (in million €/£)	
EBIT (in million €/£)	
If possible please indicate your working capital (in million €/£)	
OTHERWISE please indicate your:	
Current assets (in million €/£)	
Current liabilities (in million €/£)	
OR Balance sheet enclosed	<input type="checkbox"/>

Please specify currency (€/£)

4. Financial Management

a. Regarding the financing function of full-line wholesalers, how many days are between your delivery to the pharmacies and their payment of the invoice on average?

	2010
Ø time between delivery to pharmacies and the payment of the invoice	days

b. Regarding the financing function of full-line wholesalers, how many days are between the delivery of your purchase from the manufacturer and the payment of the invoice on average?

	2010
Ø time between the receipt of the medicines and the payment of the invoice to the manufacturer	days

Thank you for your support!

Please return the completed questionnaire to a.dragosits@ipf-ac.at

This study was prepared by the Institute for Pharmaeconomic Research (IPF) Vienna for the European Association of Pharmaceutical Full-line Wholesalers (GIRP). The information in this study was compiled with the utmost care. However, IPF cannot be held responsible for the consequences of errors arising from the use of the study. This publication may be reproduced, stored in any informational retrieval system or transmitted in whole or in part by any means – electronic, mechanical, photocopying, recording or otherwise so long as source is mentioned.