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Pharmaceutical regulation in 15 European countries

Review

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Review 2016

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Preface

The Health Systems in Transition (HiT) series consists of two lines of studies:

a) HiTs, which are country-based reviews that provide a detailed description of a health system and of reform and policy initiatives in progress or under development in a specific country. Each review is produced by country experts in collaboration with the Observatory's staff. In order to facilitate comparisons between countries, reviews are based on a template, which is revised periodically. The template provides detailed guidelines and specific questions, definitions and examples needed to compile a report; and

b) special issues, which are comparative, cross-country studies on a specific topic of importance to policy-makers.

HiTs seek to provide relevant information to support policy-makers and analysts in the development of health systems in Europe. They are building blocks that can be used:

- to learn in detail about different approaches to the organization, financing and delivery of health services and the role of the main actors in health systems;
- to describe the institutional framework, the process, content and implementation of health care reform programmes;
- to highlight challenges and areas that require more in-depth analysis;
- to provide a tool for the dissemination of information on health systems and the exchange of experiences of reform strategies between policy-makers and analysts in different countries;
- to assist other researchers in more in-depth comparative health policy analysis; and

- to draw out experiences in different countries and flag up the similarities and divergences between them.

Special issues build on existing knowledge from the country-based reviews; they synthesize and expand it using additional data sources, peer-reviewed and grey literature as well as the input of relevant country experts.

Compiling the HiT studies poses a number of methodological problems. In many countries, there is relatively little information available on the health system and the impact of reforms. Due to the lack of a uniform data source, quantitative data on health services are based on a number of different sources, including the World Health Organization (WHO) Regional Office for Europe's European Health for All database, data from national statistical offices, Eurostat, the Organisation for Economic Co-operation and Development (OECD) Health Data, data from the International Monetary Fund (IMF), the World Bank's World Development Indicators and any other relevant sources considered useful by the authors. Data collection methods and definitions sometimes vary, but typically are consistent within each separate review.

A standardized review has certain disadvantages because the financing and delivery of health care differ across countries. However, it also offers advantages, because it raises similar issues and questions. HiTs can be used to inform policy-makers about experiences in other countries that may be relevant to their own national situation. They can also be used to inform comparative analysis of health systems. This series is an ongoing initiative and material is updated at regular intervals.

Comments and suggestions for the further development and improvement of the series are most welcome and can be sent to info@obs.euro.who.int.

The series is available on the Observatory's web site (http://www.healthobservatory.eu).

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The European Observatory on Health Systems and Policies is a partnership, hosted by the WHO Regional Office for Europe, which includes the Governments of Austria, Belgium, Finland, Ireland, Norway, Slovenia, Sweden, Switzerland, the United Kingdom and the Veneto Region of Italy; the European Commission; the World Bank; UNCAM (French National Union of Health Insurance Funds); the London School of Economics (LSE) and Political Science; and the London School of Hygiene & Tropical Medicine (LSHTM). The European Observatory has a secretariat in Brussels and it has hubs in London (at LSE and LSHTM) and at the Technical University of Berlin.

The production and copy-editing process of this HiT was coordinated by Jonathan North, with the support of Caroline White, Sarah Cook (copy-editing) and Nick Gorman (layout).

List of abbreviations

AIFA	Italian Medicines Agency
AMNOG	German Pharmaceutical Market Reorganization Act
ASMR	Amélioration du Service Médical Rendu (added therapeutic benefit)
ATC	Anatomical therapeutic chemical classification
CCG	Clinical commissioning group
DDD	Defined daily dose
DKK	Danish krone
EEA	European Economic Area
EFPIA	European Federation of Pharmaceutical Industries and Associations
EMA	European Medicines Agency
ERP	External reference pricing
EU	European Union
EU15	15 EU Member States before May 2004
G-BA	Federal Joint Committee, Germany
GDP	Gross domestic product
HSE	Health Service Executive, Ireland
HTA	Health technology assessment
INN	International nonproprietary name
IQWiG	Institute for Quality and Efficiency in Health Care, Germany
IRP	Internal reference pricing
MEAs	Managed entry agreements
NHS	National Health Service
OECD	Organisation for Economic Co-operation and Development
OOP	Out-of-pocket payments
OTC	Over-the-counter medicines
PPP	Purchasing power parity
PPRS	Pharmaceutical price regulation scheme
RCT	Randomized controlled trial
SALAR	Swedish Association of Local Authorities and Regions
SHI	Statutory health insurance
SPMS	Shared Services of the Portuguese Ministry of Health
TLV	Dental and Pharmaceutical Benefits Agency, Sweden

TNF	Tumour necrosis factor
TTM	Time-to-market
US$ PPP	Purchasing power parity in US dollars
VAT	Value added tax

List of countries	
AT	Austria
BE	Belgium
BG	Bulgaria
CH	Switzerland
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LI	Liechtenstein
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

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Abstract

In the context of pharmaceutical care, policy-makers repeatedly face the challenge of balancing patient access to effective medicines with affordability and rising costs. With the aim of guiding the health policy discourse towards questions that are important to actual and potential patients, this study investigates a broad range of regulatory measures, spanning marketing authorization to generic substitution and resulting price levels in a sample of 16 European health systems (Austria, Belgium, Denmark, England, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Portugal, Scotland, Spain and Sweden).

All countries employ a mix of regulatory mechanisms to contain pharmaceutical expenditure and ensure quality and efficiency in pharmaceutical care, albeit with varying configurations and rigour. This variation also influences the extent of publicly financed pharmaceutical costs. Overall, observed differences in pharmaceutical expenditure should be interpreted in conjunction with the differing volume and composition of consumption and price levels, as well as dispensation practices and their impact on measurement of pharmaceutical costs.

No definitive evidence has yet been produced on the effects of different cost-containment measures on patient outcomes. Depending on the foremost policy concerns in each country, different levers will have to be used to enable the delivery of appropriate care at affordable prices.

Executive summary

In the context of pharmaceutical care, policy-makers repeatedly face the challenge of balancing patient access to effective medicines with affordability and rising costs. The main goal of this study is to illustrate direct and indirect regulatory strategies shaping pharmaceutical care in different European countries in a systematic, comparative manner in the hopes of guiding the health policy discourse towards questions that are important to those covered in publicly financed (statutory) systems – and thus to actual and potential patients – particularly regarding quality of care.

The investigation spans measures related to marketing authorization; pricing and price updates; post-marketing evaluations guiding coverage decisions (health technology assessment); patient cost-sharing; specific cost and quality control measures targeting individual stakeholder groups (manufacturers, wholesalers/pharmacists, prescribers); generic substitution; and resulting price levels.

A sample of 16 European health systems was selected (Austria, Belgium, Denmark, England, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Portugal, Scotland, Spain and Sweden). Quantitative data from the OECD and country-specific regulatory documents, as well as published and grey literature, were combined to form an initial evidence base in the form of health system profiles, which were then sent to relevant experts for review and validation.

All countries employ a mix of regulatory mechanisms to contain pharmaceutical expenditure and ensure quality and efficiency in pharmaceutical care, albeit with varying configurations and rigour. This variation also influences the extent of publicly financed pharmaceutical costs. Overall, observed differences in pharmaceutical expenditure should be interpreted in

conjunction with the differing volume and composition of consumption and price levels, as well as dispensation practices and their impact on measurement of pharmaceutical costs.

While for some countries timely and/or equitable access to new medicines may constitute a priority – or pose a substantial challenge – others may primarily be concerned with quality of care and containing public pharmaceutical expenditure. With the proliferation of specialty medicines and recent examples of high-cost pharmaceuticals with proven therapeutic benefit and substantial target populations, sustainability of financing in pharmaceutical care is another overarching concern to be addressed.

No definitive evidence has yet been produced on the effects of different cost-containment measures on patient outcomes. Depending on the foremost policy concerns in each country, different levers will have to be used to enable the delivery of appropriate care at affordable prices; monitoring of implemented regulation is vital to ensure that patient access and sustainability of financing are taken into account.

1. Introduction

In the context of pharmaceutical care, policy-makers repeatedly face the challenge of balancing patient access to effective medicines with affordability and rising costs. The main goal of this study is to illustrate direct and indirect strategies shaping pharmaceutical care in different European countries in a systematic, comparative manner and based on selected parameters. It is hoped that its results will guide the health policy discourse towards questions that are important to those covered in publicly financed (statutory) systems – and thus to actual and potential patients – particularly regarding quality of care.

The work underlying this study was initially commissioned by the German Federal Association of Sickness Funds. Pharmaceutical care for statutorily insured individuals in Germany remains a central issue on the health policy agenda even after the 2011 legislative changes, which introduced value-based pricing for newly authorized medicines on the basis of patient-oriented benefit. The focus of current discussions lies mainly with resulting prices, or rather with reimbursement amounts negotiated between the Federal Association of Sickness Funds and pharmaceutical companies on the basis of added patient benefit as determined by the Federal Joint Committee. In this context, international approaches towards pharmaceutical regulation in general and pricing in particular have also been gaining attention.

The country sample was chosen to include all EU Member States which, like Germany, had joined the Union before 2004 (EU15) but replacing Luxembourg with Germany's largest non-EU15 neighbour, Poland. As a result, information on the following countries is considered in this report: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Portugal, Spain, Sweden and the United Kingdom. Out of the four jurisdictions of the National Health Service (NHS) in the United Kingdom,

England and Scotland were included as they are both the most populous and the ones where distinct information was available for the majority of variables explored in the analysis.

To provide insights into a wide spectrum of strategies shaping pharmaceutical care, the overall aim of the study was operationalized as follows:

1. Context/Overview of pharmaceutical care: What do statistical figures reveal about pharmaceutical care and expenditure (public expenditure, patient cost-sharing, consumption)? (See Chapter 2)
2. Marketing authorization: What is the interplay between marketing authorization (regulatory approval) and post-marketing evaluation, pricing and the availability of pharmaceuticals in the publicly financed (statutory) health system? How does this affect time-to-market and/or patient access? (See Chapter 3)
3. Post-marketing evaluations/Health Technology Assessment: Which institutions are responsible for determining "benefit" and "value" of pharmaceuticals? What are their processes, methods and criteria in doing so and how are they determined? What are the possible outcomes of evaluation, i.e. a) is there a positive and/or negative list and b) are reimbursement restrictions possible at this stage and if so, based on which criteria? How common are reimbursement restrictions? (See Chapter 5 and Annex, Part II)
4. Reimbursement price: How are reimbursement prices determined? Are referencing strategies utilized? If so, which countries are included in the referencing basket and (how) are these weighted? Is there one (universal) reimbursement price for all patients (for example, based on indication), settings and payers or, if not, what determines variability? Are applicable VAT rates dependent on pharmaceutical type? (See Chapter 4)
5. Revisions of prices and/or reimbursement: Are pricing and reimbursement decisions revisited in a systematic (for example, annually) or ad hoc manner following specific triggers? Do such processes only concern individual pharmaceuticals or are general revisions of, for example, an entire class in the Anatomical Therapeutic Chemical classification system (ATC) or the entire formulary possible? (See Chapters 4 and 5)
6. Are there specific measures for (new), particularly costly pharmaceuticals, for example managed entry agreements (MEAs) or value-based pricing or other mechanisms of cost control (rebates, public tendering, etc.)? (See Chapters 5 and 7)

7. Patient cost-sharing: If copayments are required for pharmaceuticals, how high are they? Do they vary based on product (for example, indication, effectiveness or innovation) or patient (for example, age, income) characteristics? Are there specific measures for financial protection (including the availability of complementary health insurance packages)? (See Chapter 6)
8. Other efficiency or quality assurance measures relevant to patient access: Are there measures that de facto steer patient access or lead to potential limitations? If so, do these primarily target a) manufacturers (for example, rebates), b) pharmacists and/or wholesalers (for example, clawbacks, generic substitution), or c) physicians/prescribers (for example, pharmaceutical budgets, volume caps, prescribing guidelines, pay for performance, prescription monitoring)? (See Chapter 7)
9. Generics: How is generic substitution regulated? How high is the market share of generics? (See Chapter 8)
10. International price comparisons and price levels in comparator countries: Are there recent international price comparisons available? What are the methodological pitfalls to consider? What do we know about relative prices in included countries? (See Chapter 9)

Multiple sources were used to put together information on the aspects delineated above. Data on expenditure and consumption come from the Organisation for Economic Co-operation and Development (OECD Health Statistics). National regulatory documents as well as published and grey literature were used to identify and explore relevant strategies at national level as well as current practice regarding international price comparisons. Previous publications of the European Observatory on Health Systems and Policies, particularly in this series, were identified for each included country. Country-specific information was summarized in tables and sent to appropriate country experts from the authors' networks for review.

Results are presented thematically in chapters. Each chapter begins with a brief summary of relevant contextual information. Country results are then presented as a concise synthesis; selected interesting examples from specific countries are used for further illustration where appropriate. Detailed information per country is presented in abstracted tables per section. Each chapter ends with a short statement on the influence of the financial crisis on related regulatory mechanisms.

2. The context of pharmaceutical care – expenditure and consumption data

2.1 Expenditure

There are three complementary approaches to quantifying pharmaceutical expenditure that lend themselves especially well to international comparisons: 1) pharmaceutical expenditure per capita (in monetary units); 2) pharmaceutical expenditure as a share of total health expenditure (THE); and 3) pharmaceutical expenditure as a share of gross domestic product (GDP). Overall, comparisons of health care expenditures across countries are not straightforward, not least due to differences in the structure and financing of the health systems and mode of cost calculation. Pharmaceutical expenditures in particular pose a number of substantial challenges (see Vogler & Martikainen, 2016 and Chapter 9) and figures may vary depending on data source.

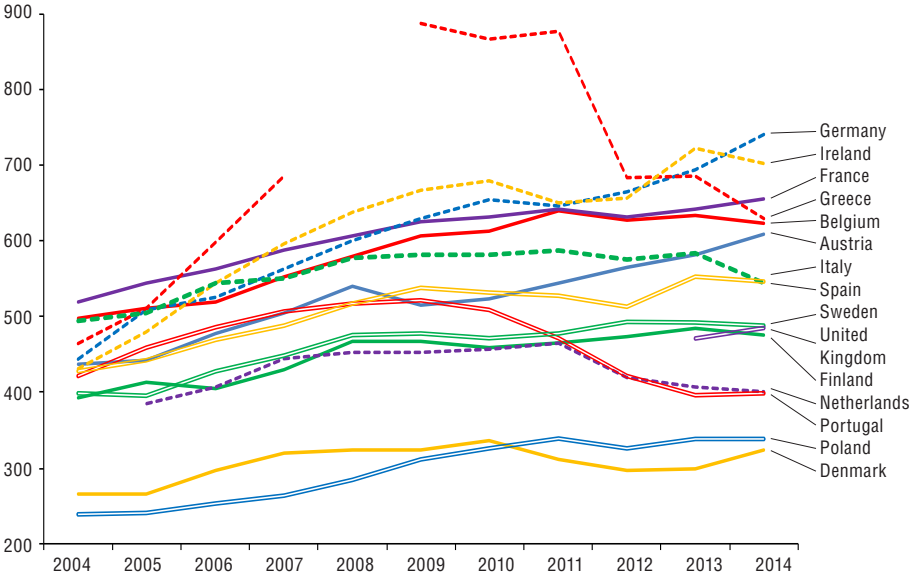
The following sections focus on expenditure for "retail" pharmaceuticals (both with and without prescription), i.e. those distributed through community pharmacies (or other authorized retail shops), as it is reported within the System of National Health Accounts (OECD, 2016a). This variable includes spending on other medical non-durable goods, adding approximately 5% to the expenditure on average (data differ considerably across countries and are sometimes incomplete), pharmacists' remuneration when it is separate from the price of medicines, as well as wholesale and retail margins and value-added tax if applicable. Additional considerations on expenditure for other pharmaceuticals, i.e. those distributed through hospitals, which are not included in this item, can be found at the end of this section.

Ad. 1) Per capita retail pharmaceutical expenditures, adjusted for purchasing power, among countries included in this study ranged from 324.6 (Denmark) to 741.1 US$ PPP (Germany) per capita in 2014 (see Figure 2.1). Ireland, France, Greece and Belgium were at the upper end of this spectrum below Germany, while the Netherlands, Portugal and Poland were at the lower end above Denmark. From a longitudinal perspective, while some countries show

a relatively stable upwards trend (for example, Austria, Germany and Poland), in others per capita expenditures on retail medicines have been decreasing (for example, Portugal as of 2009, and the Netherlands as of 2011). Following a stable upwards trend until 2009, available data for Greece during the financial crisis years show a dramatic decline in per capita expenditure after 2011.

Fig. 2.1

Per capita expenditure on "retail" pharmaceuticals and other medical non-durables (in US$ PPP), 2004–2014



Source: OECD, 2016a.

Varying per capita expenditures for pharmaceuticals among countries can be attributed to different consumption rates (for example, for different indication areas, see section on consumption below) – the so-called volume component – differences in the utilization of new, mostly high-priced medicines and established, mostly low-priced medicines – the so-called structural component – and finally different prices per pharmaceutical – the so-called price component.

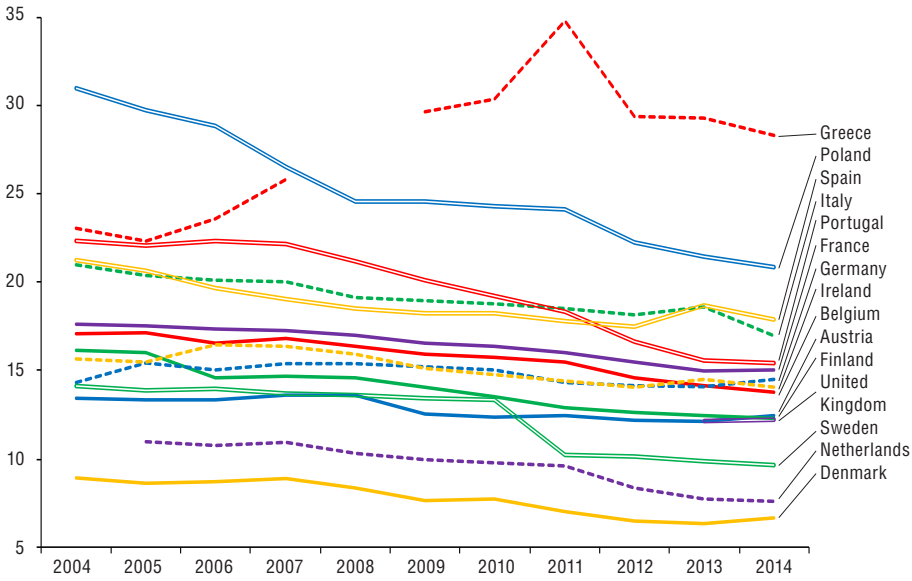
Ad. 2) Pharmaceutical expenditure can also be viewed in relation to the total expenditure on health and expressed as a percentage. Among compared countries, retail pharmaceutical expenditure as a share of current[1] expenditure

1. In contrast to total expenditure on health, current expenditure does not include capital investments. It is preferred here as both the predominant variable in the current iteration of the System of National Health Accounts and a more appropriate basis for comparison in the consideration of pharmaceutical costs.

on health in 2014 amounted to 14.5% on average with a median of 14.1% and a range of 6.7% (in Denmark) to 28.4% (in Greece). Overall, retail pharmaceutical expenditure as a share of current expenditure on health shows relative stability both in directionality and positioning among compared countries (see Fig. 2.2) and has declined on average since 2004 (average excluding the Netherlands and the United Kingdom 18.1%, median 17.0%). A higher ranking here compared with the per capita observations in Fig. 2.1 (for example, Poland, Portugal) could mean that either pharmaceutical consumption is above average compared to other health services or that price levels are higher compared to other areas of care, which are mainly shaped by personnel costs. Conversely, a substantially lower rank (for example, Austria, Sweden) may indicate lower pharmaceutical consumption or prices.

Fig. 2.2

Expenditure on "retail" pharmaceuticals and other medical non-durables as a share of current expenditure on health, 2004–2014



Source: OECD, 2016a.

Ad. 3) Finally, another approach towards assessing and contextualizing pharmaceutical expenditure is looking at its share in gross domestic product. In 2014 both the average and the median shares of retail pharmaceutical expenditure among compared countries lay at 1.4% – compared to 1.5% and 1.6% respectively in 2004. Following outlier Greece (with 2.3%), France, Spain and Germany build the upper cluster in the sample with values between 1.60%

and 1.67%, while Denmark (0.71%) and the Netherlands (0.83%) are at the lowest end of the spectrum. Varying degrees of contraction in the GDP of compared countries following the financial crisis should be taken into account when interpreting these figures.

The relative stability of expenditure as a percentage of GDP in contrast to a falling percentage of current health expenditure can be explained by the fact that in many countries within the sample expenditure on other services and goods has increased at a speed above GDP growth, while expenditure on "retail" pharmaceuticals has grown in line with GDP. Another contributing factor may be the availability of generic products following patent expiry of originator medicines.

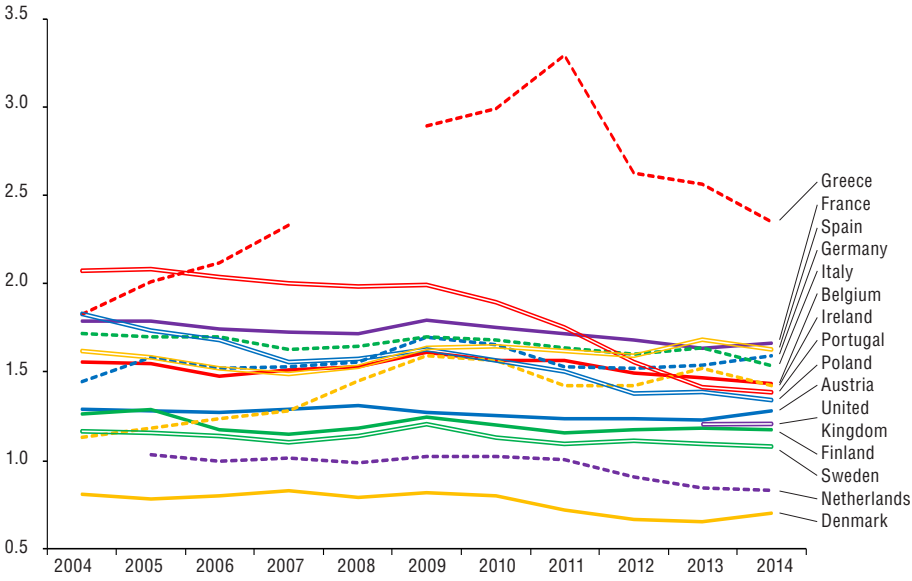
Pharmaceutical expenditure as a share of GDP (shown in Fig. 2.3) emerges as a direct multiplication of current health expenditure as a share of GDP (Fig. 2.4) and the share of current health expenditure spent on "retail" pharmaceuticals (Fig. 2.2). In 2014 current expenditure on health amounted to an average of 9.0% of GDP in OECD countries and 9.8% among studied countries (median 10.1%), up from 8.4% and 8.3% respectively in 2004. Sweden led the sample in 2014 with 11.2%, followed by France and Germany with 11.1% and 11.0%, respectively. For the majority of countries in the sample a clear upwards trend can be discerned until 2009, with levelling off or declining tendencies after that. As of 2010, current expenditure as a share of GDP (including both public and private spending) has increased again for a number of countries, albeit seemingly at a slower pace.

Another perspective for consideration results from looking at public expenditure on pharmaceuticals only. In this context, the term "public" denotes costs which are carried by the publicly financed (statutory) health system – i.e. tax-financed or insurance-based – and not by the patients themselves (out-of-pocket) or by private insurance. Out-of-pocket (OOP) payments for pharmaceuticals may be required because

1. some parts of the population are not covered by the publicly financed (statutory) health system (for example, because they are covered as subsidiaries in a private insurance scheme);
2. patients are covered by the publicly financed (statutory) health system, but certain medicines are not included in the benefit basket; and/or
3. pharmaceuticals are included in the benefit basket but are not fully reimbursed, thus requiring patient cost-sharing (see Chapter 6).

Fig. 2.3

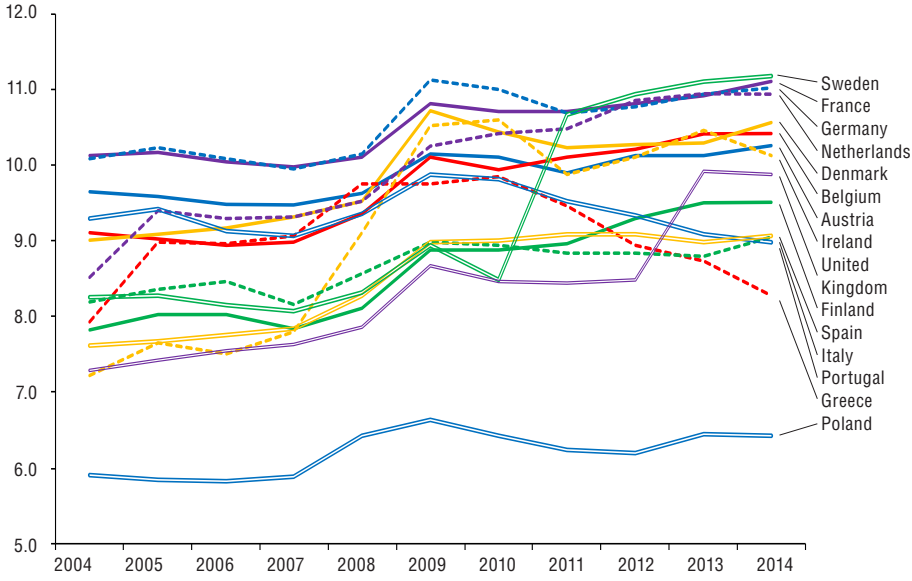
Expenditure on "retail" pharmaceuticals and other medical non-durables as a share of GDP, 2004–2014



Source: OECD, 2016a.

Fig. 2.4

Current health expenditure as a share of GDP, 2004–2014

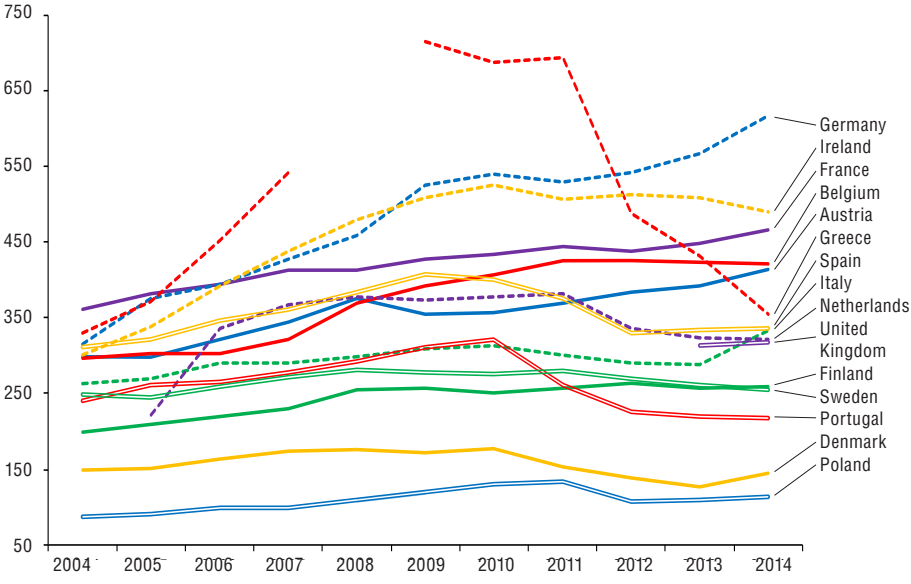


Source: OECD, 2016a: Note: the spike in the Swedish figures between 2010 and 2011 is attributable to a change in the calculation of long-term care expenditure.

Following the same logic as for total pharmaceutical expenditure above, we first look at per capita spending and then at its relative share within pharmaceutical expenditure. Among studied countries, public per capita expenditure on pharmaceuticals in 2014 (Fig. 2.5 in analogy to Fig. 2.1) ranged between 113.6 US$ PPP in Poland and 617.5 in Germany. Ireland's public per capita expenditure was second highest at 491.0 US$ PPP with a difference of approximately 125 US$ PPP to Germany, a value which would be even higher if only the statutorily insured population (89%) were considered. At the other end of the spectrum, Denmark had the second lowest public pharmaceutical expenditure with 144.1 US$ PPP per capita and a difference of approximately 70 US$ PPP to the next country (Portugal). In the Netherlands, statutory and private sickness funds were merged into a single system in 2006, which is considered statutory despite the fact that sickness funds are governed by private law. Differences in data between 2005 and 2006 need to be interpreted taking into account that many individuals were regarded (and counted) as privately insured before this change.

Fig. 2.5

Public per capita expenditure on "retail" pharmaceuticals and other medical non-durables (in US$ PPP), 2004–2014

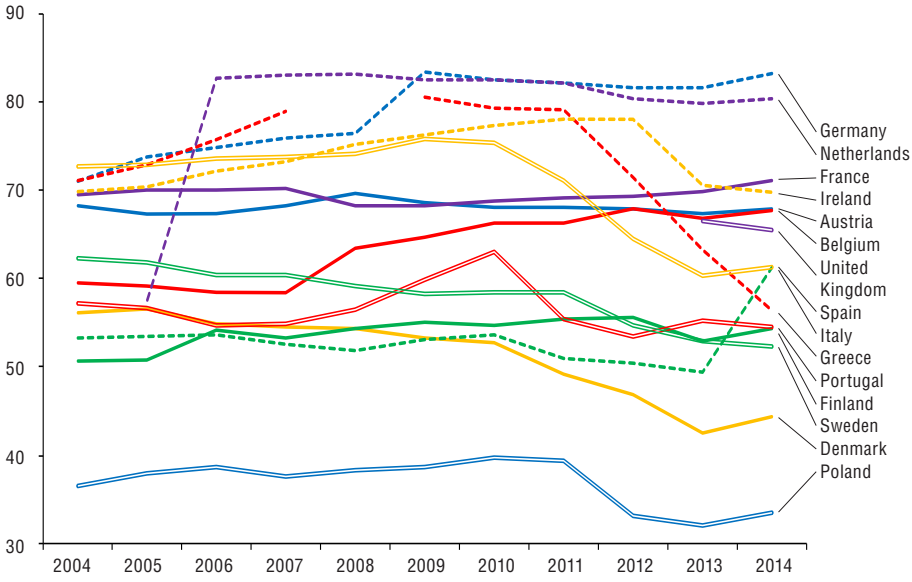


Source: OECD, 2016a.

In 2014 public pharmaceutical expenditure as a share of total pharmaceutical expenditure (Fig. 2.6) in compared countries ranged between a low of 33.5% in Poland and a high of 83.3% in Germany. The Netherlands and France also showed values above 70%. At the other end of the spectrum, Denmark remained below 50% following decreasing trends since 2010, while Greece demonstrates a constant steep recline starting in 2011. The same caveats as above apply for Germany and the Netherlands; in the case of Germany, the percentages would be even higher if only the statutorily insured were considered.

Fig. 2.6

Public expenditure as a share of total pharmaceutical expenditure on "retail" pharmaceuticals and other medical non-durables, 2004–2014



Source: OECD, 2016a.

Public expenditure on 'retail' pharmaceuticals – both per capita and as a share of current health expenditure – decreased or stabilized in the context of the economic crisis, as can be seen in Figs 2.5 and 2.6. Additional comparative visualizations (public expenditure on pharmaceuticals as a share of GDP; private expenditure on pharmaceuticals as a share of GDP; public expenditure on pharmaceuticals as a share of current expenditure on health; private expenditure on pharmaceuticals as a share of current expenditure on health; private per capita expenditure on pharmaceuticals) can be found in Annex I.

As mentioned early on in this chapter, it is important to note that the above figures depict expenditure in the retail or outpatient market only. Within the System of National Health Accounts, inpatient pharmaceutical expenditure is a memorandum item that is optional to report; structural challenges make it difficult for some countries to collect and/or disaggregate information on pharmaceutical costs in hospitals and other health care facilities. In the newest iteration of Health at a Glance, the OECD reports that – depending on budgetary and distributional characteristics and possibly dispensation practices – inpatient expenditure on pharmaceuticals would add approximately 10% on top of retail spending for some countries (for example, Germany in our sample), but this share could be far more substantial in others (for example, 27% in Spain and an estimated 44% in Portugal; OECD, 2015). Further OECD research found that pharmaceutical spending in hospitals has increased over time (in countries where information is available), attributable both to the proliferation of specialty drugs which are more likely to be used in the inpatient setting and to the fact that cost-containment measures have mainly focused on the retail market (Belloni, Morgan & Paris, 2016). For example, based on official statistics from Denmark, pharmaceutical turnover in the hospital sector in 2014 amounted to 9.6 billion DKK compared to 11.8 billion DKK in the primary care sector (from 7.6 and 13.6 billion DKK respectively in 2010; DHDA, 2016). This information is important to consider when interpreting Denmark's positioning in the comparative figures shown above. At the same time hospital pharmaceutical expenditure may not strictly portray costs for medicines consumed by inpatients: in several countries certain medicines may only be obtainable at a hospital pharmacy for outpatients as well (see Chapter 5). In Italy, many new drugs (for example for Hepatitis C and diabetes) to be used by inpatients and dispensed to outpatients at hospitals are procured by health authorities and are thus not counted into the retail market; drugs procured by health authorities account for 33% of the total pharmaceutical market and 49% of drugs covered by the National Health Service (Jommi & Minghetti, 2015). The extent of this phenomenon should also be taken into account when considering the ratio between pharmaceutical expenditures in the retail and inpatient sectors.

2.2 Consumption

In each country consumption volumes and structures can be influenced by a variety of factors, such as burden of disease and regulatory requirements, as well as prescribing traditions and guidelines. Differences in culture and patient attitudes may also contribute to variation in consumption patterns. Therefore,

this section does not attempt to explore causal relationships in individual countries in the sample. The goal is rather to provide a general overview of pharmaceutical consumption trends in compared countries, focusing on common indications, particularly chronic conditions (diabetes, hypertension, dyslipidaemia and depression). Demographic change has led to an overall increase in pharmaceutical prescriptions for chronic and/or age-related conditions, which, however, may still be underdiagnosed and/or undertreated in some countries.

The following paragraphs provide condition-specific insights and explore potential contributing factors beyond the ones mentioned above. Consumption data for some countries in the sample are not available from the OECD as they are not supplied by national authorities. For some countries, reported data include pharmaceuticals dispensed in hospitals and/or non-reimbursed pharmaceuticals and/or OTC pharmaceuticals, while for others these categories are excluded (OECD, 2016b).

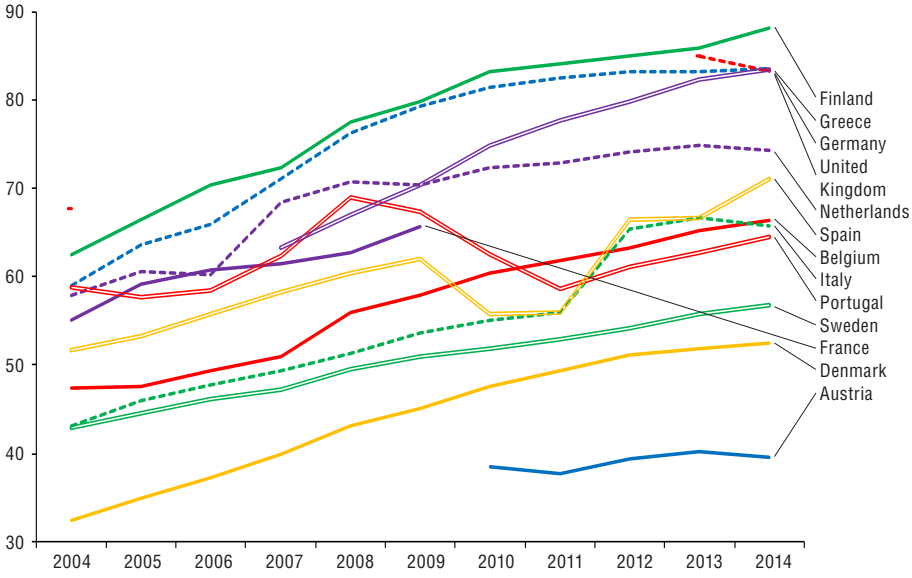
Prescriptions for antidiabetic drugs have shown a more or less stable increasing trend in all countries for which information was available, with the exception of Spain and Portugal during the crisis years. This is in all likelihood at least partially attributable to the increase in obesity rates observed in most countries; the availability of insulin analogues may also play a role. Finland, Germany, Greece and the United Kingdom show the highest consumption rates among countries in Fig. 2.7, Austria by far the lowest.

A similar pattern can be observed for medications used against hypertension (Fig. 2.8; as suggested by the OECD, this variable aggregates figures on antihypertensives, diuretics, beta-blocking agents, calcium channel blockers and agents acting on the renin-angiotensin system; OECD, 2015). Germany has traditionally shown a much higher consumption rate than comparator countries, reaching more than three times that of Austria and 1.4 times that of Finland (the second highest) in 2014.

In contrast, the United Kingdom has continuously demonstrated the highest consumption rate regarding lipid modifying agents, followed closely by Belgium and Denmark. Austria and Germany are at the lower end of the consumption spectrum (Fig. 2.9). The consumption of antidepressants shows a relatively stable, slowly increasing trend in the majority of compared countries with Portugal, Sweden and the United Kingdom building the upper cluster and Italy, the Netherlands and Greece demonstrating the lowest values (Fig. 2.10). Prescription patterns for lipid modifying agents are influenced by the general increase in obesity rates and a wider implementation of relevant screening,

Fig. 2.7

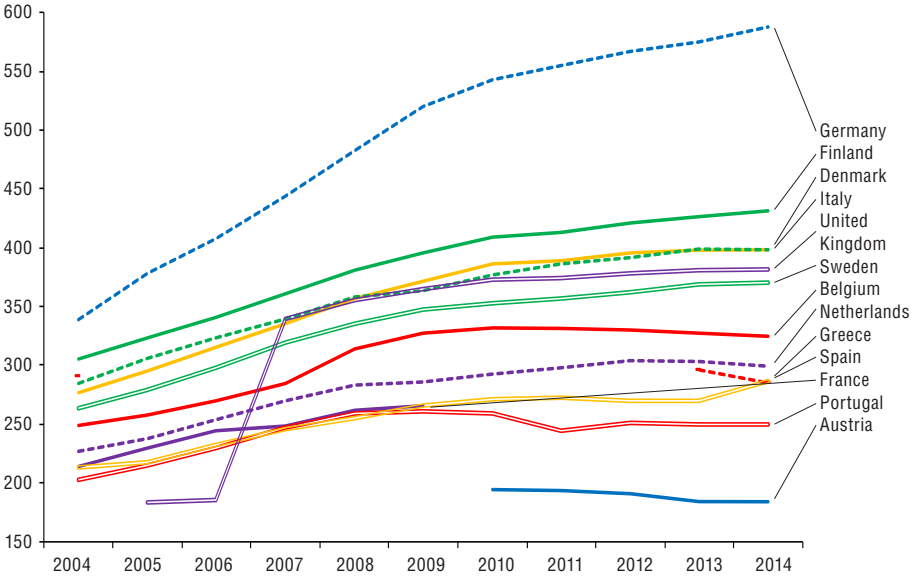
Antidiabetic medication (defined daily doses per 1000 inhabitants per day), 2004–2014



Source: OECD, 2016a.

Fig. 2.8

Medications against hypertension (defined daily doses per 1000 inhabitants per day), 2004–2014

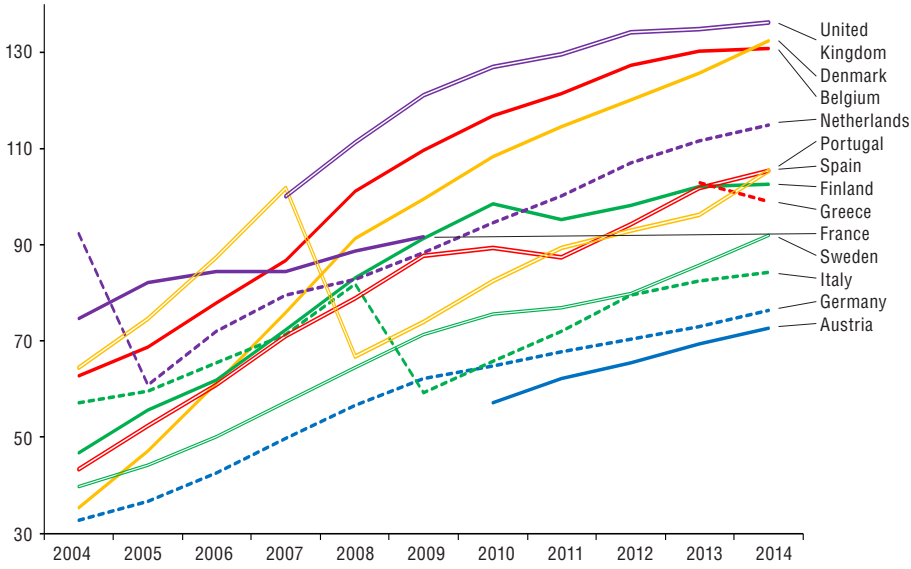


Source: OECD, 2016a.

as well as a trend towards earlier treatment and higher dosages. Indication extensions and prolonged treatment protocols may additionally influence the consumption of antidepressants; unmet need and appropriateness of prescribed treatment need to be considered in countries with very low and very high antidepressant consumption rates, respectively (OECD, 2015).

Fig. 2.9

Lipid modifying agents (defined daily doses per 1000 inhabitants per day), 2004–2014

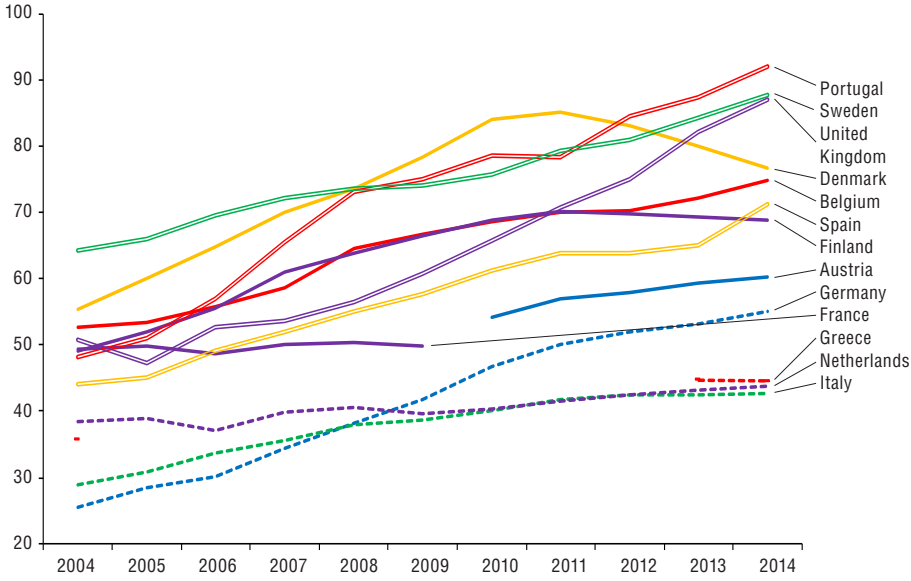


Source: OECD, 2016a.

The consumption of antibiotics in primary care can be used as a quality indicator; this reflects its link to antimicrobial resistance: the higher the number of prescriptions, the higher the prevalence of resistant strains. Culturally determined patient expectations, prescriber incentives for (ir)rational pharmacotherapy as well as regulatory issues (for example, the possibility of obtaining antibiotics over the counter, as was the case in Greece) can have a strong influence on consumption patterns. In 2014 Italy, France and Belgium had the highest consumption rates in the sample, while the Netherlands, Sweden and Germany occupied the other end of the spectrum (Fig. 2.11). Greece's extremely high and rising values until 2008 show a considerable decline in the period until 2011 (even below the 2004 figure).

Fig. 2.10

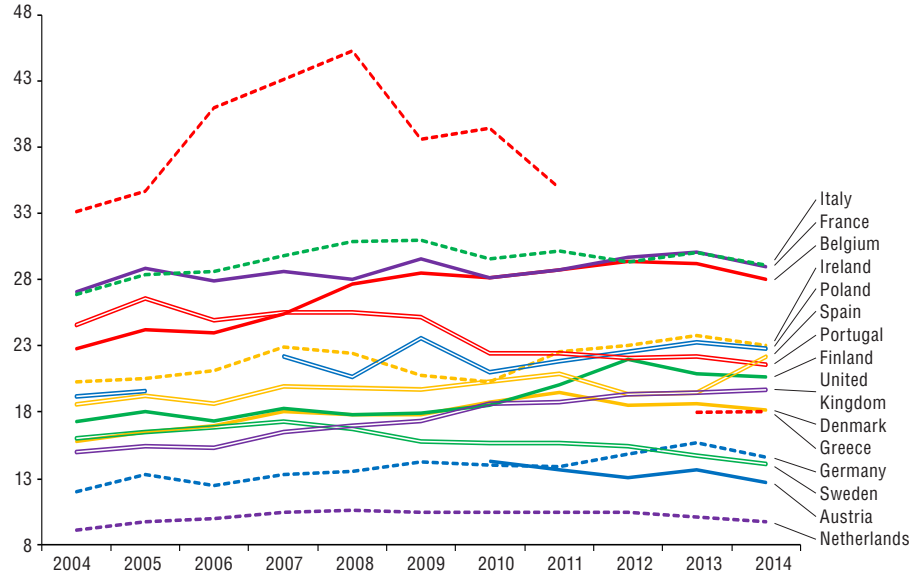
Antidepressants (defined daily doses per 1000 inhabitants per day), 2004–2014



Source: OECD, 2016a.

Fig. 2.11

Antibiotics for systemic use (defined daily doses per 1000 inhabitants per day), 2004–2014



Source: OECD, 2016c.

3. The link between marketing authorization, reimbursement and pricing

As a rule, marketing authorization is a fundamental requirement that needs to be fulfilled before medicines can be made available and any decision-making on pricing or reimbursement can take place, and is thus traditionally the first regulatory step in the pharmaceutical market. The marketing authorization process aims to verify the quality, safety and efficacy of candidate products and is carried out by competent authorities at national or European level. To apply for marketing authorization in Europe, manufacturers are required to submit the necessary evidence and have the choice between three options:

1. in the national authorization procedure, the application is submitted for one country only; the national competent authority is responsible for reviewing submitted evidence;
2. in the centralized authorization procedure, the application concerns the entire European Economic Area and is submitted to the European Medicines Agency for review. The centralized procedure is compulsory for medicines with new active substances for the treatment of cancer, diabetes, neurodegenerative diseases, autoimmune and other immune dysfunctions, and viral diseases. Furthermore, it is required for medicines derived from biotechnology processes, such as genetic engineering, and advanced therapy medicines, such as gene-therapy, somatic cell-therapy or tissue-engineered medicines, as well as for orphan medicines (medicines for rare diseases) and veterinary medicines for use as growth or yield enhancers. While the centralized authorization procedure is optional for medicines containing new active substances for other indications, according to the EMA “the great majority of new, innovative medicines pass through the centralized authorization procedure in order to be marketed in the EU” (EMA, 2016);

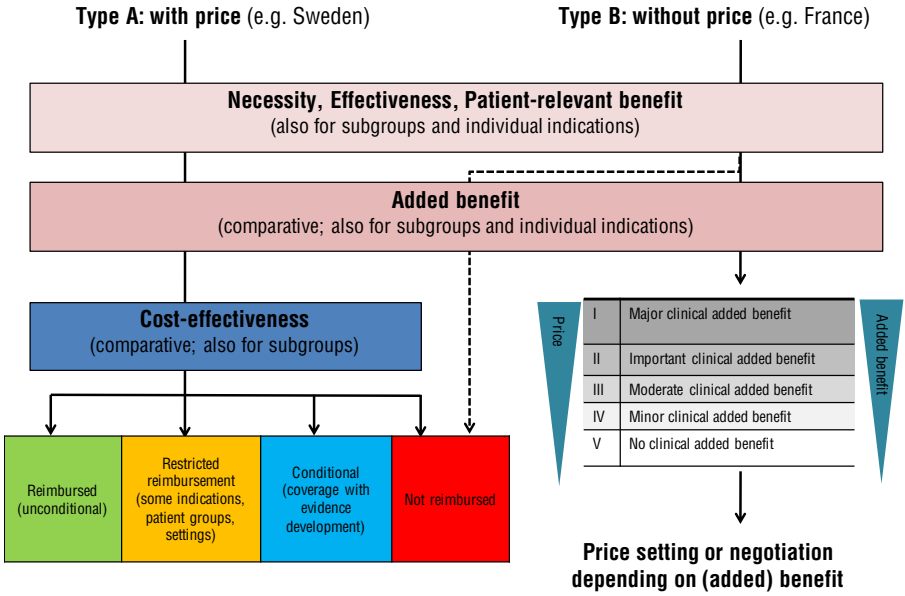
3. to apply for authorization in more than one EU country at the same time, two pathways are possible: i) the mutual recognition procedure, which presupposes an existing national authorization and uses that national competent authority as a reference point responsible for the evidence report, and ii) the decentralized procedure, wherein authorizations in several countries are requested at once and the manufacturers can freely choose which country's competent authority will be the one responsible for reviewing the evidence.

Safety is the main criterion for marketing authorization. A limited proof of efficacy based on small sample sizes is usually sufficient. Submitted evidence consists of randomized controlled trials (RCTs) carried out under optimized study conditions, usually comparing the pharmaceutical in question to a placebo (and not an active comparator) and reporting clinical (surrogate) outcome measures. Thus, it is clear that obtaining marketing authorization does not necessitate that the pharmaceutical provides a therapeutic benefit that is meaningful to patients in real world conditions.

Patient-relevant benefit is examined during post-marketing evaluations, which have been established in the majority of studied countries. As a rule, the focus is on a pharmaceutical's added therapeutic benefit compared to existing alternatives. Cost-effectiveness and budget impact are further important aspects, which are, however, not evaluated in all countries at this point. Post-marketing evaluations usually serve to determine the reimbursement eligibility and/or price of (new) pharmaceuticals in the publicly financed (statutory) health system. Despite the fact that such evaluations at national level are the norm, they vary considerably both in process and methodology across countries (see Chapter 5, Annex II and Allen et al., 2013). Leaving aside these differences, two simplified archetypes of post-marketing evaluation are discernible in Europe (see Figs 3.1 and 3.2):

a. evaluation at a predetermined price: the price is set in advance, either directly by the manufacturer or in agreement/following negotiations with competent authorities; reimbursement eligibility is determined for this price (cost-effectiveness analysis); and
b. evaluation without a predetermined price: the ascertained (added) benefit of the pharmaceutical in question functions as a basis to determine reimbursement eligibility and/or (maximum) reimbursement price.

Fig. 3.1
The two simplified archetypes of post-marketing evaluation

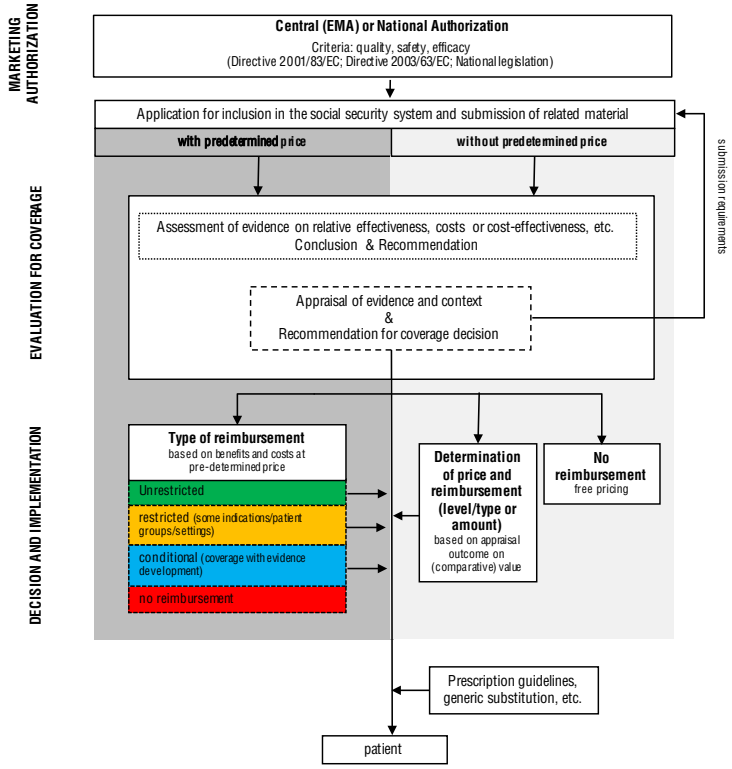


Source: Based on Zentner & Busse, 2011.

As can be seen in Table 3.1, post-marketing evaluations on the basis of a predetermined price (type A) are more prevalent among comparator countries. However, not all these countries follow the same approach in setting prices. In Sweden, prices are proposed by the manufacturers and were traditionally not discussed further, although negotiations have been introduced in recent years. The United Kingdom employs a broader agreement between the national payer (Department of Health) and manufacturers, the so-called Pharmaceutical Price Regulation Scheme (PPRS). The PPRS is essentially a profit control system: companies can set their own prices as long as the profit levels do not exceed the threshold. In contrast, ministries in the Netherlands and Poland have the final say in setting prices, taking manufacturer suggestions into consideration. In Austria, ex-factory prices are set by the ministry based on legal provisions, while reimbursement prices are negotiated between social insurance and the manufacturers. In Italy, price and reimbursement are negotiated simultaneously between manufacturers and the Italian Medicines Agency (AIFA).

Fig. 3.2

The link between marketing authorization, post-marketing evaluation and price



Source: Panteli et al., 2015.

Belgium, France and Germany evaluate the (added) benefit of newly authorized pharmaceuticals independently and base setting reimbursement prices or amounts on relevant results. Important differences exist within this group as well: while potential price negotiations take place once the evaluation has been completed in both France and Germany, the Belgian Ministry of Economic Affairs sets maximum prices during the evaluation process, and the reimbursement price (i.e. the actual price that forms the basis for reimbursement) is negotiated during the evaluation process by the Pharmaceutical Reimbursement Committee at the National Institute for Health and Disability Insurance.[2] Value-based pricing is discussed in more detail in Chapter 4.

2. If no agreement is reached, the company can still negotiate with the Minister towards establishing a risk-sharing agreement (e.g. price-volume, budget cap), which remains confidential.

Table 3.1
Patient access following marketing authorization and relation to post-marketing evaluation (PME), 2016

Country	Availability of pharmaceuticals for patients in the statutory health system following marketing authorization	Link between pricing and post-marketing evaluation
Austria	Only after PME	With predetermined price
Belgium	Only after PME	Without predetermined price
Denmark	Only after PME	With predetermined price
Finland	Only after PME	With predetermined price
France	Only after PME	Without predetermined price (price is set based on added therapeutic benefit (ASMR))
Germany	Directly	Without predetermined price
Greece	Only after reimbursement approval	With predetermined price
Ireland	Only after PME	With predetermined price (may be adjusted in negotiations following PME)
Italy	Only after PME	With predetermined price
Netherlands	Only after PME	With predetermined (maximum) price
Poland	Only after PME	With predetermined price
Portugal	Only after PME	With predetermined price
Spain	Only after PME	Without predetermined price (processes run in parallel)
Sweden	Only after PME	With predetermined price
United Kingdom	Directly	With predetermined price

Source: Authors' compilation.

The Transparency Directive issued by the European Commission (Directive 89/105/EEC) stipulates that decisions pertaining to the reimbursement or pricing of pharmaceuticals have to be taken within 90 days of marketing authorization (180 days for processes integrating reimbursement and pricing). In reality there are often substantially longer delays until patients have access to reimbursed medicines, which are in all likelihood partially attributable to the decision-making process. However, additional elements may also play a role; for example, manufacturers may strategically delay market launches in specific countries to preclude influencing prices in other countries using external reference pricing (see Chapter 4; Bouvy & Vogler, 2013).

In all countries in this study, pharmaceuticals are in principle available once marketing authorization has been granted; however, patients are usually expected to carry the costs themselves while the post-marketing evaluation is in progress. Germany and the United Kingdom are exceptions to this rule:

pharmaceuticals are theoretically reimbursed in the publicly financed (statutory) health care system as soon as marketing authorization has been granted, that is before the post-marketing evaluation is completed. In all other countries in the sample, actual patient access to newly authorized medicines could be expected to show at least some delay.

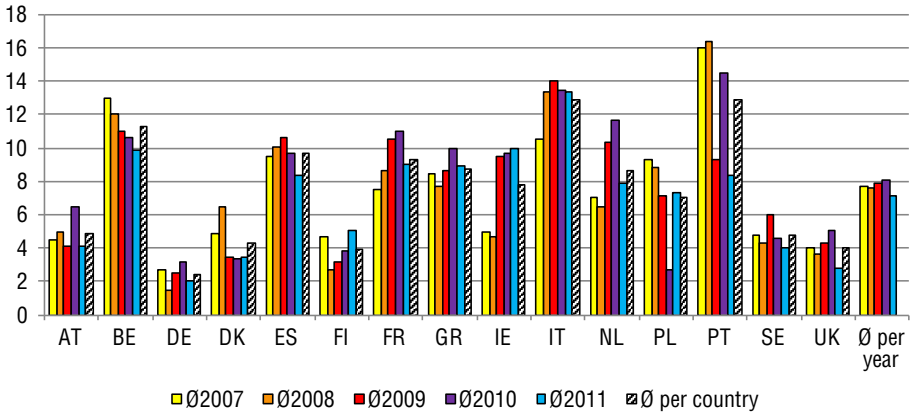
In France, there is only one situation wherein reimbursement can be granted before the post-marketing evaluation has been carried out. Highly innovative medicines without therapeutic alternatives already on the market can be made accessible even before marketing authorization. Within this early access scheme, called "Autorisation Temporaire d'Utilisation", prices are set freely. These medicines continue to be reimbursed after marketing authorization and during the post-marketing evaluation phase until a price agreement is reached with the manufacturer. If the agreed price is lower than the price initially charged, manufacturers have to pay back the difference. In Italy, provisional agreements for access may be agreed at the regional level before the centralized pricing and reimbursement negotiations are concluded; in Austria, pharmaceuticals under evaluation can be made available in exceptional cases following an ex-ante approval of the respective sickness fund's Chief Medical Officer ("head physician").

To measure the delay between market entry of pharmaceuticals and patient access, the European Federation of Pharmaceutical Industries and Associations (EFPIA) developed the W.A.I.T. indicator, which captures the time elapsed between the day marketing authorization was granted by the EMA and the end (official last day) of the administrative process in the post-marketing stage. The latest measurement in 2011 encompassed 20 European countries and found that the timeframe between market entry and the end of the post-marketing evaluation ranged between 116 and 550 days (EFPIA, 2011). Germany and the United Kingdom are not included in this calculation, as pharmaceuticals are theoretically available once marketing authorization has been granted (see above). Furthermore, the indicator does not consider the inpatient sector, where a faster availability could be expected in several countries. For example, it has been reported that some manufacturers in Austria do not apply for reimbursement in the outpatient setting (i.e. inclusion to the positive list, see chapter 5) as medicines administered in hospitals are not subject to price regulations and are paid out of the hospital budget. This contributes to fast market access for some medicines (e.g. oncology medicines), but can in fact increase public pharmaceutical expenditure overall.

The corresponding variable "time to market" developed by the IMS Consulting Group uses the same starting point but a different terminus: this is the month during which overall sales surpass a threshold that could be attributed to stocking alone (defined as 1% of the maximal sales in the first 24 months after market entry). Comparative data for the years 2007–2011 for all countries included in this study are shown in Fig. 3.3.

Fig. 3.3

IMS Consulting Group's Time To Market in months, 2007–2011



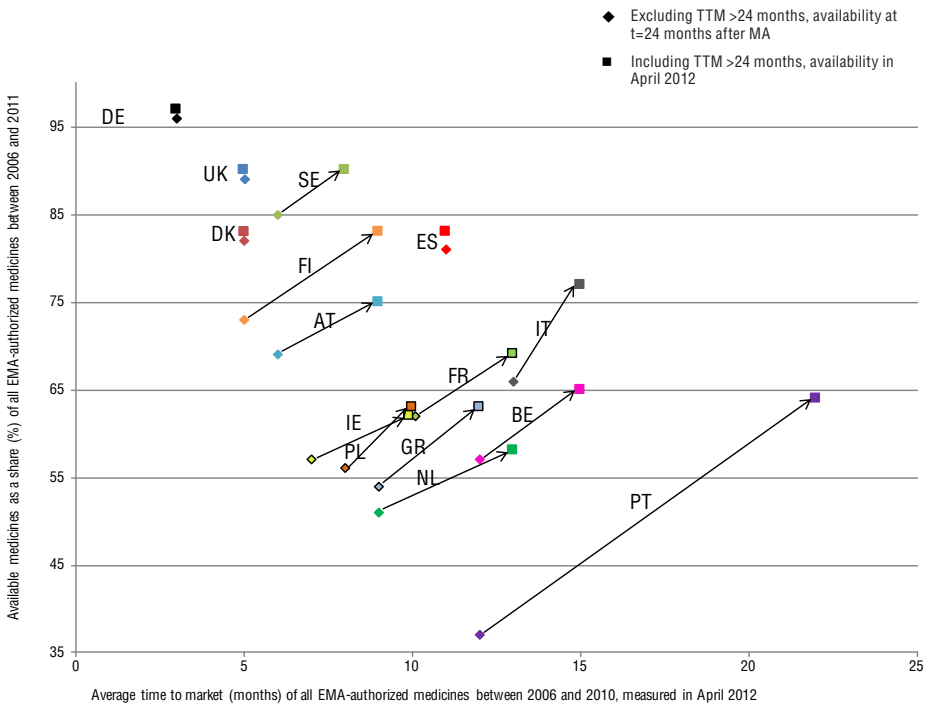
Source: Authors' compilation based on data from IMS, 2012.

With an average of about two months, Germany continuously demonstrated the lowest values and thus the fastest access to newly authorized medicines. Austria, Denmark, Finland and Sweden showed average values of four to five months and were continuously below the overall average of approximately eight months. Based on this data, delays can be observed for the United Kingdom, which showed average values comparable to those of Austria and Sweden, despite its theoretical direct access following marketing authorization (see above). According to experts, this phenomenon can be attributed to an uncertainty-fuelled reluctance on the part of relevant payers in the health system ("Clinical Commissioning Groups" in England and "NHS Boards" in Scotland) to include newly authorized medicines in their formularies before seeing post-marketing evaluation results. The longest average times to market surpassed 12 months and were found in Italy and Portugal, followed by Belgium at 11 months.

Fig. 3.4 plots time to market (i.e. date of marketing authorization to benchmark sales volume) against availability of EMA-authorized pharmaceuticals in studied countries for a given time period (IMS, 2012). According to these figures, German patients had both the fastest and the most comprehensive access to new pharmaceuticals, followed by patients in the United Kingdom and Denmark. In the first data series (diamonds), only those pharmaceuticals are considered that were actually available on the market within 24 months of marketing authorization (see the definition of the "time-to-market" variable above). While a negative linear correlation can be observed for the majority of countries, meaning that those with the longest time to market also have the lowest availability, there are also remarkable exceptions: Spain demonstrates a relatively long time to market but also very high availability (above 80%). And while Ireland demonstrates a much faster access than Italy (7 months compared to 13), availability in Italy is almost 10 percentage points higher.

Fig. 3.4

Average time to market and availability of EMA-authorized medicines between 2006 and 2011



Source: Authors' compilation based on data from IMS, 2012.

If one also includes medicines for which the time between marketing authorization and market entry surpassed 24 months and subsequently considers availability at the end of the observation period (squares), the position of most countries on the diagram changes. However, the situation remains relatively stable for Denmark, Germany, Spain and the United Kingdom (which means that there are practically no additional products entering the market with a delay of more than 24 months). Availability increases for all remaining countries but different patterns are discernible. In both Italy and Sweden, average time to market rises by approximately two months but availability increases by 11 compared to 5 percentage points, respectively. While availability jumps from 37% to 64% in Portugal, time to market also goes up by 10 months to an average of 22 months. Thus, Germany remains the front-runner in both speed and availability of newly authorized medicines even when outliers are taken into account.

Cross-sectional IMS data for 2014 do not show any dramatic changes in the patterns described above. While Germany retains first place in both speed of access (3.5 months) and availability, Spain demonstrates higher availability than Sweden and the United Kingdom but a considerably longer time to market (15.8 months) compared to Fig. 3.3. Time to market in Greece seems also to have increased substantially, reaching 21.3 months on average, due perhaps to increased effectiveness considerations introduced as a response to the financial crisis and related efforts to constrain public expenditure. The same IMS report argues that differences in time to market disappear if the duration of post-marketing evaluations (i.e. “time to reimbursement decision”) is also considered. While this is numerically correct, it needs careful interpretation that takes into account different practices regarding availability during post-marketing evaluations (see above). Furthermore, the interpretation of time to market data should also take into account that manufacturers can determine how quickly after marketing authorization they apply for reimbursement and – depending on the system – have the option of suspending the evaluation process once it has begun.

To facilitate timely access to innovative medicines, the EMA has been piloting the concept of adaptive pathways. These encompass an iterative process starting with marketing authorization for a restricted population at an earlier stage during pharmaceutical development with the potential of progressive expansion following evidence generation, incorporation of real world evidence and stakeholder input. While adaptive pathways are considered a promising approach, particularly for unmet need (i.e. indications without a therapeutic alternative), concerns on the part of regulators and the health technology

assessment (HTA) community focus on safety considerations – which are more pronounced the lower evidence requirements for marketing authorization are set – in conjunction with the fact that many countries do not have delisting mechanisms which are sufficiently equipped to deal with pharmaceuticals that end up falling short of their value targets (Eichler et al., 2015; Macaulay, 2015; Joppi et al., 2016).

4. Pricing mechanisms in publicly financed (statutory) health systems

Price regulation applies to different points in the pharmaceutical distribution chain, starting with the determination of manufacturer prices, down to wholesaler and pharmacist remuneration margins and product taxation. How detailed and stringent this regulation is varies both across countries and between sectors in the same country. In the inpatient sector, direct negotiations between hospitals and manufacturers or wholesalers are usually possible. In contrast, price-setting and distribution margins are more strictly regulated in ambulatory care.

Manufacturer prices are subject to legal or regulatory specifications in the majority of countries included in this study. So-called "free pricing" countries, such as Denmark, Germany and the United Kingdom, are in the minority. Even when manufacturers are free to set their own prices, these are influenced by indirect measures (for example, internal reference pricing, parallel imports, legally enforced discounts and rebates, as well as individual contract agreements between payers and manufacturers). In Germany, free pricing was restricted following the AMNOG regulation introduced in 2011: for pharmaceuticals with a new active substance or an indication extension entering the market, free pricing only applies for the first year after marketing authorization. After that, only a negotiated reimbursement amount is paid for drugs with proven added therapeutic benefit (for both statutorily and privately insured patients), while a maximum reimbursement amount is set for drugs without added benefit based on internal reference pricing (applies to statutorily insured only).

Table 4.1 presents an overview of mechanisms used to determine (initial) manufacturer prices in studied countries. The individual strategies will be more closely examined in the subsequent paragraphs, followed by insights on price revisions and the role of value added tax (VAT).

Table 4.1

Overview of pricing strategies applied in 15 countries, 2016

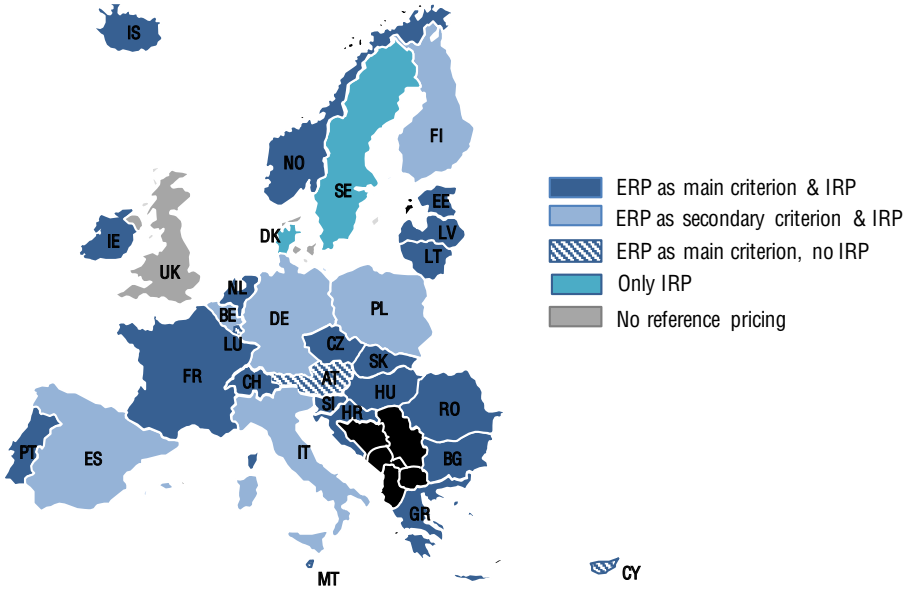
	Pricing mechanisms				
Country	**Free pricing***	**External reference pricing**	**Internal reference pricing**	**Elements of value-based pricing**	**Other**
Austria	No	Yes	No**	No	-
Belgium	No	Yes	Yes	Yes (value-based premium)	Negotiations
Denmark	Yes	No	Yes	No	Competition (retail) Tendering (hospitals)
Finland	No	Yes	Yes	No	Negotiations Tendering
France	No	Yes (for ASMR I, II, or III)	Yes	Yes	Negotiations
Germany	Yes (AMNOG: new active substances, first year only)	Yes (as a secondary criterion during price negotiations for drugs with added benefit)	Yes ("*Festbeträge*")	Yes (AMNOG)	-
Greece	No	Yes	Yes	No	-
Ireland	No	Yes	Yes	For specific products (patient acess schemes)	Negotiations
Italy	No	Yes	Yes	Yes	Negotiations (performance-based)
Netherlands	No	Yes	Yes	No	Negotiations (for high-cost orphan drugs, confidential)
Poland	No	Yes	Yes	Yes	Negotiations
Portugal	No	Yes	Yes	No	Online auctions to set maximum price (inpatient sector, SPMS)
Spain	No	Yes	Yes	No	-
Sweden	No	No	Yes	Yes	Tendering
United Kingdom	Yes (see last column)	No	No	For specific products (patient access schemes)	Negotiations Profit margins (PPRS)

Source: Authors' compilation.
Notes: * as mentioned in the text, manufacturers may be able to set their own prices in the inpatient sector even if free pricing is not applicable in the centralized pricing policy (e.g. Austria).
** internal reference pricing as described in the text below does not take place in Austria, however, there is a generic price link system (generic prices are set in relation to the prices of the originator product).
.

One of the most frequently employed strategies in price regulation is external reference pricing (ERP; also known as external price referencing or international reference pricing). It has been established in almost all European countries either as a main or secondary criterion for determining pharmaceutical prices (see Fig. 4.1). As a rule, ERP is applied for reimbursable, patented medicines but the exact characteristics of the strategy vary substantially across studied countries (see Table 4.2). The number of countries used as references (i.e. included in each country's ERP "country basket") ranges from three in Portugal to 30 in Poland. While the average of all prices in the basket is used as a benchmark in most cases, Spain uses the lowest price and Greece the average of the three lowest prices in their respective country baskets, while Portugal follows different calculation methods depending on the sector. The majority of countries in the sample uses manufacturer prices for ERP, but Finland uses wholesale prices and the Netherlands pharmacy retail prices. France is the most frequently referenced country in the sample (by 20 countries in Europe), followed by Belgium, Denmark and Spain (by 18 countries). Even in Sweden, traditionally one of the notable exceptions not using ERP, the Dental and Pharmaceutical Benefits Agency (TLV) was newly tasked with monitoring international prices to ensure that prices in Sweden are not excessive.

Fig. 4.1

Use of reference pricing in European countries, 2016



Source: Authors' compilation based on Toumi et al., 2014 and Vogler et al., 2015.

Table 4.2

Characteristics of ERP mechanisms in studied countries, 2016

Country	Scope of ERP	Number of reference countries	Reference countries	Calculation method	Referenced by number of countries
Austria	Reimbursable outpatient medicines	27	EU-member countries	Average of all countries	16
Belgium	Outpatient medicines	27	EU-member countries	Average of all countries (not explicitly)	18
Denmark	Not applicable, see Table 4.1				18
Finland	Reimbursable medicines (outpatient)	29	EU-member countries, IS, NO	Not fixed	15
France	Reimbursable medicines (outpatient) and some inpatient medicines (not financed through the DRG-system, so-called "liste en sus")	4	DE, ES, IT, UK	Not specified ("prices similar to reference countries and not lower than the lowest price")	20
Germany	Reimbursable prescription medicines with added benefit (outpatient)	15	AT, BE, CZ, DK, ES, FI, FR, GR, IE, IT, NL, PT, SE, SK, UK	Weighted based on market size and purchasing power parity	16
Greece	Reimbursable medicines (outpatient and inpatient)	27	EU-member countries	Average of three lowest prices	14
Ireland	Reimbursable medicines (outpatient and inpatient)	9	AT, BE, DE, DK, ES, FI, FR, NL, UK	Average of all countries	13
Italy	Reimbursable medicines (outpatient and inpatient)	24	AT, BE, CY, CZ, DK, EE, ES, FR, GR, HU, IE, IS, LI, LT, LV, NL, NO, PL, PT, RO, SE, SI, SK, UK	Not fixed	17
Netherlands	Outpatient and inpatient medicines	4	BE, DE, FR, UK	Average of all countries	15
Poland	Outpatient and inpatient medicines	30	EU countries, CH, IS, NO	Not fixed	12
Portugal	Reimbursable prescription and OTC medicines (outpatient)	3	ES, FR, SK	Outpatient: country average Inpatient: lowest price	15

Country	Scope of ERP	Number of reference countries	Reference countries	Calculation method	Referenced by number of countries
Spain	Reimbursable prescription medicines (outpatient)	16	AT, BE, CY, DE, EE, FI, FR, GR, IE, IT, LU, MT, NL, PT, SI, SK	Lowest price	18
Sweden		Not applicable			14
United Kingdom		Not applicable			17

Source: Authors' compilation.

The prices considered can substantially influence the strategy's effects. All countries use publicly available price information which does not incorporate confidential discounts and rebates negotiated between payers and manufacturers. Thus, referenced (list) prices often do not reflect reality and there is a risk of overpaying (see also Vogler et al., 2015). Furthermore, package sizes and dose strengths are not necessarily identical in all countries included in a referencing basket, a fact which further complicates arriving at representative results (see Chapter 9).

In France, international comparators are used in the price negotiations for pharmaceuticals with major, important or moderate added benefit (see Annex II). Proven added value in Belgium can lead to a mark-up (premium) on the ERP-determined price. Similarly to France, the German Federal Association of Sickness Funds considers European prices as a secondary criterion in their negotiations with manufacturers towards setting reimbursement amounts for pharmaceuticals with proven added benefit. Germany is also the only country in the study where reference prices are weighted according to the country's market size and purchasing power parity.

A simulation of the development of pharmaceutical prices in an ERP context showed that the strategy can drive down prices in the long term (15% reduction in 10 years) if it is applied as the sole mechanism of price regulation (Toumi et al., 2014). Substantial price differences (>30%) between countries remained unchanged over the same time period. More frequent price revisions and comprehensive country baskets led to higher price reductions. The study's overall conclusion was that real world price development led to more substantial reductions compared to the simulation assuming ERP as the sole determining mechanism; as such, it seems that other measures make a considerable contribution to lowering prices over time. This work confirmed earlier results, which supported a weighted referencing approach and the exclusion of all countries using ERP from other ERP baskets to avoid manufacturers' strategic

market launches as well as spillover effects (Stargardt & Schreyögg, 2006). The latter recommendation would be difficult to implement in the European context given the widespread use of ERP (see above). A newer study concluded that ERP can negatively impact patient access, both by fuelling strategic launches and by hampering a potential willingness on behalf of manufacturers to accept lower pricing in lower-priced countries. Regarding EPR's cost-containment function, the study's authors suggest that frequent price revisions and the consideration of actual as opposed to list prices would lead to more substantial reductions (Vogler et al., 2015).

From the manufacturer's perspective, EFPIA issued recommendations for the configuration of ERP processes with the aim of mitigating identified risks (no consideration of country-specific burden of disease and willingness to pay; potential for inhibiting access and innovation; spillover of structural problems). These include the integration of ERP into a wider pricing mechanism only for patented medicines eligible for reimbursement, the utilization of an adequate country basket encompassing five to seven economically comparable countries, the use of official manufacturer prices, a moderate frequency of price revisions (three years) and average prices as opposed to the lowest price(s) in the sample (EFPIA, 2014). With the exception of basket size, the German iteration of the strategy comes the closest to these recommendations among studied countries.

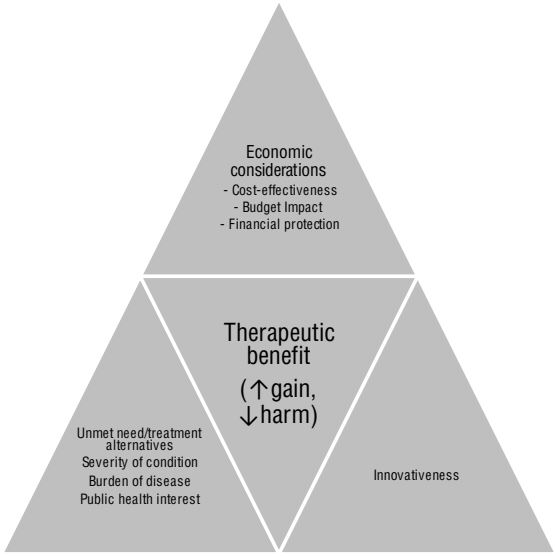
Thirteen countries in this study also apply another referencing strategy, namely that of internal reference pricing (IRP; also known as internal price referencing or therapeutic reference pricing). Intended as both a cost-containment and a competition-stimulating measure, IRP is meant to determine pharmaceutical prices based on marketed equivalent or similar products within the country. Depending on the system, it is used to set reimbursement prices for product groups. Products are clustered according to active substance (for example, Belgium, Denmark, Finland, France, Ireland, Italy, the Netherlands, Poland, Portugal and Spain), pharmacological (rarely used) or therapeutic class (for example, Greece, Poland, Sweden). To determine maximum reimbursement amounts ("*Festbeträge*") Germany uses an approach consisting of three grouping logics ("levels"), each corresponding to one of the aforementioned categorization modes. Pharmaceuticals with expired patents and their generics are grouped based on active substance (level 1). Several active substances are clustered together if they are pharmacologically/therapeutically comparable and chemically related (level 2). In the third level, pharmaceuticals with more than one active substance and chemically unrelated substances with comparable therapeutic effects are grouped together. The implementation of IRP started spreading in the last 25 years, with countries such as Denmark,

Germany, the Netherlands and Sweden paving the way. IRP is most commonly used for the pricing of generics (Bouvy & Vogler, 2013). However, in Italy IRP is also used as a basis for negotiations on the reimbursement prices of new medicines, in combination with ERP. A Cochrane review on the effects of pricing and purchasing policies on health outcomes and pharmaceutical utilization and expenditures found that IRP has the potential to shift use from medicines within the reference system that require cost-sharing to those at or below the reference price and thus reduce third-party expenditures in the short term; there is no reliable evidence on its effect on patient access and outcomes (Acosta et al., 2014).

Value-based pricing has been gaining importance as an alternative strategy in recent years. However, there is no internationally recognized, single definition of "value" in this context – as a result, a variety of approaches can be understood as incorporating value-based elements (see Fig. 4.2). Paris and Belloni (2013) found this to be true for a sample of nine OECD countries; in narrower definitions, a process can only be considered value-based if it fully integrates reimbursement decisions and pricing. Sweden is considered a pioneer of the strategy in the European context: it has been applying a value-based approach incorporating a cost-effectiveness threshold since 2002. Among the countries in this study, France and Germany are two further prominent examples using demonstrable (added) benefit to determine prices for newly authorized pharmaceuticals (or indications). It is interesting to note that the concrete quantifications of value used in France and Germany (see Annex II) are not found in other countries incorporating value-based elements (for example, Belgium, Italy, the Netherlands). Value-based elements are not necessarily systematically implemented: in Italy, while proven added value can lead to a premium price (similar to Belgium, see above), this is not applied consistently for all pharmaceuticals. A new approach to value-based pricing for the United Kingdom was developed in 2014 but has not been implemented so far.

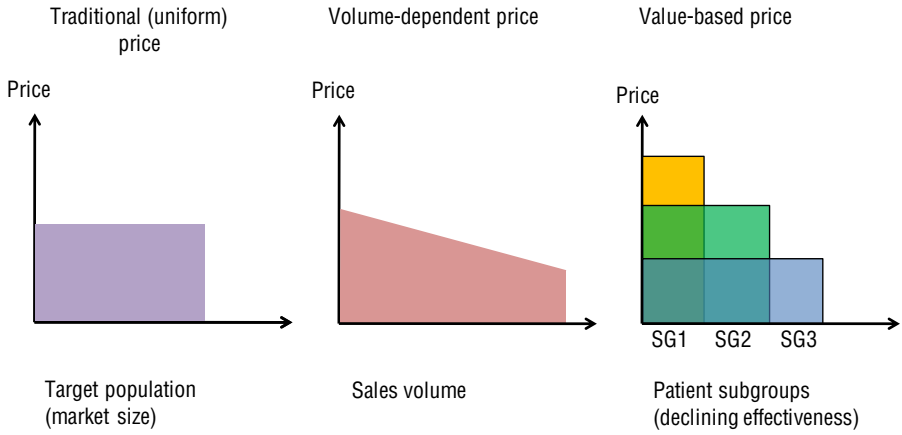
One of the challenges facing value-based pricing manifests itself when the proven benefit of a medicine varies substantially between different indications and/or patient subgroups. For such cases, Claxton, Sculpher and Carrol suggest defining a unified price for the pharmaceutical in question, corresponding to the average of incremental cost-effectiveness ratios (Claxton, Sculpher & Carrol, 2011). Fig. 4.3 depicts different approaches: the uniform price, the volume-dependent price and a value-based approach based on differing benefit for patient subgroups; in the latter case the price would be comparatively low if the pharmaceutical is reimbursable for subgroups with lower benefit as well – but comparatively high if it is reimbursable for subgroups with a higher benefit.

Fig. 4.2
Possible elements of value



Source: Authors' compilation.

Fig. 4.3
Conceptual differences between traditional (uniform) pricing, volume-dependent pricing and value-based pricing



Source: Authors' compilation.

Despite their widespread use, current pricing policies are not without their limitations (see for example Pani et al. 2016). While external reference pricing may induce strategic launching or hamper lower pricing in countries with a lower ability to pay, setting prices based on value can also lead to patient access issues if companies decide to remove their products from the market due to unsatisfactory price levels. Among others, proposed alternatives include differential pricing (whereby an international agreement is met that enables manufacturers to charge different prices in different systems based on ability to pay, see Vogler et al., 2015) and so-called personalized reimbursement models, which would support differentiated prices depending on indication, combination therapy or patient response (Roche, 2015).

Among the study countries, price revisions are carried out both periodically and in an ad hoc manner (Table 4.3). Regular revisions may concern individual pharmaceuticals, which are reviewed after a certain period following marketing authorization (for example, Greece and Ireland), groups of medicines (for example, Belgium, Germany and Ireland) or the full range of reimbursed medicines (for example, Portugal). They can be linked to the term of validity of agreements between payers and manufacturers (for example, France, Ireland, Italy) or to planned revisions of reimbursement decisions (for example, Finland, the Netherlands, Poland). Denmark employs price revisions as a means to stimulate competition in the context of price regulation: manufacturers have to submit their prices every two weeks; reimbursement prices are set based on the most inexpensive option. Ad hoc revisions are product-specific and can be triggered by manufacturers (for example, when requesting a price increase) or by competent authorities (for example, when a new medicine with the same active substance enters the market).

Pharmaceuticals are frequently taxed with lower VAT rates compared to other goods or services (see Table 4.4). Among compared countries, standard VAT rates apply to pharmaceuticals only in Denmark and Germany (25% and 19%, respectively). France taxes reimbursed medicines with 2.1% and non-reimbursed medicines with 10%. In Sweden and the United Kingdom prescription-only medicines are VAT-free, while over-the-counter (OTC) medicines are taxed at standard rates. In Ireland, this differentiation is made between oral and non-oral medicines. In the remaining countries, reduced VAT rates range between 4% (Spain) and 10% (Austria, Finland, Italy).

Table 4.3
Timeframe and mode of price revisions, 2016

Country	Price revision	
	Timeframe	**Mode**
Austria	Two additional evaluations at six-month intervals, if reference prices were available in fewer than 12 EU Member States at the time of the initial evaluation; ad hoc revisions	Product specific
Belgium	Periodically and ad hoc	Reimbursement groups or single medicines upon requested price increase
Denmark	Manufacturers report prices every two weeks; reimbursement price is based on cheapest option	
Finland	Ad hoc, periodically along with reimbursement decision	For individual medicines, due to requested price increase, patent expiration or market entry of therapeutic alternative
France	Ad hoc (if new evidence available), periodically depending on the duration of agreements	Product specific
Germany	Periodically for maximum reimbursement amount ("*Festbeträge*"); reimbursement amounts after contract expiration	Per group ("*Festbeträge*") Per active substance (following FJC resolution)
Greece	Biannual revision within four years of market entry	Full spectrum (periodic revisions)
Ireland	Annually for reference groups, expiry of pricing and supply agreements for off-patent medicines	Per group, product specific
Italy	Ad hoc and periodically depending on specific agreements	Per group (ad hoc), product specific
Netherlands	Ad hoc, periodically along with reimbursement decision	Product specific; full spectrum (periodic revisions)
Poland	Ad hoc, periodically in tiered intervals (every two-two-three-five years)	Product specific
Portugal	Annual, ad hoc in specific cases	Full spectrum
Spain	Periodically (two years) and ad hoc	Product specific, parallel revision
Sweden	Ad hoc	Product specific
United Kingdom	Ad hoc (manufacturers can modify prices within the context of the PPRS)	Individual medicines, due to requested price increase or new evidence

Source: Authors' compilation.

Some countries modified their pricing stipulations in response to the economic crisis. Within this study's sample, Belgium, Ireland and Portugal undertook changes in their ERP system. Greece introduced internal reference pricing and lower pharmaceutical VAT rates.

Table 4.4

General and pharmaceutical VAT rates, 2016

Country	Standard VAT rate (%)	VAT rates for pharmaceutical products (%)
Austria	20	10
Belgium	21	6
Denmark	25	25
Finland	24	10
France	20	2.1 for reimbursed medicines 10 for non-reimbursed medicines
Germany	19	19
Greece	24	6
Ireland	23	0 for oral medicines 23 for non-oral medicines
Italy	22	10
Netherlands	21	6
Poland	23	8
Portugal	23	6
Spain	21	4
Sweden	25	0 for prescription-only medicines 25 for OTC medicines
UK – England	20	0 for prescription-only medicines 20 for OTC medicines
UK – Scotland		

Source: Authors' compilation, based on European Commission, 2016.

5. Reimbursement

As illustrated in Chapter 3, post-marketing evaluation mechanisms aiming to inform reimbursement decisions on (new) pharmaceuticals in the statutory health system are closely linked to pricing. Decision-making in the post-marketing stage can vary substantially with system structure, regarding process, and guiding criteria as well as institutions and stakeholders involved. However, some common characteristics can be discerned among the countries compared in this study: in principle, scientific evidence on the (added) value of a new medicine is assessed; conclusions are appraised in the decision-making context and recommendations on reimbursement are formulated before a final decision is made[3] (see Table 5.1).

Specific committees responsible for formulating these recommendations have been established in all studied countries. These are separate from the working groups which carry out the scientific evidence assessment even if both are part of the same institution/authority. These institutions/authorities are sometimes also responsible for the final political decision on (non-) reimbursement (for example, Denmark, Finland, Spain, Sweden), and/or even marketing authorization (for example, Denmark, Italy). In some cases, final decisions (for example, Belgium) or their implementation (for example, Sweden) can deviate from the recommendations of the reimbursement committee, usually as a result of societal or budgetary considerations.

In Germany, reimbursement for newly authorized pharmaceuticals is considered as given once marketing authorization has been granted, unless these are explicitly excluded by the Federal Joint Committee (G-BA, see below). The Institute for Quality and Efficiency in Health Care (IQWiG) is commissioned by the G-BA to perform the scientific evaluation of evidence submitted by manufacturers. Following consultations, the G-BA decides on a pharmaceutical's added therapeutic benefit based on IQWiG's conclusions.

3. Greece is the only country in the sample without its own structured mechanism of evidence-based evaluation: new pharmaceuticals are reimbursed if they are covered in two-thirds of EU countries or at least 12 countries with a positive PME result. Results of Health Technology Assessment (HTAs) performed in other countries have been considered in this process since 2012 (Vandoros & Stargardt, 2013).

The demonstrated added therapeutic benefit then serves as a basis for price negotiations between the Federal Association of Sickness Funds and manufacturers (see Chapter 4). While no two systems in the sample are identical, a similar organizational structure to Germany's can be found in Ireland. The National Centre for Pharmacoeconomics carries out the scientific assessment of submitted evidence (similar to IQWiG); their conclusions inform the Corporate Pharmaceutical Unit of the Health Service Executive (HSE) towards formulating recommendations before the final decision is taken, also by the HSE. An important difference is that in Ireland reimbursement eligibility is determined under consideration of a price submitted in advance by manufacturers and based on ERP (see also Chapters 3 and 4). Furthermore, while the HSE is a governmental institution, decisions on reimbursement in Germany are the responsibility of the joint self-government of actors in health care (represented by the G-BA).

Criteria guiding recommendations on reimbursement, as well as final decision-making, vary among countries in this study. However, therapeutic benefit is consistently taken into account. Economic considerations are also being increasingly examined in several cases. When economic evaluations are used, differences among countries may concern the chosen perspective (for example, payer, societal) as well as the exact method of analysis. Cost-effectiveness or cost-utility analyses are most frequently applied (see also Paris & Belloni, 2013). Stakeholder involvement also differs considerably, both in terms of process and parties involved. For example, in Germany, the Netherlands and Sweden official statements can be submitted during the evaluation process; in Belgium only applying manufacturers are involved.

In the majority of countries, reimbursement decision-making processes in the outpatient sector culminate in a positive list: pharmaceuticals are reimbursed once they are included on the list. In contrast, pharmaceuticals in Germany, Spain and the United Kingdom are fundamentally covered, unless they are explicitly excluded from reimbursement (i.e. placed on a "negative list"). Some countries employ both a positive and a negative list (for example, Greece, Italy). Negative lists should be used with caution if the intention is cost-containment, as excluded medicines may have costlier alternatives on the market (Carone, Schwierz & Xavier, 2012). Different positive lists can sometimes be used to operationalize reimbursement restrictions: for example, Denmark and Finland apply additional, disease-specific lists, while in Austria an ex-ante or ex-post control by the sickness fund is required for medicines in the so-called "yellow box" (separate list, see Annex II).

Table 5.1

Post-marketing evaluations: actors and outcomes, 2016

Country	Involved Institutions (Decision/ Appraisal & recommendation/ Evidence assessment)	Interactions	Type of reimbursement list	Reimbursement restrictions (rationale)	Revision of reimbursement decision
Austria	**Decision:** Main Association of Austrian Social Security Institutions (HVB) **Assessment of the scientific evidence/ appraisal and recommendation:** Pharmaceutical Evaluation Board (HEK) of HVB	HEK advises HVB	Positive list in the outpatient sector ("*Erstattungskodex*" – EKO)	Indication, prescriber group, therapeutic benefit	By request of the manufacturer or of HVB, due to a change of pharmacological, medical/ therapeutic, or health-economic evidence, or due to new indication
Belgium	**Decision:** Ministry of Social Affairs and Public Health **Appraisal & recommendation:** Commission for the Reimbursement of Pharmaceuticals (CTG/ CRM) within the National Institute for Health and Disability Insurance (RIZIV/ INAMI) **Assessment of the scientific evidence:** INAMI working groups	CRM advises the minister	Positive list	Indication, product specification, patient group, prescriber group (expertise)	Review of innovative medicines within a period of 18 months to three years after admission, otherwise ad hoc by request of the ministry or CRM
Denmark	**Decision:** Danish Medicines Agency (DKMA) **Evidence assessment/appraisal** including cost comparison **& recommendation:** Reimbursement Committee at the DKMA	Reimbursement Committee decides	None (general and restricted reimbursement list)	Disease, patient group	Ad hoc
Finland	**Decision:** Pharmaceuticals Pricing Board (HILA) **Evidence assessment/ appraisal & recommendation:** Expert group at HILA	Expert group advises HILA	Basic and special reimbursement	Disease, patient group	Review of medicines with new substances every three years, otherwise every five years

Country	Involved Institutions (Decision/ Appraisal & recommendation/ Evidence assessment)	Interactions	Type of reimbursement list	Reimbursement restrictions (rationale)	Revision of reimbursement decision
France	**Decision:** Ministry of Social Affairs and Health **Evidence assessment/appraisal & recommendation:** French National Authority for Health (HAS), Transparency Committee (CT) – medical assessment, Economic and Public Health Assessment Committee (CEESP) – health economic assessment (for highly innovative and expensive medicines only)	CT at HAS performs assessment and advises the minister	Positive list	Therapeutic benefit, patient group	Every five years, ad hoc due to a change of indication, new evidence or by request of the minister of health
Germany	**Decision/appraisal & recommendation:** Federal Joint Committee (G-BA) **Evidence assessment:** Institute for Quality and Efficiency in Health Care (IQWiG) (or third party)	G-BA commissions IQWiG or a third party	De-facto negative list (according to § 92 SGB V and § 34 SGB V – prescription exclusion of certain medicines)	Restriction of prescription due to inappropriateness/ inefficiency	Benefit assessment: at the earliest one year after G-BA decision, either on application by the manufacturer or at the instigation of G-BA due to new evidence; due to expiration of time limit of a time-limited decision (§ 3, Benefit assessment ordinance of pharmaceuticals "*Arzneimittel-Nutzenbewertungsverordnung*")
Greece	**Decision:** Ministry of Health **Appraisal & recommendation:** Unified Social Security Fund (EOPYY, national payer)	EOPYY determines reimbursability	Negative and positive list	Indication, patient group	Ad hoc (following price approval of new drugs and price-reassessment of existing drugs)
Ireland	**Appraisal & recommendation/ decision:** Health Service Executive (HSE)/Corporate Pharmaceutical Unit (CPU) **Evidence assessment:** National Centre for Pharmacoeconomics (NCPE)	HSE-CPU determines prices, NCPE performs assessments	Positive list	Indication	Ad hoc (at the discretion of HSE)

Country	Involved Institutions (Decision/ Appraisal & recommendation/ Evidence assessment)	Interactions	Type of reimbursement list	Reimbursement restrictions (rationale)	Revision of reimbursement decision
Italy	**Decision:** Italian Medicines Agency (AIFA) **Appraisal & recommendation:** Pricing and Reimbursement Committee at AIFA (CPR) **Evidence assessment:** Technical Scientific Committee at AIFA (CTS)	CTS prepares report, makes recommendation to CPR; CPR conducts price negotiations, assesses reimbursability along with the expertise of CTS	Negative and positive list	Indication (disease relevance), patient group, product specification, prescriber group/ ambulatory health care centre	In principle, every two years. In practice, depending on the agreement Ad hoc due to a change of indication
Netherlands	**Decision:** Ministry of Health, Welfare and Sport **Appraisal & recommendation:** National Health Care Institute (ZINL) **Evidence assessment:** ZINL working groups	PC advises the board and the board advises the minister	Positive list	Indication, patient group, therapeutic benefit	Ad hoc (at the earliest six months after reimbursement decision): by request (manufacturer or other stakeholder)
Poland	**Decision:** Ministry of Health **Evidence assessment/ appraisal & recommendation:** Agency for Health Technology Assessment (AOTM)	AOTM advises the drug commission of the ministry	Positive list	Indication, patient group	Periodically in tiered intervals (every two-two-three-five years)
Portugal	**Decision:** Outpatient sector: Ministry of Health Inpatient sector: National Authority of Medicines and Health Products (INFARMED) **Evidence assessment/ appraisal & recommendation:** INFARMED	INFARMED advises the minister	Positive list	Product specification, patient group	Outpatient: within three years after the reimbursement decision; Inpatient: Revision of the expenditure cap every two years
Spain	**Decision/evidence assessment/appraisal & recommendation:** Directorate-general for Pharmacy and Healthcare Products (DGCF)/Inter-ministerial commission for pricing (IPC)	IPC and DGCF conduct assessment of the scientific evidence, appraise and make decisions	Positive list	Product specification	Annual review, within a max. of three years

Country	Involved Institutions (Decision/ Appraisal & recommendation/ Evidence assessment)	Interactions	Type of reimbursement list	Reimbursement restrictions (rationale)	Revision of reimbursement decision
Sweden	**Decision/evidence assessment/appraisal & recommendation:** Dental and Pharmaceutical Benefits Agency (TLV)	TLV determines prices, assesses drugs and decides on reimbursement status	Positive list	Product specification, patient group	Due to a change of indication, linked to an assessment of another medicine
UK – England	**Decision:** National Health Service (NHS) **Evidence assessment/ appraisal & recommendation:** Appraisal Committee (AC) at National Institute for Health and Clinical Excellence (NICE)/ external HTA Institutes	AC advises NHS	National negative list + positive list per payer ("CCG formulary")	Indication, patient group, prescriber group/context of prescription	Regular revision, in a period of time from one to three years
UK – Scotland	**Decision:** "Area Drugs and Therapeutic Committee formulary" (AD&TC within National Health Service Scotland (NHSS)) **Evidence assessment/ appraisal & recommendation:** Scottish Medicines Consortium (SMC)/New Drugs Committee (NDC)	NDC advises NHSS	National negative list + positive list per payer ("area drug list")	Indication, patient group, prescriber group/context of prescription	Revision on initiative of NHSS/ AD&TC due to a change of evidence

Source: Authors' compilation.

Reimbursement restrictions are possible in all studied countries but they vary in their exact rationale and configuration; for example, they can be applied according to patient or prescriber group or be product-specific. In the majority of countries, reimbursement restrictions based on indication are possible; Germany is an exception to this rule, as reimbursement eligibility encompasses all of a pharmaceutical's authorized indications, including those for which no added benefit was demonstrated during evaluation. In Sweden, reimbursement is also product-specific: pharmaceuticals are basically reimbursed for the full indication spectrum or not at all; however, further restrictions are possible in exceptional cases, for example when patient benefit or cost-effectiveness ratios vary by subgroup. In such cases, it can be stipulated that a pharmaceutical can only be prescribed at the expense of the publicly financed (statutory) health system as a second-line therapy; this is the case for Crestor, which is only covered if treatment with generic Simvastatin has failed (TLV, 2007). Similarly, the Netherlands removed benzodiazepines for anxiety disorders from the positive list, unless preceding treatment with antidepressants was unsuccessful (Kroneman & de Jong, 2015); this led to a moderate decrease in benzodiazepine use in general practice (Hoebert et al., 2012). Nevertheless, such restrictions are rare in both countries.

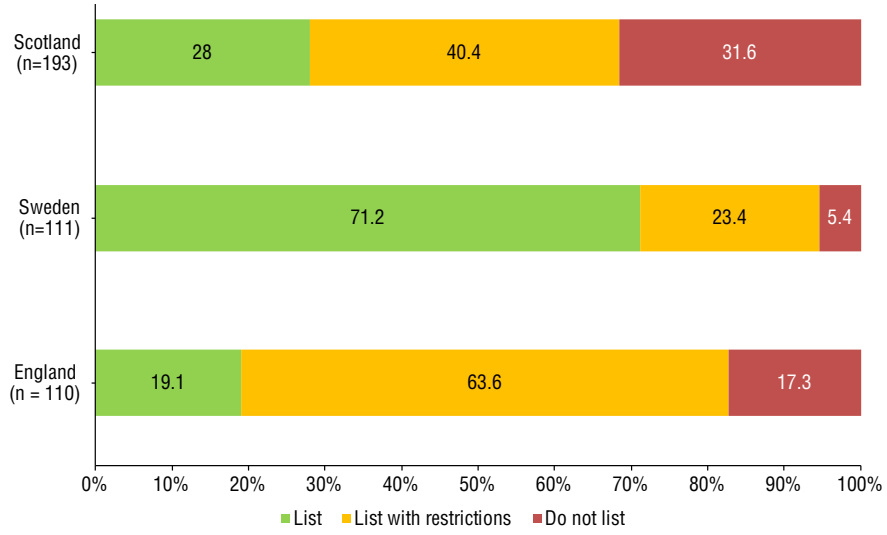
Reimbursement restrictions are overall employed with varying frequencies among countries. An analysis of reimbursement decisions in England, Scotland and Sweden showed that restrictive reimbursement conditions are considerably more rare in Sweden (Nicod & Kanavos, 2012; see Fig. 5.1). According to expert opinion, roughly one in five reimbursement decisions in France included some form of restriction; these are far less common in Ireland and Spain. In Poland, restrictions are common practice, particularly for high-cost medicines in the inpatient sector, while in Belgium they are used relatively frequently for complex therapies.

Reimbursement decisions (especially positive lists) are regularly revised and updated in the majority of included countries (see Table 5.1), most commonly using a three-to-five year window. Ad hoc revisions are additionally carried out as a result of indication changes or extensions, availability of new evidence or market entry (and subsequent evaluation) of a therapeutic alternative. Such revisions can be triggered by competent authorities (for example, Belgium, Denmark, France, Germany, the Netherlands, Sweden, United Kingdom) or by manufacturers (for example, Austria, the Netherlands). In Italy, reimbursement contracts agreed between manufacturers and AIFA have a predetermined period of validity (usually two years); they are automatically renewed unless the manufacturer submits additional evidence for new negotiations sufficiently

in advance of contract expiration (minimum six months). Regular revisions are considered instrumental to the cost-containment function of positive lists (Carone, Schwierz & Xavier, 2012).

Fig. 5.1

Reimbursement decisions in England, Scotland and Sweden, 2007–2009 (shares of full, restricted and no reimbursement in %)



Source: Authors' compilation based on Nicod & Kanavos, 2012.

Many countries in the sample use additional arrangements to enable (broader) access to high-cost medicines for which uncertainty regarding effectiveness, cost-effectiveness or budget impact is high at the time of marketing authorization (Ferrario & Kanavos, 2013; 2015). These so-called managed entry agreements (MEAs) are negotiated between payers and manufacturers. They can be focused primarily on the financial component (for example, price-volume agreements) or be outcome-oriented. In the latter case, one can distinguish between schemes that aim to a) optimize utilization (for example, patient access schemes) or b) generate new evidence to overcome uncertainty (for example, coverage with evidence development[4]). Table 5.2 shows an overview of related practices in compared countries. The highest number of MEAs was identified in Italy. A maximum price is set for each pharmaceutical and can vary downwards by MEA. This can be linked to a predefined sales volume being surpassed (type "financial component"; cf. "volume-dependent price" in Fig. 4.2) or patients not responding to the medicine as expected (type "optimization of use"). MEAs

4. For a slightly different typology of MEAs see Ferrario & Kanavos, 2015.

are also widespread in Spain, to the point where the actual role of the central evaluation and decision-making process is contested. In both Italy and Spain, regional authorities and autonomous communities respectively are responsible for the implementation of pharmaceutical care, including the implementation of MEAs. Mainly due to the confidential nature of MEAs, evidence on their overall impact is limited (Pani et al., 2016).

Table 5.2

Managed Entry Agreements in studied countries, 2016

Country	Financial arrangement (e.g. price-volume agreement)	Financial arrangement linked to optimizing utilization	Primarily evidence generation
Austria	✓		
Belgium	✓		
Denmark		✓	
Finland		None	
France	✓		✓
Germany	✓	✓	
Greece		None, in discussion	
Ireland			✓
Italy	✓	✓	
Netherlands			✓
Poland	✓		
Portugal	✓		✓
Spain	✓	✓	
Sweden			✓
UK – England		✓	✓
UK – Scotland	✓	✓	

Source: Authors' compilation, in part based on data from Ferrario & Kanavos, 2013; 2015.

In many countries, centralized decision-making processes apply only to the outpatient sector (see country profiles in Annex II), as hospitals are usually allowed to have their own positive lists. However, the delineation between inpatient and outpatient setting does not always remain clean-cut. For example, the Netherlands restricted dispensation of certain medicines to hospital pharmacies even for outpatients; these medicines are then financed through the hospital budget. This is currently the case for oral oncology drugs, TNF inhibitors and growth hormones. The goal of this regulation was to mitigate access inequalities caused by disputes between insurers and actors in the distribution chain. However, it introduces a new barrier, as patients can only pick up their medicines from the hospital; to address this, delivery at home

is possible in some cases. In Italy, hospital pharmacies are entitled to a 50% discount on the nominal price of medicines. To further contain costs and enable closer monitoring, hospital pharmacies became legally authorized to dispense certain pharmaceuticals to outpatients as well. Manufacturers in Sweden have often chosen to submit an application to TLV for the centralized decision-making process, even for products which would in all likelihood never be used in the outpatient setting. A positive evaluation outcome has then functioned as a "seal of approval" and thus leverage in negotiations with hospitals. A new model was introduced in 2015 whereby TLV assists the New Therapies group of the county councils' central organization (SALAR) with health economic evaluations based on voluntarily submitted manufacturer dossiers. The New Therapies group can then negotiate a price and/or risk-sharing agreement with the manufacturer and subsequently give a recommendation to the county councils. In the case of a negotiated agreement, the recommendation is to purchase the drug according to its provisions. Contractual arrangements with the manufacturers can be made by individual county councils only. This novel three-part negotiation between county councils, manufacturers and TLV is expected to serve as a model for the future development of pricing and reimbursement in Sweden.

Evidence-based decision-making processes were stepped up in several countries as a response to the economic crisis: Denmark established a new agency on priority-setting; Spain strengthened its HTA network; and France and Germany revised their evaluation criteria.

6. Patient cost-sharing

As a rule, costs for reimbursed medicines in the statutory health system are not exclusively covered through public financing: patients often need to carry some of the burden and pay part of the costs out-of-pocket (see also Chapter 2.1, page 8). Patient cost-sharing can function as a measure of both quality assurance and cost-containment but is not without risks. While it may facilitate the efficient utilization of health services, it can also introduce barriers to care for population groups with lower income.

Cost-sharing usually applies for pharmaceuticals prescribed in outpatient care. Belgium presents an interesting exception to this rule: copayments are also due for pharmaceuticals dispensed to inpatients, albeit at a different rate (mostly on a lump sum basis). A similar measure was established in Spain in the context of the economic crisis, but the Autonomous Communities never actually enforced these inpatient copayments and ongoing political discussion may lead to their official abolishment. In contrast, Sweden and Germany levy copayments on hospitalization days; while pharmaceuticals may be included, they are not calculated separately.

Cost-sharing most commonly takes the form of a percentage share of the retail price of a medicine (see Table 6.1). The height of this share can vary by condition (for example, chronic diseases), income or employment status, or age. In France, cost-sharing levels are determined based on demonstrated benefit. Other countries determine the price share to be carried by the statutory health system as part of the reimbursement decision for each medicine (for example, Finland, Poland, Portugal). In the Finnish system a pharmaceutical can be covered up to 40%, 65% or 100% depending on the reimbursement group it is classified in. In the first two cases, 60% and 35% respectively have to be paid by patients out-of-pocket. In Denmark and Sweden, cost-sharing height depends on the patient's total out-of-pocket costs per year: the higher these are, the lower subsequent cost-sharing rates become. In Ireland and Italy, copayments are fixed amounts that can vary with condition and income and are set at national and regional level, respectively. In Germany, cost-sharing amounts to 10%

of retail price but has both a minimum (€5) and a maximum (€10) cap.[5] In the Netherlands, pharmaceutical cost-sharing falls under the deductible rule: patients have to carry the first €375 of health care costs themselves before health insurance kicks in. Here too, insurers may decide to waive cost-sharing for certain medicines following agreement with manufacturers within the so-called "preferred medicines scheme" (see Chapter 7). In other countries, such as Austria and England, patients have to pay a fixed fee per prescription, prescribed medicine or package. Among the countries in this study, only Scotland completely forgoes pharmaceutical cost-sharing.

As a rule, patients are expected to carry the full costs for over-the-counter medicines. In countries using internal reference pricing (see Chapters 4 and 8), patients must also cover the price difference between reference benchmark and dispensed medicine, if they opt for a more expensive option, on top of other cost-sharing elements.

In almost all countries in this study there are specific provisions to protect patients from excessive out-of-pocket expenditure for pharmaceuticals. In addition to lower cost-sharing rates applicable to specific population groups, such as pensioners, many countries define maximum caps (for example, per patient and per year). Beyond this threshold value, patients are either eligible for lower cost-sharing or fully exempt. Additional insurance options covering cost-sharing are also available in many countries. In some, such options are particularly widespread: in France and the Netherlands more than 90% of the population takes out related voluntary health insurance policies.

Patient cost-sharing was one of the cost-containment mechanisms most frequently modified as part of health systems' response to the economic crisis. Pharmaceutical cost-sharing was both increased (for example, Finland, France, Greece, Ireland, Italy, Portugal, Spain; Sweden modified its financial protection rules, see Thomson et al., 2014) and decreased (mainly Germany, which abolished copayments for drugs with prices at least 30% below the maximum reimbursement amount in 2006, and Scotland, which lowered copayments for drugs in 2008 and 2010, and abolished them in 2011).

5. Pharmaceuticals in the internal reference pricing system with a price at least 30% lower than the maximum reimbursement amount are free of cost-sharing. In the context of individual discount agreements, sickness funds may decide to waive cost-sharing specifically for the medicines in question.

Table 6.1

Characteristics of patient cost-sharing in included countries, 2016

Country	Height of cost-sharing	Cap (per patient) and/or exemptions	Voluntary health insurance covering cost-sharing	Population share with VHI
Austria	5.70€ per prescription	2% of gross income per year for prescription fee (minimum cap: 38 x 5.55€) Exemptions for certain patient groups	For complementary medicine (pharmaceutical copayments not explicitly mentioned)	16% (2012)
Belgium	**Depends on: product, setting and patient group** Between 0% and 100% with defined group-specific max. copayment per drug	Cap per product and total expenses ("maximum invoice": above a certain amount depending on economic and social status, all further expenses are reimbursed)	No	n/a
Denmark	**Depends on: patient expenditure and patient group** up to 123€/year: 100% 123–200€/year: 40% 200–435€/year: 25% above 435€/year: 15%	Special reimbursement options for certain conditions, pensioners, and persons with low income	Yes	52% (2012)
Finland	**Depends on: condition (chronic) and patient group** Up to 45€ per year: 100%, then Basic: 60% copayment; Lower special: 35% copayment; Higher special: 0% copayment + 4.50€ per purchase)	Annual copayment limit 612€, 2.50€ per purchase after that	Yes	10% (2012)
France	**Depends on: therapeutic value, patient group** Therapeutically unique product: 0%; High value: 35%; Moderate value: 70%; Low value: 85%	No Exemptions apply to patients with certain chronic conditions ("Affection Longue Durée")	Yes	~ 90% (2014)
Germany	10% (min. 5€ and max. 10€), exceptional rules in certain cases (see text)	2% of gross income per year for overall copayments (1% of gross income by chronically ill persons) Exemptions for children and adolescents	Yes	Substitutive: 11% of population Complementary: 21% of population (ca. 25% of statutorily insured)

Country	Height of cost-sharing	Cap (per patient) and/or exemptions	Voluntary health insurance covering cost-sharing	Population share with VHI
Greece	**Depends on: condition and patient group** 0%, 10%, 25% (disease-specific); minimum and maximum limit per product 1€ per prescription	No Exemptions for certain patient groups	No	11.5% (2014)
Ireland	**Depends on: product and patient group** General Medical Services (GMS) Scheme: 2.50€ per item; Drugs Payment Scheme (DPS): Full price until max of 144€ is reached	GMS: 25€ per family and month DPS: 144€ per person/family per month	Only for certain cost-intensive inpatient products	No information
Italy	**Depends on: condition and patient group** Fixed copayments (generally €2 per item); amount and exemptions regionally determined	No	No	No information
Netherlands	**Deductible rule** Specific drugs may be excluded from the rule/not covered by the plan depending on the insurer	385€ per year (for all health expenditures)	Yes (there is no insurance covering the deductible)	91% (2009)
Poland	**Depends on: condition and product** 0%, 0% + fixed copayment, 30%, 50% (lump sum reimbursement for certain products exceeding specific cost limits)	No	No	No information
Portugal	**Depends on: product, patient group, income and condition** Product: A 10%; B 31%; C 63%; D 95%; Additional reimbursement for pensioners: 5% or 15%; case-specific rates for certain conditions and vulnerable groups	No	Yes (pharmaceutical copayments not explicitly mentioned)	No information

Country	Height of cost-sharing	Cap (per patient) and/or exemptions	Voluntary health insurance covering cost-sharing	Population share with VHI
Spain	**Depends on: patient group** 10% for pensioners and specific chronic conditions, 60/50/40% for active insured persons depending on income group	For pensioners; per month: 8€ (Income <18 000€) 18€ (Income from 18 000 to 100 000€) 60€ (Income >100 000€)	No	No information
Sweden	**Depends on: total patient expenditure** 0–118€/year: 100% 118–227€/year: 50% 227–421€/year: 25% 421–583€/year: 10%	238€ within 12 months	No	No information
UK – England	~10€ (£8.20; £8.40 as of April 2016) prescription fee	No ("pre-payment certificates" of £29.10 for 3 months or £104.00 for 12 months can be bought to avoid cost-sharing for individual prescriptions)	Yes (pharmaceutical copayments not explicitly mentioned)	12% (2011)
UK – Scotland	None	Not applicable	Yes, but not relevant to drug copayments	8.5% (2011)

Source: Authors' compilation.

7. Targeted measures of cost containment

As illustrated in previous chapters, all countries employ a range of both supply- and demand-side measures aiming to control pharmaceutical costs in the statutory health system. Due to differences in the exact implementation of specific regulations (even when they are applied across countries), the final retail price of a pharmaceutical consists of varying shares reverting to different actors in the distribution chain (manufacturers, wholesalers, pharmacists) and the state (through taxes and rebates). According to EFPIA data on 23 European countries for 2013, on average 66.1% of the retail price of medicines went to manufacturers, 4.9% to wholesalers, 19.2% to pharmacists and 9.8% to the state (EFPIA, 2015).

In the following sections, relevant measures will be examined per targeted stakeholder group. Patient participation as a demand-side measure is explored separately in Chapter 6.

7.1 Industry

In addition to negotiations taking place as part of the overall pricing process in some countries (see Chapter 4), there is a range of measures pertaining to manufacturers and aiming to contain costs in the statutory health system (see Table 7.1).

Discounts and rebates to public payers are among the most commonly applied measures of price control targeting manufacturers and have been assuming an increasing role in many countries over the last few years (Bouvy & Vogler, 2013). While discounts are agreed price reductions for specific payers which apply before the product is purchased, rebates are returned to the payer after the transaction has been completed. Discounts and rebates can be applied universally (legally imposed and pertaining to all manufacturers and payers in the system) or be negotiated between individual payers and

manufacturers. In the inpatient sector, prices are usually agreed on between hospital and manufacturer anyway; thus, discounts and rebates have long found application in this setting. For example, 95% of prices for inpatient medicines in Austria lie between 30 and 35% below those in the retail market. For patented pharmaceuticals outside the internal reference pricing system ("*Festbeträge*") in Germany, manufacturers are obliged to return to the sickness funds a share of 7% of the price (net of VAT) of pharmaceuticals dispensed at the funds' expense. For off-patent medicines, this share goes up to 16% unless they are priced at least 30% below the applicable maximum reimbursement amount. Legally imposed (universal) discounts and rebates have been used by several countries in this study (for example, Belgium, Germany, Greece, Italy, Portugal, Spain – see Vogler et al., 2012).

Table 7.1

Cost-containment measures targeting manufacturers, 2016

Country	Public tendering	Discounts/Rebates to public payers	Price freezes
Austria	Inpatient sector (partially)	Yes	No
Belgium	Inpatient sector	Yes	Yes
Denmark	Inpatient sector	Inpatient sector	Yes
Finland	Inpatient sector	Inpatient sector	Yes
France	Inpatient sector	Yes	Yes
Germany	Outpatient sector	Yes	Yes
Greece	Inpatient sector	Yes	Yes
Ireland	Inpatient sector	Yes	Yes
Italy	Inpatient sector (regional)	Yes	Yes
Netherlands	Outpatient sector	Yes	No
Poland	Inpatient sector	Inpatient sector	No
Portugal	Inpatient sector	Inpatient sector	Yes
Spain	Mainly inpatient sector (regional)	Yes	Yes
Sweden	Inpatient sector	Inpatient sector	No
UK – England	Inpatient sector	Yes	Yes
UK – Scotland	Inpatient sector	Yes	Yes

Source: Authors' compilation.

German sickness funds can also negotiate individual discount contracts with manufacturers. Individual agreements between payers and manufacturers are almost exclusively confidential in all countries and their characteristics, including extent and value, are therefore challenging to describe. This lack of transparency can distort pharmaceutical prices in the mid-term, as negotiated

price reductions are not reflected in price referencing strategies (see also Chapter 4). Individual contracts are most commonly used to stimulate competition in the generics market. A survey of 25 European countries showed that such contracts were a common occurrence (Austria, Belgium, France, Germany, Italy and Portugal in this sample, as well as six other EU countries) and reached reductions of up to 50% of the list price, compared to between 3% and 32.5% for legally imposed discounts and rebates (Vogler et al., 2012). Rebates linked to sales volumes of pharmaceutical companies identified in the same study spanned 1–8% of sales volume. In France, such rebates amounted to €546 million in 2013 and €711 million in 2014 (CEPS, 2015).

Public tendering is also widely used as a way to drive down pharmaceutical prices. As a rule, submitted prices are the main element influencing the outcome of the tendering process, although IMS reports that additional value considerations have begun to gain importance (IMS, 2015). Traditionally, tendering has been employed in the inpatient sector (for example in Denmark, where it is centralized across the country, see AMGROS, 2016), but its application for outpatient drugs has been increasing in recent years. For example, Spain uses public tendering in the outpatient sector for specific pharmaceuticals only, such as antiretrovirals. In Italy, public tendering has often been used to obtain further discounts by means of public procurement based on therapeutic equivalency (different pharmaceuticals for the same target). The Netherlands introduced the so-called "preferred medicines" principle, whereby payers use public tendering to choose specific products from each active substance group, which are then considered favoured for a limited period of time; they are the only ones reimbursed within a given indication for this period. This approach was deemed so successful in controlling prices that other related measures, such as price freezes, were abandoned.

However, price freezes are used in many countries in the study sample (excluding Austria, Poland and Sweden). In such cases, pharmaceutical prices cannot be raised for a predetermined period of time, or payers are entitled to manufacturer rebates compensating for potential price increases since the beginning of the moratorium period.

Price reductions were widely used in response to the economic crisis (for example, Belgium, Finland, France, Greece, Ireland, Italy, Portugal and Spain). In 2014 Sweden introduced a 15-year rule, whereby obligatory price reductions (7.5%) are imposed on pharmaceuticals with a market presence of over 15 years. A similar measure is also in place in Belgium. Following market entry of the high-cost medicines against Hepatitis C, France introduced a disease-specific

cap: the annual budget for Hepatitis C treatments is determined by Parliament. In the same context, the Swedish county councils entered risk-sharing agreements with manufacturers (see also Chapter 5) and received substantial financial support from the central government.[6]

7.2 Pharmacists and Wholesalers

Multiple distribution channels are in place in all comparator countries, but the number and density of pharmacists and wholesalers vary substantially (Kanavos, Schurer & Vogler, 2011). Pharmaceutical distribution is considered a very dynamic landscape characterized by several changes in recent years. The mark-ups and other remuneration elements for both wholesalers and pharmacists are regulated in detail in the majority of investigated countries. They differ in both size and mode of calculation (see Table 7.2). Wholesaler margins in Europe reportedly range between ca. 2% and 8% of the retail price of pharmaceuticals, while average pharmacist margins are less transparent and can, in isolated cases, reach up to 50% of the wholesale price (Kanavos & Wouters, 2014). The majority of compared countries applies regressive pharmacy margins to disincentivize dispensing expensive products. Combinations of percentual and fixed components are also common. In the inpatient sector, distribution margins may not apply at all as hospitals often use tendering processes or negotiate directly with manufacturers.

In many countries in the study sample, rebates or clawback schemes apply to wholesalers and/or pharmacists. For example, German pharmacists have to return €1.77 per dispensed prescription-only medicine to the sickness funds (down from €2.05 before 2013). For over-the-counter (OTC) drugs a 5% rebate was set, levied on retail price. In 2012 these pharmacy rebates amounted to €1.2 billion, or around 4% of SHI pharmaceutical expenditure (Busse & Blümel, 2014). Germany also introduced a temporary wholesaler rebate (0.85% of manufacturer price) in 2011.

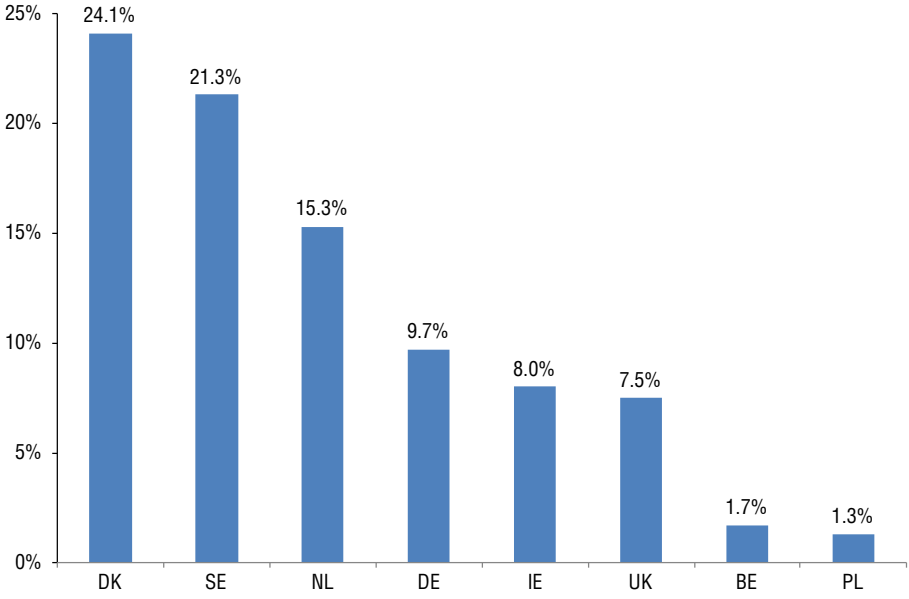
Encouraging the use of parallel imports can also contribute to cost containment in countries where pharmaceutical prices are comparatively high. Parallel imports are made possible by the free movement of goods within the EU internal market. As such, a parallel imported medicinal product can be defined as “a product bought by a third company independent of the original marketing authorisation holder or manufacturer in another Member State of the EU or EEA and imported into [the reference country] to be marketed there in parallel

6. For an in-depth look at strategies regarding high-cost, highly innovative medicines, see WHO, 2015.

to the product marketed by the original pharmaceutical company. In economic terms, parallel import of pharmaceuticals is a consequence of the differing price levels for pharmaceuticals within the EU or EEA" (BfArM, 2016). Parallel trade is widespread in the European pharmaceutical market: the European Commission estimated its turnover at €3.5–5 million in 2009, corresponding to 2–3% of the market. Some countries have introduced measures to promote parallel imports. Such measures can include obliging pharmacists to inform patients about the availability of related products or to stock a predetermined share of parallel imported products or providing financial incentives for parallel import dispensation (Kanavos, Gross & Taylor, 2005). Differences in the implementation of such measures led to varying market penetrations of parallel imports in studied countries (see Fig. 7.1). In Germany, pharmacists are obliged to dispense parallel imported products if their price is 15% (or at least €15) lower than that of the reference product, net of legally imposed rebates ("aut idem" provision, see also Chapter 8). On the reverse side of this mechanism, the price differential within the internal market can lead to considerable parallel exports in countries such as Greece and Portugal, contributing to medicines shortages (see also Vogler et al., 2015).

Fig. 7.1

Share of parallel imports in pharmacy market sales, 2013



Source: EFPIA, 2015.

Table 7.2

Distribution margins in the outpatient sector, rebates and measures on parallel imports, 2016

Country	Wholesaler mark-up/ remuneration		Pharmacists mark-up/ remuneration		Clawbacks and/or rebates	Specific measures for parallel imports
	Type	Size	Type	Size		
Austria	Regressive mark-up	Varies with manufacturer price (two schemes: 15.5–7%; 17.5%–9%) and medicine classification in EKO	Regressive mark-up	Varies with wholesale price (two schemes: 37–3.9% in scheme for "privileged customers" such as public payers, 55–12.5% for private customers)	Wholesalers (discount to pharmacies) Pharmacists (clawback to public payer, 2010-2015)	No
Belgium	Fixed and/or linear mark-up (depends on price)	Variable (with regulated cap)	Fixed and/or linear mark-up (depends on price) + lump sum	Variable (with regulated cap)	Pharmacists	No
Denmark	None (negotiations with manufacturers)	Individual negotiations (competition principle)	Lump sum + linear mark-up	2.30€ per package (incl. 1€ lump sum per prescription), add-on of 9.1% for smaller pharmacies and night duty*	Wholesalers Pharmacists	Yes
Finland	None (negotiations with manufacturers)	Ø 4.3%	Regressive mark-up (different for prescription and OTC medicines)	Varies with wholesale price; Ø 33.3% (per cent of retail sale price)	Wholesalers	No
France	Linear mark-up (capped)	6.68% of manufacturer price (min. 0.30€, max. 30.03€)	Varies with price + lump sum (new calculation formula as of 2015)	Calculated surcharge + 1.02€ for each medicine dispensed (+ 0.51€ per complex prescription)	Wholesalers Pharmacists	No
Germany	Linear mark-up (capped) + lump sum	3.15% (max. 37.80€) + 0.70€ per package	Linear mark-up + lump sum(s)	3% + 8.35€ per package + 0.16€ exceptional payment for out-of-hours services	Pharmacists	Yes
Greece	Regressive mark-up	Mark-up: 4.9% for manufacturer price up to €200, 1.5% if price ≥200.01	Regressive mark-up	2–30%	Pharmacists	No

Country	Wholesaler mark-up/ remuneration		Pharmacists mark-up/ remuneration		Clawbacks and/or rebates	Specific measures for parallel imports
	Type	Size	Type	Size		
Ireland	Linear mark-up	Mark-up 8%	Lump sum with regressive element	Prescription fee (lump sum) based on number of dispensed prescriptions (regressive)	None	No
Italy	Linear mark-up	3% of negotiated price	Linear mark-up with progressive discounts (lump sum add-on in discussion)	11.35–26.6% (30.35% with discounts ranging from 3.75% to 19%) of negotiated list price (net of VAT)	Wholesalers Pharmacists**	No
Netherlands	Varies with payer	Variable (not regulated)	Varies with payer + lump sum	Variable with pharmacy purchase price	Pharmacists (varies with payer)	Yes
Poland	Regressive mark-up	5%; unregulated for OTC (~14.3%)	Regressive mark-up	Varies with manufacturer price Unregulated for OTC (~25%)	Wholesalers Pharmacists (inpatient sector)	No
Portugal	Regressive mark-up + lump sum (varies with price)	Tiered percentage (by manufacturer price), indicatively < 5€: 2.24% + 0.25€ > 50€: 1.18% + 3.68€	Regressive mark-up + lump sum(s)	Tiered percentage (by manufacturer price), indicatively < 5€: 5.58% + 0.63€ > 50€: 2.66% + 8.28€	Wholesalers Pharmacists	No
Spain	Regressive mark-up	7.6%	Linear mark-up (capped), for prices higher than 91€ tiered fixed margins	26%	Wholesalers Pharmacists ***	No
Sweden	None (negotiations with manufacturers)	2.5%	Regressive mark-up	21%	Wholesalers Pharmacists	Yes
United Kingdom	None (negotiations with manufacturers)	Variable	Payment formula based on sales volume, profit and fixed sum	Variable	Wholesalers Pharmacists	Yes

Source: Authors' compilation.
Notes: * In Denmark, gross profit margins for pharmacists are negotiated between the Ministry of Health and the umbrella association of pharmacists every two years and are then used as the basis to determine profit per prescription.
** In Italy, wholesalers and pharmacists are only subject to clawbacks if the retail budget for pharmaceuticals in the tax-financed system is surpassed (11.35% of the total budget).
*** For statutorily reimbursed prescriptions, Spain introduced a 7.5% rebate to be carried jointly by manufacturers, wholesalers and pharmacists.

Wholesalers and pharmacists were less frequently targeted in the context of efficiency measures following the economic crisis. Mainly profit margins were modified in some countries (for example, France, Poland, Portugal).

7.3 Physicians/Prescribers

On the demand side of the pharmaceutical market, physicians and other professions who are entitled to prescribe medicines are also targets for measures aiming at cost containment or efficiency gains through quality assurance (see Table 7.3). Such measures need to balance the scientific independence and professional expertise of prescribers with the overall optimization of pharmaceutical care. In most European countries, physicians have exclusivity in their right to prescribe medicines and thus play a crucial role in their rational use.

Prescribing or pharmaceutical budgets are instruments used to control the pharmaceutical expenditure of individual prescribers or prescriber groups. Within a given timeframe, professionals can prescribe medicines up to a specified expenditure limit. Furthermore, staying within budget limits can be linked to financial incentives. Among comparator countries, prescribing budgets are not frequently employed. In England, they are in place for general practitioners and are determined per administrative unit (clinical commissioning group, CCG) and practice and revised on an annual basis. In contrast, Scottish GPs can prescribe freely. In Germany, regional pharmaceutical budgets were replaced by practice-specific target volumes in 2001. Since then, associations of sickness funds and social health insurance physicians at state level are mandated to determine an annual expenditure volume and derive target volumes for individual practices. Despite the fact that these target volumes are not strictly comparable to budgets, as they lack hard limits beyond which prescribing is no longer possible, exceeding predefined benchmarks can lead to retrospective requests for justification and potential paybacks to sickness funds. In Italy, prescription targets are set by regional governments and local health authorities.

Another strategy towards rational pharmacotherapy and increased efficiency are prescribing guidelines. These are formulated by payers, national health authorities or professional associations and are more or less binding in their enforcement. In most countries, they are understood as guiding principles for high-quality, efficient care, which do not overrule the professional judgement of prescribers. The same is true for monitoring of prescribing behaviours and volumes. Monitoring systems are in place in the majority of compared

Table 7.3

Measures for improved quality and efficiency targeting prescribers, 2016

Country	Pharmaceutical budgets	Prescribing guidelines	Incentives/ Sanctions	Electronic prescribing	Prescription monitoring
Austria	No	Binding	Incentives at regional level Sanctions rare (e.g. termination of contract)	Piloted (opt-out possible)	Yes (at regional level)
Belgium	Quotas	Not binding	Incentives, sanctions (rare)	Mandatory in hospitals, piloted in outpatient sector	Yes
Denmark	No	Not binding	No (consultation)	Yes	Yes
Finland	No	Not binding	No	Yes (mandatory as of 2017)	Yes
France	No	Not binding	As part of pay for performance ("Rémunération sur Objectifs de Santé Publique")	Yes (opt-in possible)	Yes
Germany	No	Binding	Exceeding target volumes may necessitate paybacks	Yes	Yes
Greece	Yes	Binding	Sanctions theoretically possible, rarely implemented	Yes	Yes
Ireland	No	Not binding	No	No (planned)	Yes
Italy	Yes (for GPs, regional and local health authorities)	Not binding	Incentives (regional); Sanctions theoretically possible, not implemented	Yes (partially introduced)	Yes (regional and local health authorities)
Netherlands	No	Not binding	No	Yes	Yes
Poland	No	Not binding	Sanctions for wrong prescriptions	Planned	Yes
Portugal	No	Not binding	Incentives (for specific physician groups)	Yes	Yes
Spain	No	Not binding	Incentives	Yes	No
Sweden	Yes (on province and practice basis)	Not binding	Varies by province	Yes (~98%)	Yes
UK – England	Yes (NHS –> CCGs –> GPs)	Not binding	Incentives	Yes	Yes
UK – Scotland	No	Not binding	No	Yes	Yes

Source: Authors' compilation.

countries, but are organized differently depending on system structure (for example, regionally, per payer, etc.). As a rule, their main purpose consists of benchmarking the prescribing behaviour of individual doctors to that of their peers and facilitating its optimization based on recognizable prescription patterns. Examples of such systems are the "Business Intelligence in Healthcare" platform in Austria, the Ordiprax system in Denmark and the GAmSI system in Germany. Monitoring systems can be linked to incentives or specific agreements (such as the prescription of a predefined quota in low-cost medicines). In France and Sweden, monitoring is linked to pay-for-performance remuneration schemes. In Sweden, the implementation of these strategies varies by county council.

While there is no comprehensive, evidence-based evaluation of the success of the aforementioned measures (Carone, Schwierz & Xavier, 2012), a combination of different strategies is considered to be the most reasonable approach (Vogler, Zimmermann & Habimana, 2013). This reflects the reality in all countries in this study.

In the context of the economic crisis, some countries (for example, Denmark, Greece, Portugal) introduced or expanded prescribing guidelines to curb the inefficient use of pharmaceuticals. Portugal also implemented a new prescription monitoring system.

8. Generics

Generics are usually less costly than their originator products, owing to much lower research and development costs for manufacturers, who profit from patent expirations of already established pharmaceuticals. The use of generics is endorsed in all studied countries as a cost-containment mechanism, with varying intensity. Generic substitution is possible in almost all countries in the sample (with the exception of Austria), while some even make it mandatory (for example, Denmark, Finland, the Netherlands, Sweden). In France, generic substitution is incentivized both through the pay-for-performance remuneration scheme for doctors and through higher profit margins or add-on payments for pharmacists. As a rule, patients can refuse substitution but are then expected to pay the difference in price out-of-pocket (see also Chapter 4). In France, patients refusing substitution have to pay the full amount of the dispensed medicine out-of-pocket and file for subsequent reimbursement in full.

To enable and support generic substitution, prescription of active substance (international nonproprietary name, INN) rather than trade name has been institutionalized in many countries. While this approach is employed in the majority of countries in the study sample, it is variably regulated (see Table 8.1).

In Germany, the so-called "aut idem" provision is used as an indirect measure of price regulation: pharmacists are obliged to dispense a product cheaper than the originator as long as this has not been ruled out by the prescribing physician.[7] For each active substance, products with a negotiated discount contract between the patient's sickness fund and the manufacturer have priority; should such products not be available, cheaper options need to be considered, including parallel imports with a price at least 15% lower than the originator (net of the legally imposed general rebate). A similar regulation was introduced in Belgium in 2012: pharmacists are obliged to dispense a more affordable product but have the choice between the three least expensive options in each equivalence group (they are obliged to dispense the cheapest option for

7. Authorized indication, package size and dose strength need to be identical and the form of administration identical or interchangeable.

INN prescriptions). Further measures to support the use of generics include incentivization within pay-for-performance schemes (for example, France, see above) or defined low-cost quotes for doctors (for example, Belgium).

Table 8.1

Generic policies, 2016

Country	Generic substitution	INN prescribing	Professionals entitled to prescription/ substitution	Share of generics (latest available data)
Austria	No	No	Doctor	Volume: 52.1% Value: 46.9% (Reimbursed pharmaceutical market 2014, see footnote 8; *Source:* OECD, 2016a)
Belgium	Mandatory	No	Doctor/Pharmacist (only for antibiotics and anti-inflammatory medicines)	Volume: 32.7% Value: 14.0% (Reimbursed pharmaceutical market 2014; *Source:* OECD, 2016a)
Denmark	Yes	Not mandatory	Doctor/Pharmacist	Volume: 56.6% Value: 14.9% (Reimbursed pharmaceutical market 2014; *Source:* OECD, 2016a)
Finland	Mandatory	Not mandatory	Pharmacist (Doctor can prohibit substitution)	Volume: 40% Value: 17% (Total pharmaceutical market 2014; *Source:* OECD 2016a)
France	Incentivized	Mandatory	Pharmacist (Doctor can prohibit substitution)	Volume: 31.6% Value: 18.2% (Reimbursed pharmaceutical market 2014; *Source:* CEPS 2015)
Germany	Yes (see text)	Not mandatory	Doctor/Pharmacist	Volume: 81.0% Value: 36.2% (Reimbursed pharmaceutical market 2014; *Source:* OECD, 2016a)
Greece	Mandatory	Mandatory	Doctor/Pharmacist	Volume: 20.1% Value: 19% (Reimbursed pharmaceutical market 2014; Source: OECD, 2016a)

Country	Generic substitution	INN prescribing	Professionals entitled to prescription/ substitution	Share of generics (latest available data)
Ireland	Yes	Not mandatory	Pharmacist	Volume: 34.7% Value: 16.4% (Reimbursed pharmaceutical market 2014; Source: OECD, 2016a)
Italy	Mandatory (if not ruled out by prescriber and accepted by patient)	Mandatory (brand name can be displayed additionally)	Doctor/Pharmacist	Volume generics: 21.0% Value generics: 12.0% (Reimbursed pharmaceutical market 2014; Source: OECD, 2016a)
Netherlands	Mandatory	Mandatory	Doctor/Pharmacist	Volume: 71.4% Value: 16.5% (Reimbursed pharmaceutical market 2014; *Source:* OECD, 2015d)
Poland	Yes	Not mandatory	Doctor/Pharmacist	Volume: 69% Value: 41% (2014; *Source:* Albrecht et al., 2015)
Portugal	Mandatory	Mandatory (brand name can be displayed additionally)	Pharmacist	Volume: 40.8% Value: 24.1% (Reimbursed pharmaceutical market 2014; *Source:* OECD, 2016a)
Spain	Mandatory	Mandatory	Doctor/Pharmacist	Volume: 47.6% Value: 21.8% (Reimbursed pharmaceutical market 2014; *Source:* OECD, 2016a)
Sweden	Mandatory	Not mandatory	Doctor/Pharmacist	Volume: 55% Value: 13% (2014; *Source:* Albrecht et al., 2015)
United Kingdom	Yes	Yes	Doctor/Pharmacist	Volume: 84.3% Value: 34.9% (Reimbursed pharmaceutical market 2014; *Source:* OECD, 22016a)

Source: Authors' compilation.

Relevant regulation and its implementation also influence the market penetration of generic products. In terms of volume, the United Kingdom and Germany lead the sample with 83.4% and 79.5% respectively. At the other end of the spectrum are countries like Italy, Greece, Ireland and France, all with shares of 30% or lower (see Table 8.1). In terms of value, Poland (41%) and Germany (37%) take the top two spots in the sample,[8] with a number of countries showing shares of around 15% at the other end of the spectrum.

Several countries took steps to tighten their generics policies in response to the economic crisis. For example, Belgium and Spain encouraged the cost-efficient use of medicines (and thus generics) and generic substitution, respectively. Greece and Portugal introduced INN prescribing. According to the OECD, such policies have in all likelihood facilitated the increasing market share of generics in many countries over the past ten years (OECD, 2015). However, most European countries could still enhance their endorsement of generics, for example, by accelerating market access for generics, promoting their use and lowering their prices (Bouvy & Vogler, 2013; Kanavos 2014).

8. While the value share of generics in Austria appears even higher in OECD figures, IMS data place the actual figure much lower, at 19% (value) and 35% (volume) in 2014. This is in all likelihood due to the fact that Austria data reported to the OECD concern the potentially reimbursable market compared to market shares in other countries.

9. International comparisons of pharmaceutical prices

Undertaking international comparisons of pharmaceutical prices requires the consideration of a multitude of methodological issues and country-specific factors. Depending on the goal of each study both the general approach and the exact methodological configuration can vary substantially across important parameters. Thus, this chapter has two aims and is structured accordingly: first, to provide a brief introduction to methodological considerations for international price comparisons that are vital for understanding and interpreting results; then, in accompaniment to the detailed description of country-level mechanisms of pharmaceutical regulation provided in previous chapters, to give an overview of (resulting) price levels in studied countries.

9.1 Methodological elements in international comparisons of pharmaceutical prices

There are two main types of cross-country comparison most commonly found in the international literature:

a. comparisons of (multiple) individual products, usually with a view to benchmark prices (and potentially enable reference pricing) or explore potential price discriminations; and
b. comparisons of product samples (or "baskets") aiming to explore differences in average price levels and provide insight on the effectiveness of national regulatory instruments (Danzon & Kim, 1998; Wagner & McCarthy, 2004).

In this context, it is impossible to stipulate one methodological approach to fit all intentions; however, important dimensions that need to be handled carefully in the context of international comparisons of pharmaceutical prices have been identified (Andersson, 1993) and evaluated (Machado et al., 2011; Vogler & Martikainen, 2016). They are presented and briefly discussed below.

Choice of comparator countries

Andersson (1993) supports that all international price comparisons fundamentally assume that included countries are sufficiently comparable and/or that consumers in different countries have the same preferences in regard to pharmaceuticals. However, actual consumption patterns can vary considerably even among relatively homogeneous country samples (see also Chapter 2) and reflect, among others, demographic and epidemiologic characteristics, traditions in clinical management and issues of reimbursement and distribution, but also the country's general economic power and willingness to pay. Identifying countries that are comparable across all these factors is usually difficult, if not impossible, to achieve. In some cases it can therefore be assumed that countries in geographical proximity or those with similar economic profiles also demonstrate comparable health parameters (Machado et al., 2011). However, this can be only partially applicable depending on the study's objective and specific research questions (WHO, 2008). The consideration of economic factors itself can furthermore take different shapes: while some studies differentiate between high-income and low-income countries (Cameron et al., 2009; Danzon & Furukawa, 2008; Vogler, 2016), ability and willingness to pay can vary substantially within these groups. This component is particularly decisive for comparisons aiming to directly inform pricing or related regulation. In this context, several authors find that GDP per capita should be considered in the selection of comparator countries and/or used to adjust included prices (Danzon & Furukawa, 2008; Machado et al., 2011; Cassel & Ulrich, 2012; Mahlich et al., 2014), not least as an indicator of affordability in different countries. However, this is rarely the case in published comparative studies (Machado et al., 2011).

Selection of included pharmaceuticals

To be able to formulate representative conclusions about the average price level in different countries, comparative studies would ideally have to be based on randomly selected samples of pharmaceuticals. Varying availability of different drugs across countries renders this approach particularly challenging to implement in practice. Alternatively, Andersson and McMenamin recommend forming a relatively big basket with the top (100–200) pharmaceuticals in terms of sales or volume in each country, as these may to some extent also reflect

respective consumer preferences (Andersson, 1993). This approach has been applied by a number of published comparisons (Machado et al., 2011). However, even "best-seller"-samples will in all likelihood not be fully available in all countries in a study; in such cases, it is methodologically sounder to limit calculations to available medicines instead of imputing missing prices (Danzon & Kim, 1998). Furthermore, best-seller approaches bear the risk of mainly or solely including originator products (Wagner & McCarthy, 2004). This can substantially bias the validity of results regarding general average price levels, as generics account for a substantial share of prescriptions in many countries (see Chapter 8). Pharmaceuticals with multiple active substances pose an additional challenge, as the ratio between molecules may vary across countries. Finally, *a priori* excluding over-the-counter medicines can also introduce biases and/or further limit samples (Danzon & Kim, 1998). If the goal is to explore prices for a specific indication or even a specific product, smaller sample sizes are also found in the literature.

Selection of appropriate prices

Depending on study objectives, manufacturer, wholesaler or retail prices can be used for cross-country comparisons and could lead to substantial differences in results. All three price types may be plagued by inconsistencies. Most comparative studies use manufacturer sale prices (Wagner & McCarthy, 2004; Machado et al., 2011). Given the differences in distribution margins illustrated in Chapter 7, these build a reasonable, relatively uniform basis for comparison. However, publicly available list prices do not reflect discounts and rebates, which can have a substantial effect on actual prices and thus pharmaceutical expenditure (see also Chapters 4 and 7). Overall, the public availability of price information may vary: if different price types are available in comparator countries and used for one study, additional caution is required to ensure that truly comparable prices are considered. This concerns both subtracting distribution margins and accounting for varying VAT rates (see also Chapter 4). Additionally, when prices are not identical throughout the country (for example for the hospital sector, the OTC market and the private sector) and are thus not available in a single national price list, information will in all likelihood need to be collected from individual health care providers (Vogler & Martikainen, 2016).

Comparability of included products

Package size, dose strength, form of administration and dispensation modalities can also vary across countries and reflect both therapeutic traditions and regulatory differences. Many studies use a "typical" package in the reference country as their unit of comparison; this approach can substantially bias results

as the same package may be atypical (or not available) in comparator countries. On the other hand, limiting the comparison to identical packages only would severely restrict sample size. Different approaches have been used to enable aggregation across dose strengths, forms of administration and packages, and to determine one price per comparable entity. This can be a "standard unit" (for example, pill, capsule, injection vial, 5ml of liquid, etc.), a gram, or a defined daily dose (DDD; see Vogler & Martikainen, 2016 on the suitability of DDDs for international price comparisons). All three approaches lead to comparable results as they essentially constitute scaling of prices on the basis of the quantity of the active substance contained in a package. While this information is not always explicitly mentioned in pharmaceutical price comparisons, standard units and DDDs are often used to normalize prices (Danzon & Kim, 1998; Machado et al., 2011).

Calculating average prices

Comparative studies exploring average prices on the basis of a larger sample of products need to account for the fact that not all included pharmaceuticals will have the same impact on the general price level in a country. In this respect, consumption patterns and local epidemiological factors can render some medicines "more important" than others (WHO, 2008), a fact which would be ignored by simple arithmetic averaging. In such cases, it is appropriate to use weighted price indexes, for example on the basis of sales, market shares or prescription volumes. Depending on which country is to be used as a reference to create weights, different indexes can be constructed (for example, the Lespeyres index, the Paasche index or the Fischer index; see Danzon & Kim, 1998; Danzon & Chao, 2000; Danzon & Furukawa, 2008). Price comparisons aiming to explore the effect of regulation on prices in a given country tend to use this country as a weighting reference (Wagner & McCarthy, 2004), potentially leading to a relative underestimation of its general price level (also known as the Gerschenkron effect, see Danzon & Kim, 1998).

Conversion of prices into one currency

A comparison of international prices is only possible if these are expressed in a common currency. For this purpose, official exchange rates are the most common choice (Andersson, 1993; Machado et al., 2011). Some authors expressly favour exchange rates in this context, as pharmaceuticals are internationally tradeable goods and exchange rates are used to determine manufacturers' actual net revenues from foreign sales (Danzon & Kim, 1998). Nevertheless, exchange rates are volatile and strongly influenced by capital flows between countries as well as by currency speculations; they therefore usually depict additional elements beyond price differences (Burg, 2011). To

mitigate this problem, some studies use the average exchange rate over a time period instead of at a given date. Furthermore, conversions using exchange rates do not account for variability in purchasing power among countries with the same currency (for example, those in the Eurozone) stemming from differences in income and general price level. Purchasing power parities (PPPs) are an alternative to exchange rates and address the aforementioned issues: they offer a more representative reflection of actual price levels and are less unstable and susceptible to speculation. However, their mode of calculation and robustness are not uncontested (Andersson, 1993; Burg, 2011).

Reviews of the methodological quality of international pharmaceutical price comparisons uniformly conclude that they all demonstrate methodological problems and/or are not adequately transparent about methodological decisions (Andersson, 1993; Wagner & McCarthy, 2004; Machado et al., 2011). Especially if price comparisons are to be used to guide political decisions, it is crucial that their underlying methodology is clearly described and comprehensible.

9.2 Comparison of price levels among studied countries

Comparative studies found in international literature are written from varying perspectives and employ different methodologies (see above). The majority of these studies focuses on cross-country comparisons of prices for (a number of) individual products, often within one indication field (for example, oncologics), within a certain price spectrum (for example, high-priced medicines) or authorized/evaluated within a given timeframe (for example, pharmaceuticals entering the German market after 2011). To provide a concise and representative overview about the situation in studied countries, the following paragraphs focus on published studies comparing comprehensive baskets of pharmaceuticals.

Table 9.1 summarizes the results of four different approaches using the best-seller principle described above:

1. Two publications based on the 2005 Eurostat and OECD Purchasing Power Programme compared retail prices (including margins and taxes; compare Tables 4.4 and 7.2) at country level to the EU and OECD averages at the time (Konijn, 2007; OECD, 2008). Germany demonstrated the highest average prices at 28% and 27% above the EU and OECD

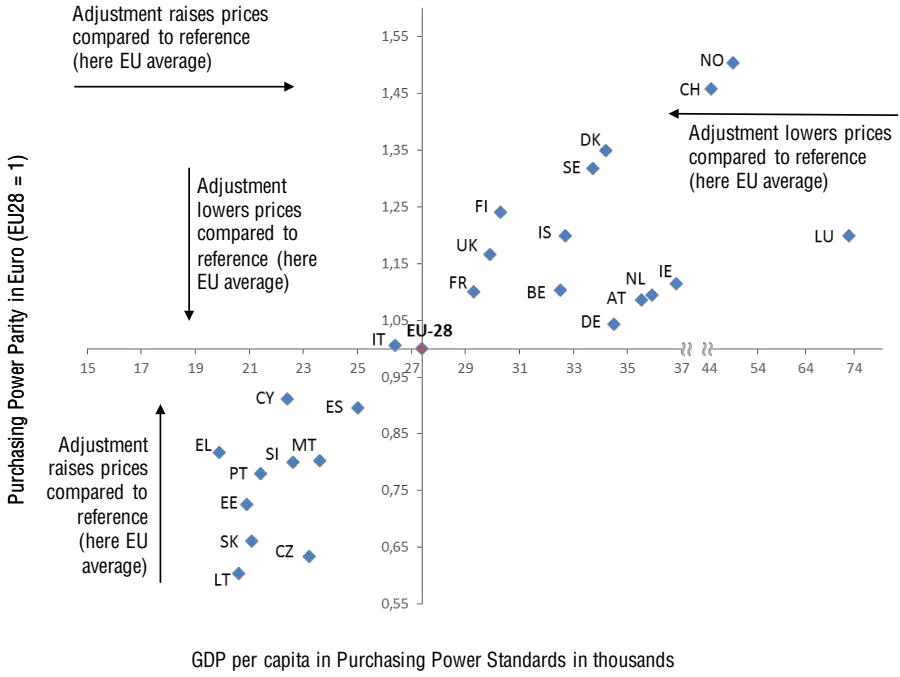
averages, respectively, followed relatively closely by Denmark, Ireland and Italy. Poland, Greece and Spain were at the other end of the spectrum with average prices at least 20% lower than the EU and OECD averages.

2. Based on newer IMS data on retail prices net of VAT, the study by Brekke and Holmås (2012) compared average wholesale and retail prices in nine countries in reference to Sweden (eight countries in our sample and Norway). In the overall sample, the highest aggregated retail prices were found in Ireland and the lowest in the United Kingdom, when identical packs were considered; once prices were scaled by dose, Germany demonstrated the highest prices, while Ireland (now in second place) was much closer to Denmark than in the identical pack comparison. A similar pattern emerges for wholesale prices, with price differences to Sweden (the reference country) maintaining directionality and diminishing in size; the only exception here was Finland, which showed average retail prices about 10 percentage points higher than Sweden and wholesale prices about 10 percentage points lower.
3. Annual calculations comparing manufacturer prices in the context of the Pharmaceutical Price Regulation Scheme (see also Chapter 3) found that, for the period from 2005 to 2011 and among ten comparator countries, Germany had the highest average prices (excluding distribution margins and taxes) in reference to the United Kingdom.
4. While all previous approaches used exchange rates to make prices in different currencies comparable, a newer study comparing prices in Germany to Austria, France, the Netherlands and the United Kingdom compared price calculations based on exchange rates and PPPs as well as a further adjustment for GDP (see Section 9.1). Adjusting prices using PPPs increases the difference between the four comparator countries and Germany (i.e. average prices in all five are lower compared to the calculation using exchange rates); an additional adjustment for GDP leads to a decrease in average price difference to Germany for France and the United Kingdom compared to the calculation using PPPs only. France (lower GDP per capita but a higher PPP than Germany) is the only comparator for which a GDP adjustment brings average prices closer to their German counterparts compared to no adjustment. Other studies that compared the application of exchange rates and PPPs to adjust international prices also found that using PPPs depreciates prices in countries with higher income levels and appreciates them in countries with lower income levels (Danzon & Furukawa, 2008; Mahlich et al.,

2014), indicating that pharmaceutical prices are in general higher or lower, respectively, than those for other goods in comparison to the reference country (see also Fig. 9.1).

Fig. 9.1

Effects of adjusting for PPP and/or GDP in international comparisons of pharmaceutical prices



Sources: Authors' compilation, based on OECD, 2016d; European Central Bank, 2016; and Central Bank of Iceland, 2016 (the average annual exchange rate in 2014 was used for calculations on the y-axis).

Taking Germany as a starting point and taking price components into account, these four studies reach consistent results despite their variable baskets: on average Germany had 10% higher manufacturer prices and 30% higher retail prices (incl. VAT) than the United Kingdom in 2005; this difference had surpassed 50% for both manufacturer and retail prices (net of VAT) by 2010 and the amplitude seems to have decreased again by 2015. Ireland is another interesting example: manufacturer prices are shown to have increased substantially between 2005 and 2009, while the consideration of pharmacy and wholesaler margins raises prices even above Germany; manufacturer prices show a decreasing trend after 2009, in all likelihood as a result of the economic

crisis. The above observations also clearly highlight the importance of carefully reflecting on price type, sample size and composition as well as adjustment practices when evaluating the results of international comparisons.

An econometric analysis of IMS data on 39 innovative medicines in 13 countries showed that a higher ability to pay (represented by GDP) led to higher prices and using external reference pricing led to reduced prices in the referencing countries (see also Chapter 4). Willingness to pay (represented by total health expenditure) and regulatory price-setting had no significant impact on price level, but ATC class did. The same study found that while international prices were on average 14.3% lower than prices in Germany, there were specific ATC classes for which Danish and Swedish prices were in fact higher than German prices (Cassel & Ulrich, 2012).

The studies described so far did not explicitly consider discounts and/or rebates enforced by law or agreed between individual payers and manufacturers. The latter are impossible to capture as they are almost exclusively confidential. An Austrian study comparing 2013 prices for 30 cost-intensive medicines in 16 EU countries encompasses separate calculations to account for the legally enforced "rebate", or rather discount, implemented in Germany (Vogler, Zimmermann & Habl, 2014). Without considering this rebate, Germany was the country with the highest number of top prices in the sample. Once the rebate was taken into account, Sweden, Denmark and Austria had more top prices than Germany. It is important to note that rebates in other countries in the sample were not considered. Prices in the study varied by 25 to 251% without consideration of the German rebate; the variation spectrum was narrower once the rebate was included in calculations. The AMNOG regulation, which introduced value-based pricing in Germany, took effect in 2011; the authors of the aforementioned study comment on the fact that German prices were still relatively high two years later but the delay in demonstrable effect of introduced measures needs to be considered when interpreting these results.

Table 9.1

Comparative price levels from four international comparisons

Year (reference)	2005 (Konijn, 2007; OECD, 2008)		2010 (Brekke & Holmås, 2012)				2005-2011 (ABPI, 2014; Department of Health, 2012)								2015 (Busse et al., 2016)		
Pharmaceutical basket	181 (comparable best-sellers; 75% originator products, 25% generics		153 (prescription-only medicines without generic competition in Sweden)				230 (best-seller originator products in primary care in England)								260 (best-seller originator products without generic competition reimbursed by the statutory health system in 2013)		
Price types	Pharmacy retail price including margins and VAT		Pharmacy retail price without VAT		Wholesale price		Manufacturer price								Manufacturer price		
Price conversion	Exchange rates (2005 average)*		Unclear**		Unclear**		Exchange rates (average of the 4th quartile every year)								Exchange rates 01.02.2015	Purchasing power parities (PPPs) 2013	PPPs and GDP 2013
	EU	OECD	All (per pack)	All (per dose)	All (per pack)	All (per dose)	2005	2006	2007	2008	2009	2010	2011				
DE	128	127	124	134	119	129	108	105	113	142	169	155	153		100	100	100
DK	121	120	118	122	116	119	-	-	-	-	-	-	-		96	74	73
IE	119	118	145	126	139	117	103	105	112	134	144	133	123		-	-	-
IT	118	117	-	-			84	78	83	101	120	113	101		-	-	-
FI	111	111	112	110	90	89	101	96	99	119	113	105	103		-	-	-
NL	109	109	97	98	94	93	95	94	99	115	-	-	117		90	87	81
AT	107	106	117	116	102	101	96	94	96	111	125	117	115		88	83	79
BE	106	105	99	105	97	100	95	97	101	122	132	122	123		-	-	-
EU25	100	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
OECD		100	-	-	-	-	-	-	-	-	-	-	-		-	-	-
SE	95	94	100	100	100	100	-	103	105	116	126	130	134		-	-	-
PT	94	94	-	-	-	-	-	-	-	-	-	-	-		-	-	-
UK	93	92	72	77	76	81	100	100	100	100	100	100	100		87	74	84
FR	91	91	-	-	-	-	96	89	92	108	115	104	104		75	70	80
ES	77	77	-	-	-	-	84	85	88	109	118	106	101		-	-	-
GR	73	73	-	-	-	-	-	-	-	-	-	-	-		-	-	-
PL	68	68	-	-	-	-	-	-	-	-	-	-	-		-	-	-

Source: Authors' compilation based on mentioned references.
Notes: *The studies use price level indices, which constitute the ratio of PPP to exchange rate.
**A previous iteration of this study used average exchange rates over a six-month period.

10. Conclusions

All countries employ a mix of regulatory mechanisms to contain pharmaceutical expenditure and ensure quality and efficiency in pharmaceutical care, albeit with varying configurations and rigour. This variation also influences the extent of publicly financed pharmaceutical costs. Overall, observed differences in pharmaceutical expenditure should be interpreted in conjunction with the differing volume and composition of consumption, and price levels, as well as dispensation practices and their impact on the measurement of pharmaceutical costs.

While for some countries, timely and/or equitable access to new medicines may constitute a priority – or pose a substantial challenge – others may primarily be concerned with quality of care and containing public pharmaceutical expenditure. With the proliferation of specialty medicines and recent examples of high-cost pharmaceuticals with proven therapeutic benefit and substantial target populations, sustainability of financing in pharmaceutical care is another overarching concern to be addressed.

Pharmaceutical prices are more or less directly controlled in all countries included in this study. Despite their widespread use, current pricing policies are not without their limitations. While external reference pricing may induce strategic launching or hamper lower pricing in countries with lower ability to pay, setting prices based on therapeutic benefit (and/or other elements of value) can also lead to patient access issues if companies decide to remove their products from the market due to unsatisfactory price levels. Nevertheless, value-based pricing and other, more novel approaches are being increasingly discussed as alternatives to traditionally implemented mechanisms, but implementation difficulties would need to be addressed at national and European level.

Despite the widespread use of external reference pricing in European countries, comparative studies show that prices have not converged as could be expected, at least for originator products. However, such comparisons are inherently plagued by a number of methodological limitations and should

therefore be interpreted with caution, particularly when using international benchmarks for pricing pharmaceutical products or in the context of reconsidering relevant regulation or policies.

No definitive evidence has yet been produced on the effects of different cost-containment measures on patient outcomes. Depending on the foremost policy concerns in each country, different levers will have to be used to enable the delivery of appropriate care at affordable prices; monitoring of implemented regulation is vital to ensure that patient access and sustainability of financing are taken into account.

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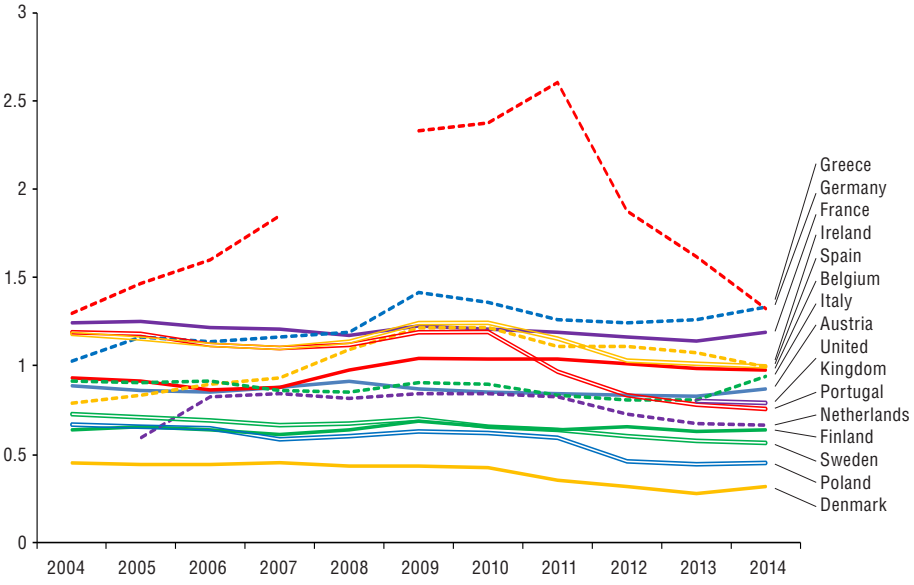
Annex I

Additional visualizations of health expenditure (OECD, 2016a)

A.1

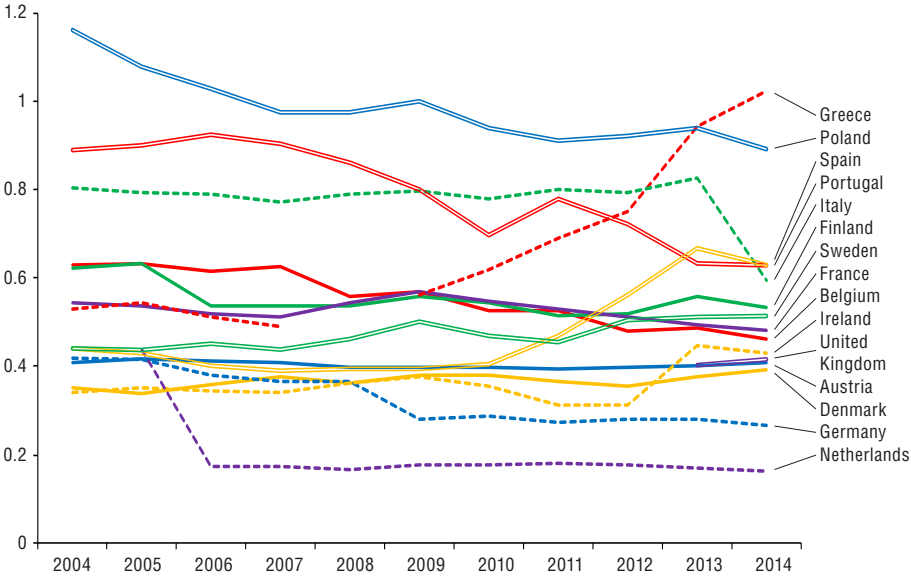
Public expenditure on "retail" pharmaceuticals and other medical non-durables as a share of GDP, 2004–2014



Source: OECD, 2016a.

A.2

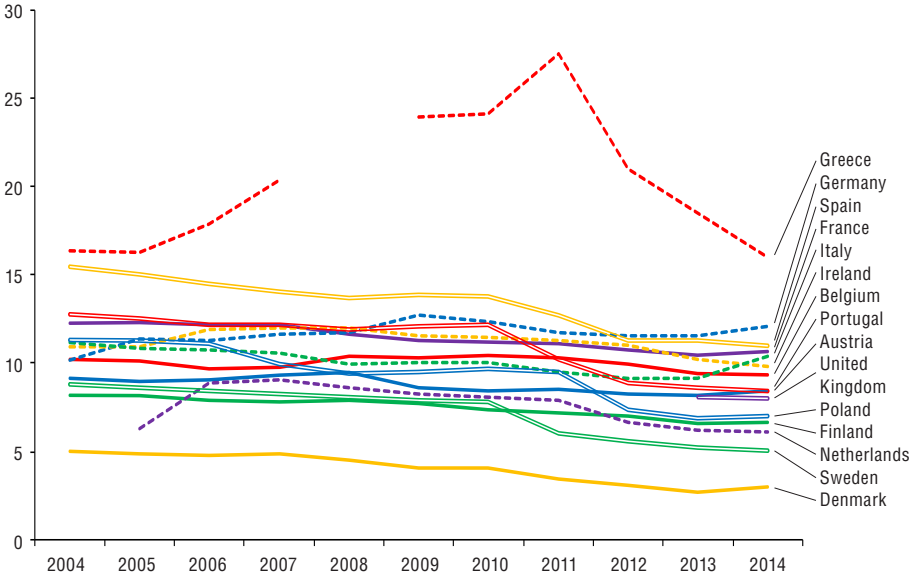
Private expenditure on "retail" pharmaceuticals and other medical non-durables as a share of GDP, 2004–2014



Source: OECD, 2016a.

A.3

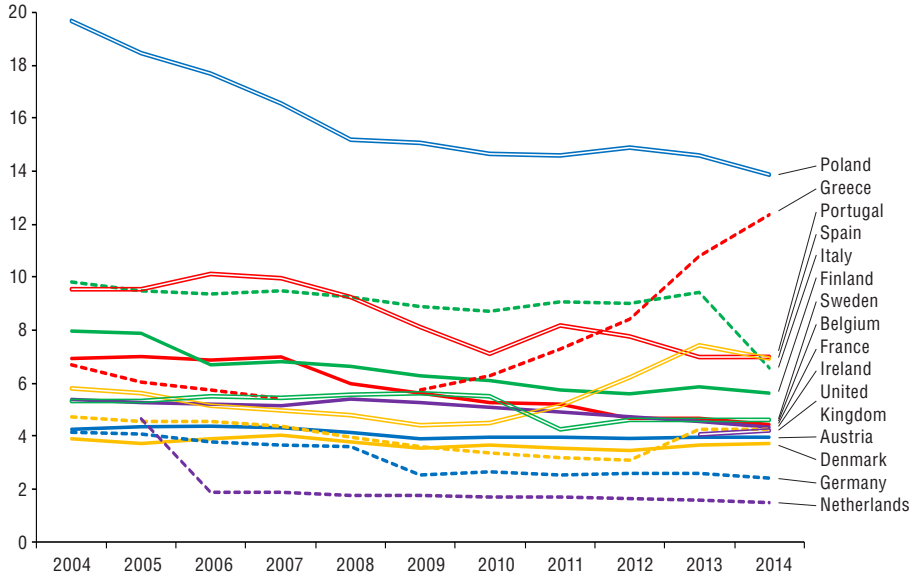
Public expenditure on "retail" pharmaceuticals and other medical non-durables as a share of current health expenditure, 2004–2014



Source: OECD, 2016a.

A.4

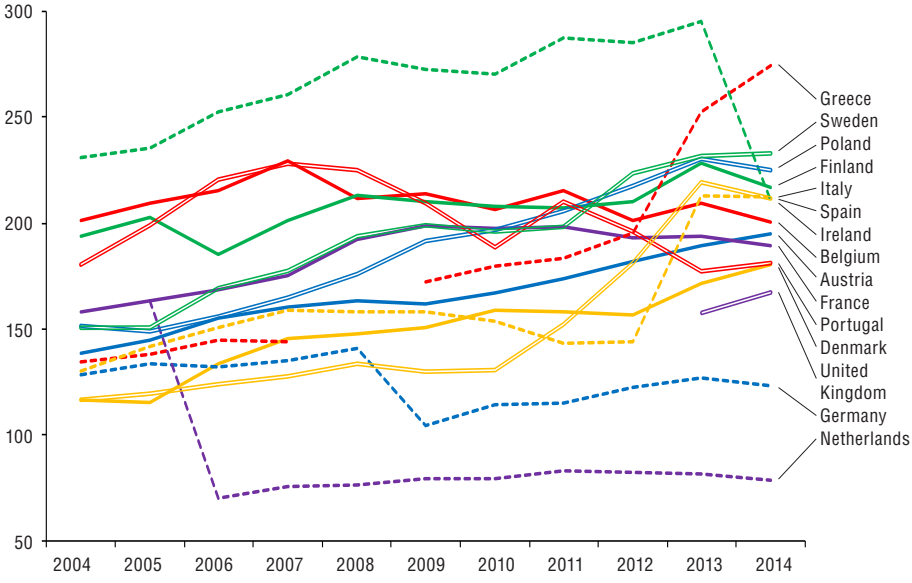
Private expenditure on "retail" pharmaceuticals and other medical non-durables as a share of current health expenditure, 2004–2014



Source: OECD, 2016a.

A.5

Private per capita expenditure on "retail" pharmaceuticals and other medical non-durables (in US$ PPP), 2004–2014



Source: OECD, 2016a.

Annex II

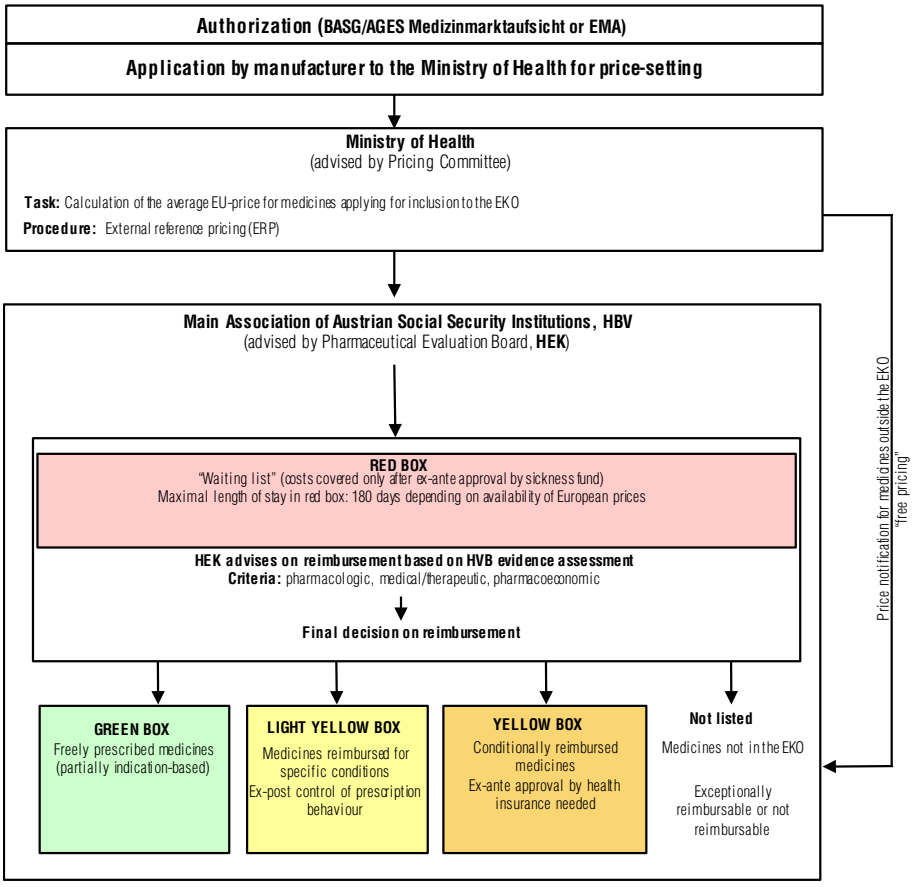
Key information and reimbursement/pricing systems in 15 European countries

Austria

Key information	
Population (2014)	8.5 M
Gross domestic product (GDP) per capita (2014)	47 707 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	10.3%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	12.4%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	609.2 (US$ PPP)
Organization of the health care system	Social insurance system (sickness funds)
National regulatory authority responsible for marketing authorization	Austrian Federal Office for Safety in Health Care/AGES Medicines and Medical Devices Agency (*Bundesamt für Sicherheit im Gesundheitswesen*, BASG/ AGES *Medizinmarktaufsicht*)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	Federal Ministry of Health, Pricing Committee (*Bundesministerium für Gesundheit, Preiskommission*)
Scope of centralized pricing regulation	Reimbursable medicines in the outpatient sector
Reimbursement: competent authority	Main Association of Austrian Social Security Institutions (HVB) advised by its Pharmaceutical Evaluation Board (HEK) (*Hauptverband der österreichischen Sozialversicherungsträger, HVB/ Heilmittel-Evaluierungs-Kommission*, HEK)
Scope of centralized reimbursement decisions	Pharmaceuticals in the outpatient sector (hospitals maintain own lists)
• Assessment of the scientific evidence	HVB working groups
• Appraisal/ Recommendation on inclusion in positive list	HEK
• Final decision	HVB Director

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Austria

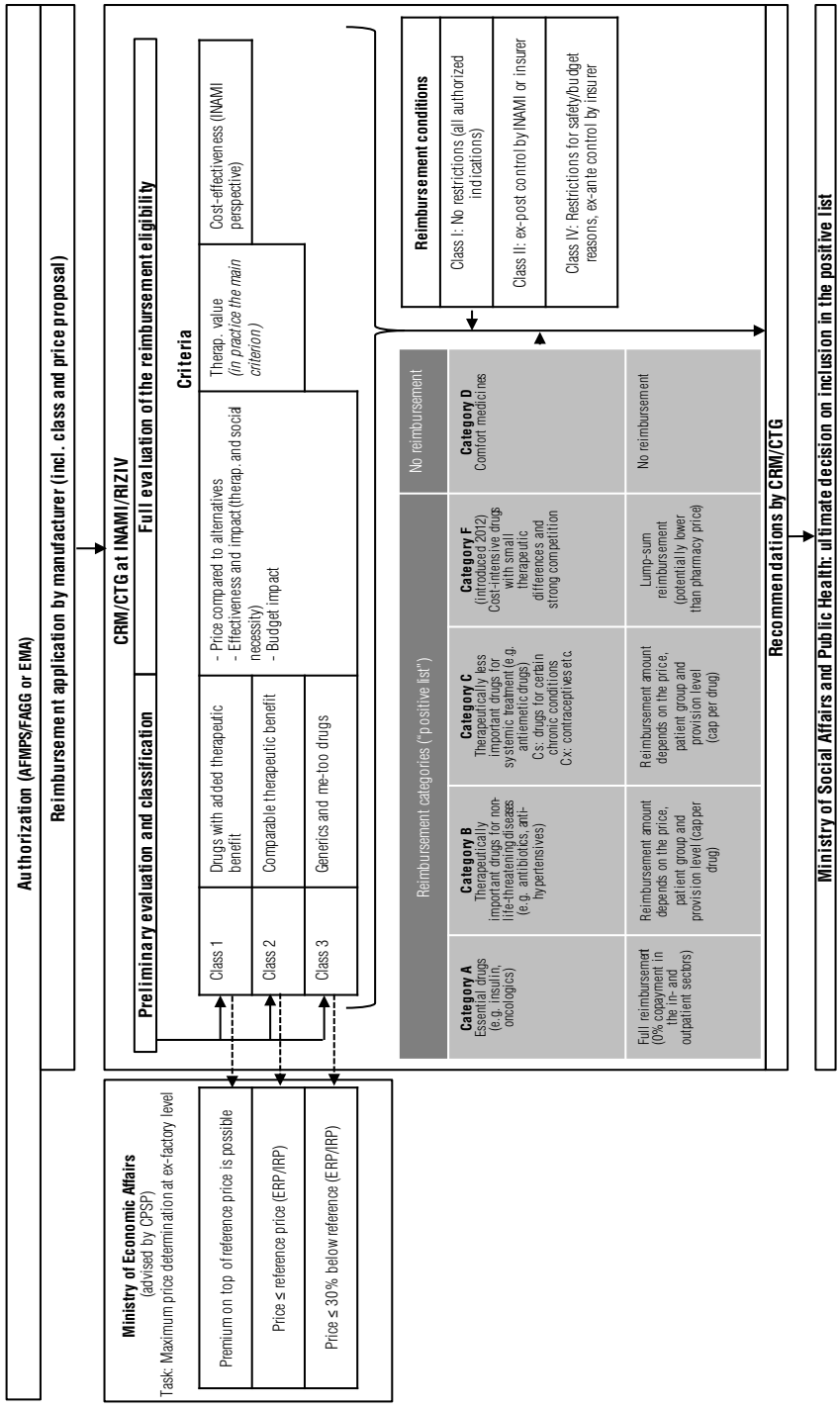


Belgium

Key information	
Population (2014)	11.2 M
Gross domestic product (GDP) per capita (2014)	43 409 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	10.4%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	13.8%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	623.0 (US$ PPP)
Organization of the health care system	Social health insurance (sickness funds)
National regulatory authority responsible for marketing authorization	Federal Agency for Medicinal and Health Products (*Federaal Agentschap voor Geneesmiddelen en Gezondheidsproducten, FAGG/Agence fédérale des médicaments et des produits de santé*, AFMPS)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	Ministry of Economic Affairs, Small and Medium-sized Enterprises, Self-Employment and Energy Minister decides advised by the Pricing Committee for Pharmaceuticals (*Commission des Prix des Spécialités Pharmaceutiques*, CPSP)
Scope of centralized pricing regulation	Prescription-only medicines
Reimbursement: competent authority	National Institute for Health and Disability Insurance (*Rijksinstituut voor ziekte- en invaliditeitsverzekering*, RIZIV/*Institut National d'Assurance Maladie-Invalidité*, INAMI)
Scope of centralized reimbursement decisions	Outpatient and inpatient sectors
• Assessment of the scientific evidence	INAMI/RIZIV working groups
• Appraisal/ Recommendation on inclusion in positive list	Commission for the Reimbursement of Pharmaceuticals (*Commissie voor Tagemoetkoming Geneesmiddelen*, CTG/*Commission de Remboursement des Médiacaments*, GRM)
• Final decision	Ministry of Social Affairs and Public Health

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Belgium

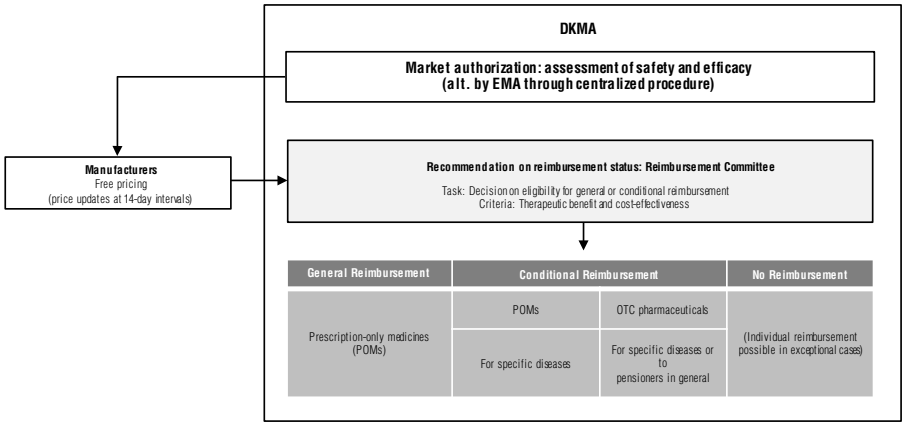


Denmark

Key information	
Population (2014)	5.6 M
Gross domestic product (GDP) per capita (2014)	45 996 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	10.6%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014) **Total pharmaceutical expenditure as % of total health care spending* (2014) (Lif, 2015)**	6.7% 12.4%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	324.6 (US$ PPP)
Organization of the health care system	Tax-financed (type "national health service")
National regulatory authority responsible for marketing authorization	Danish Medicines Agency (*Lægemiddelstyrelsen*, DKMA)
Level of decision-making on pricing/reimbursement	Central decision on whether a pharmaceutical is reimbursable. Reimbursed amount: Percentage of cheapest generic prescription medicine on the market (manufacturers report prices every two weeks)
Pricing: competent authority	Free pricing
Scope of centralized pricing regulation	None. Pharmaceuticals for hospital use are purchased at lowest possible prices through tenders and bulk purchasing (by AMGROS, the pharmaceutical procurement service for the five regional authorities in Denmark)
Reimbursement: competent authority	DKMA
Scope of centralized reimbursement decisions	Prescription drugs for retail sale
• Assessment of the scientific evidence	DKMA working groups
• Appraisal/ Recommendation on inclusion in positive list	Reimbursement Committee at the DKMA
• Final decision	DKMA

Sources: Lif, 2015; OECD, 2016a; 2016b; 2016c; * not including costs for nursing home care (i.e. care and housing; pharmaceuticals which are purchased by the residents in retail receive reimbursement at the individual level and are included).

Pricing and reimbursement in the outpatient sector, Denmark

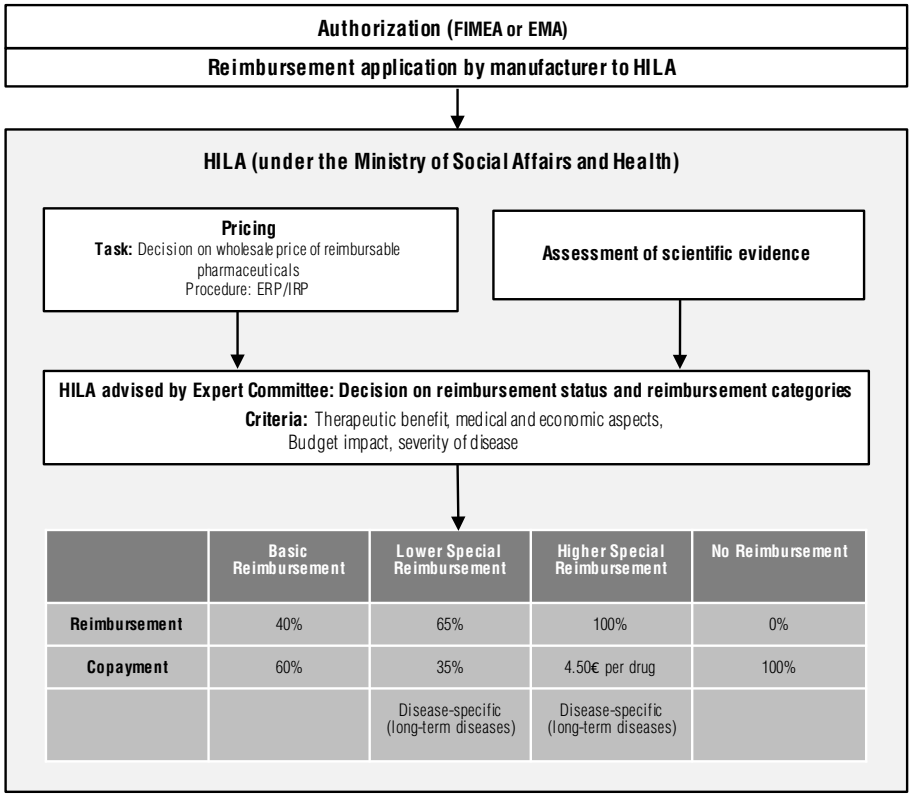


Finland

Key information	
Population (2014)	5.5 M
Gross domestic product (GDP) per capita (2014)	40 694 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	9.5%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	12.3%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	476.0 (US$ PPP)
Organization of the health care system	Tax-financed system, delivery of health care organized at municipal level
National regulatory authority responsible for marketing authorization	Finnish Medicines Agency (*Lääkealan turvallisuus- ja kehittämiskeskus*, FIMEA)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	Pharmaceuticals Pricing Board (operates under the Ministry of Social Affairs and Health) (*Lääkkeiden hintalautakunta*, HILA)
Scope of centralized pricing regulation	Wholesale prices of reimbursable pharmaceuticals
Reimbursement: competent authority	HILA
Scope of centralized reimbursement decisions	Outpatient sector (hospitals maintain own lists)
• Assessment of the scientific evidence	HILA
• Appraisal/ Recommendation on inclusion in positive list	Expert committee at HILA
• Final decision	HILA

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Finland



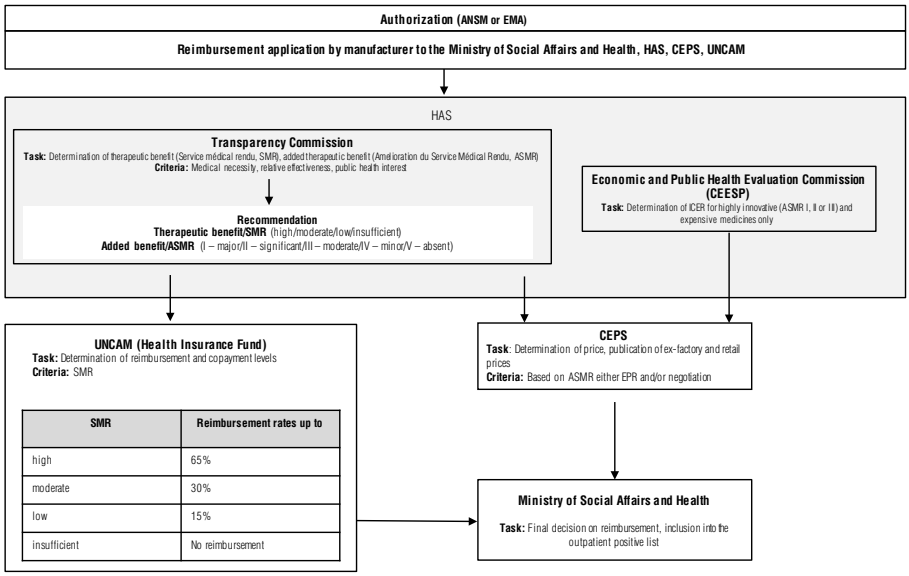
	Basic Reimbursement	Lower Special Reimbursement	Higher Special Reimbursement	No Reimbursement
Reimbursement	40%	65%	100%	0%
Copayment	60%	35%	4.50€ per drug	100%
		Disease-specific (long-term diseases)	Disease-specific (long-term diseases)	

France

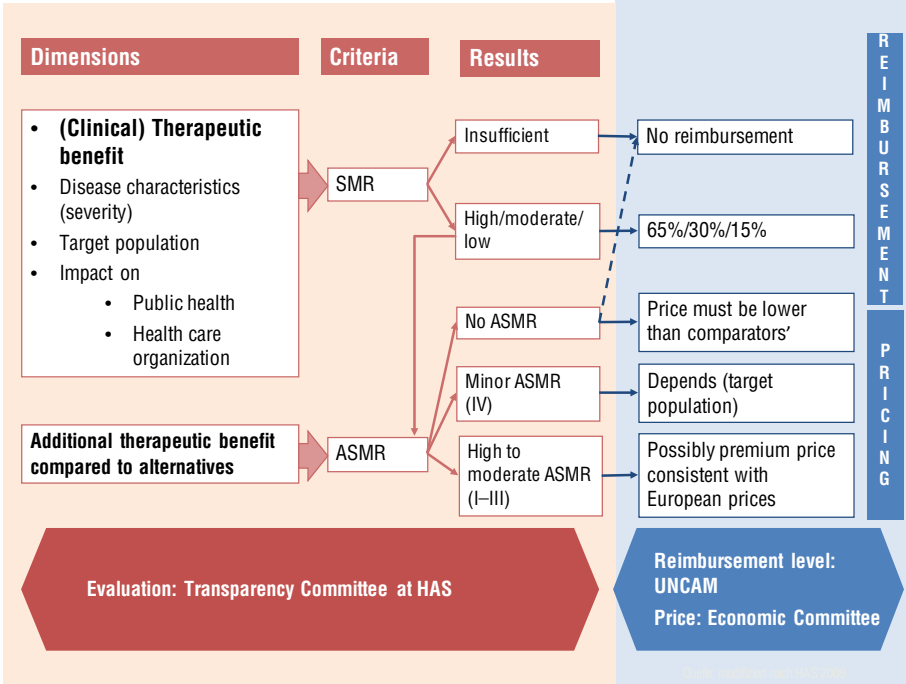
Key information	
Population (2014)	66.3 M
Gross domestic product (GDP) per capita (2014)	39 301 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	11.1%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	15.0%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	655.9 (US$ PPP)
Organization of the health care system	Statutory Health Insurance with a single public payer, strongly tax-financed
National regulatory authority responsible for marketing authorization	French National Agency for Medicines and Health Products Safety (*L'Agence nationale de sécurité du médicament et des produits de santé*, ANSM)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	Economic Committee on Healthcare Products (under the joint authority of the Ministries of Health, and Economy) (*Comité économique des produits de santé*, CEPS) advised by the Transparency Committee (*Commission de la Transparence*, CT) and the Economic and Public Health Assessment Committee (*Commission Evaluation Economique et de Santé Publique*, CEESP), both at French National Authority for Health (*Haute Authorité de Santé*, HAS)
Scope of centralized pricing regulation	Reimbursable pharmaceuticals in the outpatient sector (for the inpatient sector, only medicines used on top of DRGs, called "liste en sus" are subject to central price negotiations)
Reimbursement: competent authority	French National Union of Health Insurance Funds (*Union nationale des caisses d'assurance maladie*, UNCAM)
Scope of centralized reimbursement decisions	Reimbursable pharmaceuticals in the in- and outpatient sectors
• Assessment of the scientific evidence	HAS • Transparency Committee (medical assessment) • CEESP (health economic assessment)
• Appraisal/ Recommendation on inclusion in positive list	Transparency Committee at HAS
• Final decision	Reimbursement level: UNCAM Inclusion into the positive list: Ministry of Social Affairs and Health

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, France



Link between clinical benefit (SMR), added clinical benefit (ASMR), reimbursement and price in France (based on Meyer, 2013)*



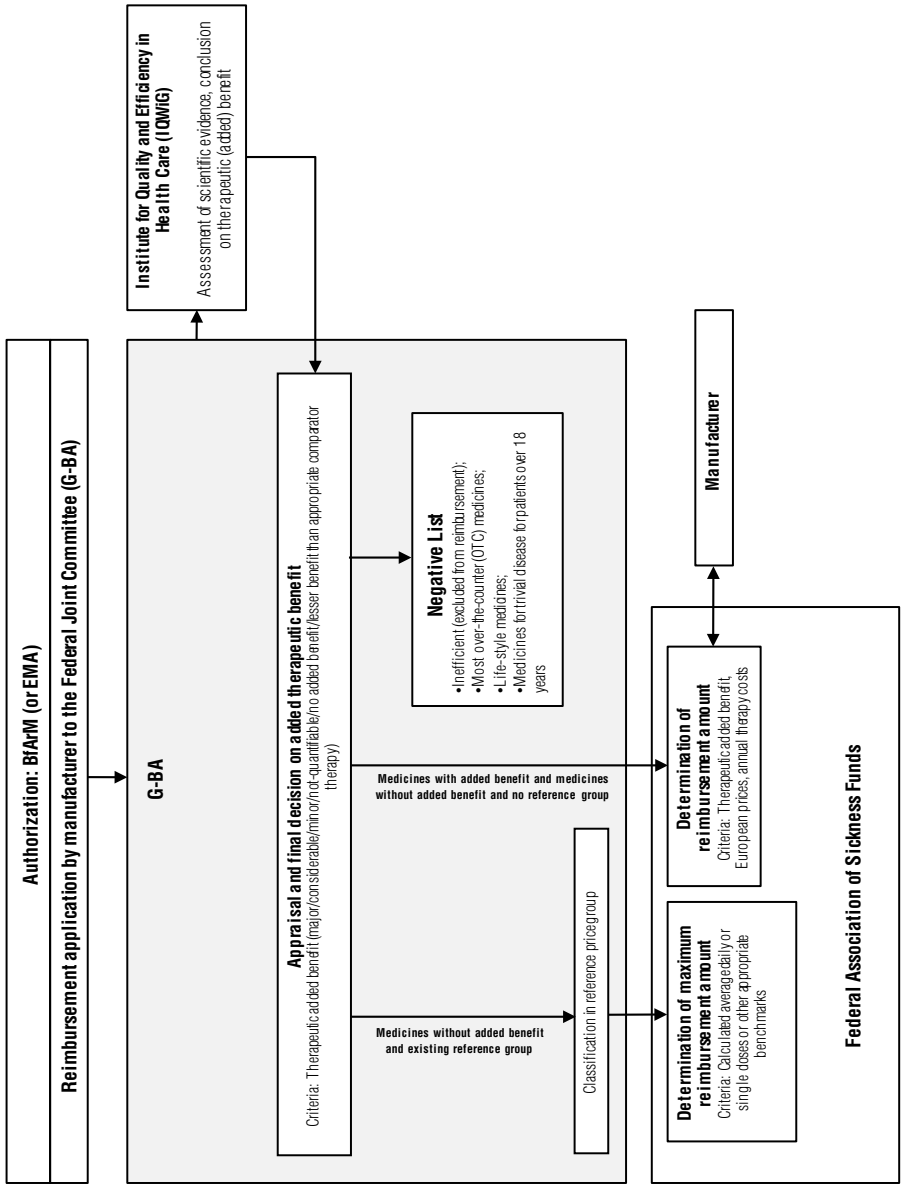
* The economic evaluation process carried out by CEESP is not depicted

Germany

Key information	
Population (2014)	81.0 M
Gross domestic product (GDP) per capita (2014)	46 394 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	11.0%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	14.5%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	741.1 (US$ PPP)
Organization of the health care system	Statutory health insurance (sickness funds)
National regulatory authority responsible for marketing authorization	Federal Institute for Drugs and Medical Devices (*Bundesinstitut für Arzneimittel und Medizinprodukte*, BfArM)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	National Association of Statutory Health Insurance Funds (*GKV-Spitzenverband*)
Scope of centralized pricing regulation	Prescription-only medicines
Reimbursement: competent authority	Federal Joint Committee (*Gemeinsamer Bundesausschuss*, G-BA)
Scope of centralized reimbursement decisions	Outpatient sector
• **Assessment of the scientific evidence**	Institute for Quality and Efficiency in Health Care (*Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen*, IQWiG)
• **Appraisal/ Recommendation on inclusion in positive list**	Federal Joint Committee
• **Final decision**	Reimbursement: Federal Joint Committee Price: National Association of Statutory Health Insurance Funds (in negotiation with manufacturers)"

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Germany

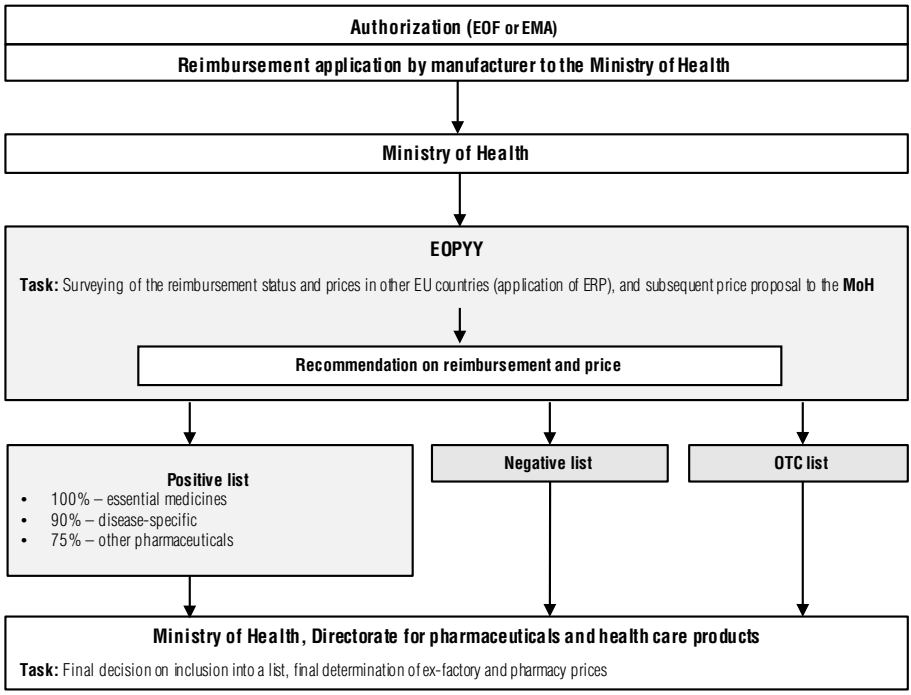


Greece

Key information	
Population (2014)	10.9 M
Gross domestic product (GDP) per capita (2014)	26 795 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	8.3%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	28.4%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	629.6 (US$ PPP)
Organization of the health care system	Mixed (Social insurance with a single payer and tax-financed components)
National regulatory authority responsible for marketing authorization	National Drug Organization (EOF)(*Ελληνικός Οργανισμός Φαρμάκων*, ΕΟΦ)
Level of decision-making on pricing/reimbursement	All new authorized pharmaceuticals
Pricing: competent authority	Ministry of Health (advised by EOF)
Scope of centralized pricing regulation	All new authorized pharmaceuticals
Reimbursement: competent authority	Ministry of Health (advised by Unified Social Security Fund [EOPYY])
Scope of centralized reimbursement decisions	All new authorized pharmaceuticals
• Assessment of the scientific evidence	None (informed by international HTAs on a case-by-case basis)
• Appraisal/ Recommendation on inclusion in positive list	EOPYY
• Final decision	Ministry of Health

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Greece

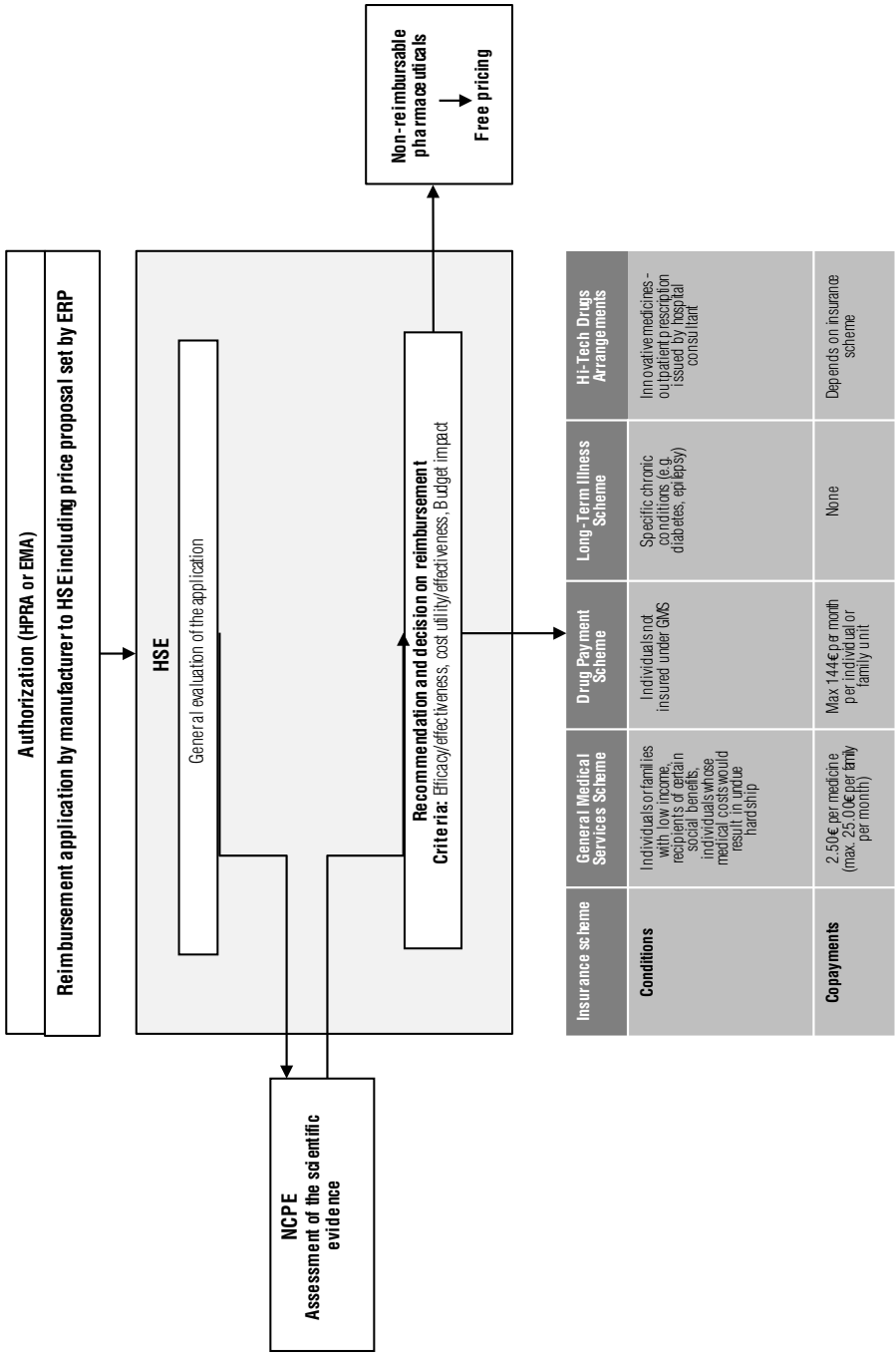


Ireland

Key information	
Population (2014)	4.6 M
Gross domestic product (GDP) per capita (2014)	49 377 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	10.1%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	14.1%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	703.4 (US$ PPP)
Organization of the health care system	Tax-financed (additional private health insurance covers approximately half of the population)
National regulatory authority responsible for marketing authorization	Health Products Regulatory Authority (HPRA)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	Health Service Executive (HSE), Corporate Pharmaceutical Unit
Scope of centralized pricing regulation	All authorized pharmaceuticals
Reimbursement: competent authority	HSE, Primary Care Reimbursement Service
Scope of centralized reimbursement decisions	All authorized pharmaceuticals
• Assessment of the scientific evidence	National Centre for Pharmacoeconomics (NCPE)
• Appraisal/ Recommendation on inclusion in positive list	HSE
• Final decision	HSE

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Ireland

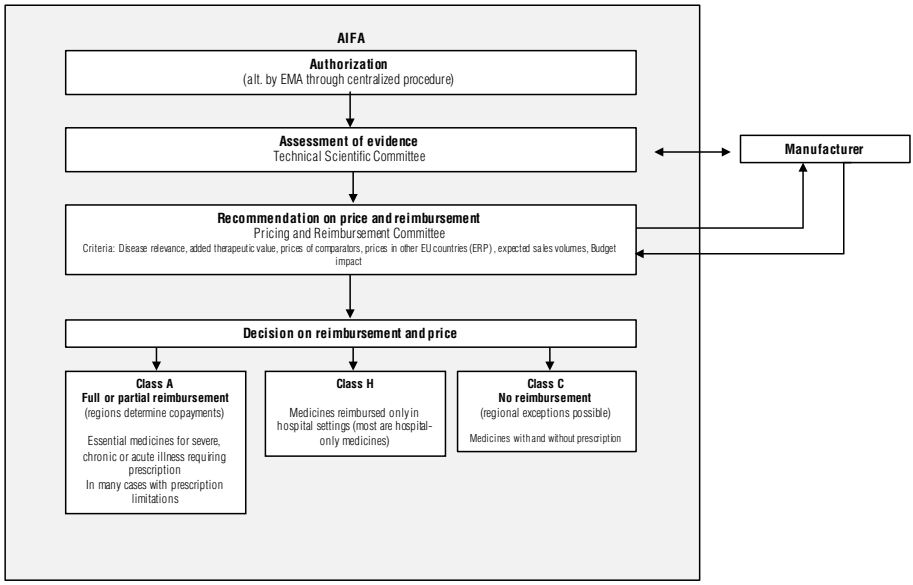


Italy

Key information	
Population (2014)	60.8 M
Gross domestic product (GDP) per capita (2014)	35 419 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	9.1%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	17.0%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	544.2 (US$ PPP)
Organization of the health care system	Tax-financed, regionally organized National Health Service (regions are in charge of organizing and providing health care)
National regulatory authority responsible for marketing authorization	Italian Medicines Agency (*Agenzia Italiana del Farmaco*, AIFA)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	AIFA (negotiation process with manufacturer)
Scope of centralized pricing regulation	All authorized pharmaceuticals
Reimbursement: competent authority	AIFA (negotiation process with manufacturer)
Scope of centralized reimbursement decisions	All authorized pharmaceuticals
• Assessment of the scientific evidence	Technical Scientific Committee at AIFA
• Appraisal/ Recommendation on inclusion in positive list	Pricing and Reimbursement Committee at AIFA
• Final decision	Pricing and Reimbursement Committee at AIFA

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the in- and outpatient sector, Italy

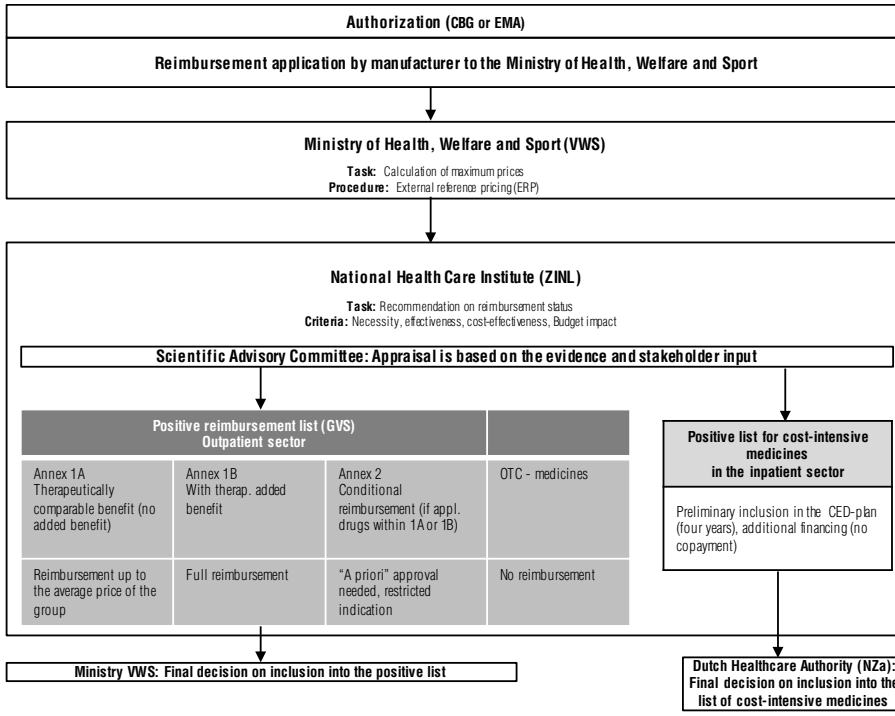


Netherlands

Key information	
Population (2014)	16.9 M
Gross domestic product (GDP) per capita (2014)	48 253 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	10.9%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	7.6%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	400.7 (US$ PPP)
Organization of the health care system	Social insurance (health care funds)
National regulatory authority responsible for marketing authorization	Medicines Evaluation Board (*College ter Beoordeling van Geneesmiddelen*, CBG)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	Ministry of Health, Welfare and Sport
Scope of centralized pricing regulation	Calculation of maximum prices, all pharmaceuticals
Reimbursement: competent authority	National Health Care Institute (*Zorginstituut Nederland*, ZINL; former *College voor zorgverzekeringen*, CVZ)
Scope of centralized reimbursement decisions	All pharmaceuticals in the outpatient sector and cost-intensive pharmaceuticals in the inpatient sector
• Assessment of the scientific evidence	ZINL working groups (advised by Scientific Advisory Committee)
• Appraisal/ Recommendation on inclusion in positive list	ZINL Board
• Final decision	Ministry of Health, Welfare and Sport cost-intensive medicines: Dutch Healthcare Authority (*Nederlandse Zorgautoriteit* (NZa))

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Netherlands

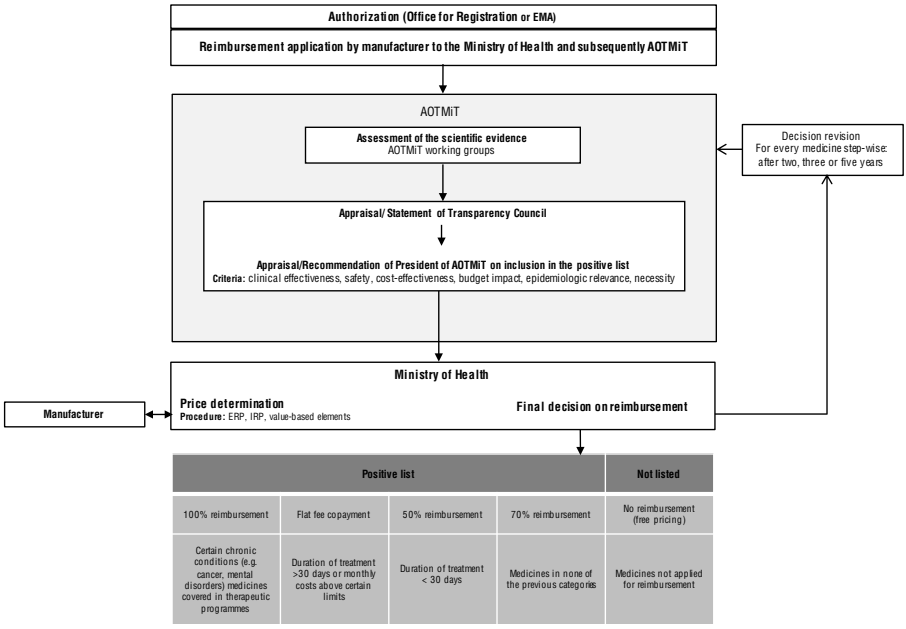


Poland

Key information	
Population (2014)	38.0 M
Gross domestic product (GDP) per capita (2014)	25 262 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	6.4%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	20.9%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	339.0 (US$ PPP)
Organization of the health care system	Social insurance with a single payer, subsidized by tax contributions
National regulatory authority responsible for marketing authorization	Office for Registration of Medicinal Products, Medical Devices and Biocides (*Urząd Rejestracji Produktów Leczniczych, Wyrobów Medycznych i Produktów Biobójczych*)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	Ministry of Health (negotiation process with manufacturer)
Scope of centralized pricing regulation	Reimbursable pharmaceuticals (free pricing for non-reimbursable pharmaceuticals)
Reimbursement: competent authority	Ministry of Health, advised by the Polish HTA agency (AOTMiT, see below)
Scope of centralized reimbursement decisions	Reimbursable pharmaceuticals
• Assessment of the scientific evidence	Agency for Health Technology Assessment (*Agencja Oceny Technologii Medycznych i Taryfikacji*, AOTMiT)
• Appraisal/ Recommendation on inclusion in positive list	Transparency Council of AOTMiT (Rada Przejrzystości)
• Final decision	Ministry of Health

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Poland

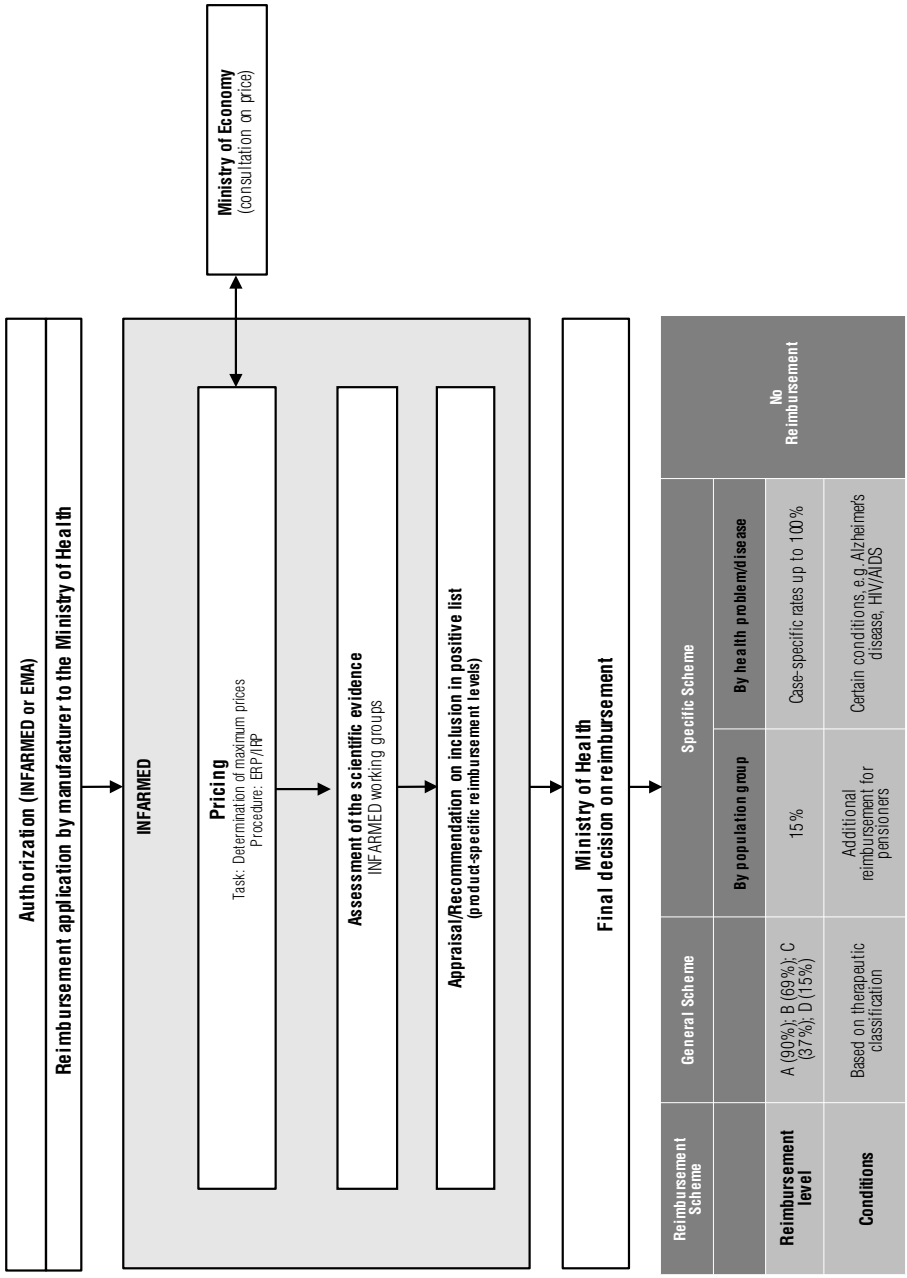


Portugal

Key information	
Population (2014)	10.4 M
Gross domestic product (GDP) per capita (2014)	28 760 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	9.0%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	15.4%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	398.6 (US$ PPP)
Organization of the health care system	National social insurance system (tax-financed); special public and private insurance schemes for certain professions (~25% of population); and private insurance (from 10% to 20% of population).
National regulatory authority responsible for marketing authorization	National Authority of Medicines and Health Products (*Autoridade Nacional do Medicamento e Produtos de Saúde*, I.P., INFARMED)
Level of decision-making on pricing/reimbursement	Central
Pricing: competent authority	INFARMED
Scope of centralized pricing regulation	Outpatient sector Prescription-only medicines and reimbursable OTC medicines (hospitals negotiate prices independently)
Reimbursement: competent authority	INFARMED
Scope of centralized reimbursement decisions	Outpatient sector Prescription-only medicines and reimbursable OTC medicines Inpatient sector: in- or exclusion (hospitals maintain own lists)
• **Assessment of the scientific evidence**	INFARMED working groups
• **Appraisal/ Recommendation on inclusion in positive list**	INFARMED
• **Final decision**	Outpatient sector: Ministry of Health Inpatient sector: INFARMED

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Portugal

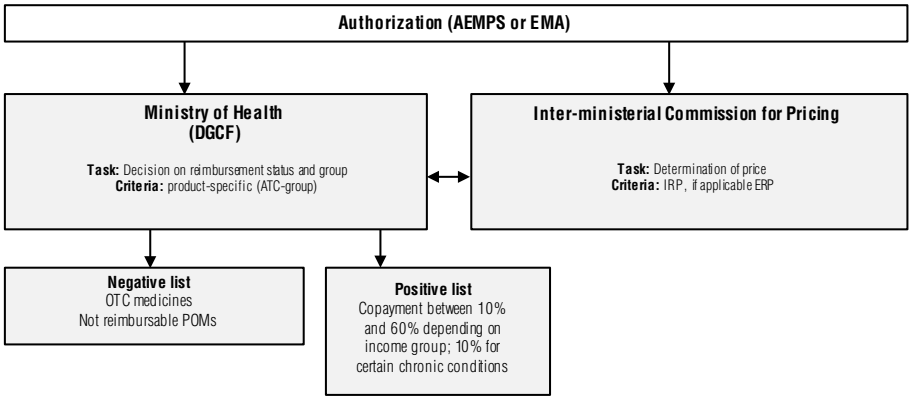


Spain

Key information	
Population (2014)	46.5 M
Gross domestic product (GDP) per capita (2014)	33 625 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	9.1%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	17.9%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	546.9 (US$ PPP)
Organization of the health care system	Tax-financed
National regulatory authority responsible for marketing authorization	Spanish Medicines and Medical Devices Agency (*Agencia Española de Medicamentos y Productos Sanitarios*, AEMPS)
Level of decision-making on pricing/reimbursement	Central (implementation of regulatory measures falls to Autonomous Communities, who can negotiate their own Managed Entry Agreements)
Pricing: competent authority	Inter-ministerial Commission for Pricing
Scope of centralized pricing regulation	Authorized pharmaceuticals
Reimbursement: competent authority	Ministry of Health, Directorate-general for Pharmacy and Healthcare Products (*Dirección General Cartera Básica de Servicios y Farmacia*, DGCF)
Scope of centralized reimbursement decisions	Authorized pharmaceuticals
• Assessment of the scientific evidence	Ministry of Health working groups
• Appraisal/ Recommendation on inclusion in positive list	DGCF
• Final decision	Ministry of Health

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Spain

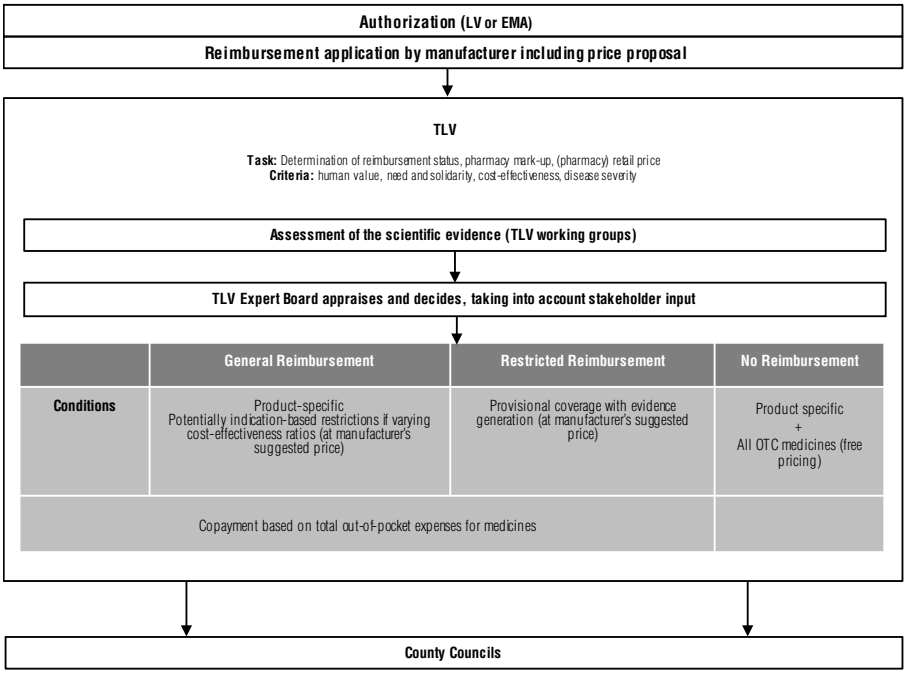


Sweden

Key information	
Population (2014)	9.7 M
Gross domestic product (GDP) per capita (2014)	45 298 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	11.2%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	9.6%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	488.7 (US$ PPP)
Organization of the health care system	Tax-financed
National regulatory authority responsible for marketing authorization	Medical Products Agency (*Läkemedelsverket*, LV)
Level of decision-making on pricing/reimbursement	Central (implementation of decision at local and regional level by County Councils)
Pricing: competent authority	Dental and Pharmaceutical Benefits Agency (*Tandvårds- & läkemedelsförmånsverket*, TLV)
Scope of centralized pricing regulation	Outpatient sector, prescription-only medicines (Free-pricing of over-the-counter and inpatient medicines; prices for the latter negotiated by County Councils)
Reimbursement: competent authority	TLV
Scope of centralized reimbursement decisions	Outpatient sector, prescription-only medicines
• Assessment of the scientific evidence	TLV working groups and/or Swedish Agency for Health Technology Assessment and Assessment of Social Services (*Statens beredning för medicinsk utvärdering*, SBU)
• Appraisal/ Recommendation on inclusion in positive list	TLV – expert board
• Final decision	TLV (implementation: County Councils)

Sources: OECD, 2016a; 2016b; 2016c.

Pricing and reimbursement in the outpatient sector, Sweden

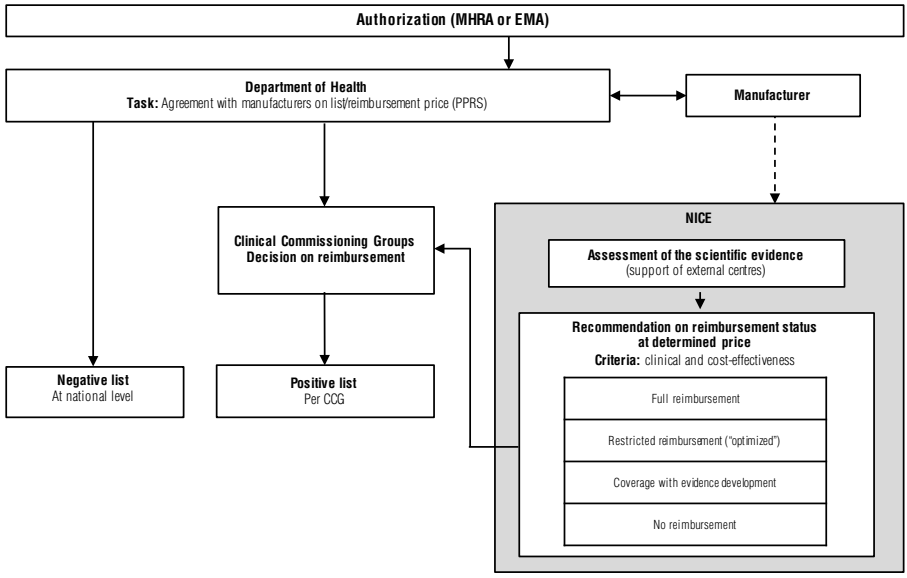


United Kingdom

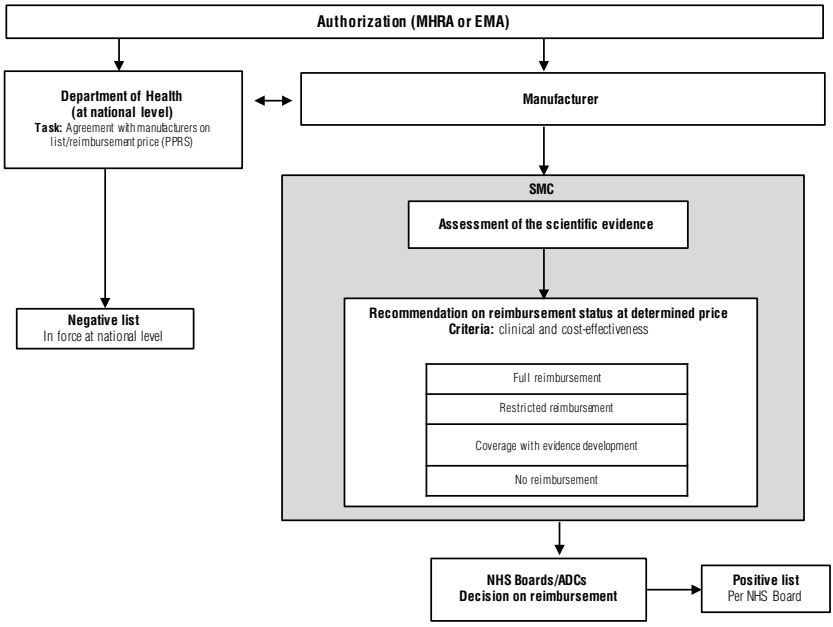
Key information	
Population (2014)	64.6 M England: 54.3 M Scotland: 5.3 M Wales: 3.1 M N. Ireland: 1.8 M
Gross domestic product (GDP) per capita (2014)	40 217 (US$ PPP)
Current Health Expenditure (CHE) as % of GDP (2014)	9.9%
Expenditure on retail pharmaceuticals and other medical non-durables as % of CHE (2014)	12.2%
Per capita expenditure on retail pharmaceuticals and other medical non-durables (2014)	485.3 (US$ PPP)
Organization of the health care system	Tax-financed
National regulatory authority responsible for marketing authorization	Medicines and Health Care Products Regulatory Agency (MHRA)
Level of decision-making on pricing/reimbursement	Pricing: central, within the "Pharmaceutical Price Regulation Scheme" (PPRS) Reimbursement: Country- and payer-specific
Pricing: competent authority	Department of Health (DoH), Negotiation with manufacturers (Pharmaceutical Price Regulation Scheme, PPRS)
Scope of centralized pricing regulation	Authorized pharmaceuticals
Reimbursement: competent authority	England: National Institute for Health and Care Excellence (NICE) Scotland: Scottish Medicines Consortium (SMC)
Scope of centralized reimbursement decisions	NICE: new/innovative pharmaceuticals ("single technology appraisal"), reimbursable pharmaceuticals ("multiple technology appraisal") SMC: new/innovative pharmaceuticals
• Assessment of the scientific evidence	England: scientific working groups commissioned by NICE Scotland: SMC working groups
• Appraisal/ Recommendation on inclusion in positive list	England: NICE Scotland: SMC
• Final decision	England: Clinical Commissioning Groups Scotland: NHS Boards ("area drug committees")

Sources: OECD, 2016a; 2016b; 2016c; ONS, 2016a; 2016b; 2016c; 2016d.

Pricing and reimbursement in the outpatient sector, United Kingdom – England



Pricing and reimbursement in the outpatient sector, United Kingdom – Scotland



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