

Controlling pharmaceutical expenditure and improving efficiency within the Spanish pharmaceutical market

Macro- and micro-level policy approaches

An Agenda for Reform – Final Policy Paper

Prepared by

The London School of Economics - LSE Health and Center for Research in Health and
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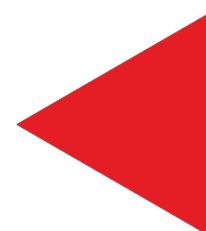
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Abbreviations

ABPI	Association of the British Pharmaceutical Industry
AEMPS	Spanish Agency of Medicinal Products and Medical Devices
CDF	Cancer Drugs Fund (UK)
CHE	Current Health Expenditure
EU	European Union
GDP	Gross Domestic Product
GENESIS	Group for Innovation, Assessment, Standardisation and Research in the Selection of Drugs
HTA	Health Technology Assessment
ICPP	Interministerial Commission on Pharmaceutical Prices
ITB	Incremental Therapeutic Benefit
IPT	Informe de Posicionamiento Terapéutico
LSEH	London School of Economics and Political Science Health
MoH	Ministry of Health, Social Services and Equality (Spain)
NHS	National Health System
NICE	National Institute for Health and Care Excellence (England)
OECD	Organisation for Economic Co-operation and Development
OTC	Over-the-Counter
PE	Pharmaceutical Expenditure
PPRS	Pharmaceutical Price Regulation Scheme (UK)
QALY	Quality-Adjusted Life Year
R&D	Research and Development
RDL	Royal Law Decree
ROCE	Rate of Return on Capital Employed
RSA	Risk Sharing Agreements
SESPAS	Spanish Society of Public Health and Health Administration
SWOT	Strengths, Weaknesses, Opportunities and Threats
SAS	Servicio Andaluz de Salud (Andalusian Health Service)

THE	Total Health Expenditure
UPF	Univesitat Pompeu Fabra
WHO	World Health Organisation
WTP	Willingness to Pay

Executive Summary

In 2017, a national audit of Spain's pharmaceutical sector activities took a highly critical view of the current pricing and reimbursement system within Spain. The evaluation and subsequent pricing of new technologies was found to lack both consistency and transparency. Further there has been an apparent unwillingness to apply and implement legislation on the use of economic evaluation in the pricing and reimbursement of medicines. This report raised concerns about efficiency in Spain's decision-making process.

The issue of efficiency in the Spanish pharmaceutical sector is magnified by global trends in pharmaceutical markets. Over the past 20 years, healthcare expenditure and pharmaceutical expenditure have grown considerably across the OECD due to a number of factors including increasing numbers of high cost-innovative medicines, growth in non-communicable diseases and ageing populations. In response, a number of common cost-containment policies have been implemented across Europe.

In 2015, Spain implemented a pharmaceutical budget capping system aimed which links pharmaceutical expenditure to Gross Domestic Product (GDP). The Farmindustria Protocol sets two limits to total public pharmaceutical expenditure for original medicines, namely, a reference rate of medium term GDP growth, and the annual rate of growth itself. From a conceptual standpoint, budget-capping policies, such as the one employed within Spain, are promising from a cost-containment, affordability and predictability perspective. While this policy seems to contribute to cost containment, it is doubtful that this type of macroeconomic policy contributes to efficiency, the diffusion of innovation or whether it provides the appropriate incentives for competition to take place where appropriate.

Objectives

Given the concerns raised over efficiency in the decision-making process within Spain, and the concerns over the ability of Spain to promote efficiency under the recent budget cap, this brief addresses the following research questions:

1. What are the key drivers of pharmaceutical expenditure in Spain?
2. What is the impact of the recently implemented micro- and macro-level policies (including the budget capping policy) in Spain?
3. Given macro-economic budget caps and other constraints, how can Spain promote greater efficiency within its pharmaceutical sector?

Methods

This report is informed by both secondary and primary evidence. Targeted and comprehensive literature reviews were carried out to collect secondary data on

impact of pharmaceutical policy on expenditure within Spain and on the impact of budget capping systems. Primary data was obtained from a meeting with expert stakeholders in March 2017 to gather feedback on budget capping policies across Europe and their impact on government healthcare policies. A limited number of follow-up interviews were conducted to clarify outstanding issues.

Key trends

A number of trends emerge from the discussion on the drivers of pharmaceutical expenditure and from the discussion on the feasibility of pharmaceutical budget caps. First, relative to other European countries, Spain's health expenditure per capita and pharmaceutical expenditure per capita levels are well within EU averages and have remained so over the past 15 years.

Second, over the past 15 years, there are three distinct periods characterizing Spanish pharmaceutical expenditure (both, hospital and retail): (a) Steady spending growth (average of 6.2 % per annum from 2000-2009); (b) significant decline in spending (average of -7.35% per annum from 2010-2013); and (c) modest growth in pharmaceutical spending (average of 2.59% from 2014-2016).

Third, pharmaceutical expenditure in Spain seems to be responsive to both pricing and volume policies. Price cuts, generic substitution policies, and introduction of co-payments coincide with declines in pharmaceutical expenditure from 2010 to 2013, yet the results achieved appear to be temporary as additional pressures continue to inflate expenditure.

Fourth, the period from 2014-2016 is characterized by an overall increase in total, retail and hospital pharmaceutical expenditure. The largest variations are seen in hospital expenditure, predominantly due to the introduction of new hepatitis C treatments.

Fifth, while Spain has made significant improvements in generic policy over the past 15 years, its performance appears to fall short of other EU member states. The same occurs for biosimilars, for which uptake in Spain is lagging behind the other main EU countries. Targeting generic and biosimilar pricing and penetration have the potential to improve Spanish health system efficiency.

Sixth, the use of HTA in the Spanish context is very limited either as a tool to inform decision-making (particularly pricing and reimbursement decisions) at national level, or as tool to provide guidance on cost-effective prescribing amongst prescribing physicians. It appears that there is poor dissemination of HTA reports, most physicians are not aware of them and, consequently, are not able or compelled to use them in daily clinical practice.

Seventh, the economic crisis and implementation of aggressive policy reforms from 2009 to 2012 coincide with net decreases in the number of registered pharmaceutical formulations. This is a result of both an increase in the delisting of products and a decrease in the registration of new formulations.

Eighth, silo-budgeting such as pharmaceutical budget caps tend to be inefficient from a macroeconomic perspective in terms of resource allocation, and raise concerns over diffusion of innovation. Experiences suggest that implementing effective payback systems can be challenging. There is a lack of clarity about how the payback system will work in practice within Spain. Payback is potentially punishing towards highly innovative products. Exemptions or contingency funds may be required in order to promote sustainable access to innovation in Spain. A model such as the UK PPRS, which sets expenditure growth targets and excludes new products launched during the five-year agreement, may be more appropriate. Another experience is France where the innovative medicines (and biosimilars, generics and orphan medicines) are excluded from the payback system.

Ninth, there are some methodological and conceptual issues associated with linking a threshold to GDP targets set ex-ante. Forecasting medium-term GDP is challenging given GDP volatility.

Balancing Micro- and Macroeconomic Policy Objectives

While Spanish pharmaceutical policy does not suffer from fundamental imbalances and overall as well as per capita spend on prescription pharmaceuticals are at or below the European average (except from when figures are adjusted by GDP), there seem to be a number of policy concerns, which influence performance and overall efficiency. These can be examined individually and in isolation from each other, for example, issues related to HTA, or prescribing practices, or generics separately, although there is always interconnectivity between them. Based on our review of Spanish pharmaceutical policy we have identified a number of policy priorities for the future.

First, pharmaceutical budget caps linked to GDP are arbitrary, inadequate to address concerns over efficiency, entry and diffusion of innovation; additionally, GDP itself is not an appropriate metric to link pharmaceutical expenditure to. An expenditure growth target could be implemented instead with explicit allocation to innovative therapies and exemption of the latter from payback clauses.

Second, a segmented payback mechanism may help promote microeconomic efficiency as well as reward innovation, by assigning some responsibility for excess expenditure to regions. The current pharmaceutical budget cap within Spain lacks clarity on how it would work in practice.

Third, efficiency improvements under a budget cap require transparent, consistent and robust health technology assessment, starting with horizon scanning, early engagement and scientific advice and the explicit use of either clinical benefit assessment or clinical-cost-effectiveness to arrive at coverage decisions. Risk sharing agreements can go some way to ensure affordability as well as paying for performance.

Fourth, Spain can achieve greater efficiency and savings through improvements in generic and biosimilar pricing, penetration, and dispensing, whilst maintaining physician

prescribing autonomy and safeguarding appropriateness and quality of care. Despite recent improvements in generic uptake and penetration, other countries still outperform Spain on pricing and penetration of generics. The tendering system employed in Andalusia may be a way forward, however, certain changes to the system may be required. The same occurs for biosimilars. EMA has already approved 29 biosimilars, whose effect on hospital spending will be similar (although less strong) to that of generic entry. The entrance of biosimilars is expected to reduce hospital spending. There is reason to believe that the potential of biosimilars in Spain has not yet peaked.

Fifth, demand-side policies, particularly focusing on prescribing guidance can promote efficiency by ensuring the appropriate use of medicines and the use of such guidance should be made mandatory. Patient information and education programmes can also contribute towards improved patient adherence.

Sixth, pharmaceutical policy should reflect values of equality and aim to reduce barriers in patient access. Striking a balance between national objectives and regional needs and autonomy remains a challenge. Continued efforts to harmonize HTA criteria, methodologies and uptake will help reduce some fragmentation and duplication across regions.

Seventh, pharmaceutical budget allocations to regions should be risk-adjusted and regions should aim to provide fixed budget caps or bundled to their prescribers; such caps or bundled payments should be linked to incentives and be mandatory.

Eighth, while the policy priorities outlined so far relate to specific actions in parts of the pharmaceutical policy interface, there is need for better coordination in order to ensure that actions and gains in one part of the 'pharmaceutical policy interface' are distributed in a fair manner across all components of that interface.

Overall, a pharmaceutical budget cap can promote affordability and predictability at the macroeconomic level within Spain but a number of additional measures are needed to promote value for money, affordability and efficiency. Further, changes may be required to the current capping mechanism to address concerns in methodology, efficiency, and diffusion of innovation.

1 Introduction

1.1 Motivation and research questions

On the 12th of January 2017, the Court of Auditors in Spain approved the findings of a national audit on the economic activities within the Spanish pharmaceutical sector from 2014-2015. This report took a highly critical view of the decision making process for pharmaceutical pricing and reimbursement in Spain. In particular, the evaluation process for new pharmaceuticals was said to lack both consistency and transparency. Further, despite legislation and considerable investment from the Ministry Health, Social Services and Equality to include economic analysis in this process, technical capacity and use remains limited (Tribunal de Cuentas, 2017). The views of this report are in line with the position taken by the Spanish Society of Public Health and Health Administration (SESPAS) that an exceedingly opaque and unjustified decision-making process in Spain has led to prices both too low and too high for the outcomes they provide (SESPAS, 2017). The unwillingness to apply legislation on economic analysis along with the poor transparency and consistency in evaluations raises serious concerns about the efficiency of decision making in the Spanish pharmaceutical sector (Oliva and Puig-Junoy, 2017).

The issue of efficiency in the Spanish pharmaceutical sector is magnified by global trends in pharmaceutical markets. Over the past 20 years, healthcare expenditure and pharmaceutical expenditure have grown considerably across the OECD. While an increasing number of innovative medicines have come to market that are potentially beneficial to patients, the associated high costs of these therapies have raised concerns over financial sustainability. Further, an ageing population and growth in non-communicable disease exert increasing fiscal pressure on health care systems (WHO, 2015).

In response to growing expenditures, policy makers across Europe have implemented cost-containment measures and policies aiming to improve efficiency in resource allocation, with particular emphasis on the pharmaceutical sector. A common policy across an increasing number of EU countries relates to the introduction and use of health technology assessment (HTA), whether this is taking place through the use of economic evaluation or clinical benefit assessment (WHO, 2015). Another common macro-economic measure employed by governments has been to cap pharmaceutical expenditure. Budget capping is a popular method for policy makers given that shifts the risk of unsustainable growth from the payor to the industry. While capping pharmaceutical expenditure may ensure affordability it does not necessarily promote efficiency (Garrison and Towse, 2003).

Since 2015 Spain has employed a budget capping system, which links pharmaceutical expenditure to the Gross Domestic Product (GDP) growth rate. The Farmaindustria Protocol sets two limits to total public pharmaceutical expenditure for original medicines, namely, a reference rate of medium term GDP growth, and the annual rate of growth itself (Farmaindustria 2016a, Ministerio de Hacienda Y Administraciones Públicas 2015). From a conceptual standpoint, budget-capping policies, such as the one employed within Spain, are promising from a cost-containment, affordability and predictability perspective. While this policy seems to contribute to cost containment, it is doubtful that this type of macroeconomic policy contributes to efficiency, the diffusion of innovation or whether it provides the appropriate incentives for competition to take place where appropriate. Traditionally, efficiency improvements, diffusion of innovation and competition can be promoted through various demand- and supply-side micro-economic policy tools (even if there is some evidence in Spain that not all these tools were effective in attaining their goals); these are not implemented in isolation, but rather in conjunction with macro-level policies (Carone et al. 2012).

In light of this, this brief seeks to address the following research questions and inform discussion among policy makers:

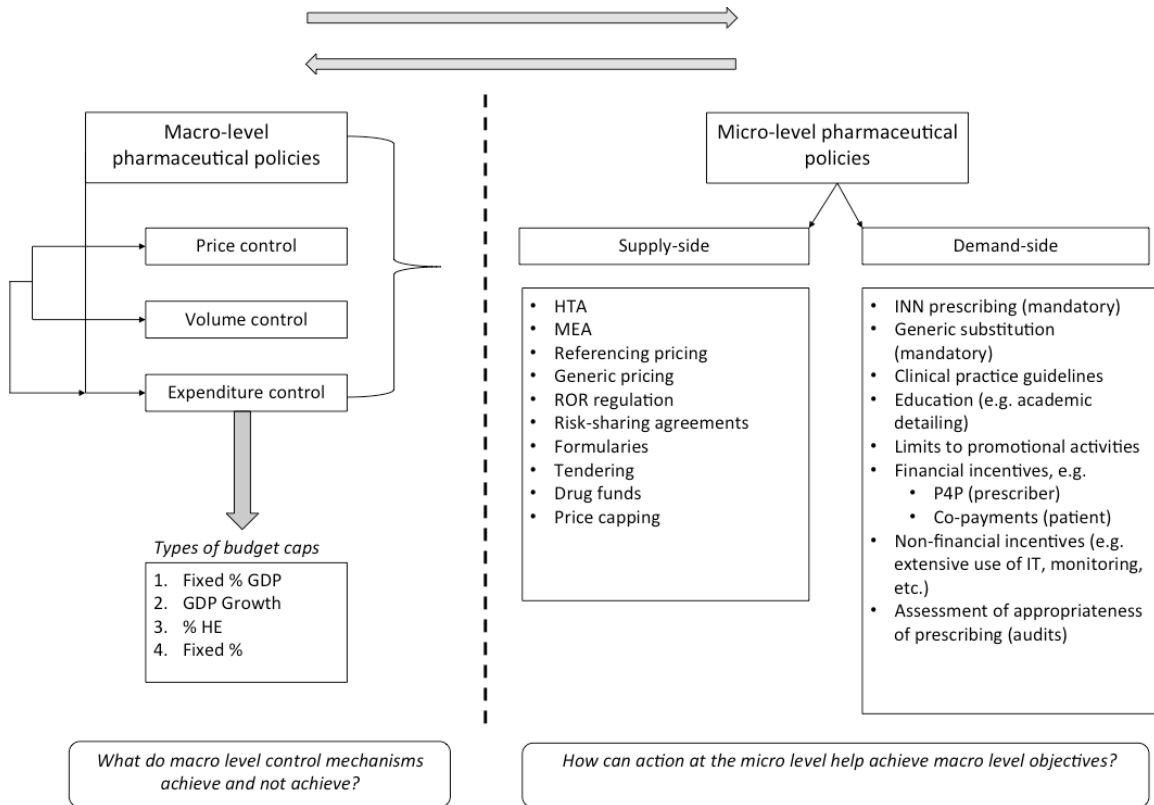
1. What are the key drivers of pharmaceutical expenditure in Spain?
2. What is the impact of the recently implemented micro- and macro-level policies (including the budget capping policy) in Spain?
3. Given macro-economic budget caps and other constraints, how can Spain promote greater efficiency within its pharmaceutical sector?

1.2 Methodology

1.2.1. Analytical framework

In order to identify drivers of expenditure and to assess the impact of micro- and macro-level policies, including budget-capping schemes, we developed an analytical framework outlining the relationship between macro- and micro-level policies (Figure 1). Based on this, at macro-level, direct controls, such as budget caps, can be placed on expenditure. At micro-level, expenditure and its components (prices and volume) are influenced through supply- and demand-side policies, including tendering, reference pricing, price cuts, prescribing guidance and incentives, including dispensing incentives and co-payments. Macro-level policies may contribute to the objective of macro-economic efficiency, while micro-economic efficiency and quality of care within a cap are promoted primarily through micro-level policies on the supply- and/or demand-side. Consequently, even in circumstances where a budget cap has been set in the most efficient way, it will not achieve its desired results unless demand-side issues are addressed along with other drivers of expenditure. We are using this framework as a benchmark for our analysis as well as to showcase the interconnectivity between macro- and micro-level measures.

Figure 1: Analytical framework



Source: The authors.

1.2.2. Data collection

Data was collected through a targeted but comprehensive review of peer reviewed and grey literature followed by primary data collection from and validation with national, local and international experts. There were two phases of secondary data collection. First, a literature review was carried out on the Spanish pharmaceutical sector in order to identify the drivers of expenditure and, specifically, those impacting the price, volume of pharmaceuticals. Targeted searches were carried out in MEDLINE, ECONLIT and Google Scholar on generic policy, health technology assessment, price cuts, dispensing policy, prescribing policy, expenditure/budget capping, and risk sharing agreements. Titles and abstracts were screened for relevance until search results became increasingly irrelevant. Peer-reviewed evidence was then supplemented with grey-

literature obtained from websites of national health organizations, international organizations, and Google searches. In addition, publicly available data relating to health expenditure, pharmaceutical expenditure, new medicine uptake, generic uptake, and number of prescriptions was collected from OECD databases and Spanish Ministry of Health websites.

The second phase of literature review focused on macroeconomic pharmaceutical budget caps. MEDLINE, ECONLIT and Google Scholar were searched for any papers with relevant evidence on the use of pharmaceutical budgets and payback or clawback schemes, since 2000. Search terms included combinations of 'pharmaceutical budgets', 'drug budgets', 'medicines budgets', 'pharmaceutical funds', 'medicines funds', 'drug funds', 'payback, clawback', and 'rebate'. Titles and abstracts were screened for relevance until search results became increasingly irrelevant. Peer-reviewed data, evidence was supplemented with grey-literature obtained from websites of national health organizations, international organizations, and Google searches. Evidence was systematically screened and assessed for strengths, weaknesses, opportunities and trends.

It is important to highlight the paucity of publicly available literature (peer review or grey) on key aspects of Spanish pharmaceutical policy, including, but not limited to, prescribing rates, generic policies, the use of information technology to inform and enforce or implement decisions, budget capping, the use of prescribing guidance and health technology assessment. As such, this brief relied heavily on the feedback received from leading Spanish and international pharmaceutical policy experts. Specifically, a meeting with expert stakeholders was held at LSE on March 20th, 2017, to gather feedback on budget capping policies across Europe and their impact on government healthcare policies. Follow-up interviews were undertaken with a number of Spanish pharmaceutical policy experts, where the objective was to collect expert opinion on the effectiveness of pharmaceutical policy measures over the past decade.

2 Background to the Spanish Pharmaceutical Sector

2.1 Key issues in pharmaceutical regulation

The main characteristic of the Spanish National Health System (NHS) is the decentralization of financing and provision. The responsibility is shared between the State and the regions (“Autonomous Communities”). In the pharmaceutical market, most of the key regulatory bodies operate at State level, such as pharmaceutical pricing and reimbursement, marketing and advertising of drugs, and the quality and manufacture of pharmaceutical products.

At State level, the Ministry of Health, Social Services and Equality (MoH) is the institution in charge of the pharmaceutical sector. The MoH monitors the pharmaceutical market through two main institutions: 1) the Directorate-General of Pharmacy and Health Care Products, in charge of the pharmaceutical policy, and 2) the Spanish Agency of Medicinal Products and Medical Devices (AEMPS) which deals with the scientific tasks and marketing authorisation.

These regulations are aimed at achieving equilibrium between national health objectives, industry and public pharmaceutical expenditure (Piña-Mavarez and Suarez-Serrano, 2009). One of the most significant reforms was that of the patent system in 1986 and the Spanish Medicines Law in 1990. The latter was replaced by the new pharmaceutical law in 2006, “Guarantees and the Rational Use of Medicines and Health Products, Law 26/2006”, which introduced a modified reference price system (Costa-Font and McDaid, 2007).

A further -relatively recent- development in the overall regulatory framework aiming to improve decision-making at pricing and reimbursement level is linked to Health Technology Assessment (HTA). On the face of it, the role of Health Technology Assessment (HTA) in Spain has increased over time. In reality, however, the decentralized nature of the National Health System (NHS) has introduced a level of complexity into how HTA is implemented. Specifically, the HTA procedure is different for

pharmaceuticals and medical devices¹. On one hand, pharmaceutical pricing and reimbursement decisions are taken at national level through the Interministerial Commission on Pharmaceutical Prices [ICPP] (*Comisión Interministerial de Precios de Medicamentos*)². On the other hand, HTA agencies are in charge of the assessment of medical devices. However, their decisions are not binding.

The Spanish pharmaceutical market is featured as being highly regulated, yet little is known about the extent to which such regulation is effective in satisfying key policy imperatives such as macro-economic efficiency, micro-economic efficiency, quality of care or equity.

2.2 Spanish pharmaceutical policy reforms since 2006

Over the past ten years there have been a series of notable reforms targeting price, volume and generic uptake. Figure 2 presents a chronology of policy reforms from 2006-2015. The first reforms were purely cost-containment initiatives through compulsory price cuts. In 2006, prior to the economic crisis, branded products without a generic competitor in Spain but available in other European countries received a flat 20% price reduction. In 2010, as part of the RDL 4/2010, this price reduction increased to 30% while it expanded its scope to publicly financed generic products. Generic products received a flat price reduction on the basis of reference pricing, leading to decreases of around 25-30%. Further, originator products received a price cut of 7.5%, orphan products a cut of 4% and incontinence products a cut of 20% (Lobo 2013).

¹ In the context of medical devices, in 2012 (RD law 16/2012), in order to improve coordination across HTA agencies, the “Spanish Network of Agencies for Assessing National Health System Technologies and Performance” (*Red Española de Agencias de Evaluación de Tecnologías Sanitarias y Prestaciones del Sistema Nacional de Salud*) was created. This network is formed of the eight HTA Spanish agencies. The network is in charge of the assessment of medical techniques and procedures for the inclusion, exclusion or modification of their use within the NHS service portfolio. Their assessment is not binding and made after the technologies have been authorised and adopted.

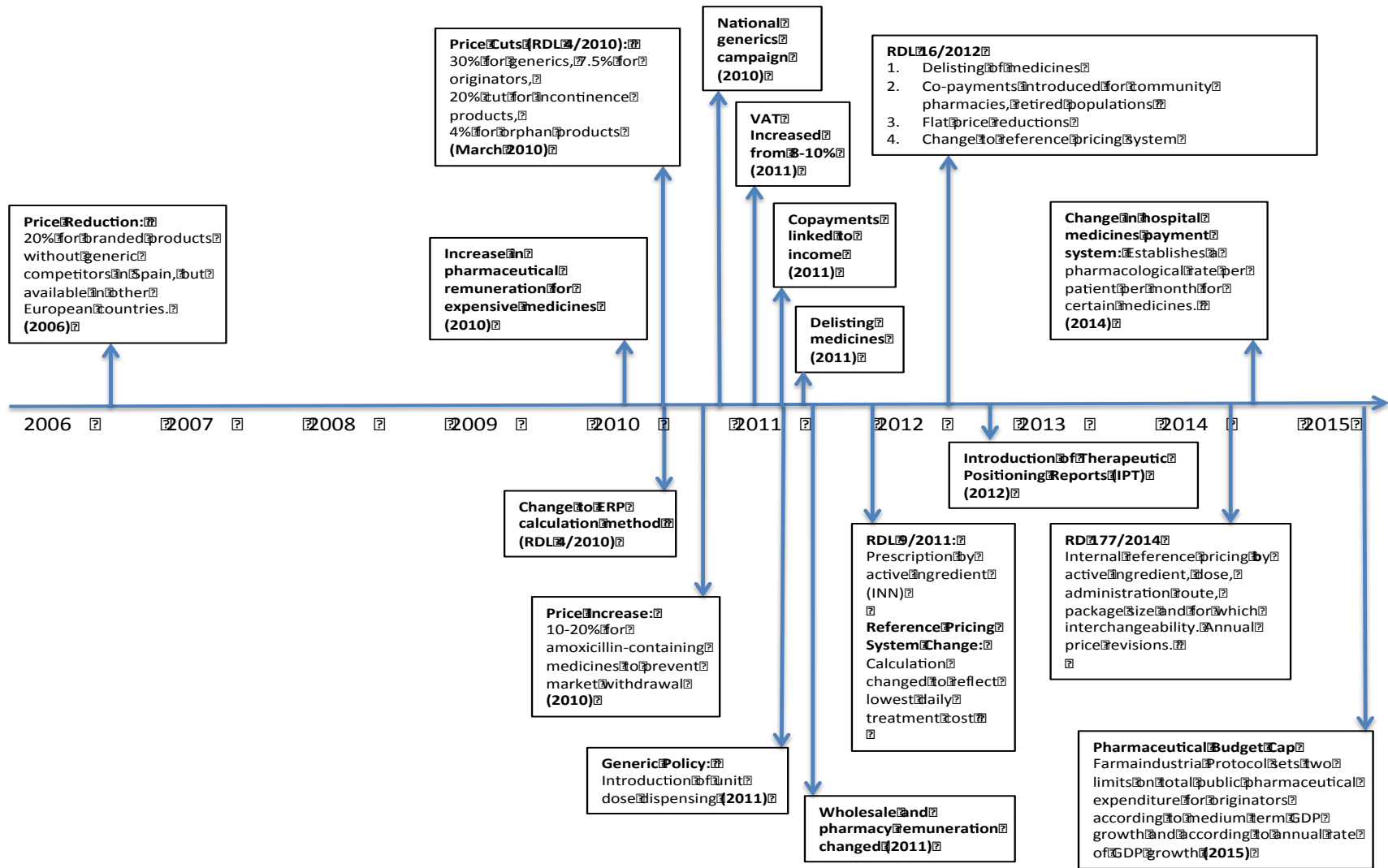
² This Commission is formed by representatives of the Ministry of Finance and Civil Service, the Ministry of Health, Social Services and Equality, the Ministry of Economy, Industry and Competitiveness and, from 2011 (RD 200/2012), from two rotatory – every six months- Autonomous Communities. Until 2012, price agreements on new drugs were publicly available on the Ministry of Health, Social Services and Equality website, however, from 2012 onwards, these are not uploaded.

The next major reform occurred in 2011 through the RDL 9/2011, which introduced mandatory generic prescribing and required pharmacists to dispense the cheapest available product according to MoH drug groups. Additional reforms in 2011 included delisting of medicines and the introduction copayments linked to income.

Further changes were then made the following year with the passing of RDL 16/2012. Before 2012, copayments in the public Spanish NHS were applied only to pharmaceutical products. After the passing of the RDL, both the conditions and the personal limits changed. Effective copayment rates had been steadily diminishing for almost 24 years (15% in 1985, 7% in 2009 and 6% in 2012) (Lopez-Valcárcel & Puig-Junoy, 2016). The copayment rate for active population was fixed at 40% and 10% for chronic patients since 1980 while the retired population was exempt. This steady decline is explained by the ageing effect, the consumption of chronic patients and excessive consumption associated with moral hazard (Puig-Junoy, Garcia-Gomez, & Casado-Marin, 2011). After the RDL 16/2012, the retired population faced a 10% copayment rate with monthly limits depending on personal income, however, there was an opportunity to expand the scope of applicability of copayments. Beyond reforms to copayments, RDL 16/2012 introduced a number of other changes to the Spanish pharmaceutical sector. This included the delisting of a number of medicines for minor symptoms, cost-containment initiatives in the form of flat price reductions, increased generic utilization, and adjustments to the reference pricing system.

Between 2013 and 2014, only minor reforms were introduced in the Spanish pharmaceutical sector. This included changes in hospital medicines payment system and a change in internal reference pricing for off-patent medicines. Finally, in 2015, Spain introduced a budget cap linked to GDP growth on total pharmaceutical expenditure through the Farmaindustria Protocol (Farmaindustria 2016a, Ministerio de Hacienda Y Administraciones Públicas).

Figure 2: Chronology of pharmaceutical policy reforms in Spain (2006-15)

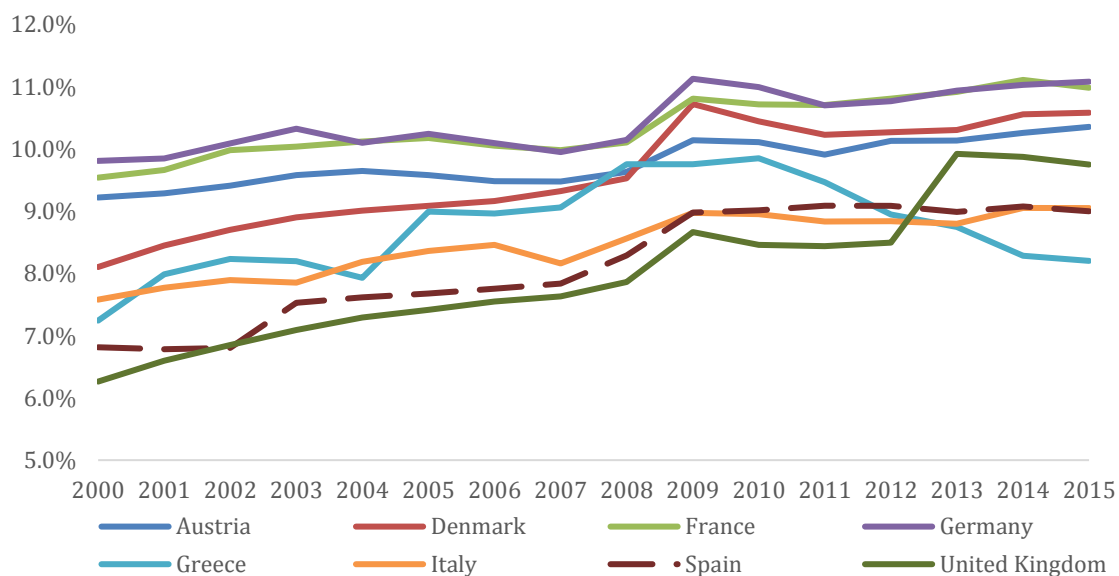


3 Drivers of pharmaceutical expenditure in Spain and efforts to contain these

3.1 Trends in pharmaceutical expenditure

The Spanish pharmaceutical market remains one of the largest in Europe. In 2014, the Spanish pharmaceutical market was the sixth largest in terms of sales in Europe, behind Germany, France, Italy, the United Kingdom and Russia.³ It was also ranked seventh in production, sixth in employment and eight in R&D (European Federation of Pharmaceutical Industries and Associations, EFPIA, 2016). Relative to other European member states Spain's total health expenditure as a proportion of GDP (Figure 3) and pharmaceutical expenditure per capita (Figure 4) are low. Three periods show noteworthy trends in pharmaceutical expenditure within Spain: a) 2000-2009, b) 2009-2013 and c) 2013-2016.

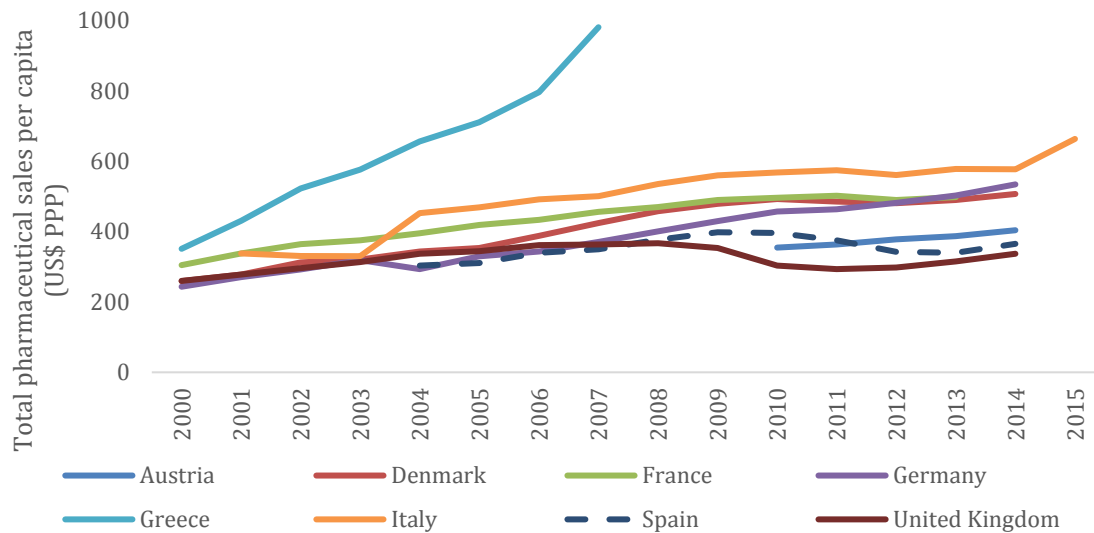
Figure 3: Health expenditure as a proportion of GDP in the EU (2000-2015)



Source: The authors based on OECD data 2016.

³ Latest data available from the *European Federation of Pharmaceutical Industries and Associations*, EFPIA.

Figure 4: Pharmaceutical expenditure per capita in the EU (2000-2015)



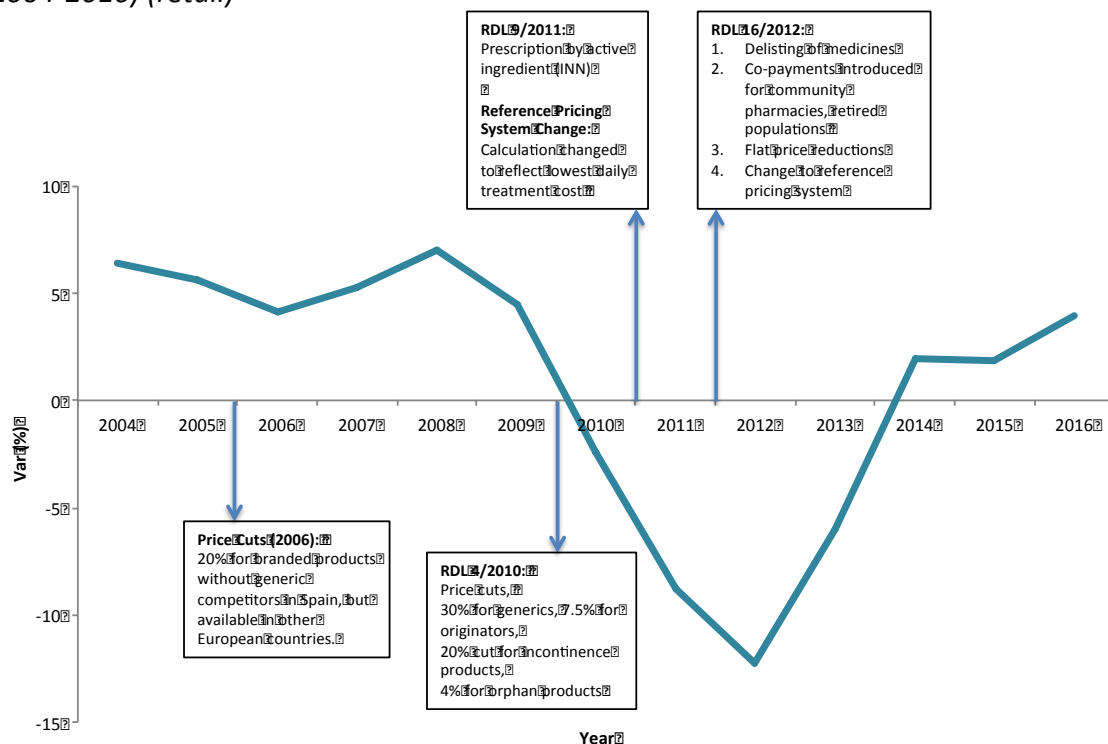
Source: The authors from OECD 2016.

In the pre-crisis period (2000-2009), the real annual average growth rate of the public pharmaceutical expenditure per capita (both, hospital and retail) was 6.2%, compared to a real GDP per capita growth of 4.7% (Lobo, 2013). From 2010-2013, total pharmaceutical expenditure declined significantly at an average annual rate of -7.35% compared to real GDP per capita declines of -1.37%, reaching levels of expenditure not seen since 2004. Following 2013, expenditure levels have risen at a modest average annual rate of 2.6% compared to real GDP per capita growth of 2.9% (Farmaindustria 2016, OECD 2016).

Figure 5 shows the percent annual variation in pharmaceutical expenditure per capita (retail), along with 4 major policy reforms. Between 2000 and 2009, the annual growth rate of public pharmaceutical expenditure ranged between 4% and 7%. Over this period, the annual growth rate was lowest in 2006 when branded off-patent medicines without generic equivalents on the market received price cuts. From 2010 to 2013, pharmaceutical expenditure declined at an average annual rate of -7.35% as RDL 4/2010 (price cuts), RDL 9/2011 (INN prescribing and change to reference pricing system), and RDL 16/2012 (delisting medicines, increase in co-payments, price cuts, change to reference pricing system) were implemented. These reforms exerted downward

pressure on expenditure through a number of mechanisms including reductions in price of both originator and generic medicines, delisting of medicines, reduction in volume through introduction of co-payments, and through increased generic substitution. Since 2013, expenditure has increased at a modest annual average rate of 2.6%. It is unclear what the cause of this increase has been, although it may be due to the market entry of innovative medicines.

Figure 5: Percent Annual Change in Pharmaceutical Expenditure per Capita in Spain (2004-2016) (retail)

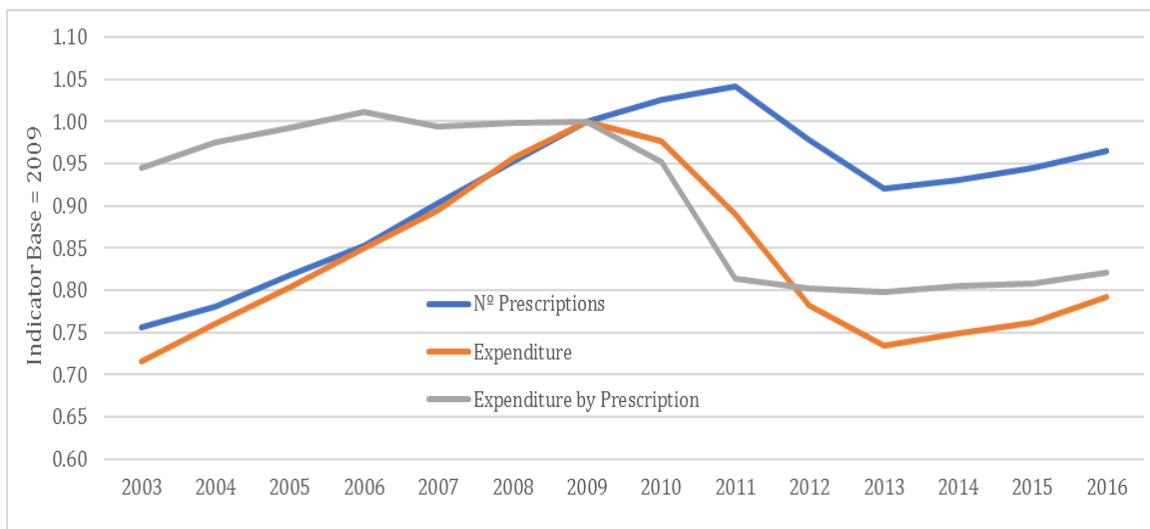


Source: Own construction. Ministry of Health, Social Services and Equality

Overall, both price and volume effects help to explain the significant declines in expenditure seen within Spain between 2009 and 2013. Figure 6 (retail) demonstrates that from 2009-2011, despite increases in the number of prescriptions, expenditure per prescription fell. Necessarily, the average price per prescription must have fallen during this period. This was likely caused by direct price cuts introduced through RDL 4/2010 or by a shift towards generic products due to mandatory prescribing by active ingredient

introduced through RDL 9/2011. In 2012, the total number of prescriptions began to drop. This coincides with increases in copayments introduced through RDL 14/2012 (reducing some of the exemptions from co-payment and increasing co-payment levels among some groups). Unfortunately, it is unclear whether this reduction in the number of prescriptions represents a reduction in unnecessary prescriptions. While co-payment reforms in 2012 appear to have had a positive impact from a cost-containment perspective, the impact on efficiency and health gain remain unclear. (Lobo, 2013; Villar et al. 2014).

Figure 6: Number of Prescriptions, Pharmaceutical Expenditure and Expenditure per Prescription in Spain (Relative to 2009 levels) (retail)



Source: Own construction. Ministry of Health, Social Services and Equality

3.2 Health Technology Assessment and its role in the Spanish system

Before 2012, the ICPP would make decisions based on a report generated within the Directorate-General of Pharmacy and Health Care Products. From 2012 onwards, the ICPP has used - as instrumental support - the Therapeutic Positioning Reports (IPTs, *Informe de Posicionamiento Terapéutico*) (detailed below). The IPTs were approved in December 2012 in order to guarantee equity in access to medicines across autonomous communities. Their growth has been dramatic in the last years. They consist of a public

assessment of the clinical effectiveness of new medicines in order to provide guidance to hospitals and Autonomous Communities regarding their adoption. They typically compare the new medicine with the alternatives used up to that point, assessing its comparative clinical benefit. However, they lack economic evaluations (cost-effectiveness analysis). IPTs have national validity but are not binding. Some Autonomous Communities follow them closely, for example Valencia and, partly, Catalonia. In smaller regions, where individual hospitals procure their own medicines, it is difficult to estimate the impact of IPTs on coverage decisions and drug uptake.

The 2017 Court of Auditors findings suggest that the pricing and reimbursement process in Spain lacks both transparency and consistency. Even though an economic evaluation analysis has been mandated by Royal Decree Law RD16/2012, it is not used in practice in the national process (Tribunal de Cuentas, 2017). There is evidence of some economic evaluation taking place independently of the government. The Group for Innovation, Assessment, Standardisation and Research in the Selection of Drugs (GENESIS) from the Spanish Society of Hospital Pharmacy operates at national level, is independent of the government, and generates HTA reports for hospital pharmaceuticals (in most of the cases, they incorporate economic evaluation results based on literature reviews) (Ortega Eslava et al., 2011). These reports are followed by a large number of hospitals and they have some influential power in the final reimbursement, at the local level (Lozano-Blazquez et al., 2016).

Even though drug pricing and reimbursement decisions are taken at national level, the Autonomous Communities are the ones paying for the costs of new drugs, due to the decentralization system. Autonomous communities differ in their ability to negotiate discounts on national prices, resulting in regional variations in the cost of drugs. For this reason, each Autonomous Community has authority to decide on the coverage uptake of a drug, based on the costs and a number of other factors. To this end, each region has the ability to define their own assessment criteria (some of them incorporating economic evaluation analysis) and processes for re-evaluation of drugs. Consultations with stakeholders in the Spanish system revealed that, while there are efforts in place to

harmonize Spanish HTA, significant variation remains in the evaluation criteria for each regional HTA agencies (i.e. out of a total of 8 agencies in Spain), hospitals, and the local level HTAs. Further, concerns emerged over the level of transparency and consistency in these regional and local HTA processes.

Overall, two of the main drawbacks of the Spanish approach to HTA are, first, its complexity and fragmentation in evidence generation and uptake and, second, the lack of transparency across national, regional and local institutions. As mentioned above, the Court of Auditors findings were highly critical of the pricing and reimbursement process at national level. At national level there is an apparent unwillingness to apply and implement legislation, and the evaluation process lacks consistency and transparency. There is a lack of clarity on the criteria that inform decisions. The use of IPTs, while encouraging also remains inconsistent (Oliva and Puig-Junoy, 2017; Tribunal de Cuentas, 2017). At regional level, there is lack of clarity on both the criteria considered in HTA and on the extent to which HTA reports influence decision-making. National, regional and local differences in evaluation criteria have led to a complex and fragmented evidence generation landscape in Spain (Stakeholder Consultations).

3.3 Hospital vs Retail Expenditure

Within Spain, roughly 60% of total pharmaceutical expenditure is retail expenditure and 40% of total pharmaceutical expenditure is hospital expenditure. From 2013-2016 total pharmaceutical expenditure has grown in Spain. Different trends are seen over the past three years in terms of retail vs hospital expenditure (Figure 7). Between 2014 and 2016, total retail pharmaceutical expenditure has grown at a modest rate. Meanwhile hospital pharmaceutical expenditure grew substantially between 2014 and 2015, then declined in 2016.

Figure 7: Regional Variation in Retail and Hospital Pharmaceutical Expenditure (thousands of Euros, 2014-2016)

Autonomous Communities (AC)	Public Pharmaceutical Hospital Expenditure			Public Pharmaceutical Expenditure in Official NHS prescriptions (retail)		
	2014	2015	2016	2014	2015	2016
ANDALUCÍA	766.201,03	979.726,63	906.701,09	1.637.085	1.652.442,78	1.707.710,28
ARAGÓN	163.724,50	200.553,16	200.930,02	291.704	297.120,72	316.437,10
ASTURIAS	142.878,49	184.070,54	174.825,57	252.883	257.505,64	267.171,33
ISLAS BALEARES	122.085,89	167.638,42	152.477,77	179.297	182.650,73	189.775,40
CANARIAS	212.222,64	262.567,66	253.239,42	422.903	433.483,33	453.681,59
CANTABRIA	81.120,64	108.878,45	85.852,40	123.577	131.050,83	137.060,51
CASTILLA Y LEÓN	277.356,45	365.437,90	337.203,62	541.281	552.489,22	572.634,57
CASTILLA-LA MANCHA	211.096,47	251.739,85	243.989,46	451.262	455.169,23	480.719,91
CATALUÑA	808.681,26	1.020.066,12	994.717,71	1.343.426	1.357.057,99	1.385.788,68
EXTREMADURA	134.671,02	158.804,82	154.892,55	294.596	301.754,25	311.568,59
GALICIA	334.018,71	434.420,90	373.808,57	681.419	674.417,45	685.091,61
MADRID	727.077,21	940.657,69	863.934,57	1.057.501	1.099.063,72	1.151.921,59
REGIÓN DE MURCIA	161.482,00	197.212,00	195.751,00	316.511	321.506,85	336.127,41
C.F. DE NAVARRA	82.621,74	96.731,55	97.869,59	123.723	129.195,80	134.065,20
PAÍS VASCO	228.142,18	266.911,41	281.146,31	449.428	462.515,29	475.311,13
LA RIOJA	47.177,34	59.725,88	52.416,31	65.134	68.516,19	70.589,56
C. VALENCIANA	699.559,42	863.149,73	780.899,40	1.104.026	1.132.988,10	1.208.817,30
CEUTA				13.031	13.693,54	14.970,82
MELILLA				11.670	12.509,46	13.327,75
NATIONAL	5.200.116,99	6.558.292,70	6.150.655,36	9.360.456	9.535.131,10	9.912.770,35

Source: Own construction. Data from The Ministry of Finance and Civil Service (Spain) for Hospital // Ministry of Health, Social Services and Equality (Spain) for retail.

The 2015 peak in hospital expenditure is predominantly explained by expenditure in hepatitis C over these three years. The introduction of innovative hepatitis C treatments resulted in significant increases in hospital expenditure on hepatitis C in 2015 (Figure 8). These levels declined significantly in 2016, which helps to explain the decline in hospital pharmaceutical expenditure. Nevertheless, 2016 levels remain higher than 2014 levels, signaling an overall growth in expenditure over this period of time. From 2015 to 2016, hepatitis C expenditure fell by more than hospital expenditure, mainly due to two reasons: 1) there was a backlog of Hep C patients treated in 2015 and the numbers stabilized and 2) increase on competition in Hep C pharmaceuticals. As a result public pharmaceutical hospital expenditure is signaling growth in other areas rather than Hep C.

Figure 8: Public Hospital Pharmaceutical Expenditure in Hepatitis C (thousands of Euros, 2014-2016)

Autonomous Communities (AC)	Public Hospital Pharmaceutical Expenditure in HepC			Percentage of Hepc on total Public Hospital Pharmaceutical Expenditure		
	2014	2015	2016	2014	2015	2016
ANDALUCÍA	15.360,11	208.025,95	68.080,71	2,00%	21,23%	7,51%
ARAGÓN	2.216,69	25.345,74	16.507,62	1,35%	12,64%	8,22%
ASTURIAS	0,00	27.307,12	9.578,76	0,00%	14,84%	5,48%
ISLAS BALEARES	2.587,07	33.886,20	5.850,93	2,12%	20,21%	3,84%
CANARIAS	4.223,51	36.664,71	17.714,78	1,99%	13,96%	7,00%
CANTABRIA	2.684,00	24.443,99	-1.624,22	3,31%	22,45%	-1,89%
CASTILLA Y LEÓN	6.544,42	54.230,81	15.319,69	2,36%	14,84%	4,54%
CASTILLA-LA MANCHA	4.816,68	39.626,20	12.823,52	2,28%	15,74%	5,26%
CATALUÑA	31.372,96	190.094,48	91.506,46	3,88%	18,64%	9,20%
EXTREMADURA	1.849,88	20.858,74	5.494,82	1,37%	13,13%	3,55%
GALICIA	1.108,47	77.848,25	7.613,67	0,33%	17,92%	2,04%
MADRID	13.409,78	186.684,42	71.449,62	1,84%	19,85%	8,27%
REGIÓN DE MURCIA	3.665,00	28.652,00	11.600,00	2,27%	14,53%	5,93%
C.F. DE NAVARRA	900,37	10.877,38	5.431,92	1,09%	11,24%	5,55%
PAÍS VASCO	3.999,45	27.645,75	27.498,92	1,75%	10,36%	9,78%
LA RIOJA	532,87	15.232,45	7.430,47	1,13%	25,50%	14,18%
C. VALENCIANA	14.802,11	182.417,61	40.573,41	2,12%	21,13%	5,20%
NATIONAL	110.073,37	1.189.841,80	412.851,08	2,12%	18,14%	6,71%

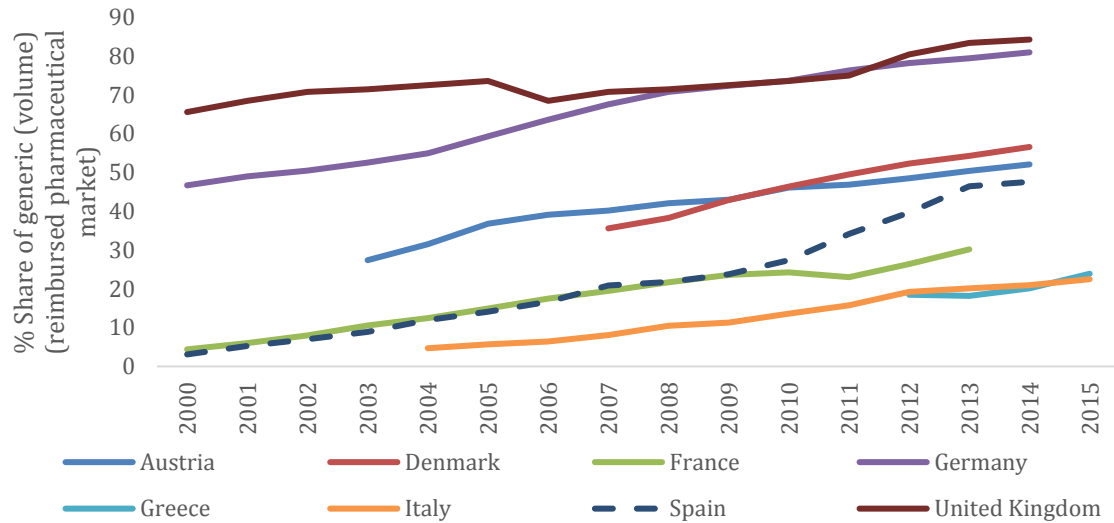
Source: The authors based on data from the Ministry of Finance and Civil Service (Spain). There are no individual data for Ceuta and Melilla.

3.4 Generic penetration and uptake

Between 2000 and 2014, both the volume of generic sales as a proportion of total pharmaceutical sales (Figure 9) and the value of generic sales as a proportion of total pharmaceutical sales (Figure 10) has increased significantly. Relative to other countries in Europe Spain's performance is average in generic market share (countries such as Germany and UK achieve higher market shares of generics, while Spain achieves higher market shares than countries such as Italy and France). In 2014, generic sales accounted for 21.8% of Spain's pharmaceutical expenditure. Meanwhile, rates of 46.9%, 36.2%, and 34.9% were achieved by Austria, Germany and the United Kingdom respectively (OECD 2016). Interestingly, the growth of both volume and value of generic sales accelerated between 2010 and 2013. Two important reforms to generic policy may help

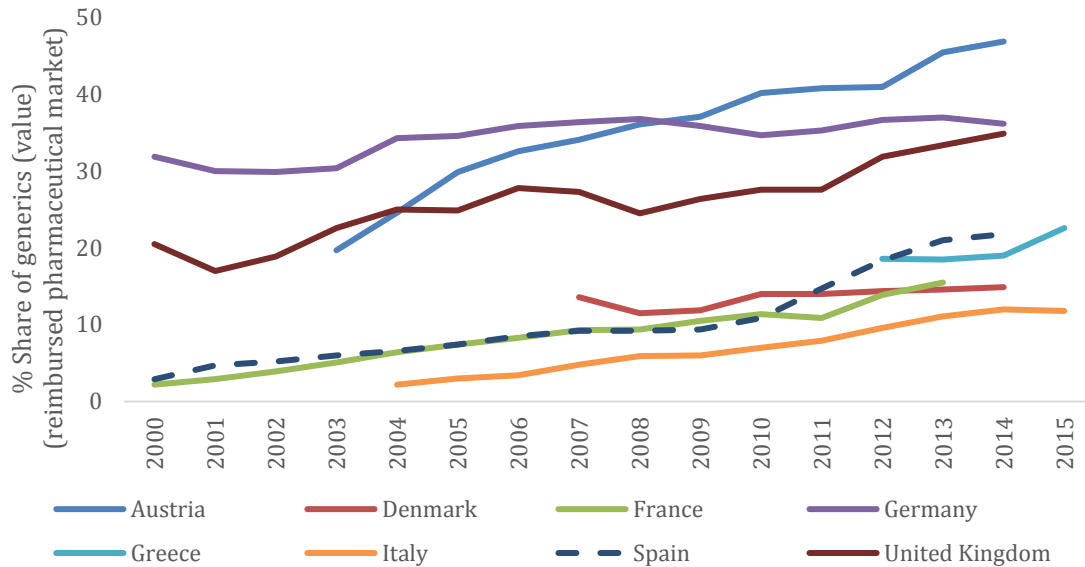
explain this trend. First, in 2010, a national generics campaign was launched to raise both awareness and acceptability of generics. Subsequently, the RDL 9/2011 mandated that physicians prescribe by active ingredient according to INN and required pharmacists to dispense the cheapest available product within MoH defined drug groups. The RDL 16/2012 made minor changes and exceptions to generic policy (Lobo 2013).

Figure 9: Volume of generic sales as a proportion of total sales (reimbursed market)



Source: The authors based on data from OECD 2016.

Figure 10: Proportion of total pharmaceutical expenditure spent on generics



Source: The authors based on data from OECD 2016.

Spain’s performance in generic sales can partially be explained through levels of generic availability, time delay for generic entry, and volume-adjusted price indices (Kanavos 2014). Figure 11 shows that only 32.1% of a large number of off-patent molecules have generic competitors 24 months post patent expiry. Generic penetration is greater in countries such as the UK, Denmark and Germany who all achieve rates higher than 45%. Spain also has room for improvement in generic pricing. A number of countries achieve lower prices for generic products than Spain, both in general and in the top-selling generics, though top-selling generics show larger price decreases in Spain compared with the generic market as a whole. Figure 12 breaks down the average price index for generic drugs at 12 and 24 months post-patent expiry. In particular, Denmark and Sweden show impressive reductions in price indices at 12 and 24 months post patent expiry. Only France, Italy, Greece and Portugal perform worse, in terms of generic prices after 12 and 24 months, while the UK, Denmark and Finland perform considerably better. A very similar situation occurs also in terms of generic entry.

Figure 11: Generic Penetration 24 months post-patent expiry in the EU

Member State (number of molecules studied)		Molecules with generic launched up to 24 months after patent expiry	Total sales at patent expiry (in constant US\$ 000) ^a	Proportion of sales with generic launched 24 months post-patent expiry
Total number of patent expired molecules				
Tier I	UK (90)	42 (46.7%)	2,990,465	88.6%
	Denmark (66)	30 (45.5%)	178,193	90.4%
	Germany (87)	41 (47.1%)	2,300,528	85.3%
	The Netherlands (53)	23 (43.4%)	261,210	64.3%
	Finland (67)	26 (38.8%)	209,774	81.2%
Tier II	Austria (94)	36 (38.3%)	175,471	71.7%
	France (101)	33 (32.3%)	2,992,032	67.8%
	Spain (84)	27 (32.1%)	1,298,675	76.3%
	Sweden (88)	30 (34.1%)	408,664	72.4%
Tier III	Italy (97)	31 (32%)	1,293,162	74.3%
	Greece (57)	14 (24.6%)	318,468	41.2%
	Portugal (56)	26 (46.4%)	256,050	70.1%

Source: Based on Kanavos 2014.

Figure 12: Average price indices for generic products within the EU at 12 and 24 months post-patent expiry.

Price index at patent expiry		Price index for generic drugs					
		All molecules with generic entry except originator brand		All molecules with generic entry (except originator) in the top decile by sales		All molecules with generic entry (except originator) in the bottom decile by sales	
		12 Months	24 Months	12 Months	24 Months	12 Months	24 Months
UK	100	60.6	34.9	54.3	26.5	76.7	56.5
Denmark	100	42.9	31.2	18.6	19.4	43.3	34.8
Germany	100	61.8	56.1	48.4	43.4	93.8	85.6
The Netherlands	100	61.7	58.5	42.9	45.6	77.1	69.4
Finland	100	50.5	36.9	30.3	22.7	59.8	45.1
Austria	100	61.5	59.9	53.6	53.3	66.4	64.8
France	100	69.5	66.3	56.8	53.8	85.2	80.4
Spain	100	68.1	61.3	66.5	58	68.8	62.1
Sweden	100	40.6	29.4	32.5	15.6	55.2	52.2
Italy	100	84.2	79.0	85.5	78.0	93.0	89.0
Greece	100	81.2	79.8	82.2	73.3	94.1	87.2
Portugal	100	67.9	66.8	57.7	55.5	82.7	72.4

Source: Based on Kanavos 2014.

Overall, while Spain has shown improvements in generic penetration and use over the past 15 years, their performance still lags behind other EU member states. The WHO

lists underuse of generic medicines and higher than necessary prices of medicines as one of the leading causes of inefficiency in health care systems (WHO 2010). Evidence suggests that Spain's current generic market is not operating as efficiently as could be the case based on performance in other markets. Specifically, Spain has room for improvement in generic pricing, speed of generic entry and penetration and the market share of generics.

Despite the above national average, some Autonomous Communities, however, have shown a stronger performance. Andalusia has favoured prescription by active ingredient with administrative and informational measures, including incentives, since 2001, making generic prescriptions arrive to 90% of total prescriptions (Lobo, 2013). Some Autonomous Communities also have a system in place to incentivise generic prescribing and, in general, cost-saving behaviour on the prescribers' side. For example, gives a 5% gross salary bonus to prescribers who fulfil a series of conditions, including reduced hospitalisation for patients whose conditions are not too severe and prescriptions of drugs that are approved ex-ante.

Another key factor contributing to the high proportion of generic drugs in Andalusia is the "tendering" system. This mechanism, though often called "tenders" (*subastas*), is rather a drug selection process and not strictly an auction: the Andalusian Health Service (SAS) does not purchase medicines at the lowest price, but it allows generic producers to sell their medicines to pharmacies. The difference with respect to the rest of Spain is that when the public health system prescribes a medicine by active ingredient (i.e. without indicating a specific brand), it will be the SAS that determines what specific medication is to be provided by the pharmacist. The selection is made through "tenders" to companies, which already have the medicine on the market. These companies will make an offer through an open and competitive procedure. The selected company will be the exclusive dealer in Andalusia, thus guaranteeing a certain level of sales. In return for exclusivity, the company pays a monthly amount to the SAS.

In order to choose the drugs to tender, the SAS chooses first the active ingredient with the highest expenditure and offers a two-year exclusive contract. Companies will then make an offer, in which a large importance is given to the amount they are willing to pay to the SAS. Companies also have to show that they have sufficient capacity to serve the whole Andalusian market. In the case that no company can serve the whole market, the SAS sometimes divides the territory into provinces, allowing more winners (one per province) and overcoming capacity constraint problems. The company offering the best offer (with respect to the reference price) wins. Notwithstanding the claims of ability to serve the whole market, the main problems of this mechanism are that some tenders end up without bidders and, for those with bidders, many experience drug shortages.⁴

Galicia also implemented measures to encourage generic prescribing. In 2011, a catalogue of 34 generic drugs was introduced that doctors would have to give before any other more expensive version of the same active ingredient.

Generic use has been encouraged through prescriber incentives. In the past, the percentage of prescriptions attributable to generics was one of the inputs considered for both the remuneration of prescribers and for the budgets allocated to primary care centres. Currently, the input has changed to the proportion of generic prescriptions for a specific active ingredient. Contracts and incentives can vary from one primary care centre to the next, which complicates and limits impact analysis of prescriber incentives throughout Spain.

3.5 Uptake of New Medicines

Over the past ten years, an average of 1005 new product formulations (products, dosage forms, pack sizes) per annum have been registered and marketed within Spain,

⁴ There is some disagreement with respect to the size of the shortages. Some sources (<https://www.diariofarma.com/2017/04/03/desabastecimiento-las-subastas-no-del-27-lo-largo-marzo>) report a 27% of drug shortages, while others report a 7.67% (<https://www.diariofarma.com/2017/04/08/alonso-reconoce-767-desabastecimiento-las-subastas>).

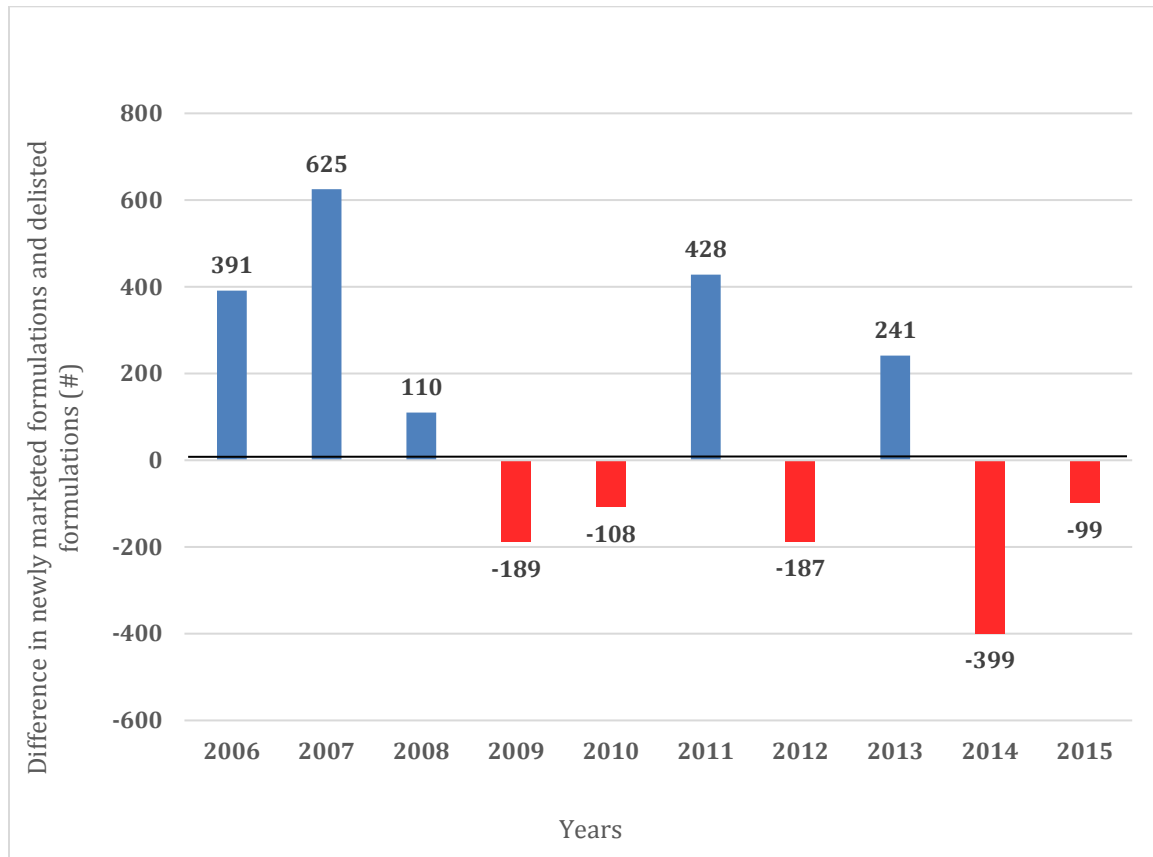
while an average of 858 formulations were delisted (PortalPharma 2017).⁵ Figure 13 shows the net difference in total number of pharmaceutical formulations each year over the past 10 years. These figures account for all new pack sizes, doses and formulations registered within Spain, which are based on all newly registered and introduced molecules. Interestingly, low levels of new medicine uptake in 2009 and 2010 coincide with the substantial declines in pharmaceutical expenditure seen in 2010. Further, the number of new product formulations peaks in 2013, when expenditure began to rise again. Following 2009, a net decrease in number of formulations registered is seen in the majority of years. This could be due in part to increased delisting of products or due to decreased uptake of new medicines. Data suggests that both are true to some extent. Between 2009 and 2015, five years had below average registration of new products (2013 and 2014 were above the 10 year average). Meanwhile, in that same period four years had above average delisting of formulations (2009, 2010, 2011 were below the 10 year average). This is consistent with the aggressive delisting of medicines as part of the RDL 16/2012.

Between 2006 and 2010, in Spain, on average, the annual number of newly marketed medicines corresponded to 26 new active ingredients. In 2015, despite a reduction in total number of new products, a total of 31 new active ingredients were added to the market (PortalPharma 2017). Unfortunately, the data available does not support any inferences to be made on the diffusion of innovation in Spain as total number of formulations is not a perfect indicator of level or uptake of innovation. Nevertheless, it appears that during the crisis years of 2009-2010, the introduction of new product formulations was at its lowest. In theory, the implementation of aggressive pricing policies could lead companies to delay launch in Spain due to fear of spill-over effects (Carone et al. 2012), particularly due to external reference pricing. Spain is taken as one

⁵ Although it would have made sense for the number of new chemical entities to be mentioned, rather than the total number of 'products' (formulations, dosage forms or pack sizes), this figure was not readily available.

of the reference countries in 18 of the 28 EU countries.⁶ However, it is also possible that the number of newly authorized products varies from year to year, with fewer products making it to market during economic downturns than during economic growth periods.

Figure 13: Change in the Number of Marketed Medicines in Spain (2006-2015)



Source: (PortalPharma 2017).

4. Pharmaceutical Budget Caps

Despite the implementation of several micro-level pricing and volume policies from 2010-2012, pharmaceutical expenditure began to rise again in 2013. In 2015, Spain implemented a pharmaceutical budget cap in order to limit the growth in

⁶ Source: *Study on enhanced cross-country coordination in the area of pharmaceutical product pricing*, December 2015, EU. Moreover, spill-over effects in country X exist even if Spain is not directly considered. The price in Spain affects prices in other countries that may be in the basket considered by country X, leading to indirect spill-overs.

pharmaceutical expenditure and link it to GDP growth. This section reviews available evidence on pharmaceutical budget capping and provides an assessment of the Spain's new budget capping policy. For a detailed overview of pharmaceutical budget caps, please refer to Appendix A.

4.1 Types of pharmaceutical budget caps

Several different types of pharmaceutical budget caps have been identified in literature. Table 1 provides a list of the various pharmaceutical budget caps identified through literature review. Appendix A provides a detailed overview of the various types of budget capping systems. A cap on expenditure can either be 'global' or 'partial', where the former includes all aspects of healthcare, while the latter relates to certain section(s) within healthcare (Wolfe & Moran, 1993). Partial budgets are increasingly targeted at the pharmaceutical industry in light of increasing expenditure within the sector. Under this type of budget, governments can impose expenditure caps on total pharmaceutical expenditure (e.g. Spain Farmaindustria Protocol), impose caps for expenditure on individual products (e.g. price-volume agreements) or disease areas (e.g. UK Cancer Drugs Fund), or even impose caps on caps on prescribers. In addition, budgets can either be 'hard' or 'indicative' (Mossialos, Mrazek & Walley, 2004; Ess, Schneeweiss, & Szucs, 2003). Hard budgets can either enforce penalties (e.g. only partial reimbursement, or repayment of overspending) or offer rewards (e.g. allowing the physicians or practices to keep or reinvest surplus funds) (Mossialos, Mrazek & Walley, 2004). Under indicative budgets, data for prescribing at the physician/practice/organisation level is collected with information regarding under- or over-spending communicated to the agent. Unlike hard budgets, no immediate penalties or rewards are issued (Mossialos, Mrazek & Walley, 2004). Differences are seen in the mechanism of setting the budget cap. Expenditure can be fixed to GDP (e.g. Greece, Romania, Portugal) fixed as a % of total health expenditure (e.g. Italy), or fixed at a baseline level and subject to increases linked to GDP growth (e.g. Spain) or to fixed percentage increases (e.g. UK PPRS) (Carone et al. 2012; Department of Health 2013). If

spending growth targets are exceeded, rebates often apply, but the type of rebate implemented can differentiate across products; for example, the latest PPRS agreement in the UK explicitly excludes all new products launched during the 5 years of the agreement (2014-2018) (Department of Health, 2013). This is a clear indication by the regulator in favour of supporting innovation.

As of 2015, Spain's pharmaceutical budget is linked to real GDP growth through the Farmaindustria Protocol. The Protocol sets two limits to the total public pharmaceutical expenditure for original medicines: a reference rate of medium term GDP growth, and the annual rate of growth itself, typically higher than the former. The Protocol establishes that, if pharmaceutical expenditures exceed the reference rate but not the actual growth rate, the industry will implement economic compensatory measures towards the NHS, which do not involve a monetary transfer. From the literature available, it is unclear what this economic compensatory measure will be. On the contrary, if spending exceeds real annual GDP growth, compensation will be monetary. There are therefore two thresholds, the first of which is less stringent than the second (Farmaindustria 2016a, Ministerio de Hacienda y Administraciones Publicas 2015).

Table 1: Country experience with pharmaceutical expenditure capping

Country	Type of Pharmaceutical Capping	Pay pack scheme	Brief description
Spain	Fixed percentage of real GDP growth. Only on innovative and publicly funded expenditure. Base set at 2015 levels	The Farmindustria Protocolo does not explicitly define a payback mechanism. It is assumed that manufacturers will payback 100% of the excess, but this not explicitly defined.	Spain has recently introduced this method for capping pharmaceutical expenditure with a base set at 2015 expenditure levels. Two budgets caps exist. The first is linked to a reference rate of medium term real GDP growth, and the second to the rate of real growth itself.
Italy	Fixed % of Health Expenditure - 13.3% in 2009, reduced to 13.1% in 2012 and 11.4% in 2013	60% payback from the pharmaceutical industry, wholesalers and pharmacies and 40% payback from state and regions.	First budget ceiling introduced in 1998, abolished in 2001. Second budget cap introduced in 2002 and was set at 13% of SSN expenditure.
New Zealand	Capping by product/therapeutic class	PHARMAC legally obliged to stay within budget. District Health Boards must cut expenditure elsewhere if PHARMAC spends over its budget.	PHARMAC has a Combined Pharmaceutical Budget which is developed in collaboration with DHBs and the Minister of Health.
Germany	Fixed budget (Calculation unclear)	Excess spending clawed back from physicians' association (up to the value of 142 million euro).	Budget caps for the 23 regions were introduced in 1993. Due to resistance from physicians, cap was abolished in 2001.
France	Budget caps for therapeutically related products	Drug manufacturers must contribute to a rebate scheme if the budget is overrun. The amount owed by each manufacturer is based on the drug's added therapeutic value and innovativeness of the drug.	Each year the French Parliament votes to approve a prospective budget for each category of health expenditure.
Greece	Fixed percentage of GDP – 1.33% in 2012, 1% in 2014	Payback agreement has been negotiated whereby industry pays every quarter if bi-monthly expenditure targets are surpassed.	In 2008 public expenditure on GDP in Greece was the highest in the EU. As part of a series of reforms through the Economic Adjustment Programme, a

Country	Type of Pharmaceutical Capping	Pay pack scheme	Brief description
			target of 1% of GDP was set for outpatient public spending on pharmaceuticals.
Portugal	Fixed percentage of GDP – 1.25% in 2012	Drug manufacturers pay back 100% of excess expenditure according to companies' individual market share.	Through Portuguese Economic Adjustment Programme, a target was set to reduce overall public spending on pharmaceuticals. Applies to both outpatient and inpatient.
Romania	Fixed percentage of GDP	Budgets implemented at the pharmacy level.	Up until 2009, Romania had in place monthly budget ceilings at the pharmacy level. Budgets were based on the number of pharmacists and their professional status, the number of pharmacy assistance, opening hours and location.
England	Earmarked Drug Fund	Under the 2014 PPRS, member companies have to pay back if NHS spending on branded medicines goes over pre-agreed growth rates	The Cancer Drugs Fund provides funding for cancer drugs that are not approved by NICE. In 2016, the Fund was revised and now operates within NICE. Now, it is a "managed access fund".
Scotland	Earmarked Drug Fund	Under the 2014 PPRS, member companies have to pay back if NHS spending on branded medicines goes over pre-agreed growth rates	The Scottish New Medicines Fund. The New Medicines Fund was set up in Scotland to provide additional coverage for orphan drugs, not available due to a negative SMC recommendation.
United Kingdom	As part of the most recent PPRS (2014) pharmaceutical expenditure, and due to austerity, there is a nil permitted increase in spend in 2014 & 2015, a fixed permitted % growth in expenditure	Excess spending is subject to PPRS. (1) It covers branded medicines sold to the NHS; generics are regulated separately. (2) PPRS is voluntary (and it covers around 80% of the branded sales to the NHS). (3) The alternative regulatory scheme regulates	The UK PPRS sets limits on the rate of return on capital employed (ROCE) by pharmaceutical firms.

Country	Type of Pharmaceutical Capping	Pay pack scheme	Brief description
	(PPRS): 1.8% in each of 2016 and 2017, with a permitted increase of 1.9% by 2018.	prices of medicines directly. The payments (payback), which is calculated based on the products that are on the market as of 31 December 2013. All new products launched after 1 January 2014 are not subject to PPRS payments. Exemption from PPRS payments is given to smaller companies with sales under £5 million. Paybacks are calculated on a company basis based on sales of branded medicines to the NHS. But the same percentage applies (for each year) to all companies in the PPRS.	

Source: Authors compilation from a variety of sources, including Carone et al. 2012, Department of Health 2013, Espin and Rovira 2007, Busse 1999, Busse 2008, and Anastasaki et al. 2014.

4.2 Impact of pharmaceutical budget caps

Evidence on the impact of pharmaceutical budget caps is sparse. International comparisons of budget capping systems are limited by differences in microeconomic level policies and health system structure across countries.

From a macroeconomic standpoint, capping pharmaceutical expenditure is unlikely to result in an efficient allocation of resources. One of the key efficiency goals of health care systems is to determine the optimal allocation of the health care budget. From an economic perspective, a health care budget can be allocated among a series of inputs including drugs, hospital services, and physician services in order to produce a final output, which is health. In some cases these inputs act as complements and in other case as substitutes for the production of health. Increasingly, in the context of growing health expenditure, countries have been employing a silo-mentality to health care budget allocation. Rather than fixing budgets across the entire health care systems, countries have set budgets for individual inputs.

Literature suggests that silo budgeting, while helping to constrain costs within the context of the input, is unlikely to produce efficient outcomes across the entire health care system (Garrison and Towse 2003). Silo budgeting of individual inputs has the potential to distort production and produce inefficiencies across the entire health care system. For instance, a cap on pharmaceutical expenditure may require a reduction in expenditure in drugs, and subsequently more expenditure in hospital services that may be less effective at promoting patient health. Assigning budgets to silo inputs rather than the final output may prevent health care systems from achieving the optimal mix of services. It has also been argued that it is more efficient for expenditure control to be exercised at disease or therapeutic area level (Garrison and Towse 2003).

Nevertheless, pharmaceutical expenditure caps with payback mechanisms can be effective at controlling costs if they are transparent, hard, and enforce penalties/rewards (Kanavos, 2008). Evidence from Germany, Portugal, Italy, and France report that pharmaceutical capping and payback mechanisms have produced cost

savings (Espin and Rovira 2007). Sood et al. also demonstrate that the implementation of global pharmaceutical budget caps can have a substantial impact on pharmaceutical expenditure, accounting for a 6% reduction over a 12-year period; however measures such as negotiation of pharmaceutical prices are shown to be more effective at reducing pharmaceutical expenditure (Sood et al. 2009), among other policy options.

4.3 Effect of pharmaceutical budget caps on diffusion of innovation

Diffusion of innovation refers to the extent to which a country can promote uptake and access to new innovations to patients. Section 3.5 showed that the uptake of new medicines is highly variable. Despite a decrease in the total number of new medicines marketed, in 2015, the number of new active principles has been higher than the average over the past ten years. Throughout the present discussion on expenditure control in Spain, it is important not to lose sight of the impact of pharmaceutical expenditure capping on the diffusion of innovation. While there is no evidence present in literature exploring the impact of budget capping on innovation, a few key concerns were highlighted through stakeholder consultations.

Within Spain, pricing and reimbursement decisions are taken by the Interministerial Commission for Pharmaceutical Prices. As such the presence of budget cap does not directly act as a barrier to the entry of new medicines. Nevertheless, budget caps can have indirect consequences on the diffusion and financing of innovation.

At a broad level, silo budgets reduce flexibility in allocating the health care budget. Health is the product of a series of different inputs. The level of innovation in each input can vary. By fixing the budget for one input, it restricts the ability of countries to respond to transformative innovations in one input. In theory, if the level of innovation in the pharmaceutical sector, far exceeded that in the hospital services, it would be efficient to reinvest resources accordingly. However, through silo budgeting, this reinvestment is not possible, and resources cannot be fully used to finance health care inputs with the highest value.

Secondly, budget caps potentially punish innovation. Within the pharmaceutical sector, each year some innovative products will enter market, some products in the market will come off patent, and other products will become obsolete and leave the market. In theory, if expenditure levels are fixed, savings from disinvestment in obsolete products and savings from price cuts and generic substitution will provide some revenue to allow for the introduction of new medicines. However, there is no guarantee that these savings will provide sufficient funds to match the pace of innovation or to fund truly transformative innovations (e.g. new treatment for Hepatitis C). In a situation where the budget cap is exceeded, a payback is triggered and the effective price of all products across the market is lower. If the cap is exceeded by a substantial amount, the payback amount will increase. Therefore, everything else being equal, years with high numbers of innovative products will result in high payback by industry, while years with limited numbers of innovative products will result in lower payback.

Overall, it is unclear whether or not the combination of budget capping with clawbacks or rebates will directly impact the diffusion of innovation, unless there is explicit provision exempting new and innovative products from these (as is the case in the latest UK PPRS agreement). In general, budget caps reduce the ability of payers to reinvest resources across health care inputs and are potentially most punishing in situations where the level of innovation and amount of subsequent payback required is highest.

4.4 Stakeholder input on pharmaceutical budget caps

Stakeholder consultation revealed mixed reviews on Spain's pharmaceutical budget capping system. First and foremost, concern was raised over how the cap system was being implemented in practice. Within legislation, there was a lack of clarity on several important details relating to the scheme. Specifically, it was unclear how the payback would be structured in situations where the cap was exceeded. More information is required on what the non-monetary economic compensatory measures would be for exceeding the reference rate of medium term GDP growth.

Opponents of a budget cap linked to GDP, criticized the choice of GDP as an anchor for expenditure. Fundamentally, GDP is an aggregate measure that is not linked to drivers of healthcare expenditure. Problems with forecasting, due primarily to GDP volatility mean that prospective budgets will likely miss targets consistently. Further, such a cap can create heterogeneity across regions in Spain. Across regions, differences in GDP and differences in drivers of expenditure are not taken into account by such a system. It is unclear if all regions will be able to reach the cap. Tensions may arise across regions. Most importantly, a budget cap linked to GDP fails to address drivers of expenditure within a country. Further, from an administrative standpoint, large paybacks can be highly inefficient. Experiences from Italy suggest that implementing a payback can be costly and challenging from a legal standpoint. For payers, it may be preferable and more efficient to implement measures that lower prices prospectively.

Proponents of a budget cap linked to GDP, stress that anchoring GDP ensures that pharmaceutical expenditure remains affordable. In situations of GDP growth, more spending will be available for pharmaceuticals. In situations of economic crisis, financial risk is minimized. Further, they stress that this type of budget cap is politically attractive and a relatively simple method of containing pharmaceutical expenditure. From an industry perspective, a payback system may be preferable to prospective price cuts owing to extensive external reference pricing systems across Europe. While a payback will not influence price and revenue in other countries, a lower price would trigger spillover effects throughout other countries due to reference pricing. Nevertheless, proponents of utilizing a GDP-linked budget cap acknowledge that a budget cap alone is not sufficient to contain expenditure and that additional policies are needed to address the drivers of pharmaceutical expenditure within Spain.

5 Balancing macro- and micro-level policy priorities

A number of trends emerge from the discussion on the drivers of pharmaceutical expenditure and from the discussion on the feasibility of pharmaceutical budget caps.

First, relative to other European countries, Spain's health expenditure per capita and pharmaceutical expenditure per capita levels are well within EU averages and have remained so over the past 15 years. Second, over the past 15 years, there are three distinct periods characterizing Spanish pharmaceutical expenditure: (a) Steady spending growth (average of 6.2 % per annum) from 2000-2009); (b) significant decline in spending (average of -7.35% per annum) from 2010-2013; and (c) modest growth in pharmaceutical spending (average of 2.6%) from 2014-2016).

Third, pharmaceutical expenditure in Spain seems to be responsive to both pricing and volume policies. Price cuts, generic substitution policies, and introduction of co-payments coincide with declines in pharmaceutical expenditure from 2010 to 2013, yet the results achieved appear to be temporary as additional pressures continue to inflate expenditure. Fourth, the period from 2014-2016 is characterized by an overall increase in total, retail and hospital pharmaceutical expenditure. The largest variations are seen in hospital expenditure, partly due to the introduction of new hepatitis C treatments.

Fifth, while Spain has made significant improvements in generic policy over the past 15 years, its performance appears to fall short of other EU member states. Policies targeting generic pricing and penetration have the potential to improve Spanish health system efficiency. Sixth, the use of HTA in the Spanish context is very limited either as a tool to inform decision-making (particularly pricing and reimbursement decisions) at national level, or as tool to provide guidance on cost-effective prescribing amongst prescribing physicians. It appears that there is poor dissemination of HTA reports, most physicians are not aware of them and, consequently, are not able or compelled to use them in daily clinical practice.

Seventh, the economic crisis and implementation of aggressive policy reforms from 2009 to 2012 coincide with net decreases in the number of registered pharmaceutical formulations. This is a result of both an increase in the delisting of products and a decrease in the registration of new formulations. Eighth, silo-budgeting such as pharmaceutical budget caps tend to be inefficient from a macroeconomic perspective in terms of resource allocation, and raise concerns over diffusion of innovation.

Experiences suggest that implementing effective payback systems can be challenging. There is a lack of clarity about how the payback system will work in practice within Spain. Paybacks potentially punish highly innovative products. Exemptions or contingency funds may be required in order to promote sustainable access to innovation in Spain. A model such as the UK PPRS, which sets expenditure growth targets and excludes new products from payment may be more appropriate. Ninth, there are some methodological and conceptual issues associated with linking a threshold to GDP targets set ex-ante. Forecasting medium-term GDP is challenging given GDP volatility.

On the face of it, Spanish pharmaceutical policy does not suffer from fundamental imbalances and overall as well as per capita spend on prescription pharmaceuticals are at or below the European average. However, there seem to be a number of policy concerns, which influence performance and overall efficiency. The findings of the Court of Auditors published in 2017 and referring to the 2014-2015 period, highlighted several key issues with the Spanish pharmaceutical sector. Decision-making was shown to be inconsistent and to lack transparency. At national level, there was an evident unwillingness to apply and implement legislation. Evidence suggested that cost-containment was being prioritized rather than efficiency in the Spanish pharmaceutical sector. A further issue in this context relates to the balance between health and industrial policy and whether the available policy mix provides the appropriate incentives to encourage and promote innovation and the uptake and use of innovative medicines.

This brief so far has reviewed Spanish pharmaceutical policy in the context of cost-containment and in the context of efficiency. This section summarizes the insights collected and provides a number of policy priorities for the future. These are discussed in the sections that follow.

5.1 What macro-level constraint ensures macroeconomic stability on medicines spending?

Policy priority 1

Pharmaceutical budget caps linked to GDP are arbitrary, inadequate to address concerns over efficiency, entry and diffusion of innovation; additionally, GDP itself is not an appropriate metric to link pharmaceutical expenditure to. An expenditure growth target could be implemented instead, with explicit allocation to innovative therapies and exemption of the latter from payback clauses provided that these are assessed on a regular basis, especially in those cases where early access, risk-sharing agreements and schemes of similar nature are being used.

Pharmaceutical budget caps linked to GDP can ensure affordability and help mitigate-risk by promoting the objective of cost containment. Despite several microeconomic policies targeting the price and volume of drugs, pharmaceutical expenditure per capita has continued to grow at a modest rate in Spain from 2013-2016. While capping pharmaceutical expenditure will not address issues of efficiency, evidence suggests it can be an effective measure to contain costs. Further, in times of fiscal constraint this type of approach ensures that pharmaceutical expenditure does not rise significantly in an arbitrary manner. Out of the various budget-capping systems investigated, capping pharmaceutical expenditure as a fixed % of GDP and linking pharmaceutical expenditure growth to GDP growth are effective in promoting cost-containment and risk minimization. However, in practice, evidence suggests the former mechanism typically involves substantial immediate reductions in pharmaceutical expenditure, which can negatively impact patient access.

While this type of policy is relatively simple and attractive to a risk-averse policy maker, stakeholder consultations revealed several problems with it, which need to be addressed in a forward-looking way. First, the use of GDP growth as an anchor is arbitrary. GDP growth is not directly linked to either the volume or the prices of medicines, and therefore does not address any of the drivers of expenditure. Second, in

order for a cap to be set, GDP growth must be forecasted. GDP often tends to be quite volatile, and as such there is significant risk that the forecasted GDP growth and subsequent cap will be inaccurate. Clear methodologies must be put into place to ensure that the pharmaceutical budget cap is accurate. Third, it is also unclear how this cap will be applied at regional level and this dimension carries significant weight in a country that relies on a federal system of governance. Both GDP and expenditure vary by region. Some regions may be better able to meet their expenditure cap than others. There is risk that a pharmaceutical budget cap, when applied at regional level will produce inequities in the health care system. Fourth, beyond issues of efficiency, the current budget capping system raises concerns about Spain's ability to promote innovation. Along with ensuring financial sustainability, Spain also should have a keen interest in contributing towards the continued development of innovative and cost-effective medications that improve the health and quality of life in their population and promoting their uptake and use. The importance of these two objectives must be weighed carefully.

As an alternative to a budget cap linked to GDP that carries all the above shortcomings, Spain might consider a model whereby expenditure growth is set at a fixed percentage and innovation accounts for a significant proportion of the growth element. There is comparable experience from the recent UK PPRS on this, whereby new products (innovative or not) launched during the lifetime of the latest PPRS agreement are not subject to PPRS payments (rebates) (Department of Health 2013). Another experience is France, where innovative medicines are excluded from the payback system. Out of the various budget-capping policies examined earlier, this offers the greatest stability and predictability to industry, the lowest volatility, and ensures sustained growth in innovation. Supply-side intervention through negotiation and the use of evidence-based techniques to assess value should ensure affordability, particularly in circumstances of fiscal restraint.

Another alternative would be the implementation of contingency funds, to be used in years where there are significant innovations entering the market. In years where

expenditure falls below the threshold, the difference is added to a contingency fund used to fund innovation in future years where expenditure thresholds are exceeded.

5.2 A payback mechanism to promote efficiency and reward innovation

Policy priority 2

A segmented payback mechanism may help promote microeconomic efficiency as well as reward innovation.

Within the current context of the budget cap, the payback mechanism which applies when the pharmaceutical expenditure target is exceeded is not well defined. This represents one of the key weaknesses in the Spanish pharmaceutical budget cap. Experience from Italy suggests that collecting the payback can be a challenging process. Enforcing the payback is critical if the budget cap is to achieve any cost savings. Conceptually, implementing a segmented payback mechanism would provide opportunity for promoting efficiency at regional level. Under segmented payback, the responsibility for excess expenditure would be divided between manufacturers, dispensers, and regions. Requiring a payback from regions and pharmacists may create incentives to improve efficiency in order to avoid paybacks.

Although it is fair to divide the payback among manufacturers, the scope of the payback would also need to be defined upfront. For example, the scope of the payback could be partial, and, as such, there could be a provision for payback exemptions for orphan drugs and highly innovative products; this also implies that agreements will need to have been reached regarding the use of those products at the micro-policy level, through some kind of price-volume arrangement, or an outcomes-based risk-share. As a result, innovative products subjected to those arrangements would be sensible to be excluded from the payback process. Ultimately, the choice of a suitable macro-level policy concerning budget caps and payback mechanisms is also linked inexorably to choices made at the micro-level.

5.3 The role of Health Technology Assessment and Risk Sharing

Policy priority 3

Efficiency improvements under a budget cap require transparent, consistent and robust health technology assessment, starting with horizon scanning, early engagement and scientific advice and the explicit use of either clinical benefit assessment or clinical-cost-effectiveness to arrive at coverage decisions. Risk sharing agreements can go some way to ensure affordability as well as paying for performance.

Beyond the introduction of changes in the budget capping system outlined above, innovation can also be promoted through improvements in the pricing and reimbursement processes in Spain. Increased transparency and consistency in the HTA process would provide higher predictability of expenditure, particularly in what concerns new and innovative therapies. One option would be the increased use of early engagement and scientific advice, which can be useful tools for providing clarity on submission processes and evidence requirements.

While a budget cap may ensure that expenditure does not reach unsustainable levels, additional measures are required to maximize value within the budget, particularly in what concerns new and innovative products. Despite legislation that prioritizes Health Technology Assessment through economic evaluation, it is unclear whether any use is made of this tool to inform coverage decisions based on value.

In order to promote efficiency under a budget cap, HTA in Spain should be leveraged much more extensively and more consistently when negotiating access to new medicines.

As part of making coverage recommendations, Spain should also consider greater use of financial and outcomes-based risk sharing agreements (RSAs). Currently, a variety of risk-sharing agreements are applied at regional level, although the extent and impact of these agreements is unknown. Some instances of price-volume agreements have been

noted at national level, while a few others have been concluded in a couple of autonomous communities and tertiary hospitals , where a budget was set for the treatment of hepatitis C in order to cap total expenditure. The use of these agreements can be an effective way to mitigate the financial risk and promote savings at the product level. In the long term, if sophisticated information and monitoring systems are in place, the use of outcome-based risk sharing agreements could also be enhanced. This could ensure that products only receive payment if they are effective and would help to drive efficiency.

5.4 A more robust generics and biosimilars policy

Policy priority 4

Spain can achieve greater efficiency and savings through improvements in generic pricing, penetration, and dispensing, whilst striking a balance between appropriateness and quality of care on the one side, and maintaining clinician autonomy in prescribing on the other.

Undoubtedly, generic policy is fundamental in the pursuit of efficiency improvements in any health care system, including that of Spain. Clearly, the generic medicines market segment is linked to the innovative medicines segment, in that efficiency gains in the former can help fund increased need arising from the introduction of novel therapies. Equally, genericisation should be compatible with physician autonomy in the selection of the most clinically and cost-effective therapeutic option depending on individual patient circumstances. However, if nothing is done to reduce over-prescription and to improve appropriateness the problems will prevail.

Despite improvements in generic uptake over the past 15 years, Spain still performs worse than other countries in terms of generic penetration and pricing and its performance could improve considerably. Mandatory generic substitution and the implementation of internal reference pricing have had positive impacts. However, issues have been highlighted in the dispensing process. Stakeholder consultation suggests that

discounts are obtained by pharmacists in exchange for supplying the product(s) offering the highest discount. The legality of this practice is questionable based on the local legal framework.

The above signal that lower prices could be achieved for generic products and that the competition game is played at the discount level, but potential savings remain in the supply chain and are not necessarily passed on to the health system. This could be rectified by one or more options: first, through dynamic reference pricing, whereby additional generic entrants are facing lower prices than incumbent producers and, second, through tendering. The tendering process for generic medicines promoted in the region of Andalusia has achieved substantial cost savings, however, these tenders have been subject to much political debate, with both supporters and opponents. Literature suggests that tendering is an effective way of promoting competition amongst generic manufacturers to achieve low prices (Kanavos et al. 2010), although some doubts exist about the long-term viability of these results (Dylst et al 2011). Spain could promote greater efficiency throughout the pharmaceutical sector by applying tendering for generic products across all regions. Further work is needed to identify other areas of generic policy, which could help promote faster generic uptake and penetration.

5.5 Stronger emphasis on demand-side policies including mandatory prescribing guidance and patient education

Policy priority 5

Demand-side policies, particularly focusing on prescribing guidance can promote efficiency by ensuring the appropriate use of medicines and the use of such guidance should be made mandatory. Patient information and education programmes can also contribute towards improved patient adherence.

The WHO highlights inappropriate use of medicines as a key driver of inefficiency in health care systems. Stakeholder consultations suggest that clinical guidance is not used effectively in the Spanish setting. This is becoming even more complicated by the fragmented nature of the Spanish health care system. Dissemination of HTA reports and the production of clear clinical guidance should be prioritized and linked to prescribing in order to promote better use of medicines and create therapeutic pathways. Expert evidence and advice from the Spanish context suggests that physicians are not cost conscious and that the vast majority of clinical practice guidelines are not followed. The role of HTA in this context would be crucial in terms of making clinically cost effective recommendations for prescribers that can be used at national level, ie across all regions. Such guidance can be linked to the IT system used by physicians to prescribe and could also be made mandatory. This may require interventions on and improvements of IT systems used for prescribing purposes.

The extent to which patients follow prescribing recommendations can also be a significant driver of microeconomic efficiency. Patient education programmes can play an important role in chronic disease areas, where acute exacerbations of diseases are often avoidable with effective patient self-care. Increased patient adherence can be promoted through well-designed patient education programmes.

5.6 Reducing barriers in patient access

Policy priority 6

Pharmaceutical policy should reflect values of equality and aim to reduce barriers in patient access.

A key limitation of aggressive cost-containment policies such as pharmaceutical budget caps is the potential for negative impact on access to new medicines. Sustained economic crisis will limit pharmaceutical expenditure and by extension the opportunity to fund innovative medicines. As the evidence presented on pharmaceutical

expenditure demonstrates, while generic entry and price reduction can help free up resources to invest in new medicines, a growing pace of innovation may eventually pose problems if GDP growth does not occur. If restricted access to new medicines is required, then post-code lotteries⁷ should be avoided. By harmonizing the requirements of HTA, Spanish policy makers, may wish to coordinate further the work that is undertaken by regional HTA bodies to ensure that duplication is avoided, the workload is spread fairly and that it contributes to key priorities on resource allocation

5.7 Resource allocation mechanism and risk transfer

Policy priority 7

Pharmaceutical budget allocations to regions should be risk-adjusted and regions should aim to provide fixed budget caps or bundled to their prescribers; such caps or bundled payments should be linked to incentives and be mandatory.

Much of the debate in Spanish pharmaceutical policy relates to the national – regional interface. The autonomy of regions in pursuing their own policies and making their own priorities is well respected and needs to be safeguarded. Operating within a macro-level framework requires a careful balance to satisfy overall objectives at national level while preserving flexibility and autonomy at regional level. Based on that, it appears that fiscal stabilization ought to happen at regional level as well. Pharmaceutical budget allocations to regions, therefore, should be risk-adjusted and, in so doing, take into consideration demographic changes and actual needs at regional level. In turn, the regions should be more pro-active in terms of enforcing such budgetary allocations amongst their prescribers. Fixed budgets or an overall bundled payment for physician services could be considered and, in so doing, enable the latter to prescribe within clear boundaries and be aware of limitations. Such budgets or payments and the associated

⁷ Postcode lotteries in health refer to differences in health care between different geographic areas.

limitations should be mandatory with incentives or disincentives attached to them to ensure adherence.

5.8 Better coordination across all facets of pharmaceutical policy

Policy priority 8

While individual policy priorities relate to specific actions in parts of the pharmaceutical policy interface, there is need for better coordination in order to ensure that actions and gains in one part of the 'pharmaceutical policy interface' are distributed in a fair manner across all components of that interface.

All policy priorities discussed in this section so far are very closely interconnected in terms of meeting health and pharmaceutical policy objectives at national and/or regional level. For example, better performance in the off-patent segment may result in savings and can release resources that can be re-invested in other parts of the system, where there is greater need, including the admission of innovative therapies into the reimbursement list. Equally, an elaborate process of value assessment through the implementation of HTA can inform more rational decisions based on clinical and/or cost-effectiveness, including a better definition of eligible patient sub-populations, or shape risk-sharing agreements, in order to account for uncertainties around therapeutic value, or inform clinical guidance enabling the inclusion of new therapies along therapeutic pathways. In turn, clinical guidance and pathways may not be implemented unless they are linked to prescribing tools informing prescribers about appropriate therapeutic options. Given the decentralized nature of the Spanish health care system and the choices made by the autonomous communities, an overall pharmaceutical policy coordinating function may be needed to ensure that actions are implemented, monitored and evaluated at the appropriate level. Such a coordinating function will also catalyse the relationship between the centre and the regions and will provide the vision for pharmaceutical policy in Spain.

6. Conclusion

While Spain's pharmaceutical expenditure levels are well within European averages there are several areas in which they could improve. The recently implemented budget capping system appears to be arbitrary, lacks clarity on payback mechanisms, suffers from methodological issues in GDP forecasting and raises concerns over efficiency and diffusion of innovation. A model similar to that of the UK PPRS, which sets targets on expenditure growth and exempts new products, may be more appropriate for promoting sustainable access to innovation within Spain. Moving to the microeconomic level, reforms in the use of health technology assessment and risk sharing agreements can help promote both efficiency and affordability. Despite recent improvements in generic policy, Spain would also benefit from the implementation of Andalusia's tendering policy at national level for the dispensing of generics, provided that such implementation is well planned and managed. Taking into account that this implementation should be well planned and managed. Generic utilization and appropriate drug use should also be targeted through demand side policy tools such as patient education programmes and prescribing guidance. Finally, further efforts are likely needed to balance national objectives with regional needs and autonomy. Applying risk-adjustment to regional pharmaceutical budgets and implementing bundled payments for physician services at regional level could be a way forward. Strictly speaking, a pharmaceutical budget cap can promote affordability at the macroeconomic level within Spain but a number of additional measures are needed to promote value for money, affordability and efficiency at local level. Further, changes may be required to the current capping mechanism to address concerns on methodology, efficiency, and diffusion of innovation.

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Appendix A – Overview of pharmaceutical budget capping systems

There are two types of pharmaceutical budgets and caps: global and partial. At a macroeconomic level, a number of countries have employed global limits to the total pharmaceutical expenditure (PE) over the past few decades, applying across the totality of drug spend. The rationale is clear and aims to restrict pharmaceutical spending growth. There is significant variation in the type of cap imposed, both in terms of the method of setting the cap and in terms of the consequences of exceeding the cap. Generally, global pharmaceutical caps fall under one of the following: i) PE capped at a fixed percentage of GDP; ii) (annual) PE growth linked to GDP growth; iii) PE set at a fixed proportion of health expenditure; iv) (annual) PE growth limited to a fixed percentage. In terms of partial pharmaceutical budgets (and caps) a number of countries implement earmarked drug funds for specific purposes or classes of medicines (e.g. orphans, cancer drugs, etc). An example of such earmarked funds is the Cancer Drugs Fund (CDF) in England.

A.1.1. Pharmaceutical expenditure capped as a fixed percentage of GDP

The simplest and perhaps most arbitrary method of determining a limit for pharmaceutical expenditure is to set it as a fixed percentage of GDP. Three countries employing pharmaceutical budget caps have explicitly set their pharmaceutical expenditure as a fixed percentage of GDP (Greece, Portugal, and Romania).

Prior to 2010, Greece had the highest pharmaceutical expenditure out of all EU member states at close to 1.9% of GDP (as well as the highest drug spend per capita). In response to national economic crisis, Greece implemented an Economic Adjustment programme with a series of reforms aimed at controlling health expenditure. Unsurprisingly public expenditure on pharmaceuticals was targeted as part of these reforms. A target of 1% of GDP was set for outpatient pharmaceutical expenditure in 2012. Unfortunately uptake of reforms was slow, and this was later revised to 1.33%, with a target of 1% set for 2014. A pay-back mechanism was negotiated for any excess expenditure.

Similar to Greece, Portugal was in the midst of financial crisis and through an economic adjustment programme also implemented targets for pharmaceutical expenditure that were linked to GDP. Portugal set a target of 1.25% for 2012 and 1% of GDP for 2013. Unlike Greece, who applied the target solely to outpatient pharmaceutical expenditure, in Portugal, targets were set for all pharmaceutical expenditure. A pay-back mechanism was negotiated for any excess expenditure.

Romania has also implemented a budget ceiling of around 1% of GDP, with a payback mechanism in place for any excess expenditure (Carone et al. 2012).

A.1.2 Pharmaceutical expenditure growth linked to GDP growth

An alternative to linking pharmaceutical expenditure to GDP is to set a base level of pharmaceutical expenditure and to link any future growth to GDP growth. Spain has recently introduced this method for capping pharmaceutical expenditure with a base set at 2015 expenditure levels. From this base, the percentage of pharmaceutical expenditure growth cannot exceed that of GDP growth. Any excess expenditure is to be

paid back by industry according to companies' individual market share (further details are provided in section 4.3).

A.1.3. Pharmaceutical expenditure capped as a fixed percentage of health expenditure

The third method links pharmaceutical expenditure with health expenditure. Since 2002, Italy has set their pharmaceutical budget at 13% of total health expenditure. If this level is exceeded, payback is required from regions, industry, wholesalers and pharmacists. Regions are responsible for 40% of the payback, while industry and dispensers are responsible for 60%. The proportion of health expenditure was changed in 2009 to 13.3 %, then again lowered to 13.1% in 2012 and 11.4% in 2013.

A.1.4 Pharmaceutical expenditure growth fixed at a given percentage

An alternative option to linking pharmaceutical expenditure to GDP growth, is to set an arbitrary growth target for pharmaceutical expenditure, with any excess being paid back by industry according to market share. This scheme has been applied most recently by the UK in line with the 2014 PPRS. Under the latest PPRS agreement, pharmaceutical expenditure is set to remain constant for 2015, to increase by 1.8% in 2016 and 2017 and to increase by 1.9% in 2018.

In the past, Portugal also imposed limits on the growth rate of pharmaceutical expenditure. Between 2006 and 2007 growth rate for pharmaceutical expenditure was set at 0%. Interestingly, only 69.65% of the excess expenditure was to be paid back by industry. The literature was unclear on responsibility for the remaining 30%.

A.1.5. Earmarked drug funds

Pharmaceutical budgets are also found at the disease level through earmarked drug funds. These are specialized funds earmarked for particular types of products that

historically have operated outside of traditional reimbursement systems. These funds are partial drug budgets, and were set up to provide access to specific therapies that are deemed clinically effective, but that have failed to receive a positive HTA because of poor cost-effectiveness and high levels of uncertainty (NHS 2016).

The Cancer Drugs Fund (CDF) in England was established in 2010 with an interim budget of £50 million. Initially 10 strategic health authorities in England operated the scheme at a local level. In 2013, NHS England took over the scheme and established a national list of products available through the cancer drugs fund. The scheme was established as a temporary measure to provide additional funding for cancer drugs until an alternative arrangement was made. In 2014, the scheme was extended for an additional 2 years. The budget was frequently exceeded, and by 2015/2016 was set at £340 million. In 2016, a new cancer drugs fund was established within National Institute for Health and Care Excellence (NICE). In the new CDF, NICE assesses all cancer drugs and determines whether or not a drug enters the CDF. The CDF provides temporary reimbursement for promising drugs that do not have sufficient evidence available for a positive NICE recommendation (NHS 2016).

Other examples of earmarked drug funds is the New Medicines Fund in Scotland, for rare diseases, and the Life Saving Drugs Fund in Australia for serious and rare medical conditions (Scottish Government 2015, Australian Government Department of Health 2016).

A.1.6 Variations in payback mechanisms

Typically budget or expenditure caps, if they are to be credible, are associated with a payback mechanism, clawback or rebate. There is some heterogeneity in the form of payback mechanisms, however, broadly these can be classified as: a) no payback, b) segmented payback, c) full payback, or d) payback with exemptions.

While in some cases, such as with earmarked drug funds, targets are set and not enforced, most countries implement some type of payback. In certain instances, full payback is required, however, in general, industry may not be responsible for the entire excess expenditure. This occurs in settings with multiple payors or in settings where decision-making is decentralized to regional levels. For instance, in the past, Belgium only required industry to pay back 72% of the excess, with the remainder being paid back by insurance organizations. Meanwhile within Italy, excess expenditure was found to be split between industry, wholesalers, pharmacists and regions (Espin and Rovira 2007). Other countries may impose additional flat rebates on all sales beyond the capped level of spending. Hungary, required full pay back and in the past included a flat 12% rebate on all pharmaceutical expenditure (Espin and Rovira 2007). Greece currently implements a payback whereby all excess spending is returned to the Ministry of Health.

Exemptions are frequently placed on paybacks for certain types of products. This provides countries with some flexibility in their payback schemes. The UK for instance, provides exemptions on payback in the PPRS for companies that have a market share under £5 million and for sales on vaccines or products that are centrally procured in case of national emergencies (ABPI 2014).

Overall, countries have several options to choose from when setting budget caps on pharmaceutical expenditure

A.1.7 Spanish and international pharmaceutical budget caps

Spain's pharmaceutical budget is linked to real GDP growth. Specifically, the Farmaindustria Protocol sets two limits to the total public pharmaceutical expenditure for original medicines: a reference rate of medium term GDP growth, and the annual rate of growth itself.

The Protocol establishes that, if pharmaceutical expenditures exceed the reference rate but not the actual growth rate, the industry will implement economic compensatory

measures towards the NHS, which do not involve a monetary transfer. On the contrary, if spending exceeds real annual GDP growth, compensation will be monetary. There are therefore two thresholds, the first of which is less stringent than the second.