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**Health policy in times of austerity — a
conceptual framework for evaluating effects
of policy on efficiency and equity illustrated
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Health Policy in Times of Austerity – A Conceptual Framework for Evaluating Effects of Policy on Efficiency and Equity Illustrated with Examples from Europe since 2008

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Highlights

- We propose a framework to evaluate health policy changes against health system goals.
- The framework provides a categorisation of policies into distinct health system domains.
- Policies are evaluated in terms of their effect on efficiency and equity.
- Policy changes implemented in European countries since 2008 illustrate the framework.
- Policies mainly aimed to contain cost and likely had mixed effects on efficiency and equity.

Abstract

The objective of this paper is to provide a framework for evaluation of changes in health policy against overarching health system goals. We propose a categorisation of policies into seven distinct health system domains. We then develop existing analytical concepts of insurance coverage and cost-effectiveness further to evaluate the effects of policies in each domain on equity and efficiency. The framework is illustrated with likely effects of policy changes implemented in a sample of European countries since 2008. Our illustrative analysis suggests that cost containment has been the main focus and that countries have implemented a mix of measures that are efficient or efficiency neutral. Similarly, policies are likely to have mixed effects on equity. Additional user charges were a

common theme but these were frequently accompanied by additional exemptions, making their likely effects on equity difficult to evaluate. We provide a framework for future, and more detailed, evaluations of changes in health policy.

Keywords

Healthcare Reform; Equity; Efficiency; Economic Crisis; Europe; Denmark; England; France; Italy; Netherlands; Portugal; Spain

Introduction

The need to “bend the cost curve” and lower the rate of growth in healthcare spending has been acknowledged across many high-income countries. The post-2008 economic crisis, which precipitated a sovereign debt crisis in Europe and squeezed public budgets, added particular urgency to longer-term concerns of cost containment.

Questions policy makers face in an environment of short-term pressures to contain costs may include: Where should cost containment be targeted to avoid undermining health system performance? Should policies aim at controlling prices or volumes? Which measures can generate short-term savings and what are their long-term implications? Which measures require significant up-front financial investment or are technically demanding? Which measures are politically difficult to adopt?

The intended or unintended consequences of policy changes in response to external shocks can be evaluated against overarching health system goals. Protection of high-need and vulnerable populations, such as the elderly, people with low incomes or social minorities, who tend to be characterised by lower health status and a disproportionate prevalence of illness, remains a priority across all three of these. Although evidence on the effects of economic crises on health and the demand for healthcare remains ambiguous [1], the number of vulnerable people likely increases with economic downturn and increasing unemployment. At the same time, declines in government revenue and private incomes cause pressure on public and private budgets available for healthcare [2]. In deciding which policy responses to adopt, equitable financing and access to healthcare are particularly important to protect vulnerable groups.

The objective of this paper is to provide a framework for evaluation of health policy changes against overarching health system goals. The first section develops the framework. We then extract from prior studies policies implemented in a sample of European countries since 2008. We evaluate and discuss the likely effects of these policies to illustrate our framework. A wide range of changes were made in this period, either in response to the economic crisis or in continuation of existing priorities [3,4], providing a rich sample of policies to illustrate our framework.

Framework Development

The World Health Organization (WHO) health system goals of improving population health, maintaining health services and ensuring fair financing and financial protection from ill-health [5] are related to the more abstract concepts of efficiency and equity. Improvement of population health requires the provision of effective services. With any given amount of finite resources, their

allocation to interventions that provide the greatest health gain will increase effectiveness and, by increasing health gains per unit of expenditure, efficiency.

Fair or equitable financing and financial protection are achieved by insurance that levies prepaid contributions progressively, based on ability to pay rather than risk of future service use, and leaving services free of charge at the point of use. Equity of access to services, that is, equal access for equal need regardless of ability to pay [6,7], ensures that services are responsive to population need. Overall, a healthcare system is redistributive if progressive financing is combined with equity of access, and incidence of public spending is higher in poorer population groups with higher need [8]. The criteria in an evaluation of equity are thus twofold, “Who pays (contributions)?”, and “Who gets (benefits)”?

A third and related question is, “Who gets paid?” This arises from the identity of aggregate revenue raised with aggregate healthcare expenditure and aggregate income of those working in the healthcare sector. Revenue and expenditure are equal to the volume of healthcare services delivered to the population multiplied by their average price and equal to the number of people working in health care multiplied by their average incomes [9].

We first extend the framework of the three dimensions of coverage by WHO [10] to analyse the effect of policies on insurance coverage (Figure 1). As has been suggested by Roberts, Hsiao & Reich [11], the depth and height of coverage may vary across population groups so that a homogeneous coverage "cube" is of limited use in an analysis of equity. This may be particularly true in low- and middle-income countries but also applies in high-income countries if coverage depends on location or occupation [8] or certain population groups are excluded or can opt out of public coverage [12]. Therefore, policies are evaluated in terms of their effect on service and cost coverage for distinct population groups. Reductions in coverage overall or policies that increase the gap in coverage between population groups have a negative effect on equity; policies that increase coverage or reduce coverage gaps increase equity. Along the height of coverage we furthermore distinguish between value-based users charges that may facilitate efficiency gains and blanket charges, which reduce equity.

We then categorise policies according to where in the tri-partite relationship between patients, purchasers and providers [13] their effects lie (Figure 2). In each of these health system domains, a set of criteria are used to evaluate the effect of policies on equity and efficiency. These include the breadth and depth of insurance coverage as criteria in financial flows from the population to purchasers (boxes 1 and 2). The height of coverage is the criterion in direct payments from the

population to providers (box 3). Beyond coverage, the main criteria in risk adjustment between purchasers and in resource allocation to providers are incentives for risk-selection and for changing the volume and quality of services (box 4). The effect of these financial flows on provider behaviour (box 5) and on equity of access (box 6) are the main criteria in service provision to the population. A final domain is added for policies related to the health system in its entirety (box 7). The amount of administrative cost incurred for health system stewardship impacts efficiency in this domain.

Finally, we expand upon the framework proposed by Thomson et al. [14] and borrow from a framework referred to as the “cost-effectiveness plane” in the health economics literature [15]. This allows for a visualisation of the effects of policies on efficiency. While efficiency is frequently misconstrued as synonymous with cost reductions, the concept requires a measure of output as numerator in addition to a measure of cost as denominator. Health outcomes attributable to healthcare (such as amenable mortality) are appropriate numerators in measuring efficiency because increasing population health is an overall policy goal. However, the effect of healthcare is notoriously difficult to disentangle from the wider determinants of health. As a result, assuming that services are effective in improving health, aggregate volumes of services provided can be used as a surrogate measure.

The third element of our framework is presented graphically in Figure 3. Policies are placed along the horizontal axis based on their effect on health expenditure. This is measured in terms of total expenditure, whether financed publicly or privately, to distinguish cost containment from cost shifting. Cuts in public expenditure may lead to substitution of public with private sources of financing [16–18]. Such cost-shifting measures may be particularly harmful to equity and lead to increased aggregate expenditure because cost is more difficult to contain when financed by fragmented private sources than in an environment of monopsonistic purchasing. Along the vertical axis, policies are placed on the plane based on their effect on health outcomes or aggregate service volumes.

If effects on outcomes or output can be measured on a ratio scale and sufficient data on effects and costs are available, this allows for ranking of distinct policies based on efficiency and their relative positions on the plane are a visualisation of their relative effects on efficiency. For example, a policy in the top-right quadrant close to the origin of both axes is more efficient than a policy in same quadrant and further right but equally close to the horizontal axis. However, only policies that increase output and decrease cost clearly represent efficiency gains while measures that decrease output and increase cost are clearly inefficient. Measures in the remaining two quadrants, which decrease or increase both cost and output concurrently, may be efficiency-neutral, efficient or

inefficient. The frontier between efficiency and inefficiency is represented by the dotted line in Figure 3. The slope of this line represents the incremental amount of resources a society is willing to expend for obtaining an incremental unit of service output or health gain. This is an external threshold set by policy.

A similar plane with a measure of equity on the vertical axis can be used to visualise relative equity effects. The direction of equity effects of changes to coverage are relatively straightforward to assess along the three dimensions illustrated in Figure 1. Determining the effects of other policies on equity and the position of policies on the plane relative to each other is empirically more difficult.

Methods

We extract all policies in Denmark, England, France, Italy, the Netherlands, Portugal and Spain from results of surveys and case studies published by the European Observatory on Health Systems and Policies [3,4]. We abstract the stated or implicit goals of each policy, which provider, profession, health technology or population group it affects and the mechanism through which it aims to achieve its goals and group policies that are identical according to these criteria across countries. Using the conceptual framework described above, we categorise these distinct types of policies according to the seven health system domains and assess their likely effects against health system goals. We cluster distinct policy types according to the type and direction of their likely effect and populate the efficiency plane with the policy clusters. We also discuss effects on equity and replicate the efficiency plane with equity on the vertical axis.

Our methods have a number of limitations. First, we categorise policies according to the direction of their *likely* effects because no detailed data on their actual effects on cost and output are available. We discuss some key assumptions made in our categorisations below. We also restrict our analysis to a static environment and do not consider all potential longer-term effects of policies. Because policy clusters are placed into quadrants based only on the likely direction of their effects, their relative positions within each quadrant cannot be interpreted in terms of their relative effects on efficiency or equity. Second, we use service output in assessing efficiency because too many assumptions would be necessary to assess likely effects on health outcomes. Finally, at the risk of some oversimplification but in order to cover the complete range of policies in the graphical representations, we only show the 21 policy clusters in the efficiency and equity planes. Performing the analysis at the level of distinct policy types, or indeed individual policies by country, would allow for a more nuanced categorisation.

The seven countries included experienced varying degrees of economic downturn and cuts to public budgets since 2008 and provide a wide variety of policies. They further represent two countries (Denmark and England) outside and four inside the European Monetary Union, of which Portugal and Spain were subject to Economic Adjustment Programs (EAPs) under supervision of the European Commission, the European Central Bank and the International Monetary Fund. Italy was also under scrutiny and pressure from creditors to cut public expenditure while France remained less affected by such external forces. The urgency to reform and to find measures with immediate effects can thus be assumed to have varied significantly between these countries.

Results

We define 45 distinct types of policies since 2008 from the studies conducted by the European Observatory [3,4] across 21 clusters. All policies and their categorisation are shown in Appendix 1. Some policies were direct responses to the economic crisis, particularly in southern European countries, which were impacted most severely by the crisis and where policy was subject to EAPs, while others represented a continuation of ongoing fiscal consolidation and reform processes.

Twenty-six of 45 policy types were related to changes in coverage and accessibility of publicly funded healthcare, with some changes to breadth (Who pays?) but focusing on the depth and height of coverage (Who gets?). Twelve related to changes in user charges, i.e. the height of coverage. Among the remaining 19, eight were related to changes in provider payment or prices (i.e. price reductions – Who gets paid?), five to changes in provider structure or in procurement of provider supplies, five were directly related to changes in service provision or the quality of services and one was related to changes in ministries or other government agencies, affecting stewardship of the entire health system.

Figure 4 shows the mapping of policy clusters on the efficiency and equity planes based on their likely effects. Colour codes indicate which domain of the health system and which dimension of coverage each policy is related to. Policies spanned six of seven health system domains in Denmark, France, the Netherlands and Spain and five domains in Italy and Portugal. Most policies likely represented cost containment and fall into the left-hand quadrants of the planes. However, some policies have likely led to cost increases and concurrent increases in output and equity. Although some policies may be inefficient in the longer run through causing delayed cost increases, our analysis does not identify clearly inefficient policies that are likely to decrease output while increasing cost in the short run. Somewhat of an exception to this may be increases to user charges for primary care, which were reported in two countries (Appendix 2).

The highest number of policy types was adopted in the Netherlands, covering all except the bottom-right efficiency quadrants. In Denmark, the majority of initiatives aimed to reduce cost while being neutral to or also reducing output, making their impact on efficiency difficult to evaluate; changes also aimed to improve quality and expanded coverage of preventive interventions for vulnerable populations. A number of measures were reported in France that are likely to increase quality, such as value-based user charges and expansion of HTA, and increase efficiency, such as substitution of inpatient with outpatient care. Initiatives also included increases in user charges as well as expansion of protection schemes to low-income populations. Similarly, all three southern European countries took measures across all except the bottom-right quadrants. England, where the fewest policies were adopted spanning four of seven health system domains, appears to be somewhat of an exception – neither policies that might increase cost were reported nor, contrary to other countries, were additional user charges introduced. Policies in England appear to have focused on cutting provider prices and incomes, downsizing administrative bodies and gaining efficiencies from substituting hospital services.

Fourteen of the 26 policy types related to coverage reduced the breadth, depth or height, implying negative effects on equity (Appendix 1). Coverage reductions for vulnerable groups, such as immigrants in Spain, are likely to have a particularly detrimental effect on equity because they also increase the coverage gap between population groups. However, three types of policies increased coverage for vulnerable populations either through expanding coverage to population groups that were previously uninsured, removing user charges or expanding user charge exemptions.

User charge increases were most commonly applied to hospital or specialist services and drugs or devices and most frequently took the form of co-payments (Appendix 2). A mandatory deductible across all types of services only applies in the Netherlands, with some exceptions such as primary care consultations. Co-insurance predominantly applies to drugs and devices, which may provide patients incentives to choose cheaper alternatives [19]. France introduced value-based co-insurance to penalise utilisation of care not compliant with agreed pathways. To attenuate effects of user charges on low-income and high-need populations, introductions or increases were generally accompanied by expansion of exemptions (Appendix 3). In Denmark, France and Italy initial changes to user charges were reversed at later points in time during the period considered, or subsequently included in the overall deductible in the Netherlands.

Some of the initiatives that are likely to increase efficiency can also be positive for equity. The reduction of drug prices, through mechanisms such as generic substitution, for example, can reduce financial access barriers. Substituting hospital with primary care can increase equity if primary care is

more accessible to poorer and needier population groups than specialised care. Cost containment measures that are output neutral are likely to also be neutral to equity.

Discussion

It is not always straightforward to assess the *likely* effects of policies on cost and output without detailed empirical evidence on their design and actual effects, which is largely lacking. Effects on the health system goals considered may indeed depend significantly on the design and implementation of policies or their context. Reductions in drug prices, for example, could reduce cost and be output-neutral but might also increase output if drugs become more affordable, as has been reported in the Netherlands or Portugal [20,21]. We consider reductions in provider prices and overhead to be efficient through reducing costs and leaving output unchanged. This is also true if providers respond with an increase in activity. If cuts are excessive, however, making some activity economically unviable, they may also be associated with reductions in service volumes. A similar dynamic may apply to cutting health worker incomes – if cuts are substantial, service volumes and quality may decrease. If young professionals are affected disproportionately, income cuts may also imply negative effects on workforce morale in the longer run and make health professions less attractive.

Measures such as the introduction of evidence-based guidelines and monitoring of adherence, expansion of e-health systems, introduction of value-based user charges or health technology assessment (HTA) to define coverage are likely to improve the quality of services and, potentially, health outcomes achieved. While this can reduce the use of services with little benefit and create savings, it may also uncover unmet need and encourage the additional use of effective services leading to cost increases.

Finally, measures that aim to change the mix of services or the skill mix of the workforce, such as substituting doctors with nurses, may also generate savings even if service volumes remain unchanged. If designed carefully to make service delivery more appropriate to patient need and provider skills, output and quality may increase. However, the ultimate effects of shifting tasks from doctors to other professionals depend on the context in which they are implemented and on the reactions of professionals. Doctors wield significant power in provider organisations, especially in primary care, and may be able to capture savings from substitution of skills as additional income if provider payments are not lowered concurrently. They could also react by inducing demand for additional services to substitute lost income.

Similarly, not all initiatives can easily be assessed in terms of equity. Measures that aim to reduce service volumes are equity-neutral if reductions are proportionate to population need. However, if

they are concentrated in areas of higher need or providers respond to price reductions or volume caps with shifting activity towards lower-risk or private patients, such measures reduce equity. Quality improvement measures can be equity-neutral provided that they improve quality of care for all population groups proportionately to need. They can indeed have a positive effect if they render appropriate care more accessible to high-need patients. Conversely, they can be detrimental to equity if improvements occur disproportionately for groups with lower need. There is a risk that disadvantaged population groups that are politically less well represented are affected disproportionately in times of austerity while more affluent groups are able to protect themselves. Without more detailed analysis and disaggregated data, it is not possible to assess the *de facto* effects of these measures on vulnerable populations.

These limitations notwithstanding, Figure 4 illustrates that, based on our analysis, policies cluster to the left of the efficiency plane and are likely to contain cost through cuts to capacity and activity and attendant changes to coverage or price reductions. Many policies thus represent mechanisms to reduce costs and activity concurrently. However, countries also appear to have used the crisis as an opportunity to increase spending in some areas through expanding population and service coverage.

Price cuts, reported in all seven countries, are a means to reduce total expenditure through reducing provider incomes (Who gets paid?) and without reducing volumes (Who gets?). As economic activity slows, revenue decreases without changing contribution rates (Who pays?). Price reductions, whether affecting provider incomes or industry supplying providers, can generate immediate savings to realign expenditure with revenue and are relatively easy to implement technically. Although political resistance might be encountered if those bearing the brunt of such measures have strong representations, these may be 'low-hanging fruit' and be relatively 'painless' for the population [22]. Price cuts can also be neutral to equity, provided that they are not excessive and result in *de facto* reductions in service availability.

Reductions in prices of pharmaceuticals or generic substitution were reported in all countries, with a particularly wide range of measures in Portugal and Spain [31–33]. Aggregate data indicate that pharmaceutical sales have slowed or decreased while volumes of major drug categories have continued to increase, as has the share of generics [29,30]. While our conceptual analysis does not establish causal relationships, this could be an indication that policies may indeed have achieved efficiencies. However, more specific studies from Spain indicate that increased co-payments reduced pharmaceutical consumption [34,35].

While also technically easy to implement, direct cuts to the availability of services are more ‘painful’ for the population [22]. Such measures include hospital closures, reduction of staff or other cuts to capacity. They may be politically more problematic and have a more immediate effect on health system performance. Their distributional implications depend on which population groups are affected more by the cuts (Who Gets?). Policies to control the number or incomes of healthcare workers were reported in all countries and were particularly prominent in southern Europe. Studies of perceived impacts of cuts in Spain and Italy raised concerns about deteriorating working conditions, patient access and quality of care [23–26]. Sources from Portugal, for example, where salaries and benefits of staff at public providers were reduced significantly, indicate that doctors and nurses increasingly resort to private-sector jobs or to practicing abroad [3,27]. In Spain, salary cuts were of similar magnitude [28] and have been reported to have negative effects on workforce morale and on quality of care [23]. However, there appears to be continued growth in the number of active physicians and nurses per population in all countries for which such data is reported [29,30].

The introduction of access barriers, notably through additional user charges, was common. This is concerning as they imply an immediate reduction in equity through making services less available to vulnerable population groups. In addition, prior evidence has shown clearly that blanket user charges are a blunt mechanism and may not only be inequitable but also inefficient in the longer run [19,31]. This is particularly true for primary care because, depending on the barriers to accessing other levels of care, such charges could cause people to substitute primary with more expensive care, such as hospital-based services, or to forgo early treatment causing utilisation of costlier interventions at a later stage (‘squeezed-balloon effect’). While our analysis does not consider longer-term effects, a similar dynamic could apply to several policies that are likely to reduce cost and output concurrently in the short run. The reduced availability of necessary services could have the unintended consequences of contributing to the growth of a parallel private sector, reducing equity, and lead to cost increases in the longer-term.

Decreases in hospital discharges and length of stay as well as increases in unmet need and waiting times might be an indication of reduced accessibility of services and are apparent in southern European countries and, to a lesser extent, in the UK [29,30,32]. However, increases in user charges have largely been accompanied by additional exemptions. In Portugal, for example, eligibility for exemptions was broadened from about 4.2 to 7.2 million people [33]. We are not able to assess the likely effects of user charge increases combined with additional exemptions.

The introduction of value-based user charges was only reported in France and Italy. This may represent a missed opportunity. If applied carefully, such charges can reduce the use of

inappropriate care while freeing up resources for needed services and can thus have equity and efficiency-enhancing effects [34]. Value-based policies more generally, such as expanding HTA, were less common and might still be in their infancy. One reason for this may be that such policies are technically more difficult to implement, require up-front investment and may not generate immediate savings. A number of measures for HTA-based cuts to service coverage were announced in Spain but these take time to be implemented [35,36].

While the period since 2008 provides a rich sample of policy changes, our analysis does not attempt to attribute effects that were observed by empirical studies to specific policies. Nor does the recency of policy changes allow for evaluating more sustained effects on health system goals, which materialize with delay. We find, for example, a larger number of policy types in the Netherlands than in England. This does not imply, however, that cost containment was more pronounced in the Netherlands. Indeed, in England, the crisis coincided with significant reforms under the 2012 Health and Social Care Act that increased autonomy of devolved purchasers and may have led, together with flat budget allocations, to reductions in service accessibility that are not immediately apparent from national policy. Actual effects depend on goals set by policy makers and the design of policies, which were more radical in southern European countries that were severely hit by the crisis and were subject to external pressures. More generally, evidence on effects of specific policies implemented during the post-2008 crisis is sparse. As a result, our analysis relies on descriptions of policies in a convenience sample of European countries that serve to illustrate our framework based on a number of assumptions and their likely effects.

Conclusion

We provide a conceptual framework for future and more detailed evaluations of the effects of health policy changes on efficiency and equity. The framework is illustrated with likely effects of recent policies from Denmark, England, France, Italy, the Netherlands, Portugal and Spain.

Responses to the most recent economic crisis may have had a greater cost containment focus than before [17]. Measures that are relatively easy to implement were common and are may have contained cost while preserving accessibility of services in the short-run, implying efficiency gains. However, a large number of policies also aimed to cut costs by restricting coverage and access, which is likely to decrease equity and has uncertain effects on efficiency, especially in the longer term. Increases in user charges were a common theme.

Conflicts of Interest

The authors have no conflicts of interest to report.

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<http://www.missoc.org/MISSOC/INFORMATIONBASE/COMPARATIVETABLES/MISSOCDATABASE/comparativeTableSearch.jsp> (accessed November 9, 2015).

Figure 1

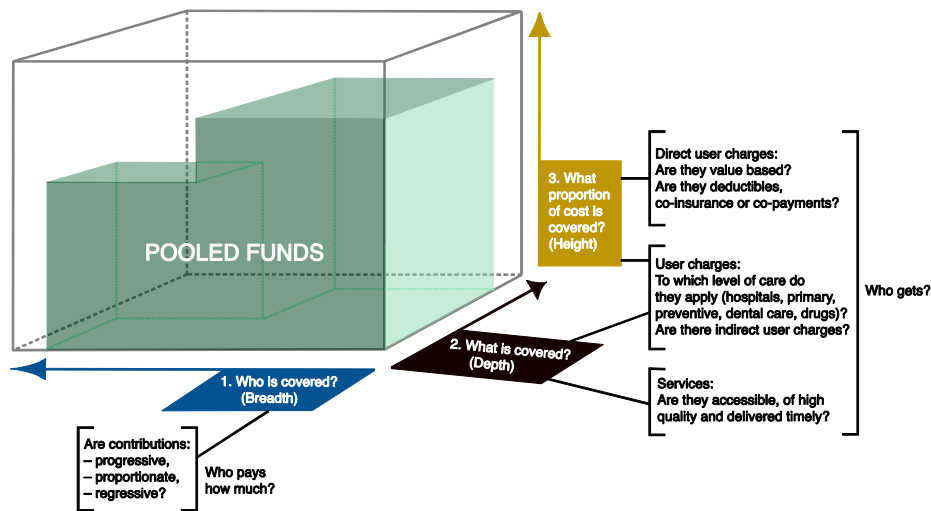


Figure 2

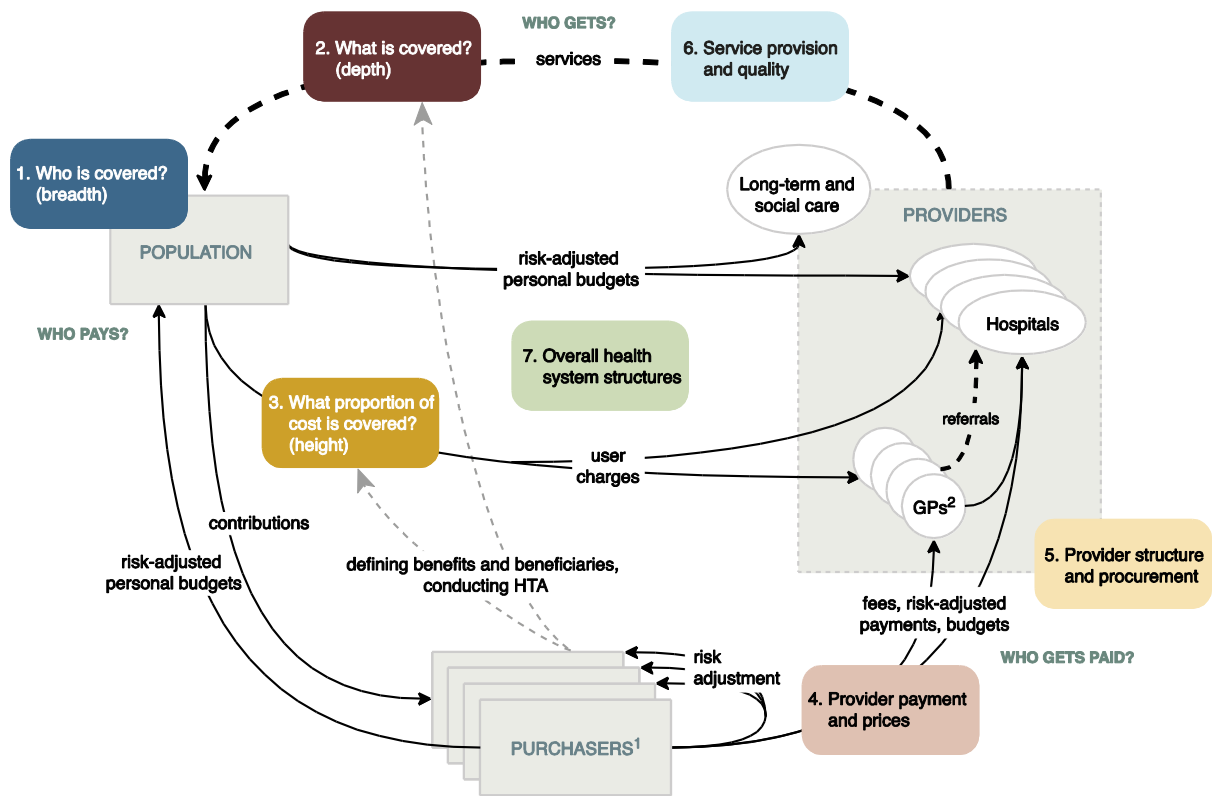


Figure 3

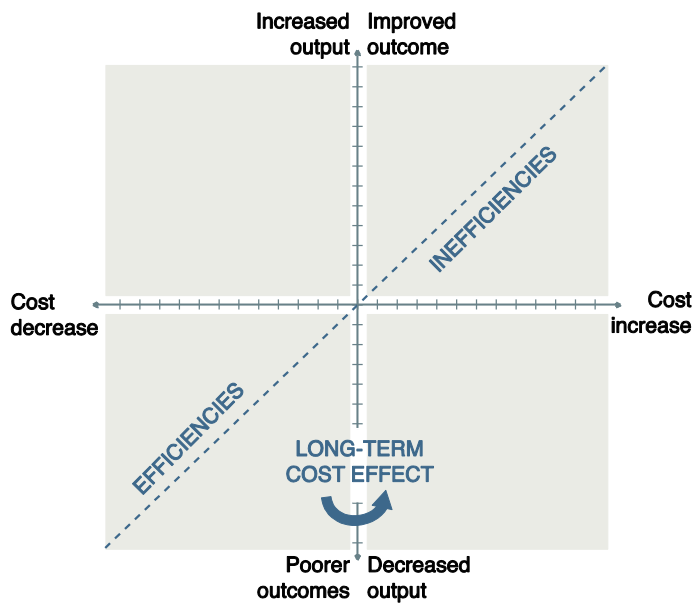
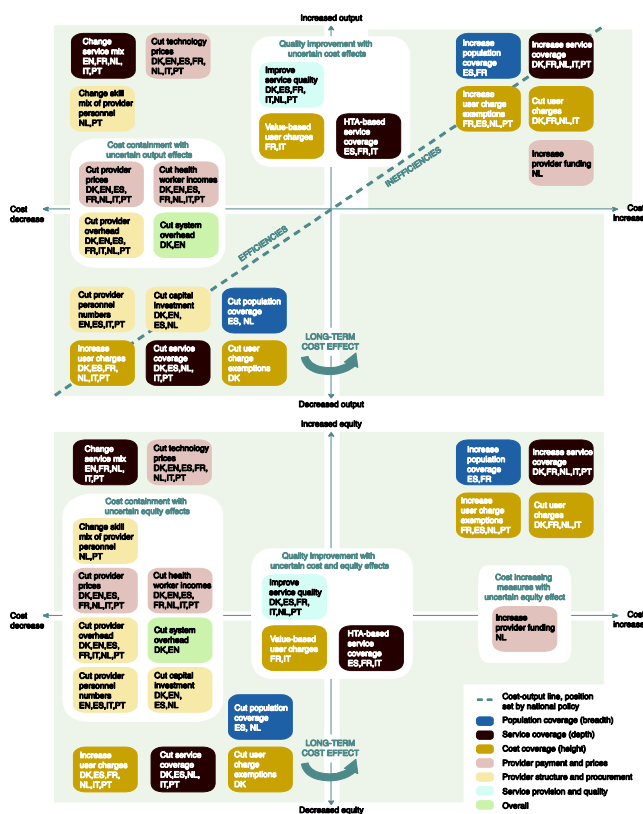


Figure 4



Appendices

Appendix 1: Summary and categorisation of policies implemented since 2008 in the six countries reviewed

Health System Domain Affected	Type of Effect	Direction of Effect on			Description of Policy Type	Countries
		Output	Equity	Cost		
Population coverage (breadth) and access to services	Increase breadth	+	+	+	1. Expanding coverage for uninsured population or vulnerable groups	France, Spain
	Reduce breadth	-	-	-	2. Restricting coverage for vulnerable groups (e.g. non-permanent residents, non-EU citizens, undocumented migrants, etc.)	Spain
					3. Tightening of eligibility criteria for long-term care, resulting in de-facto narrowing of population coverage	Netherlands
Service coverage (depth) and access	Increase depth	+	+	+	4. Ad-hoc expansion of coverage for additional services	France, Netherlands, Italy
					5. Increasing public health budgets or expanding public health interventions (screening, prevention)	Denmark, France, Portugal
	Reduce depth	-	-	-	6. Ad-hoc or blanket restrictions to coverage of services	Netherlands, Spain, Italy, Portugal
					7. Reducing public health budgets or removing public health interventions (screening, prevention)	Denmark, Netherlands
					8. Reducing supply and accessibility of primary care	Spain
					9. Reducing supply of hospital care (closures, reduction in beds, mergers)	Denmark, Spain, Netherlands, Italy, Portugal
	10. Reducing supply or funding for long-term care	Netherlands, Italy				
	Change service mix (increase or decrease depth)	+	+	-	11. Increasing supply and accessibility of primary care to substitute for hospital care	England, France, Netherlands, Italy, Portugal
Value-based	+	?	?	12. Introducing HTA to define coverage (all types of benefits including services)	Spain	

Health System Domain Affected	Type of Effect	Direction of Effect on			Description of Policy Type	Countries
		Output	Equity	Cost		
	changes (increase or decrease depth)				13. Introducing HTA to define coverage of drugs and/or devices	Spain, France, Italy
					14. Using HTA to identify services for disinvestment	Spain, France,
Height of coverage and access to services	Reduce user charges (increase height)	+	+	+	<i>Remove or decrease user charges for:</i>	
					15. Hospital and/or specialist care	Denmark, Netherlands, Italy
					16. Primary care (in Netherlands, primary care consultations excluded from deductible, charges for mental health reversed in 2014)	Netherlands
					17. Decreasing or abolishing user charges for vulnerable populations	Denmark, France
	Increase user charge exemptions (increase height)	+	+	+	18. Expanding user charge exemptions for vulnerable populations (e.g. based on age, income, employment status, health status) or reducing exemptions for wealthier populations	France, Spain, Netherlands, Portugal
	Increase user charges (decrease height)	-	-	-	<i>Introduce or increase user charges for:</i>	
					19. Hospital and/or specialist care	Denmark, France, Netherlands, Italy, Portugal
					20. Primary care (in Netherlands, mental health only)	Netherlands, Portugal
					21. Drugs and/or devices	Denmark, Spain, France, Italy, Portugal
					22. Long-term care	Netherlands
23. Dental care					Denmark	
24. Introducing / increasing overall deductibles (for all levels of care and types of services)	Netherlands					
Reduce user charge	-	-	-	25. Introducing or increasing user charges for vulnerable populations or removing	Denmark	

Health System Domain Affected	Type of Effect	Direction of Effect on			Description of Policy Type	Countries
		Output	Equity	Cost		
	exemptions (decrease height)				exemptions	
	Value-based changes (increase or decrease height)	+	?	?	26. Introducing or increasing value-based user charges (e.g. non-urgent use of ED, drugs with limited effectiveness, inappropriate service utilization, etc.)	France, Italy
Provider payment and prices	Increase provider prices	+	?	+	27. Increasing funding for or prices of primary care	Netherlands (2010)
	Reduce provider prices	?	?	-	28. Decreasing or freezing funding for or prices of primary care	Netherlands (2008)
					29. Reduce hospital expenditure through budget caps or payment scheme reforms	France, Netherlands, Italy, Portugal
					30. Reduce hospital expenditure through price cuts	Denmark, England, France, Netherlands
					31. Increase competition among payers	Netherlands
	Reduce health worker incomes	?	?	-	32. Introducing measures to control health worker incomes (salary or fee-for-service cuts, freezes or slowed increases, increased social contributions, increasing overtime shifts, etc.)	Denmark, Spain, England, France, Netherlands, Italy, Portugal
Reduce health technology prices	+	+	-	33. Generic substitution	Spain, France, Netherlands, Portugal	
				34. Reduce drug or device prices through direct cuts or indirect policies (e.g. increased competition, centralized procurement, tendering, reference pricing etc.)	Denmark, England, Spain, France, Netherlands, Italy, Portugal	
Provider structure and	Cut overhead	?	?	-	35. Reducing provider administrative budgets or staff	Denmark, England, Netherlands, Portugal

Health System Domain Affected	Type of Effect	Direction of Effect on			Description of Policy Type	Countries
		Output	Equity	Cost		
procurement					36. Centralization of procurement of medical supplies	England, Spain, France, Italy, Portugal
	Cut provider personnel numbers	-	?	-	37. Introducing controls of health worker staff levels (cuts, recruitment freezes, non-renewal of temp contracts, etc.)	England, Spain, Italy, Portugal
	Change skill mix	+	?	-	38. Strengthening the role of nurses to substitute of doctors with nurses in primary care	Netherlands, Portugal
	Cut capital investment	-	?	-	39. Reducing or delaying publicly financed capital investments in hospitals	Denmark, England, Spain, Netherlands
Service provision and quality	Improve quality	+	?	?	40. Introducing or expanding measures to encourage evidence-based prescribing of drugs and avoid errors (INN, e-prescriptions, guidelines, etc.)	Denmark, Spain, Portugal
					41. Adding new criteria to HTA or expand scope	France
					42. Introducing or expanding measures to encourage evidence-based practice	Denmark, France, Italy, Portugal
					43. Introducing additional e-health systems to facilitate information exchange, improve quality and reduce waste	Denmark, France, Portugal
					44. Incentivize treatment and management of chronic patients	France, Netherlands
Overall	Cut health system overhead	?	?	-	45. Restructuring Ministries or other public agencies to reduce overhead and administrative costs	Denmark, England

Source: Authors based on Maresso et al. and Thomson et al. [3,4]

Note: "+" denotes increases, "-" decreases and "?" uncertain effects

Appendix 2: Summary of user charges introduced since 2008 by level of care and type of charge

Level of Care and Type of Service or Good	Type of Charge	Countries and Type of Change
Hospital in-patient stay	Co-payment	France (2010): from EUR16 to 18 per day for all hospital stays Netherlands (2012): introduction of co-payment of EUR145 / month for stay in mental care hospital (abolished in 2014)
Hospital emergency services	Co-payment	Portugal (2011-13): depending on type of emergency, from EUR8.60 - 9.60 to EUR 15 - 20.60 and future inflation-indexed increases. Italy (2011): increase to a minimum of EUR25 for non-urgent use, amount set by region (value-based charge)
Outpatient specialist services	Co-payment	Denmark (2012): introduction for IVF and sterilization Netherlands (2012): introduction of EUR100 to 200 per secondary mental health treatment (abolished in 2014) Portugal (2011-13): increase from EUR4.60 to 7.75 for all specialist consultations and future inflation-indexed increases. France: Italy (2011): increase to a minimum of EUR10 nationally, with remaining amount set by region
Primary care	Co-payment	Netherlands (2012): increase from EUR10 to 20 per primary mental health care consultation (abolished in 2014) Portugal (2011-13): from EUR2.25 to EUR 5 for GP consultations and up to EUR 10 for other primary care services and future inflation-indexed increases.
Devices	Co-insurance	Spain (2012): Introduction for prostheses, depending on category of coverage France (2010): increase from 35% to 40% for all devices, subject to exceptions approved by sickness funds Netherlands (2013): introduction of 25% for hearing aids (replacing varying levels of co-payments)
Devices	Co-payment	Netherlands (year not specified): introduction of EUR141 per pair of orthopaedic shoes for adults and EUR57 for children aged <16 years
Pharmaceuticals	Co-insurance	Denmark (2008-13): slight increases of ceilings for decreasing co-insurance rate (from 100% for annual costs <DKK915 to 15% for costs >DKK3,235 Spain: increase in co-insurance rate from 40% to 40 – 60%, depending on type of drug France (2010): 65% to 70% for less effective drugs (value-based charge) Portugal (2010-11): coinsurance applied to over-the-counter drugs

		and pharmaceuticals for mental health conditions; co-insurance rates increased from 0 to 80% depending on the type of drug to 10 to 85% (but decrease of co-insurance rate for generics)
Pharmaceuticals	Co-payment	Denmark (2012): slight increase for over-the-counter drugs Spain (2012): Introduction for prescription drugs, depending on region and category of coverage Italy (2008-11): introduction in four regions for outpatient prescriptions
Long-term care	Co-insurance	Netherlands (2013): increase of co-insurance rates
Dental care	Co-payment	Denmark (2013): slight increase
All, subject to exceptions	Deductible	Netherlands: repeated increases from EUR 150 / year in 2008 to EUR 350 in 2013
All, subject to exceptions	Co-insurance	France (2009): Increase for care not compliant with agreed pathways from 40% to 70% (value-based charge)
Related non-healthcare services	Co-payment	Denmark (2013): introduction for translation services for migrant groups

Source: Authors' analysis based on Maresso et al.[3] and Mutual Information System on Social Protection (MISSOC) [37,38]

Appendix 3: Summary of changes to user charge exemptions and protection mechanisms

Type of Exemption or Protection	Countries and Targeted Populations
Exemptions from all user charges	<p>Italy (2008-11): varying arrangements by region, but charges generally based on household income; increase of age threshold for exemption for people receiving the min. pension from 60 to 65 years</p> <p>Portugal (2012): expansion based on income, health status (e.g. people with chronic conditions), disability, age (e.g. children) and employment status (e.g. unemployed, fire fighters) to cover about 70% of the population</p>
Expansion of publicly funded statutory insurance coverage and private insurance for user charges	<p>France (2009): expansion of low-income population eligible for statutory coverage (CMU) and complementary insurance covering user charges (CMU-C)</p> <p>France (2011): removal of deductible for undocumented migrants</p>
Income-based co-insurance rates and monthly caps for prescription drugs	Spain (2012): introduction of varying rates from 10 to 60% and monthly caps ranging from EUR8 to EUR61 for annual incomes between EUR18,000 to 100,000
Insurance premium subsidies	Netherlands (2011-13): gradual reduction of subsidies for purchase of insurance and lowering of income threshold for eligibility. However, reductions less significant for lower than higher incomes.
Exemptions of services from deductible	Netherlands (year not specified): exclusion of GP consultations, maternity care and paediatric care from overall deductible

Source: Authors' analysis based on Maresso et al.[3] and Mutual Information System on Social Protection (MISSOC) [37,38]