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An approach to estimating the effects of financing system change on Irish healthcare expenditure

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Abstract: The Irish healthcare system is a complex mix of public and private. The system is predominantly tax-financed (in 2013, 77 per cent of healthcare financing came from general taxation revenues); however, private health insurance and out-of-pocket payments are also used to finance significant amounts of healthcare expenditure. There are a number of different eligibility categories for public healthcare services in Ireland. Those in Category I (full medical cardholders) are entitled to free public health services but pay a co-charge for prescription items. Those in Category II are entitled to subsidised public hospital services and prescription medicines, but pay the full cost of other services including General Practitioner (GP) care. In October 2005, the GP visit card was introduced; GP visit cardholders have the same entitlements to free GP care as Category I individuals, but the same entitlements to all other public health services (including prescription medicines) as Category II individuals. Eligibility for a full medical/GP visit card is assessed primarily on the basis of an income means test, with a higher threshold applying to the GP visit card. A significant proportion of the population (42 per cent in 2014 (Department of Health, 2015a)), hold private health insurance, which mainly provides cover for private or semi-private acute hospital services.

Keywords: healthcare expenditure, Ireland
JELs: H51, I18

1. INTRODUCTION

The Irish healthcare system is a complex mix of public and private. The system is predominantly tax-financed (in 2013, 77 per cent of healthcare financing came from general taxation revenues); however, private health insurance and out-of-pocket payments are also used to finance significant amounts of healthcare expenditure. There are a number of different eligibility categories for public healthcare services in Ireland. Those in Category I (full medical cardholders) are entitled to free public health services but pay a co-charge for prescription items. Those in Category II are entitled to subsidised public hospital services and prescription medicines, but pay the full cost of other services including General Practitioner (GP) care. In October 2005, the GP visit card was introduced; GP visit cardholders have the same entitlements to free GP care as Category I individuals, but the same entitlements to all other public health services (including prescription medicines) as Category II individuals. Eligibility for a full medical/GP visit card is assessed primarily on the basis of an income means test, with a higher threshold applying to the GP visit card. A significant proportion of the population (42 per cent in 2014 (Department of Health, 2015a)), hold private health insurance, which mainly provides cover for private or semi-private acute hospital services.

This complex system has been the subject of much criticism, frequently with respect to barriers to and inequities in access to care. In particular, the use of direct out-of-pocket payments to finance GP care by the majority of the population who do not qualify for free GP care is unusual in a European context (Evetovits et al., 2012). In addition, the role of private health insurance in facilitating faster access to public hospital services for those with PHI over those without PHI but with equivalent health needs has also been highlighted (Ruane, 2010, Smith, 2010).

Recognising and responding to these issues, in 2011 a newly elected coalition government committed to far-reaching healthcare reform for Ireland, which included the development of a universal, single-tier health service, which guarantees access to medical care based on need, not income (Department of the Taoiseach, 2011). The proposals also committed to a change to the manner in which Irish healthcare is financed, with the introduction of Universal Health Insurance (UHI). Some three years later, a White Paper was published which proposed how this reform might be achieved (Department of Health, 2014).

Under the proposed system of UHI, every member of the population would be insured for the same package of healthcare services. The White Paper contained some broad proposals for which components of Irish healthcare services should be funded via UHI though also proposed that there should be a consultation process to determine the composition of the UHI-financed 'health basket'. People would purchase insurance for this standard package from one of a number of competing health insurers. A system of community rating would operate, with insurers not allowed to charge different premia for the same policy depending on an individual's risk profile. Financial support would be available to ensure affordability by directly paying or subsidising the cost of insurance premia for people on lower incomes. The purchasing of primary and hospital care would be largely devolved to insurers. Neither insurers nor providers operating within the UHI system would be allowed to sell faster access to services covered by the UHI standard package of care. Individuals could choose to purchase additional cover for healthcare not included in the UHI basket. As part of the transition to UHI, a model for financing public hospital care based on Money-Follows-The-Patient (MFTP) was proposed; this involved moving away from the current block grant budgets to a new system where hospitals are paid for the agreed services that are provided.

Implicitly recognising that a system of UHI might lead to an escalation in costs, the White Paper identified a number of measures that would be used to control costs, including price monitoring of insurers and setting maximum prices for healthcare providers. In addition, other cost control measures would be set down in legislation but not implemented unless required including capping insurer overhead and profit margins, capping insurer claims expenditure and setting a global budget for each insurer. While not providing an estimate of the cost of the proposed reforms, the then Minister for Health did note that "I am determined that total spending by the State on healthcare in Ireland under a single-tier UHI system should not exceed its total spending under the two-tier system which it replaces" (Department of Health, 2014). Subsequently, the Department of Health funded a study of the costs of the White Paper model of UHI, which was published in November 2015 (Wren et al., 2015).
The aim of this paper is to describe and discuss the development of the approach to estimating the effects of the White Paper model of UHI on healthcare expenditure in Ireland, which was applied in Wren et al. (2015). Although there have been many studies within and across countries examining the drivers of healthcare expenditure including differing systems of financing (Glied, 2008, Wagstaff, 2009, Martin et al., 2011), few studies have examined the ex post effects of financing system change on healthcare expenditure (Wagstaff and Moreno-Serra, 2009). Our review of the literature has not discovered a directly applicable methodological template to test the ex ante effects of Ireland's proposed financing system change, although similar studies have been undertaken, for instance, in the US examining the ex ante effects of the Affordable Care Act (Cutler et al., 2010, Office of the Actuary, 2010). Estimation of the effects of the White Paper model of UHI on Irish healthcare expenditure required the development of such an approach, drawing on evidence from the literature of financing system effects on healthcare expenditure to inform assumptions about the potential effects of the proposed model. Prior analysis of the sources of financing for a range of potentially UHI-financed Irish healthcare services was also necessary to establish a modelling framework, in which the proposed financing changes might be applied and examined.

In Section 2 the international evidence on the relationship between health financing and healthcare expenditure is reviewed. In Section 3 the development of the methodology to cost the White Paper model of UHI is described and discussed; and the main findings of the analysis are outlined. In conclusion, Section 4 discusses the limitations and potential generalisability of this methodology.

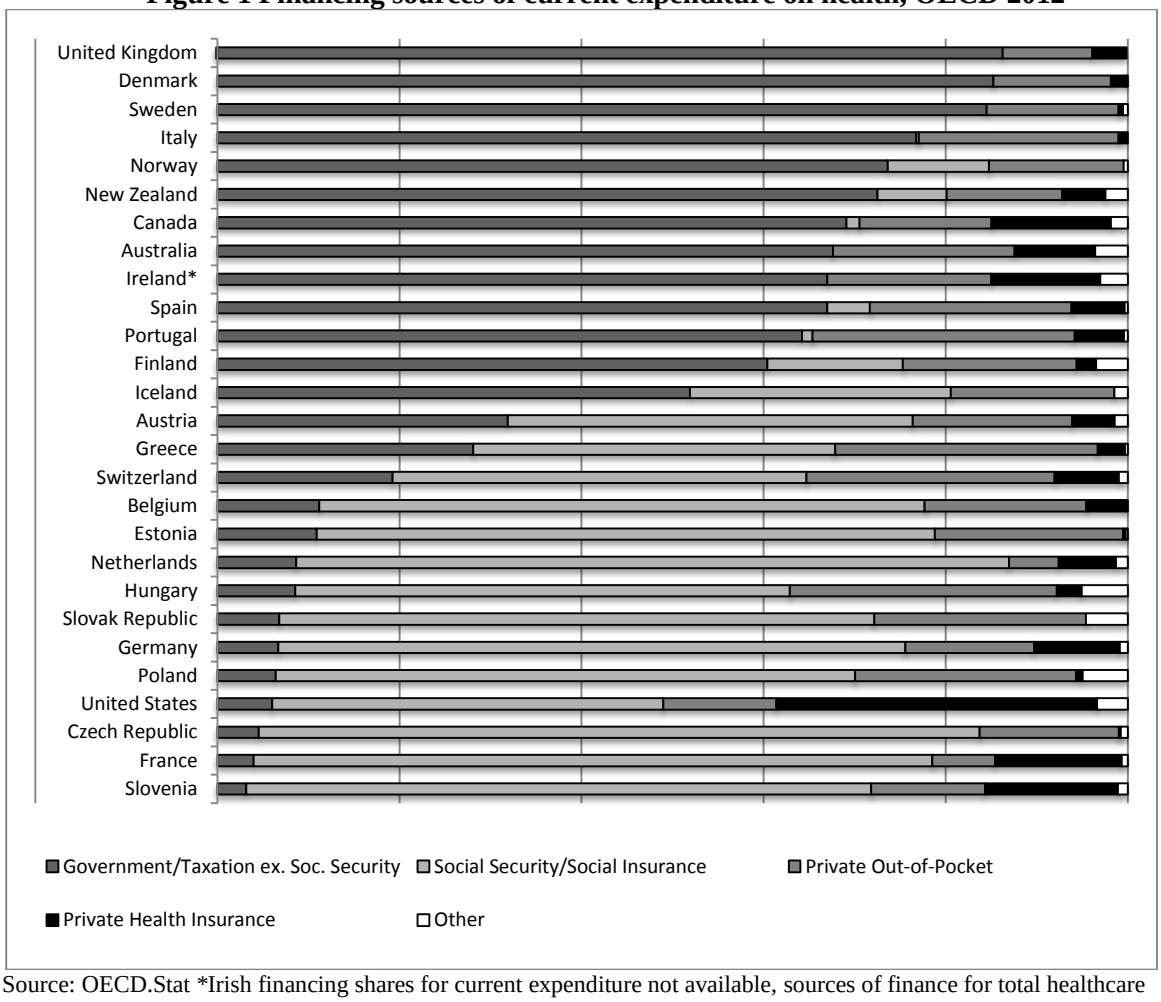
2. THE INTERNATIONAL EVIDENCE

2.1 Financing healthcare

There are four main approaches to financing health systems in high income countries: general taxation, social insurance, private insurance and out-of-pocket expenditure, with most countries adopting a combination of methods (Figure 1). Based on OECD data for 2012 (Figure 1), the UK, Sweden and Denmark financed over 80 per cent of current healthcare expenditure from general taxation, while social insurance was the predominant source of finance for current healthcare expenditure in many Western European countries, for example France (75%) and Germany (69%). The US was an outlier in the OECD with private health insurance (PHI) financing 35 per cent of current healthcare expenditure. Yet in each of these countries, a proportion of financing came from private out-of-pocket payments. Many countries with predominantly social insurance financing had an element of tax and PHI financing. Countries with predominantly tax financing less frequently combined this with social insurance financing.

There are advantages and limitations with each method of financing healthcare; however, in general predominantly tax-financed health systems tend to have the lowest levels of per capita health expenditure, followed by social insurance systems, while systems with large proportions of private financing show the highest level of per capita health expenditure (Thomas et al., 2006). Examining the relationship between healthcare expenditure and financing system, Wagstaff (2009) used data from 29 OECD countries to determine whether having a social insurance system rather than a tax-financed system resulted in higher or lower health expenditure per capita and whether having one system or the other resulted in better or worse outcomes with regard to amenable mortality.1 Controlling for per capita national income, he found that social insurance raised per capita total health expenditure by approximately 3-4 per cent. With regard to health outcomes, there was no evidence that social insurance systems achieved lower rates of amenable mortality. In fact, the evidence suggested that with regard to premature mortality from breast cancer among women, social insurance systems performed worse with 5-6 per cent higher potential years of life lost. The author speculated that this might be due to the focus on individual members within social insurance systems, compared to tax-financed systems which may focus more broadly on the entire population and as a result public health programmes, including screening, may be better organised and integrated within a tax-financed system. Though potentially less relevant to the Irish context, Wagstaff and Moreno-Serra (2009) similarly found that the adoption of social insurance systems in former communist countries which transitioned from a Semashko2 model resulted in an increase in total health expenditure by approximately 11 per cent, while public health expenditure increased by approximately 15 per cent.

Figure 1 Financing sources of current expenditure on health, OECD 2012



Source: OECD.Stat *Irish financing shares for current expenditure not available, sources of finance for total healthcare expenditure shown

[1] Amenable mortality is defined as deaths from a collection of disease such as diabetes and appendicitis that are potentially preventable given effective and timely health care.

[2] Named after the first minister of health of the USSR, a Semashko model refers to a system that is completely state controlled and owned

2.2 Why might expenditure be higher in social insurance based systems?

While the evidence suggesting that healthcare expenditure is generally higher in social insurance systems relative to tax-financed systems is somewhat limited, there are a number of potential reasons why such an association may exist. These include:

1. Unobserved within-country factors – Wagstaff (2009) has suggested that whether a country has an insurance or tax-financed system is likely to be endogenous, that is, unobservable factors correlated with the outcome of interest (in this case healthcare expenditure) are also likely to be correlated with the choice of system. Thus a society in which healthcare is valued as an investment, might choose a system because it may facilitate a higher spend. However, controlling for this potential endogeneity by focusing on changes in the way countries finance their healthcare, Wagstaff (2009) still found expenditure to be higher within social insurance systems.

2. Greater willingness to pay – An alternative explanation for higher expenditure in social insurance financed systems is that insurees raise their demands for healthcare in order to maximise the return on the contributions they make (Hinrichs, 1995). Under a taxation system, the money paid and the benefits received are not directly related, whereas in insurance-based systems, the link is more evident (Mossialos and Dixon, 2002). Therefore, people may be willing to pay more than they would in general taxation given a greater sense of control over the use of the funds (Thomas et al., 2006).

3. Less political interference - Another argument is that social health insurance revenue is earmarked and therefore potentially less subject to political interference than taxation revenue (Mossialos and Dixon, 2002). In Belgium, for example, where healthcare is financed from both taxation and social health insurance contributions, taxation-based revenue tended to fluctuate more than insurance-based revenue (Nonneman and van Doorslaer, 1994).

4. Reduced unmet need – Higher health expenditure in social health insurance systems may be explained by the greater provision of healthcare services or greater population coverage within these systems; however, there is relatively little evidence to support this assertion. While not directly testing this assertion, Wagstaff (2009) , found that health was no better within social insurance systems relative to tax-financed systems. While Chaupain-Guillot and Guillot (2015) found that variations in rates of unmet needs across countries were partly explained by the differences in health financing arrangements, this related to the share of households' out-of-pocket payments in total health expenditure, rather than whether the system was financed through taxation or social health insurance.

5. Transaction costs – Within a healthcare system, there may be a single-payer or multiple payers. In a single-payer system, one organisation - usually the government - purchases health services for the entire population; while in a multi-payer system several different organisations purchase healthcare for different segments of the population (Hussey and Anderson, 2003). Often tax-based systems have a single payer (such as the National Health Service in the UK), while insurance-based systems have multiple payers; however, this is not a necessary design feature of such systems and there are examples of single-payer systems within an insurance-based system (Estonia). In general, administrative costs tend to be lower in single-payer relative to multi-payer systems. A single payer can realise economies of scale in administration (Normand and Weber, 2009), while multiple payers mean duplicative claims-processing facilities and smaller insured groups, both of which increase overhead costs (Woolhandler et al., 2003). Within a multi-payer system, additional transaction costs may also be imposed on healthcare providers because they interact with a multiple of potential payers. Interactions increase with payers' attempts to manage care, such as requiring prior authorisation for certain services (Morra et al., 2011). In addition, each payer will likely have different insurance products, a different list of approved drugs and different rules for billing and submitting claims (Morra et al., 2011). Himmelstein et al. (2014) for example, found that higher hospital administrative costs in the US and the Netherlands are explained by the use of per patient billing as opposed to lump-sum budgets; as well as a requirement that hospitals bargain over payment rates with multiple payers, whose documentation requirements and billing procedures often vary.

6. Competition between insurers – A feature of a small number of social insurance systems is competition among insurers. In theory, competition between insurers is intended to enhance efficiency in healthcare administration and delivery by two mechanisms: making insurers bear financial risk and giving people the choice of insurer (Thomson et al., 2013). It is anticipated that insurers will minimise costs in order to offer lower premia thereby attracting and retaining enrolees. For competition of this sort to work, a

number of conditions must be met, including people being able to choose and switch insurer with ease and insurers having access to and a willingness to use tools to influence healthcare quality and costs (Thomson et al., 2013). In practice, there is little evidence to suggest that the use of competing insurers has been successful in controlling healthcare costs (Mathauer and Nicolle, 2011, Thomson et al., 2013), the reason being that the necessary conditions for competition are often not in place. Evidence from the Netherlands, for example, suggests that attempts to control healthcare costs by encouraging price competition between insurers did not work out as anticipated. While insurers were successful in reducing their operating costs, it was not sufficient to control total expenditure as these costs amounted to only 7 per cent of insurers' expenditure (Rosenau and Lako, 2008). For such competing insurers to drive down costs successfully, they must be able to bargain with health service providers; however, such selective contracting is relatively rare in the Netherlands (Bal and Zuiderent-Jerak, 2011).

7. Insurers' profits and overhead costs - Since the proposed health financing reforms for Ireland envisaged a form of social insurance channelled through private health insurers, further considerations of particular relevance are private insurers' profits and overhead costs. Recent evidence from the US suggests that approximately four per cent of all healthcare expenditure is comprised of health insurance companies' costs (Jacobson, 2010), while around 17 per cent of insurance premia were devoted to insurers' overheads (including profits) rather than to medical payments (Day et al., 2015).

2.3: Potential impact of UHI on healthcare expenditure in Ireland: Learning from the international literature

While the proposals within the White Paper model of UHI are specific to the Irish context, it is possible to draw some general conclusions from the international literature about how the proposed reforms might impact on healthcare expenditure in Ireland. For example, in the current Irish healthcare system, private patients pay the full cost of accessing the GP, as well as paying out-of-pocket for prescribed medication; while the proposals for reform suggested that GP fees would be removed for all (Department of the Taoiseach, 2011). Given previous evidence which suggested that 26 per cent of private patients in Ireland reported having a medical problem but not visiting the GP because of cost (O'Reilly et al., 2007), it is anticipated that the removal of GP fees would increase demand for such services as well as shifting cost from private individuals to the state. However such additional costs would be a feature of any system reform which introduced universality in GP care in Ireland and could result in a decrease in total healthcare expenditure if it resulted in a move away from more costly secondary care services. For example, Starfield and Shi (2002) found that the better the orientation towards primary care, the lower total healthcare costs, possibly partly because of better preventive care and lower hospitalisation rates.

The additional costs associated with "meeting" unmet need within a universal system may be regarded as acceptable given that they are financing healthcare services and potentially positively impacting upon population health. However other costs potentially arising from the proposed reforms such as additional transactions costs for health insurers and healthcare providers associated with a multi-insurer system may be less acceptable given that they represent administrative costs and have no discernible impact on healthcare or health. While it may have been envisaged that competing private insurers would help to counteract such additional transaction costs, given the experience in other countries (Thomson et al., 2013) this is unlikely to occur in Ireland. In particular, selective contracting, a necessary feature for competing insures to operate efficiency, is unlikely to be successful in Ireland due to relatively low population density (Mikkers and Ryan, 2014).While there are multiple teaching hospitals in Dublin, there are many fewer hospitals in other parts of the country. This could give many hospitals local monopoly status (Mikkers and Ryan, 2014). Where hospitals are further apart, consumers may be less willing to travel beyond a local hospital. An insurer who contracts selectively may lose market share as enrolees switch to another insurer.

3. DEVELOPING A METHODOLOGY TO COST THE WHITE PAPER MODEL OF UHI

The initial requirements to estimate the effects of financing system change on Irish healthcare expenditure are: a clearly-defined proposal for system change; detailed analysis of the current financing sources for the proposed UHI-financed services; and an evidence base for the assumed effects of the proposed system change. In developing a methodology to cost the White Paper model of UHI, two challenges were encountered in meeting these requirements: ambiguities within the White Paper about the proposed system change; and inadequate data on healthcare costs and expenditure in Ireland. To address the first deficiency, it was necessary to develop a set of assumptions about the proposed UHI model. To address the second deficiency, it was necessary to undertake detailed data analysis. Extensive review of the literature (summarised above) supplied the evidence base for the assumed effects of the proposed system change. The next sections describe the approach to meeting each of these requirements, the development of a model to estimate the effects of the White Paper UHI proposals under the consequent range of assumptions, and the central findings from the analysis.

3.1 Addressing ambiguities in the White Paper model of UHI

The White Paper was ambiguous about central aspects of the proposed model of UHI. The ambiguities and the assumptions adopted in the analysis to address them were as follows:

1. *Services to be financed by UHI*
   The White Paper contained some broad proposals for which components of Irish healthcare services should be funded via UHI and additionally proposed a consultative process to determine the future health basket. Categories of healthcare proposed to be in the UHI-financed health basket included: primary care, acute inpatient, outpatient and daycase care, mental health services and rehabilitative care for a period not exceeding 12 months. Other services proposed to be funded from general taxation included: health and wellbeing services, long-term mental healthcare and social and continuing care. However for other services, such as purchase of prescribed medicines, the White Paper was unclear about how such services would be financed.

   Assumptions: The analysis estimated the effects on healthcare expenditure of the introduction of UHI-financing for a range of 8 potential and progressively more comprehensive baskets of services. The least comprehensive basket was assumed to include only hospital inpatient and daycase care. The most comprehensive basket would include hospital care, primary care, mental health care, prescribed medications in the community and dental care.

2. *Extent of tax subsidy*
   The White Paper proposed that insurance premia should be subsidised by the State from tax revenues for a proportion of the population on lower incomes and paid entirely for those on the lowest incomes. However the proportions of the population to be subsidised and the level of the subsidy were unstated.

   Assumptions: The analysis was informed by a separate study by Callan et al. (2015), which examined alternative approaches to subsidising UHI premia.

3. *Equal access based on need rather than ability to pay*
   The White Paper committed to equal access to healthcare services based on need rather than ability to pay. However, other statements within the White Paper appeared incompatible with this egalitarian principle. For example, the extent to which out-of-pocket charges would remain was uncertain, with the Department of Health envisaging that Emergency Department charges would remain (Wren et al., 2015), thereby potentially departing from the principle that access should be based on need rather than ability to pay. Further the White Paper stated that subject to certain quality and geographic coverage rules, insurers would be free to engage in selective contracting with healthcare providers, which would allow insurers to offer different types of UHI policies, offering a greater or lesser choice of healthcare providers, and with differing levels of excess. This feature of the proposed model could be interpreted as being in conflict with the principle of equal access based on need rather than ability to pay. The White Paper did not elaborate on how these potentially conflicting aspects of the proposed model would be reconciled.

   Assumptions: Faced with these conflicting proposals, the analysis assumed that payment would reflect ability to pay under this system of UHI and that a flat-rate, community-rated premium would apply above a certain income threshold, with subsidies for people on lower incomes and differing premia for adults and children.

4. *EU competition law and cost control*
   The Programme for Government committed that the UHI system should be designed to remain outside the remit of EU competition law (Department of the Taoiseach, 2011) as is the case in many European systems of statutory social insurance (Prosser, 2010). However, legal advice to the Department of Health noted that competition law would continue to apply to private health insurers within the UHI system (Lynch, 2014). This important qualification, if correct, would reduce the control government would have over factors such as pricing, cost control and insurers' margins[3].

[3] The insurers' margin is the term used in Wren et al. (2015) to describe the margin between insurers' earned premium income and their expenditure on claims incurred and is comprised of: expenses and the cost of reinsurance; and underwriting profit or loss plus the impact of investments, which sum to profit before tax.

Assumptions: The prevailing market average margin (broadly expenses plus profit) of private health insurers in Ireland was assumed to apply to all UHI-financed services. Differing assumptions about the level of this margin were adopted.

5. *Payment mechanisms*
   There was some ambiguity about how medical practitioners would be reimbursed under a system of UHI. While a system of money follows the patient was proposed for the payment of hospitals, there was less clarity about the payment of hospital doctors and general practitioners (GPs). Fee-for-service (FFS) payments, such as pertain in the Irish privately insured sector, incentivize the supply of more care, which may encourage both necessary and unnecessary care (Robinson, 2001).

   Assumptions: The analysis assumed that GPs would continue to be paid by a combination of capitation and fees for specific services as in the current medical card system. The analysis did not explore the risk of supplier-induced demand under UHI, which could arise in the event of fee payments to hospital consultants replacing salaries for formerly tax-financed public hospital care.

3.2 Analysis of financing shares for Irish healthcare services

The analysis adopted a societal perspective of cost. Although many discussions on healthcare expenditure focus on government or public healthcare expenditure and hence the cost to the Exchequer, while ignoring private expenditure by individuals, the cost to Irish society is central to any assessment of healthcare financing reform. This is especially relevant when considering a move to UHI because such a system is likely to result in a change in the public-private distribution of expenditure as well as distributional impacts across groups of individuals. The focus therefore in this analysis was on the cost of healthcare to Irish society in its broadest sense. This view of the cost of healthcare was reflected in the broad definition of healthcare expenditure applied, including: publicly-funded expenditure (both current and capital), private health insurance-funded expenditure, private out-of-pocket expenditure on healthcare, and expenditure by private corporations on healthcare. Furthermore, the analysis extended the definition of Irish healthcare expenditure to include the financing costs of insured expenditure. Whereas expenditure on healthcare programmes includes the claims incurred by insurance companies, the full cost of financing healthcare for individuals and the state includes the additional financing costs of insurance companies. Given the central role outlined for insurance companies in the UHI model proposed by the Government, the analysis required estimation of the effects of the proposed reform on the full cost of insurance to individuals and the state (Wren et al., 2015).

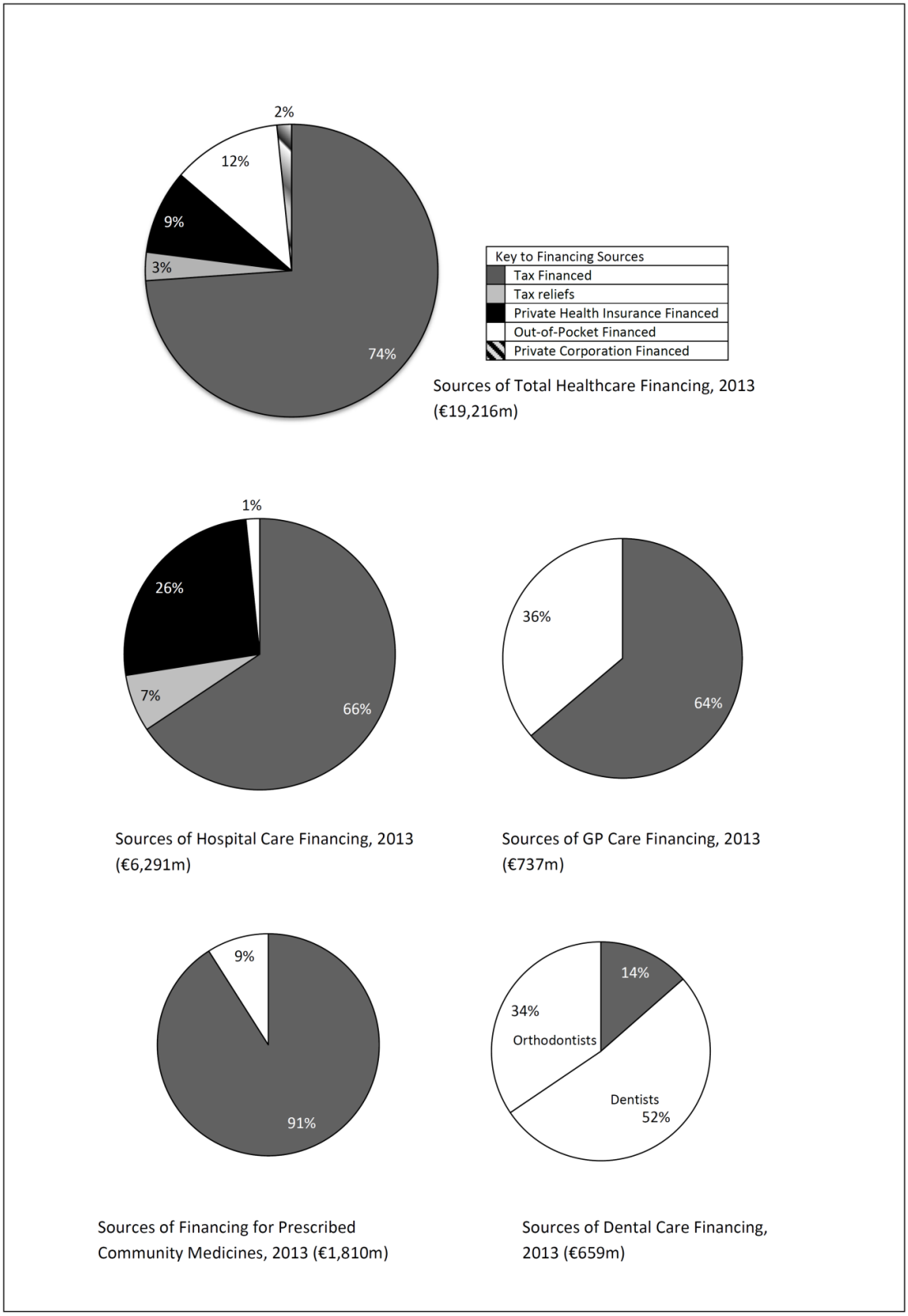
Preliminary analysis of the level of and sources of finance for total expenditure on healthcare in Ireland in 2013 and of the sources of finance for services which might be financed by UHI required overcoming data challenges. In analysis of healthcare costs internationally, a distinction is often made between the top-down and bottom-up approaches. The top-down methodology estimates the cost of care by using aggregate, often budgetary data, and dividing it by the number of units produced (Curtis, 2012), while the bottom-up methodology calculates the cost of care by directly measuring patient-specific resource utilisation, which is subsequently assigned a unit cost. The preferred, bottom-up approach is dependent on the availability of accurate unit cost data which traditionally have been lacking in Ireland, although current unit-costing projects should contribute in time to the development of a more informed understanding of Irish healthcare costs (Wren et al., 2015). In the absence of such bottom-up costs, the analysis necessarily adopted a largely top-down methodology. This required, nonetheless, quite detailed data analysis to estimate the financing sources of current Irish healthcare services. Subsequent publication of preliminary, revised Irish healthcare expenditure data according to the definitions of the OECD System of Health Accounts (SHA) (Central Statistics Office, 2015) should assist further refinement of the Wren et al. (2015) analysis.

Data challenges arose in analysis of public healthcare expenditure because, although a programme breakdown was available, programme boundaries did not neatly align with the services to be financed under UHI making it difficult to identify public current healthcare expenditure for these services. Estimating the proportions of hospital budgets relating to inpatient and daycase care, for instance, required unpublished data supplied by the Healthcare Pricing Office. Even more challenging was the lack of data on private healthcare expenditure. Estimates of private healthcare expenditure are not routinely published in Ireland. While traditionally the Central Statistics Office (CSO) supplied estimates of overall aggregate private expenditure on health to the OECD for inclusion in the OECD health database; estimating the components of private healthcare expenditure necessitated analysis using survey data. Thus, for instance, estimates of private fee payments to hospital consultants, which are not reimbursed from insurance, and of private fee payments to orthodontists and dentists were derived using the Household Budget Survey.

This preliminary data analysis yielded detailed estimates of the sources of financing for total Irish healthcare expenditure and for expenditure for specific services (Figure 2). It can be seen from the pie diagrams illustrating

a selection of these estimates that sources of financing vary by service. While PHI contributed 9 per cent of total Irish healthcare expenditure (according to this broad definition), it contributed 26 per cent of current expenditure on hospital care. The share contributed by taxation is seen to be greatest for prescribed medications, while dentistry is predominantly financed by out-of-pocket payments. These financing sources by service were key inputs to modelling the effects of the introduction of UHI financing.

Figure 2 Sources of Financing, Total Irish Healthcare and selected services



Source: Developed from Wren et al. (2015)

3.3 Assumed effects of the proposed system change

Having established the financing data to inform the model and adopted key assumptions about the operation of the proposed UHI system, it was further necessary to adopt assumptions about potential effects of the proposed reform, which could be quantified. Initial static analysis assumed no behavioural or organisational change and varied only the assumed insurers' margin (Table 1). More detailed dynamic analyses varied further assumptions to reflect potential behavioural or organisational change. Sensitivity analyses varied assumptions about the cost of GP care, the cost of hospital care and the level of unmet need. These assumptions were developed by applying evidence from the literature and primary Irish data analysis, where necessary. The relevant parameters, their assumed effects and the evidence supporting these assumptions are summarised in Table 1.

Since there was no precise guidance on the degree to which insurers would require current market-level rates of compensation and return on capital employed, the analysis adopted three alternative assumptions about the margin, based on the mean market margins in the private insurance market from 2010-2013: the minimum market margin arising in 2010 (7.5 per cent), the maximum market margin arising in 2013 (14.2 per cent), and the mean market margin (9.9 per cent) prevailing between 2010 and 2013. While analysing unmet need is central to any analysis of the cost effects of the introduction of universal healthcare, however financed, estimating unmet need is challenging. The analysis applied a range of estimates of unmet need. The European Survey of Income and Living Conditions (EU-SILC) measures unmet need from self-reported data but this is acknowledged to be an imprecise measure. The large majority of EU-SILC respondents in Ireland (95.2 per cent in 2013) did not report having any unmet needs. Of 4.8 per cent who reported unmet need, the majority reported 'too expensive' or 'waiting list' as the reason. Following adjustment for age and gender, weighted by the expected resource use of the respondents reporting unmet need, and expressed as a proportion of the population with met needs, the revised estimate of the level of unmet need was 4.1 per cent. This was translated into an assumption that under UHI, services would increase to meet this need and this increase was applied to the cost of tax-financed and out-of-pocket-financed services that became UHI-financed. However given international and Irish evidence that EU-SILC may understate unmet need (Allin and Masseria, 2009, O'Reilly et al., 2007), in sensitivity analysis, a higher 10 per cent increase was applied to the cost of tax-financed and out-of-pocket-financed services that became UHI-financed.

Table 1 Key assumptions in modelling effects on healthcare expenditure of White Paper UHI model

Scenario	Evidence	Assumed effect on UHI-financed services
Insurers' Margin	Health Insurance Authority's reports on risk equalisation (HIA 2011; 2012; 2013; 2014)	Addition of minimum market mean margin of 7.5%; maximum 14.2%; mean 2010-2013 9.9%
Unmet Need	EU-SILC (2013)[1]4.8% report unmet need O'Reilly et al (2007) 18.9% do not visit GP due to cost	4% or 10% expenditure increase
Transaction costs	Himmelstein et al (2014) cost of hospital administration: 15.5% England; 19.8% NLD; difference applied to Ireland	4.3% increased hospital costs
Efficiency gains Hospitals	HIPE (2012)[2] mean length of stay (LOS) of surgical inpatients: uninsured 7.3 days; insured 6.3 days	14% reduction surgical LOS with all patients dropping to insured mean
Efficiency gains Primary care	Cupples et al (2008) Ratio GP: nurse visits in Northern Ireland lower than Republic of Ireland	Reduced expenditure on GP care due more delivery by nurses
Increased GP visiting	Analysis based on survey evidence (TILDA, GUI, LII)[3] of extent of increased GP visiting when individuals no longer face fees	Increased expenditure on GP care to reimburse GPs for higher demand
GMS payments rate basis	Application variants of prevailing GP payment rates for medical cardholders to non-cardholders	Increased expenditure on GP care applying prevailing GMS rates

Source: Developed from Wren et al. (2015) and further discussed in (Connolly et al., forthcoming). Notes: 1 European Survey of Income and Living Conditions (EU-SILC); 2 Hospital Inpatient Enquiry (HIPE) 2012 data supplied by Healthcare Pricing Office (HPO); 3 Growing Up in Ireland (GUI) Survey; Living in Ireland (LII) Survey 1995-2001; The Irish Longitudinal Study on Ageing (TILDA)

The introduction of UHI with multiple competing insurers would potentially increase the transaction costs of healthcare providers, who would be required to interact with a number of potential payers. Since current transaction costs for healthcare providers in Ireland are unknown, the analysis adopted an assumption based on a

recent study by Himmelstein and colleagues, who found that hospital administration costs as a percentage of hospital costs were 15.5 per cent in England, 11.6 per cent in Scotland, 14.3 per cent in Wales, 12.4 per cent in Canada, 19.8 per cent in the Netherlands and 25.3 per cent in the US (Himmelstein et al., 2014). Assuming current hospital administrative costs for Ireland to be similar to those of England (15.5 per cent) and that under UHI transaction costs for public hospitals in Ireland would increase to a level similar to those of the Netherlands (19.8 per cent), based on similarities between the system in the Netherlands and the proposals for Ireland outlined in the White Paper, the analysis assumed that an additional 4.3 per cent (the difference between transaction costs in the Netherlands and England) should be added to public hospital expenditure when costing UHI.

To model potential efficiency gains with the introduction of UHI, evidence of length of stay (LOS) was applied. The insured population has higher LOS in public hospitals than in private hospitals for all insurance-financed care and for the same procedures (McLoughlin, 2014). Within public hospitals, the insured have a significantly lower mean LOS than the uninsured for hospital stays associated with surgical diagnoses. There may be organisational and incentive effects relating to insurance-financed care which could lead to reduced LOS for both the insured and the previously uninsured under UHI, if the financing change were to lead to differing practices in public hospitals. The analysis assumed that the mean length of stay of the uninsured with surgical diagnoses in public hospitals would drop to the mean length of stay of the equivalent insured patients, which would represent a 14 per cent reduction in length of stay. This reduction was applied to the estimated 20 per cent of the public hospital budget accounted for by surgical inpatient costs.

To model the effects of UHI financing for GP care, the analysis examined a number of alternative scenarios. In one scenario survey evidence of changes in GP-visiting when people acquire medical or GP-visit cards was applied. In this scenario, it was assumed that bargaining between the state and GPs would result in payment to GPs (primarily by capitation) at a rate designed to compensate them for the loss of private fees for former non-cardholders' now increased visiting (Wren et al., 2015, Connolly et al., forthcoming). Other scenarios assumed an application of variants of the existing GP remuneration rates for cardholders to the care of non-cardholders. In a further scenario, potential efficiency gains were modelled on the assumption that the implicit staff-mix (between GPs and practice nurses) in a study for Northern Ireland would be applied in the Republic of Ireland (Cupples et al., 2008). This analysis estimated that there would be a 15.9 per cent reduction in GP costs if there was more use of nursing staff (Wren et al., 2015, Connolly et al., forthcoming).

3.4 Formal representation of the model

To estimate the effects of introducing the UHI-financed health baskets on the composition of health financing and the overall level of health expenditure, the assumed effects described above were applied to the analysis of financing sources. A modelling framework was established, in which healthcare financing was defined as, and expenditure components were assigned to, the following categories:

- Tax financing (TF)
- Private Health Insurance financing (PHIF)
- Out-of-pocket financing (OOPF)
- Universal-Health Insurance financing (UHIF)

Total health expenditure was assumed to equate to total health financing and was therefore the sum of these components.[4] The creation of the UHI-financed health baskets required the movement of components of expenditure from TF, PHIF and OOPF to UHIF. A component of healthcare expenditure that moved from TF or OOPF to UHIF was adjusted upwards to reflect insurers' assumed margin on this addition to insured expenditure (on varying assumptions about the level of this margin). A spending component that moved from PHIF to UHIF did so without adjustment since PHIF already includes the full cost of financing via private insurance.

The central calculation in the model is the estimate of the cost of the UHI-financed basket of services. In the case of the least comprehensive UHI-financed basket, comprising purely acute hospital inpatient and daycase services, it is formally represented as:

$$UHIF_{incsub} = \left(PHIF_{psc} \times (1 - PHIF_{res})\right) + \left((PubHosp + OOPHosp) \times (1 + M) \times (1 + TC) \times (1 + UN) \times (1 - EG)\right)$$

[4] The further two per cent of total healthcare expenditure comprising private corporation-financed expenditures such as investment in private hospitals, nursing homes and clinics was not assumed to change in the analysis, nor did the analysis model effects on public capital expenditure.

Where:

$UHIF_{incsub}$ = UHI Financing including tax subsidy
$PHIF_{psc}$ = Total PHI-financed expenditure pre-system change
$PHIF_{res}$ =
Residual proportion of PHI claims payments after payments to public and private hospitals and hospital consultants
$PubHosp$ =
Public current expenditure on hospital inpatient and daycase services (net of insurance and out-of-pocket payments)
$OOPHosp$ = Out-of-pocket payments for public hospital charges
M = Insurers' margin %
TC = Transaction cost %
UN = Volume increase in services to address unmet need %
EG = Efficiency Gain %

The basket combines expenditures on hospital services, which were formerly financed by taxation, by charges paid by individuals or by private insurance. The basket cost is further inflated by the assumed insurers' margin, additional transaction costs and additional services to address unmet need, which are partially offset by assumed efficiency gains. In the analysis, the modelling framework was applied to estimate aggregate, per capita and percentage UHI financing, tax financing, out-of-pocket financing and PHI financing in alternative hypothetical UHI systems with alternatives of the 8 UHI-financed health baskets. Each of these analyses was repeated for a wide range of scenarios, with alternative combinations of assumptions.

3.5 Findings

The central findings of the analysis focussed on three baskets, at the request of the Department of Health, and on a range of scenarios combining core assumptions. The potential effect of the introduction of this system of UHI on estimated total healthcare expenditure of €19.2 billion in 2013 was found to be an increase of between €666 million to €2,055 million, or 3.5 to 10.7 per cent. This range of findings reflects the basket and the assumptions adopted (Wren et al., 2015). These findings translate into a mean per capita UHI cost, equivalent to the mean UHI premium, ranging from €1,600 to €2,509. This range of the mean UHI premium compares to a mean PHI premium of €1,104 in 2013 (Health Insurance Authority, 2015)[5], with the higher mean UHI premium reflecting the broader service coverage of the UHI basket, an increased volume of services to address unmet need and the additional costs arising from the insurance financing system. There are partially offsetting reductions in per capita tax, PHI and out-of-pocket payments for healthcare, reflecting the shift to UHI-financing for some services.

In sensitivity analysis, this research found that, on most assumptions, the insurers' margin was the greatest contributor to additional healthcare costs in the White Paper model of UHI financing, with a higher assumed insurers' margin leading to higher percentage increases in healthcare expenditure. The estimated cost of the UHI model of financing (from the combination of the insurers' margin and additional transaction costs) was found in general to exceed the estimated costs to address unmet need, which would be expected to arise in a universal system, however financed. The authors acknowledged uncertainty in the unmet need estimates and recommended further research in this area. Tax-financing for the high proportion of services which were envisaged as remaining outside the UHI basket combined with the anticipated extent of tax subsidy for the UHI system, explored in analysis by Callan et al. (2015), would have the effect that overall healthcare financing would still derive more from taxation than UHI premia.

4. CONCLUDING DISCUSSION

The modelling approach to estimating the potential costs of the White Paper model of UHI described in this paper has acknowledged limitations. Important questions that should be addressed before a new healthcare financing system is introduced in Ireland were beyond the scope of the analysis. Other necessary enquiries should include whether the proposed financing system change would improve health outcomes, achieve equity, be cost-effective or whether it would be feasible in an Irish context. Subsequent analysis of further dimensions of the White Paper model suggest that it could have increased costs without achieving universality and equitable access (Wren and Connolly, forthcoming).

[5]The mean PHI premium is calculated by dividing total open membership undertakings' premium income by the number of people with private health insurance inpatient cover in the year from Health Insurance Authority (2015). The mean PHI premium increased from €1,008 in 2012 to €1,104 in 2013 and €1,144 in 2014.

Following publication of estimated costs of the proposed model of UHI (Wren et al., 2015) the then Minister for Health announced that "the high costs for the particular model of health insurance .... are not acceptable, either now or any time in the future" (Department of Health, 2015b). In the election campaign of February 2016, the outgoing coalition government parties continued to express their support for universal healthcare but their approach to financing universality was unclear (Fine Gael, 2016, Labour Party, 2016). The incoming minority Government did not mention UHI in the 2016 Programme for Government, which however stated that further work should be conducted on the costs of various funding models to "allow the New Partnership Government to make a final decision on the best way forward to finance Universal Healthcare" (Department of the Taoiseach, 2016: 63).

Given the continued interest in examining alternative approaches to financing healthcare in Ireland, the question arises as to how generalisable is the modelling approach described in this paper. To apply this approach to analysing the potential cost effects of other funding models, the proposed models would have to be developed in some detail. The level of detail and the clarity of the proposed financing model design would ideally be greater than in the case of the White Paper model which, as has been demonstrated, was ambiguous and unclear in many respects. An alternative approach would be to analyse the potential cost implications of aspects of the financing model design during the design phases to assist policy-makers in model design. If social insurance models were under consideration, for instance, further analysis of system design options to give government greater control of such factors as insurers' margins would be desirable. As in the case of the analysis of the costs of the White Paper model, it would be necessary to undertake detailed review of the international evidence on aspects of the model design to inform assumptions of its cost implications in Ireland.

The development of this modelling approach has been shown to have required detailed analysis of Irish data to estimate sources of financing for Irish healthcare services, whether by taxation, insurance or out of pocket. In any further application of this approach, this analysis should be updated and reviewed, particularly in light of the publication of preliminary, revised Irish healthcare expenditure data according to the definitions of the OECD System of Health Accounts (SHA) . Further acknowledged limitations of the analysis of the cost implications of the White Paper model were its focus on the impact of UHI financing on healthcare expenditure without considering other factors which would also likely influence expenditure in the coming years, including population ageing and population growth; and its largely top-down costing approach using aggregate data whereas a bottom-up approach would have been preferable, had time and data availability allowed.

In the context of the review of financing models to achieve universal healthcare envisaged in the 2016 Programme for Government, it would be preferable that the analysis of the effects of alternative financing models should address some of the limitations of the analysis described in this paper. The effects of financing system change should preferably be analysed in a model of the drivers of Irish healthcare expenditure, employing a bottom-up approach to costing and encompassing such factors as demographic and epidemiological change, changes in public pay rates and advances in medical technology. Analysis of the cost effects of financing system change should be accompanied by analysis of the efficacy of any proposed model with regard to its stated aims, such as improved health outcomes, equitable universal access, and cost effectiveness.

References

Allin, S. & Masseria, C. 2009. 'Unmet need as an indicator of access to health care in Europe'. *Eurohealth*, 15**,** 7-9.

Bal, R. & Zuiderent-Jerak, T. 2011. 'The practice of markets in Dutch health care: are we drinking from the same glass?' *Health Econ Policy Law*, 6**,** 139-45.

Callan, T., Colgan, B. & Walsh, J. R. 2015. *Income-Related Subsidies for Universal Health Insurance Premia: Exploring Alternatives Using the SWITCH Model*. ESRI Working Paper. Dublin, Ireland: Economic and Social Research Institute.

Central Statistics Office 2015. *Ireland's System of Health Accounts, Annual Results 2013 (Preliminary).* http://www.cso.ie/en/statistics/health/: Central Statistics Office.

Chaupain-Guillot, S. & Guillot, O. 2015. 'Health system characteristics and unmet care needs in Europe: an analysis based on EU-SILC data'. *Eur J Health Econ*, 16**,** 781-96.

Connolly, S., Nolan, A. & Wren, M.-A. forthcoming. *Universal GP care in Ireland: potential cost implications.*

Cupples, M. E., Byrne, M. C., Smith, S. M., Leathem, C. S. & Murphy, A. W. 2008. 'Secondary prevention of cardiovascular disease in different primary healthcare systems with and without pay-for-performance.' *Heart*, 94**,** 1594-600.

Curtis, L. 2012. *Unit costs of health & social care 2012*. University of Kent: PSSRU.

Cutler, D., Davis, K. & Stremikis, K. 2010. *The Impact of Health Reform on Health System Spending.* Issue Brief The Commonwealth Fund.

Day, B., Himmelstein, D., Broder, M. & Woolhandler, S. 2015. 'The affordable care act and medical care loss ratios: no impact n first three years'. *International Journal of Health Services,* 45**,** 127-131.

Department Of Health 2014. *The Path to Universal Healthcare: White Paper on Universal Health Insurance*. Dublin, Ireland: Department of Health.

Department Of Health 2015a. *Health in Ireland: Key Trends.* Dublin, Ireland: The Stationery Office.

Department Of Health 2015b. *Statement by Minister Varadkar following Cabinet discussion on UHI.* In: Department Of Health (Ed.). Dublin, Ireland.

Department Of The Taoiseach 2011. *Programme for Government 2011-2016.* Dublin, Ireland: Department of the Taoiseach.

Department Of The Taoiseach 2016. *A Programme for Partnership Government.* Department of the Taoiseach.

Evetovits, T., Figueras, J., Jowett, M., Mladovsky, P., Nolan, A., Normand, C. & Thomson, S. 2012. *Health system responses to financial pressures in Ireland: policy options in an international context.* Brussels: European Observatory on Health Systems and Policies.

Fine Gael 2016. *Fine Gael General Election Manifesto 2016.* Dublin, Ireland: Fine Gael.

Glied, S. 2008. *Health care financing, efficiency and equity.* NBER Working Paper Series. Cambridge, MA: National Bureau of Economic Research.

Health Insurance Authority 2011. *Report of the Health Insurance Authority to the Minister for Health, in accordance with Section 7E(1) (b) of the Health Insurance Acts, 1994-2009.* Dublin, Ireland: Department of Health.

Health Insurance Authority 2012. *Report to the Minister for Health on an evaluation and analysis of returns for 1 July 2011 to 30 June 2012 including advice on risk equalisation credits.* Dublin, Ireland: Department of Health.

Health Insurance Authority 2013. *Report to the Minister for Health from the Health Insurance Authority on an evaluation and analysis of returns for 1 July 2012 to 30 June 2013 including advice on risk equalisation credits.* Dublin, Ireland: Department of Health.

Health Insurance Authority 2014. *Report to the Minister for Health on an evaluation and analysis of returns for 1 July 2013 to 30 June 2014 including advice on risk equalisation credits.* Dublin, Ireland: Department of Health.

Health Insurance Authority. 2015. *Market Statistics 2014* http://www.hia.ie/publication/market-statistics.

Himmelstein, D. U., Jun, M., Busse, R., Chevreul, K., Geissler, A., Jeurissen, P., Thomson, S., Vinet, M. A. & Woolhandler, S. 2014. 'A comparison of hospital administrative costs in eight nations: US costs exceed all others by far.' *Health Aff (Millwood),* 33**,** 1586-94.

Hinrichs, K. 1995. 'The impact of German health insurance reforms on redistribution and the culture of solidarity'. *J Health Polit Policy Law,* 20**,** 653-87; discussion 689-94.

Hussey, P. & Anderson, G. F. 2003. 'A comparison of single- and multi-payer health insurance systems and options for reform'. *Health policy,* 66**,** 215-228.

Jacobson, L. 2010. 'Health Insurers get a small percentage of overall health care spending', Politifact [Online]..Available: http://www.politifact.com/truth-o-meter/statements/2010/mar/12/americas-health-insurance-plans/health-insurers-get-small-percentage-overall-healt/ [Accessed 10/05/2016].

Labour Party 2016. *Towards a new National Community Health Service.* Dublin, Ireland: Labour Party.

Lynch, F. 2014. Letter to Mr David Moloney, Assistant Secretary, Department of Public Expenditure and Reform. Released under Freedom of Information. Dublin, Ireland: Department of Health.

Martin, J., Lopez Del Amo Gonzalez, M. & Garcia, M. 2011. 'Review of the literature on the determinants of healthcare expenditure'. *Applied Economics,* 43**,** 19-46.

Mathauer, I. & Nicolle, E. 2011. 'A global overview of health insurance administrative costs: what are the reasons for variations found?' *Health policy,* 102**,** 235-46.

McLoughlin, P. 2014. *Review of measures to reduce costs in the private health insurance market 2014: Independent report to the Minister for Health and Health Insurance Council.* Dublin: Department of Health.

Mikkers, M. & Ryan, P. 2014. '"Managed competition" for Ireland? The single versus multiple payer debate'. *BMC Health Serv Res,* 14**,** 442.

Morra, D., Nicholson, S., Levinson, W., Gans, D. N., Hammons, T. & Casalino, L. P. 2011. 'US physician practices versus Canadians: spending nearly four times as much money interacting with payers'. *Health Aff (Millwood),* 30**,** 1443-50.

Mossialos, E. & Dixon, A. 2002. Funding health care: an introduction. In: Mossialos, E., Dixon, A., Figueras, J. & Kutzin, J. (eds.) *Funding health care: options for Europe.* Buckingham, England: Open University Press.

Nonneman, W. & Van Doorslaer, E. 1994. 'The role of the sickness funds in the Belgian health care market'. *Soc Sci Med,* 39**,** 1483-95.

Normand, C. & Weber, A. 2009. *Social health insurance: a guidebook for planning,* Bad Homburg, Germany, VAS.

O'Reilly, D., O'Dowd, T., Galway, K. J., Murphy, A. W., O'Neill, C., Shryane, E., Steele, K., Bury, G., Gilliland, A. & Kelly, A. 2007. 'Consultation charges in Ireland deter a large proportion of patients from seeing the GP: results of a cross-sectional survey'. *Eur J Gen Pract,* 13**,** 231-6.

Office Of The Actuary 2010. *Estimated Financial Effects of the 'Patient Protection and Afforable Care Act', As Amended.* Washington DC: Centers for Medicare and Medicaid Services.

Prosser, T. 2010. 'EU Competition Law And Public Services.' In: Mossialos, E., Permanand, G., Baeten, R. & Hervey, T. K. (eds.) *Health Systems Governance in Europe: The Role of European Union Law and Policy.* Cambridge University Press.

Robinson, J. C. 2001. 'Theory and practice in the design of physician payment incentives.' *Milbank Q,* 79**,** 149-77, III.

Rosenau, P. V. & Lako, C. J. 2008. 'An experiment with regulated competition and individual mandates for universal health care: the new Dutch health insurance system'. *J Health Polit Policy Law,* 33**,** 1031-55.

Ruane, F. 2010. *Report of the Expert Group on Resource Allocation and Financing in the Health Sector.* Dublin: Department of Health and Children.

Smith, S. 2010. 'The Irish health basket: a basket case?' *The European Journal of Health Economics,* 11**,** 343-350.

Starfield, B. & Shi, L. 2002. 'Policy relevant determinants of health: an international perspective'. *Health policy,* 60**,** 201-18.

Thomas, S., Normand, C. & Smith, S. 2006. *Social Health Insurance: Options for Ireland.* The Adelaide Hospital Society.

Thomson, S., Busse, R., Crivelli, L., Van De Ven, W. & Van De Voorde, C. 2013. 'Statutory health insurance competition in Europe: a four-country comparison'. *Health Policy,* 109**,** 209-25.

Wagstaff, A. 2009. *Social health insurance vs tax financed health systems - evidence from the OECD.* . Washington DC, USA: World Bank.

Wagstaff, A. & Moreno-Serra, R. 2009. 'Europe and central Asia's great post-communist social health insurance experiment: Aggregate impacts on health sector outcomes'. *J Health Econ,* 28**,** 322-40.

Woolhandler, S., Campbell, T. & Himmelstein, D. U. 2003. 'Costs of health care administration in the United States and Canada.' *N Engl J Med,* 349**,** 768-75.

World Health Organization 2010. *The world health report: health systems financing: the path to universal coverage.* World Health Organization.

Wren, M.-A. & Connolly, S. forthcoming. 'Challenges on the Path to Universal Healthcare in Ireland. Budget Perspectives 2017,' Paper 1. Dublin: Economic and Social Research Institute.

Wren, M.-A., Connolly, S. & Cunningham, N. 2015. 'An Examination of the Potential Costs of Universal Health Insurance in Ireland'. ESRI Research Series. Dublin: ESRI.

DISCUSSION

James O'Mahony: The UHI White Paper left it unclear what was and was not going to be in the universally insured basket. Essentially this issue was fudged. This then makes it very difficult for anybody to meaningfully cost the proposal. For example, meeting all the unmet need in a completely universal system for all would presumably cost much more than current services, but a system in which not all services were covered or were financed with co-pays would pay much less. How did you attempt to deal with such uncertainty over what was covered in your estimation? Secondly, as a broader question, what does the White Paper say about policy development in Ireland? If the policy proposal is so vague how can it be considered a credible prospect to present, especially as it proposed a very fundamental changes the health system?

Seán Lyons: Could switching to a social insurance model affect members' expectations about quality of service – for example - the lengths of waiting lists people are prepared to accept?

Brian Costello: Could the speakers comment on the availability of data for the studies which they carried out. Were there any areas where they felt there could be improvements in the amount and quality of data freely available in the Health domain.

Paul Donnelly: As I see it Ireland appears to rank quite highly in comparison to other states in terms of Health Exp/GDP. Yet it is the case that GDP is not a useful measure in our case - GNP would be better - but if used that would further raise Ireland's health expenditure percentage share by comparison with other states - to our disadvantage. And yet we have a health regime that is in terms of its offering to users not comparable favourably to most of the other states highlighted. This would raise the question: Is the Irish Health System comparatively inefficient or are we as a population sicker than others or some combination of both?

Noel O'Gorman: Is Universal Health Insurance, as proposed, fundamentally different in practice from an ear-marked tax (funding universal access to healthcare)? Why should private insurers be superior to Government in securing value from the suppliers of healthcare services? I also enquire about the benchmarks being employed for assessing the Universal Health Insurance model from the standpoint of efficiency and efficacy. I think that the New Zealand healthcare model – which, on my understanding, combined public financing (via general taxation) and private provision of health services – could provide a useful point of reference for assessing other healthcare systems.

Ciara O'Shea: I note that measuring of efficiency of healthcare systems is very difficult. In particular, associating health outcomes (e.g. living longer) with the actions of health systems as opposed to life style factors is very tricky. The OECD has undertaken many studies on this area. A recent paper published by the Canadian Institute of Health Information has examined the clinical, operational and contextual factors that affect variations in efficiency across Canada's health regions. The variables explored in the study explained almost 50% of the variations in efficiency among comparable health regions. (www.cihi.ca/en/hse_short_aib_10apr14_en.pdf).