



DO BRITISH AND IRISH SURGEONS OPERATE UNDER FISCAL DISADVANTAGE? GDP HEALTH EXPENDITURE IN THE WESTERN WORLD 1980 - 2013

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ABSTRACT

Objective:

Every Western nation face fiscal pressures due to extended longevity and improved medical technology. The priority countries' give to health is the proportion of the nation's income spent on health i.e % GDP-Expenditure-on-Health (%GDPEH), which is the financial context in which surgeons operate. We examine whether Britain and Ireland 'affords' as other countries.

Design:

GDPEH data is drawn from the US Bureau of Statistics and World Bank from 1980 to 2013 to compare Britain and Ireland, with the other 19 countries.

Setting:

Twenty-one Western countries with similar politico-economics.

Participants:

The 21 countries general population.

Main Outcome Measures:

% GDP Expenditure on Health (GDPEH) for three periods.

Main Results:

% GDPEH: [1] During 1980-97 Britain averaged 6.2% and Ireland 7.3%, being 20th and 14th highest respectively, Europe's average was 7.3%. [2] For 1998-2010 the UK averaged 7.9% and Ireland 7.3%, being equal 17th and 19th to Europe's average of 9.2%. [3] During 2010-2013 Britain averaged 9.2% and Ireland 8.9%, being 18th and 21st, Europe's average was 10.4%.

Over the period 1980-2013 Britain averaged 6.9%, Ireland 7.3% being lowest and 17th =. Thus Britain and Ireland gave a

proportionately lower financial priority to health than most other countries. The overall European average 8.2% yields ratios of 1: 1.19 for the UK and 1: 1.12 for Ireland.

Implications:

British and Irish surgeons have operated under relative and comparative fiscal disadvantage. Nonetheless recent research found Britain and Ireland had the biggest reductions in adult (55-74) mortality, however, with such proportionate chronic under-funding can the service continue to achieve such outstanding results?

1. All authors contributed the design and write-up of the study.
2. The authors have no any competing or interest in the work and there was no external funding for the study and the authors have no competing or vested interest in the study.
3. The study is a true and accurate analysis of secondary data from authoritative sources and no relevant data has been omitted and any limitations in the study are acknowledged.
4. Consequently no ethics committee approval was required as no persons were involved.

Key Words:

international, comparison, mortality, health expenditure

INTRODUCTION

A nation can only spend on health what it can afford. This raises the question for members of the ASGBI, does Britain and Ireland 'afford' as much as other Western countries, as what the nation affords for its health services is the financial context in which surgeons practice.

In response to medical advances, greater public expectations, extended longevity and the rising cost of care (Faden et al, 2009; D.o.H, 2011; American Cancer Society, 2014; Jonsson et al, 2015; Luengo - Fernandez, et al, 2015) every Western nation has had to 'afford' more and spend proportionately more of its 'national income' on health. This is the percentage of Gross-Domestic-Product-Expenditure-on-Health (GDPEH) (US Bureau Statistics, 2014; World Bank, 2015), which can be taken an indication of the fiscal priority each nations devotes to its health services.

In cash terms, however, there are huge differences in the financial worth of different national GDP's. However, in



terms of affordability and priority, it is the percentage of GDP to health that indicates the financial priority it 'affords' to health, from within its national budget. Hence it is the different percentages of GDPEH that illustrate countries commitment to health, irrespective of how the services are configured, or the source of the income, as %GDPEH is the total from both public and private sources devoted to health (US Bureau of Statistics, 2014; World Bank, 2015). For example, the proportion of America's GDPEH coming from Federal and State sources is 47% but they are the general exception, as the Western average is 80.7%; Ireland 76.9% and the UK 82.6%, the remainder comes from 'private' sources, predominately in some form of health insurance, individual or often through the employers (US Bureau of Statistics, 2014).

Emerging from earlier studies of health care outcomes, cost-effectiveness (Pritchard & Hickish, 2011; Pritchard & Wallace, 2011) and ASGBI member's response to problems of patient safety (Pritchard et al, 2010), we were led to ask the question, are British and Irish surgeons operating under relative comparative fiscal disadvantage?

There is one working null hypotheses. That over the period 1980 - 2013 there will be no statistically significant difference between Britain and Ireland's financial support for health compared with the other 14 European countries.

METHOD & DESIGN

Economic Input into Health Services: A country's Gross Domestic Product is its national income and the percentage of GDP devoted to its health services, within its national budget. This is what that nation affords for its health services, i.e. GDP-Health-Expenditure (GDPEH). Every one of the 21 countries have different configuration of services, but the uniform measure of % GDP devoted to health allows a direct comparison to be made of each nation's fiscal relative priority given to health. Data is drawn from the US Bureau of Statistics (2014) for the years 1980 - 2008 and from the World Bank (2015) for the years 2010 - 2013, covering 24 separate reported years. However, there is missing data for Greece for 3 years, Australia and Japan 2 years and Belgium, Denmark, and Portugal for 1 year, noted in the table.

The GDPEH data falls into three periods matching different UK governmental

periods 1980 - 1997; 1998 - 2010 and 2010 - 13 for which averages are calculated.

As will be seen, every country increased its GDPEH over the period but not in every year and the years of retraction will be reported for Britain and Ireland.

An overall average for the period 1980 - 2013 is calculated, which is the fiscal context in which Western surgeons practice.

It is reiterated that, in cash terms, there are marked differences between the value of countries GDP, but the GDPEH is an indicator of a nation's *priority given to health* within that country's budget and income. Consequently, this is the resource climate in which surgeons operate in the Western world.

FINDINGS

Economic Input % GDPEH: Table 1 presents the %GDP Expenditure on Health of all 21 Western countries. Baseline, current years and the latest years are given as well as the averages for the 1989 - 1997 and 1998 - 2010 and 2010 - 13 periods.

In 1980, the USA led GDPEH at 9%, followed by Denmark and Sweden 8.9%. Down to Portugal and Spain at 5.3%, Britain was third lowest at 5.6%, but Ireland at 8.2% was 5th highest at the time. The other 14 European country average was 7.1%.

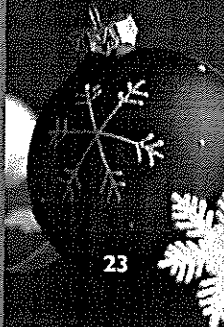
During 1980 - 97 period, the UK average fiscal commitment to health was 6.3% ranked equal 19th. Ireland's average was 7.3%, equivalent to being 14th out of 21 countries. The European average for the 1980 - 97 was 7.7%, yielding a UK to European ratio of 1: 1.22 and for Ireland 1:1.05.

From 1998 to 2010 the USA GDPEH rose from 14% to 17.1%, an average of 16.4%, the next highest averages were in Switzerland 10.8% and Germany 10.7%.

Britain's GDPEH increased from 6.7% to 9.4% by 2010, averaging 7.9%, ranked equal 17th. Ireland increased from 6.9% to 9.2% an average for of 7.3% but falling to 19th of the countries reviewed.

The European GDPEH average was 9.1% for this period yielding a UK to European ratio of 1: 1.16 and Ireland 1: 1.26.

The latest period is from 2010 - 2013 whose average GDPEH was again led by the USA at 17.1%, followed by France 11.6% and Germany 11.3%. Both Britain and Ireland %GDPEH fell from 2010 up to



2013, the UK averaging 9.2% being 18th out of 21 countries, with Ireland at 8.9% being the lowest.

Taking the overall period from 1980 to 2013 GDPEH averages, the highest was the USA at 12.4%, Germany 9.5% and France and Switzerland at 9.4% respectively. The overall lowest was the UK at 6.9%, Spain 7%, Greece 7.2%, with Ireland 4th lowest at 7.3%. The overall 1980 - 2013 European average of 8.2%, a UK to Europe ratio of 1:1.19 and Ireland a ratio of 1:1.12.

It should be noted that, whilst from 1980 GDPEH had risen considerably in all countries, but in some years there was a retraction. In Britain it fell from the previous year's GDPEH in the years 1984, 1987, 1988, 1994, 1995, 2011, and 2013. Ireland was even more variable, falling in the years 1981, 1986, 1987, 1989, 1990, 1993, every year through 1997-2000 and then in 2011.

Overall, the effect of the differences in %GDPEH was that the other European countries spent an equivalent 19% and 12% more of its national income on health than Britain and Ireland respectively.

In relation to the USA, Britain's GDPEH ratio was 1:1.80 and Ireland 1:1.70. In regards to Germany, the UK ratio was 1:

1.38 and Ireland's 1:1.30. Thus, in national income terms, over the whole period Germany spent proportionally more than 38% and 30% of its income than did Britain and Ireland.

DISCUSSION

Limitations:

The main limitation in comparing GDP expenditures on health is that, in actual cash terms, there are marked variations. Also, there are marked differences in the sources of funding to health, private and public, and, the configuration of health services. However, what the GDPEH measure shows is the degree of financial commitment each nation made to its health services, within its system and overall budget.

Main Findings:

The null hypothesis, that there would be no significant differences between Britain and Ireland's GDPEH and the other Western countries, is largely rejected. Over the whole period 1980 - 2013 Britain had the lowest average and Ireland was fourth lowest. Indeed, whilst Britain bumped along the bottom of the league table, Ireland's relative position to other countries continued to fall over the years, going from 5th highest to fourth lowest. This indicates that, compared with

Table 1

| Country % Reported years [24] | GDP 1980 | GP 1997 | Average 1980-97 | GDP 1998 | GDP 2010 | Average 1998-2010 | GDP 2013 | Average 2010-13 | Average 1980-13 |
|-------------------------------|------------------|------------------|------------------|------------------|--------------------|--------------------|--------------------|------------------|------------------|
| 1. USA [24] | 9.0 | 13.9 | 9.9 | 14.0 | 17.1 | 16.4 | 17.1 | 17.1 | 12.4 |
| 2. Germany [23] a | 8.4 | 10.7 | 8.8 | 10.6 | 11.6 | 10.7 | 11.3 | 11.3 | 9.5 |
| 3= France [24] | 7.0 | 9.9 | 8.8 | 9.6 | 11.6 | 10.4 | 11.7 | 11.6 | 9.4 |
| 3= Switzerland [24] | 7.3 | 10.2 | 8.5 | 10.4 | 10.9 | 10.8 | 11.5 | 11.2 | 9.4 |
| 5. Canada [24] | 7.0 | 9.3 | 9.0 | 9.3 | 11.1 | 9.8 | 10.9 | 11.0 | 9.3 |
| 6= Netherlands [24] | 7.4 | 8.5 | 8.3 | 8.7 | 12.1 | 9.4 | 12.9 | 12.4 | 8.7 |
| 6= Sweden [24] | 8.9 | 8.6 | 8.6 | 7.9 | 9.5 | 8.8 | 9.7 | 9.6 | 8.7 |
| 8. Austria [23] | 7.4 | 8.4 | 8.0 | 8.4 | 11.1 | 9.4 | 11.0 | 11.0 | 8.5 |
| 9. Belgium [23] | 6.3 | 7.9 | 7.4 | 8.6 | 10.6 | 9.7 | 11.0 | 10.8 | 8.2 |
| 10. Norway [24] | 7.0 | 7.5 | 7.5 | 8.6 | 9.4 | 8.7 | 9.6 | 9.4 | 8.0 |
| 11= Italy [24] | 7.0 | 7.6 | 7.6 | 7.7 | 9.4 | 8.4 | 9.1 | 9.3 | 7.9 |
| 11= Australia [22] | 6.1 | 8.4 | 7.6 | 8.6 | 8.9 | 8.4 | 9.0 | 9.0 | 7.9 |
| 13. Denmark [23] | 8.9 | 8.1 | 7.1 | 8.3 | 11.1 | 9.0 | 10.6 | 10.9 | 7.8 |
| 14= N. Zealand [24] | 5.9 | 7.6 | 7.1 | 8.6 | 10.0 | 8.6 | 9.7 | 10.0 | 7.7 |
| 14= Finland [24] | 6.3 | 7.7 | 7.7 | 7.4 | 9.0 | 7.7 | 9.4 | 9.1 | 7.7 |
| 16. Portugal [23] | 5.3 | 7.9 | 6.7 | 6.4 | 10.9 | 8.8 | 9.7 | 10.2 | 7.4 |
| 17. Ireland [24] | 8.2 | -) | -)" | 6.9 | 9.2 | -)" | 8.9 | 8.9 | -)" |
| 18. Japan [22] | 6.5 | 7.2 | 6.7 | 7.5 | 9.6 | 8.0 | 10.3 | 10.1 | 7.2 |
| 19 Greece [21] | 5.9 | 8.6 | 6.1 | 8.4 | 9.5 | 9.1 | 9.8 | 9.6 | 7.2 |
| 20. Spain [24] | 5.3 | 7.4 | 6.5 | 6.6 | 9.6 | 7.9 | 8.9 | 9.3 | 7.0 |
| 21 U.K [24] | 3)0 | 0)- | 0)! | 0)- | 9.4 | 7.9 | 9.1 | 9.2 | 6.9 |
| Europe Average | -) | 8.5 | -)" | 8.4 | 10.5 | 9.2 | 10.4 | 10.4 | 8.2 |
| UK Rank | 19 th | 21 st | 20 th | 19 th | 17 th = | 18 th 4 | 18 th 4 | 18 th | 21 |
| Ireland Rank | 3 rd | ! th | 14 th | 17 th | 19 th | 21 st | ! 4 | 21 st | 17 th |
| UK: EU Ratio 1: 0.84 | 1.25 | 1.27 | 1.18 | 1.25 | 1.12 | 1.16 | 1.14 | 1.13 | 1.19 |
| Ireland: EU ratio | 0.86 | 1.21 | 1.00 | 1.22 | 1.14 | 1.26 | 1.17 | 1.17 | 1.12 |



comparable Western countries, British and Irish surgeons operate under fiscal disadvantage, markedly so against other European countries such as Germany, France and Switzerland.

With such a relative low priority given to health funding in the two countries, it might be assumed that their health outcomes, for example in reducing adult (<74years) cancer deaths, which is a British Government priority (DoH 2011) would be behind other Western countries. This was not the case.

In a study of the ten major Western countries found that Britain had the biggest reduction in cancer deaths between 1980 and 2006 and was the most cost-effective (Pritchard & Hickish, 2011). Whilst in regard to reducing total adult (55-74) deaths, Ireland had the biggest reduction over the period, the UK were third equal and Ireland and Britain were first and second most cost-effective (Pritchard & Wallace, 2011). Soon to be published research shows this success continues to which members of the ASGBI will have undoubtedly contributed.

Whilst self-evidently a nation can only have a health care system it can afford, this study shows that the Britain and Ireland afforded substantially less than many other countries, yet comparatively achieved more with proportionally less. However, this data illustrates that, in effect, proportionately there have been 'hidden' cuts for what the UK and Ireland could 'afford' for their health services that will undermine their ability to meet the challenges ahead, but these relative retractions can only be seen when having other comparative countries using a standard mechanism like %GDPEH.

Consequently, both Britain and Ireland need to at least match the Europe's proportional health expenditure, which would go a long way to improve A&E waiting times, provide adequate social care and reduce the need to cancel operations. Thus, maybe, just maybe, Britain and Ireland could be like France and Germany and have operating theatres devoted entirely to emergency care and, therefore, not disrupting elective surgical lists.

Finally both public and professionals need to ask, what can and should we devote to health care and do we afford as much as other countries? And if not, why not?

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