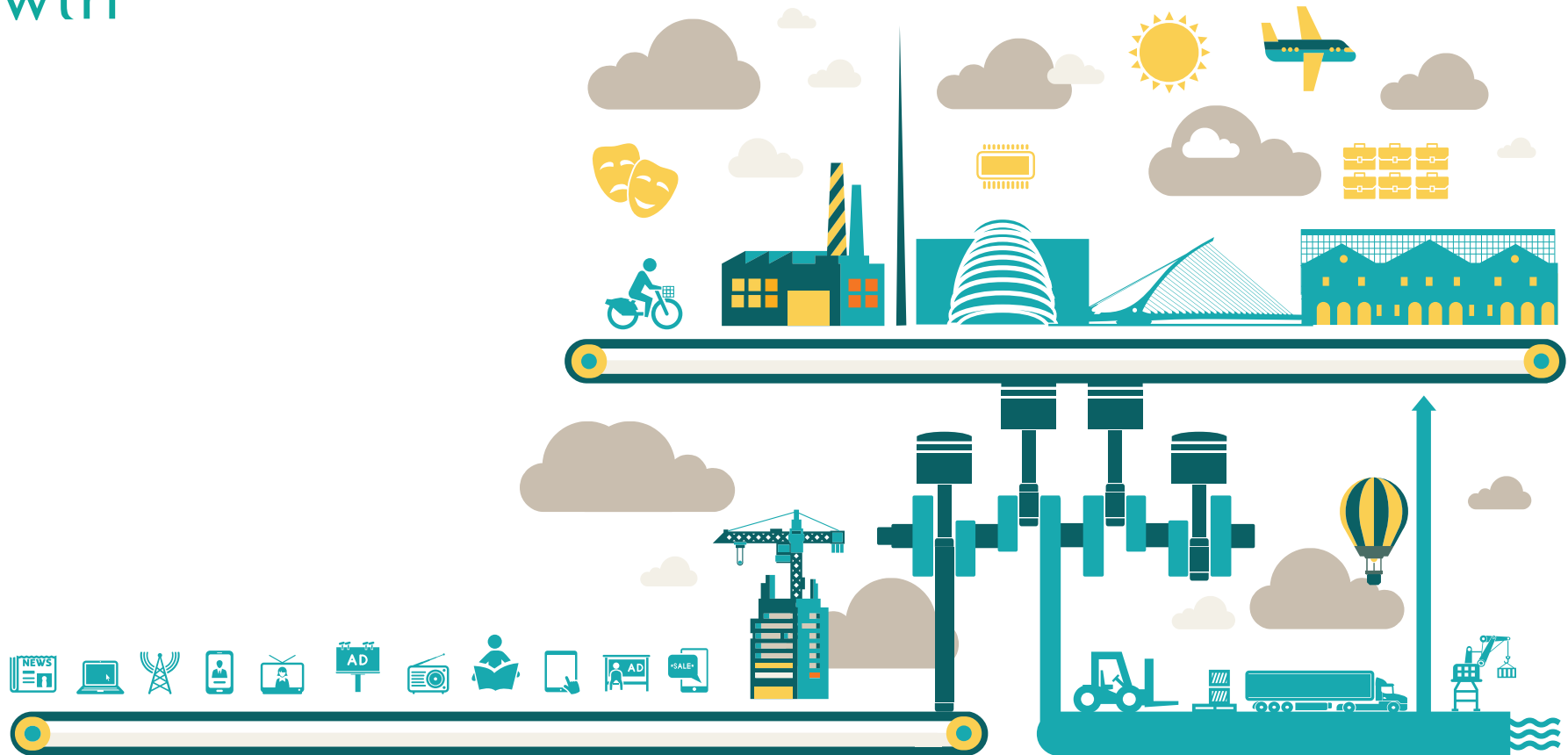


ADVERTISING:

An engine for
economic
growth





Contents

pg 02	Important notice from Deloitte
pg 03	Foreword
pg 05	Executive summary
pg 06	1 Advertising enables the economy
pg 08	2 Advertising supports jobs
pg 10	3 Advertising funds Irish media and heritage
pg 12	4 Advertising powers markets
pg 18	5 Advertising enables the internet economy
pg 20	6 Advertising stimulates social change
pg 24	Appendix A The impact of advertising on GDP
pg 29	Appendix B Advertising spend supports jobs
pg 32	Appendix C Enabling the internet economy

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by Alan Cox,
CEO Core Media



Advertising's contribution to growing sales and profit is well known; all the world's leading brands have been built through consistent marketing, which has created demand and increased revenue for those businesses.

Up to now, much less has been known about advertising's role as a stimulant for economic growth through its capacity to drive demand, spread innovation and foster competition.

We were impressed by the work that Deloitte did for the Advertising Association in the UK last year on this topic and hope that this report on advertising's impact on the Irish economy will provide a valuable contribution to the Irish debate.

The key finding from this study tells a remarkable story about the Irish advertising and marketing industry; on average €1 spent on advertising is estimated to generate

€5.7 in our economy. This phenomenal finding is based on rigorous and complex econometric analysis, conducted by Deloitte, and described in the report.

I would like to thank Google, INM and RTÉ for co-sponsoring the study with us, and for their contributions. We request that policy makers take note of the disproportionate impact our industry has on the economic performance of this country, and we ask Government to consider the benefits that would accrue from a programme which incentivises and encourages businesses to invest in advertising in order to grow demand and employment in Ireland.

Recognition of this has never been more important, as the economy is still fragile, but poised for growth.

A handwritten signature in blue ink that reads "Alan Cox". The signature is fluid and cursive.

CORE MEDIA[®]

Google

Irish Independent

RTÉ

Foreword

€1 of advertising spend generates €5.7 on average for the Irish economy



Advertising plays a central role in our everyday lives through things as simple as informing about the latest products to funding a wide range of free entertainment.

€938 million¹ was invested in advertising and marketing communications² in Ireland in 2012. The industry provides vital funds to the Irish media, enabling its fundamental contribution to society and culture. It provides 1 in 3 euro of revenues to newspapers and a fifth of all TV revenues, facilitating a daily and diverse supply of news and information to one of the most avid reader populations in Europe. It contributes to promoting Irish cultural heritage and supports other sectors, from radio to sports or leisure.

It funds many services at the centre of the internet, where Irish people already spend over 2.5 hours per weekday.³ These range from online search engines to social media, through which Irish people increasingly shop, research and stay in touch.

In 2012, the Advertising Association of Ireland commissioned a study about the Economic Impact of Advertising, with a focus on its effects in funding the media, and the resulting supply chain and knock-on effects.⁴

However, advertising's role in the economy is wider. This was comprehensively studied in a pioneering study commissioned by the Advertising Association in the UK (the '*Advertising Pays study*'⁵), which quantified advertising's fundamental contribution to the economy, and articulated the mechanisms through which advertising enables markets.

The present study adopts the Advertising Pays innovative method and framework, to quantify and illustrate advertising's impact in Ireland. The Advertising Pays study's cross-country statistical analysis, which covers different markets and years is extended in this study to include Ireland and the most recent data, to measure advertising's effect in the Irish economy.

On this basis, advertising is estimated to contribute €5.7 to Irish Gross National Product (GNP) on average per €1 spent on advertising.⁶ With advertising media expenditures in Ireland of €938 million, advertising is estimated to have contributed at least €5.3 billion to Irish GNP in 2012.

This effect results from the fundamental role that advertising has in the economy, ranging from its ability to support innovation and competition, to its role in stimulating exports.

The information contained in advertising allows consumers to make more informed decisions and promotes faster take-up, supporting market efficiency, investment and market expansion. There are various examples of advertising playing such a role in Ireland, from the labour market, to markets from high-tech to fast moving consumer goods.

Advertising enhances competition, by supporting innovation and differentiation, or through the advertising of prices. Advertising's role in informing about the best deals in supermarket groceries in Ireland is just one illustration of this effect.

By nurturing brands, advertising helps create relationships between customers and companies, facilitating choice and creating a platform for international export success. Leading Irish brands such as Jameson and Kerrygold, to name a few, are a testimony to this effect.

Advertising's funding of key online services allows Irish consumers to look for the best deals, and opens new career, educational and social opportunities, driving further productivity in the economy. Advertising's current contribution to growing the Irish digital economy through more efficient online and offline purchases is only likely scratching the surface of the opportunity ahead.

As a catalytic activity promoting innovation, competition and growth, policy makers should enable an environment where advertising's ability to be a driver of the economy is maximised. Policy makers should consider direct forms of support, such as financial incentives, to allow the industry to grow faster and contribute more, given advertising's enabling effects on the economy.

This report illustrates these impacts in Ireland.

Executive Summary

¹ This includes advertising in newspapers and magazines, television, cinema, radio, out-of-home, direct mail, online advertising and sponsorship. The cost of producing advertising is not included. Source: Core Media estimates (2012) for newspapers and magazines, television, cinema, radio, out-of-home, online advertising and sponsorship. Deloitte estimates for direct mail based on international benchmarks and WARC data (<http://www.warc.com/Topics/ForecastsandData.topic>) provided by Core Media. See appendix B.1, table 6 for a breakdown and details of estimates.

² Hereinafter referred to as 'advertising'.

³ UPC (2012), 'The UPC Report on Ireland's Digital Future'.

⁴ AECOM (2012), 'Economic Impact of Advertising in Ireland'.

⁵ Advertising Pays: how advertising fuels the UK economy, a study commissioned by the Advertising Association from Deloitte LLP. Available at: www.adassoc.org.uk/Advertising-Pays.

⁶ This result reflects the average impact of €1 of advertising across the economy, with advertising having higher or lower effects in specific circumstances.

Advertising is an engine of the economy. It informs consumers of products and prices, and fosters adoption of innovations. It provides the essential bridge between the product and the consumer.

"Advertising has often been seen as more art than science - even in its impact as well as its content. This report applies new economic models to Ireland to give some real measure of the importance of advertising to business, individuals and the wider economy."

*Brendan Keenan, Economics Editor
Independent Newspapers*

1.1 Advertising stimulates economic activity

Although advertising is such an integral part of the economy, it is very difficult to measure its impact. This report looks at how differences in the level of advertising across countries contribute to different levels of economic activity, following the approach developed in the UK Advertising Pays study.

The model built covers 18 countries and 15 years, ranging from the G7⁷ and Ireland through to developing economies.⁸ It identifies the main drivers of GDP differences between countries and isolates the role of advertising, as described in Appendix A. The issue about whether advertising drives higher economic growth, or whether faster-growing economies generate higher levels of advertising, is addressed through the particular statistical methodology used, also described in Appendix A.

The model demonstrates that higher advertising expenditures have a positive impact on GDP. From the model, the following is found in relation to the effect of advertising in Ireland:

- Advertising is estimated to contribute €5.7 to Irish GNP on average per €1 spent on advertising.⁹
- With advertising expenditures in Ireland of €938m, advertising is estimated to have contributed at least €5.3 billion to Irish GNP in 2012.

1.2 Advertising smoothes the labour market

Advertising makes the labour market work better.¹⁰ The approximately €15 million Irish recruitment advertising market¹¹ facilitates the matching of positions and candidates through Irish job boards, printed and social media.

The literature articulates the impact of advertising on recruitment. Advertising provides information to potential recruits, and increases the recruitment pool by raising employer awareness and branding.¹²

- **Reduces search cost.** Recruitment advertising is seen as an effective way of reaching potential candidates.¹³ For companies and recruiters, recruitment advertising communicates employment needs to a targeted and self-selected audience, allowing employment opportunities to be communicated faster and more widely to relevant candidates. Likewise, job seekers can learn of targeted and specific job opportunities which they can appraise.¹⁴



Advertising's contribution to the Irish economy is

€5.3bn

1 ADVERTISING ENABLES THE ECONOMY

Jobs are sustained in the media and creative industries, and the wider economy, as a result of advertising spend.

In 2012, 3,000 people were estimated to be employed in creative and media agencies and the production of advertising. Advertising also supports the jobs of those involved in the commissioning of advertisements within advertisers' organisations across all sectors. It is estimated that an extra 4,000 people are employed in those activities.

- Overall, a total of 7,000 people are estimated to be employed in advertising activities in Ireland in 2012.

Beyond these, advertising also supports jobs in organisations funded by advertising spend. For example, this includes a share of the employment in newspapers, magazines or radio stations as a result of the revenues that those industries generate from advertising.

- Over 7,500 jobs are supported by the revenue from advertising space.

Further employment is supported in those sectors' supply chains. For example, a broadcaster's advertising revenues will fund the wages of many of its staff and contribute to the broadcaster's content and distribution

costs. Further economic activity and employment will be supported as the broadcaster's and content suppliers' staff spend their wages.

- Approximately 15,500 jobs are estimated to be supported across the supply chains of the creative industries and throughout the wider economy from employees spending their wages.

The total employment which is supported directly or indirectly by approximately €1 billion of advertising media spend in Ireland is estimated to be in the order of 30,000 jobs. Appendix B provides a detailed description of the approach used to establish all job estimates in this section.

A much larger number of jobs are also created as a result of advertising's role as an enabler of markets, which are not captured here, although an example of such types of impacts is illustrated in the case study opposite.



30,000

Irish jobs are supported by advertising

2 ADVERTISING SUPPORTS JOBS



Case study: Advertising of Ireland as a tourist destination helps boost domestic travel and employment

In 2006, Fáilte Ireland, the National Tourism Development Authority, launched the campaign 'Right Here, Right Now', which resulted in the successful repositioning of Ireland as an attractive aspirational destination.²⁷

Along with the change in economic conditions, the launch of the first campaign in 2006 has contributed to the increase of the domestic travel share of total Irish travel. The number of domestic trips and the expenses by domestic tourists increased by 26% and 33% respectively, between 2006 and 2011.²⁸

This has helped to cope with the effects of the recession that has reduced the total revenues of the Irish tourism sector by 5%, since 2006.²⁹

In 2011, over 10,000 jobs (6,400 in the sector, 3,800 in the supply chain and the rest of the economy) are estimated to have been supported by the increase in domestic tourism in Ireland.³⁰



²⁷ IAPI AdFx (2008), 'Right Here, Right Now'.

²⁸ Deloitte analysis based on Fáilte Ireland:Tourism facts 2007, 2008, 2009, 2010 and 2011.

²⁹ Ibid.

³⁰ This figure is estimated based on the incremental revenue generated by domestic tourism, which increased by 33% since 2006, and 2011 Fáilte Ireland estimation of employment (latest available). Using I-O information, the impact that this increment has on supporting direct employment in the sector is estimated, as well as associated indirect and induced effects in the Irish economy.

Without advertising, some enterprises may not be viable.

The revenue generated by selling advertising supports the Irish media, from the internet, to print, to broadcast and beyond. 38% of Irish media industry's revenues are estimated to come from advertising.³¹ In the absence of advertising these industries would look very different. Firms would have to charge consumers and some enterprises may not be viable.

The role of advertising in funding the newspaper and magazine sector is particularly critical, given the traditional importance of newspapers as a source of information for the Irish population. Newspaper readership is regarded as one of the highest per capita in Europe with 81% of the Irish adult population reading printed newspapers regularly.³² One third of newspaper revenues come from advertising, providing a vital source of funding.³³

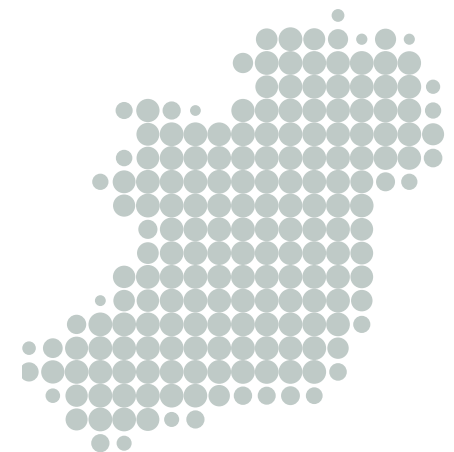
Advertising spend contributes one fifth of all Irish TV revenues.³⁴ It contributes to RTÉ's revenue³⁵ and it funds other major free-to-air broadcasters such as TV3 and subscription channels, such as those broadcast through Sky or UPC, contributing to a diverse range of quality programming. These broadcasters in turn sustain creative Irish industries such as the film and video sector.

The media in Ireland contributes to the diffusion of the Irish language helping to promote Irish cultural heritage. For instance, 55% of TG4's broadcasting schedule is provided in the Irish language³⁶ and is part-funded by advertising.

It also supports local heritage by funding local printed media and radio, including 50 local and regional newspapers³⁷, read by 1.5 million people a week³⁸, and nearly 60 local and community radio stations.³⁹

Advertising funds the internet, enabling access to a wealth of information, and providing extensive educational, social and cultural opportunities, further supporting heritage. This contribution is described further in section 5.

Advertising funds a range of other leisure and sports activities, such as Dublin's bike rental scheme.



38% of all revenue to Irish media comes from advertising

3 ADVERTISING FUNDS IRISH MEDIA AND HERITAGE

Case study: dublinbikes

Dublinbikes is often regarded as one of the most successful bike rental schemes in the world, and is supported by advertising. Launched in 2009, advertising company JCDecaux provides and operates a network of 550 bicycles at 44 locations on behalf of Dublin City Council. The cost of installation and maintenance of the bikes and their stations is covered by JCDecaux, providing a valuable service for Dubliners and visitors, in return for advertising space in the city.

With over 31,000 active long-term subscribers, dublinbikes has been a key contributor to Dublin's sustainable transportation policy. It is estimated that over 5 million journeys have been made under the scheme.⁴⁰ In 2013, JCDecaux signed a new contract with Dublin City Council to carry out an expansion of the scheme.⁴¹

Furthermore, it was recently announced that similar bike schemes will be launched in Cork, Limerick and Galway in 2014. These schemes are being part-funded by Coca-Cola Ireland.⁴²

But advertising's role in the economy is much wider as the next sections illustrate.



³¹ Estimates based on data provided by Core Media.
³² National Newspapers of Ireland, <http://nni.ie/about-us/latest-news/>.
³³ See Appendix B, Table 6
³⁴ See Appendix B, Table 6
³⁵ According to RTÉ Annual report (2012), advertising contributed to 58% of all RTÉ commercial revenues.
³⁶ TG4 estimation provided by Core Media.
³⁷ Local Newspaper week, <http://www.localnewspaperweek.ie>.
³⁸ Regional Newspapers and Printers Association of Ireland, 'Facts and figures'.
³⁹ Broadcasting Authority of Ireland, www.bai.ie.
⁴⁰ Murphy et al (2013). "The role of bicycle sharing in the city: analysis of the Irish experience". International Journal of Sustainable Transportation. <http://www.tandfonline.com/doi/abs/10.1080/15568318.2012.748855>.
⁴¹ JCDecaux (2013), 'dublinbikes expansion'.
⁴² Core Media.

Advertising fuels innovation, competition and market expansion, leading to more efficient markets and wealth creation.

Advertising provides vital information to consumers about the availability, features or price of products and services. It supports innovation by accelerating the speed at which product improvements are adopted, reducing barriers to market penetration.

It can lead to significantly expanded markets, with more consumers having access to products at lower prices; and to enhanced product value, supported by investment.

By nurturing brands, advertising reinforces the commitment to quality, facilitates product choice, and helps project companies successfully onto international markets.

Advertising in Ireland has these effects across markets, from the top spending sectors such as retailing or food manufacturing to others such as financial services or telecommunications where advertising plays an equally significant role.⁴³

4.1 Facilitates Market Growth

The information contained in advertising helps raise awareness of new products, and supports market growth.⁴⁴

The scope for advertising to perform this role will vary according to the state of the market. Advertising is likely to help accelerate the growth of markets where there is breakthrough change.⁴⁵

An example is provided by Samsung, which has heavily used advertising⁴⁶ to expand smartphone markets. Continued growth in Samsung sales has contributed to the increase in smartphone penetration in Ireland from 39% to 50% between 2012 and 2013.⁴⁷



Over
400,000
households would not yet have
broadband access without advertising

4 ADVERTISING POWERS
MARKETS



Samsung has also used advertising extensively to promote new market segments such as big display smartphones (phablet) through its Galaxy Note range, positioning the company as Apple's main competitor. With the recent launch of the Galaxy Note 3, the Galaxy Note is now in its third generation. Samsung's positioning in Ireland with campaigns for its tablet range such as the Galaxy Tab and the Galaxy Note 10.1 contributed to an annual 25% growth in tablet penetration. By the end of 2013, it is forecast that there will be 1.2 million tablets in Ireland.⁴⁸

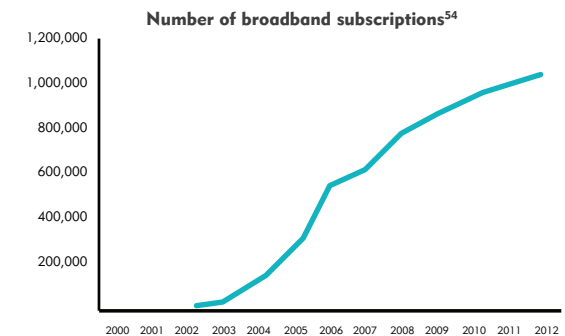
In the fast-moving consumer goods segment, advertising helped Lucozade to create and expand the Irish sports drinks market. Before its launch in 1995, sports drinks were virtually unknown in Ireland.⁴⁹ After two decades of targeted advertising through several award winning campaigns⁵⁰, advertising helped Lucozade to establish a market for sports drinks in Ireland, placing the company in the leading position in sports drinks sales. In 2013, Lucozade was the 4th biggest selling brand in Irish grocery.⁵¹

Advertising has also contributed to the expansion of new products within traditional markets. Ireland is in the top 10 countries in fortified milk consumption as a proportion of total milk consumption in the world. This has been supported by advertising. For example, the award winning Super Milk campaign in 2010 contributed to Ireland becoming the market with highest growth in fortified milk sales in the world.⁵²

Case study: Advertising has played a key role in supporting the growth of broadband, helping to connect rural communities in Ireland

The broadband market has grown remarkably in the last decade, with nearly two in three⁵³ Irish households currently having fixed residential broadband connections. Advertising has played an important role in supporting this market expansion with campaigns focused on broadband service launches by new operators, faster speed broadband services, or triple play promotions. Without advertising, it is likely that market growth would have been slower, and the market would be less competitive. Over 400,000 Irish households, approximately 40% of current total broadband households, would likely not yet have broadband access in 2012 without advertising.⁵⁵

The boost in connections supported by advertising has also benefited rural areas in Ireland, where broadband penetration already reaches 56.5% of rural households.⁵⁶ This enables rural economic development by facilitating e-businesses, improving communications between farms and national and international markets⁵⁷, and attracting young families to ensure availability of a skilled and vital labour force in rural areas.⁵⁸



⁴³ Nielsen (2013) Ad Dynamix: Advertising spend by category in Ireland provided by Core Media.

⁴⁴ See for example, Bagwell, K. (2007), 'The economic analysis of advertising', Handbook of Industrial Organization, Volume 3, for an explanation of the role of advertising in supporting the development of economies of scale.

⁴⁵ Dr Simon Broadbent for Economics Committee, Advertising Association (1997), Does Advertising Affect Market Size?

⁴⁶ It is estimated that Samsung spent \$12 billion in marketing, being the top advertising spender globally in 2012. Source: CNN Money (2012): 'Samsung's galactic marketing budget'.

⁴⁷ Eircom (2013), Home Sentiment Survey 2013 and Red C (2012), 'Connecting the world: Mobile and social media trends, Ireland'.

⁴⁸ Ibid.

⁴⁹ IAPI AdFx Awards (2008). 'Lucozade Sport: Longitudinal Case Study'.

⁵⁰ Ibid.

⁵¹ Checkout and Nielsen (2013), 'The Checkout Top 100 Brands'.

⁵² IAPI AdFx Awards (2010), 'Form Super Milk to Super Brand'.

⁵³ Comreg (2013) 'Quarterly Report Q2 2013'.

⁵⁴ Economist Intelligence Unit (2013).

⁵⁵ This is based on broadband advertising elasticity of 0.4, sourced from "Advertising and price elasticities of ADSL Access", John Nankervis, University of Essex, February 2004. The elasticity is applied to the annual increase in broadband connections since the year 2002, to estimate the reduction in new connections without advertising. The source for the number of current fixed residential broadband connections is Economist Intelligence Unit.

⁵⁶ CSO (2012), 'Census 2011 results'. June. <http://www.cso.ie/en/census/census2011reports/census2011thisisirelandpart2>.

⁵⁷ European Commission (2006), 'Broadband Internet access: the territorial divide'. <http://europa.eu/scadplus/leg/en/lvb/l24190c.htm>.

⁵⁸ Oireachtas Library & Research Service (2009), 'Broadband'. No.4.

4.2 Supports Exports

Exports are an important driver of economic growth. The academic literature illustrates the role of advertising in supporting exports.⁵⁹ Main findings include:

- Greater brand recognition in overseas markets supports market entry and helps to build larger market shares;
- A 2003 study found a strong positive link between the level of brand recognition and financial performance of that brand in export markets.⁶⁰

The power of advertising and brands is exemplified by world-renowned Irish brands such as Jameson and Kerrygold:

- Whiskey brand Jameson is one of the most successful Irish brands.⁶¹ In 2012, Jameson reached 4 million cases sold. It is the number one Irish whiskey in sales in the world⁶² with a 64% global market share of Irish whiskeys.⁶³ Since the late 80's, Jameson has multiplied its sales by approximately 750%, mostly overseas, with around one quarter of its total sales in the US. This export success is based on strong and targeted marketing coupled with premiumisation and innovation.⁶⁴

Jameson's marketing strategy has helped Irish whiskey and Jameson in particular to globally compete with other premium whiskey brands. For instance, in October 2011, Jameson invested heavily on its first TV campaign centred on the legend of John Jameson. Jointly with its high profile short film online contest, this has backed an increase of 29% of sales in the US in 2012, contributing to Jameson being in the Top 20 spirits brands by value in the world.⁶⁵

- Another prominent example is butter brand Kerrygold, regarded as one of Ireland's truly internationally known food brands.⁶⁶ Since the early 60's, advertising has contributed to the butter brand's expansion in foreign markets and to the image of Ireland abroad.⁶⁷ It is, for example, the top selling butter in Germany with 50% of branded butter market share.⁶⁸ Kerrygold's advertising also contributes to promote its premium positioning in foreign markets. In 2012, for instance, its food magazine advertising and first time ever TV campaign contributed to it becoming the number one imported butter brand in the US.⁶⁹



The importance of marketing to support export sales is also acknowledged by the government. Enterprise Ireland, the government agency responsible for supporting Irish businesses, has developed a programme aiming to help export-focused Irish companies across all sectors. In particular, online marketing is seen as one of the most

cost effective tools for small and medium sized companies to develop export markets given its ability to reach wide audiences abroad.⁷⁰ Enterprise Ireland offers support aiming to maximise the potential of small and medium sized companies' online presence to support sales in overseas markets.

⁵⁹ See, for example, Cavusgil, S.T. and Zou, S. (1994), 'Marketing strategy-performance relationship: an investigation of the empirical link in export market ventures', *Journal of Marketing*, Vol. 58, No.1, pp. 1-21.

⁶⁰ Zou, S. and Zhao, S. (2003), 'The effect of export marketing capabilities on export performance: an investigation of Chinese exporters', *Journal of International Marketing*, Vol. 11, No. 4, pp. 32-55.

⁶¹ Jameson's brand estimated value is \$540 million. Brand directory. www.branddirectory.com.

⁶² Jameson hits four million cases, *Irish Whiskey news*, November 29, 2012 <http://www.whiskeyintelligence.com/2012/11/jameson-hits-four-million-cases-irish-whiskey-news/>.

⁶³ Period 2011-2012 Annual Report.

⁶⁴ Jameson hits four million cases, *Irish Whiskey news*, November 29, 2012 <http://www.whiskeyintelligence.com/2012/11/jameson-hits-four-million-cases-irish-whiskey-news/>.

⁶⁵ Brand directory (2013), 'World's Top 50 spirits brands in 2013'.

⁶⁶ Irish Co-operative Organisation Society (2012), 'Co-operative Alliance Ireland Yearbook'.

⁶⁷ Bolger, M (2012), 'Buttering up the British: Irish exports and the tourist gaze'. *In/Print*, 1, 2012. Dublin Institute of Technology.

⁶⁸ Irish Dairy Board (2012), 'Annual report'.

⁶⁹ Ibid.

⁷⁰ Enterprise Ireland (2013), 'E-marketing support'.

4.3 Fosters Price Competition

Advertising stimulates competition by supporting innovation and differentiation, through the advertising of prices, or by helping new entrants raise awareness of their products.

A study, for example, which examined the impact of the advertising of staple products such as detergent, toothpaste and toothbrushes, found that increases in advertising made consumers more price sensitive and led to higher overall demand.⁷¹ This effect is recognised in the wider academic literature.⁷²

Advertising's contribution to stimulating price competition is present in many markets in Ireland, from energy, to mobile phones or supermarkets.

In the residential electricity market in Ireland, market liberalisation triggered price competition. Advertising has played a key role in informing customers of new supply options available. For example, Bord Gáis launched in 2009 an intensive award winning campaign advertising a 10% discount in prices. Bord Gáis gained 300,000 clients in only one year through its market entry strategy, equivalent to 20% of the residential electricity market share.⁷³

In the Irish mobile phone market, average revenue per user has nearly halved since 2005⁷⁴, attributable in part to lower price mobile plans⁷⁵, promoted through advertising.⁷⁶ Nearly 3 million numbers have ported to another operator since 2005.⁷⁷ The average post-paid mobile basket in Ireland is currently more than 20% cheaper than the OECD average basket.⁷⁸

⁷¹ Erdem et al. (2008), 'The impact of advertising on consumer price sensitivity in experience goods markets', *Journal of Quantitative Marketing and Economics*, Vol 6.

⁷² For example a study on Austrian advertising taxation found that the tax increased overall consumer prices but with very diverse effects across different markets - the reduction in advertising expenditure as a result of the tax led to increased prices for food products but falls for others (See Rauch, F. (2011), 'Advertising expenditure and consumer prices', CEP discussion paper 1073). The literature suggests that the overall effect of advertising on prices will depend on the net effect on economies of scale, the firm's unit cost and consumers' sensitivity to price. When advertising increases the price sensitivity of demand, it works to reduce prices. In contrast, advertising may create higher intrinsic value when it helps promote innovation and differentiation (See Bagwell, K. (2007), 'The economic analysis of advertising', *Handbook of Industrial Organization*, Volume 3).

⁷³ IAPI. AdFx Awards (2010) Bord Gáis: 'Making the big switch'.

⁷⁴ Comreg (2013) 'Summary statistical data on the Irish mobile market'.

⁷⁵ Comreg (2013), 'Quarterly Key Data Report'.

⁷⁶ Telecommunications companies in Ireland spent c. €63 million in advertising in 2012, telecommunications being a top five sector by advertising spend in the country. Source: Nielsen (2013), Ad Dynamix: Total "telecommunications" category advertising spend in Ireland in 2012 provided by Core Media.

⁷⁷ Comreg (2013) 'Summary statistical data on the Irish mobile market'.

⁷⁸ Out of 21 countries benchmarked, Comreg (2013), 'Quarterly Data Report'.

⁷⁹ Nielsen (2013), 'Ireland Private Label Report'.

⁸⁰ Ibid.

⁸¹ Private Label Manufacturers Association, e-scanner, www.plmainternational.com/EscannerInt/october2012En.html.

⁸² Kantar World Panel (2013), '5 year trend in retailer share across the Republic of Ireland', October provided by Core Media.

⁸³ Ibid.

⁸⁴ For instance, almost 800 TV ratings were delivered in the first two weeks, reaching 80% of the population according to IAPI AdFx (2012), 'From last resort to first port of call: Say 'Hello' to the new SuperValu'. According to Nielsen Ad Dynamix (2013) provided by Core Media, SuperValu was the top advertising spender among supermarkets brands.

⁸⁵ Red C provided by Core Media.

⁸⁶ IAPI AdFx (2012), 'From last resort to first port of call: Say 'Hello' to the new SuperValu'.

⁸⁷ Retail Ireland based on CSO's CPI figures. Food and drink prices down 6% since 2008: Retail Ireland. Monday 11, February 2013. <http://www.ibec.ie/IBEC/Press/Publicationsdoelib3.nsf/vPages/Newsroom-food-and-drink-prices-down-6-since-2008-retail-ireland-11-02-2013?OpenDocument?OpenDocument>

⁸⁸ This is estimated based on consumers' spend estimate on food and non-alcoholic drinks assuming prices would have been 6.8% higher. Consumer spend on food and non-alcoholic drinks is sourced from Consumption of Personal Income, CSO (2012), 'National Income Expenditure Report'.

Case study: Competition in the grocery retail market has contributed to price decreases that have saved Irish households nearly €550 million in 2012 alone

% Share of Grocery Spend in Republic of Ireland⁸³

Brand	2008	2013
Aldi	2.5	6.7
Lidl	4.7	6.8

Source: Kantar World Panel 2013

The supermarket sector has seen intense price competition in Ireland, against decreases in disposable income in recent years.⁷⁹ Households have turned to discounters and own brand products, which have increased their market share, supported by advertising.

Aldi's 'Like brands, only cheaper' campaign advertised Aldi's cheaper product range while reassuring consumers about the quality of their products.⁸⁰ Lidl's 'Choose Lidl' campaign features regional farmers and manufacturers supplying Lidl's cheaper private labels.⁸¹ Aldi and Lidl have grown their total retail market shares between 2008 and 2013 against a backdrop of price competition and range expansion, supported by advertising.⁸²

In February 2012, SuperValu launched an intense campaign across all media to advertise its new own brand range of 1,500 products.⁸⁴ Product testing reported that the range was on average 33% cheaper in price than the branded equivalents, and of at least comparable quality.⁸⁵ In 2012 SuperValu passed its two greatest competitors, Tesco and Dunnes, on Value for Money scores for the first time.⁸⁶ The Central Statistics Office (CSO) reports that food and non-alcoholic beverage prices are down 6.3% since 2008⁸⁷, representing household savings of nearly €550 million in 2012 alone.⁸⁸

4.4 Stimulates Innovation and Differentiation

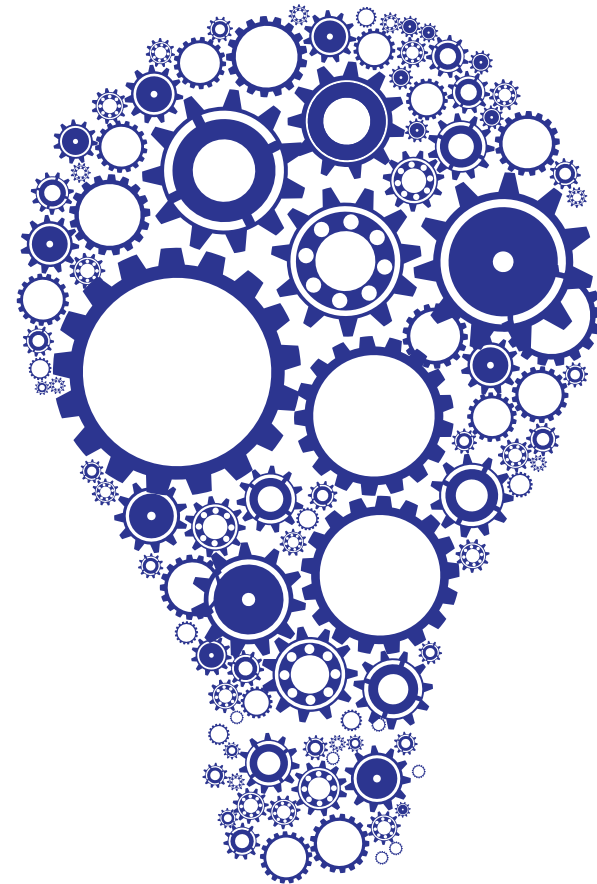
Advertising stimulates investment by fostering adoption and reducing investment risks. It supports innovation and new product launches across practically any market, from pharmaceuticals to fast-moving consumer goods, or cars:

- An example is the market for electric cars. Advertising campaigns from giants such as Nissan and Renault have contributed to their standardisation as an alternative to regular cars. Nissan introduced in 2011 the first purpose-designed fully electric car, Nissan LEAF, with advertising helping to grow sales and promote it as a zero-emissions vehicle.⁸⁹ In Ireland alone, car manufacturers spent nearly €3.5 million over the last five years⁹⁰ in promoting new models like these.
- The case study opposite in relation to Personal Computers (PCs) exemplifies further the role that advertising can play in supporting investment in new products.

Advertising helps companies differentiate, and build association with customers, by leveraging their brand or promoting innovative features:

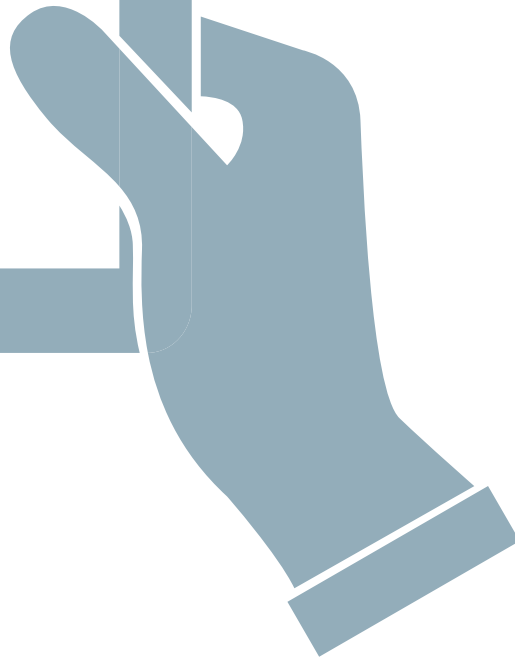
- Love Irish Food is a syndicated group of Irish food brands, ranging from tea to chocolate.⁹¹ It has used advertising campaigns to differentiate the group's products by stressing their Irish origin, and linking them to Irish values, quality and employment in Ireland. Its award-winning advertising campaigns have been recognised for their ability to differentiate the relevant products by associating the brands with Irish heritage, quality and family.⁹²
- Electric Ireland, for example, launched the first Appliance Calculator App in Ireland in 2011. This app allows customers to calculate how much energy their various home appliances are using, and the cost. Electric Ireland promoted the app, through advertising, as a way to help their customers control energy costs at home. Since its launch, the app has been downloaded over 70,000 times.⁹³

The empirical literature of advertising supports this view. Research finds that firms which differentiated their products received higher returns from their innovations, particularly where those innovations were pioneering.⁹⁴



Case study:

Computer manufacturers & retailers' Irish revenues would be reduced by €27 million without advertising.



In the €95 million Irish business-to-consumer computer equipment market⁹⁵, manufacturers and retailers create awareness of new model launches through advertising. Advertising helps promote new releases and their features, reach interested consumers and generate demand faster. This improves overall investment returns and helps to reduce the investment risk. In 2012, nearly €5 million was spent on advertising of computers in Ireland facilitating product promotion.⁹⁶

Advertising helps manufacturers to differentiate their equipment by raising awareness of their relative benefits. A prominent example is Apple's "Get a Mac" campaign, awarded as one of the best campaigns of the new century⁹⁷, which compared the capabilities and attributes of Mac against PC. Another example is Samsung's "For everyone" campaign, jointly with Google, which promoted its PCs' ultra-portable features available at an affordable price.⁹⁸

Through advertising, computer manufacturers and retailers promote the launch of disruptive, innovative products. An illustration is Lenovo's campaign introducing its hybrid PC tablet, which aimed to define the new convertible PC market. One year after the launch of this campaign, Lenovo is one of the world leaders, with 45% market share of the Windows 8 convertible PC market.⁹⁹

Computer manufacturers would find it more difficult to maintain the speed of innovation in the absence of advertising, since their innovations would be less likely to be acknowledged by consumers.

Computer manufacturers and retailers' Irish revenues from business-to-consumer sales would have been an estimated 29% lower in 2012 without advertising in that year, equivalent to over €27 million.¹⁰⁰ Along with similar effects of advertising globally, this could have a substantial impact on the range of new computer models that could be developed and commercialised.

⁸⁹ www.nissan.ie

⁹⁰ Core Media analysis based on Nielsen (2013) Ad Dynamix : Electric, Hybrid and innovative cars advertising spend in Ireland,2008-2012.

⁹¹ <http://www.loveirishfood.ie/>

⁹² IAPI AdFx Awards (2010). "Love Irish Food: Makes all the difference".

⁹³ iTunes store and Google Play download statistics (2013).

⁹⁴ Srinivasan, S. et al. (2009), 'Product innovations, advertising and stock returns', Journal of Marketing (January).

⁹⁵ This is a Deloitte estimate that is based on Irish government and business computer equipment spending from Forrester Research, Inc., (June, 2012): "European Information And Communication Technology Market 2012 To 2013" and an estimated proportion of computers sold for business and government based on industry consultations.

⁹⁶ Core Media estimation based on Nielsen (2013), Ad Dynamix.

⁹⁷ Adweek (2009): Adweek's Best of the 2000's.

⁹⁸ Both Apple and Samsung's campaigns were global campaigns with some exposure in Ireland through inspill.

⁹⁹ ZDNET.com (2013) "Lenovo doubles down on convertible PC bet".

<http://www.zdnet.com/lenovo-doubles-down-on-convertible-pc-bet-yoga-tizes-lineup-7000020187/>

¹⁰⁰ This is based on a durable goods advertising elasticity estimation in Sethuraman et al. (2011) 'How well advertising works? Generalization from a Meta-Analysis of Brand Advertising Elasticities', Journal of Marketing Research. This report estimates that a 1% change in advertising leads to a 0.29% change in durable goods revenues. Assuming a 100% decrease in advertising expenditure implies an estimated 29% decrease in computer sales.

Across shopping, social networking, searching, or consuming news, video or music, the main activities that Irish people engage with online¹⁰¹ are either directly funded or enabled by advertising.



The internet is pervasive in Irish daily life. 8 in 10 adults now use the internet in Ireland¹⁰², spending more than 2.5 hours per weekday online, on activities ranging from entertainment to shopping to simply keeping in touch.¹⁰³

The ability to make smarter purchasing decisions is a key driver for the Irish going online. Price is a key driver for Ireland's 2.6 million internet shoppers¹⁰⁴, while the importance of convenience rises with age. Across categories such as travel, clothing and books¹⁰⁵, the internet allows the Irish to purchase the best deal. Its success is reflected in the value of online shopping in Ireland nearly doubling since 2009, to become a €4.4 billion market currently.¹⁰⁶

Search and social media, largely funded by advertising, generate the majority of traffic directed to online shopping sites.¹⁰⁷ Google and Facebook are among the most visited websites in Ireland.¹⁰⁸ The economic benefit from incremental online shopping sales resulting from referrals from advertising funded sites is estimated at €34 million.¹⁰⁹

Beyond online shopping, the Irish increasingly research products online before buying offline, with over 80% of smartphone users having researched online a product they intended to buy in 2012¹¹⁰. They also used the internet to switch providers, from insurance to utilities or communications. Over half of internet users say they have used the internet to switch car insurance provider, for example.¹¹¹ In these ways the internet allows more informed and efficient purchase decisions. €8.3 billion in offline sales are estimated to be researched on advertising funded websites prior to offline purchase, resulting in €420 million in consumer savings.¹¹²

This is evidence that online's economic impact extends beyond the internet itself.

Another example of the internet's wider economic reach is the high-street sales that online advertising stimulates, some of which may not have occurred without it. Irish retailers are spending increasing amounts on online advertising, which has doubled in only four years¹¹³, testifying to its impact in driving footfall into retail stores. Approximately €300 million in economic benefit is generated per annum through the incremental effect of online advertising on high street sales.¹¹⁴

€8.3bn
in offline sales are estimated to be researched online on advertising funded sites



5 ADVERTISING ENABLES THE INTERNET ECONOMY

The benefits described above are only some examples of the impact that advertising has on the internet. This excludes, for example, the economic value of the new career, educational and social opportunities the internet opens, these being some of its main benefits, often supported by advertising. As such the actual benefit of advertising in supporting the digital economy is likely to be greater.

Further, the economic contribution of the internet economy, supported by advertising, is expected to continue to rise as internet penetration and the number of smartphones and tablets continue to grow in Ireland, opening further opportunities for Irish consumers and businesses, nationally and internationally.



¹⁰¹ UPC (2012), 'The UPC Report on Ireland's Digital Future'.

¹⁰² As described in Section 4.1, 2 in 3 Irish households have broadband.

¹⁰³ UPC (2012), 'The UPC Report on Ireland's Digital Future'.

¹⁰⁴ Ibid.

¹⁰⁵ Ibid.

¹⁰⁶ Indecon for the Department of Communications, Energy and Natural Resources (2013), 'Assessment of the Macro-Economic Impact of Internet/Digital on the Irish Economy'. Online Shopping Expenditure - Midpoint estimates. February.

¹⁰⁷ Experian (2012), 'Experian Hitwise reveals latest UK search engine and social analysis', January and Enders (2011), 'UK consumer e-commerce trends', July.

¹⁰⁸ ComScore (2013), 'Europe Digital: Future in Focus, Ireland, Top 20 sites in Ireland, December'.

¹⁰⁹ See Appendix C. It is assumed that three quarters of online shopping sales value flows outside of Ireland, based on industry conversations.

¹¹⁰ Google (2012), 'Our Mobile Planet: Ireland'.

<http://www.thinkwithgoogle.com/insights/emea/library/studies/our-mobile-planet-ireland/>

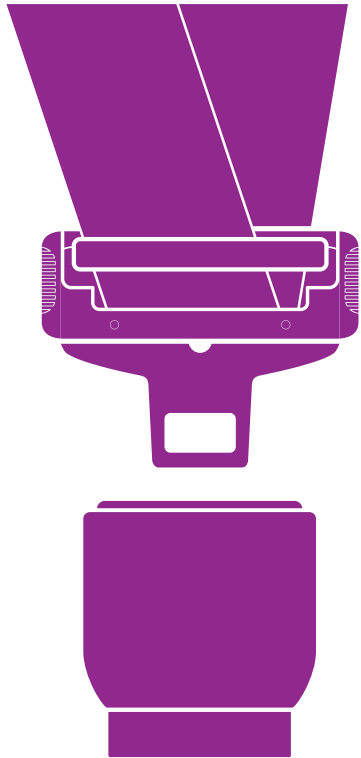
¹¹¹ UPC (2012), 'The UPC Report on Ireland's Digital Future'.

¹¹² See Appendix C.

¹¹³ WARC, <http://www.warc.com/Topics/ForecastsandData.topic> provided by Core Media.

¹¹⁴ See Appendix C.

Advertising's role in driving social action can have economic benefits.



In the six years post-launch of a seatbelt awareness campaign in Ireland, the overall wearing rate increased by more than 30%. This contributed to a decrease in people being killed or seriously injured while not wearing a seatbelt of 56%, helping to reach the second lowest level of road deaths in 44 years. A study calculated an economic saving of €492 million in the Republic of Ireland and Northern Ireland, with the TV campaign accounting for €86 million of those savings.¹¹⁵

Similarly, in 2009, the Road Safety Authority launched an aggressive campaign to reduce road deaths in Ireland. In 3 years, the number of deaths has decreased by 33%. The Irish government estimates the value of a life in Ireland to be €2.1 million.¹¹⁶

In 2009, an award winning campaign to promote blood donation was launched in Ireland. In the first year of the campaign, the number of total donations increased by 4% helping to sustain a consistent national supply by reducing the scarcity shortage "crisis" days by 76%. The increase in donations due to the campaign also contributed to reduce by €233,000 the required spend by the Irish Blood Transfusion Service, a quarter of the total spend.¹¹⁷

Dublin's bike rental scheme described in section 3, supported by advertising, promotes a healthier life style among Dubliners. Widespread use of bikes supports sustainable transport, helping to reduce traffic congestion and carbon emissions.



6 ADVERTISING STIMULATES SOCIAL CHANGE

¹¹⁵ IAPI. AdFx Awards (2008). 'The long term effect of seatbelt advertising'.

¹¹⁶ Project Appraisal Guidelines (2011), 'Unit 6.11. National Parameter Values Sheet'. <http://www.nra.ie/Publications/ProjectAppraisalGuidelines/FileContentforPAG/file,17980,en.pdf>.

¹¹⁷ IAPI. AdFx Awards (2012). 'Irish Blood Transfusion-From Crisis To Consistency'.

Advertising helped
to increase seat
belt usage



APPENDICES

APPENDIX A

THE IMPACT OF ADVERTISING ON GDP

This appendix presents the details of the econometric estimation carried out in order to assess the impact of advertising on economic activity.

As noted in Section 1, this report follows the approach developed in the *Advertising Pays* study, which looks at how differences in the level of advertising across countries contribute to different levels of economic activity. The model constructed by Deloitte in that study was extended for this report, to include Ireland in the sample of countries and the latest data available. A comprehensive description of the model is presented here.

A.1 Advertising and economic growth

This section describes the analysis framework to assess the aggregate impact of advertising on GDP.

A.1.1 The dataset employed

The analysis used a dataset to estimate the relationship between GDP per capita (the dependent variable of interest), advertising expenditure (the main explanatory variable) and a number of other variables determining GDP growth (e.g. aggregate capital investment, volume of international trade for the country and level of government spending).

An initial dataset of countries was constructed by collecting publicly available data from the World Bank's World Development Indicators.¹¹⁸ This was supplemented by data from WARC provided by Core Media, as well as by data from the International Labour Organisation (KILM and LABORSTA) and OECD. This generated a panel of 18 countries including the world's largest economies as well as some developing economies, spanning a 15-year period from 1998 to 2012.

Table 1: List of countries included in the analysis of advertising and GDP

Countries

Argentina, Australia, Brazil, Canada, Chile, China, France, Germany, India, Ireland, Italy, Japan, Peru, Russia, Singapore, United Kingdom, United States, Vietnam

Source: Deloitte analysis

An additional key factor that influenced the choice of countries, especially the less developed nations, was the availability of relevant data for the analysis. Table 2 presents the variables included in the econometric model with their definitions.

Table 2: Variables used in the analysis of advertising and GDP per capita

Variables	Description	Source
<i>GDP per capita</i>	Real GDP per capita (constant USD, PPP adjusted)	<i>World Bank World Development Indicators</i>
<i>Trade/GDP</i>	Annual trade volume as a share of GDP (proxy for the 'degree of openness' of a country)	<i>World Bank World Development Indicators</i>
<i>Investment/GDP</i>	Annual share of aggregate investment to GDP	<i>World Bank World Development Indicators</i>
<i>GovExp/GDP</i>	Annual government consumption expenditure for goods and services as a share of GDP	<i>World Bank World Development Indicators</i>
<i>Advertising Expenditure</i>	Annual advertising expenditure (constant USD, PPP adjusted)	WARC
<i>Total hours worked</i>	Annual average hours worked multiplied by the total labour force in the economy	<i>ILO/KILM/LABORSTA/OECD and World Bank World Development Indicators</i>

Source: Deloitte analysis

The majority of developed countries in the sample cluster towards higher advertising intensity levels, whereas the less economically developed countries cluster towards lower levels of advertising intensity.

¹¹⁸ Available from: <http://data.worldbank.org/indicator>.

A.1.2 The approach

The approach adopted, including variables used, follows the work conducted by Aiginger and Falk (2005)¹¹⁹, who set out to investigate determinants of economic growth. The final specification used in this study is very similar to that used by Aiginger and Falk, with certain variations due to data availability or correlation between explanatory variables. The Aiginger and Falk paper was supplemented by advanced literature from the mobile Information and Communication Technologies sector, such as those of Andrianaivo and Kpodar (2011)¹²⁰ and Lee, Levendis and Gutierrez (2009).¹²¹

The Aiginger and Falk paper uses OECD data over the period 1960–2002. The latter two papers adopt a standard economic growth model using a sample of 44 African countries over the periods 1988–2007 and 1975–2006, respectively.

The approach to testing and quantifying the impact of advertising builds directly on this literature by including advertising as an additional potential driver of economic growth.

This analysis does not reflect the full transformational impact of advertising, as in all countries and all periods in the sample there is some advertising. Nonetheless it captures impacts on GDP from changes in advertising expenditure that are more significant than small marginal changes in the amount of advertising within one country.¹²²

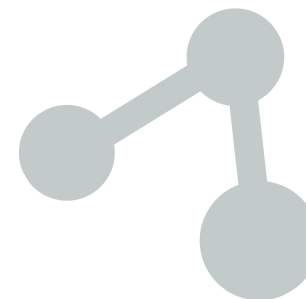
The impact of advertising on GDP per capita is complicated by the likely existence of reverse causality. Specifically, higher levels of advertising are expected to lead to higher GDP per capita; however, conversely, higher GDP per capita is expected to be associated with firms increasing advertising expenditure in order to capture a share of the larger market. Because of this complex relationship, isolating the causal impact of advertising on GDP is difficult and requires careful econometric analysis.

An alternative specification to the form used here would have been to estimate the model in growth rates. However, the postulated impact of advertising is transformational and gradual. The dynamic panel data specification used here better reflects the nature of the effect advertising is thought to have.

The issue of reverse causality between advertising expenditure increases and economic growth is addressed by specifying a dynamic panel data model and estimating the parameters using the Generalised Method of Moments (GMM) techniques developed by Arellano and Bover (1995) and Blundell and Bond (1998).¹²³ This technique uses instruments to provide consistent estimates of the model parameters, and allows for the inclusion of a lagged dependent variable to accommodate the decay-effects of increased levels of advertising on future economic growth (GDP). Standard panel data estimators such

as the fixed or random effects methods will be inconsistent if advertising is endogenous. This will be further compounded due to the lagged dependent variable which is correlated with the country-specific effect by construction. The system GMM methods allow for these issues.

Time-dummy variables are included in the model in order to capture the possibility that the model excludes variables that vary over time (but not by country), world trade being an example. If one or more of these variables are correlated with the included regressors, the parameter estimates will be inconsistent (i.e. the regressors will then be endogenous). The inclusion of time-dummy variables will address these factors, and mitigates the potential for inconsistent estimates that would result from omitted variables bias. Whilst it would not be possible to identify the impacts of separate time-varying variables together with the time-fixed dummy variables, this is certainly not the case for variables that are country-specific, such as those currently included in the model. Hence including time dummies leads to consistent estimates in the case of common omitted variables.



¹¹⁹ Aiginger, K. and Falk, M. (2005), 'Explaining differences in economic growth among OECD countries', *Empirica* Vol. 32, pp. 19–43.

¹²⁰ Andrianaivo, M. and Kpodar, K. (2011), 'ICT, financial inclusion, and growth: Evidence from African countries', IMF Working Papers, 11/73, pp. 1–45.

¹²¹ Lee, S.H., Levendis, J. and Gutierrez, L. (2009), 'Telecommunications and economic growth: An empirical analysis of sub-Saharan Africa'. Available from SSRN: <http://ssrn.com/abstract=1567703>.

¹²² The model does not show the full transformational effect; rather it depicts the effect from increasing or decreasing advertising from its current levels. Part of this is controlled for by the use of countries at various stages of development. However, it is likely that the full effect of advertising would be larger. The intuition behind this is that advertising is likely to have a non-linear impact on GDP. For example, it may be that for each incremental euro spent (or reduced) from a lower level of advertising, the impact on the market is likely to be higher than it would be at higher levels of advertising.

¹²³ Arellano, M. and Bover, O. (1995), 'Another look at the instrumental variables estimation of error-components models', *Journal of Econometrics*, Vol. 68, No. 1, pp. 29–51. Blundell, R. and Bond, S. (1998), 'Initial conditions and moment restrictions in dynamic panel data models', *Journal of Econometrics*, 87(1), pp. 115–143.

A.1.3 The model

The model specification adopted takes the following form:

Equation 1: Theoretical Model

$$\begin{aligned} \log(GDP_{percap}_{it}) &= \alpha + \beta_1 \log(GDP_{percap}_{it-1}) + \beta_2 \log(AdvExp_{it}) + x'_{it} \theta + \gamma_t + \alpha_i + \varepsilon_{it} \\ &+ \lambda \varepsilon_{it-1} \end{aligned}$$

Where x_{it} includes: Hours worked_{it}, $\ln\left(\frac{GovExp}{GDP}_{it}\right)$, $\ln\left(\frac{Trade}{GDP}_{it}\right)$, $\ln\left(\frac{Investment}{GDP}_{it}\right)$

γ_t represents dummy variables for each year in the dataset (excluding the base year), subscript i indicates each country while subscript t denotes the year.

On the left-hand side of the equation is GDP per capita, which is expressed as a function of the lag of real GDP per capita, advertising expenditure and a set of determinants of growth. These are: total hours worked, government expenditure, trade volumes, and aggregate investment. All variables are in logs and the model allows for first-order moving average serial correlation in the errors.¹²⁴

The model was estimated using the system GMM method of Arellano-Bover/Blundell-Bond over the period 1998–2012 on the data as described in A.1.2.

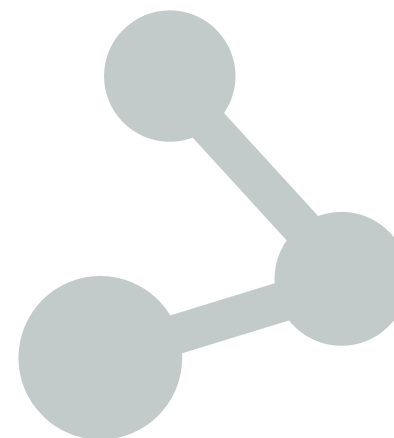
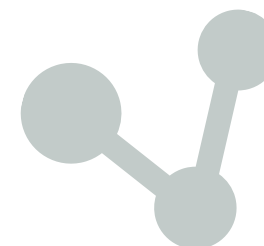
The error terms v_i and ε_{it} are assumed to be independent and identically distributed over i , and t .

GDP per capita is assumed to be contemporaneously endogenous, that is, correlated with current and past realisations of the error term. Hence:

$$E(AdvExp_{i,t} \varepsilon_{i,s}) = 0 \text{ only for } s > t.$$

Advertising expenditure, investment and trade are assumed to be pre-determined, that is, correlated with past realisations of the error term but uncorrelated with contemporaneous and future realisations of the error term:

$$E(X_{i,t} \varepsilon_{i,s}) = 0 \text{ only for } s \geq t.$$



¹²⁴ The model follows a 'reduced form' approach instead of building a macroeconomic system of equations to understand the impact of advertising on particular variables. The model draws on the literature on economic growth to explain GDP as a function of a number of variables, and investigates whether the advertising variable is a useful additional explanatory factor in the model.

A.1.4 The results

Table 3 below reports the estimates of Equation 1 using the Arellano-Bover/Blundell-Bond estimator.

The analysis shows that a 1% increase in advertising expenditure leads to 0.062% higher GDP per capita in the same year.

Due to the lagged dependent variable, it is also possible to postulate that an increase in advertising expenditure in a given year

supports a higher GDP. This increase in GDP in the current period will result in higher GDP in the following and subsequent periods due to the significant lagged dependent variable.

The remaining variables all seem sensible from an economic perspective and are significant at the 5% level. The negative coefficient on the government expenditure as a percentage of GDP variable is supported by a variety of economic literature, in line with the view that a larger

government has a negative impact on GDP per capita, including a recent finding by the European Central Bank: 'The model results show a significant negative effect of the size of government on growth.'¹²⁵

The coefficient on the variable for hours worked is negative. While this may appear counter-intuitive at first, upon examination of the data it becomes apparent that more developed countries do indeed have fewer working hours, and that each hour of work yields output of higher value in more developed countries.

The positive coefficients on both investment as a percentage of GDP and trade as a percentage of GDP are in line with economic theory, suggesting that higher investment and higher trade openness result in higher GDP.

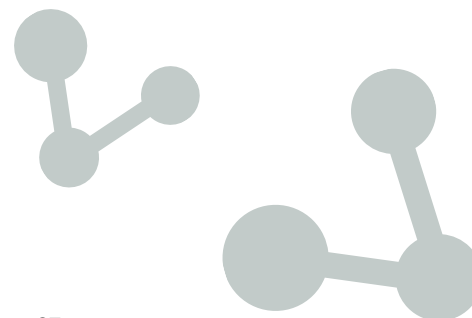
Time-dummy variables are also included in order to capture the possibility that the model excludes variables that vary over time and mitigate the potential for inconsistent estimates that would result from omitted variables bias, as explained above.

Table 3: Econometric results

	Coefficient	Standard Error	Z	P > Z	95% confidence interval	
log(GDP per capita) _{t-1}	0.927378	0.014388	64.46	0	0.899178	0.955578
log $\left(\frac{\text{Government expenditure}}{\text{GDP}} \right)$	-0.14253	0.020398	-6.99	0	-0.18251	-0.10255
log (advertising expenditure) _t	0.062162	0.011108	5.61	0	0.040446	0.083879
log (total hours worked) _t	-0.04433	0.009282	-4.78	0	-0.06253	-0.02614
log $\left(\frac{\text{investment}}{\text{GDP}} \right)$ _t	0.035351	0.011104	3.2	0.001	0.013714	0.056988
logtrade $\left(\frac{\text{trade}}{\text{GDP}} \right)$ _t	0.044261	0.008034	5.51	0	0.028516	0.060007
Constant	0.53059	0.208774	2.54	0.011	0.1214	0.939779

NOTES
 Number of observations = 195
 Number of groups (countries) = 18
 Time variable: time
Observations per group:
 • min = 1
 • avg = 10.83333
 • max = 14
 Number of instruments = 174
 Wald chi2(10) = 59531.32
 Prob > chi2 = 0.0000

Source: Deloitte Analysis



¹²⁵ European Central Bank (2011), 'Economic performance and government size', Working Paper Series No. 1399, November, <http://www.ecb.int/pub/pdf/scpwps/ecbwp1399.pdf>.

A.1.5 Diagnostic tests

Details of the post-estimation diagnostic tests supporting the choice of the instrumental variables employed in the estimation are summarised in this section. The first test (table below) determines whether the instruments are valid by investigating whether the moment conditions differ significantly from zero. This assumption is necessary for the estimator to be consistent. The test is not rejected at the 5% significance level, suggesting that the instruments are valid.

Table 4: Sargan test of over-identifying restrictions

Sargan test of overidentifying restrictions		
H₀: overidentifying restrictions are valid		
chi2(163)	=	173.0614
Prob > chi2	=	0.2800

Source: Deloitte analysis

The Arellano-Bond test for serial correlation of the error term $\varepsilon_{i,t}$ reported below shows that it is not possible to reject the null hypothesis of no serial correlation in the errors.

Table 5: Arellano-Bond test for serial correlation

Arellano-Bond test for zero autocorrelation in first-differenced errors

order	z	Prob>z
1	-2.1221	0.0338
2	-1.2732	0.2030

H₀: no autocorrelation

Source: Deloitte analysis

The trended nature of the key variables, possible unit roots and the issue of co-integration were investigated and necessary adjustments undertaken:

- The data used for the analysis is inflation-free. Real GDP figures and Purchasing Power Parity adjusted constant dollar advertising expenditure are used.
- Panel unit roots tests were carried out on all series using the methods developed by Levin, Lin and Chu (LLC, 2002). All variables were found to be stationary, and are a mixture of I(0) and I(1) trend-

stationary processes. In other words, they have a deterministic trend. This means that the variables in question will co-integrate by construction in the model as estimated, as a linear combination of the variables will be stationary by definition. Note that a trend-stationary variable is said to be stationary despite its mean being a function of time, because the stochastic properties of the trend are defined by error process which is stationary, i.e. $Y(t) = a + b*Y(t-1) + c*t + \text{error}$. This was the case for the dependent variable.

- The above means that the model is valid as estimated in log form.

Finally, in order to test the robustness of the advertising coefficient, the regression was run on subsets of the data. The subsets included:

- testing on only the G7 plus Australia, Ireland and the BRICs.
- testing on various subsets of years – excluding years at the top end and bottom end of the dataset, and various combinations of this in order to estimate an impact.

These tests indicate that the estimation and results are statistically robust.

APPENDIX B

ADVERTISING SPEND SUPPORTS JOBS

Total employment is estimated using industry information including:

- people employed in creative and media agencies;
- people employed in the production and creation of advertisements.

In addition, the following are estimated:

- employees whose jobs are supported by the revenue from the sale of advertising space such as people employed by broadcasters;
- employees involved in the commissioning of advertisements in advertisers' organisations; and
- the wider number of jobs supported through the media and creative industries' supply chains and the wider economy.

B.1 Calculating the employment supported by advertising revenue

The employment supported by advertising revenue was estimated by one of two methods:

- **Revenue attribution:** For sectors where suitable data was available, the direct employment supported by advertising was calculated by taking a share of total employment in advertising-funded organisations. This share is given by the proportion of the organisation's revenues that come from advertising.
- **Value-add estimation:** For sponsorship, the total revenue from advertising was available¹²⁶ but it was not possible to use the revenue attribution approach because total employment was not reliably available. In this case an alternative approach was used based on Eurostat data for Ireland.

From Eurostat's value-add data tables it is possible to derive the direct employment generated per unit revenue for the recreational, cultural and sporting sector, which is used as proxy for sponsorship.¹²⁷ This was multiplied by the level of advertising revenue to estimate the direct advertising-supported employment.

In applying these methods advertising expenditure is taken from Core Media and Deloitte estimations.¹²⁸ From those, advertising revenues that accrue to the different media are estimated, by deducting agency commissions.¹²⁹ Total media industry estimated employment was provided by Core Media from industry consultations. Where the report draws on the revenue attribution method, the proportion of media industry total revenues coming from advertising is then applied to total media industry employment to calculate the direct employment supported by advertising revenues.



¹²⁶ Core Media estimates.

¹²⁷ Eurostat produces revenue/value-add ratios and separate estimates for the value-add per employee by sector. These figures can be combined to estimate employment per unit revenue.

¹²⁸ Core Media estimates (2012) for newspapers and magazines, television, cinema, radio, out-of-home, online advertising and sponsorship. Deloitte estimate for direct mail based on the UK direct mail share of total advertising in 2008, applied to Irish total advertising spend in 2012 from WARC data (<http://www.warc.com/Topics/ForecastsandData.topic>) provided by Core Media.

¹²⁹ Advertising revenues calculated by deducting advertising agency commissions from total advertising expenditures. Commissions are estimated at 15% of advertising expenditure based on industry consultations for press, television, radio, cinema, out-of-home and sponsorship. For the Internet media category, an estimated 9% was deducted; based on industry consultations. Advertising agency commissions do not apply to Direct Mail.

Table 6: Direct employment from net advertising revenue, 2012

Media	Method	Gross Advertising expenditure (million)	Net Advertising revenue (million)	Total estimated revenue (million)	Total estimated employment ¹³⁰	Estimated direct employment from advertising
Television	Revenue attribution	€209	€178	€971	2,970	510
Press	Revenue attribution	€184	€156	€460	5,236	1,780
Radio	Revenue attribution	€97	€82	€97	1,634	1,389
Direct mail	Revenue attribution	€119	€119	€807	9,641	1,420
Cinema	Revenue attribution	€7	€6	€115	1,600	83
Out-of-home	Revenue attribution	€54	€46	€54	391	332
Internet	Revenue attribution	€151	€138	€153	915	825
Sponsorship	Value-add estimation	€117	€100	n/a	n/a	1,339
Total		€938	€825			7,679

Source: Eurostat, Core Media, Deloitte calculations. Quantities may not exactly add up due to rounding.

¹³⁰ Estimated figures for total employment in television, cinema, radio, out of home and internet media industries are based on Core Media industry consultations. Press figure is estimated based on industry annual reports and market share information. Direct mail figure represents total An Post employment as reported on An Post annual reports.

B.2 Calculating advertising agency and client side employment

Data from the Annual Service Inquiry reported by CSO was used as an estimate of the total number of employees directly working in advertising agencies.¹³¹

Employees involved in the commissioning of advertisements in advertisers' organisations in Ireland were conservatively estimated using the ratio of client side employment to the people employed in advertising agencies and production of advertising in the UK. This ratio was then applied to the Annual Service Inquiry estimation of jobs in advertising agencies and production to estimate client-side employment in Ireland.

Table 7: Employment in advertising, 2012

	Estimated employment	Source
Advertising, creative and media agencies (comprising both online and offline media)	2,993	CSO
Client-side/in-house commissioning (comprising both online and offline media)	3,982	Deloitte analysis
Total	6,975	

B.3 Calculating the employment supported through supply chain linkages

The next step in the analysis was to consider how the above generates wider employment across the economy.

Further impact through supply chain linkages is calculated using employment multipliers. These multipliers are estimated based on output multipliers from Input-Outputs tables for Ireland.¹³² Multipliers summarise the relationship between employment in a specific sector and wider employment across the economy as a result of the sector's interdependences.

Table 8: Total employment from advertising expenditure, 2012

Media	Estimated direct employment	Estimated indirect and induced employment	Total Employment
Television	510	870	1,380
Press	1,780	3,032	4,813
Radio	1,389	3,125	4,514
Direct mail	1,420	1,874	3,294
Cinema	83	67	150
Out-of-home	332	270	603
Internet media	825	1,346	2,171
Sponsorship	1,339	1,088	2,427
Advertising, creative and media agencies (comprising both online and offline media)	2,993	1,792	4,785
Client-side/in-house commissioning (comprising both online and offline media)	3,982	2,384	6,366
Total	14,654	15,848	30,502

Source: Core Media, Eurostat, CSO, Deloitte calculations. Quantities may not exactly add up due to rounding.

¹³¹ Annual Service Inquiry 2011 data reports full time equivalent employees, total people engaged and total people employed. The difference between the total people engaged and the total people employed is estimated to be the number of proprietors and owners. This figure is added to the full time equivalent employees to estimate the total number of employees in advertising agencies and creation of advertisements.

¹³² In the absence of Irish employment multiplier data, the ratio of Irish to Scottish output multipliers is calculated, and this ratio is then applied to Scottish employment multipliers to estimate Irish employment multipliers.

APPENDIX C

ENABLING THE INTERNET ECONOMY

Supporting online retailing

Irish consumers spent €4.4 billion on online shopping in 2012.¹³³

Online search is estimated to have accounted for nearly half of total visits to online shopping sites, with approximately another 10% coming through social media¹³⁴. Both are substantially funded by advertising. Based on this, internet search and referrals are estimated to account for €2.3 billion in online sales in Ireland.

These sales generate a total economic value-add for the Irish economy. Much of the economic value generated by online sales will be substitution from offline channels. Additionally, some online purchases are from non-Irish providers.¹³⁵ The net economic benefit from search/referrals supported by advertising is estimated at €34 million.¹³⁶

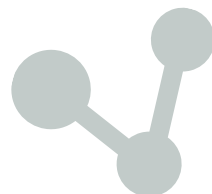
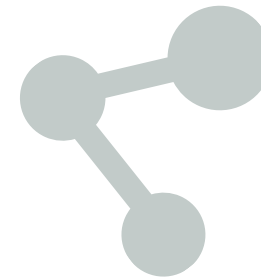
Stimulating high street sales

Spend in online advertising is estimated to support approximately €720 million in high street sales annually.¹³⁷

Around 35% of online advertising spend is estimated to represent an increase in overall advertising expenditure.¹³⁸ Based on this, online advertising is estimated to generate an economic benefit equivalent to €300 million through its effect on high street sales.

Consumers also utilise the internet to research products before making a purchase in the high street market. This process of online research followed by retail purchase accounted for €13.6 billion in high street sales in 2012¹³⁹, of which an estimated €8.3 billion can be attributed to research on advertising-funded sites.¹⁴⁰

Taking into account that it is likely that most of these sales would have occurred in the absence of the internet, consumers benefit by an estimated €420 million of savings on their purchases each year as a result of research of offline purchases carried out on advertising-funded sites.¹⁴¹



- ¹³³ Indecon for the Department of Communications, Energy and Natural Resources (2013), 'Assessment of the Macro-Economic Impact of Internet/Digital on the Irish Economy'. Online Shopping Expenditure - Midpoint estimates. February.
- ¹³⁴ Experian (2012), 'Experian Hitwise reveals latest UK Search Engine and Social Analysis', January. Enders (2011), 'UK consumer e-commerce trends', July.
- ¹³⁵ It is assumed that three quarters of online shopping sales value flows outside of Ireland, based on industry conversations.
- ¹³⁶ This is based on an illustrative assumption that 5% of supported sales would be new sales. This appears to be a conservative assumption, given that it is easier to find certain products online and given the competitive prices available through many e-commerce sites. Sales are converted to economic benefit using multipliers and revenue/value-add ratios.
- ¹³⁷ There is significant uncertainty about return on investment (ROI) on online advertising spend, with different studies producing a range of estimates. The figure above is estimated based on estimates in Direct Marketing Association: 'The Power of Direct Marketing 2011-2012', in relation to the US market, and Nielsen (2009), 'Is your marketing investment delivering expected returns?' October. ROI estimates from the Direct Marketing Association study are used and adjusted for the relative fixed broadband internet subscribers (per 100 people) and GDP per capita at purchase power parity (Source: World Bank) in Ireland versus the US. The sales ROI used to estimate incremental high street sales from online advertising in this study is the average of the Ireland adjusted sales ROI estimate based on the Direct Marketing Association study and the Nielsen estimate. The estimated effect is scaled down by the proportion of total retail sales that occur offline, approximately 85%, based on figures quoted in 'Irish retailers making 15% of sales online' (<http://www.independent.ie/business/irish-retailers-making-15pc-of-sales-online-29292416.html>), in order to avoid double-counting the impacts. Sales are converted to economic benefit using multipliers and revenue/value-add ratios.
- ¹³⁸ Derived from Zentner, A. (2010), 'The effect of the internet on advertising expenditures: An empirical analysis using a panel of countries', SSRN.
- ¹³⁹ Deloitte analysis based on 2012 Google Research Offline Purchase Online (ROPO) estimation for Ireland in Indecon for the Department of Communications, Energy and Natural Resources (2013), 'Assessment of the Macro-Economic Impact of Internet/Digital on the Irish Economy'. This reports ROPO purchasers. As ROPO is more likely for higher spend purchases, the estimate reported in Indecon (2013) is used to derive an approximation of ROPO sales. The Google ROPO estimate takes account of the range of products that offline purchasers buy.
- ¹⁴⁰ The attribution to advertising-funded sites was calculated as 61%, based on Ofcom analysis of online activity by consumers. This activity breakdown was then combined with a Deloitte analysis of the funding model underpinning the companies providing the relevant set of services. Ofcom (2011), 'The communications market 2011'.
- ¹⁴¹ There is some research to suggest that internet research lowers the prices paid by consumers between 2% and 15%. A 5% assumption was adopted. Zettelmeyer, F., Scott Morton, F. and Silva-Risso, J. (2006), 'How the internet lowers prices: evidence from matched survey and automobile transaction data', Journal of Marketing Research, Vol. 43, May. This assumption was applied to the 'researched online purchased offline' sales that can be attributed to advertising-funded sites.



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