

Delivering Tangible Estimates of non-SNA Intangible Assets

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Abstract: *Intangible assets have grown increasingly important in the modern economy. Our understanding both of the types of intangible assets and methods to measure them have grown alongside the modern economy's requirements. Whereas previous iterations of the System of National Accounts incorporated or 'capitalised' some of the most recognisable intangible assets, others remain 'uncapitalised' outside the asset boundary. This paper identifies the need to provide accurate estimates of investment in these assets despite this. Utilising the Corrado, Hulten and Sichel (CHS) framework, we summarise the methods utilised by the Office of National Statistics in the United Kingdom to produce estimates of the full set of CHS 'uncapitalised' assets, to provide a universal picture of these assets and their economic importance. In particular, we provide data on the magnitude of these, utilising estimates covering the period 1997-2019. The paper then spotlights the methods currently used to deliver estimates of marketing assets, which have been proposed for inclusion in the 2025 revision to the System of National Accounts, and their relationship to information contained within the existing national accounts. The paper concludes by reviewing the data requirements of these methods and potential lessons which can be learning from UK estimates.*

Keywords: intangible capital, measurement, marketing, knowledge assets

1. Introduction³

Intangible assets, also known as knowledge assets or intellectual capital, are assets that do not have a physical or financial dimension. This group of assets includes software, reputation and branding, design, and research and development which contribute to the long-term accumulation of a firm's knowledge capital, and, as a result, commercial value. Such assets complement physical (tangible) capital, such as buildings, equipment and machinery, in driving economic growth.

Their growing importance in a modern world has become more visible, following a marked shift in economic activity from the "physical" products markets to digital marketplaces, with the advent of more advanced technologies. The fast growth of production of intangible assets, coupled with digitalisation of economic and recreational activity broadly, has started disrupting the mainstream economic development paradigm, that advocated for industrialisation before development of knowledge capital. Indeed, over the last 3 decades we have witnessed a

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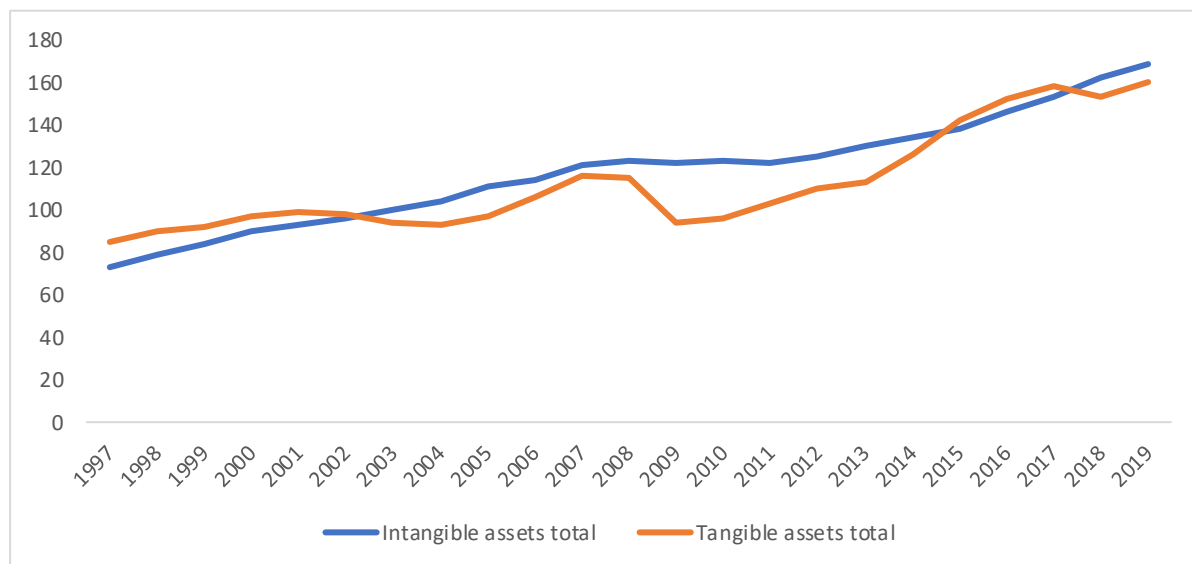
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³ This paper was written prior to the recent update of investment in R&D estimates by the UK, which is still in progress and are pending further methods work to identify how to bring these new data into the national accounts. All figures presented here reflect the latest publication on intangible assets, published on the 1st of December 2021. Further information about how R&D investment measurement changes will impact on our estimates of investment in intangible assets will be made in the future.

movement away from tangible capital-intensive to intangible knowledge-intensive production. Consequently, innovation and knowledge capital are essential in understanding and measuring productivity.

Measuring intangible assets is an area of growing importance for the Office for National Statistics (ONS) in its efforts to provide a more complete picture of the UK economy. Changes to the UK National Accounts – which capitalised spending on some intangible assets such as Research and Development – have contributed to addressing this change in the nature of production. In this attempt, the ONS has benefitted from a growing body of economic literature that develops a measurement framework to capture investment in a broader set of intangible assets, which are not capitalised in the UK National Accounts.

Figure 1. Total investment in intangible assets (market sector and own production) compared with the total investment in tangible assets, UK, 1997 to 2019, £bn (current prices).



Source: Office for National Statistics

Currently, the ONS publishes ‘capitalised’ investment estimates in mineral exploration, entertainment, literary and artistic originals, research and development (R&D), and computer software and databases, within the National Accounts. Besides these, it also publishes investment estimates (experimental statistics) for ‘uncapitalised’ assets outside the National Accounts, namely design (own account and purchased), branding (own account and purchased), financial product innovation, own account software, organisational capital (own account and purchased) and firm specific training.

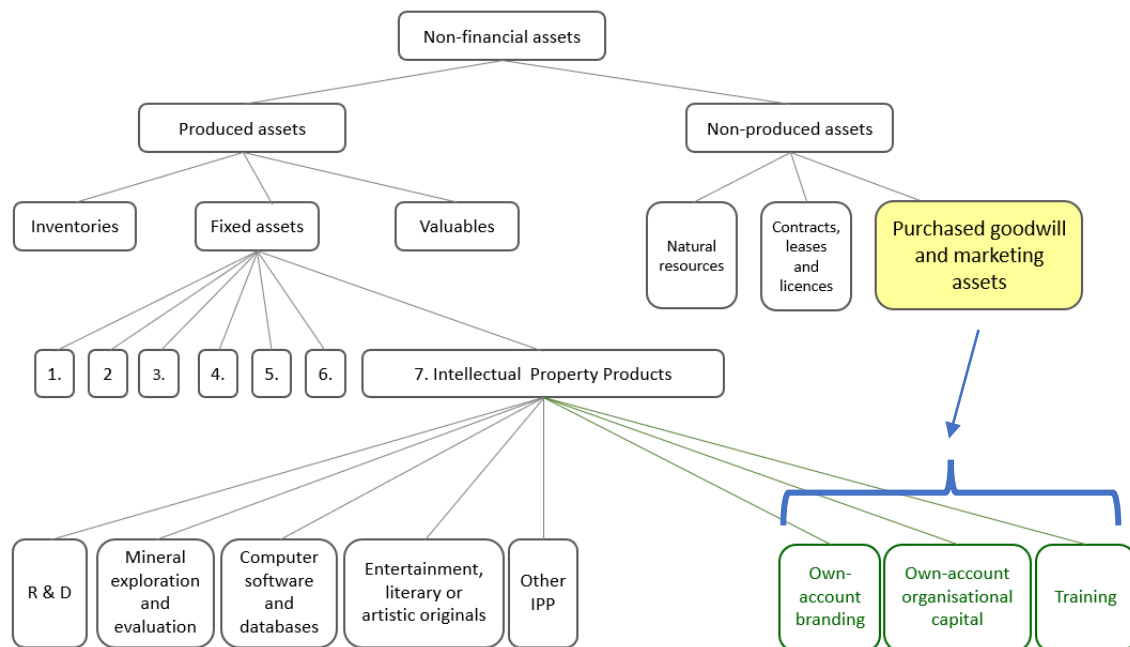
The ONS has published so far 7 datasets, methodological notes, articles and bulletins on experimental estimates of investment in intangible assets, covering the period from 1992 to 2019 for most assets (the exception being firm specific training, where the time series ends in 2017), at 2-digit level of Standard Industrial Classification (SIC). These publications map the journey of development of intangible assets statistics for ONS, based on the pioneering work of Jonathan Haskel, Tony Clayton, Carol Corrado and Peter Goodridge, who first worked on the framework applied by the ONS to produce these statistics. A forthcoming publication on investment in intangible assets in the UK (15th December 2022) will bring the time series to 2020 for all assets.

In this paper we discuss the assets outside the National Accounts. The following section goes over the thinking and working definitions of these assets, presenting the relevant estimates. Section three looks specifically into our experience measuring branding assets, as the ONS is one of the few national statistical institutes that has attempted to estimate investment in this group of assets. The fourth section presents challenges around double-counting. Section five concludes with a plan for further improvements.

2. Intangible assets outside the SNA

In this section we look into non-financial, produced assets, that have the properties of intellectual property products (IPPs).

Figure 2. Location of assets in the System of National Accounts 2008



2.1 Design

Experimental ONS estimates of investment in design follow the literature in measuring "architectural and engineering design". The primary data sources for purchased investment in design are intermediate consumption and Gross Fixed Capital Formation (GFCF) in architectural and engineering activities (Classification of products by activity CPA category 71), obtained from the supply and use tables published by the ONS. To measure own account investment in design, a sum-of-costs approach is adopted, using the Annual Survey of Hours Earnings (ASHE) to identify those working in pre-specified design occupations and estimate the cost of work that leads to long-lived design assets.

More generally, design work can include a much wider variety of activities, from aesthetic activities such as fashion design and interior design, through to service design. Since April 2021, the ONS estimates have also included the turnover of the specialised design industry as an additional data source, as a further step towards including a broader range of activities. Different types of design exhibit different characteristics. Not all design could be considered long-lasting, not all could represent a store of value, and bespoke/unique designs are unlikely to provide a flow of benefits contributing to a production process, so we apply a discount factor to the total value of time worked by the relevant professions to take account of this. In addition, without some

degree of formal protection (copyright, registered design right etc.) it is difficult to ascribe a formal economic owner to various types of design and envision how they would benefit from it and restrict use of the it.

2.2 Organisational Capital

Investment in organisational capital is generally thought to be investment into the structures and management practices of organisations intended to increase productivity and efficiency. There is no single accepted definition however, and some literature considers organisational capital to be a much broader concept, and potentially a contributor to a quantified measure of social capital. Experimental ONS estimates measure purchased investment in organisational capital as intermediate consumption and GFCF in management consulting services (CPA category 70), and the sum-of-costs approach using ASHE is employed to estimate own account investment.

While organisational capital evidently provides benefits over time to a company, our initial conclusion is we need to question whether this really comprises a store of value in the way an asset typically would. Similar to design, if there is no protection of the company's organisational capital (e.g. secrecy), then it becomes challenging to establish economic ownership or see how the item can be restricted.

2.3 Firm-specific Training

Firm-specific training relates to the "know-how" that is not transferable between companies, for example, the knowledge needed to use bespoke software. For this reason we see this asset as not representing a double count with traditional methods of measuring human capital, which represents the skills and knowledge which can be transferred from employer to employer. The act of providing training is considered a service within the SNA but can be viewed as investment in acquisition of knowledge and skills, in parallel to education and health services, which could alternatively be seen as investment in wider human capital.

In experimental measures, a sum-of-costs approach covering the cost of training staff (both in terms of direct training costs and the cost of employees' time spent on training) is used to estimate the value of knowledge and skills acquired, assuming perfect markets where firms spend up to the value acquired. The main source of data is the bi-annual National Employer Skills Survey. Again, it may also be difficult to establish economic ownership of firm know-how distributed through training, although the distinction with human capital is suggestive that as employees cannot transfer this skill, the easiest approach may be to treat the employer who has paid for the trainer as the owner, as they are the only institution for whom this investment delivers any value.

2.4 Branding

Branding is the term used by the ONS to cover marketing assets⁴. Current experimental estimates of investment in branding cover a proportion of market sector expenditure on advertising and market research. Purchased branding measurements use intermediate consumption and GFCF data on advertising and market research services (CPA category 73) from the ONS supply and use tables and turnover data for both the advertising and market research industries from the Annual Business Survey (ABS). Own account estimates use the sum-of-costs approach with the ASHE data for relevant occupations. Branding will be discussed in more detail in the following section.

2.5 Financial Product Innovation

Financial product innovation (FPI) was proposed by Corrado, Hulten and Sichel in 2005 as research and development (R&D) in finance, a form of non-scientific R&D, broadly defined as an estimate of the spending for new product development by financial services and insurance firms. According to the Frascati Manual, an activity must be novel, creative, uncertain, systematic, and

⁴ There is the recognition that this may need to be changed if marketing assets are accepted as the SNA terminology. .

reproducible to qualify as R&D. The creation of new products in finance could satisfy these criteria. Since then, discussion around FPI has broadened to recognise the importance of other factors in the innovation process, such as software, marketing, and training. Innovation - in finance but also more generally - can encompass the implementation of knowledge or products that are not novel in general but may be new to the firm. The ONS' estimates of FPI use a sum-of-costs method with ASHE data, using a proportion of the wages of economists, statisticians and researchers in the finance and insurance industries.

Table 1. Uncapitalised assets, epigrammatic method of estimation and UK data sources

Potential IPP (not included in SNA)	Estimation method
Architectural and engineering design	Purchased component based predominantly on Supply and Use expenditure data (Intermediate Consumption and GFCF). Own-account component uses sum of costs approach, modelled using Annual Survey of Hours and Earnings (ASHE) data.
Branding	Based predominantly on Supply and Use expenditure data (Intermediate Consumption and GFCF).
Firm-specific training	National Employer Skills Survey, extended using Supply and Use data.
Organisational capital	Purchased component based predominantly on data from the Management Consultancy Association. Own-account component uses sum of costs approach, modelled using ASHE data.
Financial product innovation	Sum of costs approach, modelled using ASHE data.

3. Investment in marketing assets

Items such as brand names, mastheads, trademarks, logos, and domain names (*BPM6* paragraph 13.17 and *2008 SNA* paragraph 10.198), used by an entity to promote its products or brands, can all be considered marketing assets for an organisation. As such, they are assumed to be contributing significantly to brand recognition, consequently “brand value”. This requires investment by corporations in building and supporting their brands to differentiate the characteristics of their services and products, aiming to create customer loyalty, via emotional signalling.

For simplicity, the terms “branding” and “marketing” are considered interchangeable, and are different to advertising, which via deployment of marketing techniques would aim to influence consumers, but it could also be used to convey information that have time-critical character. Marketing and brand equity activities include: market research and market testing, methods for pricing, product placement and product promotion; product advertising, the promotion of products at trade fairs or exhibitions and the development of marketing strategies. Marketing activities for existing products are only innovation activities if the marketing practice is itself an innovation. In practice however, as we discuss in section four, it is quite challenging to avoid overlaps between different activities that could be part of the marketing process, such as market research and design.

The complexity of marketing assets is partially recognised by the 2008 SNA, where it is noted that a brand can be interpreted as far more than just a corporate name or logo. It is the overall *impression* a customer or potential customer gains from their experience with the company, its services and its products. Further, in paragraph 10.199 of the SNA, the value of goodwill and

marketing assets is defined as the difference between the value paid for an enterprise as a going concern and the sum of its assets less the sum of its liabilities, each item of which has been separately identified and valued. Although goodwill is likely to be present in most corporations, for reasons of reliability of measurement it is only recorded in the SNA when its value is evidenced by a market transaction, usually the sale of the whole corporation. Exceptionally, identified marketing assets may be sold individually and separately from the whole corporation in which case their sale should also be recorded under this item.

There is a difference between brand equity and branding:

- Brand equity is the value of the brand over and above the sum of its fixed assets and includes the value of reputation and the synergies between its assets. The national accounts item 'Goodwill' which represents the difference between the valuation of a company and its capitalized assets (particularly when realized at a point of sale) could be expected to capture the value of brand equity, alongside other 'uncapitalised' intangibles, including training and organisational capital.
- Branding assets (called Marketing Assets in SNA) will include things like logos, slogans, and even colour schemes (anything which can be trademarked or placed under an equivalent protection in terms of ownership and use) and are typically created through payment for work done e.g. paying a graphic designer to create a logo. Despite this, they are considered non-produced assets in the SNA due to measurement difficulties; branding assets are rarely sold in isolation and the SNA stipulates estimates should only be produced on evidence of a sale. Arguably these could also, however, be covered by 'Goodwill'.

It is perfectly possible for branding expenditure and brand equity to be unrelated if consumer preferences or perceptions change – for example, if a brand is caught up in some scandal, its brand equity could fall to zero in spite of extensive expenditure on branding assets. Companies may spend a lot on activities intended to increase their brand reputation and in turn, equity, but ultimately their performance will determine their value.

Currently there is no internationally agreed statistical methodology on how to produce estimates of marketing assets, although the SNA revision process is tackling this. However, the United Kingdom produces estimates of investment in marketing assets, based on the methodology generated by Corrado, Hulten and Sichel (2006) for the US. Current experimental estimates of investment in branding cover a proportion of market sector expenditure on advertising and market research. Purchased branding measurements use intermediate consumption and GFCF data on advertising and market research services (CPA category 73) from the ONS supply and use tables and turnover data for both the advertising and market research industries from the Annual Business Survey (ABS). Own account estimates use the sum-of-costs approach with the ASHE data for relevant occupations.

The ONS uses the recommended approach for estimating own-account software and IPP may be used to estimate own-account branding as follows:

Value of own-account production =

Total number of employees working on own-account production x

Average compensation of employees x

Proportion of time spent on own-account production +

Other intermediate costs used in own-account production +

Notional operating surplus related to own-account production (capital services) (only depreciation for non-market producers) +

Other taxes (less subsidies) on production

The ONS uses a sum of costs approach for expenditure on own-account branding using a method parallel to that recommended for own-account software by the OECD and Eurostat:

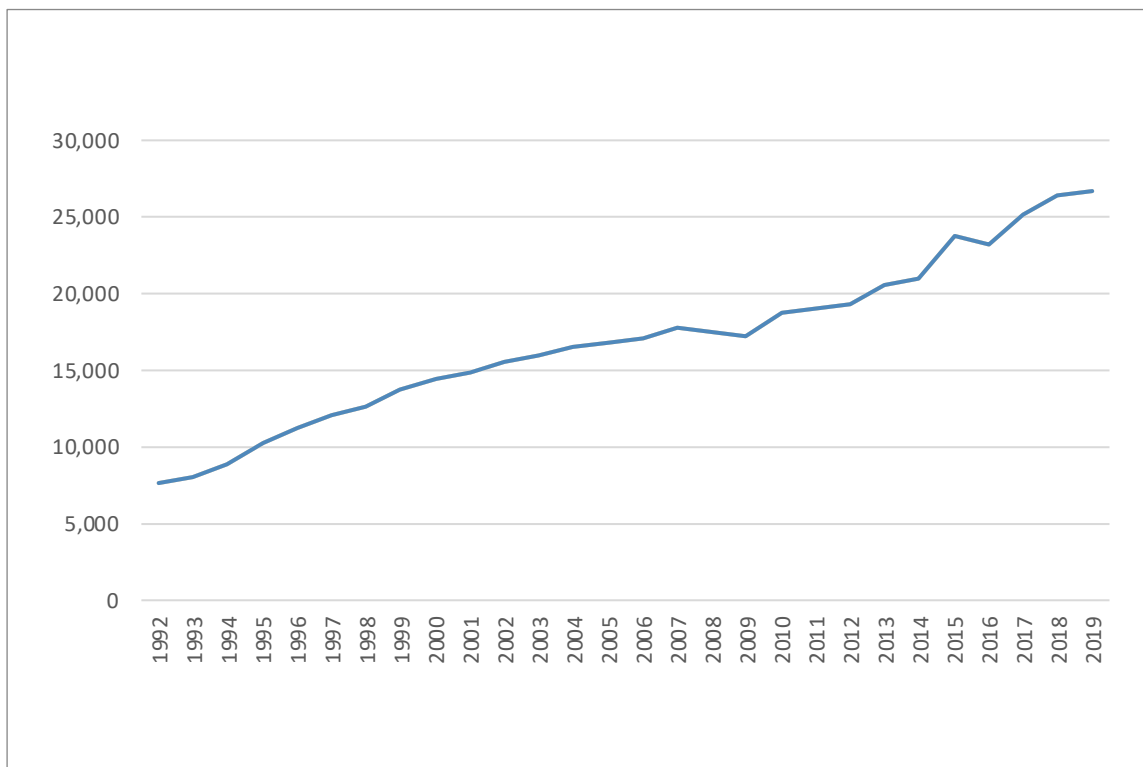
- expenditure on own-account branding
- wages and salaries of relevant workers
- scale-up factor for non-wage labour costs
- scale-up factor for non-labour costs
- scale-down factor for time on non-investment activities
- scale adjustment factor for those industries that produce the relevant good for sale, to avoid double-counting, with 'purchased' investments

The variables are drawn from the Standard Occupational Classification (SOC) codes from ASHE as relevant and estimates the following, for each of the six SOC codes:

- the proportion of employees that work on branding
- the fraction of time spent on branding by these employees
- the proportion of branding work that should be counted as 'investment'
- the fraction of branding work done by specialist advertising and market research organisations that is **own-account** Division 73 in the SIC (2007)

Based on our most recent findings, total investment (in current prices) in branding by the UK market sector has been steadily increasing over the last two decades, reaching £26.7 billion (Fig. 3).

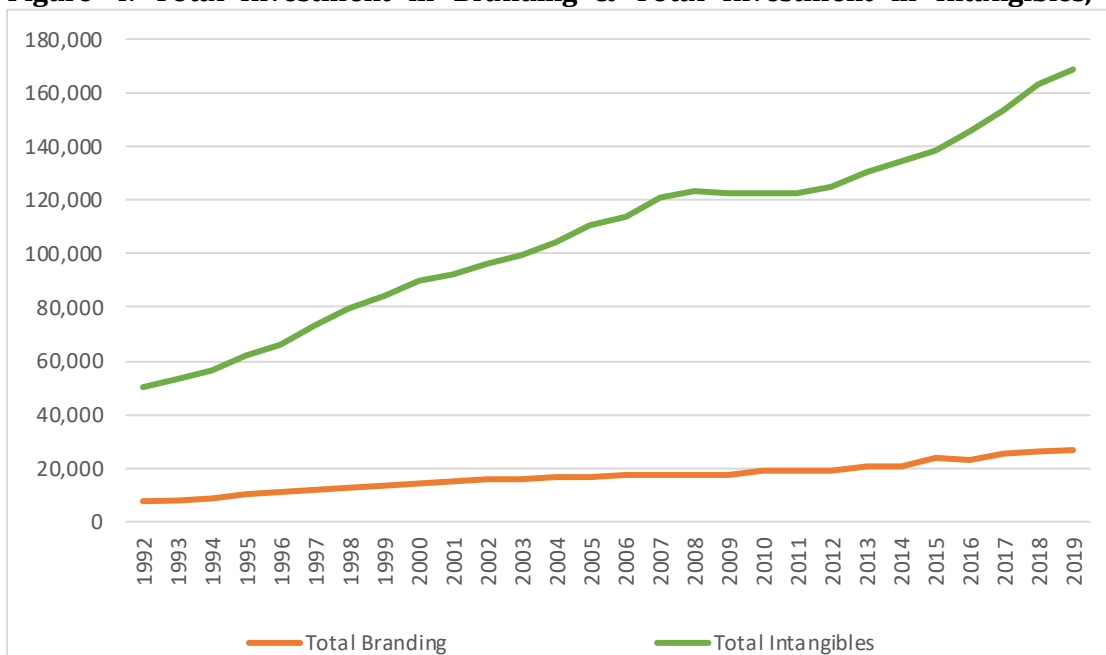
Figure 3. Total Investment in Branding, CP, £m



Source: Office for National Statistics

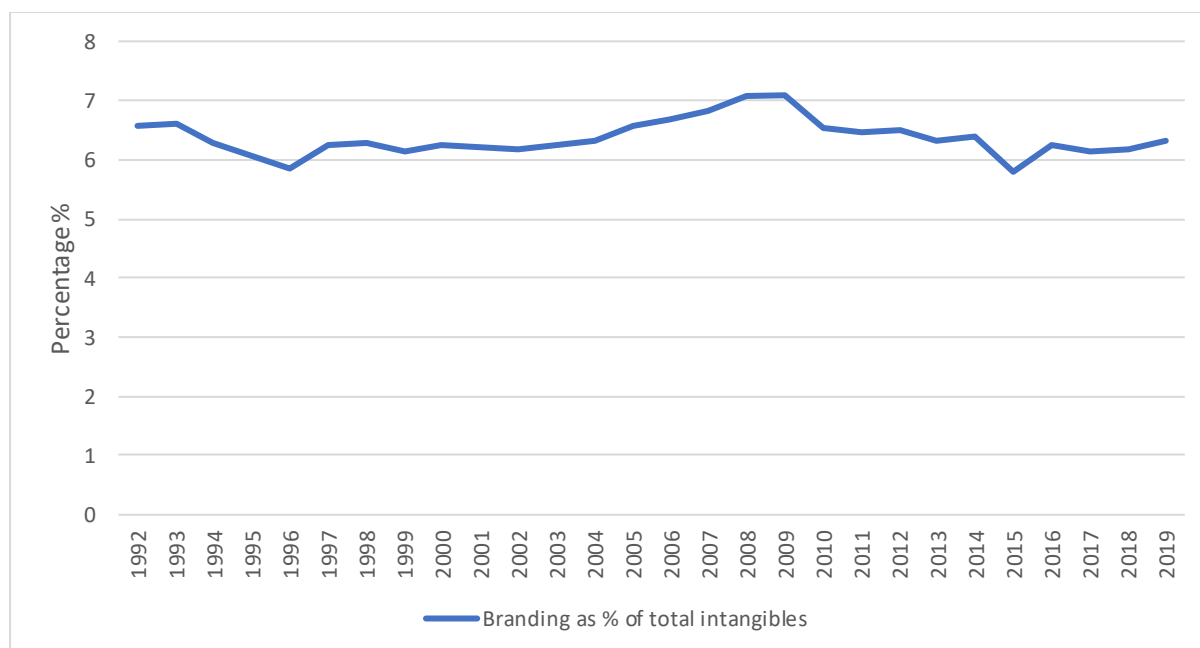
Fig.4 and 5 illustrate that branding remains a small part of the total investment in intangible assets in the UK, accounting for 6.3% of the total investment in intangibles in 2019 (in current prices).

Figure 4. Total Investment in Branding & Total Investment in Intangibles, CP, £m



Source: Office for National Statistics

Figure 5. Branding as % of total intangibles



Source: Office for National Statistics

The ONS outputs highlight two key challenges relating to the measurement of own-account branding.

- i) Determining the occupations contributing to branding.
- ii) Estimating the proportion of time spent on branding that could be considered investment.

Marketing in particular demonstrates that there can be discrepancies between the expenditure that firms would consider 'investment' and the actual resulting stock of value (for example, expenditure on branding assets and advertising compared with the stock of brand equity). In addition, unlike conventional produced assets, an item such as brand equity could reasonably be expected to appreciate over time. Are the stocks or flows considered more important for policy purposes and how should discrepancies be reconciled?

4. Double-counting issues

Given the nature of the activities involving the production of all of these assets, we have identified the areas where double counting is likely to be occurring, including overlaps with assets that are considered non-produced.

We first look at Financial Product Innovation. Financial Product Innovation is a form of 'non-scientific R&D' and it has been presumed that this is not covered in R&D surveys such as ONS Business Enterprise Expenditure on Research and Development (BERD) survey. However, BERD follows the Frascati Manual which does not exclude non-scientific R&D and ONS reports R&D estimates for Industry K (Finance and Insurance). Therefore, we believe that if FPI is intended only to cover activity fulfilling the criteria for R&D, then this is already accounted for under SNA. There may also be an overlap with Software (e.g. payment via apps).

Design is another asset where the limits are not clearly identifiable. There is potential for a substantial overlap between engineering design and ergonomic/product design and R&D; in fact, the typical engineering design process almost certainly appears to fulfil the criteria of the Frascati Manual. If aesthetic design were to be considered, there may be an overlap with Artistic Originals.

Organisational capital will increase a firm's value beyond the sum of its parts as it will have inherent processes and structures that allow it to outperform other businesses, making it worth more to a potential buyer. The SNA arguably considers organisational capital as a component of goodwill (10.196).

Branding is a much more complex area, that is likely to also overlap with the non-produced asset category "goodwill and marketing assets", in the SNA 2008. Conceptually, the SNA category 'Purchased Goodwill and Marketing Assets' covers both the value of brand equity (goodwill – a firm will be worth more than the sum of its capital as it has a reputation that has been built by its operating standards) and branding assets (marketing assets). A firm having a strong performance is likely to provide an increase to its brand value regardless of the 'actual' value of its investments. However, the SNA stipulates that these should *only* be recorded on evidence of a sale. It is particularly uncommon for branding assets to be sold in isolation and, more importantly, as these cases are very rare it would likely lead to statistical disclosure. It would also be difficult to obtain accurate price valuations as we would need explicit information on the price paid and the balance sheet value, and of course the former to exceed the latter, for this to be recognised as an asset. Interestingly, the SNA also states that "the major reason for not treating marketing assets as fixed assets is due to the difficulty of measuring their value."

Branding can also overlap with Research and Development in the Frascati manual. Paragraph 2.65 argues that research for the arts consists in developing goods and services to meet the expressive needs of artists and performers. There are enterprises in this line of business that devote a significant part of their resources to R&D in this area. For instance, they engage in experimental development to produce new electronic musical instruments to suit the needs of a group of performers. Other types of R&D organisations (mainly universities and technical institutes) also play a role in exploring new technologies for performance art (to improve audio/video quality, for instance). The activity aimed at supporting the introduction of new organisational or marketing methods by art institutions (advertising, financial management, etc.) may qualify as R&D, but caution should be exercised in making this decision. This area of R&D performance is already covered by existing data collection.

Moreover, there is the Other intellectual property products (paragraph 4.53) category to consider. This category includes the costs for purchased patents, long-term licences, or other intangible assets that are used in R&D and which are in use for more than one year. Other intangibles that can be reported in a unit's internal financial accounts, such as marketing assets or goodwill, should not be included.

The Oslo manual (Chapter 4) provides a framework for measuring business innovation activities. The chapter identifies eight types of activities that firms can undertake in pursuit of innovation, although many of these largely knowledge-based activities can also be carried out for other, more general purposes. Two of these are:

- i) Marketing and brand equity activities
- ii) Intellectual property (IP) related activities

In the same manual, paragraph, 4.18, argues that marketing and brand equity activities include market research and market testing, methods for pricing, product placement and product promotion; product advertising, the promotion of products at trade fairs or exhibitions and the development of marketing strategies. They also include advertising for trademarks that are not directly related to a specific product, such as advertising linked to the firm's name, as well as public relations activities that contribute to a firm's reputation and brand equity. Sales and distribution activities are not part of marketing and brand equity activities.

Considering marketing and brand equity activities as an innovation activity (paragraph 4.19) can lead to further challenges- marketing activities for existing products are only innovation activities if the marketing practice is itself an innovation. For many companies only a small fraction of marketing expenditures is likely to be linked to product innovations introduced within the observation period. Relevant innovation activities include preliminary market research, market tests, launch advertising, and the development of pricing mechanisms and product placement methods for product innovations. In some cases, the advantages of a business process innovation could also be marketed, for instance if the business process innovation has environmental benefits or improves product quality. Expenditures for marketing and brand equity activities include all activities identified in subsection 4.2.3, including expenditures for training for marketing and brand marketing activities. Expenditures for trademarks should be reported under IP activities. Data on expenditures for the acquisition of external marketing and advertising services can often be obtained from a firm's income statement. Expenditures for IP-related activities include all current expenditures for the activities identified in subsection 4.2.4. These should include expenditures on training for managing IP and on the acquisition of trademarks for marketing and brand equity activities. The cost of purchasing external IP for R&D should be reported under R&D.

5. Conclusion

The ONS is committed to producing statistics on intangible investment and we are seeking to update and improve our work to reflect the latest developments and best practice. Along these lines, we consider several areas in need of improvement. The following areas should also be considered by any other countries embarking in the measurement of branding (marketing assets).

The first one to examine is importantly, as discussed above, we cannot ignore the issues of double-counting, with a potential overlap between some branding activities, advertising, computer software and R&D.

The second is the proportion of time that the relevant workers spend on own-account branding as opposed to branding for outside organisations merits attention too, as we assume that proportion of those that work in branding are rather wide ranges (e.g. 15-30%). This is related to the fraction of time spent on branding by employees, by the assumption that time-factors cannot exceed 70%. This assumption follows the OECD recommendation of only a 50% time-factor for software professionals; in both cases for employees who appear to spend their time solely on own-account work. As such, the fraction of branding work done by specialist advertising and market research organisations that is own-account is worth looking into, too. 95% of the branding produced by division 73 in the SIC (2007) is excluded since it will sell most of what it produces.

Thirdly one should consider the proportion of branding work that should be counted as 'investment': it is usual to assume in-house staff are usually more involved in short-lived advertising work, thus leading to a 30% proportion of in-house advertising work being used to estimate as investment. The proportions of purchased Advertising and Market Research that are long-lived are estimated at 60% and 80% respectively.

Fourthly, it is essential to develop more accurate deflators at industry level, which is an area we are currently undertaking research, predominantly focussing on the R&D deflators, considering a number of options.

Fifth, there is also a need to establish the difference between investment in branding/marketing assets such as logos, and expenditure intended to serve as investment in the overall brand equity and reputation (advertising, market research etc.). These may be linked but outlay on branding assets or services like advertising does not necessarily lead to increased brand equity. Advertising does not lead to items that are a store of value in their own right, however the outcomes of market research may be valuable, particularly if there are modes of protection in place. The SNA acknowledges that goodwill and marketing assets do have the characteristics of an asset, however, they are currently categorised as non-produced assets.

Finally, public sector and non-profit institutions serving households (NPISH) marketing assets is another area that needs further investigation. Whether the public sector or NPISH produce marketing assets is open to debate, as their advertising and branding signalling is not related to an activity that leads directly to profits (usually), but to convey information for the common good. We note that there are significant semantic and ideological complexities involved in this task, that require broader collaboration and coordination.

None of these points, however, are beyond resolving and simply require sensible investment and attention. We consider this to be an area of development which national statistics institutes should be able to move forward using this and similar work by other bodies as a foundation.

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