

Measuring the spillover benefits of UK independent films

A report commissioned by Pact

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About the authors

alma economics



Alma Economics combines unparalleled analytical expertise with the ability to communicate complex ideas clearly.

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About the commissioning organisation

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Executive summary

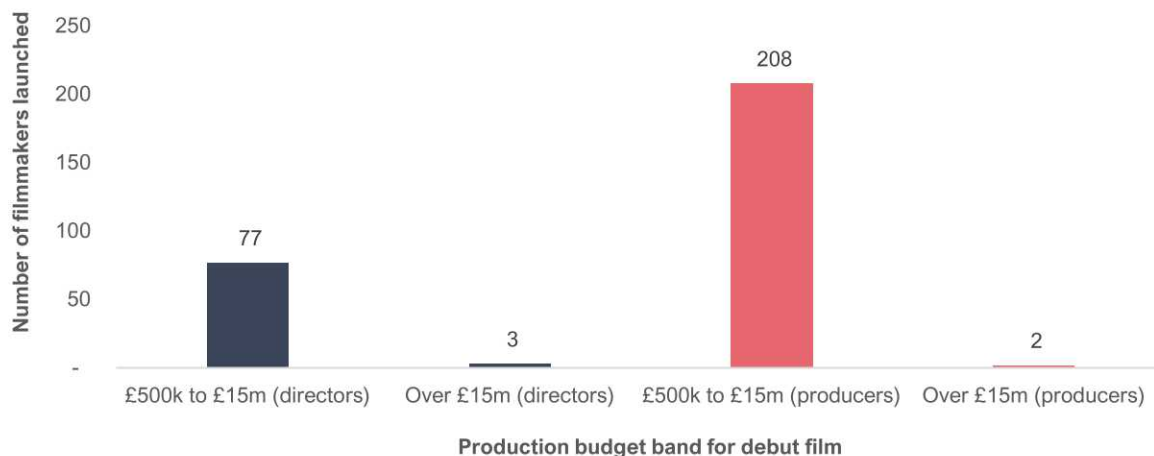
Alma Economics was commissioned by Pact to analyse the extent to which market failures affecting UK independent films are larger than the market failures affecting other UK-based screen activity. The analysis that follows is based on an empirical assessment of the profile of market failures for different sizes of film budgets, focusing on market failures that fall under the category of positive externalities (also known as spillover benefits).¹

Talent incubation spillover benefits

Low budget films have historically been a catalyst for launching emerging on- and off-screen filmmaking talent, supporting their progression to larger and higher-profile film projects by allowing them to develop their skills, take creative risks, and raise their profiles.² The case studies in this report have illustrated some of the many examples of filmmaking talent being launched by low budget films. *Attack the Block (2011)* played a key role in launching the career of London-born actor John Boyega, who subsequently starred as Finn in the revamped *Star Wars* franchise during the 2010s. This effect is also not limited to supported subsequent film activity, with *This is England (2006)* resulting in a TV spin-off whilst showcasing how low budget feature films can launch talent for TV, with Vicky McClure subsequently starring in successful TV series including *Line of Duty*, *Broadchurch*, and *Alex Rider*.

Our analysis supports this assertion, indicating that low budget films are substantially more effective at launching emerging talent than large budget films. Between 2010 and 2021, we estimate that 77 directors and 208 producers made their feature film debuts on low budget UK feature films and proceeded to be involved in the same roles on subsequent UK films. This compares with the very small number of directors and producers who were launched by large budget films. Relatedly, we estimate that £1 spent on low budget film is 140 times more likely to help to launch a new director and 440 times more likely to help to launch a new producer than the same spend on a large budget film.

Figure 1. Number of directors and producers launched by debut films, who proceeded to be involved in subsequent production activity, by debut film budget band³



Source: Alma Economics analysis

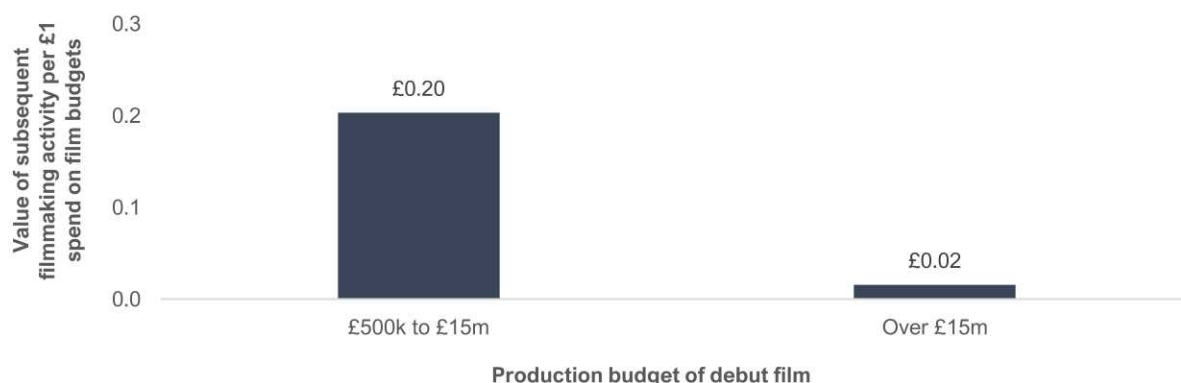
¹ A positive externality would occur when a film produces benefits for third parties which were not directly involved in the funding of the film.

² For the purposes of this analysis, low budget films are defined as those with production budgets between £0.5m and £15m whilst large budget films are defined as films with production budgets of £15m and above.

³ Due to concerns around data quality, we have excluded films with budgets of below £500k from the analysis.

Putting a monetary figure on the positive externality resulting from talent incubation on films, we found that **every £1 of spend on the production budgets of low budget UK films supports around £0.20 of subsequent filmmaking activity**. This represents an increase in UK screen sector economic activity and makes a direct contribution to UK GDP. In comparison, we find that the contribution of large budget films to talent incubation is almost non-existent, with these films typically being directed or produced by already established filmmakers.

Figure 2. Value of subsequent filmmaking activity per £1 spend on film budgets, by debut film budget band



Source: Alma Economics analysis

Cultural value spillover benefits

There is also considerable evidence that film can generate positive value and wellbeing effects over and above those of the direct entertainment value. This can include capturing lived experiences of people in the UK, important episodes in British history or even causing positive benefits felt far outside of the film industry. In this report we have broadly grouped all of these effects under the title of “cultural value” as shorthand for a variety of different benefits to society from the consumption of UK films, as distinct from the production externalities covered by the launching of new on- and off-screen talent.

Our analysis of cultural value suggests that **each £1 of spend on the production budgets of low budget UK films generates an additional £0.05 in cultural value spillover benefits**. This represents an estimate of the spillover wellbeing effects but is not a monetary benefit and does not make a direct contribution to UK GDP.

The case studies covered in this report showcase how low budget films can generate significant cultural value; for example, *The Imitation Game (2014)* acted as a catalyst in the passing of the so-called *Turing Law* which pardoned those previously convicted for consensual same-sex relationships, whilst raising awareness and understanding of key episodes in British history. *Bend it Like Beckham (2002)* was widely thought to have increased female participation in football, as well as highlighting the lived experience of British-born Asians.

Introduction

Alma Economics was commissioned by Pact to analyse the extent to which market failures affecting UK independent films are larger than the market failures affecting other UK-based screen activity. The analysis that follows is based on empirical assessment of the profile of market failures for different sizes of film budgets, focusing on market failures that fall under the category of positive externalities, a technical concept explained further below. In addition to presenting empirical estimates based on advanced statistical techniques, case studies of specific films and filmmakers are presented alongside empirical results and the theory underpinning those results.

What are positive externalities & why do they matter?

“Examples of [...] market failure include:

Externalities: These occur when an activity imposes costs or produces benefits for economic agents not directly involved in the deal. For example, pollution not covered by regulation may be profitable for a perpetrator but impose real costs on others who are not directly involved in the market.” (His Majesty’s Treasury, The Green Book: Appraisal and Evaluation in Central Government, 2022)⁴

Positive externalities (also known as “spillover benefits”) are cases where a third-party benefits from an economic activity but without those people engaged in the activity taking this into account when making decisions about whether to engage in that activity and by how much. Examples include:

- **Research and development** activity by one firm enabling other firms to benefit by building on the new discoveries of that firm or copying the technology.
- **Health interventions** to prevent an infectious disease for one person have a positive externality for others who come in contact with them, reducing the likelihood of infection.
- A company paying for a **skills development** for an employee who then moves to another firm that benefits from the employee’s increased productivity.

In the absence of government intervention to address positive externalities, free markets will under-provide and under-consume the good or service, reducing those valuable benefits to third parties and typically also reducing overall levels of economic activity. In the examples above, interventions to address these issues can include tax policies such as R&D tax credits and the Apprenticeships Levy as well as direct public sector funding for R&D, health spending and skills development.⁵

It is established that UK filmmaking generates significant positive externalities, underpinning the case for UK Audio-Visual Expenditure Credit; in the absence of government intervention, the size of the UK screen industry would be significantly diminished and there is an established evidence base to support this.⁶ What is less well understood is the extent to which UK independent films generate larger positive externalities (per £1 of activity) than the big budget films produced by major studios. Should UK independent films generate a higher level of positive externality (per £1 of activity), this would represent a strong case for additional intervention to tackle under-provision. There are significant theoretical reasons to expect this to be the case and these are tested empirically later in this report.

⁴ HM Treasury, 2022, The Green Book: Appraisal and Evaluation in Central Government. Available [here](#).

⁵ Note that patents are also part of the solution for R&D but operate in a different way to the other interventions. The aim with patents is to enable the innovative firm to directly capture more of the benefits that would otherwise flow to third parties.

⁶ In March 2023 the UK moved the previous film tax relief to a refundable expenditure credit model.

The “incubator effect”: launching new on- and off-screen talent

“The UK independent film sector is also an integral part of the wider screen ecosystem through its role as an incubator of talent, both on and behind the camera. Craft and technical skills developed through working on independent film feed the success of the UK screen sectors in making bigger budget films and high-end television productions. Independent film has an essential role in positioning the UK as a world leader in a fast-growing global industry.” (British Film Institute, 2022)⁷

Human capital refers to the economic value of a worker's experience and skills. This can be developed via formal training, but a significant proportion (most likely the majority) of the development of skills and experience amongst UK filmmakers comes from on-the-job learning, which is a crucial stage in development and launching (or “incubating”) of new talent.

There are strong theoretical reasons to expect the extent to which films launch new talent to be larger for smaller films because first-time and second-time directors, producers, actors, etc, are less likely to get the opportunity to start in large budget films. Even where larger budget films use first-time on- or off-screen talent, these cases likely represent talent established elsewhere, e.g. where famous musicians or sports stars have switched to acting having already established high levels of fame.⁸

Attack the Block: the film that launched the most famous stormtrooper ever

Before there was John Boyega in Star Wars, there was John Boyega in Attack the Block (2012), his film debut. A novel approach to casting led to a cast almost entirely made up of unknown actors who realistically may not have been launched in acting careers without Attack the Block being made, a very clear example of a UK film incubating new on-screen talent.

Cast as the lead role Moses, John Boyega grew up in Camberwell and Peckham, South London, and first auditioned for the film aged 19. Undergoing several rounds of casting, Boyega was finally chosen as lead actor and his performance in Attack the Block was widely praised by critics. He subsequently went on to star in Star Wars episodes 7 to 9. Much of the filming for these films took place at Pinewood Studios, UK, with Star Wars' filming in the UK reliant on there being an existing pool of on- and off-screen talent to draw on.

Whilst many of John Boyega's films after Star Wars were US-made (e.g. Detroit, Pacific Rim: Uprising), he is due to star in Attack the Block 2 in 2023 (a UK production). Arguably, getting a first start in the UK could make film talent more likely to have UK productions as a career anchor that they return to even if they also make a number of films outside of the UK.

Attack the Block also marked the directorial debut of Joe Cornish, who has gone on to make Lockwood & Co in the UK for Netflix, which reached number 1 on Netflix's Daily Top-10 rankings and launched with a 100% score on Rotten Tomatoes. This is an example of a low budget UK film launching talent for the High-End TV (HETV) sector, contributing to overall UK screen sector activity. Joe Cornish is also due to direct Attack the Block 2.

⁷ BFI, 2022, Press Release: The BFI Response to the Economic Review of UK Independent Film. Available [here](#).

⁸ A caveat to note here is that micro-budget films may also be launching relatively low amounts of talent given the frequency of filmmakers who work on a single micro-budget film and then do not work in the screen industry again, or filmmakers who do not progress beyond micro-budgets.

Generating cultural value spillover effects

There is considerable evidence that film can generate positive value and wellbeing effects over and above those of the direct entertainment value provided by a film. These have been covered in depth in various other sources, e.g., see “Stories we tell ourselves” (UK Film Council, 2009).⁹ This can include capturing lived experiences of people in the UK, important episodes in British history or even causing positive benefits felt far outside of the film industry. We have broadly grouped all of these effects under the title of “cultural value” as shorthand for a variety of different benefits to society from the consumption of UK films, as distinct from the production externalities covered by the launching of new on- and off-screen talent.

A key point for this report is that we are not attempting to measure the total cultural value of UK film but are instead focusing on the externality portion that sits within the UK. We are excluding private cultural value, which is the direct cultural value experienced by people watching a film that resonates with them, educates and enriches their lives. This does not represent a market failure in that it is already included in consumers’ willingness to pay for films. We are also not attempting to estimate the cultural value generated by UK films outside of the UK on the basis that this is out of scope for HMT Green Book analysis for UK policymaking.

Cultural value spillover benefits represent a market failure by leading to under-provision of films with significant cultural value. This is due to these wider spillover effects not leading to higher financial returns to filmmakers despite generating additional wellbeing effects for the UK, which can lead to underinvestment in these films both in terms of production and marketing budgets.

The Imitation Game: a film that changed UK law

The historical drama *The Imitation Game*, portraying Alan Turing’s life and his contribution to breaking Nazi Germany’s enigma codes, was the highest grossing independent film in 2014. Produced with a budget of around £11.5 million, box office revenue amounted to nearly £200m worldwide. In addition to this commercial success, the film generated significant spillover benefits by: (1) raising awareness and understanding of key episodes in British history, and (2) contributing to the 2017 Policing and Crime Act which pardoned those previously convicted for consensual same-sex relationships.

The film is based on Andrew Hedges’ 1983 book *Alan Turing: The Enigma*, and received a number of nominations and awards, in addition to a 90% Rotten Tomatoes critic rating. *The Imitation Game* excels in both capturing and increasing knowledge of important events in British history. It is widely accepted that the actions of Alan Turing and other Bletchley Park codebreakers accelerated the end of WWII, saving many lives in the process. However, it has taken time for film to reach the point where it has managed to portray these actions as vividly as the action from battlefields.

Notably, the film has received extensive praise for helping to mobilise the power of wider society to push for the pardoning of all 49,000 individuals convicted under the same law as was Turing. The film acted as a catalyst for a 2015 campaign advocating in favour of such pardons, which received over 640,000 signatures and was widely supported by cast members such as Benedict Cumberbatch. The 2017 Policing and Crime Act includes the so-called *Alan Turing Law*, which pardoned all those convicted for consensual same-sex relationships (typically posthumously).

⁹ A study for the UK Film Council (2009), “Stories we tell ourselves: The Cultural Impact of UK Film 1946–2006”. Available [here](#).

Lastly, it should be noted that a film can achieve both significant levels of launching new talent as well as generating significant cultural value. This is a feature of a number of our case studies but arguably no more so than for the case of *This is England* (2006), which was an interesting case of a UK independent film launching both new British talent for UK TV but also generating new Intellectual Property for TV. At the same time as launching considerable new talent, this film also generated significant cultural value with its depictions of 1980s England and the activities of fascist groups in England in its recent history.

This is England: a UK low budget film powering UK TV

This is England (2006) was produced on a £1.5 million budget and achieved a worldwide box office revenue of £7 million. The film, its director Shane Meadows, and several actors won a number of British and international awards for their involvement in the film.

This film was notable for launching a popular spin-off TV series that ran for three series and was successful both commercially and with critics, demonstrating that UK low budget films can generate significant benefits not only for the UK film industry but also for the UK TV sector. In addition to generating Intellectual Property for UK TV, *This is England* also played a key role in launching actress Vicky McClure, who has won multiple awards for her portrayal of Lol and has since accomplished a successful career in UK film and television. Following her involvement in *This is England*, McClure has gone on to become a household name, playing lead roles in *Line of Duty*, *Broadchurch* and *Alex Rider* among other TV series.

This is England also made a valuable cultural contribution to the question “What is England?”. In contrast to films based on, for example, Jane Austen novels or depictions of the British upper class, the film shines a light on the social strains caused by high unemployment in England during the mid-eighties.

The film engages with the discourse around the importance of belonging, friendship, and the need to be accepted. Notably, the film also issues a loud warning about where to find such a community by engaging closely with dichotomies and tensions between the main characters that form part of a group of skinheads. The screenplay carefully distinguishes between a first group which welcomes the central character, Shaun, into their circle and become like a second family to him. However, a second group centred around the character Combo (played by Stephen Graham) represents white nationalism, xenophobia, and racism. Combo is portrayed as violent and brutal yet uneducated and frustrated about his life. This leaves the viewer with a depiction of the consequences of white supremacist thinking and an exploration of the boundaries between patriotism and nationalism.

Empirical approach and results

Summary

- The analysis in this report is driven by a novel database of UK films constructed by Alma Economics, spanning UK feature films shot between 2010 and 2021.
- Our analysis indicates that low budget films are relatively effective at launching new filmmaking talent in the UK, with every £1 of spend on production budgets for low budget UK films supporting around £0.20 of subsequent activity by these debut filmmakers. This represents an increase in UK screen sector economic activity and makes a direct contribution to UK GDP.
- In comparison, we find that the contribution of large budget films to talent incubation is almost non-existent, with these films typically being directed or produced by filmmakers who are already established in the industry.
- Our analysis of cultural value suggests that each £1 of spend on production budgets for low budget UK films generates an additional £0.05 in cultural value spillover benefits. This represents an estimate of the spillover wellbeing effects but is not a monetary benefit and does not make a direct contribution to UK GDP.

A novel dataset of UK films

The analysis in this report is driven by a novel database of UK films constructed by Alma Economics, spanning UK feature films shot between 2010 and 2021. We used matching algorithms to link metadata from the IMDb API with additional information collated from the public domain and film-level data provided by the BFI, allowing us to construct a rich database for each feature film title which captured:

- The names of credited directors, producers and principal actors.
- Production budgets.
- Box office revenues.
- IMDb rating.

The final database contained 3,149 UK film titles, representing 78% of all UK feature films certified in that period. On a budget basis the database yielded even greater coverage of UK film activity, with the sample representing 88% of the total production budget spent on UK films in the period. Lastly, due to concerns around data quality we have excluded films with budgets of below £500k from the subsequent analysis.

Talent incubation spillover benefits

Approach to measuring talent incubation spillover benefits

This element of the analysis aimed to measure the role low budget films play in launching emerging filmmakers who go on to contribute to subsequent filmmaking activity in the UK. To do this we used the database described above to identify debut filmmakers (credited directors and producers) and the

films which launched them during the period 2010 to 2021.¹⁰ To verify these were indeed debut filmmakers, we cross-referenced the list with an IMDb database of UK country of origin films spanning back to 1990. In addition, a sample of debut filmmakers was manually reviewed to verify their status as debut filmmakers, with those incorrectly flagged removed from the analysis.

We then used the database to identify the subsequent UK films that these debut filmmakers progressed to contribute to in the same role, with the production budget of these films aggregated to come to an estimate of total production expenditure supported. For the purposes of this analysis, low budget films are defined as those with production budgets between £500k and £15m. Large budget films are defined as films with production budgets of £15m and above. All production budgets have been adjusted for inflation using the CPI inflation index (using 2021 as a base year) to account for changing production costs over time.

Interpretation of results

The results presented below represent our best estimate of the size of the positive spillover flowing from the incubation of talent on low budget films. There are reasons why the true level of the spillover benefit could arguably be more or less than the level estimated.

Arguments for a lower spillover benefit. The spillover benefit estimated would be lower if the subsequent activity supported by low budget films is not entirely additional, that is, that this activity might have occurred without the existence of low budget films. There are several reasons for why this could be the case; it could be that the debut filmmakers would have been successful without being involved in a low budget film, whilst it could be that experienced filmmakers or those launched outside of the UK could have equally substituted for the role in question.

Arguments for a higher spillover benefit. On the other hand, the true spillover benefit could reasonably be higher than we have estimated given the scope of our analysis has had a relatively narrow focus on subsequent *feature film* activity, excluding any subsequent activity supported in other cultural sectors such as high-end television or video games. Our analysis only covered a 11-year time horizon, although there are many examples of launched talent going on to have successful careers in the film industry over many decades. Whilst this analysis has focussed on the talent incubation effect of debut films, it could also be argued that the 2nd and 3rd films of emerging filmmakers also play a pivotal role in launching filmmakers' careers. Wider consideration of these factors would increase any estimates of the size of the talent incubation spillover effect.

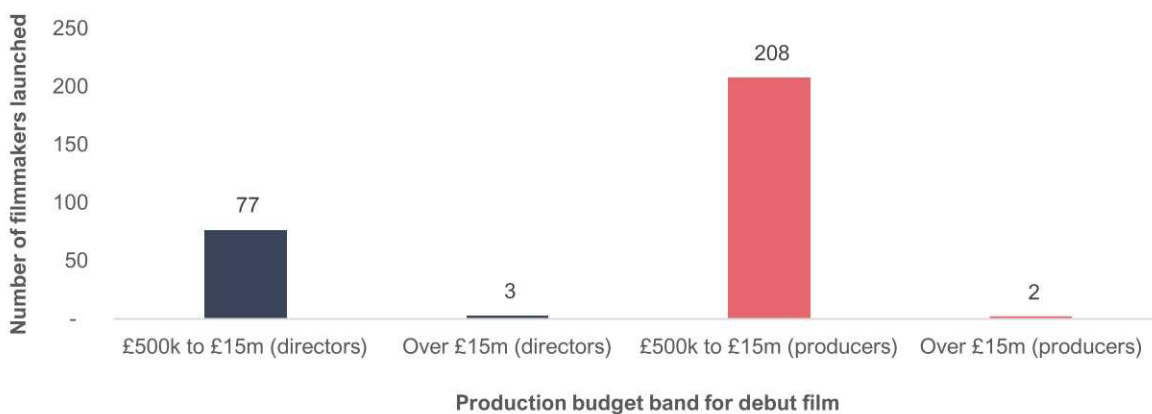
Our analysis also does not capture UK exports, such as where a filmmaker launched by a UK film proceeds to be involved in film activity based outside of the UK. Examples of successful UK exports launched by independent films include John Boyega, who played a lead role as Finn in *Star Wars* episodes 7 to 9, and Jason Statham, who made his feature film debut in 1998 on *Lock, Stock and Two Smoking Barrels* and proceeded to star in Hollywood Blockbusters such as the *Fast & Furious* franchise. Despite not directly contributing to UK productions, exports can create value by extending the influence of UK talent and signposting the UK as a hotbed for creative talent, whilst helping to spread British values worldwide.

¹⁰ To verify these were indeed debut filmmakers, we cross-referenced the list of debut filmmakers with an IMDb database of UK country of origin films spanning back to 1990, ensuring no prior involvement in filmmaking before 2010. In addition, a sample of debut filmmakers was manually reviewed to verify their status as debut filmmakers, with those incorrectly flagged removed from the analysis.

Analytical findings

Our analysis indicates that low budget films are substantially more effective at launching emerging talent than large budget films. Across the 11-year time horizon considered, we estimate that 77 directors and 208 producers made their feature film debuts on low budget UK feature films and proceeded to be involved in the same roles on subsequent UK films. Large budget films on the other hand were only found to have launched 3 directors and 2 producers during the same time-period, with these films typically being directed or produced by filmmakers who were already established in the industry. Relatedly, we estimate that £1 spent on low budget film is 140 times more likely to help to launch a new director and 440 times more likely to help to launch a new producer than the same spend on a large budget film.

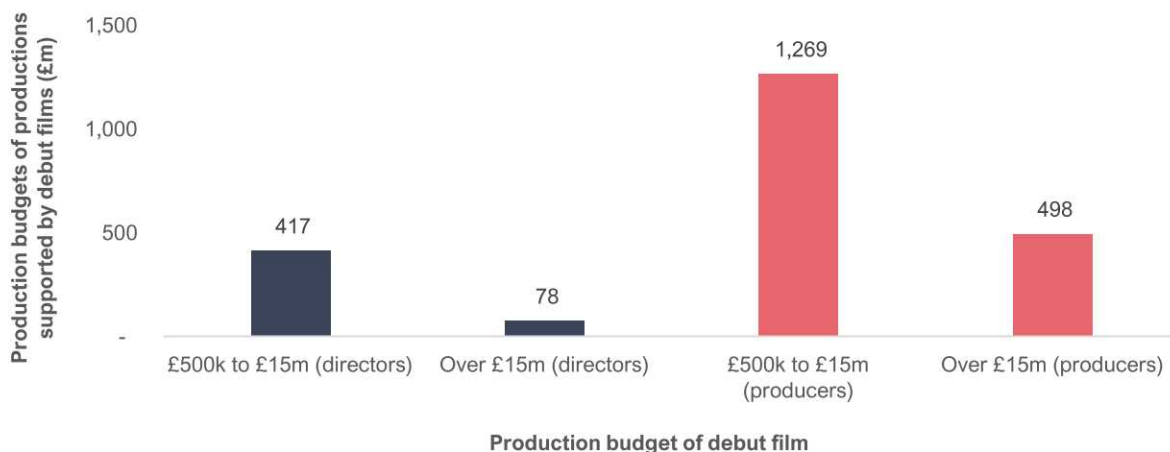
Figure 3. Number of directors and producers launched by debut films, who proceeded to be involved in subsequent production activity, by debut film budget band



Source: Alma Economics analysis

The conclusion is similar when comparing the scale of filmmaking activity supported by debut filmmakers, as measured by the value of production budgets supported. We found that directors who made their debuts on low budget films supported £417m of subsequent production activity, compared with £78m for directors that made their debuts on films with budgets over £15m. Debut producers meanwhile supported £1,269m of subsequent production activity, compared with £498m for producers who made their debuts on large budget films.

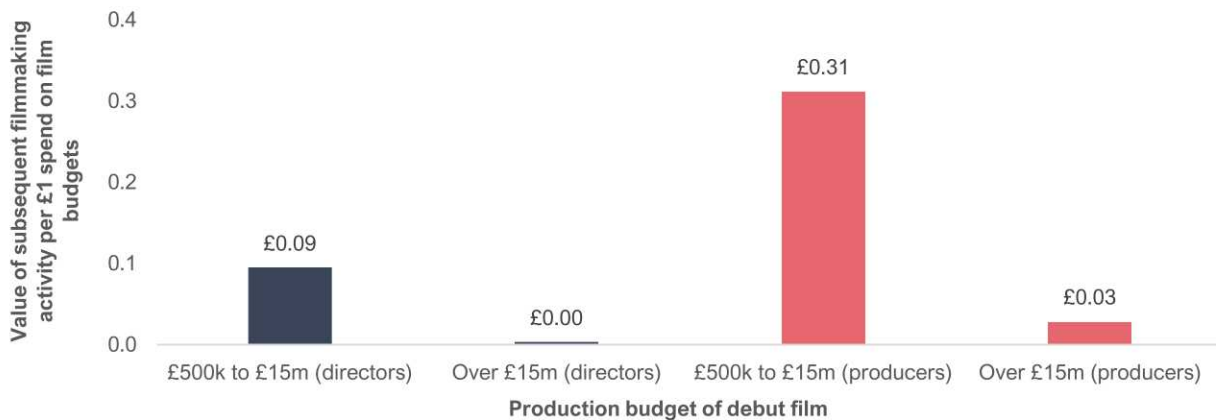
Figure 4. Subsequent production budget supported by debut directors and producers, by debut film budget band (£m, 2021 prices)



Source: Alma Economics analysis

Converting this analysis into ratios, to understand the relative efficacy of every £1 spend on production toward launching emerging filmmakers and their subsequent works, our analysis indicated that the highlighted talent incubation effect was significantly more potent for low budget films, with £0.09 and £0.31 of subsequent activity supported by debut directors and producers, respectively, for every £1 of spend on low budget UK films. Conversely, this talent incubation effect was almost non-existent for large budget films. Averaging the estimates of the talent incubation effect for directors and producers yielded a headline estimate of £0.20 of subsequent activity supported by debut filmmakers for every £1 of spend on production budgets for low budget UK films.

Figure 5. Value of subsequent filmmaking activity per £1 spend on film budgets, by debut production budget band



Source: Alma Economics analysis

Unrelated and Archipelago: low budget films which launched UK filmmaking talent

Unrelated (2007) is an example of a low budget film which played an important role in launching the careers of UK filmmaking talent, as the debut feature film of both critically acclaimed director Joanna Hogg and high-profile actor Tom Hiddleston. *Unrelated* tells the story of a fortysomething woman who seeks to escape an unhappy relationship by spending her summer holiday with friends in a villa in Tuscany, Italy, and achieved significant critical acclaim, including an 89% critic score from Rotten Tomatoes. Hogg and Hiddleston further collaborated on the 2010 film *Archipelago*, which depicted a family holiday to the island of Tresco, which forms part the Isles of Scilly, following the story of a young man in the midst of a quarter-life crisis.

Following her involvement in directing these seminal works, Hogg has proceeded to direct several UK feature films including *Exhibition* (2013), *The Souvenir* (2017), *The Souvenir: Part II* (2019), and *The Eternal Daughter* (2021). Her works have received significant critical acclaim at domestic and international film awards, including nominations for Best Director at the British Independent Film Awards for *Souvenir* and *Souvenir: Part II*.

Tom Hiddleston was cast for his role as Oakley in *Unrelated* only two weeks after finishing drama school, where he had starred in minor productions beforehand. Following his roles in *Unrelated* and *Archipelago*, Hiddleston's profile rose even further with his casting in the Marvel Cinematic Universe as Loki in the *Thor* (2011, 2013, and 2017) and *Avengers* (2018 and 2019) films. He also achieved critical acclaim for his role as Jonathan Pine in the 2016 TV series *The Night Manager*, receiving a Golden Globe for Best Actor on a miniseries or TV film.

Cultural value spillover benefits

The hallmark of cultural value as a spillover benefit is that it should show up as under-consumption of films in particular budget bands but only after controlling for film quality. The latter point is important because low quality films should quite rightly underperform commercially and are very unlikely to generate cultural value, whether private cultural value or cultural value as a spillover benefit.

A sample of 1,210 UK films with UK box office releases was analysed with advanced statistical techniques to identify pockets of high quality films underperforming commercially, with quality measured in terms of budget (high spend should be correlated with high quality) and IMDb rating (audience score). On the latter, user-generated IMDb ratings were preferred to the ratings of film critics because they are more likely to be a valid predictor of commercial performance. We are defining quality in terms of appealing to and entertaining a wide audience.

Under-consumption effects were detected by the statistical analysis, particularly for films in the lower half of the £0.5-15m budget range. After converting the under-consumption to be expressed relative to the value of production budgets, it is estimated that **UK independent films create cultural value spillover benefits equivalent to 5% of production budget spend**. These are a non-monetary (non-financial) benefit in that they do not represent additional GDP but instead put a monetary estimate on the wellbeing effects of cultural value spillover benefits from UK independent film. A more granular discussion of our results is presented below.

Bend it like Beckham: a low budget UK film with high cultural value

Telling the story of Jess Bhamra, her passion for football, and her Punjabi Sikh origin family, *Bend it like Beckham* (2002) focuses on the role of women in football. It also engages with issue of belonging among young people from ethnically diverse backgrounds, exploring topics such as discrimination, racism and religion. The film is regarded as an important record of societal change in early 2000s England.

As a notable example of cultural value, *Bend it like Beckham* has been widely credited with encouraging women's football in the UK and abroad, and has contributed to inspiring a generation of female footballers. The legacy of the film has also recently been re-examined by the BBC documentary *Bend it like Beckham: 20 years on*. In 2020, the Football Association reported that 3.4 million women and girls play football in England and *Bend it like Beckham* received praise for being the first film focusing on women's football to this extent and portraying female footballers as role models rather than stereotypes.

The film's storyline paints a critical yet positive picture of tensions between traditional cultural values and modern British society. In particular, this is exemplified by Jess' father's concern over his daughter getting discriminated against, rather than opposing her passion for football as the audience may have expected. Numerous scenes provide the opportunity for viewers of ethnic minority backgrounds to feel represented on screen through their shared experience of migrating to urban England, with the film widely credited with its accurate portrayal of Punjabi customs.

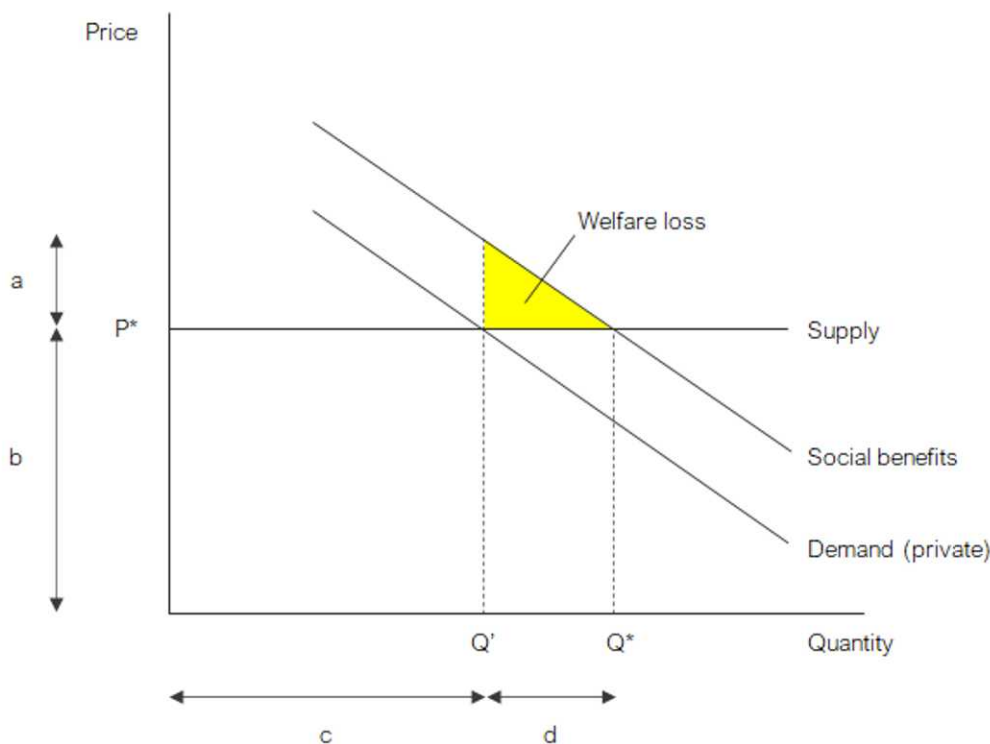
Whilst this case study focuses on cultural value, it should be noted that *Bend it like Beckham* also represented Keira Knightley's first starring role in a film with a cinema release so it is also an example of a low budget UK film launching new talent.

Estimating cultural value externalities

Economic theory applied to a film context

In the textbook case of a positive spillover effect (“externality”), there are benefits to third parties that exceed the private benefits of consuming a product.¹¹ The level of private benefits traces out the demand curve for a good or service, and the sum of private benefits plus benefits to third parties (the externalities) traces out the total benefits of the good or service, including benefits to non-consumers.

Figure 6. Graphical illustration of welfare loss associated with under-consumption of low budget films



In the diagram above, the level of consumption that maximises welfare (wellbeing) for society is Q^* , which is higher than the free market outcome of Q' . The free market outcome leads to society being worse off in terms of wellbeing by an amount equivalent to the yellow-shaded triangle.

In the diagram above, P^* can be thought of as the price of a cinema ticket with the supply curve shown as a flat line because cinema ticket prices do not vary with audience sizes. The area P^*Q' shows the box office revenue for a film, which can be related to Gross Value Added by the typical ratio of GVA to box office revenues. The level of under-consumption (the gap between Q' and Q^*) can also be estimated (covered below). Applying the assumption of a price elasticity of unity for social benefits means that distances a , b , c and d in the diagram can all be estimated and related to GVA. The specific positive externality that we are attempting to estimate is that of cultural value, described further in the main document. As with elsewhere, this is only the portion of cultural value that represents an externality and does not include *private* cultural value, which is not a market failure.

¹¹ A key point to note here is that the talent incubator effects considered in this study are *production* externalities, whereas cultural value instead focuses on *consumption* externalities.

Under-consumption of UK independent films

Under-consumption of UK independent films can be estimated if we assume there are some films unaffected by positive externalities that can act as a guide to how much box office UK independent films should generate. The following equation can act as the basis for a specification to be estimated:

$$\ln UKBoxOffice_i = \beta_0 + \beta_1 UKindie_i + \beta_2 \ln Budget_i + \beta_3 Rating_i + \varepsilon_i$$

In this equation $\ln UKBoxOffice_i$ is the log of box office revenues for film i , $UKindie_i$ is a flag (dummy variable) for whether the film is a UK low budget film and this can be broken up into different budget bands,¹² $\ln Budget_i$ is the production budget of the film as a measure of quality and $Rating_i$ is a measure of review scores (e.g. IMDb ratings) as a further measure of quality. The coefficient β_1 is a direct measure of the percentage under-consumption of UK independent films relative to expectations that are based on films not subject to market failure and after controlling for quality (equivalent to d on the diagram above). The coefficient β_2 is the elasticity of box office revenue to production budgets and β_3 relates box office revenues to IMDb ratings.¹³

It should be noted that any estimated under-consumption represents under-consumption even after applying the current level of film tax relief, which will have already benefited the UK low budget films in the sample. Assuming that the new increase in film tax relief rectifies the under-consumption, the wellbeing effect (over and above any increase in film production) would be equivalent to $(\beta_1)^2/2$ as a percentage of the additional GVA generated by enhanced tax relief.

Lastly, it should be noted that there is a limitation to the framework above because we cannot be sure that what we are measuring is under-consumption specifically due to positive externalities. The presence of this form of under-consumption is a necessary but not a sufficient condition for positive externalities of this type. Given the level of documentation of wider evidence on cultural value, we think this limitation is worth flagging but we proceed on the basis that the measurement framework is sufficiently fit-for-purpose for the task of putting some initial quantification on the cultural value of UK low budget filmmaking.¹⁴

Detailed results

Shown in the table below, the equation above is estimated via Ordinary Least Squares (OLS) with two different specifications, one to show under-consumption for films with budgets of £0.5-2m, £2-5m and £5-10m and a second specification to omit the last of these three categories because the estimated impact was not statistically significantly different from zero. It is this second specification that represents our preferred set of estimates.

These estimates can then be transformed into estimates of the loss of wellbeing shown in the diagram above. These are then weighted by the frequency of films being made in the different budget bands and then a ratio is applied to estimate the ratio of budget bands to UK revenues from the films affected, with revenues including UK box office, estimated UK digital sales, packaged media sales and UK TV revenues.

The final result is an estimate that UK films in the £2-15m budget range generate an additional 4% of the value of their budgets as a monetary estimate of the wellbeing effects they generate due to cultural

¹² As with elsewhere in the report, "indie" flags film size rather than any attempt to determine whether films were made independently of the involvement of major studios.

¹³ This can be set equal to a particular value (e.g. unity) as part of the estimation process.

¹⁴ This represents an area for further research. Of particular value would be contingent valuation of non-use value of UK independent films, which is out-of-scope for this study.

externalities. If this budget range is expanded to £0.5-15m, the estimated wellbeing impact is 5% of film budgets. This represents a non-monetary benefit for cost-benefit analysis under the HM Treasury Green Book framework for policy appraisal and evaluation.

Table 1. OLS estimation of proxies for existence of positive externalities

Dependent variable: Log of UK box office revenues		
	Specification 1	Specification 2
Dummies to test for cultural externalities:		
£0.5-2m budget band	-0.94*** (6.7)	-0.91*** (6.6)
£2-5m budget band	-0.46*** (3.0)	-0.42*** (2.8)
£5-10m budget band	-0.18 (1.0)	- -
Proxies for film quality:		
Log of film budget	1.06*** (39.2)	1.06*** (40.0)
IMDb rating	0.72*** (14.2)	0.72*** (14.3)
Implied % loss of activity due to externality:		
£0.5-2m budget band	-61%	-60%
£2-5m budget band	-37%	-34%
£5-10m budget band	-16%	-
Observations	1,210	1,210
R-squared	64%	64%

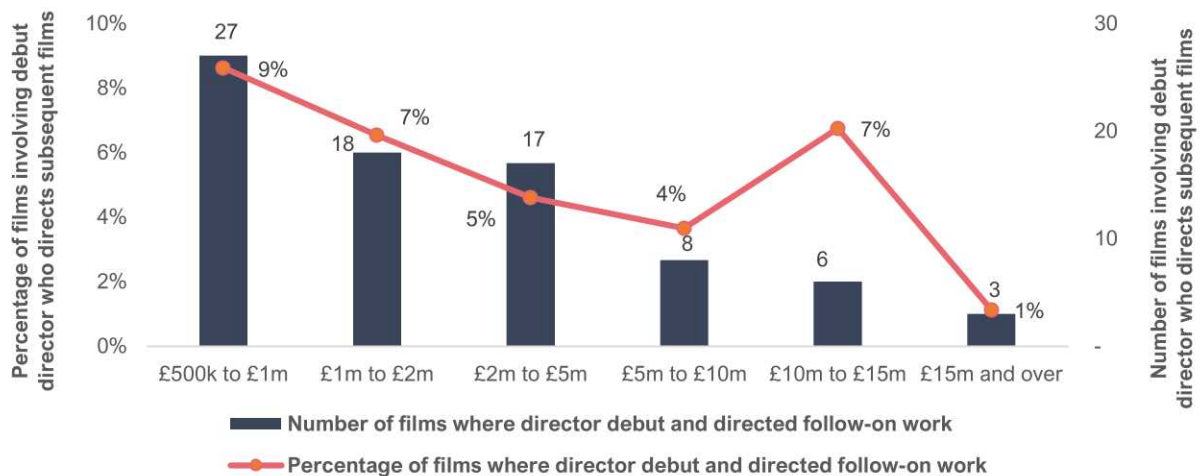
Note: Absolute t-statistics in parentheses. *** indicates statistical significance at the 1% level.

In addition to the estimates for cultural value, some of the other coefficients are of interest. The coefficient on the log of a film's production budget is around unity, which means that each 1% increase in film budget is associated on average with an additional 1% of UK box office revenues. The coefficient on the IMDb rating of a film of 0.72 in logs, translates to a percentage improvement of around 100% in box office revenues per 1 point of IMDb rating so that an IMDb 7.0 might be expected to generate double the box office revenues of an IMDb 6.0 after controlling for film budget.

Annex A: Analysis of the talent incubator effect by film budget band

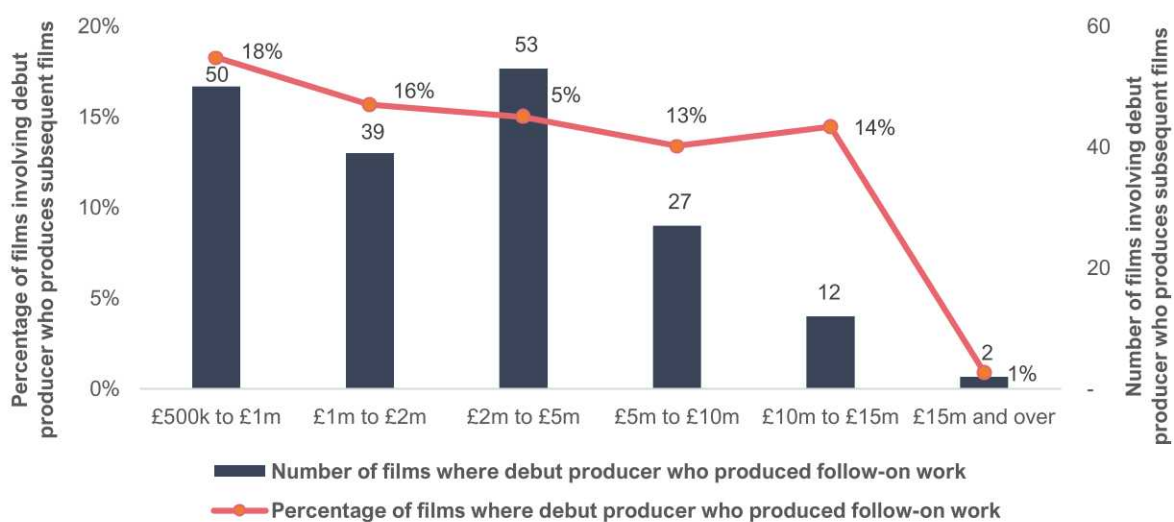
As part of this research, we also estimated the talent incubation spillover benefit by film budget band to understand the extent to which the effects described vary depending on the size of the film production in question. Figure 7 shows that there is a negative correlation between a film’s production budget and its likelihood of launching a director, although this correlation is less pronounced when considering the share of films launching directors. Figure 8 shows that there is a negative correlation between a film’s production budget and both the number and share of films launching a producer. Notably, the budget band containing films with budgets of £15m and above performs relatively poorly compared with smaller budget bands in terms of launching new directors and producers.

Figure 7. Number of films involving a debut director, by budget band



Source: Alma Economics analysis

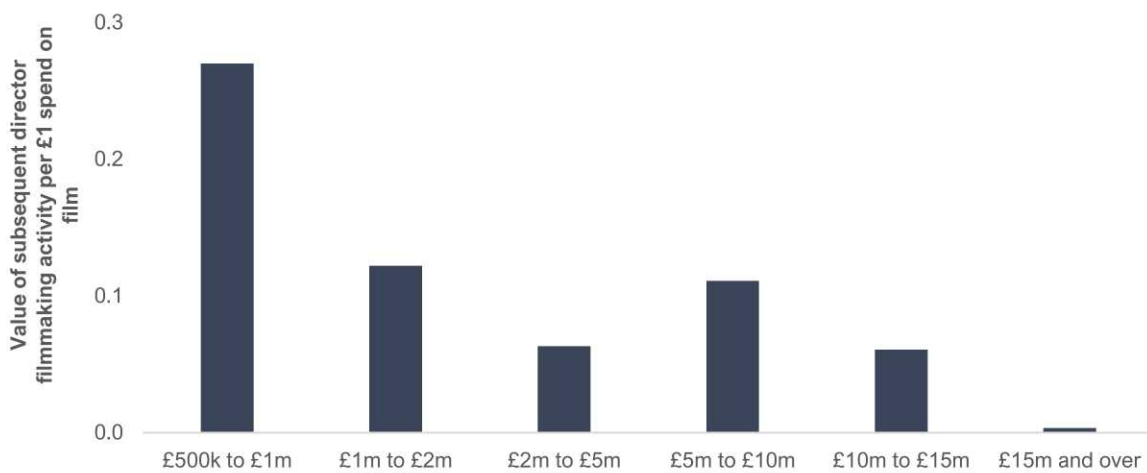
Figure 8. Number of UK films involving a debut producer, by budget band



Source: Alma Economics analysis

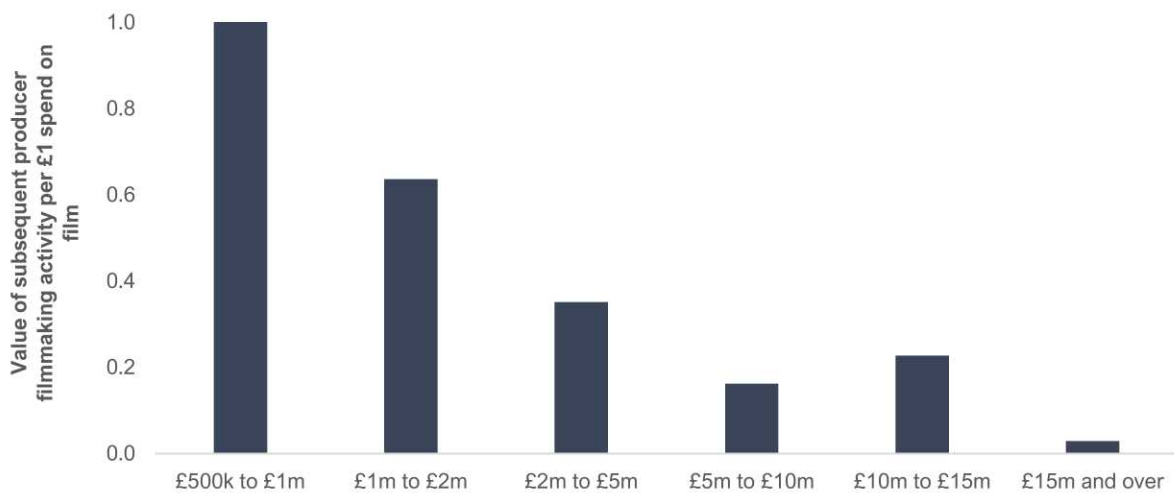
We also analysed the ratio of production budget supported by debut filmmakers to total production budget for different production bands to understand how the relative efficacy of every £1 spend on production toward launching emerging filmmakers and their subsequent works varied for films of different sizes. We found that all budget bands within the £500k to £15m range significantly outperformed films with budgets of £15m and over. The £500k to £1m and £1m to £2m budget bands were found to perform best in terms of talent incubation for both directors and producers, with there being no clear pattern in performance for directors and producers across the £2m to £5m, £5m to £10m, and £10m to £15m budget bands.

Figure 9. Value of subsequent director filmmaking activity per £1 spend on film, by production budget band



Source: Alma Economics analysis

Figure 10. Value of subsequent producer filmmaking activity per £1 spend on film, by production budget band



Source: Alma Economics analysis



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