

**ECONOMIC INCENTIVE POLICIES IMPACT
ON THE DEVELOPMENT OF THE NATIONAL FILM
INDUSTRIES IN THE LOW AUDIOVISUAL CAPACITY
COUNTRIES: THE HOLLYWOOD EFFECT IN
CENTRAL AND EAST EUROPE**

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Abstract

This paper examines the film incentive policy's impact on the national film industry within the context of foreign direct investment (FDI) research. It addresses the gap in research, focusing on the incentive mechanism as compensation for inadequate market structure in low audiovisual production capacity countries in Central and East Europe. The literature review examines the trajectory of policy changes on the European level in parallel to the debate on whether incentives have a positive economic impact on host countries. The quantitative mixed method is used to examine whether incentives increase film industry capacities, financial sources and produce spill-over in productivity in the long run. By focusing on intra-industry impact, the research paves the way for further academic development of a methodology tailored to the complexity of the film industry. The findings hold particular value for smaller countries reliant on attracting mobile investments and export of film services.

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Terms and Categories used in this paper

Film services – partial activities related to production and postproduction of audio-visual and media content (film, TV, radio, advertising, animation) that are hired independently through international outsourcing

National film industry – the collective term for infrastructure, human and organisational capacities pertaining to production, postproduction, distribution and broadcasting of the audio-visual works in a country

Low audio-visual production capacities - refers to countries or regions in Europe with a low audio-visual output or a limited geographic or linguistic coverage, as per European Audiovisual Media Services Directive

Incentives – automatic economic funding aimed at attracting mobile film production investments to boost local economic development; also referred in this paper as cash rebate, tax incentives, tax rebate, subsidies, automatic funding.

Film fund – selective funding schemes aimed at subsidising cultural production of national cinema

GPN – Global Production Networks

FDI – Foreign Direct Investments

Mobile investments – project based short term investments in a production of a film mobilising high financial volumes to employ variety of resources, also “runaway productions”

1. Introduction

This research draws upon theories in economic development, economic geography, and to a lesser extent relies on cultural and media studies to provide a comprehensive understanding of the film policy prerequisite. The environment that shaped the film industry and subsidy mechanisms analyzed in this paper combines the cultural argument that favours selective funding policy, and economic arguments that enable automatic funding through incentives. The growing trend of introducing cash rebate and tax credit policies in Europe won over a dominantly cultural perspective of public subsidies, into an economic proponent of creative industries. In that regard, film, television and the production of audiovisual content have been flagship examples of the creative industries. Therefore, as their importance and expectations grow in the eyes of policymakers, the understanding of the underlying economic mechanisms becomes vital for any future policy design.

A key contribution to the theoretical frameworks of this study is the overview of the previous research and the change in understanding of the incentivizing instrument. In the past three decades, both academic and political debate over incentives contrasted it with the framework of the European co-production agreement and an attempt to strengthen the European single market. The importance of the commercial viability of the sector raised the logic of the film industry to become eligible subject to incentivizing mechanisms applied when attracting foreign direct investments.

The research question addresses a narrow interest in the intra-industry impact of the incentive policies on the stakeholders operating in the film industry with innate limitations referred to as low audiovisual production capacity. This responds to the research gap found in the literature

review. More importantly, the aim is to promote economic research of the film industry, beyond the existing market research that focuses on consumption and market intelligence.

From the point of view of this research incentive models are perceived as a strategy to boost unused capacities and support economic development of the national film industry through productivity and market access spillovers. The research debates whether incentivizing economic policies toward attracting inward investments in the film industry improves the international positioning of the national film industry and enhances financing opportunities in the mid and long term. Indirectly, this paper examines the stance of low-capacity countries in the creative global production networks.

The propensity of film incentives in Europe could be explained through observations made in foreign direct investment (FDI) studies by the Organization for Economic Cooperation and Development (OECD), suggesting that competition is strongest between close neighbours with similar economic conditions, especially high-skill and high-tech export-oriented industries. In the same way, the increase of regional incentives within countries supports the observation that competition between sub-national governments is higher than with overseas locations (Charlton, 2003).

European legislation and strategic framework predominantly use the term audio-visual industry to encompass a broad base of screen sector, including TV and media. Thus, this paper will use film and audiovisual sector interchangeably, though the focus of the inquiry remains on the production of feature films. For explicit meanings and definitions used in this paper, see the list of terms and categories.

The underlying objective is to contribute to the research of creative industry economics and support the consolidation of the debate around this specific policy. This point of view becomes critically important in the looming age of recession and restrictive budgetary measures towards cultural or seemingly non-essential industries, especially in countries with already limiting capacities and structural film market deficiencies.

Lastly, the research timeframe concludes at the peak of the global audio-visual production output. The global pandemic and digital shift have inevitably changed the film industry business models, audience taste and power relations that will undoubtedly be reflected in the global production networks within which the subjects of this research operate.

2. Literature Review

The purpose of the literature review is to deepen the understanding of inward investments in the film industry, through a theoretical framework that underpins the need for industrial policy intervention for economic growth in creative industries. It examines the evolution of the incentive policy in both the film industry and broader FDI to draw similarities and guide hypothesis formulation. Likewise, the method of research aims to accommodate contextual differences. The core of this literature review emphasises the challenging position of the film industry between its economic performance and cultural significance, posing a further challenge to adequate evaluation of the incentive impact on the development of the national film industry.

Given the amount of debate both in favour and against incentivising the international film industry as a form of FDI, this research narrows the inquiry into intra-industry impact in Central and East European countries, deemed as having low audio-visual production capacity. The

chapter underpins the continuity between their successful performance in FDI and the success of film incentives.

This chapter starts with the breakdown of related concepts that led to the development of film incentive policies and their influence on the European legislative framework. It is followed by a critical analysis of the existing research performed in developed countries to support the comprehensive design of the following methodology chapter. The chapter concludes with evidence from the target countries to contextualise further analysis.

2.1. Understanding of the Incentive Policy Intervention in the European Film Industry

The deregulation of global markets promoted in the 80s, favoured the adoption of policies to attract all kinds of investment from multinational corporations. The film industry was no exception from trends in the manufacturing industries with an attempt to realize the “spatial fix” with different cultural and political implications, effectively fast-tracking the US film industry expansion in Europe (Harvey, 2001; Miller et al., 2001). In parallel to deregulation, processes of flexible specialization of Hollywood (Christopherson and Storper, 1986), the new international division of labour (Miller et al., 2001), and the introduction of co-production mechanisms in Europe took place. Despite a certain criticism, their introduction was simply a response to the financial risks inherent to film production and market organization (Morawetz et al., 2007). As a result, these combined industrial and cultural processes framed the market structure and conduct of the production patterns we know as dominant in the past decades.

To attune the film industry as a subject of economic research, it is important to discuss and acknowledge the characteristics of the broader creative industries. The seminal work of Caves

(2002) denotes characteristics of high market uncertainty, high sunken (fixed) costs with low marginal costs, multiplicative production function, industrial organisation, location centralisation and urban clustering. These inherent attributes are the cause for distinct policy approaches towards film production differentiating it from general economic activities. For some authors, market failure due to these systemic characteristics justifies policy intervention in the creative sector (Throsby, 2010).

The debate over incentive policy interventions in the film industry follows a similar trajectory as in FDI research. Blomstrom and Kokko (1997) warn against the risk of incentivizing foreign investors in manufacturing as being a discriminatory policy, as overbidding for international work might diminish local employment and market share. However, the main structural failure of the European film market remains in the inability to develop a commercially viable financing model (Katsova, 2014; Morawetz et al., 2007). Unlike in the US, the fragmented markets and language barriers pose a limit to achieving economies of scale with only a few European films managing to overcome it (Bakker, 2005). Further to this, the trade deficit with the US created a strong perception of the threat of Hollywood cultural hegemony over indigenous cultural production which called for an increase in policies such as quotas, and subsidies (Miller et al., 2001). However, the policy of protectionism was abandoned following the empirical success of Canada and the UK as production outsourcing destinations, and their growth in film services in the early 2000 (Morawetz et al., 2007).

Simultaneously, the perception of the film as “merit-good” evolved towards an export product and job creator. Hence, the view of the need for intervention shifts to support the knowledge exchange and contribution to the wider creative economy (Bakhshi et al., 2014). As the understanding of creative industries' economic significance rolled out, it aligned film

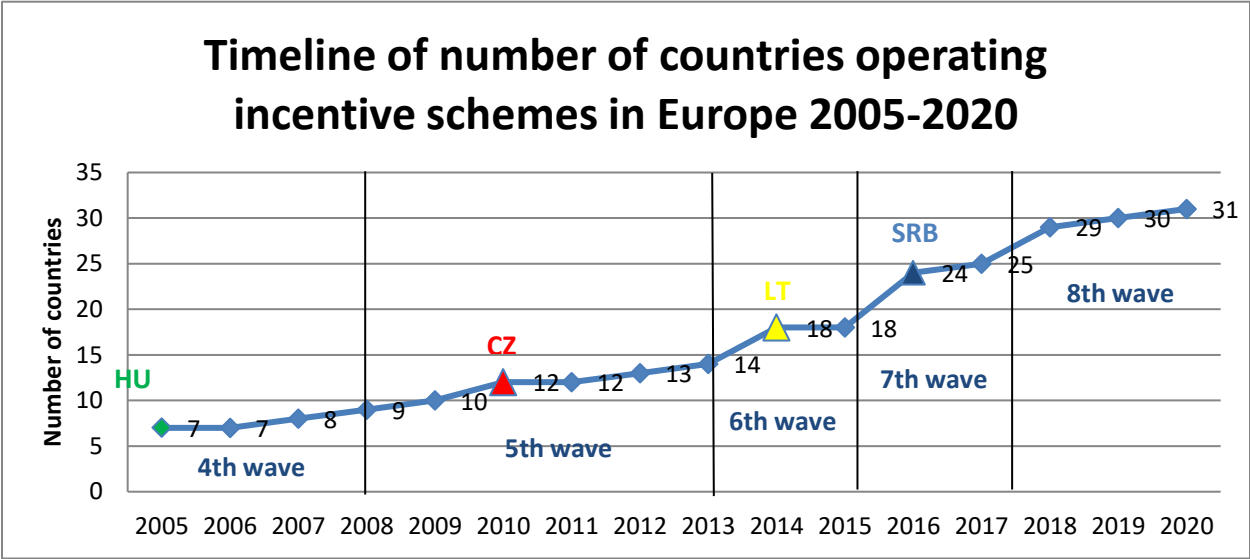
incentivizing with the umbrella of industrial policies aimed at attracting investments. Incentivizing instruments, in the forms of tax credits and cash rebates, became prevalent measures to compensate for the market insufficiency and keep industry resources fully employed. This partly explains why incentives are popular policy tool in the low production capacity countries.

Despite being perceived as an automatic, economic, purely figure-driven instrument, incentives made a significant impact on the Audiovisual Communication Act and the strategic framework presented in the Commission's Communication on promoting cultural and creative sectors for growth and jobs. The Audiovisual Media Services Directive (European Parliament Directive 2013/10/EU (2010), Official Journal of the European Union) which governs EU-wide coordination of national legislation on all audio-visual media, both traditional TV broadcasts and on-demand services, sets down common rules including funding principles for the Media strand of the Creative Europe programme. Strategy guides national policy design for member and accession countries in the light of the above-mentioned structural deficiencies, providing exceptions to the rules governing the state aid, incentive policies and overall competition laws. The international trade agreements, namely those between Europe and the US, use "cultural exception" to protect the legal standpoint of the audiovisual works in international trade (Herold, 2010). Internally, the EC's direct funding mechanisms are sensitized to reflect different market structures and provide opportunities for "low production capacity countries". Overall, the quantity of European instruments focus on subsidizing production, while less emphasis is provided to the distribution and exhibition (Katsova, 2014; Milla et al., 2016). This contributes to the understanding the incentive mechanism and its strategic impact on the sector as a whole.

The dynamics between the overarching directives and the empirical evidence push for further evolution of the incentive policies. Thus, strategies recognize both the sensitive nature of the film industry as a cultural production and the importance of finding new approaches to solving the inherent economic incapacities. More recent reports and briefings published by the European Commission and European Parliament note the conservative view of the long-term impact of incentivizing international films, but acknowledge the positive impact on the attractiveness of co-productions, especially minority co-productions (Katsova, 2014). Further to financial viability, it is noted that the growing number of countries operating incentives provides a guarantee for accessing private funding and banks, traditionally conservative towards the film industry (Blomström et al., 2003; Morawetz et al., 2007). In the research, we will combine these observations in response to the research question.

For host countries, the adoption of the incentives raised expectations from (mainly) US film and media conglomerates to increase employment, exports, and tax revenue, but more importantly to create the spillover effect of knowledge, technology and human capital. Simple country comparisons identified that countries with incentive schemes in place had larger film sectors, reflected in the percentage of the GDP (Olsberg and Barnes, 2014). The spread of incentives increased the competition among the incumbent countries and sparked the waves of new entrants (Morawetz, 2009). Graph 1 displays a historical growth in number of countries offering national incentive programmes. The total number of schemes available is even greater when regional offers are included. The progression indicates wave pattern of new countries entering the competitive incentive market. Following Morawetz's observations of the first decade of the 20th century, each wave is marked by a group of countries entering the incentives game. Hungary is marked as the third wave country, the Czech Republic spearheading the fifth (Morawetz, 2009),

while Lithuania and Serbia could be marked as the sixth and seventh wave, respectively. This period saw 10 countries introducing incentives in only 3 years between 2014 and 2017. This period also marks the start of the global demand for film services and location capacities (Olsberg and Barnes, 2014).



Graph 1 Number of countries with incentive programmes in Europe 2005-2020, Source: European Audiovisual Observatory, Olsberg Global Incentive Index, sample countries introducing incentives marked

2.2. Indirect implications of the Global Production Networks

To further understand the film services, it is important to briefly include the role of Global Production Networks (GPN) (Coe, 2013). The framework developed by economic geographers builds on the inherent complexity of the global value chain expansion, vertical disintegration and urban co-location of the film industry (Currid and Williams, 2010). The premise of the centre-periphery construct places US runaway productions in the central role of value creation in GPN, while value distribution and extraction exist in different extents throughout the periphery. The interdependence between production stages together with the expansion of digital technology has

enabled the growth of production networks without a loss in connectedness and maximised effects (Coe and Yeung, 2015). In response, countries and business clusters undertake different coupling strategies to position themselves and build competitiveness within GPN. These strategies are grouped as: (a) structural mode of coupling, focused on outsourcing with generic regional assets and external dependency; (b) functional mode of coupling, a balanced partnership in the global network with distinctive assets and regional autonomy and (c) indigenous, responsible for initiation and driving GPN (Coe and Yeung, 2015).

The main criticism of the GPN is the presumption of value creation only in the development stage, through intellectual property rights. This implies that creative clusters, such as Los Angeles or New York (Currid and Williams, 2010) are the centre of the network while satellite production locations are renounced from the value creation (Morawetz et al., 2007). Contrary to this statement, the fragmented multiplicative production function (Caves, 2002) in combination with vertical specialisation propelled by digital technology, enables value creation and innovation along the entire value chain. The examples could be found in computer graphics, imaging and camera technology, taking place continuously and elsewhere. However, often these innovations are pulled back into the centre from the periphery through mergers and acquisitions.

Within the scope of this research, the aim is to indirectly examine whether incentive policy has improved the position of national film industries in the GPN. The incentive policy is looked as tentative mechanisms that support the transition from structural (outsourcing) to functional mode, where balanced partnership in a global network is achieved with distinctive assets and regional autonomy (Coe, 2013; Coe and Yeung, 2015).

2.3. Underlying Assumptions from FDI Research and Implications on the Film Industry

Theoretical and empirical research in economic geography considers that an increase in the number of countries introducing the incentive leads to a zero-sum game (Oates, 2005). This view is largely modelled on game theory where all countries will be best if they keep a moderate level of incentives and avoid overbidding. However, the risk of overbidding is thought to be politically driven rather than economic reasoning (Biglaiser and Mezzetti, 1997). To diminish the negative impact EU policies aim to impose coordination through guidelines on state aid to prevent market inequalities.

Incentive policy implementation around Europe has demonstrated a significant positive role in attracting investment to undeveloped regions in manufacturing (Charlton, 2003). Following this evidence in manufacturing industries, the choice of target countries in this paper focuses on the lower production capacity countries in Europe. This way, the research draws upon similar views of the spill-over effect presented in the extensive research in manufacturing industries (Moran et al., 2005) and aims to apply those to the film industry bearing in mind distinct attributes of the creative industries (Caves, 2002).

The research on FDI spillover in the target countries indicates a few important conclusions that will be used in our hypothesis testing. Firstly, CEE countries displayed higher FDI to output ratios in the period 1997-2005 than any other region on the global level (Castejón and Wörz, 2006), mostly concentrated in the financial and business services, with Hungary and Czech Republic being the main recipient relative to their size, alongside Estonia (Bijsterbosch and Kolasa, 2010). Thus, our presumption that countries with high FDI are performing better in film incentives justifies analogy and further hypothesis framing.

In terms of spill-over effects, their very definition is elusive, and though authors find positive intra-industry effects through case studies, they are more reluctant to draw definite conclusions that could apply across industries and host economies based on macro-level statistical research (Blomstrom and Kokko, 1997; Caves, 1971). Specific evaluation of the impact of FDI concludes that the economy-wide effect of industry-specific FDI inflows depends on the extent of intra-industry versus inter-industry spill-overs (Castejón and Wörz, 2006). Further to the complexity of answering this question, Lipsey (2002) adds that no constant relationship can be confirmed between the extent of inward FDI flows in relation to GDP and economic growth. Finally, a recent large-scale meta-analysis found the overall effect of spillovers on exports can be statistically significant, but the size of the effect is economically negligible (Duan et al., 2019).

In the studies examining the economic impact of film incentives, in particular countries, a multiplier effect is often used to quantify the spill-over effect (Olsberg and Barnes, 2014). Its methodology is based on the input-output model that is not accessible in European statistical data. For the purpose of this research, the understanding of the spill-over effect will be limited to the recognition of the market access spill-overs and productivity spill-overs (Abisuga and Muchie, 2021; Blomström et al., 2003). The market access spill-overs result from the increased access to export markets for local companies, due to the entry of multinational companies.

Alternatively, market access will be interpreted as desirability for co-productions with the country. Productivity or competence spill-overs in local enterprises are measured through productivity per hour for the same group of countries and concluded that spill-overs vary by country, sector, nature of FDI and absorptive capacity of host country enterprise (Bijsterbosch and Kolasa, 2010). However, such in-depth research is a methodological challenge for the film industry, due to the lack of granular data.

2.4. Overview of the Empirical Studies in the Period 2008-2020

Research on economic incentives in the film industry is a niche field in academic research, characterised by heterogeneity in both methodological approaches and findings – from highly negative to conformingly positive. Proponents of incentives put forward the increase in employment and new job creation while opponents argue that benefits are short-lived, and doubt their cost-effectiveness (Maher, 2015). Disparate tone and findings reflect the agency of various stakeholders, being industry associations, independent think tanks or commercial consulting companies performing the studies, as commissioned by the government bodies. Therefore, strengthening academic research and methodology could provide an objective understanding of the incentive impact.

The available body of conducted research could be classified into two main categories – fiscal impact, most extensively done in the US and Canada, and a broader economic impact that was predominant in the analysis of national programmes around Europe. Research conducted by US scholars focuses on modelling fiscal effect and states the limited and short-lived effects of incentives (Bradbury, 2020; Button, 2021, 2019) which are revenue-negative for a state budget (Lester, 2013; Thom, 2018), but more cost-effective than other alternatives on a cost per job basis (Owens and Rennhoff, 2020). On the other hand, UK studies focus on the economic impact, using gross value added (GVA) created in the sector and the positive impact on employment, and overall inward investments that indirectly employ other non-creative sectors (Olsberg and Barnes, 2014).

Despite the growing interest and the number of countries adopting film incentivising policies the level of academic research in the area remains relatively limited (Messerlin and Parc, 2020; Thom, 2018). Interest in the subject among the researchers is sporadic, failing to generate

consistent research methodology. Due to the large number of externalities, the main challenge is to establish a model that would unequivocally provide an answer independent of different market structures.

This paper takes the combined challenges of the film industry and investment incentive policies by accepting the statement that positive spill-overs from foreign investments concentrate in middle-income developing countries, while the poorest developing countries have no evidence of such effects (Blomstrom et al., 1995). This opinion draws from extensive research in the manufacturing industry and further suggests that the potential spill-over benefits could be realised only if local firms have the ability and motivation to invest in absorbing foreign technologies and skills. Furthermore, consolidated research in manufacturing industries agrees that overly aggregated statistical methods provide evidence of overall impact, but do not explain how and where the actual impact happens (Moran et al., 2005). In their opinion, incentives should focus on activities that enhance linkages between foreign and local firms, support education, and training, and lead to an increase in research and development (Blomstrom et al., 1995).

2.5. Evidence from the target countries

The review of the research on FDI and target countries' attitudes towards incentive measures coincides with the introduction of incentives for the film industry. Hungary and the Czech Republic spearheaded the trend among Central and East European countries boosting mutual competition. The scattered research review will provide insight into the contextual background of each observed country.

2.5.1. Hungary and the Czech Republic

Staggering economic performance and rivalry between the two top-performing CEE countries contributed to the expansion of incentives throughout Europe, especially Central and East. Hungary introduced a 20% corporate tax shelter in 2004 (Motion Picture Act and Corporate Tax Act), followed by a revision in 2012 to accommodate the link between investors and producers, and a second revision in 2018 to increase the level of tax rebate to 30%.

On the other hand, the Czech Republic adopted a cash rebate model in 2012 (Act No. 496/2012 on Audio-visual Works and Support for Cinematography) with subsequent legislation renewal keeping the level of 20% constant. Data collected from administering bodies reported 505 million euros generated in Hungary and 360 million euros in the Czech Republic in 2019, marking the absolute high since the introduction of the incentive policy.

On the other hand, qualitative research conducted in both countries notes a form of segregation of film service workers, limited transfer of knowledge, and effective creation of the two-tier industry structure where different work practices, salaries and career pathways are practised (Sayfo, 2020; Szczepanik, 2016). Interestingly, the role of individual agency and social influence are noted as prominent, yet not enough researched as factors.

2.5.2. Lithuania and the Baltics

Studies in Lithuania positively evaluate the tax incentive impact in generating additional foreign investment in the country. Since the introduction of the 25% cash rebate in 2014 (Article 172 of the Law on Corporate Income Tax and the Law on Cinema), data showed significant growth of both production volume, number of films and turnover of the sector by one-third. Moreover, the implementation of the film incentives demonstrates the ability of the local films to increase box

office market share (KEA, 2018). This makes the Lithuanian audio-visual industry stand out in the Baltics, given its economic size and historically lower level of state support for film among its Baltic peers (KEA, 2018). The same study also identified economic impact outside the capital, advocating for decentralisation of industry and trickle-down effects in other sectors like tourism, construction and transport.

2.5.3. Serbia

Serbia introduced a cash rebate model in 2016 (Decree on Incentives to Investors to Produce Audio-visual Works in the Republic Of Serbia), subsequently adjusting the provisional level of support to 30% in 2019. Economic impact studies identified strong growth in employment as well as a significant trickledown effect in the tourism sector, led by the trifold increase in the export of services in the first couple of years of implementation (Kovačević et al., 2020). However, fiscal impact though significant was not budget neutral in the initial 5 years since introduction. The aim of the studies was to establish a methodology for continuous policy monitoring and assist further policymaking (Kovačević et al., 2022, 2020).

The choice of territories offers a stratified view within the group, with two top-performing countries and two later arrivals with a smaller overall industry performance. The examination of the hypothesis will try to identify common causalities that may be relevant for other low audio-visual production capacity countries.

2.6. Conclusion

Over the last three decades, there has been a gradual change on the European level that acknowledged the economic potential of the film industry and unlocked incentivising instruments to strengthen the economic viability of the sector. The review of the policy evaluations, reports and empirical research done in developed countries, such as the UK, France or Canada, supported the policy climate and wide adoption of incentives in low audio-visual production capacity countries.

Empirical research in FDI policies alongside scattered research on incentives impact in developed countries confirm the positive impact on the employment and sector turnover through increased exports. However, mechanisms within that produce a spill-over impact remain ambiguous. Likewise, studies that focus on the fiscal impact of film incentives remain conservative in creation of wider economy benefits beyond short-term.

These findings will be considered in answering the research question and respond to whether findings from the FDI incentives could be valid for the film incentives. Following the analogy, this study argues that without the systemic approach to the film industry from both economic and cultural policy views, the incentive effects are only short-term. The research will focus on minimising externalities by targeting countries that share similar characteristics defined as "low audio-visual production capacity", as well as a broader attitude towards FDI (Charlton, 2003). From the perspective of this research incentive models are considered as a strategy to boost unused capacities and support the economic development of the national film industry leading to potential spill-over effects.

The research gaps stem from the lack of theoretical framework specific to the film industry, which will be assisted with findings in FDI research. Secondly, contextual gap focuses on intra-industry impact versus a more popular inter-industry impact of the film incentives. Thirdly, the methodology gap in analysing only quantitative data that is not always comparable across the countries.

The challenges in designing methodology to answer the research gap are mainly due to the complexity of the factors within the sector. In response, three key dimensions are identified: production capacities, financial capacities and international positioning. Secondly, the availability of macro data and lack of primary data will be assisted through a quantitative mixed method. Thirdly, the observation period of 13 years will enable confidence in conclusions and comparison between relatively coherent sample of countries.

3. Research methodology

The research takes a positivist approach with elements of interpretivism, to accommodate the social context within which the film industry operates. In many policy briefings, this has been noted as one of the failings in purely quantitative analysis. The nature of the film industry is labelled as a "prototype industry" (Katsova, 2014), and therefore quantitative analysis is required to be enriched with qualitative insights for full comprehension.

The research takes policy evaluation and explanatory route through hypothesis testing, whether causal mechanisms exist in response to incentive policies' impact on the national film industry (Saunders, 2019). The impact is defined through the increase in the production infrastructure, access to finance, and spill-over in productivity and market access to improve international positioning.

3.1. Research design

Research design combines quantitative research that combines national business statistics, and industry performance indicators with the qualitative evaluation of industry stakeholders. In this way, methodology combines factual data and the stakeholders' perception to improve confidence in the interpretation of hypotheses statements.

To enable rigour concerning economic and social factors that shape the film industry, the research uses purposeful sampling (Saunders, 2019). Characteristics of the chosen group of countries include location offer (landlocked, level of urbanisation, similar architectural history), cinema history and development (national studio infrastructure, availability of training and film schools, national funding schemes), and general statistic metrics (population size, GDP growth, FDI ranking and ease of doing business). This initial filtering helped confirm the established

hypothesis that film incentives are a reflection of the country's overall positive attitude towards the FDI policy. Research methodologies that examined this were taken into consideration for the research design (Bijsterbosch and Kolasa, 2010; Castejón and Wörz, 2006; Lipsey, 2002; OECD, 2000).

Further to the above, the market structure places all four countries in the category of “low audiovisual production capacity”, within the typology of the European Audiovisual Media Services Directive. Due to the time limitations in obtaining data, the sample of countries included focuses on the Czech Republic, Hungary, Lithuania, and Serbia. The first two represent countries with high-performing film incentives while the latter two represent modest baseline. To a certain extent, the direct competition between the countries fits the game theory aspect of the incentives in the CEE countries.

The research design aims to provide a comprehensive model for understanding the incentive impact on the national film industry through economic performance. National-level data on the film sector is rarely used to measure the overall impact of film-incentivizing policies. Therefore, the underlying objective is to contribute to the research of the creative industries economics in CEE and support consolidation of the variables and methods measuring the impact of such policies across countries.

The research question of whether economic policies affect the development of the national film industry in the low-capacity countries in East and Central Europe was addressed through three hypotheses tested:

Hypothesis 1: Film incentives influence the growth of production capacities through an increase in the number of enterprises, employment and value added. The hypothesis is framed based on

the previous research findings with aim to be tested on the group level, among countries with similar characteristics.

Hypothesis 2: Film incentives influence the amount and availability of funding sources (private and public). This hypothesis builds on the statement that incentives reduce financial risk and attract more private investments, and thus, the growth in sources of funding complements the increase in production capacities (Morawetz, 2008; Perez, 2002).

Hypothesis 3: Incentives positively influence international positioning through productivity levels and access to the market as two key spill-over effects. This hypothesis aims to establish a link to the GPN framework, though spill-over effects are theoretically challenging to identify.

Based on the literature review and formulated hypotheses the pyramid model is developed where every hypothesis represents a layer in the industry pyramid, as illustrated in Figure 1. The model examines whether incentives increase the production infrastructure, in the pyramid base, and access to finance, in the second layer, and the production output through productivity and market access in the third level. However, the model hides a plateauing risk for the industry where the quantity of film services driven by incentive creates a strong base, but does not affect higher levels of the pyramid. In other words, financial capacities don't produce any spill-over on the creative value or international recognition of films produced. In qualitative research of the film industry in Hungary and the Czech Republic, it has been noted that outsourcing destinations create two-tier systems in which spill-over is prevented or limited due to silos between international and national producers (Stachowiak and Stryjakiewicz, 2018; Szczepanik, 2016).

Finally, each of the layers in the pyramid could be associated with a different strategy and position in GPN. Base level to structural mode based on outsourcing, second and third level with functional and indigenous, respectively.

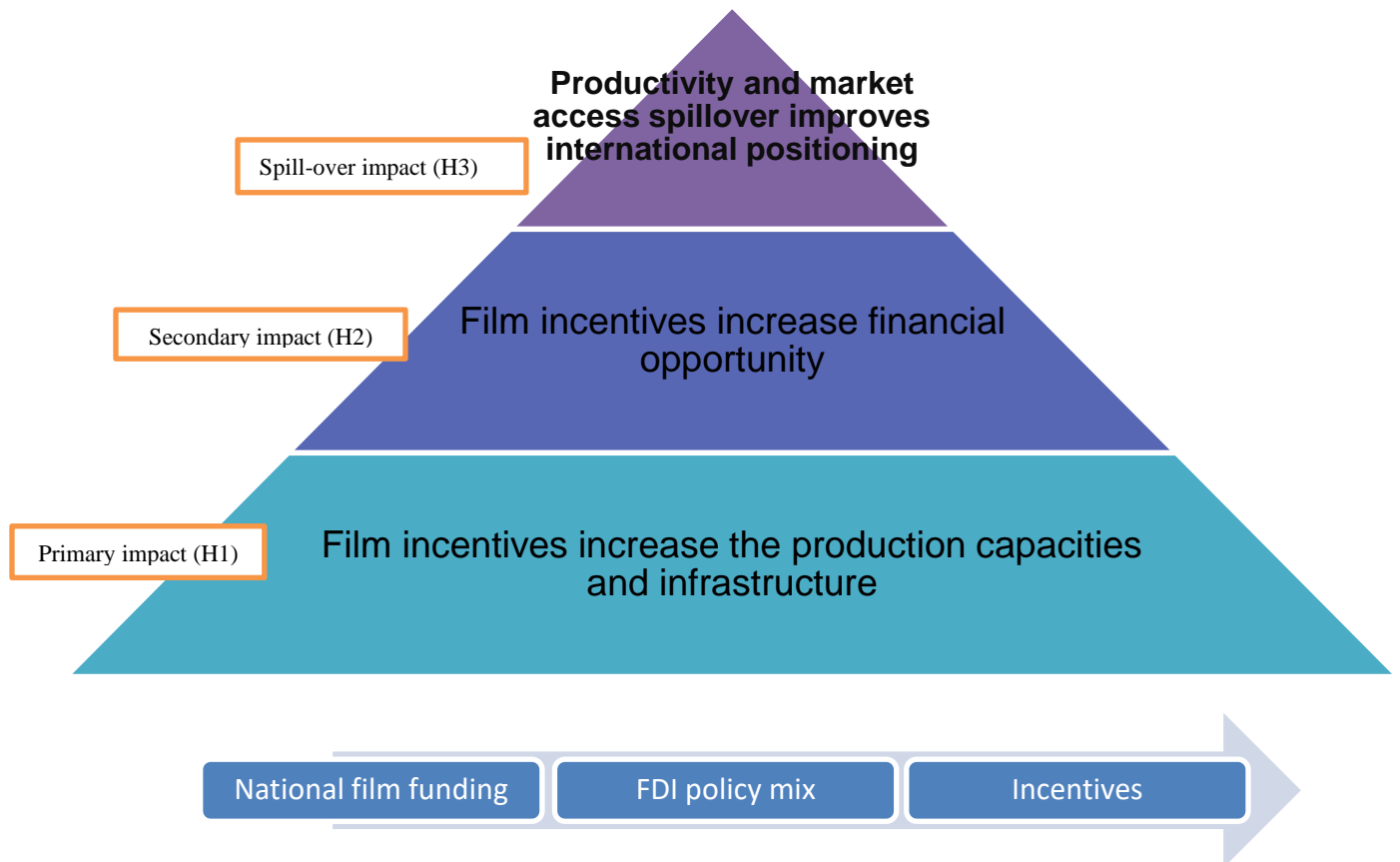


Figure 1 Proposed model of incentive impact on the national film industry

3.2. Data description

Data collection focuses on secondary data sourced through Eurostat, National statistics offices, respective National Film Funds, and the European Audiovisual Observatory reports to enable rich and comparable data sets for the target sample. Data on economic performances and non-film industry indicators were sourced from Eurostat and respective National Statistic Offices. When appropriate, the research process included data reported in trade publications or country

reports by consulting companies and external auditors to broaden the understanding of trends (Daubeuf et al., 2020; Olsberg and Barnes, 2014).

Relevant national bodies in charge of data collection and reporting of film industry performance assisted in the triangulation of data to secure quality and comparability. The final list of data and indicators that were collected and used to establish the model is the following:

Table 1 Hypothesis and variables tested in the quantitative analysis

HYPOTHESIS	INDEPENDENT VAR	DEPENDENT VAR
H1: <i>Film incentives influence the growth of production capacities through an increase in the number of enterprises, employment and value added</i>	Annual national film funding awarded (EUR) Annual incentives awarded (EUR)	Number of active enterprises in NACE rev 2 J59
		Number of foreign-controlled enterprises NACE rev 2 J59
		Persons employed in active enterprises in NACE rev 2 J59
		Value added at factor cost in NACE rev 2 J59 (EUR)
H2: <i>Film incentives influence the amount and availability of sources of funding</i>		Value added at factor cost by foreign-controlled companies in NACE rev 2 J59 (EUR)
		Number of minority co-productions
		Number of films produced
H3: <i>Incentives positively influence international positioning through productivity levels and access to the market</i>	Annual incentives awarded (EUR)	Average film budget (EUR)
		Labour Productivity at the hour worked (Index 2015=100), NACE rev 2 J, R

In the evaluation of the economic contribution of the sector to the economy, the value added at factor cost is used as a measure of the gross income from operating activities after adjusting for operating subsidies and indirect taxes (Statistical Office of the European Union, 2021). Using value added in this context has limitations both conceptually and methodologically (Cobbold, 2003). However, given the prominence in other studies, it will serve as one of the dependent variables.

Additionally, primary data is collected through a survey using a 5-point Likert scale to reflect the perception of the industry representatives towards elements of each hypothesis. This data gave additional confidence in the conclusions made on quantitative tests.

The challenge in sources of data was overcome by using a unified statistical methodology over a longer period. However, the level of data aggregation hindered precise causalities that were filled in with industry reports and the contribution of survey results to cut through the noise of data and offer objective modelling.

3.3. Data collection

Data was collected through online sources focusing on the period of 2008-2020. During the process, variables have been narrowed based on their quality and new sub-categories have been added to increase the understanding of variables behaviour.

The main challenge in the data collection was securing the unified time series for each country given the different timelines of incentive introduction. Furthermore, a challenge of institutional discontinuity and archiving data was encountered in Hungary, though it was the first country to introduce the incentives. Over the course of the observed period administration of both film

funding (selective) and incentives (automatic) changed between institutions resulting in different longitude of time series per country. As a result, the period of comparable variables was reduced. Therefore some observations were made on a country-by-country basis, while the H1 was tested for the entire period 2008-2020 where statistical data was most complete.

It should be also noted that data recording in each country is done on a cash basis. In other words, all film incentive payments are based on the cash-out principle irrespective of whether production happened in the same budget year. This time lag in data comparison might provide slight distortion in year-on-year comparison and causal effect on the sector output, but given the interest of the research is in the longer periods this should not significantly affect the overall conclusions.

Data collected through an online survey included 35 participants, out of 170 invited (response rate 20%). Invitations were specifically targeted to include senior members of production companies (63% responses), film commissions and film fund executives (17% responses), freelance professionals (11% responses), and representatives of adjacent industry organisations, unions and professional associations (9% responses). This stratification of participants served to acquire the quality of data and eliminate bias that might favour opinions of either public or private industry perspectives.

3.4. Data analysis

Data analysis intends to establish a long observation period, but due to different levels of data strings, the core observations look into the period 2008-2020. Where available, longer data series were obtained, as well as European averages for external trend spotting. However, the year 2020 was excluded in some instances due to the pandemic inactivity of the industry. Overall, the time

series established are improvement from the previous research that only examined short-term impact. Therefore, time trajectory enables more sustainable conclusions.

Data series relied mostly on correlation testing and few elements allowed regression models to be tested (Saunders, 2019). Descriptive statistics were used for general observation of growth rates and visual representation of data supported findings (Sekaran, 2003).

In the second phase, the primary data collection was conducted via an online survey with industry stakeholders representing both the public and private sectors. The quality of data did not allow regression analysis as internal reliability required additional improvement and reframing of the survey. Instead, descriptive statistics and central tendencies offered consistent results and alignment with quantitative analysis (Sekaran and Bougie, 2016).

3.5. Ethical considerations

The research methodology underwent Birkbeck ethical approval and was concluded to be low-risk, routine research. In alignment with that, the process of data collection, handling and processing was performed according to the academic standards required.

3.5.1 Limitations and threats to the reliability and validity of findings

Limitations of the research may lie within the precision level of the secondary statistical data collected, as they tend to be aggregated to the level of class 2 in the NACE system, while 4 classes would have been preferred. Limitations of relying on secondary data may be further propelled by survey participants' bias toward the positive research findings. Though the potential of such interest is low, participants may have an agenda regarding the research question.

A potential conflict of interest lies with access to data in Serbia and previous involvement in the research on economic impact. The risk of bias towards repeating the conclusions and framing the model to fit the previous research outcomes is avoided through the expansion of the methodology and hypothesis framing.

The research takes a quantitative approach to identify the causal relationship between the macroeconomic indicators as dependent variables and vertical policy measures as independent variables. However, certain idiosyncratic characteristics or path dependencies may play a factor which goes beyond the scope of this research. Such instances are the presence of large American expats in the Czech Republic in early 2000 (Szczepanik, 2016). Awareness of these factors helped introduce additional variables.

The risks in construct validity lie within conclusions made based on aggregated data, such as productivity index, and interpretations associated only with one variable, while unable to control multiple factors in which the film industry operates. Nevertheless, design methodology takes into account previous examinations of the topic to strengthen its validity.

The research aims to spotlight conclusions that could apply to other countries with similar assumptions and characteristics, namely those in CEE like Slovakia, Austria or Poland. Therefore, external validity to the group of countries with similar market size and industry structures could be possible and further examined. However, within the main research question new themes arise, such as the inflation effect of incentives, which could be helped by external validation on a larger number of countries.

4. Analysis and discussion of results

This mixed-method analysis provides evidence on the relationship between the incentives and observed variables through both descriptive and inferential statistics. The overall positive impact is noticeable, with some, but not significant, divergence in variables on the country level, but not significant to diminish the overall positive conclusions. Likewise, the industry's stakeholders remained unanimous across the target population of the positive impact on the national film industry.

The chapter starts with the presentation of results from the quantitative data, undertaken in testing each of the three hypotheses. It is followed by a survey results and concludes with a combined discussion, reflecting the assumptions from the model. Final observations are presented both on the group level and country by country.

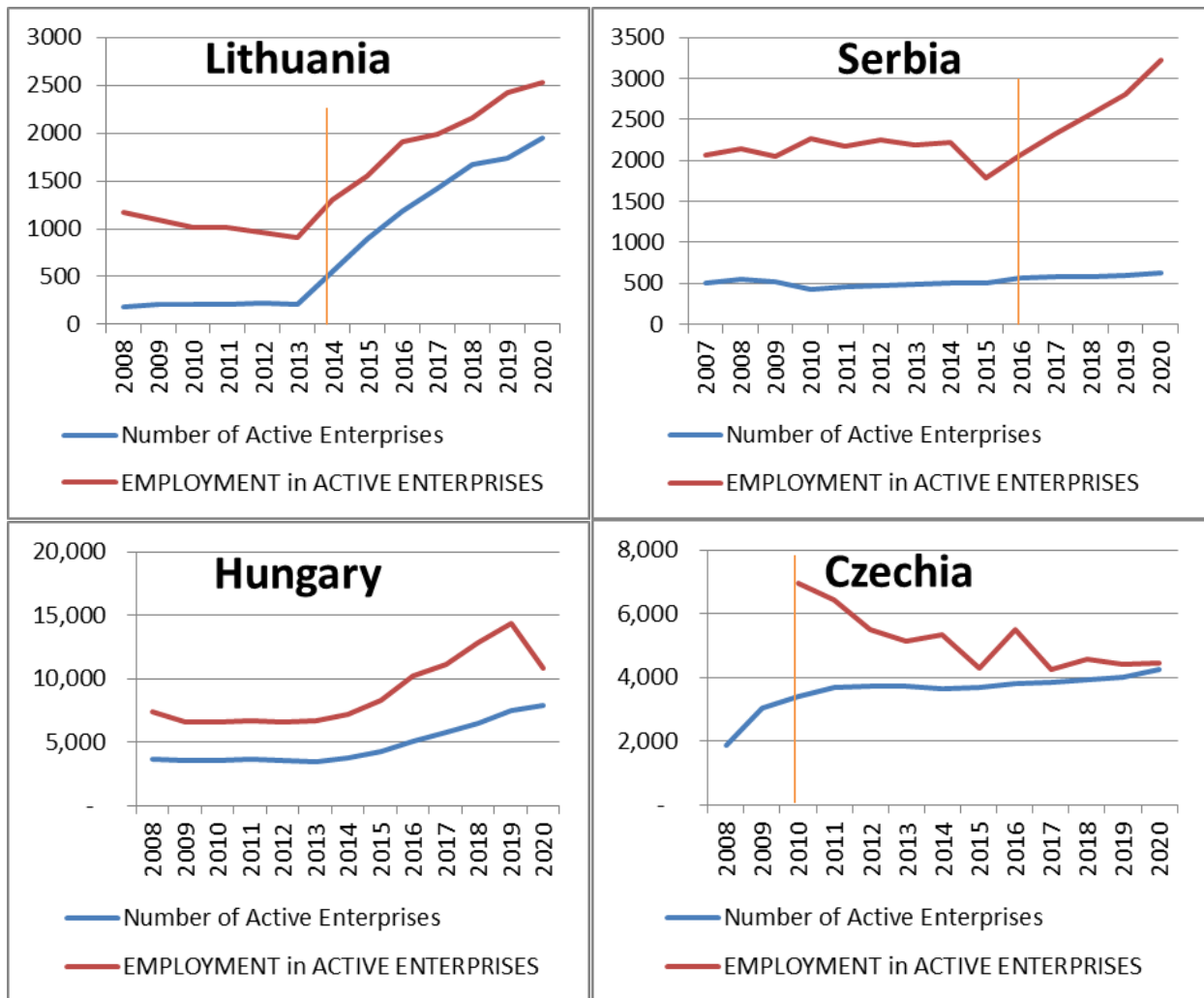
4.1. Data Analysis

The observation period for dependent and independent variables was from 2008 to 2020. In some instances, longer or shorter time series were available, and those will be noted in the output results. During this period, Hungary had been already operating the film incentive programme for some years, while the Czech Republic introduced it in 2010, with Lithuania and Serbia, started to implement their incentive programmes in 2014 and 2016, respectively. In this context, the impact of the Hungarian incentives could only be partially tracked, while others provided clear before and after trends. Furthermore, legislative changes during the implementation period, such as an increase in the percentage of incentives, were not factored in the analysis. Where available, European averages were used for comparison and trend spotting.

4.1.1. Direct impact on the production capacities

The first hypothesis tested the film incentives influence on the growth of production capacities through an increase in the number of companies, employment and value-added. Dependent variables, which constitute the hypothesis focus on the three key parameters of the structural business statistics: number of active companies, employment in the active companies and value-added at the factor cost, collected on the level 2 of NACE [J59] Motion picture, video and television programme production, sound recording and music publishing activities.

Group chart 1 shows positive growth in Lithuania and Serbia and a steady decline, interrupted by spikes in two years, in the Czech Republic. On the other hand, Hungary experienced growth in employment and companies in the seventh year of the observed period and the eleventh since the introduction of the incentives, thus preventing direct association with the existence of an incentive scheme. The average company size remained at a similar level, or significantly decreased in Lithuania, demonstrating fragmentation of the sector.



Group chart 1 – Country structural business statistics in the period 2008-2020, Source Eurostat, vertical line indicates year of incentive policy introduction

Further to this, Table 1 displays a comparison of average annual growth rates in the period before and after the implementation of the incentives, except for Hungary, due to the unavailability of data prior to 2004. In Lithuania and Serbia, the introduction of incentives influenced strong positive growth in all three dependent variables, on occasion reversing negative growth rates. However, in the Czech Republic growth rates decreased after the implementation, but it should be noted that the period before incentives included only 2 years of observation, thus, results could not be fully comparable.

Table 2- Growth rates of number of active companies, employment and value-added in the period 2008-2020, Analysis based on data from Eurostat

SBS indicator	HUNGARY	CZECH REPUBLIC		LITHUANIA		SERBIA	
	2008- 2020	Before 2010	After 2010	Before 2014	After 2014	Before 2016	After 2016
Number of active companies	6.49%	65.12%	2.26%	2.58%	23.57%	-1.09%	2.43%
Employment in active companies	3.25%	-1.46%	- 4.32%	-4.84%	11.72%	-1.91%	11.83%
Added value at the factor cost (mil EUR) 2010-2019	-9.24%	4.47%		13.10%	24.39%	4.48%	27.62%

Despite the previous table showing a strong growth rate of value added for Serbia and Lithuania, the nature of value added as a growth indicator requires additional examination in the following segment.

4.1.2. Value added (VA)

Chart 2 presents a visual trajectory of value added at factor cost over the observed period. All countries exhibited growth starting 2015-2016. It should be noted that this period marks the start of a strong global growth in the international production volume mainly associated with the entrance of streaming services and TV series from the US, as well as the rise in Chinese and Indian markets (Milla et al., 2016; Olsberg SPI, 2019). This adds to the existing methodological limitation of value added as a growth indicator. As a result, the incentive impact could not be isolated from the other factors that influence industry performance. This means that the strong

growth displayed by Lithuania and Serbia, which introduced the incentives around this period, is a combined result of the incentives and rising demand for production capacities and film services.

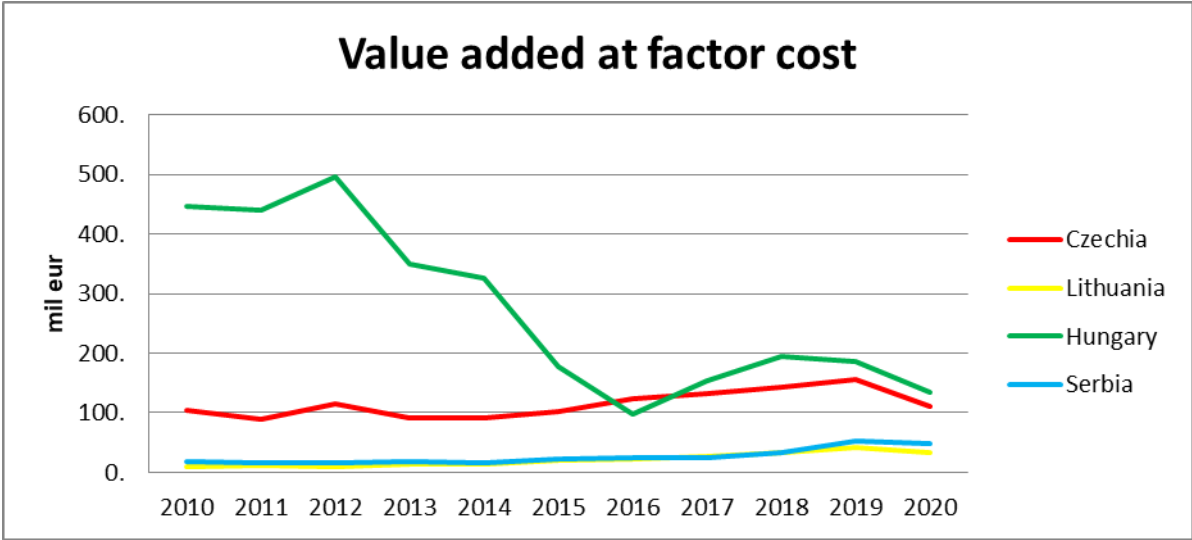


Chart 2 Value added at a factor cost (in million euros) for the period 2010-2020, Data source: Eurostat

To better understand the value-added trend in the context of FDI policies, the analysis looked into the participation of foreign-controlled companies in the VA, shown in Chart 2a below. It reveals that Hungarian value added was heavily comprised of foreign-controlled companies, and the decline in their participation coincides with the decline in the overall value added. Meanwhile, Lithuania and the Czech Republic had a steady level of value-added associated with foreign-controlled companies, and spikes exhibited in Lithuania were irrelevant to the existence of the incentive scheme. Data for Serbia was not available; hence the conclusion for Serbia could not be made.

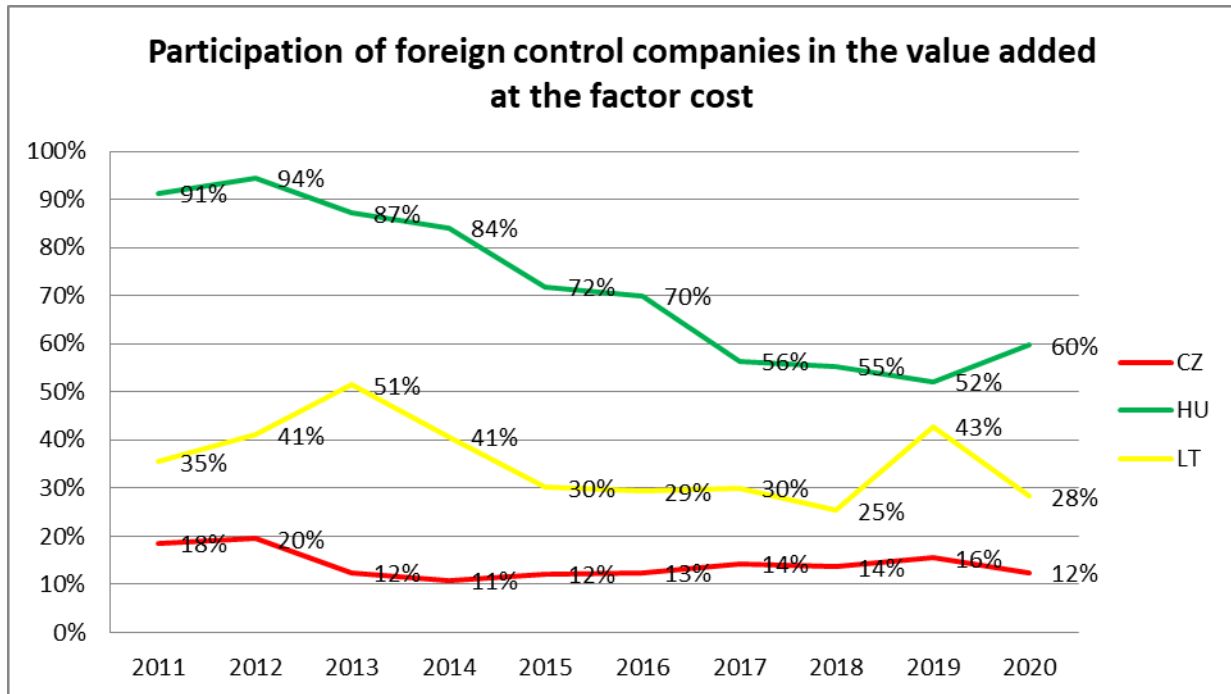
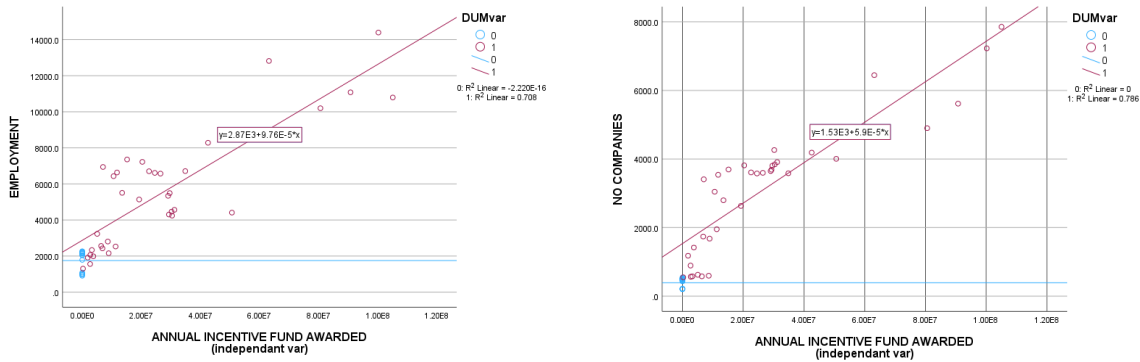


Chart 2a Participation of foreign-controlled companies in the value-added at a factor cost (in million euros) for 2010-2020, Data source: Eurostat, data for Serbia was not available

Partial correlation is applied on total value added and value added created by foreign-controlled companies, controlling for incentive awarded. There is a strong positive correlation between, controlled for incentive ($r=.965$, $n=33$, $p< .001$). An inspection of the zero-order correlation ($r=.958$) suggests that controlling for incentives had very little effect on the strength of the relationship between the two variables. Simultaneously, correlation between the incentives awarded and the number of foreign-controlled companies was moderate ($r= .536$, $N=36$, $p< .001$). The two tests suggest a potential indirect impact of the incentives in the value added creation. In conclusion, a strong positive correlation, between the total value added in the sector and the value added created by foreign-controlled companies, is independent of the direct presence of the incentives.

Finally, to conclude the first hypothesis, film incentives' impact on the structural business statistics was explored through scatter plots, with blue dots indicating level of employment and

number of active enterprises before the introduction of incentives, while pink dots indicate period after the introduction of incentives. The positive level of association is evident.



Graph 2 and 2a - Fitted line showing association of employment and number of companies with incentives distributed; blue for periods before incentives, pink after incentives introduction, Data Source: Eurostat, National Film Centers

To compare the impact of film incentives and film funding on the structural business statistics, partial correlation was used, controlling for each independent variable in turn. Results shown in Figure 2 indicate following conclusion: incentives have a significant positive correlation with the number of active enterprises and employment, while the level of significance suggests there is no impact on the value added ($p < 0.250$). This excludes value added as an indicator that could be used to measure incentives' impact on the sector.

On the other hand, national film funding correlation with SBS, when controlled for incentives rejects statistical correlation, due to the high p-values. The conclusion is that national film funding does not influence structural business statistics.

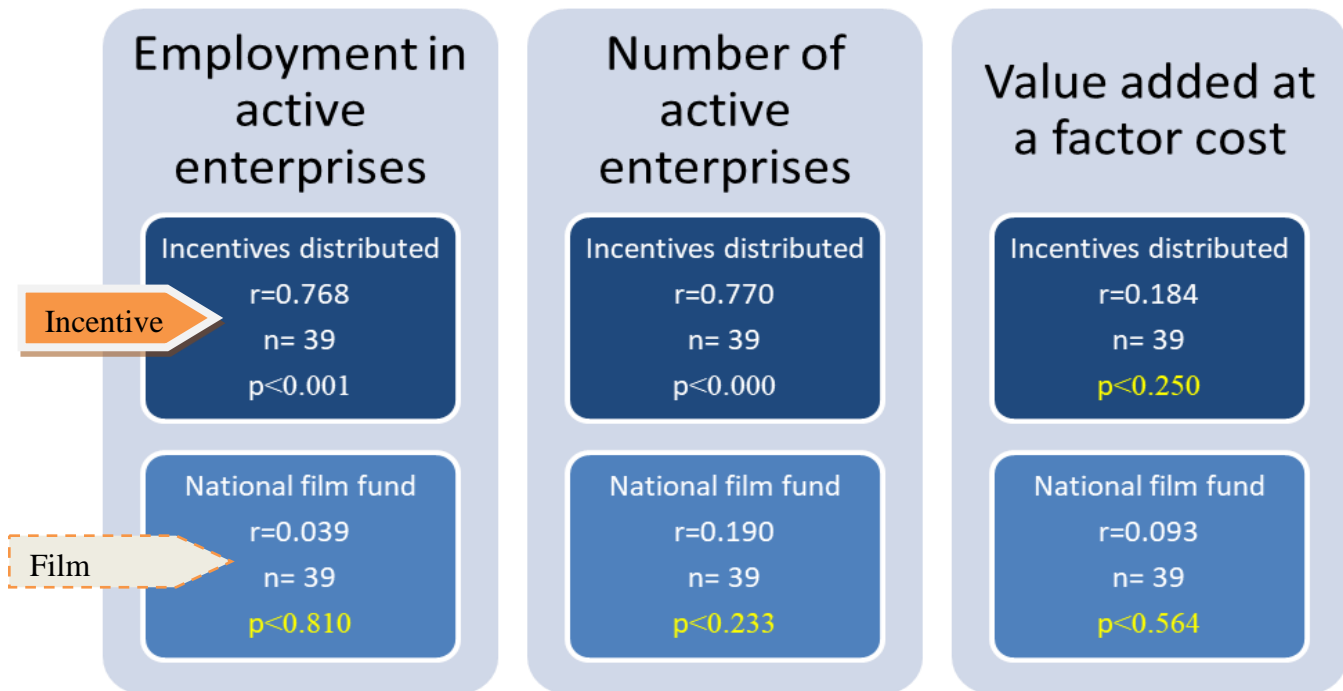


Figure 2 – Incentives and national film fund impact on structural business statistics

In addition, the main hypothesis was confirmed through correlation for each country. Results in Table 3 enumerate the strong positive correlation between number of companies, employment and even value added with the incentives. Unfortunately, influence of national film funding on the country level could not have been controlled, due to reduced sample.

To isolate the negative direction of the Czech Republic, partial correlation was performed on employment and incentives, controlling for the Czech Republic. There is a strong positive correlation between employment and incentives ($r=.873$, $n=48$, $p<.001$). An inspection of the zero-order correlation ($r=.875$) suggests that controlling for the Czech Republic had very little effect on the strength of the relationship on the group level.

Table 3 Partial correlation between annual incentives and structural business statistics per country, controlling for national film fund; calculations based on Eurostat data

ANNUAL INCENTIVES AWARDED		NO COMPANIES	EMPLOYMENT	Value added at factor cost in MIL EUR
HUNGARY	Pearson Correlation	.911**	.870**	-.859**
	Sig. (2-tailed)	<.001	<.001	<.001
	N	13	13	11
CZECH REPUBLIC	Pearson Correlation	.708*	-.794**	.691*
	Sig. (2-tailed)	0.015	0.004	0.019
	N	11	11	11
SERBIA	Pearson Correlation	.792**	.761**	.796**
	Sig. (2-tailed)	0.001	0.001	0.001
	N	14	15	14
LITHUANIA	Pearson Correlation	.926**	.909**	.886**
	Sig. (2-tailed)	0.000	0.000	0.000
	N	12	12	11
** . Correlation is significant at the 0.01 level (2-tailed).				
* . Correlation is significant at the 0.05 level (2-tailed).				

To conclude, the direct positive impact of the incentives policy on the growth of production capacities, measured through the number of enterprises and employment, is strong in countries with low audiovisual capacity. Country specifics may differ from the overall observations, but have no impact on the group result. However, the impact on value added suggests that incentive measures are not correlated with sector value creation.

4.1.3. Examining financial opportunities

The second hypothesis examines whether film incentives influence the amount and availability of financial sources in the sector. The first step included the comparison of the average annual growth rates in a distributed amount of incentives (automatic funding) and national film funding (selective funding), as shown in Table 3. All four countries displayed higher growth rates in

favour of the incentives. The Czech Republic maintained a similar level of average growth rate between both funding sources, around 15%, while Lithuania had the sharpest average annual growth rate of 88.5%.

Table 4 Comparative analysis of funding growth rates, Sources: Czech Film Fund, Hungarian Film Institute, Lithuanian Film Center, Film Center Serbia

Country	The growth rate of incentives	The growth rate of the national film fund
Czech Republic	15.71%	14.99%
Hungary	32.62%	26.28%
Lithuania	88.51%	11.43%
Serbia	16.62%	10.12%

Further, the Pearson correlation coefficient was computed to assess the relationship between the two financing mechanisms. It identified a strong positive correlation between the two independent variables ($r = .860$, $N = 44$) with a significance level, $p < .001$. In conclusion, growth in incentive funding is strongly associated with national film funding.

The second examination of the hypothesis looked into the relation between the size of the average film budget and funding sources in three countries, with data for Serbia not being available. The strong positive correlation, with both annual funding ($r = 0.87$) and incentive funding ($r = 0.7$), confirms that the overall cost of production increases as funding increases. However, time series were limited to the period after the introduction of incentives, thus, the impact on the average cost of production before the introduction of the incentives could not have been established.

As inflation of production costs caused by the incentives was flagged with strong agreement in the survey, a simple linear regression was used to test if the increase in incentives significantly predicts an increase in the average film budget. The fitted regression model was:

Eq.(4.1.3) $Average\ film\ budget = 763,648.9 + 0.011x(Annual\ incentive\ budget)$

The regression model implies that each increase of 1 million EUR in the annual incentive budget increases the average film budget by 11,000 EUR. The overall regression was statistically significant and explains 48% of the change in the average budget by the incentives ($R^2 = .486$, $F(18) = 17.027$, $p < .001$).

Table 5 Regression analysis of the annual incentive budget and average film budget

Coefficients ^a								
Model	R Squared	ANOVA		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		F	Sig.	B	Std. Error	Beta		
(Constant)	.486	17.027	<.001	763648.858	134739.027		5.668	<.001
Annual incentive fund awarded (EUR)				.011	.003	.697	4.126	<.001

a. Dependent Variable: AVERAGE SIZE OF FILM BUDGET

When the multiple regression model was tested with both independent variables, incentive fund and national film fund, the impact on the average film budget size showed the national film fund to be a statistically significant predictor, with a positive standardized coefficient (Beta = .854), indicating a strong positive relationship.

Unstandardized coefficient B indicates that for each million in annual funding, the average film budget increases by 64,000 euros.

Table 4a – Multiple regression analysis

Coefficients								
Model	R Squared	ANOVA		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		F	Sig.	B	Std. Error	Beta		
(Constant)	.750	25.452	<.001	419427.351	126436.056		3.317	.004
ANNUAL INCENTIVES AWARDED (EUR)				.000	.003	.015	.073	.943
ANNUAL FILM FUNDING (EUR)				.064	.015	.854	4.230	<.001

a. Dependent Variable: AVERAGE FILM BUDGET

To summarise, despite the contradicting outputs the results are not necessarily conflicting. Instead, they suggest that the national film fund is a strong predictor of the average film budget, while incentives do not have a significant prediction impact. However, the model is built on a sample of only 20 observations and could be a subject of future research.

4.1.4. Analysis of the spill-over effect on productivity

The third hypothesis tests whether incentives positively influence productivity levels and access to the market, as two spill-over effects that improve the international positioning of the national film industry. In examining the productivity spill-over, the indicator used is real labour productivity per hour worked (Bijsterbosch and Kolasa, 2010). Unfortunately, the level of data available aggregated level NACE J, Information and Communication, includes a broader TV and media sector, publishing and music industry alongside the dominant ICT sector. Thus, the productivity in class R9000 Arts and Entertainment was used as a complementary indicator, with the exception of Serbia as data were not available. Data was indexed with 2015 as the base year.

Charts 3 and 3a demonstrate growth on the level of the European Union in the observed period for class NACE rev.2 J Information and Communication, while stagnation and a slight decrease in class R - Arts entertainment and recreation. All countries exhibited growth in productivity above the levels of the European Union average in class R, while in class J results are more ambiguous. It is unsafe to assume any incentive impact on productivity levels given the accumulated level of data.

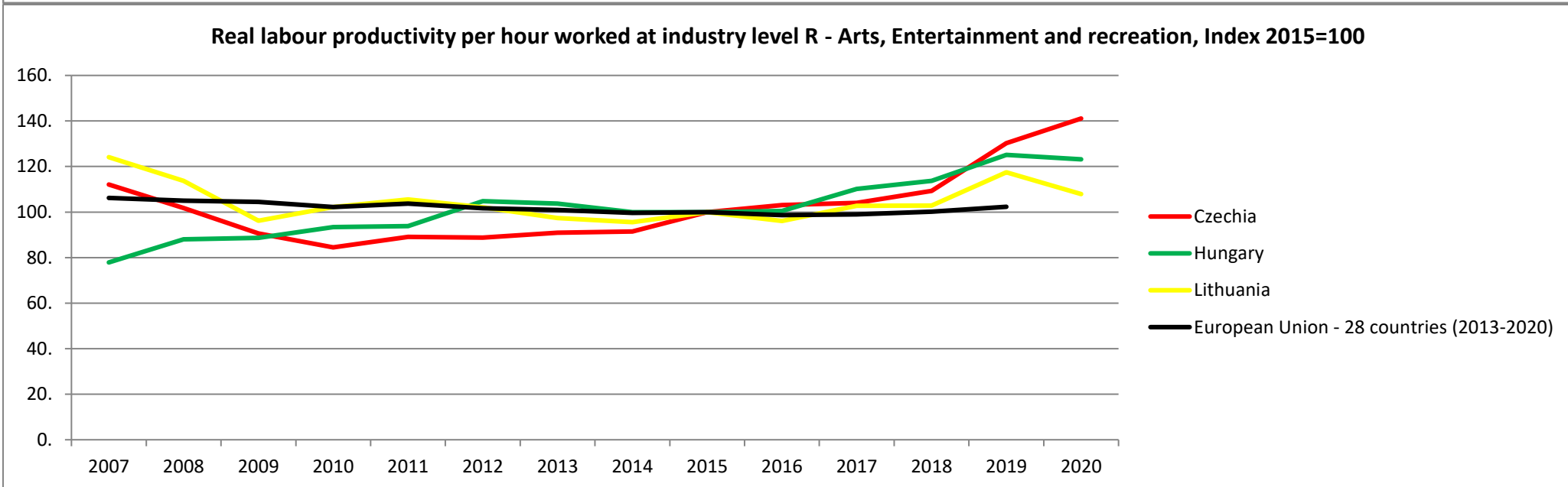
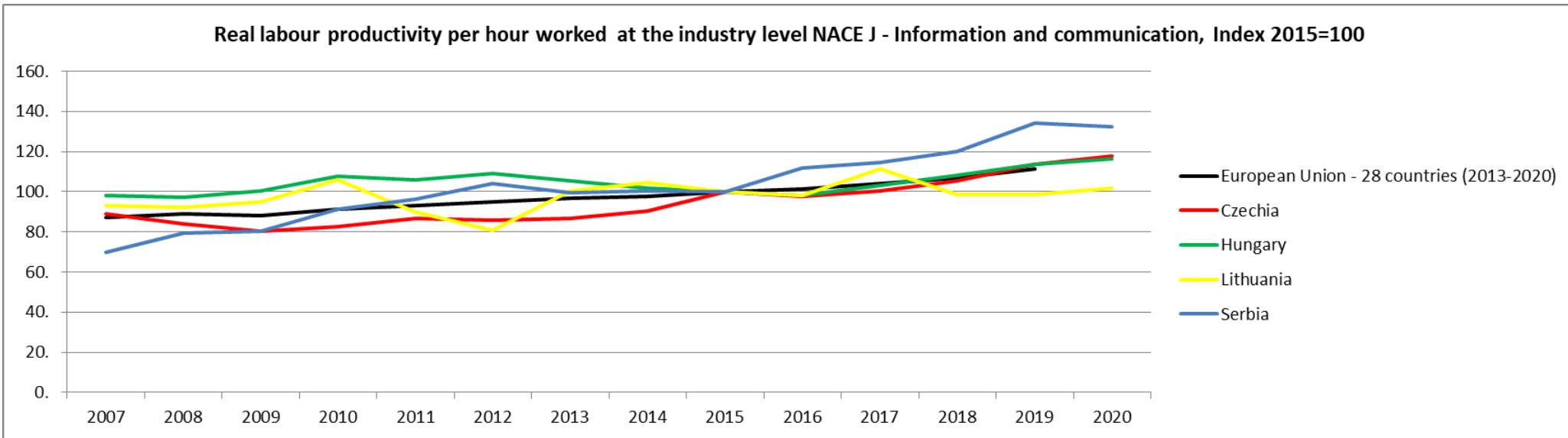


Chart 3 and 3a - Productivity levels per hours worked NACE rev.2 J59 and R90, 2007-2020, Index 2015=100, Data Source: Eurostat

4.1.5. Analysis of the spill-over effect on market access

Due to the unavailable data regarding export levels and exporting countries in film services, the analysis of market access had to be reduced to the examination of the co-production opportunities, as suggested in European reports.

The correlation tested opportunities for minority co-productions and looked into the relation with the number of films produced annually. However, the Pearson test could not establish statistical significance between these variables ($p = .489$, $p = .610$), as marked in Table 5 below. The significance level could not establish a relationship with national film funding, which contradicts the logic. The underlying cause of this might be the incomparable datasets, as funds awarded do not result in linear number of films completed on a year by year basis, due to the long and varied period for a film completion.

Table 5 Correlation between incentives and co-production opportunities

Correlations		NUMBER OF MINORITY CO-PRODUCTIONS	NO OF FILMS PRODUCED PER YEAR
ANNUAL FILM FUNDING (EUR)	Pearson Correlation	.001	.130
	Sig. (2-tailed)	.995	.400
	N	37	44
ANNUAL INCENTIVE FUND (EUR)	Pearson Correlation	-.117	.079
	Sig. (2-tailed)	.489	.610
	N	37	44

****.** Correlation is significant at the 0.01 level (2-tailed).

Further analysis will rely on data collected through industry stakeholders in an online survey.

4.2. Survey results

Data collected through the survey could not suffice Chronbach's Alpha reliability test. Therefore, the analysis was limited to the descriptive statistics. Full data analysis is available in the Appendices VI.

The first group of questions examined the attitude towards incentives and their influence on the industry capacities, such as industry infrastructure, industry organization, working standards, talent discovery and international image of the country. Central tendencies display values close to 4 (Mean=3.41, Mode=3.67, SD= .617), suggesting a strong level of agreement with a positive impact on all accounts and disagreement with the statement that incentives are discriminatory measures towards the national film industry.

The second group of questions referred to financial impact through impact on the amount of available film funding, new private or public sources of funding, costs of production, and access to additional funding. Mean and median on the group level (Mean=3.29, Mode=2.60, SD= .907) suggest a neutral overall perception of financial impact, with mostly strong agreement regarding the increase of production costs.

The final group of questions reflected individual company position in the market and co-production attractiveness. Mode and median values show moderate agreement with improved position (Mean=2.90, Mode=3.20, SD= .873). Within this group, control questions were used to test the potential discriminatory effect of the incentives as a measure which only benefits film services and large production companies. However, responses to these questions show a high level of disagreement, supporting the overall positive perception of the spill-over impact on market access.

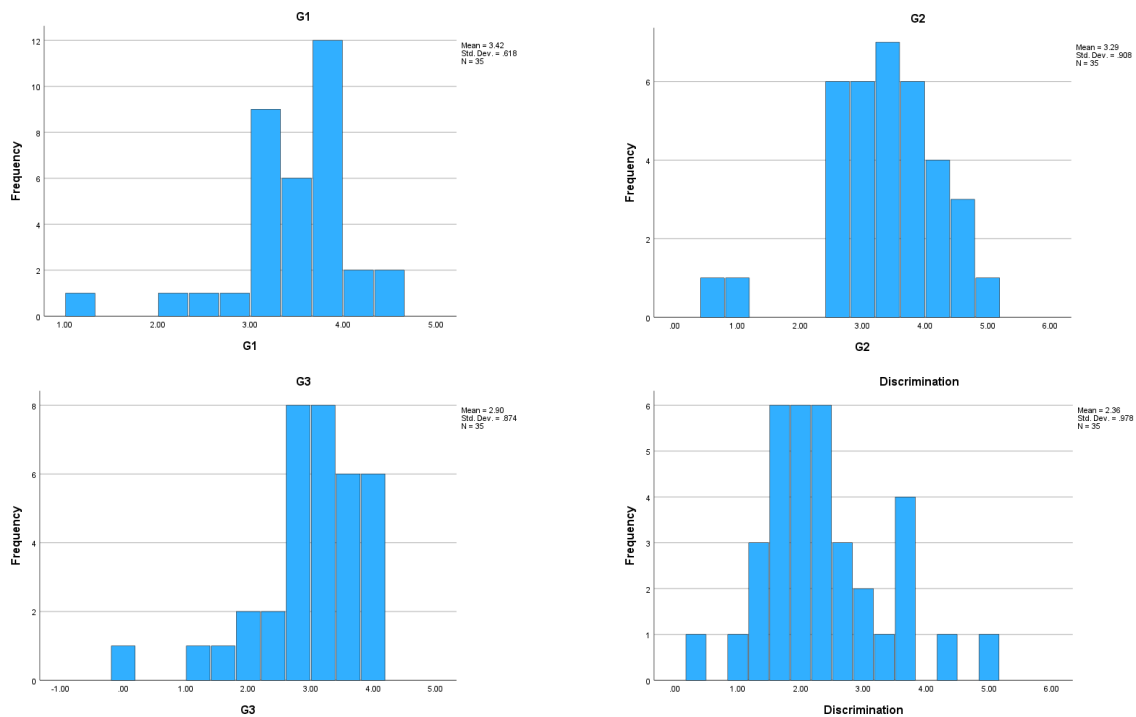


Chart 4 - Survey results grouped per thematic questions G1 - Impact on capacities and infrastructure, G2 - Impact on access to finance G3 - Impact on company market position, Discrimination towards incumbent companies

4.3. Discussion

Findings from the quantitative analysis partially confirm the hypothesis that there is an overall positive impact of incentive policy on the national film industry development. Nevertheless, findings do not suffice to establish a model of relations between all variables due to the robustness of data level and complexity of factors. Instead, the conclusions rely on the contextual and qualitative data from survey analysis. Overall, the abundance of variables and causalities tested throughout the analysis aligns with the literature review and draws recommendations for further refinement of research directions examining the film industry underlying mechanisms.

4.3.1 Summary of main findings

The analysis confirmed that film incentives influence the growth of production capacities, measured through employment and the number of companies. However, the theoretical inadequacy of value added, as a growth indicator, proved to discard the direct correlation between the incentives and value added. Instead, findings suggest that the presence of incentives moderately correlates with the presence of foreign-controlled companies, who in return have significant contributions to the levels of value added. This aligns with findings in FDI research and incentive's indirect role in value creation through the spill-over effect.

Most complete findings are relating to the increase in financial accessibility. The strong positive correlation between incentive funding and national film funding suggests that they constitute two independent pillars of national film financing. Analysis confirms that film incentives are moderately associated with the rise of financial capital available in the industry. Moreover, there is a moderate positive correlation with the number of local companies having access to

incentives, which strengthens the argument for the nondiscriminatory role of incentives as an economic support mechanism aimed only at international investments.

Further to the examination of the improvement of financial resources, regional offices in the Czech Republic started offering additional (selective) funding in 2017 and 2018. The statements from the film funding institutions in all countries provide insight into further strengthening of the link with private banks open to providing loans, gap financing or other financial assistance to film productions, using film incentives as a guarantee.

Analysis of the spill-over effects remained vague, as supportive data on productivity was only found in survey responses confirming the positive impact on work standards and industry organisation. Similarly, the increased attractiveness of minority co-productions suggests an improvement in market access. Notably, the conducted data analysis could not establish a statistically significant correlation between these variables.

The main limitations and problems associated with the performed analysis are the quality of secondary data across the countries, uneven time series available and high level of data aggregation. Sector indicators used on level 2 of NACE class J could have been improved by level 4 which official statistics do not capture or provide as publicly available. The most challenging element remains the evaluation of spill-over effects, which was already identified in the literature review. Some literature suggests the use of average salaries as an alternative measure of productivity. However, due to the inflation effect, it would not serve the objective.

In terms of incentive design, all countries have fairly similar requirements that focus on economic performance. Thus, the heterogeneity of impact depends solely on its absorption

capacities, though these heterogeneities did not affect the statistical testing on the group level. The following segment addresses country specifics.

4.3.2. Discussion of findings per country

HUNGARY

Hungary displays a high level of foreign-controlled value added (namely the US) in the total sector performance, suggesting that tax incentives did play an FDI role, not just attracting mobile productions and export of services, but a more substantial presence of foreign production companies that contributed to the sector growth in economic terms. However, the lagging investment in national film funds and domestic film production contributed to the creation of a two-tier system where film services and film productions did not produce enough sustainability for domestic sector growth and overall vulnerability to external changes. With the global rise in production volume in 2015, the country entered a new cycle of growth with patterns more similar to the rest of the observed countries. However, the risk of plateauing remains for the abovementioned reasons and structural coupling strategy dominates over functional integration in the GPN.

THE CZECH REPUBLIC

The Czech film sector showed a stable but moderate impact of the film incentives on the structural business statistics, with the exception of the official employment decline. However, spill-over effects and access to finance were significantly present in the Czech cinema sector with an increase in the number of both films produced and participation in minority co-productions. It could be said that the cumulative policy attitude, which goes beyond the scope of

this research, contributed to the improvement of the strategic position of the Czech Republic in the GPN, previously identified as a reemerging older firm region (Coe, 2013) that has achieved successful functional integration in the GPN.

LITHUANIA

Lithuania presents the strongest positive impact of incentives on all dependent variables tested through hypotheses. Findings confirm the theoretical assumption that strong incentive impact is most visible in smaller economies. However, survey respondents expressed strong agreement with the inflator effect of the incentives, thus, a closer monitoring of the industry performance could prevent loss in price competitiveness in future policy design. From the perspective of GPN, Lithuanian performance unlocked new centres in the global production networks.

SERBIA

Serbia presents a modest positive direct impact of having the incentives. Despite the industry size being third among the target group, and strong association with dependent variables, the overall impact was modest in comparison to Lithuania. This suggests that Serbia did not maximise the opportunities of having the incentives. Likewise, improvement in positioning in GPN is limited with the risk of plateauing and fragility to external factors most notable among the observed countries.

Final note, none of the incentive policies in the observed countries pose requirements for additional elements such as training, tourism offset or similar. This facilitated homogenous conclusions on the group level and simplified analysis. However, it also signals that there is no motivation for incoming productions to invest efforts in producing the spill-over effects. In the

long term, this could weaken the policy's effectiveness on the development of the national film industry.

4.3.3. Additional results from the research

The results on the correlation between the incentives and structural business statistics contribute to the theoretical problem with the low statistical significance of the economic impact on the value added through incentivizing specific industry sectors. However, the examination aimed to go within the sector impact and understand the causalities that are not statistically tracked. These insights will be addressed in recommendations for further research.

Whenever possible, partial correlation controlling for the type of incentive was performed. No significant difference was found between the two models implemented, cash rebate or tax credit. Therefore, analysis allows the drafting of coherent conclusions independent of whether countries implement cash rebates or tax credits.

Shorter observation periods display a high positive impact while longer periods of implementation produce more ambiguous conclusions. This suggests further examination of the long-run implications of incentive policies would benefit the comprehensive understanding, especially within the context of external impact from the GPN and global industry cycles.

5. Conclusions

The examination in this paper enforces economic rationale in the analysis of the film industry and the incentive policy impact within the context of FDI research and economic development. In this way, the research aims to align the specifics of the film industry to the wider economy. This approach is gaining importance with policy changes addressing the creative industries' prominence on the European level. With nearly every European country offering incentives, the underlying mechanisms of economic development within the film industry gain further importance. The goal of this research was to contribute to the analysis of those complexities through the incentive perspective.

5.1. Key points from the literature review

FDI research draws on implications of the game theory, where an increase in the number of countries entering the incentives diminishes positive effects for incumbent host countries. Simultaneously, the risks of overbidding might discriminate against the local industry players.

Within the intra-sector impact, studies indicated a variety of spill-over effects, and this research took a special interest in productivity and market access spill-overs. However, their existence was moderately confirmed through survey analysis and improvement in organization, skills level and co-production attractiveness.

Despite the data challenges in quantifying film industry performance through statistical and accrual methods, the contextual information confirms a great deal of alignment with the literature review in FDI theory. Intra-industry impact of incentives is evident, though underlying causalities require additional research and extensive development of datasets.

The research gap identified is insufficient development of methodology for measuring the impact of incentive policy on the host country's film industry. This research aligns the hypothesis with established research in FDI to provide a bridge towards further academic development of methodology and capturing the intra-industry impact, as opposed to common reports on inter-industry impact. The findings could be especially valuable for countries with smaller film industries which consider the adoption of the incentives.

Hypothesis 1: Film incentives influence the growth of production capacities through an increase in the number of enterprises, employment and value added.

Hypothesis 2: Film incentives influence the amount and availability of funding sources (private and public).

Hypothesis 3: Incentives positively influence international positioning through productivity levels and access to the market as two key spill-over effects.

5.2. Research highlights

The research findings proved that incentive policies do not discriminate against the national film industry of the host countries in the long term. The long-term perspective opens the possibility for different cycles within the incentive implementation that are influenced by external trends, such as the global boom in demand for film services, as a result of the streaming boom. Overall, incentive impact on a host country is different in different global industry cycles and absorptive capacities of a country.

This general observation could be interpreted contrary to the game theory, as both the Czech Republic and Hungary managed to sustain their competitive advantage as early entrants in

Central and East Europe. On the other hand, Serbia and Lithuania entered the incentive competition at the same time, with fairly smaller industry sizes but very different results, suggesting that Lithuania maximized its opportunity.

The conclusion from hypothesis testing could be summarized as follows: film incentives as economic policy have a direct positive association with the growth of enterprises and people employed, while national film funding (selective) has no association with growth in film industry capacities. The financial capacities of the industry are improved through incentives, as two financial instruments have a strong mutual positive correlation and attract new financial sources into the industry (Morawetz, 2008; Perez, 2002). However, the rise of the average film budget suggests an inflation effect on the costs of production.

The challenge identified in FDI research regarding the spill-over in productivity and market access is encountered here, but not sufficiently supported with quantitative data. However, the trajectory suggests a positive trend that the film industry may benefit in synergy with other related sectors (ICT, media, telecoms).

Overall, financial incentive is not enough instrument to build sustainability in the national film industry. Thus, the risk of plateauing and the creation of the service industry on account of national production reduces its potential role in the GPN. Furthermore, as incentives affect only the production phase of the value chain, they can only be considered as a partial solution to the market failure. In that regard, the spill-over potential should represent focus of the future policy development, in hand with research methodology.

The research took a special interest in value added as the dependent variable and indicator of industry sustainability. Its mutable correlation with incentives from country to country (Lipsey,

2002) and high correlation with foreign-controlled companies leads to a conclusion that attracting more permanent FDI has larger benefits than attracting short-term project-based mobile investments.

In terms of quantitative methods, film incentive effects have a direct impact on very few macro indicators, while other associations are statistically not significant, or lack sufficient level of data. As a result, this provides a rationale for modelling country-specific evaluation methodology and a more systemic approach to primary data capturing. In return, this limits the comparative analysis across countries with existing methods in the nascent phase. Future research could focus on consolidating methodology for measuring the impact independent from country specifics.

5.3. Implications for policy

The stronger increase in incentive funding over the increase of national film funding suggests the favourable status of the instrument with policymakers. However, tracking of its impact and evaluation has been scarce, especially in lower audiovisual production capacity countries. As the literature suggests, this indicates insufficient institutional capacities and cooperation between stakeholders in designing complementary policies that influence overall film industry growth. However, this aspect goes beyond the quantitative modelling presented in this paper.

As suggested in the literature review, Hungary and the Czech Republic had a strong trend of over-performing FDIs in information and business services (Bijsterbosch and Kolasa, 2010), which probably ushered the way for mobile investments in the film sector. This is to state that

incentives are part of the broader FDI policy and institutional capacities of the country to design, implement and coordinate business environment for successfully absorbing foreign investments.

The focus on production, rather than market and distribution, which dominates European film funding policies, makes incentivizing film services a complementary measure that directly increases production capacities. However, incentives do not necessarily resolve the market failure. The complexity of the film industry as an amalgamation of economic activities with cultural importance induces the complexity of designing measures to adequately address the sector's needs. Thus, spill-over effects do not directly result from having the incentive policy.

Even though the research question did not differentiate between tax incentives (Hungary and Lithuania) and cash rebates (Czech and Serbia), testing within the analysis didn't find any significant difference in the level of association between the two models. Therefore, differences in performance were mainly due to the country specifics and absorption capacity, not the incentive type itself.

5.4. Limitations and areas for future research

The main limitation regarding the highly aggregated data level is that the positive impact associated with incentives might have been blurred by less visible externalities. Such is the strong global production growth and demand for film services over the period 2015-2020. However, this externality could not be isolated and conclusions made for each country try to compare different responses to global opportunities.

Drafting conclusions on the descriptive statistics from primary data might present a weak academic argument. Therefore, the hypothesis on the spill-over effect could only be partially accepted, with suggestions for further research.

The analysis opened many underlying questions that might be valuable for further research of the industry. One of the most debated is the inflation effect of the incentives. Increasing the sample size of film budgets could produce a more precise regression model and predict inflation risks to avoid loss in price competitiveness.

In terms of the spill-over effect, this research uses a narrow definition focusing on productivity and market access. However, further refinement of industry surveys could lead to better primary data capturing to measure spill-overs in capital investment in studio infrastructure, equipment and new technologies, skills transfer, or managerial capacities that foster higher export and market success. Also, further research could take into account how effective the underpinning requirements are, such as skills-training requirement, tourism offset, or cultural test.

This research subject assumes project-based investments in the film industry to have a similar impact as FDIs. However, in the observed period, new regional media hubs were established by global media companies. Further research could provide an understanding whether incentives play a part in attracting these hubs and positioning within GPN.

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Appendices

Appendix I Survey questionnaire

G1	SA	Agree	Neutral	Disagree	SD	N/A
1. The incentives have discriminatory impact on national film industry (i.e. favour only international/US service productions)						
2. The incentives have (<i>positively</i>) influenced the expansion of production infrastructure (new studio space, equipment, new technology, post-production facilities)						
3. The incentives have (<i>positively</i>) influenced the working standards on national film productions (organisation, chain of command, working hours, crew rights and treatment)						
4. The incentives have (<i>positively</i>) influenced talent discovery (actors, directors, directors of photography, costume designers)						
5. The incentives have (<i>positively</i>) influenced industry and market organisation (strengthening of unions, formal professional associations, collective negotiation)						
6. Having incentives have positive impact on the image of the national film industry						
G2						
1. The incentives have (<i>positively</i>) influenced the amount of film funding available for national films						
2. The incentives have (<i>positively</i>) influenced new sources of funding (private and public) for national films						
3. The incentives have led to the increase of costs of production						
4. National films have access to additional funding through incentives						
5. National films that performed better in the box office have accessed incentive programme						
G3						
1. The incentives have (<i>positively</i>) increased desirability of my production company as a co-producer						
2. The incentives have (<i>positively</i>) increased desirability of my production company as a minority co-producer						
3. The incentives have (<i>positively</i>) influenced only service production companies						
4. The incentives have (<i>positively</i>) influenced only large production companies						
5. The incentives have enabled entrance to the market for smaller companies						

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