CHARLES UNIVERSITY
FACULTY OF SOCIAL SCIENCES
Institute of Economic Studies

Impact of government subsidies on the quantity and quality of movie production

Bachelor's thesis

Author: Nikola Bošković

Study program: Economics and Finance

Supervisor: Matěj Bajgar, D.Phil.

Year of defense: 2024

Declaration of Authorship

The author hereby declares that he or she compiled this thesis independently, using only the listed resources and literature, and the thesis has not been used to obtain any other academic title.

The author grants to Charles University permission to reproduce and to distribute copies of this thesis in whole or in part and agrees with the thesis being used for study and scientific purposes.

Prague, July 31, 2024

Nikola Boskovic

Abstract

This thesis investigates the effects of production subsidies granted by the Czech Film Fund on the quantity and quality of the movie production in the Czech Republic. For this purpose, the regression discontinuity design is used, utilizing the data on subsidy allocation process and outcome variables for individual movies such as box office, viewer ratings and award nominations. The three main findings are that (i) the subsidies roughly double the probability of movies being produced, (ii) the subsidies do not have any significant positive effect on the quality of the supported movies, conditional on the movies being produced, (iii) the subsidies are disproportionately awarded to movies which, conditional on being produced, achieve lower box office numbers but receive better ratings from both viewers and critics. This thesis represents the first quasi-experimental investigation of the impact of movie subsidies in any country.

JEL Classification	C21, D61, H25, L82, O38, Z11
Keywords	movie industry, subsidies, Czech Film Fund, regression discontinuity
Title	Impact of government subsidies on the quantity and quality of movie production

Author's e-mail	92603103@fsv.cuni.cz
Supervisor's e-mail	matej.bajgar@fsv.cuni.cz

Abstrakt

Tato práce zkoumá dopady dotací Státního fondu kinematografie na kvantitu a kvalitu filmové produkce v České Republice. Za tímto účelem používá metodologii regresní diskontinuity a využívá data o procesu přidělování dotací a data o výsledcích jednotlivých projektů, včetně tržeb, diváckých hodnocení a počtu ocenění a nominací. Hlavní výsledky práce jsou následující (i) dotace zhruba zvojnásobují pravděpodobnost vzniku filmů (ii) uvažujeme-li pouze vzniklé filmy, dotace nemají žádný významný pozitiní dopad na kvalitu podpořených filmů (iii) uvažujeme-li pouze vzniklé filmy, dotace míří dispropočně k filmům s nižšími tržbami, ale zároveň k filmům s lepším diváckým a odborným hodnocením. Tato práce představuje první kvazi-experimentální vyhodnocení dopadu filmových dotací na světě.

Klasifikace JEL	C21, D61, H25, L82, O38, Z11
Klíčová slova	filmový průmysl, dotace, Státní fond kinematografie, regresní diskontinuita
Název práce	Vliv veřejných dotací na kvantitu a kvalitu filmové produkce

E-mail autora	92603103@fsv.cuni.cz
E-mail vedoucího práce	matej.bajgar@fsv.cuni.cz

Acknowledgments

I would like to thank to the the Union of the Czech Film Distributors and to the Czech Film Fund for the data that they have provided for this thesis. Without their data this thesis would not be possible.

I would like to express my gratitude to my advisor, Matěj Bajgar, D.Phil. for his continuous support and guidance throughout my work. His expertise and advice were invaluable to the completion of this thesis.

Typeset in FSV LaTeX template with great thanks to prof. Zuzana Havrankova and prof. Tomas Havranek of Institute of Economic Studies, Faculty of Social Sciences, Charles University.

Bibliographic Record

Bošković, Nikola: *Impact of government subsidies on the quantity and quality of movie production.* Bachelor's thesis. Charles University, Faculty of Social Sciences, Institute of Economic Studies, Prague. 2024, pages 47. Advisor: Matěj Bajgar, D.Phil.

Contents

List of Tables

List of Figures

Acronyms

RD Regression Discontinuity

CFF Czech Film Fund

UCFD Union of the Czech Film Distributors

CSFD Czecho-Slovak Film Database

CFTA Czech Film and Television Academy

R&D Research and Development

USD American Dollar

CZE Czech Crown

Chapter 1

Introduction

Every year the Czech Film Fund (CFF) distributes movie subsidies for production and distribution, in total value of above CZK 1 billion. Similar subsidy schemes also exist in many other countries, in the United States alone the total financial volume of all subsidies added up to USD 1.5 Billion in 2010, Tannenwald (2010). The main purpose of these subsidies is to enable and encourage production, of high quality and internationally competitive films. Subsidies are an important tool of economic and cultural policy and if managed and implemented correctly, subsidies have many potential benefits. However from the practical point of view subsidies might turn out to be wasteful and cost inefficient. Many researchers that have investigated effects of movie subsidies on the quantity and quality of the movie production have arrived at this exact conclusion, Tannenwald (2010). It is therefore important to evaluate whether subsidies granted by CFF are allocated efficiently and lead to the best possible outcomes for the Czech movie industry.

The aim of this thesis is to explore and understand the relationship between the distribution of movie subsidies and the outcomes of the individual projects. For this purpose I have proposed three research questions. First, do the subsidies for movie production granted by CFF increase the probability of the movies being produced? Second, conditional on being produced, do the subsidies for movie production granted by CFF lead to better performance of subsidized movies? Third, do the subsidies disproportionately go to movies which are, conditional on being produced, of higher quality than the movies not receiving the support?

To answer these research questions I will work with the data from the CFF and focus mainly on administrative data on film proposal evaluations together

with the data on movie outcomes such as box office obtained for the Union of the Czech Film Distributors (UCFD), viewer ratings by general public obtained from Czecho-Slovak Film Database (ČSFD) and Czech Lion Awards nominations by professional film critics obtained from Czech Film and Television Academy (ČFTA). I use the regression discontinuity design, comparing projects with scores just above and below the threshold for receiving support, to infer the causal relationship between movie subsidies and (i) probability of the movie being created (ii) different dimensions of the quality of the movie, mentioned above.

Based on the results I conclude that the subsidies do increase the probability of the movies being produced in the short run by 36 percentage points, this corresponds roughly to doubling the in probability of being produced. On the other hand, subsidies have no significant positive effect on the quality of movies, conditional on these movies being produced, regardless of the variable chosen to measure the quality. Last but not least, I have found that subsidies go disproportionately more to the movies with higher general public and critic ratings (measured by the number of nominations) and to the ones with lower box office.

While a large literature estimates the impact of public subsidies for R&D, there are only a few papers investigating the impact of subsidies for creative industries, such as the film industry, despite the large volume of funds going globally to such subsidies. Importantly, the existing studies only describe conditional correlations between subsidies and the quantity and quality of movie production. As the probability of receiving subsidies depends on each projects characteristics, many of which are unobservable, these studies have little to say about the *causal* impact of the subsidies on the examined outcomes. By estimating the impact of the movie subsidies on the quantity and quality of movie production using a regression discontinuity design, my thesis represents the first quasi-experimental evaluation on the topic in any country. In addition, no econometric study of any kind on the topic exists for the Czech context, so the thesis also represents a novel contribution to related policy debates in the Czech Republic.

The thesis is divided into 6 chapters. Chapter 1 provides thesis introduction, Chapter 2 provides theoretical and practical background of subsidies, Chapter 3 provides literature review, Chapter 4 discusses data and methodologies used in the thesis, Chapter 5 presents the results of estimation using data visualization methods and their interpretation and discussion of limitations and Chapter 6

provides the final conclusion.

Disclaimer: The data used in this thesis cannot be published as part of the data belongs to the Union of the Czech Film distributors.

Chapter 2

Theoretical and practical background of subsidies

In this chapter, I will provide basic information and overview of the topic of subsidies in creative industries across multiple countries and regions and from various perspectives.

2.1 Historical context of subsidies in creative arts

Subsidies in creative arts have a long and rich history going back to as early as ancient times where rulers had dedicated staff of artists and performers that were paid from public money and whose sole responsibility was to provide entertainment and cultural enrichment to the members of ruling elite. Since then subsidies in creative industries have evolved a lot but the same underlying principle, that is, financially supporting artistic expression that otherwise could not independently function, applies.

Contemporary subsidy schemes for creative industries are often administered by governmental institutions as opposed to previous arrangements that were more often based on private patronage. This transition can be traced to the emergence of nation states in 19th century Europe, and in this period indeed subsidies for all kinds of artistic and cultural activities flourished as they were seen to be contributing to the creation of national identity, Rosenfeld (2004) and Laugee & Rabiller (2020)

Nowadays, the argument for the support of the culture in the name of national identity still holds. The importance of this is reflected by the fact that almost all countries in the world have dedicated government institutions

for the issues of culture, however these expenditures have to be reasonably justified to the taxpayer. This is where the need arises for the proper economic analysis.

2.2 Economic context of subsidies in creative arts

Subsidies are an important tool of economic policy and if managed and implemented correctly, subsidies have many beneficial effects. Aside from macroeconomic arguments about job creation and economic stimulation, subsidies can also help to offset the market failures and inefficient allocation of resources that arise as a result.

It has been established that certain areas of R&D can be prone to under investment and as a remedy for this governments often implement subsidy schemes.

Film making certainly shares some commonalities with traditional R&D, in both cases something new is being created and often it is not fully known in advance what the result would be until the venture is undertaken. This creates uncertainty and risk which arguably plays a role in both under investment in traditional R&D and movie industry as evidenced by Teti (2013).

Not only unwillingness to provide funding due to uncertainty but also other factors and market failures could lead to under investment, for example simply not reflecting the non-marketable benefits of the national movie industry such as cultural enrichment and presentation of the country on the international stage.

Hence, it seems reasonable, from a theoretical standpoint, to argue that there is a rationale behind state aid for domestic film producers and therefore the next logical question would be one of evaluation of economic and cultural merit of such endeavors. In other words, I have arrived to the theoretical conclusion that movie subsidies in some form are needed and the question is whether the current subsidy schemes are effective in offsetting market failures described above. This question is not directly addressed in this thesis however it presents an interesting topic for future research.

2.3 Types of creative industry subsidies

Generally, there are two main types of subsidies, The direct subsidies and The indirect subsidies. This holds, of course, for the creative industries as well.

Direct subsidies are a form of financial support that takes a form of a direct monetary transaction from the subsidizing to the subsidized entity. For example, the CFF as I will explain below provides a direct form of subsidy.

Opposite to this, is an indirect subsidy which takes, most often, the form a tax deduction or a tax rebate. In both cases however, the aim is the same, that is to improve the financial position of subsidized entity and enable it to continue with the subsidized activity.

2.4 Challenges and criticism of subsidies

Having discussed all the potential benefits of providing subsidies for creative industries I will now also address some of the most common criticisms.

One of the major concerns regarding the subsidy schemes is their inefficiency, meaning that the value gained from the subsidy scheme is not proportional to the money spent on this scheme. Inefficiency can arise as a result of many potential issues including mismanagement and unnecessary bureaucracy.

Another major concern includes potential for frauds when allocating the subsidies leading to above mentioned inefficiencies.

Last but not least, there is an issue of dependency of the film industry on the subsidies, meaning that in times of crisis, for example, when the government is not able to provide a stable flow of funding to the industry, the industry might face serious difficulties with financing or even collapse.

2.5 Film subsidies in the Czech Republic

The Czech Film Fund (Státní fond kinematografie) is a governmental organization that provides film subsidies in the Czech Republic and it is exclusive to Czech filmmakers or co-production involving Czech contribution. The Fund was established in 2013 and it falls under the organizational and budgetary supervision of the Ministry of Culture of the Czech Republic. Before 2013 there was a similar institution with the same stated goal of supporting domestic movie production.

The CFF has a special procedure devised to facilitate fair and transparent allocation of production subsidies. Each project that applies for a production subsidy is evaluated on a basis of artistic merit, cultural contribution and management competency receiving a certain score in each of these broad categories. The aggregate score is then computed as a sum of the individual scores and if a project scores above a certain threshold it receives the subsidy, although the projects scoring just above the threshold tend to only get a part of the requested subsidy. There is many important parts of movie industry other than the production of movies itself, such as distribution and presentation of movies on the festivals, for which subsidies by CFF are also granted but these are much smaller in volume compared to subsidies for production.

2.6 Films subsidies in the EU and the USA

On the level of the European Union a similar fund exists, called Eurimages, which aims to subsidize movie production from individual European countries as well as co-productions between these countries. The fund was established in 1989 and it falls under the Council of Europe.

For comparison in the United States the individual filmmakers can get subsidies and tax cuts from state governments but no institution providing subsidies on the federal level exists, this naturally leads to the competition among individual states on who can provide more favorable conditions and it leads to overpaying, with little economic return as Tannenwald (2010) suggests.

2.7 Future of film subsidies

When it comes to the future of subsidies for creative industries I am almost sure they will not cease to exist for numerous historical and economic reasons I have discussed above. The question is how will they evolve and how will the current societal trends affect their future. In fact, we already see some subtle signs of shift towards sustainable and socially equitable film making, so this might become more mainstream in the future.

So to summarize, the subsidies for creative industries and for the film industry in particular are important from a cultural and economic point of view and therefore they are, in my opinion, well worth studying.

Chapter 3

Literature review

In this chapter I will provide an overview of the most important and the most recent literature studying the impact of various government subsidy schemes on the movie industry across several countries and from multiple perspectives.

The literature on the impact of film subsidies on the film industry offers a multifaceted perspective, focusing on various outcomes such as production quantity, production quality and financial viability of individual projects as well as national industries. As a good source of information about the current state of research and possibilities of new research venues, McKenzie (2023) can be used.

The literature review first discusses the data used by researchers to answer their research questions looking at (i) the level of observations, in other words which units or geographical areas are being studied, and (ii) the outcome variables used for the measurement of quantity, quality and financial viability of movies. Then, I look at the methodologies and the specific econometric methods used for estimations of the effects of subsidies on the movie outcomes together with advantages and limitations of these methodologies. Next, I look at the results of the research summarizing the impact of subsidies on individual outcome variables measuring the quantity and the quality of the movie production as well as financial viability. Last but not least, I provide a short summary of the research results.

3.1 Data and methodologies used in earlier studies

The studies presented in this review use various levels of data aggregation to study the effects of subsidies on the movie outcomes. On the lowest level of data aggregation studies focus on the individual movies. This approach was implemented by Meloni *et al.* (2015) and also by Weber *et al.* (2024) among other papers. On the higher level of data aggregation, there are studies focusing on the individual regions of a country, this approach is explored by Agnani & Aray (2010). And on the highest level of data aggregation, there are studies focusing on multiple countries, this approach is used by Parc *et al.* (2022). These studies related averages of outcome variables for a given region or country and a given year to the total volume of subsidies granted in that region for a specified period.

Regarding the specific outcome variables chosen for the measurement of quantity, quality and financial viability of movies, individual studies differ. The outcome variables for measurement of the quantity include number of movies used by Agnani & Aray (2010) and the box office used by Meloni *et al.* (2015). The outcome variables for the measurement of the quality include viewer and critic ratings used by Parc *et al.* (2022), awards and nomination from film festivals and competitions used by Meloni *et al.* (2015). The outcome variable for the measurement of the financial viability is primarily box office. Teti *et al.* (2014) in addition to box office also work with costs to assess the profitability.

Regarding the methodology, the most popular approach among individual studies is a panel data regression with the fixed effects model used to account for the differences between individual years and across the different genres of movies or different geographical regions. This approach is natural due to the data collection process where the dataset is typically covering multiple years and in some cases even decades in order to accumulate enough observations. This approach is employed by Parc *et al.* (2022) among other studies.

Another, related methodological approach, is an estimation of Cobb-Douglas production function for movie production employed by Agnani & Aray (2010). After the production function is transformed using a logarithmic function, a linear regression model is obtained, which can again be estimated via fixed effects or other panel data regression methods.

Another, simpler approach is looking at sample statistics and comparing

averages of outcome variables such as box office for subsidized and unsubsidized movies, this approach is implemented by Teti *et al.* (2014)

One major limitation of all above discussed approaches is that they do not, by themselves, provide strong evidence for the causal effect of subsidies on movie performance. They rather have to be supplemented with strong theoretical justification. In contrast, my analysis, using regression discontinuity design, is the first to provide causal evidence on the studied topic.

3.2 Findings of earlier studies

Looking at the results of the research it seems that the effects of subsidies on financial performance are mixed at best. Teti *et al.* (2014) in their study of the financial viability of state movie subsidies in Italy, comparing the box office performance and profitability of subsidized versus unsubsidized films, utilizing a large dataset of 914 Italian movie titles from 1995 to 2003, report that on average, subsidized movies are more unprofitable than their unsubsidized counterparts. This result seems reasonable to me, given that unsubsidized movie makers are likely to be more cautious when judging the projects profitability compared to their subsidies counterparts. Another piece of evidence supporting the claim of the previous study is presented by Meloni *et al.* (2015) that focus on the effects of public subsidies on box office revenues and the number of awards won by films, in Italy between the years 2002 and 2011. Their findings reveal a negative impact of public funding on the quantity of films (measured by box office), although they note genre-specific differences, with dramas and thrillers appearing to benefit from public subsidies.

Opposing evidence is provided by Weber *et al.* (2024) in their study assessing the impact of public funding on the financial performance and quality of films co-produced in Germany. With a vast sample of 1984 movies, their study observes a positive impact of public subsidies on box office performance. Authors attribute this to the subsidies' role in attracting private investment and press coverage. Last but not least, McKenzie & Walls (2013) report in their study on Australian governmental movie subsidy schemes, that subsidies do not impact a film's financial success in Australia.

Looking at the results of the research it seems that the effects of subsidies on the movie production quantity are not practically significant. Agnani & Aray (2010) studying the effect of awards and subsidies on the Spanish movie industry, focusing solely on the quantity of production, conclude that while

international awards received by the Spanish industry in previous year significantly enhance production, subsidies do not exhibit a notable effect on the quantity of movies produced. This is an interesting result and it suggests that accolades and prestige might be a greater motivating factor than financial incentives in boosting film production levels. However, I have been able to find only one study focusing on this relationship working with absolute number of films, other studies use for example box office as a measure of quantity which has been discussed above.

Finally, discussing the effects of subsidies on quality of movie production measured either by ratings from the general public or film critics reveals mixed results. Parc *et al.* (2022) in their empirical study across France, Korea, the UK, and the US examining the impact of film subsidies on the quality of films produced and considering viewer and critic ratings as quality metrics, reveal that increase in subsidies, ceteris paribus, is associated with an increase in film quality. Notably, Korea demonstrated superior film quality despite receiving the least subsidies, authors attribute this effect to the efficiency of privately managed film investments. Similar conclusion is presented by Weber *et al.* (2024) stating that subsidies do in fact have positive effects on the movie production.

On the other hand, Meloni *et al.* (2015) also find negative impact of public subsidies on the quality of movie production as measured by the number of awards received.

Collectively, these studies present a complex picture of the role of film subsidies. While there is evidence of their positive impact on film quality and financial performance in certain contexts, other research suggests that subsidies may not always translate into increased production or quality improvements. This underscores the importance of considering the allocation and management of subsidies not only their volume, as well as the need for a nuanced understanding of their effects on the film industry in various settings across different countries.

Chapter 4

Data and methodology

The methodology chapter will be divided into two major sections. First section, called "Dataset creation methodology" will address the definitions of variables together with their explanation, the process of collecting and organizing the data and also various challenges and limitations associated with this process. Second section, called "Data analysis methodology" will address the general principles of regression discontinuity designs and assumptions required for their successful implementation as well as specific econometric models to estimate. Also, the stated assumptions will be tested in this section and some further methodological details will be explained.

4.1 Dataset creation methodology

4.1.1 Explanation of the variables

I collect two types of variables for my regression analysis, first, the score variable and second, the outcome variables.

The score variable (in more detail discussed in the background section) provides a measure of how subsidy-worthy a particular project is as seen by the CFF. The projects with scores above a certain threshold receive the subsidy, while projects below the threshold do not receive any subsidy.

To assess the impact of subsidies on the movie production I will use several outcome variables.

First, the variable measuring the quantity of the movie production, defined as "the movie was created within 3 years from a subsidy request", this is a binary variable that takes either a value of 0 if the movie was not created within 3 years or value of 1 if movie was created within 3 years. Further explanation on

why this variable was defined in this particular way is provided at the end of the dataset creation methodology section.

Second, the variables measuring the quality of movies, here I will distinguish between general popularity among the public and artistic quality as seen by professional film critics.

The general popularity will be measured by viewer ratings from ČSFD and also by data on the number of shows, viewer count and box office obtained from the UCFD.

To measure the artistic quality as seen by professional film critics I will be using data on awards and nominations from the Czech Lion Awards (Český lev) organized by the ČFTA. I have decided to use this data to measure artistic quality because the Czech Lion Awards is the most prominent and well established competition of its kind in the Czech Republic and the ČFTA as an institution responsible for this competition consists of above mentioned film critics as well as actors, directors, producers and other industry professionals. To make my analysis more robust, I will define multiple variables with the aim of measuring the artistic quality of individual films. First, I will look at the number of awards and nominations given to a particular film in the above mentioned Czech Lion Awards. There are 20 categories in which the films can compete, therefore 20 awards are distributed among the competing films every year. Within the given category, multiple films can be nominated, therefore the overall number of nominations per year which is distributed between competing films need not be constant. To address the trade-off between accuracy of my variable (how strict I am when judging artistic quality) and variability in dependent variable, I will define the variable at multiple levels as follows: "The film has received at least X nominations". For the purpose of my analysis X will take values of 1, 3, and 5. Alternative, and possibly a bit more restrictive, approach is to only look at the nomination in a single category, namely the nomination for the best film of the year. Each year, approximately 5 films are nominated in this category, which makes it quite competitive and films nominated in this category can be viewed as all round successful and of high quality, at least in the eyes of film professionals. The variable is defined as "The film has been nominated for the best film for the given year" The data on the nominations and awards are taken directly from the official ČFTA website.

4.1.2 Dataset creation process

The dataset was created by matching individual projects that have applied for the subsidy at the Czech Film Fund with their respective outcomes mentioned above.

In the first stage, I had to determine whether or not the project has been realized (movie produced) so far, for this purpose I have set the time cut-off at 31st of March 2024. To be able to create a "completion under 3 years variable" I had to drop the observations for the years 2023, 2022 and 2021. The films with the completion time under 3 years were given a value of 1, the films with completion time above 3 years were given a value of 0. The films that I was not able to find, I account for as not created and by implication also not created within 3 years and therefore these projects were given a value of 0. This is a justifiable approach given that all long format feature films that are created enter the distribution and are cataloged at ČSFD. Therefore film not found in this database implies with very high level of certainty that the project was not realized.

In the second stage, I had to match already created films with their outcome variables measuring the quality. This has been done partly automatically using the list of the films that have entered the distribution in the Czech Republic provided by the UCFD. In this manner I have matched the data on the box office, viewer count and the number of shows that were also provided by the UCFD. And partly manually, in case of ČSFD ratings and ČFTA nominations and awards.

Each subsidy application is recorded as a stand alone observation in a dataset. I include all subsidy applications for production of feature films submitted to the CFF that were at least partly produced in the Czech republic (co-productions). Focusing only on the subsidies for production of feature films allows for the analysis to be consistent and relevant because these subsidies constitute relatively large part of the films production budget and therefore it could be expected that they will have the largest effect compared to other smaller subsidies.

I also considered filtering observations according to budget size, subsidy size, or subsidy to budget ratio to only choose more relevant observations but I have decided to include all observations due to their short supply. The matching of subsidy requests to created films has been done only by name, however given the quite small volume of Czech film production and relatively narrow

time frame the mismatch due to the same name should not be of a particular concern.

4.1.3 Limitations of the dataset creation process

There were few methodological challenges and limitations while compiling the dataset. First, as I have already mentioned, the film creation is an ongoing process, so, in principle, it is never possible to say with absolute certainty whether a film will eventually end up being made. Therefore answering the question whether subsidies increase a chance of films being made eventually is challenging. Also, answering the question if the subsidies only accelerate film production without necessarily leading to more films being produced is equivalently challenging. This would be done much more easily using historical data looking back as far as several decades, to be almost certain, that no films would end up being made. Alternatively, the effect of subsidies on completion status within a specified period of time can be studied, answering related question of effects of subsidies on film production in that specified time period. With careful extrapolation, it can be interpreted as the effect of subsidies on the difference in probability of the subsidized and unsubsidized movies being made in the short term.

Second, It is not uncommon for a film to have a working title and then be published under either similar but in some cases even completely different titles. This, of course, makes the analysis more challenging because the films apply for the subsidy while in production, so naturally they use a working title which then makes it more challenging to match them.

Third, in some cases, although very rarely, the data might be missing or be incomplete for some observation. This is simply resolved by removing the incomplete observations from the dataset and thereby excluding it from the analysis.

4.1.4 Summary statistic for the dataset

In this subsection I provide basic summary statistics. The aim is to better understand the nature of the dataset used in the analysis and to explore the important features of the relevant variables. The summary statistics are provided in two tables for formatting reasons.

The dataset consists of 523 observations in total and includes data starting from 2013 up to 2023. Not all observations, however, are complete or relevant

	Score	Distance	Inf. adj. budget	Subsidy status	Completion status
units of measurement	index	index	units of CZK	T/F	T/F
lower bound of the range	0	-100	0	0	0
upper bound of the range	100	100	∞	1	1
minimal value in the sample	0	-77	761 946	0	0
maximal value in the sample	100	29	170 535 174	1	1
sample mean	70.41	-6.65	29 828 453	0.31	0.46
sample standard deviations	12.66	12.76	22 420 203	0.46	0.50
number of observations in the sample	523	523	523	523	523

Table 4.1: Summary statistics 1

for each regression analysis, therefore the effective number of observations for each regression differs and will be specified together with the estimation in the results section. Following this, it is important to realize that quality metrics such as viewer and critics ratings as well as box office are only observed for the movies that have been produced. The dataset contains 245 produced films (as of 31st of march 2024) and out of these 197 were produced within 3 years from subsidy request. Therefore there is 48 films in the dataset that were produced but it took longer than 3 years from the subsidy request. Considering produced films only, the average time it took for a film to be produced is approximately 2 and a half years. Note that sample sizes for quality metrics and box office differ slightly, this is due to the data availability issues.

	completion status under 3 years	completion time	Inf. adj. box office	viewer ratings	Nomination status (at least one nomination)
units of measurement	T/F	years	units of CZK	index	T/F
lower bound of the range	0	0	0	0	0
upper bound of the range	1	10	∞	100	1
minimal value in the sample	0	0	4813	12	0
maximal value in the sample	1	10	147 001 129	82	1
sample mean	0.47	2.42	12 527 544	56.42	0.046
sample standard deviations	0.50	1.69	18 516 473	12.46	0.50
number of observations in the sample	376	245	232	242	241

Table 4.2: Summary statistics 2

4.2 Data analysis methodology

4.2.1 Choice of the methodology

To answer the research questions few methodologies could potentially be used. I will now present the motivation behind introducing the regression discontinuity design and reasons why this methodology is best suited for the task at hand.

The most natural and straightforward methodology would suggest to look at the average values of outcome variables for treatment and control groups separately and then compare them and try to infer some results in this manner. However, the major limitation of this approach is an upward bias that arises

from the subsidy selection process. Subsidies are given to the projects that are expected to perform better. As a result it can be expected that the projects that were selected to be subsidized would on average perform better than their counterparts which were not selected to be subsidized even if the subsidy was not given to any of the projects.

To circumvent this methodological limitation I have decided to use regression discontinuity design that is focused specifically on the treatment effect at the cut-off and therefore eliminates this inherent upward bias of the method presented above. I will discuss the specifics of RD designs in more detail in the next section.

4.2.2 Introduction into RD designs

Regression discontinuity (RD) design is a quasi-experimental method that tries to imitate random sampling using a score variable and pre-defined cut-off point. Observations are divided into two groups, called control group and treatment group based on their relative position of score to the cut-off. The idea is that observations close around the cut-off can be viewed as comparable except for the effect of the intervention. The purpose of this method is to establish the causal relationship and quantify the extent of the treatment effect, i.e. the gap in the expected outcomes between the treatment group and the control group.

There are two main methodological frameworks for the RD designs, first, the local randomization framework and second, the local polynomial regression framework. For the purposes of this work I will use the latter. The main assumption of this framework is the continuity in the population regression function at the cut-off in the absence of the treatment. This assumption, in principle, makes it possible to make a causal inference about the measured treatment effect at the cut-off. Although the RD assumptions cannot be inherently tested, various validation and falsification methods exist that can provide indirect evidence about the plausibility of the RD design. For the purposes of this work, the two most common validation and falsification techniques will be presented and applied. Further details on RD designs are discussed in Cattaneo & Titiunik (2022)

First technique is based on the continuity of the running variable. Intuition behind this technique is such that if the estimated density function of the running variable is discontinuous at the cut-off this might suggest that studied units are able to manipulate the assignment to either treatment or control

group and as a result of this sorting, the treatment and control groups are not comparable anymore. This test is applied by estimation of the probability density function of the running variable. Failure to reject the null hypothesis of continuity is interpreted as a continuity of the density function. This technique was first proposed and developed by McCrary (2008)

Second technique is based on the continuity of covariates, this technique is also known as the covariate balance test. Intuition behind this technique is such that if there is an estimated discontinuity in the covariate variable at the cut-off this would suggest that the treatment and control groups are not comparable at the cut-off. This test is applied simply by estimation of the treatment effect of the running variable on the covariate variable of choice. Failure to reject the null hypothesis of statistically insignificant treatment effect is interpreted as a continuity of the covariate and comparability of the treatment and the control groups. This techniques was first proposed by Lee (2008)

Practical applications of this method mainly include program evaluation studies where assignment to treatment and control groups is given by a value of a running variable and a predetermined cut-off. This method was first used by Thistlethwaite & Campbell (1960) to evaluate the merit based scholarship programs. Since then, RD designs and the tools for their implementation have developed and these designs have become a widely used and accepted method for program evaluation studies.

The main advantage of RD designs is their ability to produce estimates of treatment effects consistent with randomized control trials as evidenced in meta-analysis by Chaplin *et al.* (2018). This is especially important in environments where pre-treatment randomization is not possible due to ethical and other considerations.

There are few important disadvantages to the RD designs. First, requirement on high density of observation around the cut-off, which is required in order to have enough observations and therefore more accurate estimates at low bandwidths. Second, the correct functional form is required for unbiased estimates, this form is in practice often not specified, so linear and other lower order polynomials are used to estimate the treatment effect around the cut-off. Third, the estimated treatment effect is only valid locally, meaning for the observations around the cut-off. These and other limitations of RD designs are studied in depth by Lee & Lemieux (2010)

4.2.3 Implementation of RD design to evaluation of movie subsidies

For the purposes of my research, the analysis will be divided into three main parts, each of them consisting of a set of regression models with the aim of answering the particular research question. First, I will study the impact of subsidies on the quantity of movie production. Second, I will study the impact of subsidies on the quality of individual movies conditional on these movies being made. Third, I will study the relationship between the CFF's selection of movies to subsidize and their quality and performance with the aim of learning which movies tend to get subsidies. Before the analysis can be implemented the above mentioned assumptions have to be tested using the two validation and falsification methods introduced above.

Testing the assumptions

First, the "distance" variable has to have a continuous estimated probability density function at the cut-off. The cut-off is, in this case, set to be 0. The figure (4.1) shows the estimated probability density function for the "distance" variable. The p-value for this test is p = 0,93 which means that we cannot reject the null hypothesis of continuity. The figure (4.1) together with the formal statistical test provides evidence for continuity of the probability density function for the "distance" variable at the cut-off.

Second, the pre-intervention covariates should be continuous at the cut-off. For this purpose I will test the continuity of the logarithm of inflation adjusted budget at the cut-off. The figure (4.2) shows the estimated treatment effect of the subsidies on the logarithm of inflation adjusted budget using RD framework.

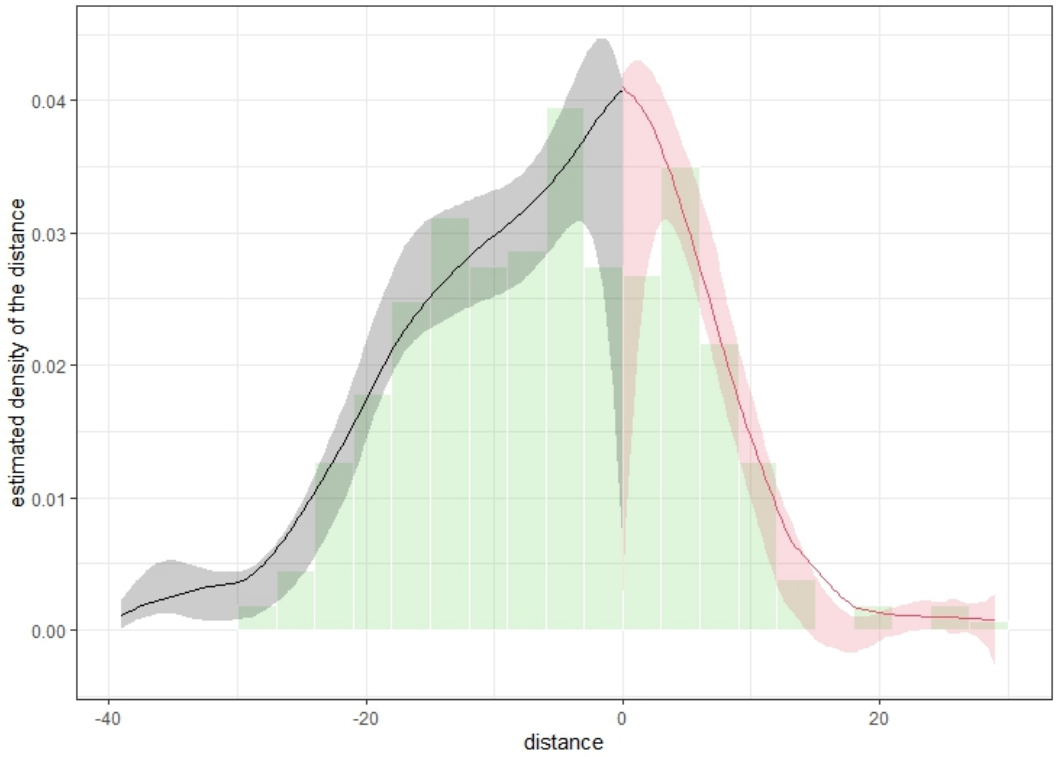

Figure 4.1: Density test

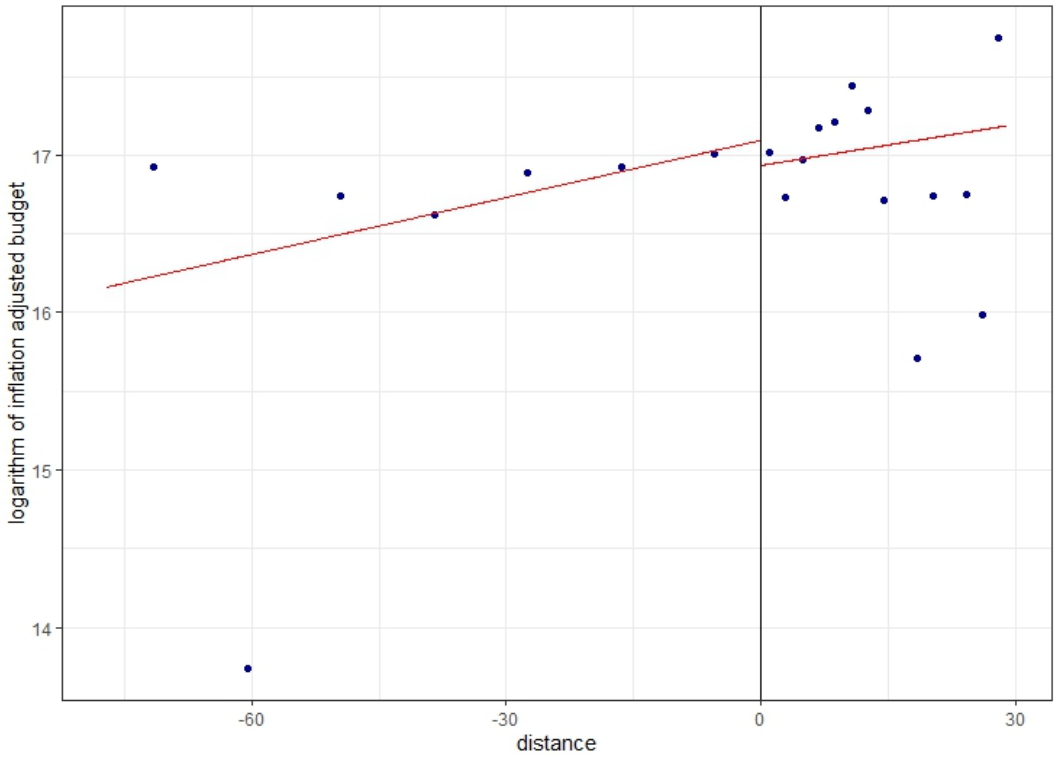

Figure 4.2: Covariate balance test

The p-value for this test is p = 0,24 which means that we cannot reject the null hypothesis of no treatment effect. The figure (4.2) together with the formal statistical test provides evidence for the continuity of the logarithm of the inflation adjusted budget variable at the cut-off point.

These two tests provide some empirical evidence that supports the validity of RD design in my thesis. Before I propose the econometric models for estimation of the treatment effects, I will comment on a few methodological considerations.

Important methodological considerations

First, the score cut-off for granting the subsidy is varying across years and therefore a new variable called "distance" had to be defined in order to make observations across different years comparable. Furthermore, the value of the score cut-off was not explicitly stated and had to be established based on the available data. For this purpose, I computed for each year the average of the score of the last application that has been subsidized and the score of the first application that has not been subsidized. With the year specific cut-off points defined I proceeded to define the "distance" variable for each observation as the difference between this observation's score and the year specific cut-off point corresponding to the year of the observation. The "distance" variable therefore represents the relative distance from the cut-off and it will play a role of the running variable in my analysis.

Second, to make the analysis more precise and the estimates more reliable I have decided to introduce covariates into the regression. I will introduce an inflation adjusted budget and also a dummy variable for each specific year to control for any constant group differences among years.

Third, to improve the properties of the estimator of the standard error I will cluster the observations on the level of the film. This means that individual applications (observations) for the subsidy that are made for the purpose of production of one particular film will be treated as one cluster.

Fourth, both the film budget and the box office were adjusted for inflation using the consumer price index obtained from the Czech Statistical Office.

Last but not least, I would like my analysis to be robust and not to depend too heavily on the chosen parameters of the methodology, therefore I will present estimated results for various bandwidth as this parameter has the most

significant impact on estimated results. I will use triangular kernel and linear polynomial which is considered to be the standard approach in RD designs.

Econometric models for regression discontinuity

To test the effect of subsidies on quantity of movie production, I have proposed the following econometric model:

$$\begin{aligned} \text{completion\_3Y}_i = \beta_0 + \beta_1 \text{distance}_i + \beta_2 D_i + \beta_3 (\text{distance}_i \cdot D_i) + \\ \beta_4 \text{log\_cpi\_budget}_i + \sum_{j=2014}^{2020} \beta_j E_{i,j} + \epsilon_i \end{aligned} \tag{4.1}$$

Where the dummy variable D takes the value of 1 if the project was subsidized and takes the value of 0 if the project was not subsidized. Additionally, the dummy variable E for the year j take the value of 1 if the observation corresponds to the year j and it takes value of 0 otherwise.

To test the effect of subsidies on the quality of the movie production conditional on the movie being made, I have proposed the following models:

$$\begin{aligned} \text{Y}_i = \beta_0 + \beta_1 \text{distance}_i + \beta_2 D_i + \beta_3 (\text{distance}_i \cdot D_i) + \\ \beta_4 \text{log\_cpi\_budget}_i + \sum_{j=2014}^{2023} \beta_j E_{i,j} + \epsilon_i \end{aligned} \tag{4.2}$$

Where Y_i stands generally for dependent variable measuring the quality of the movie. From this general equation the special cases can be derived by substituting the specific quality measurement variables for Y_i. By substituting in the variable box_office_i we get the equation (4.2.1), by substituting in the variable viewer_ratings_i we get the equation (4.2.2), and by substituting in the variable $\text{awarded\_or\_nominated\_1}_i$ we get equation (4.2.3). The definitions of dummy variables D and E remains the same as for the equation (4.1).

The parameter of interest in all of the above stated equations, specifically the equation (4.1) and the equations (4.2.1), (4.2.2) and (4.2.3) is the parameter β_2 which corresponds to the treatment effect. Also note, that dummy variable for the year 2013 has been omitted from the above stated equations to avoid dummy variable trap and therefore the year 2013 is the base group.

Also, I have decided to exclude variables "shows" and "viewer_count" from the analysis because these are very strongly correlated with the "box_office"

variable and yield nearly identical results. For the same reason I only include the variable "awarded_or_nominated_1" in the results section.

4.2.4 Econometric model for estimation of relationship between score and outcomes

Finally, to explore the relation between Czech Film Funds selection of movies to subsidize and their quality and performance, I have proposed the following models. For this purpose I use the basic multiple regression model estimated via OLS.

$$\mathrm{Y}_i = \beta_0 + \beta_1 \mathrm{distance}_i + \beta_4 \mathrm{log\_cpi\_budget}_i + \sum_{j=2014}^{2023} \beta_j E_{i,j} + \epsilon_i \qquad (4.3)$$

Where Y_i again generally stands for a dependent variable. If Y_i is substituted by $\mathrm{box\_office}_i$ we get equation (4.3.1), if Y_i is substituted by $\mathrm{viewer\_ratings}_i$ we get equation (4.3.2), and finally if Y_i is substituted by $\mathrm{awarded\_or\_nominated\_1}_i$ we get the equation (4.3.3). The definition of dummy variable E remains the same as for the equation (4.1) and again, the dummy variable for the year 2013 is exclude.

In this chapter, I have provided an explanation of the variables used in the analysis as well as the methodology guiding the dataset creation and its limitations and the summary statistic for the dataset. Further, I have explained RD design used for the analysis, postulated its required assumptions and tested their validity. Finally, I have proposed the econometric models to estimate the different treatment effects as well as effects of score on relevant outcome variables.

Chapter 5

Results

The results chapter will be organized in the same order in which econometric models were proposed in the methodology chapter, divided in there main sections according to the three main research questions. In each section I will present and discuss the estimated results from econometric models. And at the end I will discuss the limitations of the results.

5.1 Effect of the subsidies on the quantity of the movie production

In this section I will present the results regarding the effect of the subsidies on the quantity of the movie production. This section contains only one econometric model, equation (4.1), estimated at 3 levels of bandwidth - large (50), medium (25) and MSE-optimal bandwidth, which in this case takes the value of 3.85. I report two estimates, conventional and bias corrected as well as two confidence intervals, first for conventional estimate using conventional standard error estimation, second for bias corrected estimate using robust standards errors. The tables (5.1) and (5.2) present the results of the estimation of equation (4.1) and the figure (5.1) presents the visualization for this estimation.

Bandwidth	Method	Coef.	Std. Err.	p value	90% C.I.
50	Conventional	0.226	0.087	0.010	[0.082 , 0.369]
50	Bias corr. rob.	0.258	0.118	0.029	[0.064 , 0.452]
25	Conventional	0.236	0.097	0.015	[0.076 , 0.396]
25	Bias corr. rob.	0.360	0.130	0.005	[0.147 , 0.574]
3.85	Conventional	0.815	0.166	0	[0.541 , 1.088]
3.85	Bias corr. rob.	0.939	0.198	0	[0.613 , 1.265]

Table 5.1: The effect of the subsidies on the probability of completion within 3 years

Bandwidth	eff. observation on the left	eff. observation on the right
50	248	125
25	227	123
3.85	37	44

Table 5.2: Effective number of observations for equation 4.1

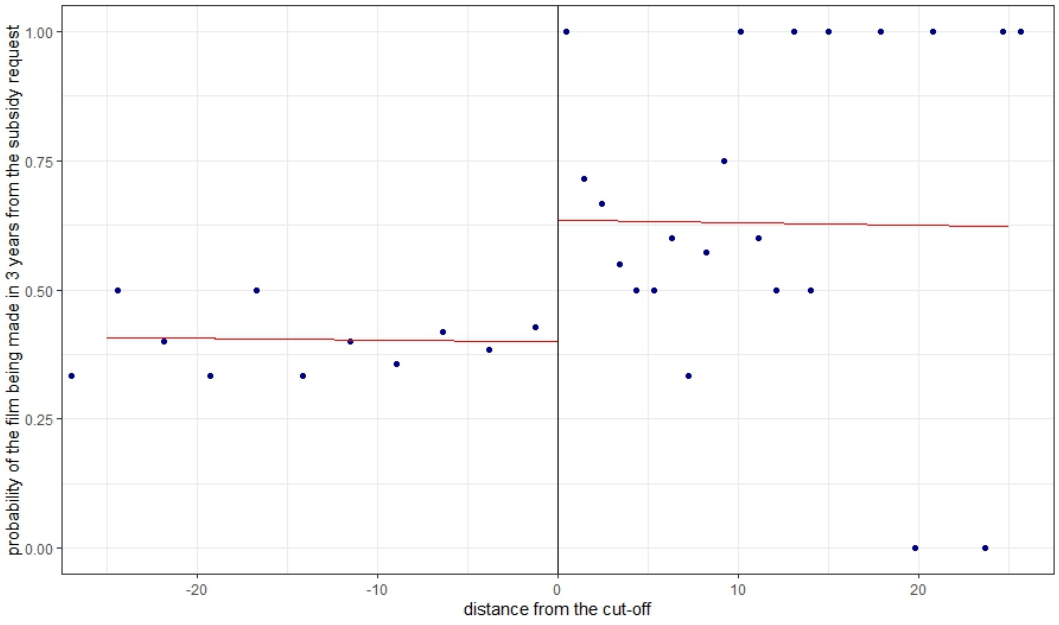

Figure 5.1: Graph of the effect of the subsidies on the probability of completion within 3 years, bandwidth of 25

To briefly comment on this section, data suggest that there is evidence to support the claim that subsidies do increase the probability of the movie being

made within 3 year from the subsidy request at the significance level of 10% for all bandwidths. The particular estimate of this effect varies for different bandwidths, they are comparable for the large and medium bandwidths but seem to be unrealistically high for the MSE-optimal bandwidth. If we accept the medium (25) bandwidth as more realistic, than the interpretation would be that receiving a subsidy is expected to increase the probability of the particular movie being made within 3 year by approximately 36 percentage points which corresponds to almost doubling of the probability. Taking the robust confidence interval for the bias-corrected estimate into account this effect will with 90% confidence lie between approximately 15 and 57 percentage points.

5.2 Effect of the subsidies on the quality of the movie production

In this section I will present the results regarding the effects of the subsidies on the quality of the movie production. This section contains 3 econometric models, equation (4.2.1), equation (4.2.2) and equation (4.2.3), again all three models will be estimated at large (50), medium (25) and MSE-optimal bandwidths. Again, I report two estimates, conventional and bias corrected as well as two confidence intervals, first for conventional estimate using conventional standard error estimation, second for bias corrected estimate using robust standards errors. The tables (5.3) and (5.4) and the figure (5.2) present the results of the estimation of equation (4.2.1). The tables (5.5) and (5.6) and the figure (5.3) correspond to the equation (4.2.2). Finally, the tables (5.7) and (5.8) and the figure (5.4) correspond to the equation (4.2.3).

Bandwidth	Method	Coef.	Std. Err.	p value	90% C.I.
50	Conventional	0.243	0.373	0.515	[-0.371 , 0.857]
50	Bias corr. rob.	0.223	0.529	0.674	[-0.647 , 1.093]
25	Conventional	0.218	0.412	0.597	[-0.460 , 0.896]
25	Bias corr. rob.	-0.185	0.572	0.746	[-1.125 , 0.756]
6.55	Conventional	-0.348	0.656	0.596	[-1.427 , 0.731]
6.55	Bias corr. rob.	-0.418	0.809	0.605	[-1.750 , 0.913]

Table 5.3: The effect of the subsidies on the box office

Bandwidth	eff. observation on the left	eff. observation on the right
50	129	102
25	121	101
6.55	43	67

Table 5.4: Effective number of observations for the equation 4.2.1

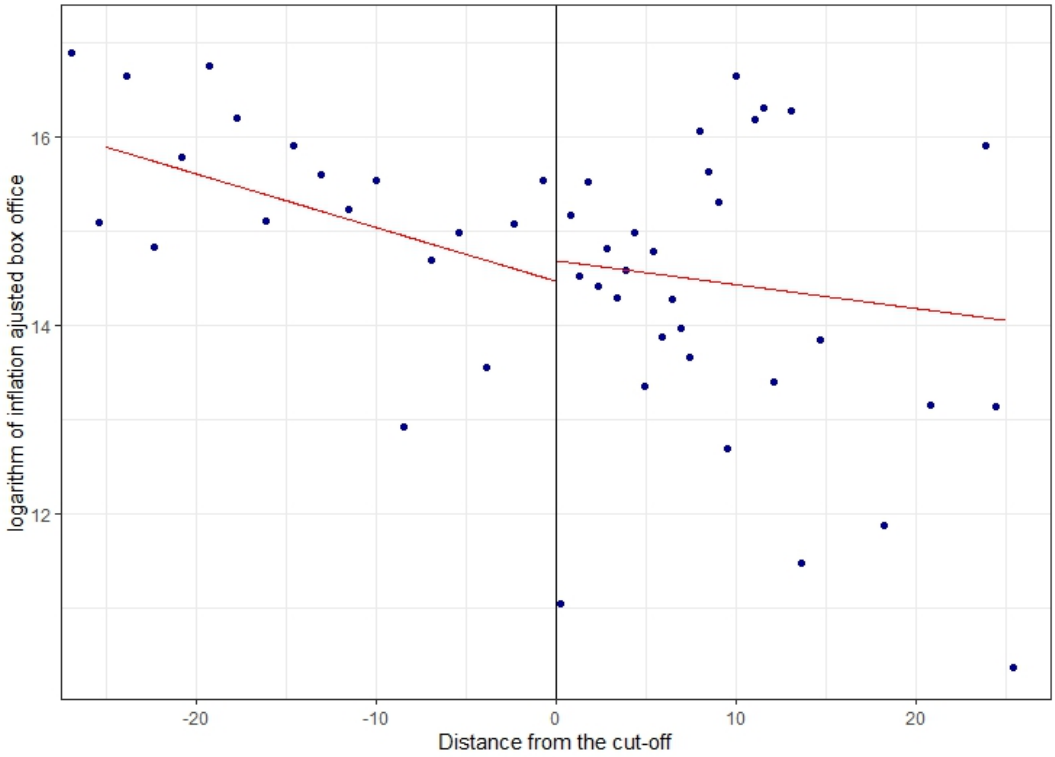

Figure 5.2: Graph of the effect of the subsidies on the box office, bandwidth of 25

Bandwidth	Method	Coef.	Std. Err.	p value	90% C.I.
50	Conventional	0.380	2.482	0.878	[-3.704 , 4.463]
50	Bias corr. rob.	0.509	3.631	0.889	[-5.463 , 6.481]
25	Conventional	0.649	2.806	0.817	[-3.966 , 5.265]
25	Bias corr. rob.	1.786	4.096	0.663	[-4.951 , 8.523]
6.58	Conventional	5.010	5.508	0.363	[-4.05 , 14.07]
6.58	Bias corr. rob.	6.934	6.561	0.291	[-3.857 , 17.726]

Table 5.5: The effect of the subsidies on the viewer ratings

Bandwidth	eff. observation on the left	eff. observation on the right
50	134	107
25	125	106
6.58	46	69

Table 5.6: Effective number of observations for the equation 4.2.2

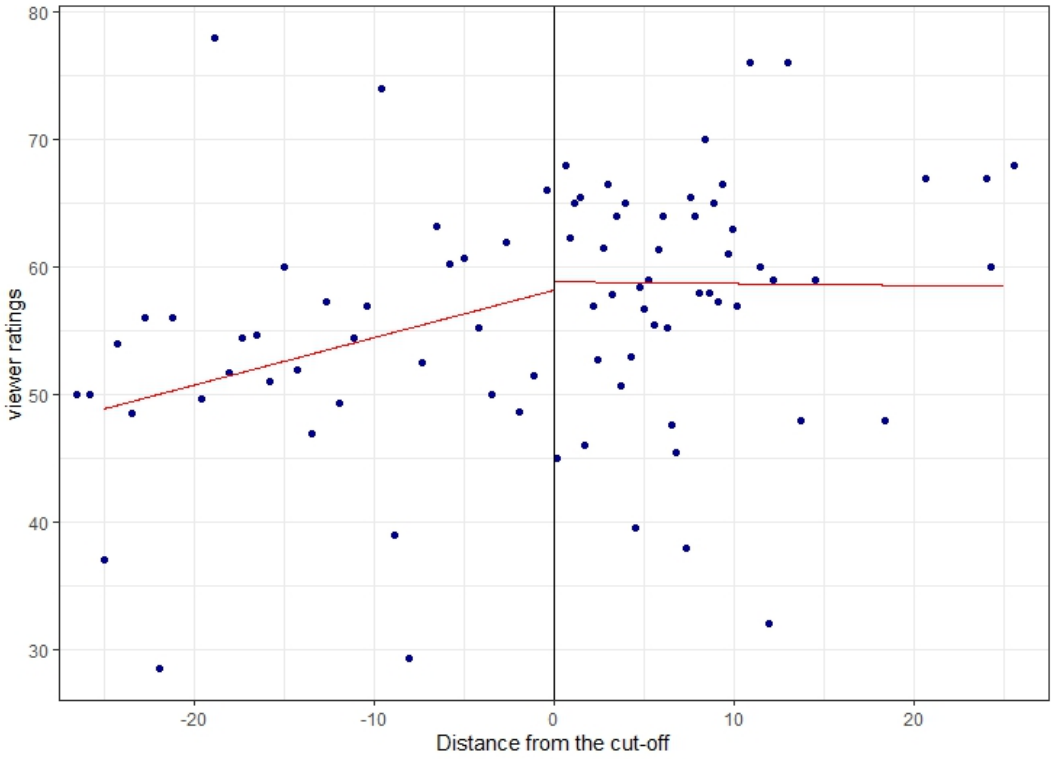

Figure 5.3: Graph of the effect of the subsidies on the viewer ratings, bandwidth of 25

Bandwidth	Method	Coef.	Std. Err.	p value	90% C.I.
50	Conventional	-0.078	0.109	0.477	[-0.257 , 0.102]
50	Bias corr. rob.	-0.236	0.157	0.133	[-0.495 , 0.022]
25	Conventional	-0.146	0.124	0.240	[-0.35 , 0.059]
25	Bias corr. rob.	-0.181	0.184	0.327	[-0.484 , 0.123]
6.2	Conventional	-0.400	0.213	0.060	[-0.75 , -0.049]
6.2	Bias corr. rob.	-0.421	0.269	0.117	[-0.863 , 0.021]

Table 5.7: The effect of the subsidies on the probability of receiving at least one nomination

Bandwidth	effective observation left	effective observation right
50	133	107
25	124	106
6.2	42	63

Table 5.8: Effective number of observations for the equation 4.2.3

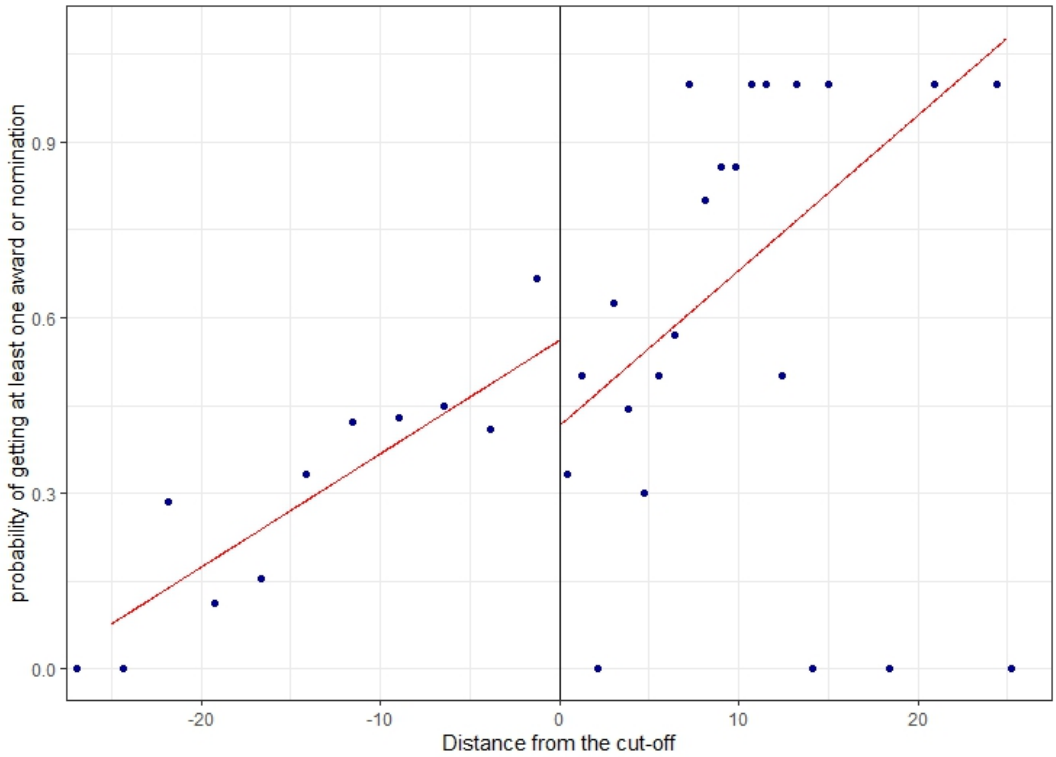

Figure 5.4: Graph of the effect of the subsidies on the probability of receiving at least one nomination, bandwidth of 25

To briefly comment on this section, the results on the effect of the subsidies on the movie production quality seem inconclusive in general. There is no statistically significant evidence to support the claim that subsidies increase the box office or the viewer ratings. However, there seems to be some evidence that the subsidies might lead to lower expected film critic ratings as measured by the number of nomination at the Czech Lion Awards. This is supported by the data in the table (5.7) that shows negative treatment effects for all bandwidths and at the MSE-optimal bandwidth of 6.2 the null hypothesis of no effect can be rejected at the 10% significance using the conventional estimate. In the case

of the bias corrected robust estimate the rejection of the null hypothesis of no effect is also relatively close.

5.3 Evaluation of the Czech Films Fund's subsidy strategy

Finally, to explore the relationship between Czech Film Fund's selection of movies to subsidize and their outcomes, I will estimate 3 econometric models, equation (4.3.1), equation (4.3.2) and equation (4.3.3), specified in the methodology section, to which tables (5.9), (5.10) and (5.11) correspond respectively. In this section I will use the basic multiple linear regression model estimated via OLS.

Variable	Estimate	Std. Error	t value	p value
(Intercept)	-11.5770868	2.8022667	-4.1313	5.133e-05 ***
score	-0.0375414	0.0093254	-4.0257	7.828e-05 ***
year14	-0.0996991	0.5438782	-0.1833	0.8547
year15	0.3728435	0.6133602	0.6079	0.5439
year16	-0.1260682	0.5934324	-0.2124	0.8320
year17	0.0713903	0.5987752	0.1192	0.9052
year18	-0.1325262	0.5977180	-0.2210	0.8253
year19	0.6560382	0.7189288	0.9125	0.3625
year20	0.4872927	0.7609825	0.6403	0.5226
year21	0.7827723	0.7191066	1.0885	0.2776
year22	2.3421359	0.4966595	4.7158	4.286e-06 ***
year23	2.7947033	0.5197094	5.3774	1.993e-07 ***
log_cpi_budget	1.7125309	0.1633882	10.4814	$<$ 2.2e-16 ***

Table 5.9: Relationship of the score and the box office

Variable	Estimate	Std. Error	t value	p value
(Intercept)	-1.741932	23.510537	-0.0741	0.941002
score	0.241949	0.080439	3.0078	0.002925 **
year14	4.339631	3.587170	1.2098	0.227617
year15	4.071360	3.901835	1.0434	0.297841
year16	-1.228332	4.121772	-0.2980	0.765965
year17	-2.518149	3.770923	-0.6678	0.504946
year18	-1.550111	4.124998	-0.3758	0.707425
year19	3.252194	4.145798	0.7845	0.433584
year20	-3.096129	4.021419	-0.7699	0.442147
year21	5.103935	4.370654	1.1678	0.244113
year22	3.358301	3.023826	1.1106	0.267900
year23	-0.349819	3.361965	-0.1041	0.917219
log_cpi_budget	2.358944	1.319297	1.7880	0.075093 .

Table 5.10: Relationship of the score and the viewer ratings

Variable	Estimate	Std. Error	t value	p value
(Intercept)	-3.8867380	0.6457939	-6.0185	6.963e-09 ***
score	0.0100309	0.0037909	2.6460	0.008712 **
year14	-0.0521177	0.1382391	-0.3770	0.706516
year15	-0.0376784	0.1516921	-0.2220	0.824499
year16	0.0947449	0.1524328	0.6216	0.534833
year17	-0.1255773	0.1503609	-0.8358	0.404121
year18	-0.0236752	0.1643949	-0.1867	0.875731
year19	0.0480268	0.1807725	0.2657	0.790729
year20	-0.2993985	0.1631565	-1.8350	0.067803 .
year21	0.2135592	0.1723133	-1.2498	0.212650
year22	-0.5143941	0.1248568	-4.1127	5.463e-05 ***
year23	-0.6677996	0.1369912	-4.8748	2.041e-06 ***
log_cpi_budget	0.2191280	0.0398727	5.4957	1.038e-07 ***

Table 5.11: Relationship of the score and the artistic quality

To briefly comment on this section, the estimated relationship of the score variable and the box office is negative and statistically significant. Given the log-level specification of the model, the interpretation is that for unit increase in the score the box office decreases approximately by 3.8%. The estimated relationship of the score variable and the viewer ratings is positive and statistically significant, for unit increase in the score increase of 0.24 in the viewer ratings is expected. And finally, the estimated relationship of the score variable and the artistic quality (measured by the nominations) is positive and significant as well, for unit increase in the score increase of the probability of movie

being nominated at least once of 0.01 is expected. All interpretations are made with ceteris paribus assumption.

5.4 Limitations of the results

The results presented above are subject to certain limitations.

The first limitation is the relatively small density of observations around the cut-off, which then implies a small number of observations in samples at low bandwidths, which could lead to unreliable estimates for these bandwidths.

The second limitation is the repeating of associated observations in the dataset, i.e. the fact that there are multiple subsidy applications per single project. This is caused by the fact that one producer might apply multiple times for a subsidy for the same project until the subsidy is granted. This limitation might cause a downward bias of the estimated treatment effect because it increases the number of observations below the cut-off with the value of the outcome variable equal to the observations above the cut-off. However, this does not pose a significant risk to the analysis for two reasons. First, such repeating observations are not very common (around 15%), so the scale of this bias is relatively small. Second, the main result of this thesis (effect of subsidies on probability of completion within 3 years) is statistically significant even in the presence of the bias in the opposite direction. This limitation could potentially be overcome by removing projects with repeating observations, but this would come at the cost of further reducing the number of observations.

Chapter 6

Conclusion

In my thesis I have explored the impact of CFF's production subsidies on the quantity and quality of the movie production in the Czech republic. In the introduction, I have proposed the three main research questions, I will restate them here.

First, do the subsidies for movie production granted by CFF increase the probability of the movies being produced?

Second, conditional on being produced, do the subsidies for movie production granted by CFF lead to better performance of subsidized movies?

Third, do the subsidies disproportionately go to movies which are, conditional on being produced, of higher quality than the movies not receiving the support?

Based on the results, I conclude that the subsidies do increase the probability of the movies being produced in the short run. On the other hand, subsidies have no significant positive effect on the quality of movies, conditional on these movies being produced, regardless of the variable chosen to measure the quality. On the contrary, it seems that the subsidies might have a negative effect on the artistic quality measured by the number of nominations. Last but not least, I have found that subsidies go disproportionately more to the movies with higher general public and critic ratings (measured by the number of nominations) and to the ones with lower box office.

I wanted to compare the results of my thesis with the results found in the literature but unfortunately the literature on this topic is quite inconclusive which makes the comparison difficult. This again underscores the importance of national specifics of movie industries and the subsidization schemes which has to be taken into account when studying this topic.

Few promising paths for future research have emerged during the writing of this thesis.

First possible path for the future research might be an extension of the considered outcome variables to include international film awards and festivals with the aim to infer the impact of subsidies on international competitiveness of Czech films.

Second possible path for the future research might be to focus on the other streams of revenue besides the box office alone. For example another major source of revenue for film producers comes from the film distribution in television and on the streaming platforms. This would allow for exploration of the impact of subsidies on the overall financial performance of the movies.

Third possible path for the future research might be to look at the historical data, for example considering only applications older than 10 or 15 years with the aim to answer the question whether subsidies only accelerate movie production without necessarily increasing the number of movies produced in the long run.

Practical implications of this thesis mainly consist of the policy evaluation and recommendation to the CFF. Based on the findings of this thesis, it can be argued that the current strategy of film subsidization by CFF is directed towards subsidizing less commercial film of higher quality and that many of these films would not be created without receiving the subsidy.

Bibliography

Agnani, B. & H. Aray (2010): "Subsidies and awards in movie production." *Applied Economics Letters* **17(15)**: pp. 1509–1511.

Cattaneo, M. D. & R. Titiunik (2022): "Regression discontinuity designs." *Annual Review of Economics* **14(1)**: pp. 821–851.

Chaplin, D. D., T. D. Cook, J. Zurovac, J. S. Coopersmith, M. M. Finucane, L. N. Vollmer, & R. E. Morris (2018): "The internal and external validity of the regression discontinuity design: A meta-analysis of 15 within-study comparisons." *Journal of Policy Analysis and Management* **37(2)**: pp. 403–429.

Laugee, T. & C. Rabiller (2020): "Nationalist discourses on art during the nineteenth century." EncyclopÃ©die d'histoire numÃ©rique de l'Europe [online], `https://ehne.fr/en/node/12262`. Accessed: 29/07/2024.

Lee, D. S. (2008): "Randomized experiments from non-random selection in us house elections." *Journal of Econometrics* **142(2)**: pp. 675–697.

Lee, D. S. & T. Lemieux (2010): "Regression discontinuity designs in economics." *Journal of economic literature* **48(2)**: pp. 281–355.

McCrary, J. (2008): "Manipulation of the running variable in the regression discontinuity design: A density test." *Journal of econometrics* **142(2)**: pp. 698–714.

McKenzie, J. (2023): "The economics of movies (revisited): A survey of recent literature." *Journal of Economic Surveys* **37(2)**: pp. 480–525.

McKenzie, J. & W. D. Walls (2013): "Australian films at the australian box office: Performance, distribution, and subsidies." *Journal of Cultural Economics* **37**: pp. 247–269.

Meloni, G., D. Paolini, & M. Pulina (2015): "The great beauty: Public subsidies in the italian movie industry." *Italian Economic Journal* **1**: pp. 445–455.

Parc, J., C. Umana-Dajud, & P. Messerlin (2022): "The impact of subsidies on film quality: Empirical evidence from france, korea, the united kingdom, and united states." *The Journal of Arts Management, Law, and Society* **52(6)**: pp. 419–434.

Rosenfeld, Jason, P. (2004): "The salon and the royal academy in the nineteenth century." In Heilbrunn Timeline of Art History. New York: The Metropolitan Museum of Art, 2000–. `http://www.metmuseum.org/toah/hd/sara/hd_sara.htm`. Accessed: 2024-07-29.

Tannenwald, R. (2010): "State film subsidies: Not much bang for too many bucks." *Center on Budget and Policy Priorities* **9**.

Teti, E. (2013): "The dark side of the movie. the difficult balance between risk and return." *Management Decision* **51(4)**: pp. 730–741.

Teti, E., A. Collins, & J. Sedgwick (2014): "An offer they couldn't refuse (but probably should have): the ineffectiveness of italian state subsidies to movie-making." *Public Money & Management* **34(3)**: pp. 181–188.

Thistlethwaite, D. L. & D. T. Campbell (1960): "Regression-discontinuity analysis: An alternative to the ex post facto experiment." *Journal of Educational psychology* **51(6)**: p. 309.

Weber, N. R., A. Marchand, & R. E. Kunz (2024): "The global impact of public and private funding on cultural and economic movie success: evidence from german film funding." *Journal of Cultural Economics* **48(2)**: pp. 259–283.