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**Economic analysis of Czechoslovak New
Wave in the Film industry in historical
and political context of the 1960s**

Bachelor thesis

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Prague, January 4, 2022

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Abstract

The goal of the thesis is to compare the profitability of Czechoslovak New Wave movies with the rest of the movies made in 1960s in Czechoslovakia. The comparison uses statistical tests and visualising using boxplots. The comparison consists of three steps; the comparison of gains, the comparison of production costs and the comparison of attendance. The comparison of production costs is supplemented by comparison of the exterior filming typical for Czechoslovak New Wave and by regression model showing which factors had influence on production costs. Among the factors are exterior filming, atelier filming, whole production time and the model contains also dummies: film color, film format and whether the movie is Czechoslovak New Wave movie or not. This analysis is put into Czechoslovak political and economic background since 1945 to 1970. The thesis briefly describes the Czechoslovak New Wave movement and describes the development of Czechoslovak film industry since 1945 to 1970 and its indicators such as number of cinemas and seats, attendance and number of produced movies.

Keywords	Film Industry, Czechoslovak New Wave, Cost-Benefit Analysis, Production costs, Film Attendance, the 1960s
Title	Economic analysis of Czechoslovak New Wave in the Film industry in historical and political context of the 1960s
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Abstrakt

Cílem práce je porovnat ziskovost filmů československé nové vlny se zbytkem filmů natočených v 60. letech v Československu. Srovnání využívá statistické testy a vizualizaci pomocí boxplotů. Porovnání se skládá ze tří kroků; srovnání zisků, srovnání výrobních nákladů a srovnání návštěvnosti. Srovnání výrobních nákladů je doplněno srovnáním exteriérového natáčení typického pro Československou novou vlnu a regresním modelem ukazujícím, které faktory měly vliv na výrobní náklady. Mezi faktory patří natáčení exteriéru, ateliérové

natáčení, celý výrobní čas a model obsahuje i dummy proměnné: barva filmu, formát filmu a zda jde o film Československé nové vlny či nikoli. Tato analýza je zasazena do československého politického a ekonomického pozadí od roku 1945 do roku 1970. Práce stručně popisuje hnutí československé nové vlny a popisuje vývoj československého filmového průmyslu od roku 1945 do roku 1970 a jeho ukazatele, jako je počet kin a míst, návštěvnost a počet vyrobených filmů.

Klíčová slova	Filmový průmysl, československá nová vlna, nákladově-výnosová analýza, výrobní náklady, návštěvnost kin, šedesátá léta
Název práce	Ekonomická analýza československé nové vlny ve filmovém průmyslu v historickém a politickém kontextu šedesátých let
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Chapter 1

Introduction

„Imbecilita komerčních zájmů a nesmiřitelnost ideologického dogmatu, to jsou dvě zla ohrožující filmové umění. Když byla česká kinematografie hned po válce znárodněna, osvobodila se z moci prvního zla, a během šedesátých let se pomalu zbavovala druhého. V té krátké chvíli svobody (svobody relativní, ale tak vzácné na naší planetě) se narodila velká plejáda mladých českých filmařů.“ Milan Kundera¹

„The imbecility of commercial interests and the irreconcilability of ideological dogma are two evils that threaten film art. When Czech cinema was nationalized immediately after the war, it freed itself from the power of the first evil, and slowly got rid of the second during the 1960s. In that brief moment of freedom (relative freedom, but so rare on our planet), a great number of young Czech filmmakers was born.“ Milan Kundera²

¹Kundera (1996)

²the translation was made by the author

The main aim of this Bachelor thesis is to compare the Czechoslovak New Wave movies in terms of profitability with the rest of the movies made in the 1960s in Czechoslovakia. The comparison will have three steps: comparison of gains, comparison of production costs and comparison of attendance. The comparison will be first based on statistical test and after it will be based on boxplot comparison of the two groups (samples). The comparison of production costs will be supplemented by a comparison of duration of exterior filming and by a model analysing the factors influencing the production costs. The author found evidence that a lot of exterior filming, which is typical for a Czechoslovak New Wave, causes additional costs. Therefore he provides a model for testing factors (including duration of exterior filming), for instance duration of atelier filming, overall production time of a movie to reveal whether the duration of exterior filming indeed causes additional costs and whether there is any other factor causing even higher costs in the model.

The secondary aim is to provide the information about Czechoslovak film industry indicators, *i.e.* number of cinemas and seat, cinema attendance and number of movies produced, since 1945 to 1970.

The third aim of this Bachelor thesis is to provide a brief background. It includes the development of a political and economic background since 1945 to 1970 and the development of a film industry in Czechoslovakia since 1945 to 1970. After that the description of Czechoslovak New Wave follows.

The Czechoslovak New Wave is a part of Czechoslovak (now Czech and Slovak) cultural heritage. As Milan Kundera said, the film industry in Czechoslovakia had two advantages and that is relative ideological freedom and freedom from commercial interests. Those two advantages led to a birth of new young filmmakers, who brought something new to world cinematography.

1.1 Literature review

Czechoslovak New Wave movement was profoundly analysed in artistic way. For instance, Hames (2008) described the movement including the directors typical for Czechoslovak New Wave, their distinctive style and their movies. This book served the author for gathering the list of the movies which could be considered as Czechoslovak New Wave and also for description of the New Wave. Přádná *et al.* (2002) analysed the typical means of stylization, for instance, the typical filming environment was exterior, which the author of this thesis used as the attribute of Czechoslovak New Wave for testing whether it has

manifested in economic indicator, namely the production costs. Havelka (1971) and Saska & Jelínek (1970) served for acquiring the movie data, especially the movie production data, *e.g.* production costs or number of days in exterior, the author had to gain an access to National Film Archive, because the data are not available for public and are not available online at all, which caused additional obstacles during current Covid crisis. Also, no source provides any information about the gains of individual movies in the 1960s in Czechoslovakia, the author counted it himself using the data provided.

Dobešová (2003) in her work describes very briefly the Czechoslovak situation in political and economic way before 1989, which served for political and economical background in this thesis. Šmída (1985) profoundly described how the film industry in Czechoslovakia worked from making the literature template to editing films in labs. He also described the structural development of film industry, mentioning the centralization and decentralization. Česálková & Skopal (2016) in one chapter mention the development of cinemas in interwar and post-war era. This information helped to understand the film industry in terms of cinemas and technology. Bauma (1965) showed the economic perspective in analysing the Czechoslovak film industry in post-war era and provide the data for Czechoslovak film industry development. Skupa (2016) observes the 1960s in terms of censorship and the author took the information about how the then-censorship and communist party looked at new and unconventional movies. Finally, Doležalová & Moravcová (2020) and Dvořáková *et al.* (2020) inspired the author in making this thesis and in the analysis part the author continues the time series graphs of movie production from Doležalová & Moravcová (2020).

1.2 Aim of the thesis

The Czechoslovak New wave went into a film history as one of the most famous film movements in the world, therefore there is no doubt that the movies were critically acclaimed by the film society, but were those movies also attractive for ordinary spectators in the 1960s? The author analyses the Czechoslovak New Wave in economic perspective by comparing the production costs, the attendance and the gains of the movies with the rest of the movies made in Czechoslovakia in 1960s. The production costs comparison is supplemented by comparison of exterior filming and production costs regression model, which will reveal the effect of factors (including exterior filming) on production costs.

As far as the author is concerned this analysis of Czechoslovak New Wave has never been performed yet.

The economic analysis of Czechoslovak New Wave will be based on hypothesis which will consist of three steps (or three sub-hypotheses). The subject of the analysis will be individual Czechoslovak movie data from 1960s including Czechoslovak New Wave movies. Those data are analysed by comparing New Wave movies with the rest of the movies that were made in the same time period in Czechoslovakia (1960s) and that are not considered as Czechoslovak New Wave³. The hypothesis is as follows: The Czechoslovak New Wave movies were less profitable than the rest of the movies made in 1960s in Czechoslovakia. This hypothesis will consist of three steps, first will look at the gains, second will concentrate on production costs and third will be dedicated to movie attendance.

First step will statistically and visually compare the gains from the Czechoslovak New Wave movies with the rest of the movies. This first step will reveal the answer to the main hypothesis, but in second and third steps the author will analyse the causes of this result, namely production costs and attendance.

Second step will statistically and visually compare the production costs. Considering the typical attributes of the Czechoslovak New Wave, the author picked one that could affect the production costs. This attribute had to be measurable, otherwise there could be any analysis, therefore, for instance the typical attribute of different approach on storyline in terms of absence of tight causal links (also typical for Czechoslovak New Wave) (Přádná *et al.* (2002)) cannot be analysed in terms of the effect on production costs, or at least not in this thesis. But filming in exterior considered as the typical attribute for Czechoslovak New Wave to reach the higher level of authenticity (Přádná *et al.* (2002)), is definitely affecting the production costs. Šmída (1985) and Bauma (1965) claims that more exterior days means higher production costs, due to reserve days (among other reasons) which are mandatory for possibility of, for instance, bad weather or more importantly busy actors. This acting problem called the “acting question” was omnipresent in whole observed period in the 1960s. Actors were often busy with theatre performances or rehearsals or different movie, which caused prolonging of the filming stage of a movie. The filming stage was the most expensive among other stages (about 62% of average pro-

³For brevity from now on the author will use only "the rest of the movies" or in the analysis the author also uses a term "non New Wave", in short NW (New Wave) and NNW (non-New Wave)

duction costs for filming stage) (Bauma (1965), p.113) – the preparatory and finishing stages. Whether this attribute was a possible explanation for higher costs will be examined in this step. But first there has to be made a statistical test whether the exterior filming was dominant in NW movies with comparison with NNW movies. Thus, first sub-step will test whether the variable exterior days is statistically and visually different in NW movies than in the rest of the movies. After this, second step will be managed. Second step is to test whether the NW movies had the same costs as NNW movies. The alternative for this statement will be that the NW movies had higher costs and the possible explanation for higher costs, the author suggests, is the higher number of exterior days in filming stage of NW movies. In the end of this step, the author will provide a regression model for comparison of factors influencing the production costs. Those factors will be duration of exterior filming, atelier filming, overall production time in days and dummies: film color, film format and New Wave dummy.

Third and the last step is following – knowing that the Czechoslovak New Wave is nowadays known among cinephiles around the world and went out in history as one of the most famous film movements in the world, was this movement also attractive in the 1960s in Czechoslovakia, in other words was the attendance in cinemas on Czechoslovak New Wave movies higher than on the rest of the movies? In this step the author will statistically and visually compare the movie attendance of NW movies and NNW movies.

To conclude, first step will reveal whether the Czechoslovak New Wave was less profitable. Then the author analyses the production costs with variable exterior days as the possible cause of higher costs of NW movies on the one hand. And the reputation and current attractiveness of the NW movies on the second hand as a possible suggestion for higher movie attendance than attendance on NNW movies.

1.3 Methodology

For the purposes of the analysis in this bachelor thesis, it was necessary to use the statistical tests and models. In this section, the author will justify why they were chosen. The variables on which the statistical tests are applied are variables gains, exterior days, production costs and attendance⁴. The test

⁴the author is testing also variables atelier days, filming stage and gross sales for purposes stated in the results

on each variable was the same and its purpose was to compare two samples (groups) of the data whether there is a statistical difference between them. Groups were NW movies and the NNW movies. For the test was used the independent 2-group Mann-Whitney U Test also known as the Generalized Wilcoxon test. If the null hypothesis of the test is rejected, there is enough evidence to state that the samples (groups) are not identical. Similar test is Two Sample T Test, which was not used in this analysis, because it assumes normal distribution of variables on which the test is applied. All the variables, used in this analysis, were tested for normality by Shapiro-Wilk Test and all of them led to violation of normality (see A.2 for the results). Another option was the Brunner-Munzel Test which is the modification of the Mann-Whitney U Test and according to Karch (2021) the Brunner-Munzel Test has equal or higher power than Mann-Whitney U Test. The only exception, when the Mann-Whitney U Test is better to use, is when the data are skewed and the sample sizes differ, which was exactly the case here – the skewness exists, because the data are not normally distributed and the number of observations were 178 and 55, for NNW and NW movies respectively. Therefore, the author decided to prefer the Mann-Whitney U Test⁵. If the result is "not identical samples" the author uses the boxplots for deciding whether the NW sample has either higher values or lower values than NNW sample.

For the visualisation of the data was used the graphs showing the development of the film industry's indicators in Czechoslovakia from year 1945 to 1970 and the boxplots showing the differences in variables between two groups, *i.e.* the NW movies and the NNW movies.

As the sub-part of the second step, the author find another variables causing higher costs. It was accomplished by making regression models, namely classic OLS model and FGLS model. As the variables causing higher costs, the author chose production days, atelier days, exterior days, New Wave dummy, color dummy and format dummy (explanatory variables). The dependent variable is production costs. The problem occurring in the data was the heteroskedasticity problem. The author did a Breusch-Pagan Test against the heteroskedasticity for the classic OLS model and revealed that the heteroskedasticity is present. Therefore the author chose to make the classic OLS regression with robust standard errors and FGLS method, which also deals with heteroskedasticity. Heteroskedasticity is causing unreliability of standard errors, therefore in OLS

⁵author used both tests (The Mann-Whitney U Test and Brunner-Munzel Test) and the results were the same at the same 0.05 significance level, 3.1

regression had to be made the robust standard errors to forego the heteroskedasticity problem and to have reliable standard errors for detection of statistical significance of variables. Another solution for heteroskedasticity is creating the FGLS model. The concept of FGLS model is to put weight on each observations trying to eliminate the problem of heteroskedasticity. After modelling, the coefficients of both models were compared and taken as statistically significant if the p-value of the coefficient was less than 0.05 (significance level).

1.4 Data

For the film industry context of the Czechoslovak New Wave, the overall Czechoslovak film industry data since 1945 to 1970 was gathered. The data taken from Havelka (1971) contains annual information about number of cinemas, number of seats, overall attendance and number of feature films produced in Czechoslovakia.

As the Czechoslovak New Wave is not strictly defined movement, where could be possible to simply identify the films that matches the definition and which do not, it is hard to take the right movies into consideration. Czechoslovak New Wave is profoundly examined in Hames (2008), which served as the main and only source for gathering the movie titles used in this economic analysis. The book groups the film titles based on the author (director) and authors are grouped based on many attributes *e.g.* the style of filming – *cinéma-vérité* was typical for the Forman's group mostly. Thus, the book states also films, that were made in foreign countries after author's emigration, for instance *Taking off* or *One Flew Over the Cuckoo's Nest* both movies by Miloš Forman, which also contain a savor of New Wave (Hames (2008), p.148). Those titles were erased from the list for the analysis. Then the book mentions short films – mainly titles from the author's early work – which were eliminated from the list as well; for instance, a movie *A Character in Need of Support* is considered as one of the New Wave films, but it is a short film, thus it is erased from the list. Last condition is the year when the film was made, it had to range between 1960 and 1969 including, because the Bachelor thesis is concerned about feature films in Czechoslovakia in the 1960s. The year when the film was made is taken from the same book. In the list there are 83 movie titles.

First part of the analysis, containing the analysis of production costs, in this Bachelor thesis is based on the data gathered from Saska & Jelínek (1970).

Because Saska & Jelínek (1970) states only Czech movies (made in Czechia)⁶ and the years 1961 and 1964 misses in the National Film Archive, the bias in the results of the analysis can occur. The author took from Saska & Jelínek (1970) the information about Czech movie name, number of exterior days, atelier days, production days, production costs, production year, format and color for each movie.

Second part of the analysis, containing the analysis of attendance and gains, in this Bachelor thesis is based on the data gathered from Havelka (1971), from where the author also took the screening start year and the end year of measurement of screening. Quick mention about different source Březina (1996) for the attendance had to be made, because each source states significantly different numbers in this variable. Author decided to choose Havelka (1971) because Březina (1996) gathered the data until 1993, which erases the then situation effect, for instance some movies like *Larks on a String* had been forbidden to distribute until 1990 and since then this movie gained a decent attendance numbers. Havelka (1971) stopped measuring the attendance in 1970 at the latest, thus the movies produced in 1969 could have had lower scores due to less time in distribution than movies produced in 1960 resulting in possible bias. The gains were computed by the author himself by first computing the gross sales and then subtracting production costs from gross sales for each movie. Another bias arose when computing the gross sales, because the author took the Czech and Slovak attendance and multiplied it with Czech and Slovak average ticket price in the start year of screening. The bias is first in the average ticket price, because the prices of tickets differed and second the bias is created by not considering the change of ticket price in following years of screening of each movie. Thus, for instance if the screening of a movie started in the end of December 1965, it probably could have gained the gross sales mainly from selling the tickets in 1966, but this analysis took the average ticket price from a year 1965.

For the analysis of the New Wave the two parts have been merged together and the dataset contains 233 observations after omitting the NA values, from which 55 are in this thesis considered as NW movies (The list of movie ti-

⁶The distinction between Czechia and Slovakia or Czech and Slovak is based on state law arrangement. We know that this distinction completely overlooks the reality of Czechoslovak cinema (relatively strong decentralization of Czechoslovak film, especially since 1968). From the point of view of economic analysis, it is necessary to take into account that Czechoslovak resources were distributed, that the themes of the films, members of the production teams and spectators in cinemas were de jure Czechoslovaks. Dvořáková *et al.* (2020)

titles contained 83 Czechoslovak movie titles but Saska & Jelínek (1970) has production data only for Czech movies, thus the reduction of the number) and 178 movies are the NNW movies. Each observation contains information about year of production, Czech movie name, format, color, days of production, days in atelier, days in exterior, production costs, screening start year, Czech attendance, Slovak attendance, overall attendance, end year of measurement of screening, Czech gross sales, Slovak gross sales, overall gross sales, gains and note.

Chapter 2

Czechoslovak New Wave and its background

2.1 Political background from 1945 to 1970

In April 1945, before the war ended, the preliminary Czechoslovak government had met and had decided on political and economic development until the first elections in 1946. This government took first steps in nationalization of economy. There was an overall tendency to shift to the political left, because of heroic fights of the Red army and its liberation of Czechoslovakia. This tendency brought a election victory to a Communist Party in 1946. The influence of Soviet Union in Czechoslovakia grew and the Communist Party members started to occupy the posts in bureaucracy, army and police which in the end led to a political coup in February 1948 and introduced a totalitarian regime for next few decades. Rough times followed, communists were trying to get rid of the ideologically and politically problematic citizens, who were showing the disagreement with the regime, by political processes that could have ended with executions, thousands of inhabitants emigrated to the West. Situation loosened after the Stalin's and Klement Gottwald's death in 1953 (Dobešová (2003), p.15-20).

In the 1960s Czechoslovakia was renamed to a Czechoslovak Socialist Republic (CSSR) which supposed to confirm that the regime reached the socialist stage. But 1960s could be described as a more liberal era among other periods in Czechoslovak socialist history. Intention of then-communists was to create "socialism with human face". Relaxation in culture and also in film industry manifested in less emphasis on ideological and political correctness and in

diversion from socialist realism, which was favored by the Communist Party (Skupa (2016)). This relaxed times escalated in period denoted as Prague spring (1968), which was the final stage of the liberalization process in 1960s in Czechoslovakia, but this political relaxation ended up with invasion of armies of Warsaw Pact states led by Soviet Union on August 20 in 1968, because Soviet Union did not agree with the direction of socialism taken by CSSR. After the Soviet intervention in August in 1968, the Normalization process was set up, meaning the situation had to get back to the “normal times” by strengthening of power of the Communist Party in Czechoslovakia, the liberal era was gone, which manifested in more emphatic restriction on freedom of speech and expression, thus the film industry had to create only politically correct material. Also, in practice it meant that between the years 1968-1970 a 170 000 people left the country, because they did not want to stay, or they did not have a choice. Also 70 000 members of the Communist Party was removed and another 400 000 was erased from the list (Hames (2008), p.263).

2.2 Economic background from 1945 to 1970

After the second World War, Czechoslovakia started to nationalize the key industries (film industry was the first one). First kind of central planning, characteristic for the socialist countries, started in 1947 as a form of “Two-year plan”, where the main task was to re-construct the economy after the war. After the coup d'état in 1948, Government continued to complete nationalization – almost entire private ownership was taken to state hands. (Dobešová (2003), p. 15-20). An interesting remark should be made here, even though the ownership was common, and therefore the incentives for increasing productivity were low and there little or no competition in Czechoslovak economy, the film industry had signs of competition. There was a competition for promising literary template among those who processed this template to a movie (for instance the directors) and a competition of art groups for places in dramaturgy plan of a Barrandov studio (Szczepanik (2016), p.277).

In the 1960s the stagnation of the economy, poor economic results, unrealistic goals on the economy led to introduction of Šik reform. The Šik reform was brought to the light in 1965 and the task was relaxed economic environment, more market and less state; better motivation for the firms to produce what was demanded. The Fourth five-year plan (1966-1970) was conducted in the spirit of Šik reform and the whole process was supported by the political loosening

during the Prague spring, when even price liberalization was discussed. But the Soviet tanks situation returned the previous approaches of state governing (Dobešová (2003), p.15-20). This shows that since there is the political melting present, the melting manifest itself in other spheres such as economy, and this could be said also about film industry, because in 1960s a Czechoslovak New Wave movement has revealed.

Talking about Czechoslovak economy, the author will quickly mention the evolution of National Income. When using the base year as 1937 (where is 100% of National Income), the year 1948 is in the lowest point with 97% (the information from 1938-1947 are missing) among all observed years that is from 1948 to 1970. During the whole period the National Income was increasing, exception is the year 1963 with the decrease of 6% from the last year, the maximum increase happened in the year 1966 (Mička *et al.* (1985), p.89, p.138). Therefore in terms of National Income, the Czechoslovakia was thriving.

2.3 Film industry in Czechoslovakia from 1945 to 1970

The decree of nationalization of the film industry in Czechoslovakia was released by the president Edvard Beneš in 1945. Decree reserved the exclusive right – to own film studios, to produce movies, modify them in the laboratory, distribute them, screen them, import and export them – to the state and the organizations established for it (Šmída (1985)). The consolidation of the film property took three years because of the resistance of private owners and Sokol association who did not want to give it away (the association owned 830 cinemas, *i.e.* 45% of all cinemas in Czechoslovakia from statistics in 1937) (Česálková & Skopal (2016), p.32). After the Second World War film industry suffered firstly by the lack of appropriate movies for screening – because German movies were unthinkable – and secondly by the lack of material for making new films. Thus, Soviet movies were imported and screened for a lower price than for instance US movies, but in 1947 the attendance portion of US movies were 55.6% among all screened movies in Czechoslovakia (Česálková & Skopal (2016), p.33). Because Czechoslovak communist government preferred local or Eastern bloc film production, it set up the boundary to 35% maximal portion of Western movie titles in the Czechoslovak distribution (Česálková & Skopal (2016), p.39).

By establishing Czechoslovak state film in 1948 as an unified organization for movie business, the consolidation of movie property got to another stage. For instance, new order for distribution was made and new plan for building cinemas in countryside was created (Šmída (1985)). Looking at the statistics, Czechoslovakia had from First Republic dense network of cinemas, in 1930 1 817 cinemas and 27 citizens per seat and for instance Germany had in 1930 5 267 cinemas and 34 citizens per seat (Česálková & Skopal (2016), p.28); in 1946 Czechoslovakia had 1 642 cinemas and in 1950 2 545 cinemas, but more than a half had less than 300 seats and only 1/6 was screening daily. In 1955 less than half of the cinemas could screen only 16 mm film, and cannot screen 35 mm nor 70 mm film (Česálková & Skopal (2016), p.34). 70 mm film screening, which provided higher picture and sound quality than its predecessors – 35 mm and 16 mm film (basically the higher number of mm, the more information can the film bear), started to be used in 1969 in Czechoslovakia, therefore for the analysis in this thesis it is negligible factor. But earlier than 70 mm, the wide-screen projection started in Czechoslovakia in 1957 (Česálková & Skopal (2016), p.34) and the number of movies produced for this type of wide-screen projection in 1960s including Czechoslovak New Wave movies had been still increasing (Havelka (1971)). Now, let's get back to the information about the number of cinemas in Czechoslovakia and the plan for building the cinemas in countryside. Havelka (1971) provides data about cinema coverage - in the 1945 there was 8.7% of municipality with a cinema in Czechoslovakia, in 1950 it was 18.6%, in 1961 it was 25.4%, in 1965 it was 24.9% and finally in 1970 it was 26.4% of municipality with a cinema in Czechoslovakia. Thus, the situation of cinemas in countryside improved, but the overall number of cinemas in the 1960s had decreasing tendency, as one can discover further in this thesis.

In 1950 the Central Committee of the Communist Party of the Czechoslovakia (CC CPC) brought to light new resolution, that should have helped in consolidation of film production process. CC CPC was concerned about the artistic quality, quantity, attractiveness and educational ideology in the movies, *e.g.* define a socialist hero that builds the socialism or depict warm relationship with Soviet Union, therefore this resolution was made. Resolution laid down the foundation stone to a cooperation between dramaturgy and production and also brought greater concentration on the education of new promising workers in the film industry. Also it imposed the indicators of film production process, in particular daily footage in meters (Šmída (1985)). Those implementations had persisted until 1960s and had positive effect on movie production.

In 1951 – 1954 the centralisation process peaked and since 1954 the Czechoslovak film industry started to decentralize, because the Czechoslovak Film (state enterprise) started to be recognized as independent entity and started to be new accounting unit. Another manifestation of decentralization is independence of the Barrandov Film Studio Barrandov (BFS) within the framework of Czechoslovak Film (CSF) in 1957 or the movie distribution and management of cinemas went on a regional level control also in 1957 (Šmída (1985)). In terms of production costs, the years 1951-1954 are characterized by a big rise of costs (peak is 5 122 000 CSK average production cost in 1954 instead of 426 000–2 400 000 in years 1945–1950), after the 1954 the average production costs decreased and in 1963 the average was 2 419 000 CSK (Bauma (1965), p.74). Because the film industry was in state hands, the financing was provided by the state as well, therefore Czechoslovakia used the profits from imported movies to finance its domestic production, which according to Bauma (1965) (p.208) was loss-making. And importing movies had proven to be profitable - from 1956 to 1962 the gains ranged between 96 740 000 CSK to 127 357 000 CSK (Bauma (1965), p. 209).

Now, let's look at from which countries, the imported movies were the most attractive. Looking at statistics of years 1957 to 1963, the leading position in average attendance for a one performance is occupied by "the other" production including US with 189 persons per performance in average in observed years, in the second place is domestic production with 163 persons. Countries of Eastern Bloc had 136 spectators per performance and USSR had just 127 (Bauma (1965), p.201). But let's turn back to the structural development of the film industry. In 1959 the decentralization process was interrupted by the Film Festival in Banská Bystrica. During this festival a five films were examined and forbidden to distribute, because the movies contained „the residues of bourgeois thinking," and that "the films are not optimistic" (Hames (2008), p.55). Those five movies are first pioneers of Czechoslovak New Wave (Hames (2008)). After a momentary shift of responsibility (because of the controversial movies) of ideological supervision from the smallest film-making art groups to a higher positioned supervisor (central director), the decentralization process continued and peaked in 1962 by relocation of Czechoslovak Film directly under CC CPC, which shows that CSF is independent and important state enterprise only ideologically controlled (Šmída (1985)).

In the period 1962-1965 the quality had raised – this could be proved by the fact of receiving the prominent prices on international festivals, but the cinema

attendance in Czechoslovakia dropped (Skupa (2016), p.88-97). Speaking about rentability, the Czechoslovak production was loss-making in observed period 1956-1962. The average year revenue is 177 363 000 CSK, peak is in 1958 with 202 540 000 CSK revenue and the worst year in terms of revenues of Czechoslovak film production is 1956 with a revenue of 152 697 000 CSK. Deducting costs from revenues will reveal the loss in every year from 1956 to 1962, going from - 16 798 000 CSK in 1958 to - 84 088 000 CSK in 1962 (Bauma (1965), p.208). Possible explanations for the financial losses and attendance drop are the reform attempts in a way of filming which had its pinnacle in 1965. Those attempts were considered as controversial in that time, because the Czechoslovak New Wave brought methods in the Czechoslovak cinematography that were new. From the 1965 the atmosphere started to boil between the film producers and censorship supervisors, and it peaked in 1968, moreover the attendance fell by 4 million spectators between the years 1965-1966 and that led to a decision that the experiment films are not needed (Skupa (2016), p.125). Liberalisation process reached the top in June in 1968 when the censorship was deleted (Skupa (2016), p.155), but not for a long time. After the Soviet intervention in August, the Normalization process was set up, meaning the situation had to get back to the “normal times” by strengthening of power of the Communist party in Czechoslovakia. A lot of artists emigrated because of the Soviet intervention and following Normalization, including for instance Miloš Forman or Ivan Passer. Those who decided to stay had to either change their style to be more ideologically acceptable or they had to quit what they were doing. But the impact of the normalization on the film production had a delay, therefore the movies could be finished in before-normalization spirit of liberal attitude (Skupa (2016)). The similar situation occurred in foreign movie import to Czechoslovakia. In 1969 the revenues of Czechoslovak Film were the highest in Czechoslovakia; and also the number of imported movies in category “other” (including US movies) were highest in the post-war era (Česálková & Skopal (2016), p.41).

2.4 Czechoslovak New Wave

Czechoslovak New Wave was considered as one of the most important movement in the world cinematography after Italian Neorealism. It represented more lasting disagreement with Socialist Realism than Polish in late 50s and Hungarian cinematography in early 70s (Hames (2008), p.13). As causes that created the

external environment for flourishing of the New Wave we could consider: the nationalization of the film industry in 1945, which provided the economic base; the establishment of a film school (FAMU) in 1947, which provided the technical training; and the de-Stalinization policies of the Czechoslovak government in the early 1960s set in motion by the XII. Congress of the Czechoslovak Communist Party in December 1962, which provided the necessary artistic freedom. But this freedom is not sufficient incentive for birth of an aesthetic movement, therefore it is necessary to seek the impulse in the ideological foundations of Czech society. Aesthetics of socialist realism supported by Czechoslovak Communist Party was rejected by New Wave. It has to be said that this rejection was not a rejection of socialism in general, it was more likely a rejection that interpreted the revolutionary ideals in a new form. The de-Stalinization era of the 1960s in Czechoslovakia led to emerge doubting of the revolutionary ideals inherent in the socialist society and this tendency influenced also film industry. Directors tried to revitalize those ideals and the result was the Czechoslovak New wave (Bates (1977)).

Directors that can be recognized as a part of the Czechoslovak New wave can be divided into five groups. First group would represent older authors that started in 1950s in Czechoslovak film industry and their movies were progressively critical and new for that time. They are Ján Kadár, Elmar Klos, Ladislav Helge, Vojtěch Jasný, Štefan Uher, František Vlácil and Karel Kachyňa. Second group is influenced by realism, directors mostly made movies that critically observed society. Representatives are Jaromil Jireš, Evald Schorm and Hynek Bočan. Third group is known as Forman's school which is represented by Miloš Forman, Jaroslav Papoušek and Ivan Passer. Each of them had their own movies and styles, but they helped and influenced each other. Miloš Forman, the main character in this group used elements of cinema-vérité and he cast non-actors, his style could be described as critical realism. Others in this group followed more or less his style. Fourth group took inspiration from literature *e.g.* Franz Kafka, or they used symbolism, imagination in their work or they experimented in their movies. In this group belongs Pavel Juráček, Jiří Menzel, Jan Němec, Věra Chytilová and Jaromil Jireš. Finally, the Slovak directors should be mentioned: Juraj Jakubisko, Elo Havetta and Dušan Hanák. Slovakian wave is inspired by East Slovakian traditions and movies can be taken as naturalistic.

It is not an exhaustive list of Czechoslovak New Wave directors, one can also mention Jan Švankmajer, Juraj Herz, Zbyněk Brynych etc. Nor it is right

to say that only directors made the Wave, whole Czechoslovak intellectual society contributed on building this original movement. To briefly mention some other contributors, it has to be mentioned the writers Jan Procházka, Bohumil Hrabal, Antonín Máša or Vladislav Vančura, who wrote the literary novels for the movies, outstanding cameraman Jaroslav Kučera who filmed probably most of the New Wave movies and the director of the Barrandov Studios in 1964-1969 Vlastimil Harnach, who protected the then production from administrative interventions (Skupa (2016); Hames (2008)).

The Czechoslovak New Wave movies were critically approved and successful on film festivals in Europe and in the world. It is worth mentioning the Academy Awards for the best foreign film – *The Shop on Main Street* (1965, Kadár, Klos) and *Closely Watched Trains* (1967, Menzel); Award for Best Director in Cannes – *All My Compatriots* (1969, Jasný). The success was not only among festival juries, but some movies can also boast great public interest not only on Czechoslovak home turf *e.g.* *Black Peter* (1963, Forman) or *Loves of a Blonde* (1965, Forman).

Even though the atmosphere of the 1960s was ideologically “loosened” in Czechoslovakia than before and after, there are examples of films that were forbidden to distribute starting with conference at Festival in Banská Bystrica which forbids five movies *e.g.* *September Nights* (1957, Jasný). Jan Němec’s film *A Report on the Party and the Guests* (1966) was forbidden “forever” and it is considered as the most controversial movie among Czechoslovak New Wave films. Despite the movie was forbidden “forever”, it was released in 1968. *Firemen’s Ball* (Forman, 1967) was also forbidden “forever” in 1973. *The Parson’s End* (1968, Schorm) was put on the black list. Then the Czech Rhapsod] (1969, Jasný), *The Ear* (1969, Kachyňa), *The Seventh Day the Eighth Night* (1969, Schorm) was put into strongbox; *Birds, Orphans and Fools* (1969, Jakubisko) was not released until 1990, etc.. In 1973 was released the list of forbidden films with more than one hundred movies made in 1960s. Because of the fact, that all those films were forbidden, they reported zero revenues until they were allowed for screening. For some films it did not happen until 1990 (after the Velvet revolution), *e.g.* *The Ear* or *Funeral Ceremonies* (1969, Sirový).

After Prague Spring in 1968 the fates of directors differed. Some of them emigrated – Miloš Forman, Ivan Passer to US, Ján Kadár to Canada and later on to US as well, Jan Němec had to emigrate in 1975 or he would go to prison, Juráček emigrated to West Germany, because he signed up Char-

ter 77, which was a document criticizing the political and state power. Some of those who stayed in Czechoslovakia could not shoot films like Ladislav Helge, Evald Schorm, etc.. Juraj Herz, Jaromil Jireš and Štefan Uher could continue in filming, Karel Kachyňa continued in making movies for children. Menzel could start again in 1975 after he evidently had to condemn his earlier work and the New Wave (Hames (2008)).

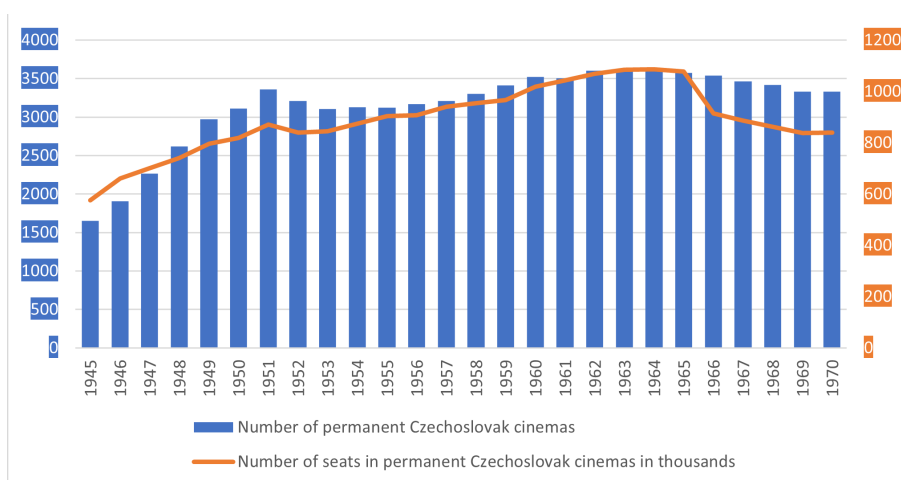
Chapter 3

Analysis

3.1 Development of the main indicators in film industry in Czechoslovakia

This part will serve as an introduction to the economic analysis of the Czechoslovak New Wave films. This introduction will consist of the development of the film industry after the Second World War until the 1970 in terms of number of cinemas and seats, attendance and number of produced films in two main studios in Czechoslovakia. The main goal, using the overall data, was to introduce the industry before going further to the more profound economic analysis of the Czechoslovak New Wave films. The data continues in the time series previously compiled by Doležalová & Moravcová (2020).

Figure 3.1: Development of number of cinemas and seats in Czechoslovakia



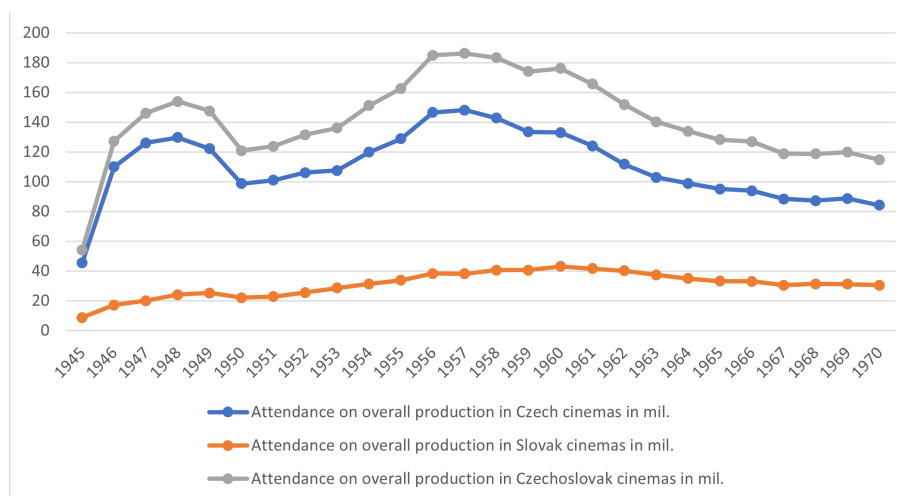
In terms of cinemas, year 1945 differs by almost 350 cinemas between the

Havelka (1971) and Doležalová & Moravcová (2020), but here the author chose to use Havelka (1971) as the source, because the information for following years provides only him. Possible explanation for the difference could be the fact that Havelka (1971) states “permanent” cinemas and Doležalová & Moravcová (2020) states “sound cinemas”. The number of cinemas is increasing heavily in first six years, then the trend changes and decrease with the local minimum in 1953 after that the number slowly increase until 1962 when the number hits its maximum and that is 3 604 cinemas (see Figure 3.1). Final stage, and also the most important for Czechoslovak New Wave analysis, has decreasing tendency until 1970 with the magical 3 333 cinemas.

In the beginning cinemas had the biggest number of seats, that is 349, and then the number decreased and stabilized in the end with the number of 252 seats per cinema, which means that even though the number of cinemas more than doubled, the number of seats per cinema decreased by almost 100 seats. Thus, the cinemas in Czechoslovakia could be considered as smaller in the end of observing period than in the beginning in 1945. Interesting phenomenon occurs between 1965 and 1966, because there is a drop of 34 permanent cinemas, but the drop in terms of seats is 164 299 seats. Havelka (1971) explains this drop as the exclusion of the summer cinemas from permanent ones in period 1966-1970, which naturally had a high number of seats.

Gradual decrease in number of cinemas, number of seats and number of seats per cinema since 1962 in Czechoslovakia leads to a question, whether the cinema attendance and thus the gains were also decreasing.

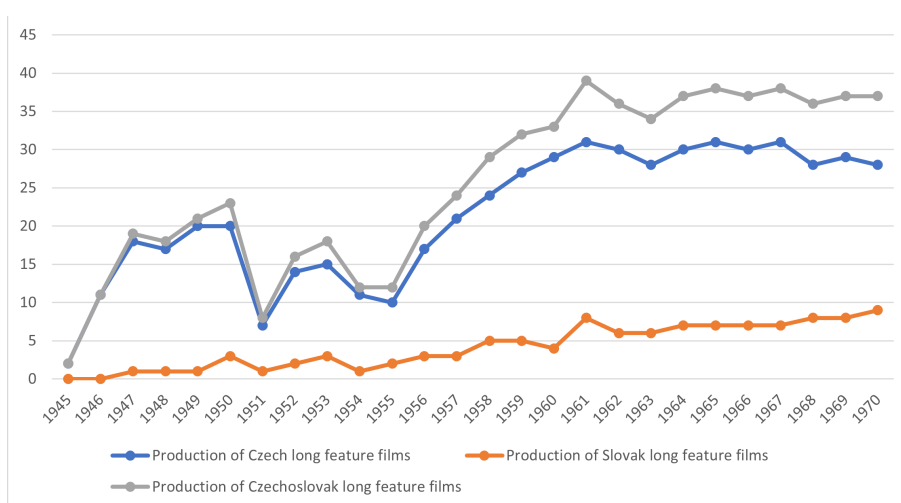
Figure 3.2: Overall film attendance in Czechoslovakia



In terms of attendance there was increasing trend in first 12 years since

1945, not mentioning the period from 1948 to 1950 when the attendance had decreasing tendency; see Figure 3.2. The peak in attendance was in 1957 with 186.21 mil. spectators per year in Czechoslovak cinemas. Since then, the attendance went down until the end of observed period in 1970 when attendance reached only 114.75 mil. spectators per year. Rough comparison of the trends of attendance with number of cinemas and seats shows that the trends are not influenced. So, was there something else, which caused the decrease of number of cinemas and seats and decrease in attendance?

Figure 3.3: Production of long feature films in Czechoslovakia

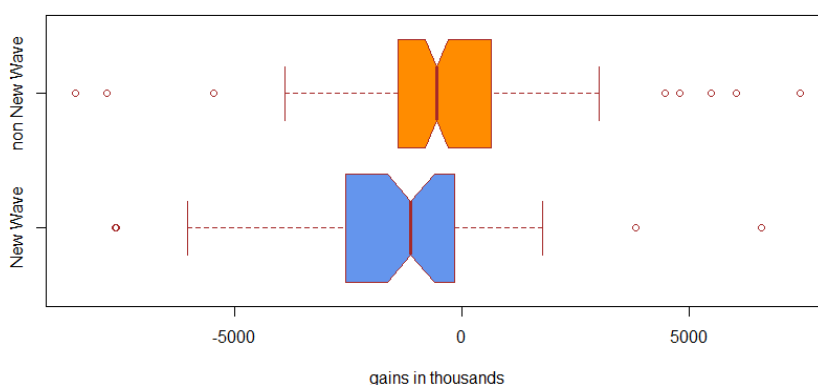


Looking at the graph Figure 3.3, film production in Czechoslovakia had had generally increasing trend since 1945 with just 2 long feature films in the beginning and in 1970 Czechoslovakia had 37 long feature movies. Big drop happened in 1951 when only 8 movies was made. The highest number of movies was produced in 1961, when Czechoslovakia produced 39 long feature films. Despite the fact, that cinemas and attendance had decreasing trends in general in 1960s, the production of long feature films was simultaneously reaching its maximum. Therefore, movie production did not affect the attendance in terms of quantity of films produced. Thus, the possible explanation is that the attractiveness of movies went down. In the 1960s in Czechoslovakia there was a new movement present in the film industry, a Czechoslovak New Wave movement and this fact brings new question of whether this movement was the issue of the decreasing numbers of cinemas and attendance. On the other hand, this movement nowadays is known as an example of the successful worldwide. Therefore, more profound analysis of the particular movies considered as the Czechoslovak New Wave movies has to be made.

3.2 Czechoslovak New Wave analysis results and discussion

First step of the main hypothesis is comparison of gains. The gains as the result of subtraction of the costs from the gross sales for each movie are often very low or negative (see Figure 3.4). For NW movie gains are middle 50% of the data (the main body of the boxplot) all below zero. For NNW movie gains is the reality better – the middle 50% of the data are around zero. The statistical test result of comparing NW sample and NNW sample is rejection of the null hypothesis, meaning the gains data from the two groups are not identical. The outliers occur in smallest values as in highest values in both groups.

Figure 3.4: comparison of gains

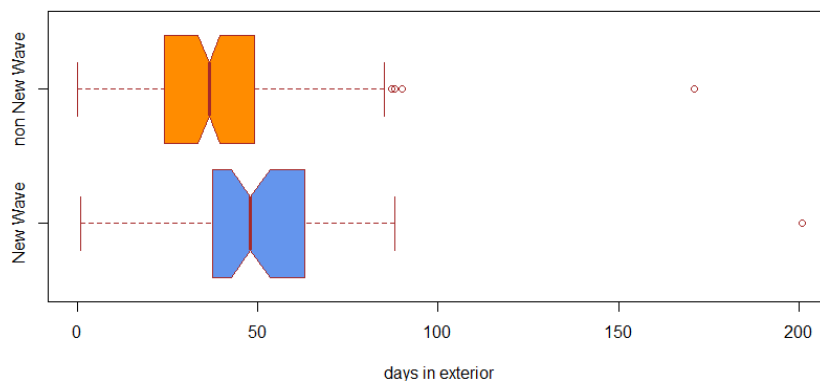


NNW movie gains have 3 outliers on the left side from the boxplot, the smallest observation is a movie *The Marathon* with loss - 8 504 thousand CSK, second smallest observation is a movie *Long Live the Republic!* with loss - 7 803 thousand CSK. On the other hand, the highest values (there are 5 outliers) are movies *Men About Town* with 7 446 thousand CSK gains and *The Incredibly Sad Princess* with 6 033 thousand CSK gains. For NW movie gains there are 2 outliers in smallest values and 2 in the highest values. They are *Adrift* with loss - 7 633 thousand CSK, *Marketa Lazarova* with loss - 7 612 thousand CSK and *Loves of the Blonde* with 6 588 thousand CSK gains and *Closely Watched Trains* with 3 811 thousand CSK gains.

Second step of the main hypothesis is comparison of costs. In this step, the procedure will be following: comparison of exterior days, comparison of costs and regression modelling. Comparing the exterior days variable between the NW movies and the NNW movies revealed that the NW movement tended

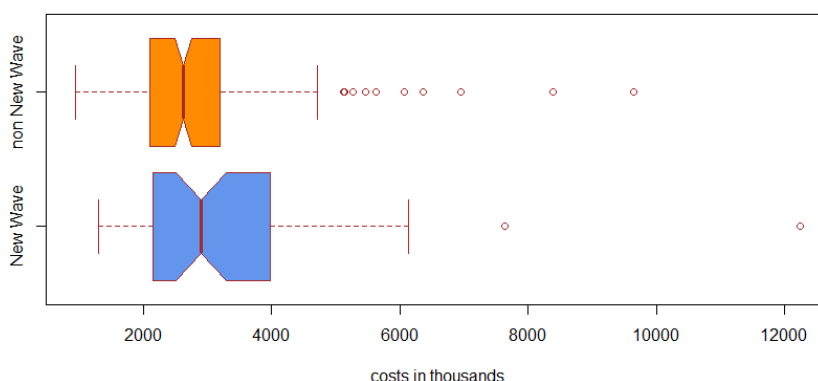
more to film in exterior than NNW (see statistical test results Table 3.1 and see Figure 3.5 for detection of higher values of exterior days in NW group). The NW exterior days variable, with the mean of 51.4 days, is significantly shifted to the right in comparison with NNW exterior days variable with the mean of 38.4 days. NW exterior days has one outlier and that is a movie Marketa Lazarova with 201 days in exterior (see Figure 3.5). The NNW exterior days have 4 outliers, the outlier with the highest value with 171 days is the movie Long Live the Republic!. Having done the first part of the second step, the procedure can continue to the comparison of production costs. If the NW production costs were higher the author would suggest that it is due to more exterior days during the filming stage, which was just proven. Even

Figure 3.5: comparison of exterior filming in days



though the visualised production costs data in the diagram Figure 3.6 may lead to a statement, that the production costs of NW are higher, the statistical test failed to reject the null hypothesis. In other words, the NW movies and NNW movies have statistically same production costs. The most expensive NW movies were Marketa Lazarova with cost almost 12.3 mil. CSK and Adrift with cost 7.6 mil. CSK, both are the only outliers. The NNW movies have altogether 10 outliers. Those with the highest values were movies the Marathon and Long Live the Republic!, which cost 9.7 mil. CSK and 8.4 mil. CSK, respectively. On the other hand, the lowest values in costs reached movies Camera Rolling and Black Peter (= Peter and Paula), with production costs 0.9 mil. CSK and 1.3 mil. CSK respectively, first one being the NNW movie and second NW movie. To finalize this second step for the main hypothesis, the regression model showing the relationships between production costs (dependent variable) and factors influencing production costs (explanatory variables) will be briefly stated, because the author wants to prove whether the exterior days had

Figure 3.6: comparison of production costs



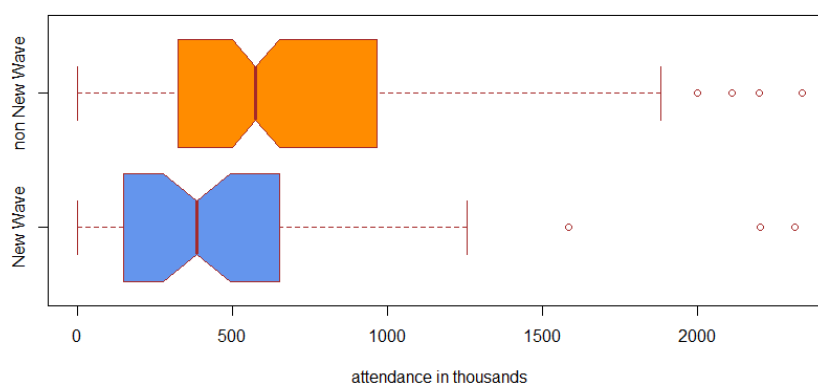
an effect on production costs and reveal other factors influencing the production costs. For explanatory variables the author considered production days (the sum of all stages of making a movie including preparatory works, filming stage and finishing works), atelier days, exterior days, New Wave dummy, color dummy and format dummy. See Table A.1 where the results are displayed. In OLS model one can see, that the color is not statistically significant variable, therefore its coefficient should not be taken as reliable. All the other variables are statistically significant at 0.05 significance level, moreover variables production days, atelier days and format dummy has p-value less than 0.001, which means they are very statistically significant. In terms of values of coefficients, new findings have been revealed, *i.e.* atelier days are more costly than exterior days. With each atelier day the costs increase on average by 23.8 thousand CSK (In this model), but with each exterior day the costs increase on average only by 16 thousand CSK.

For variable production days the coefficient is 7.3, which means that each day of film production costs 7.3 thousands CSK. New Wave dummy's coefficient brings again new findings, because its value of 320.6 means, that if the movie was considered as NW movie, it cost on average 320.6 thousands CSK more, which contradicts the previous result of Mann-Whitney Test, that the NW and NNW movies are statistically identical in terms of production costs. But the author will trust the Mann-Whitney Test result, because this model includes other variables, which could affect the New Wave dummy variable and also the New Wave dummy coefficient is statistically significant only at 0.05 significance level, which is sufficient, but not much for convincing to trust rather this model and not the Mann-Whitney Test result. And finally the format dummy coefficient has value of 550.5, which means that if it was wide-screen movie, the costs

for it would be higher by 550.5 thousand CSK. The fgls model for comparison had similar results. What have changed (apart from the value of coefficients) is that the color dummy started to be statistically significant at 0.05 significance level and its value is 368.9 meaning that if the movie was colorful, the costs increased on average by 368.9 thousand CSK. And on contrary the variable exterior days is less statistically significant, but still its p-value is less than 0.05 (significance level).

In terms of attendance, NW movies was not as attractive as the NNW movies. The statistical test rejected the null hypothesis, meaning the attendance data from NW and NNW movies are not identical (see Table 3.1). It

Figure 3.7: comparison of attendance



can also be seen from the diagram Figure 3.7, that the middle 50% of the data (the main part of the boxplots) are significantly shifted from each other, non NW movie attendance is more to the right demonstrating higher attendance. Both boxplot's whiskers are starting at zero, meaning that some of the movies were forbidden or the screening had not started until 1970 (the year when the measurement of attendance ended), therefore the attendance number is zero. In NW movies it was *The Seventh Day*, *the Eighth Night*, *Funeral Ceremonies*, *The Ear*, *Squandered Sunday*, *Larks on a String* and *Adrift*. In NNW movies it was *The Tales of Hoffmann* (1962), *Kinoautomat: One Man and His House*, *A Matter of Days*, *Mr. Tau* and *Ezop*.

In terms of the highest attendance, the winner is *The Incredibly Sad Princess* from the NNW group with 2 340 thousands spectators, the second highest attendance in the same NNW group has a movie *Ring Up Martin* with 2 201 thousand spectators, both are outliers. NW movie attendance highest outliers were *Loves of the Blonde* with 2 313 thousand spectators and *When the Cat Comes*

with 2 204 thousand spectators. For completion, the NNW attendance data has 4 outliers and NW attendance data has just 3 outliers.

Table 3.1: results of Mann-Whitney U Test and Brunner-Munzel Test

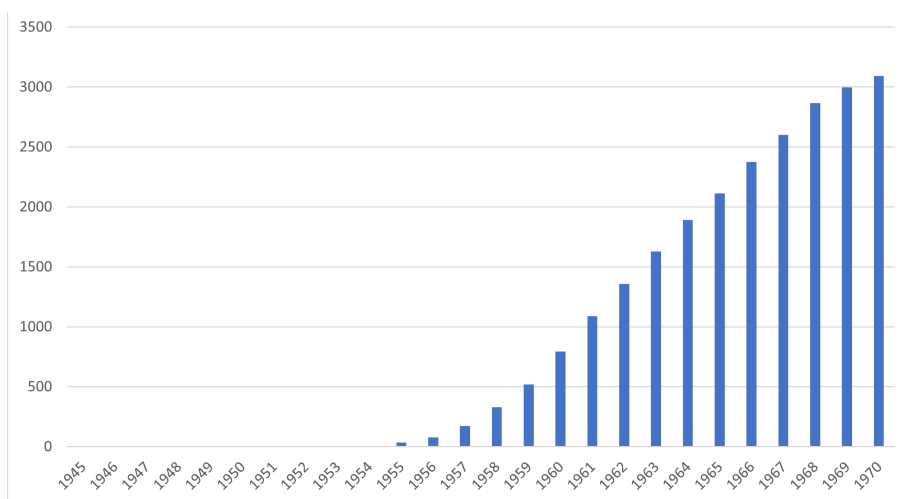
variable	Mann-Whitney U Test	Brunner-Munzel Test
Exterior days	not identical	not identical
Atelier days	not identical	not identical
Costs	identical (0.269)	identical (0.315)
Attendance	not identical (0.002)	not identical (0.003)
Gains	not identical (0.003)	not identical (0.004)

tests made at 0.05 significance level. If the p-value is higher than 0.001, it is in brackets

To summarize the findings, it is necessary to state that the NW movement was not attractive for the spectators, which projected on non-profitability on average (the mean of the gains is - 1 321 thousand CSK), the NNW movies was non-profitable on average as well, but the result was better (the mean of the gains is - 392 thousand CSK). The costs were the same in terms of statistical testing, but visually it can be seen that the costs were slightly higher among NW movies. Therefore the answer on the main hypothesis is that the NW movies were less profitable than the rest of the movies. But it is necessary to say, that also the rest of the movies were not profitable and the overall development, mentioned before the main analysis, of numbers of cinemas, seats and attendance numbers were going down in the 1960s. Thus, there had to be another reason causing this decline in cinema attendance and gains from movie production, other than non-attractiveness of Czechoslovak New Wave in its time in Czechoslovakia (1960s). Possible explanation is the increasing popularity of televisions, which are the substitutes for the cinemas. In graph Figure 3.8 is shown the development of number of TVs.

Another explanation of the attractiveness decline of domestic film supply is that possibly the culture society changed and the demand for it was not as before. Or there is also possibility of shifting from the domestic film production demand to a imported film production demand, especially the demand for movies from category "other" including the US movies. These suggestions are not analysed in this thesis, but could be analysed in further research, possibly for Master Thesis.

Figure 3.8: Development of number of TVs (in thousands) in Czechoslovakia



Chapter 4

Conclusion

The main motivation of this thesis was to compare the Czechoslovak New Wave movies with the rest of the movies made in 1960s in Czechoslovakia in terms of profitability. The comparison consisted of three parts, *i.e.* comparison of gains, comparison of production costs, and comparison of attendance. For this, the author did the statistical comparison of the two samples (groups) using the Mann-Whitney U Test, which is preferred, but he states the Brunner-Munzel Test for reassurance of the results. The statistical comparison was supplemented by comparison of boxplots showing the distribution of data. The two statistical tests applied on attendance and gains revealed that the two samples are statistically not identical for both variables and after looking at the boxplots, the author decided that Czechoslovak New Wave movies had less attendance and lower gains than the rest of the movies made in 1960s in Czechoslovakia. But in fact, both samples did not bring positive results in terms of gains (both groups had negative average gains).

The statistical test for production costs revealed that the two samples are statistically identical at 0.05 significance level, therefore production costs were similar for Czechoslovak New Wave movies and for the rest of the movies made in 1960s in Czechoslovakia. The comparison of production costs was supplemented by comparison of duration of exterior filming and by regression model of production costs. The comparison of exterior filming using the same statistical tests as for other comparisons in this thesis revealed that the two samples are not identical and the boxplots of exterior filming shows that Czechoslovak New Wave movies have higher values of exterior filming than the rest of the movies. The production costs regression model was made using OLS method with robust standard errors and FGLS method, because the heteroskedasticity

was present in the data. The coefficients of variables revealed that exterior filming indeed causes higher production costs, each extra exterior filming day rises the production costs by 16.1 (for OLS and 7.4 for FGLS method) thousand Czechoslovak Crowns (CSK). But the author also found, that variable atelier filming causes even higher costs. Each extra atelier filming day rises the production costs by 23.8 (for OLS and 17.6 for FGLS method) thousand CSK.

The development of Czechoslovak film industry indicators revealed that in the 1960s the number of cinemas and seats were decreasing, the overall attendance was decreasing and the number of movies produced was almost stable.

To conclude, the comparisons found that Czechoslovak New Wave was less profitable than the rest of the movies in 1960s in Czechoslovakia. But both groups were loss-making. This fact could be explained by decreasing overall attendance, thus even the number of cinemas was decreasing. Therefore, it has to exist some factor causing the decline in attractiveness in going to the cinema. The author suggest that the factor is television, which was becoming trendy in the 1960s in Czechoslovakia.

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Appendix A

Figures

Table A.1: results of OLS (with robust s.e.) and FGLS models

Expl. variable	OLS	FGLS
Intercept	-543.7 (.)	-70.4 (.)
Production days	7.3 (***)	7.4 (***)
Atelier days	23.8 (***)	17.6 (***)
Exterior days	16.1 (**)	7.4 (*)
New Wave dummy	320.6 (*)	249.7 (*)
Color dummy	183.4 (.)	368.9 (*)
Format dummy	550.5 (***)	380.7 (***)
observations	233	233
R squared	0.628	0.521

0 **** 0.001 *** 0.01 ** 0.05 * 0.1 . 1

Table A.2: results of Shapiro Wilk Test

Variable	Shapiro Wilk Test result
Exterior days	deviate from normal
Atelier days	deviate from normal
Costs	deviate from normal
Attendance	deviate from normal
Gains	deviate from normal

tests made at 0.05 significance level, p-values were very low