The Performance of German Motion Pictures, Profits, and Subsidies: Empirical Evidence from the '90s

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Abstract

This paper discusses different mechanisms of subsidy allocation invoked by operation of law. We compare the allocation of subsidies via committees to the allocation of subsidies through the reference principle, which binds public support to performance at the box office. The analysis is embedded in a broadly disposed regression analysis of the determinants of the performance of German movies in the theatrical market. It aims to identify market characteristics and contrasts the German case with studies that address foreign markets. Finally, the profitability of the industry is considered as the presumed economic non-viability of the industry constantly recurs in the public debate as an argument for subsidies.

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1 Introduction

This paper pursues three objectives. First, against the background of heavy subsidization of the German film industry, it analyzes the effects of two types of subsidy allocation: committee allocation and reference principle allocation. Second, it seeks to identify the determinants of performance of German motion pictures. Third, the profitability of the industry is considered as the presumed economic non-viability of the industry constantly recurs in the public debate as an argument for subsidies.

A number of econometric studies examine the performance of motion pictures, e.g., Litman and Ahn (1998), Mulligan and Motiere (1994), Prag and Casavant (1994), Sochay (1994), Wyatt (1991), and Smith and Smith (1986). Generally, these studies apply the OLS regression technique and estimate a film's success on the basis of box office receipts. The independent variables in the regression equations typically consist of variables such as budget, genre, reviews, stars, directors, awards, age restrictions, and distributors' size. Although these estimates are based on different data and regression specifications, the results reveal certain parallels. Broadly speaking, they suggest a positive relation between a film's performance and its budget, its reviews, and star drawing power.

The recent contributions of De Vany and Walls (1999), Ravid (1999) and Bagella and Becchetti (1999) extend previous studies in several ways. De Vany and Walls (1999) and Bagella and Becchetti (1999) note that distributions of box office receipts are heavily skewed by the few blockbuster films that generate a large chunk of the industry's total revenues. Finding that the general OLS normality assumption is violated for their data, they employ sophisticated estimation techniques in order to overcome methodological problems.[1]

De Vany and Walls (1999) suggest that box office revenues are asymptotically Pareto-distributed, and analyze how the marginal probability of a "hit" can be altered with respect to several variables. They demonstrate that extending a film's run and a wide release are the most important factors in raising a film's hit probability.[2] Budget, stars, sequels, genre types, ratings, and year of release also have significant influences.

De Vany and Walls (1999) further investigate the determinants of profits in the movie business. This is clearly the crucial question from a financier's perspective. The related estimations exhibit a poor fit, indicating there is no

[1] For a discussion on the consequences of nonnormality, see Judge et al. (1985), Chapter 20.

[2] Intuitively, of course, we would expect a "hit" with audiences is more likely to have its run extended.

formula for generating profits in the motion picture industry. These results are supported by Ravid (1999), who finds that only certain age ratings are positively related to the rates of return on the movies in his sample.[3] These studies illustrate the widely reported "nobody knows" property in motion picture production.[4]

Although most studies on motion picture performance focus on the North American market, Bagella and Becchetti (1999) consider the Italian market. Moreover, they investigate the effects of motion pictures subsidies and find that the "net effect" of subsidies is unrelated to a film's performance, although subsidized movies perform, on average, more poorly than unsubsidized movies. They further investigate Rosen's superstar phenomenon (Rosen (1981)) by controlling for nonlinear effects of the *ex ante* popularity of actors and directors on a film's total admissions. They find their data is "...broadly consistent with this conceptual framework." (p. 251).

The present study (i) provides an empirical analysis of the performance of German motion pictures in terms of admission numbers and in terms of economic success, (ii) introduces independent variables that account for both subsidies and different mechanisms of subsidy allocation, (iii) investigates the feasibility of profits in the German movie industry, (iv) touches on relevant public policy issues,[5] and (v) considers superstar effects.

The remainder of this paper is organized as follows. Section 2 summarizes the major features of German film funding, which is used as a background for the analysis, and discusses implications of different subsidy allocation mechanisms. Section 3 presents the regression analysis. Section 3.1 gives a summary of the data base and Section 3.2 illustrates the theoretical motivation for our demand model. Sections 3.3 and 3.4 analyze movie performance in terms of admission numbers, overall rates of return, producers' rates of return, and distributors' rates of return. Section 4 investigates the often-questioned feasibility of profitability in the German motion picture business. Conclusions and policy recommendations are presented in Section 5.

[3]De Vany and Walls (1999) define movie profits as: *box office* $\cdot$ *0.5* $-$ *budget.* This measure includes revenues from the domestic theatrical market only. This probably strongly underestimates actual profits, since movie revenues from the domestic market are only part of total revenues. Ravid (1999) defines the rate of return simply as the relation of box office receipts and a movie's budget. This can be problematic as the business is typically dominated by non-linear contracts.

[4]De Vany and Walls (1999) cite the famous remark of screenwriter W. Goldman (1983): "With all due respect, nobody knows anything." Similar statements can be found in Caves (2000) and Litman (1998).

[5]Rather than discuss the pros and cons of public subsidies in general, we focus specifically on the effects of some features of funding arrangements. For discussion of public promotion of the arts, see e.g., Pommerehne and Frey (1990) and Frey (2000).

2 German Film Funding

2.1 Subsidy Allocation

The German film industry differs fundamentally from the US film industry in that it serves a smaller domestic market, obtains heavy public funding, and captures only a small domestic market share and a microscopic share of the global market.[6] Proponents of public subsidies argue that the German market is too small to allow German film producers to survive economically.[7] Every year, about 60 German films, most heavily subsidized, are premiered in German theatres. Of the 120 films released between 1993 and 1998 used in this study, 105 were subsidized. Of these, subsidies covered on average more than 55% of their production budgets.[8] Total film funding exceeded € 157 million in 1998. Financial support for the motion picture industry is mainly provided by federal and state governments. Additional money is provided by public and private TV stations both at the federal and state level, which in turn usually get access to the TV rights for subsidized movies. About 60% of total funding is used to finance motion picture productions, while the remaining 40% goes to different financing schemes such as film distribution, vocational training, film event funding, and fostering international co-productions. We concentrate our analysis on public support for film production and distribution.

At the state level, *funding committees* are typically responsible for the allocation of subsidies to individual motion pictures. Support is generally provided in the form of a conditionally repayable interest-free loan, i.e., the loan must only be paid back after the distribution costs (prints and advertising - P&A) and the producer's own investment have been covered. Therefore, subsidies from the committee principle provide some degree of insurance to producers. Committees mainly consist of politically appointed representatives and representatives from public and private TV stations.[9] Therefore,

[6]See Table A.1 in the appendix to this paper for a brief description of the German market. This study adheres to the definition of film origin as specified in §15 of the German Film Act (FFG), whereby a German film is one which has a final German language version, uses predominantly German studios, and has a production company registered in Germany.

[7]See Huber (2000).

[8]The actual fraction is probably higher, because in the case of international co-productions, foreign subsidies are not considered due to data availability. Note that our use of the term "subsidy" here refers to both non-repayable and conditionally repayable financial support.

[9]The *Intendantenmodell* (director's model) found in the states of Berlin/Brandenburg is an exception to this rule. The managing director of the fund, the Filmboard Berlin

committee decisions are reached through negotiations and are likely to be influenced by non-market factors. For instance, production companies are often obliged to spend a certain share of the budget within the funding state or to produce contents that somehow relate to that state. Furthermore, committees are likely to be subject to lobbying efforts by producers, directors, and distributors.

In contrast, at the federal level, most subsidies are allocated according to the *reference film principle* set forth in the *German Film Act* (FFG).[10] The reference film principle states that the production company of a motion picture (the reference film) is entitled to receive non-repayable financial support for a new feature if the reference film attracts 100,000 cinema admissions within one year.[11] The exact amount of the subsidy is computed according to the number of admissions of the reference film.[12] Hence, subsidy allocation is closely tied to the reference film's performance. In 1999, the reference principle was extended to distribution.[13] Unlike movie production subsidies, distributors need only reach 50,000 admissions to qualify for reference funding.[14] Furthermore, the subsidy consists of a conditional repayable and interest free loan, which means repayment starts only if the costs of distribution (prints and advertising - P&A) have been covered.

2.2 Committee vs. Reference Principle

As far as we are aware, Bagella and Becchetti (1999) were the first to investigate the effect of subsidies on movie performance in an econometric analysis. They found that "...the net effect of subsidies on the mean of the dependent variable is irrelevant." (p. 246). We question whether this result holds for the German case. Bagella and Becchetti (1999) investigate subsidies that only consist of below-market interest rates, while our analysis confronts a different situation. As stated above, subsidies account for over half of the average film

Brandenburg, is solely responsible for funding decisions.

[10]See § 68 Film Act. It is important to note that committee decisions on the allocation of subsidies also occur at the federal level.

[11]These viewer numbers drop to 50,000 if the reference film receives a certificate from the Filmbewertungsstelle Wiesbaden (FBW) or if it wins a prize at a prominent film festival. If the reference film is a documentary or a children's feature, then the required viewer numbers fall to 25,000 within a four-year period.

[12]A maximum of 1.2 million admissions are taken into account. If the total number of viewers exceeds this level, it does not lead to higher subsidies under the reference principle.

[13]Compare § 53 FFG.

[14]Again, the required number of viewers drops to 25,000 when the reference film receives a certificate from the Filmbewertungsstelle Wiesbaden (FBW) or wins a prize at a prominent film festival.

budget in Germany. Moreover, almost every film is subsidized. We suspect that these subsidies must have a substantial impact on the production of German movies.

The committee principle, in particular, is likely to influence producers' behavior. Our reasoning starts with Kornai's seminal work on the soft budget constraint (see Kornai (1979), Kornai (1980)). Kornai (1986) defines the softening of the budget constraint as follows: "The 'softening' of the budget constraint results when the strict relationship between expenditure and earnings has been relaxed, because excess expenditure over earnings will be paid by some other institution, typically by the state." (p. 4). A fundamental attribute of such assistance is that "...it is negotiable, subject to bargaining, lobbying, etc." (p. 5). This well describes how subsidies are allocated by committees. Committee subsidies weaken the relation between expenditure and earnings and are subject to lobbying. With respect to dynamic effects of the soft budget constraint, Kornai (1986) states:

> "If the budget constraint is hard, the firm has no other option but to adjust to unfavorable external circumstances by improving quality, cutting costs, introducing new products or new processes, i.e., it must behave in an entrepreneurial manner. If, however, the budget constraint is soft, such productive efforts are no longer imperative." (p. 10).

Applied to our case, this implies that committee subsidized production companies may work either inefficiently, irrespective of market needs, or both. Moreover, such effects are likely to be reinforced for cultural reasons. Germany has a long tradition of cinema as an elite art form rather than mass entertainment.[15] Thus, it is plausible to presume that some German producers will pursue objectives other than gross at the box office. Their cultural commitments may lead them to sacrifice financial prudence for their own preferences for film quality.[16] One further reason for producing irrespective of market needs is that committees themselves may pursue other priorities than satisfying the audience, e.g., local employment effects from movie subsidization, fitting a project to a TV station's profile, and the professional or personal preferences of committee members.

In summary, our hypothesis is that subsidies allocated through committees may support films that are unlikely to satisfy demand, because production companies have no motivation to behave in an entrepreneurial manner

[15] See e.g., Jarothe (1997), p. 49.

[16] See Rose-Ackerman (1987) for a theoretical treatment of a similar argument. Caves (2000) assumes that creative workers care about their products using the same line of argument.

and because committees can ignore market needs. Therefore, the committee principle seems likely to entail negative effects on the performance of the German motion picture industry.

The reference principle seems *a priori* a more appropriate mechanism for movie subsidization as it binds public support to the firm's previous market performance. Thus, it provides incentives to produce for the audience and may help reduce the total amount of film funding needed per viewer.

However, some conditions have to be met to make the latter benefits possible. First, production companies that gain support from the reference principle must *consistently* produce movies that enjoy above-average success. Otherwise, it would not matter if the reference subsidies flow to previously successful or to previously unsuccessful production companies.[17] Second, a film's success should be defined in terms of *economic success*, i.e., in its rate of return. Otherwise inefficiently high budgets, financed by committee subsidies, could be rewarded with reference subsidies.[18] Third, and most important, we should consider that subsidies only make sense where subsidized movies cannot cover their cost in the marketplace, i.e., they are *not-for-profit* productions. Therefore, it is important to examine whether these conditions are actually met.

3 Regression Analysis

3.1 Data Base

The analysis includes 120 of 367 German feature films released between 1993 and 1998. Incomplete budget data forced a limiting of the data set. We do not expect a sample selection bias, however, as we see no incentives that could systematically bias decisions with respect to the publication of production budgets. Most previous econometric studies on the determinants of motion picture success only consider successful films. For instance, Sochay's (1994) study is based on *Variety* magazine's list of top rental films. Our study, in contrast, also uses data from films with very weak attendance. Data on such German films is readily accessible, because the FFG dictates publication of all viewer numbers of funded films. Further, the relatively small German market facilitates data research as the domestic professional journals give more space

[17] It is worth to remember that this condition might not be met too easily. Consider that the statement of screenwriter Goldman (1983):"With all due respect, nobody knows anything." became the motto of De Vany and Walls (1999).

[18] This may in fact be the case under the current per-viewer specification of the reference principle in § 22 FFG.

to unsuccessful films. The data has been gathered from a number of sources: the periodical reports of the *Filmförderungsanstalt* (German Federal Film Board - FFA), the film journals *Blickpunkt:Film*and *Filmecho/Filmwoche*, the *Lexikon des internationalen Films* (International Film Dictionary), the *Filmbewertungsstelle Wiesbaden* (Film Evaluation Board - FBW), the *Internet Movie Data Base,* and the *Spitzenorganisation der Filmwirtschaft* (Head Organization of the German Film Industry - SPIO).[19] All Euro (Deutsche Mark) amounts are adjusted to 1993 by deflating them with the cost of living index of private households.

Figure 1 indicates admissions of German movies follow the typical blockbuster pattern, with a few movies drawing enormous audiences, and the rest experiencing modest or poor attendance.[20]

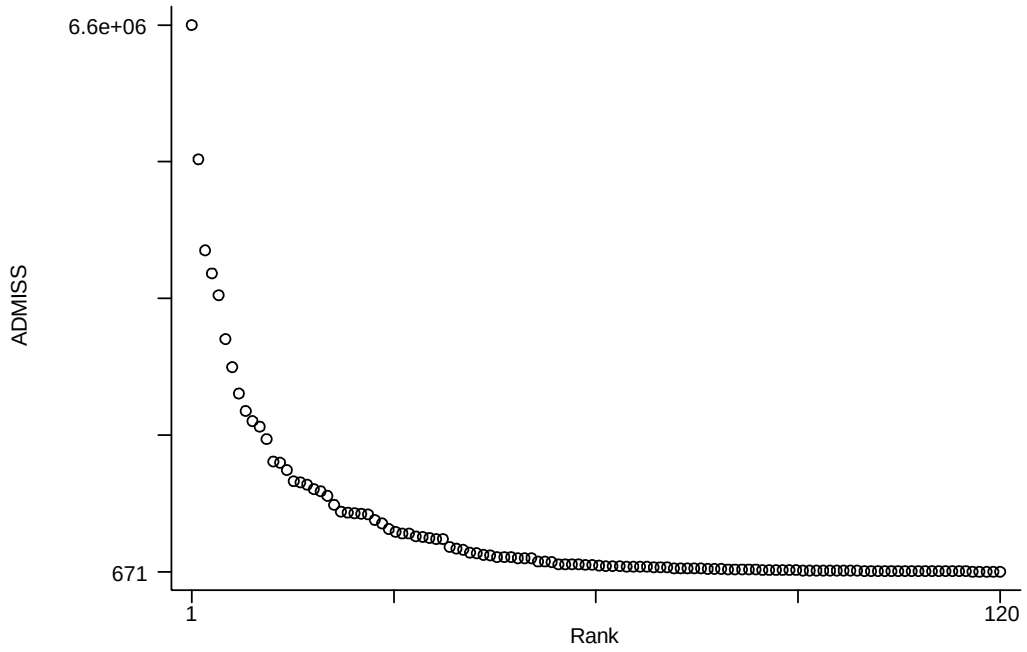

Figure 1: Blockbuster Property: Distribution of Admission Numbers of the Movies in the Sample (Ordered By Rank)

The differences between the movies, in terms of audience appeal, is remarkable. The best movie performs more than 9700 times better than the

[19]The author thanks Mr. Carsten Pfaff from the SPIO department of statistics for contributing data on production budgets.

[20]For an early analysis of the economics of blockbusters, see Garvin (1981). The most recent German blockbuster was *Der Schuh des Manitu*.

worst! Table 1 gives some more information about the distribution of admissions, budgets, and subsidies of the movies in the sample.

	Admissions	Budgets	Subsidies	
			Reference	Committee
Average	509,002	3,684,655	544,754	1,482,569
Std. dev.	1,014,957	4,342,604	587,635	1,017,526
Maximum	6,565,342	24,877,418	3,464,844	5,879,857
Minimum	671	146,741	9,003	21,726
1% percentile	1,161	193,780	9,003	44,077
5% percentile	2,941	454,027	33,170	174,248
10% percentile	4,568	620,453	45,803	398,280
25% percentile	15,989	1,419,346	105,735	740,695
Median	77,307	2,176,058	401,831	1,371,191
75% percentile	495,076	3,901,157	749,642	1,956,793
90% percentile	1,456,680	8,743,091	1,206,931	2,725,911
95% percentile	2,622,281	11,964,230	1,439,287	3,621,047
99% percentile	4,951,385	20,451,675	3,464,844	4,154,549
n	120	120	51	104

Table 1: Admissions, Budgets (in Euro), and Subsidies (in Euro) of the 120 Movies in The Sample

We can see that the distribution of budgets is also relatively uneven. Moreover, concerning the distribution of subsidies from different allocation mechanisms, we find that reference subsidies are far more skewed than committee subsidies. This may be explained by the fact that reference subsidies are allocated according to the variable market performance of the reference film.

3.2 Demand Specification

We apply a log-linear model of demand that ensures a broad description of the determinants of German motion picture performance. The specification of our model is based on the Dixit and Stiglitz (1977) model of monopolistic competition, as specified by Hameln (1991) and Hameln (1994) in the context of an empirical analysis of Rosen's (1981) superstar phenomenon in the record market. Within this framework, the demand for record sales displays a log-linear relationship with a vector of general and quality attributes of the records (Hamlen, 1991, p. 730; 1994, p. 398). We suggest that this model fits the motion picture business as demand-side and supply-side characteristics

of music and movie markets have quite similar structures. On the demand side, we observe that individuals prefer to consume a wide variety of music and movies. Further, in both markets, we can reasonably assume imperfect substitution of lesser quality for greater quality. On the supply side, we find scale economies of joint consumption. As with Hameln (1991), the log-linear specification is also supported by the Box-Cox transformation technique, which can be regarded as one approach to letting the data determine the most appropriate functional form.[21] Finally, the log-linear formulation allows us to investigate Rosen's (1981) superstar phenomenon, because it yields regression coefficients that provide elasticities.

3.3 Absolute Performance

Regression (1) examines the determinants of German feature film performance in terms of *absolute admission numbers,* which are represented by the variable ADMISS.

$$\begin{aligned} \ln ADMISS \;=\; & \alpha_1 + \alpha_2 S\text{-}PROD + \alpha_3 VS\text{-}PROD + \alpha_4 COMM + \alpha_5 COPR + \\ & \alpha_6 \ln ACTOR + \alpha_7 DIRECTOR + \alpha_8 \ln BUDGET + \alpha_9 FBWHR + \\ & \alpha_{10} FBWR + \alpha_{11} DRAMA + \alpha_{12} CHILD + \alpha_{13} CRIME + \\ & \alpha_{14} ACTION + \alpha_{15} FSK0 + \alpha_{16} FSK6 + \alpha_{17} FSK12 + \\ & \alpha_{18} FSK16 + \alpha_{19} MINIMAJOR + \alpha_{20} INDEPENDENT + \varepsilon_1 \end{aligned} \tag{1}$$

The independent variables of regression (1) consist of a vector of general and quality attributes that are supposed to affect a film's performance.

With respect to the effects of subsidies, we define four binary dummies. To capture the features of the reference film principle, we construct S-PROD for successful production companies and VS-PROD for very successful production companies. These variables distinguish whether a production company was successful (100,000 admissions) or very successful (500,000 admissions) according to the average admissions of films it produced between 1993 and 1998 that were *not* part of the sample (see Table A.2 in the appendix to this paper). Thus, if the reference film principle supports *consistently* successful production companies, S-PROD and VS-PROD should be positively related to a film's performance. The dummy variable COMM is used to control for the influence of committee types of funding. It reflects all motion pictures in the sample that were subsidized with non-reference film funding. Since committee subsides are allocated to both successful and unsuccessful production

[21] Compare Judge, Griffiths, Carter Hill, Lütkepohl, and Lee (1985), p. 840.

companies, we expect COMM not to be significantly linked to a film's performance. Subsidies for international co-productions are a widespread means of film funding. The most compelling argument for supporting international co-productions lies in the fact that it helps to solve financing problems for movies with high budgets. The subsidization of international co-productions is, however, often criticized. It is said that they have resulted in culturally and economically unsuccessful "Europudding" films. We set up the dummy variable COPRODUCTION to see if there is a relationship between international co-productions and a picture's performance with German audiences. Hence, the variable COPRODUCTION is intended to provide clues regarding the validity of the competing arguments.

Most previous studies on the movie business find that the appearance of a star improves a film's box-office gross. For instance, De Vany and Walls (1999) and Albert (1998). Furthermore, Bagella and Becchetti (1999) find that the *ex ante* popularity of actors entails nonlinear effects on a film's total admissions. They interpret this result as empirical support in favor of Rosen's (1981) superstar hypothesis. However, following Hameln (1994), we argue that popularity is only a measure of previous success and, therefore, no objective and external measure of quality. This implies that it might not provide evidence for the superstar phenomenon in the sense described by Rosen (1981), who argues that small differences in *quality* may lead to large differences in earnings. We therefore suggest that the *ex ante* popularity of an actor is rather a measure of the knowledge that consumers have about a particular actor. Such an interpretation fits the model proposed by Adler (1985), who argues that the superstar phenomenon exists because individual utility increases with the individual knowledge about the work of a specific artist. Since individual knowledge can be increased either by direct consumption of the artist's work or through discussion with other individuals, the number of individuals that consume the work of the artist also affects the individual utility. Thus, we prefer the interpretation of *ex ante* popularity in Adler's sense. To control for the effects of *ex ante* popularity of actors in the German market, we define the index ACTOR (see Table A.3 in the appendix to this paper). The value of the index is 1, 2, 3, where the number of actors in the movie who previously had a leading role in a movie that reached at least 400,000 admissions is 0, 1, 2 or more, respectively. If there are superstar effects, the coefficient of this variable should thus be larger than one. It is clear, however, that index construction is arbitrary by nature, so related results should be considered with due caution.

We construct the binary dummy DIRECTOR to analyze the influence that directors whose movies reached large audiences in the past have on movie performance (see Table A.4 in the appendix to this paper). We would

suggest DIRECTOR to be positively related to a film's performance, because previously successful directors are likely to be both talented, and willing to meet demand, which is not necessarily the case for directors who never succeed.[22]

A film's budget is represented by the variable BUDGET. We expect the budget of a film to have a positive effect on the film's performance. This assumption seems tenable as features with larger budgets tend to reach more viewers. They have the resources to finance high quality inputs for technical equipment and other "below the line" inputs, as well as to buy creative "above the line" inputs such as screen writers, directors and actors (see e.g., Prag and Casavant (1994)).

In Germany, the *Filmbewertungsstelle Wiesbaden* (Film Evaluation Board - FBW) appraises features and awards films it believes have content of outstanding quality with the certificates "recommended" or "highly recommended." The FBW is a public institution and part of the German cultural film policy: a certificate can improve the chances of receiving film funding and, in some states, implies entertainment tax reductions. The certificates are awarded by a committee with five members. In a formal procedure, each movie is viewed at full length and an evaluation is carried out. We use FBW certificates here as a proxy for critical appraisal. Accordingly, the dummies FBWHR for highly recommended and FBWR for recommended films are included in the analysis.

A film's genre may also relate to a film's success (see e.g., De Vany and Walls (1999); Prag and Casavant (1994)). Accordingly, dummy variables are defined and classified as set out in the *Dictionary of International Film*. The classifications are DRAMA, CHILDREN, CRIME, and ACTION, with COMEDY serving as the base category.[23]

Age restrictions may also influence the success of a movie (Ravid (1999); Sochay (1994); Wyatt (1991)). These effects are, however, ambiguous. On the one hand, age restrictions reduce the number of potential viewers. On the other hand, they may signal specific contents of a film and can potentially increase the number of viewers. In Germany, age restrictions are set by the *Freiwillige Selbstkontrolle* (Organization for the Voluntary Self–Regulation of the German Film Industry - FSK). The dummy variables FSK0, FSK6,

[22]See Rother (1997) for a description of the director's role in film production.

[23]The category ACTION differs from the classification in the Dictionary of International Film and comprises genres that are rarely produced in Germany (namely action, adventure, war, and science fiction). CRIME consists of movies classified as criminal and thriller. Those movies without information available in the Dictionary of International Film were evaluated with the help of the *Internet Movie Data Base* (www.imdb.com) and the internet database of *Blickpunkt:Film* (www.cinebiz.de).

FSK12 and FSK16 reflect the respective age restrictions, while the FSK18 age restriction serves as the default.[24]

In the area of film distribution, three categories of film distributors' size are considered (see Table A.5 in the appendix to this paper). These are INDEPENDENT, MINIMAJOR and MAJOR. The latter is used as the base category in the regressions. The rationale for this distinction is that a distributor's size is linked with a film's marketing costs and a film's potential market size. For instance, independent distributors typically focus on niche markets, so releases by independent distributors show low numbers of release prints. This suggests that the number of admissions of an independently released film should, on average, be lower. The same rationale applies, although probably to a lower extent, to mini-majors. Hence, we expect INDEPENDENT and MINIMAJOR to be negatively related to ADMISS.[25]

Table 2 presents the results of regression (1). It is revealed that VS-PROD is positively related to a German film's performance in terms of absolute admission numbers. The significance of VS-PROD suggests that, apparently, there is a group of production companies that *consistently* produces exceptionally successful films. However, simply successful production companies do not show any significantly positive effect, as documented by the negative coefficient and the low t-values of the S-PROD variable. Hence, the 100,000 admission threshold seems too low to ensure that only consistently above-average performing production companies gain from the reference film principle.

The *ex ante* popularity index ACTOR shows weakly significant positive effects. However, the coefficient of ACTOR is less than one. Our analysis thus fails to support the existence of a superstar phenomenon. On the other hand, directors have a large positive impact on admissions. Further, while total admissions rise with a film's budget, the elasticity is below one, indicating that a higher budget investment does not necessarily pay itself back. The significance of FBWHR suggests that critical appraisal is important with respect to the box office appeal of a movie. Moreover, films without age restrictions appear to have relatively good chances at the box office. Considering genre types, only dramas do significantly worse than the base category comedy. Finally, with regard to film distribution we find, as expected, that

[24]The FSK rating is similar to the voluntary Motion Picture Association of America ratings.

[25]The primary estimation of (1) included three binary dummies that controlled for the fact that the demand for motion pictures fluctuates considerably within a year. In Germany, film-going is typically high around Christmas and in September, and low from mid-April to the end of August. However, seasonal dummies showed no significance. As omitting the variables had no notable effect on our estimates, we omit them.

	Regression (1)	
Variables	ADMISS	
S-PROD	- 0.01	(-0.03)
VS-PROD	1.08**	(2.32)
COMM	0.62	(1.31)
COPRODUCTION	-0.42	(-1.06)
ACTOR	0.70*	(1.83)
DIRECTOR	1.02**	(2.48)
BUDGET	0.46**	(2.31)
FBWHR	1.16**	(2.48)
FBWR	-0.24	(-0.70)
DRAMA	-0.57*	(-1.68)
CHILDREN	-0.65	(-1.08)
CRIME	-0.06	(-0.12)
ACTION	0.04	(0.90)
FSK0	1.86*	(1.88)
FSK6	0.95	(1.11)
FSK12	0.67	(0.82)
FSK16	0.14	(0.02)
MINIMAJOR	-0.99**	(-2.04)
INDEPENDENT	-1.22***	(-2.83)
C	3.55	(1.25)
R^2	0.56	
Adjusted R^2	0.48	
Number of obs.	120	

Notes: all continuous variables are in natural logarithms.
Numbers in parentheses are t-statistics.
*Statistically significant at $p < 0.1$.
**Statistically significant at $p < 0.05$.
***Statistically significant at $p < 0.01$.

Table 2: Determinants of Absolute Performance in the German Theatrical Market

MINIMAJOR and INDEPENDENT are significantly negatively linked to a German film's absolute performance.

It is plausible that there is some degree of collinearity between the independent variables. For instance, one might expect that high budgets, famous actors, well known directors and successful production companies are positively related. Therefore, we checked the regression and the data for signs of multicollinearity, but found no signs indicating it. Regression coefficients were stable when adding or deleting independent variables, standard errors of coefficients were not conspicuous, and the correlation matrix showed no high

pairwise correlations between the independent variables (see Table A.6 in the appendix to this paper). Furthermore, the variance inflation factors (VIF) of the independent variables were far below the critical value of 10 suggested in the literature as a rule of thumb.[26] Therefore, we conclude multicollinearity is not an issue in our analysis.

3.4 Rate of Return Performance

Although the film industry seems focused on film attendance, from an economic point of view, profits and rates of return are clearly more important. Moreover, an analysis of rates of return allows us to test whether very successful producers (VS-PROD) are also significantly positively related to rates of return, i.e., whether they consistently produce more profitably than production companies that fail to qualify for reference film funding. Therefore, we seek empirical evidence on the determinants of the rate of return a film generates.

Calculation of Rates of Return

We consider three perspectives on a film's rate of return: the producer's rate of return (PROD-RoR), defined as a producer's profits divided through the film's budget; the distributor's rate of return (DIST-RoR), defined as a distributor's profit divided through the cost for release prints and advertisement (P&A); and the overall rate of return (RoR), i.e., the sum of both types of profits divided through the sum of budget and P&A.

To calculate the specific rates of return a movie generates, it is necessary to consider how box-office revenues are shared among exhibitors, distributors, and producers. Although contracts may vary for each movie, standard agreements dominate the business. Usually, a share of 47% of the box office is returned to the distributor.[27] The further sharing among parties is described by Eggers (1997), p. 101, in detail. Within a standard contract, a share of 65% is imputed to the cost of the distributor, while the other 35% remains with the distributor, but is not imputed to recouping distribution costs. Once distribution costs are fully recouped, the producer receives half of the additional distributor revenues. Moreover, the distributor usually guarantees a minimum payment of about € 500 per release print to the producer, irrespective of how the movie performs at the box office. This "minimum guarantee" is added to the distribution costs that consist of the cost for release prints and advertisement (P&A). For those movies where data is available P&A is

[26] See Kleinbaum, Kupper, and Muller (1988), p. 210.

[27] See Hauptverband Deutscher Filmtheater E.V. (1999), p. 3.

on average € 7,993 per release print (see Table A.7 in the appendix to this paper). Therefore, we consider this number for our profit calculations.

The producer's revenue is also generated in ancillary markets (video, DVD, pay TV and ad-supported TV, foreign sales, and in-flight entertainment). Since production companies do not publish related data, we estimate ancillary market revenues on the basis of an example given by *Dr. Dieter Frank*, CEO of *Bavaria Film*, one of Germany's leading production houses.[28] He states that a German movie with 500,000 admissions yields about € 1.50 per admission from domestic TV right sales, and about € 0.30 from both video and foreign sales, which totals € 2.10 per admission. To calculate producer's profits, we add revenues calculated on the basis of these numbers to the revenues from the theatrical market. Finally, assuming average admission prices of € 5.00 in the theatrical market in the period between 1993 and 1998, we get our proxy for profits and associated rates of return.

Rate of Return Regressions

Following our calculations profits are negative for most films in the sample, which implies negative rates of return. Therefore, a logarithmic transformation of the dependent variables is not possible and the Box-Cox transformation technique cannot be applied. This has two implications. First, the theoretical foundations of the following regressions might be considered weaker than in regression (1). However, with respect to rates of return, we could not model demand anyway as consumers do not pay for profits, but rather for a seat in the movie theatre. Therefore, we have to consider the following regressions against a more descriptive tenor. Second, since the calculation of rates of return heavily depends on box office performance, the distribution of these rates is also characterized by the *blockbuster property*, i.e., outliers tend to dominate the means. Therefore, the least squares estimator is not necessarily the most efficient unbiased estimator.[29] We thus apply the l_1-estimator with respect to our rate of return estimations. The l_1-estimator is more robust than least squares with respect to the form of the underlying distribution of the disturbances and gives more powerful tests (see Judge, Griffiths, Carter Hill, Lütkepohl, and Lee (1985), p. 836).[30] This leads to the following regressions:

[28] See Frank (1995).

[29] On the basis of the Shapiro-Wilk test for normality, we can clearly reject the normal distribution of profits (the associated p-values are all smaller than 0.00001).

[30] This estimator is also known as the least absolute value (LAV) estimator, the least absolute residual (LAR) estimator, the least absolute error (LAE) estimator, and the minimum absolute deviation (MAD) estimator.

$$\begin{aligned} RoR = {} & \beta_1 + \beta_2 S\text{-}PROD + \beta_3 VS\text{-}PROD + \beta_4 COMM + \beta_5 COPR + \\ & \beta_6 ACTOR + \beta_7 DIRECTOR + \beta_8 BUDGET + \beta_9 FBWHR + \\ & \beta_{10} FBWR + \beta_{11} DRAMA + \beta_{12} CHILD + \beta_{13} CRIME + \\ & \beta_{14} ACTION + \beta_{15} FSK0 + \beta_{16} FSK6 + \beta_{17} FSK12 + \\ & \beta_{18} FSK16 + \beta_{19} MINIMAJOR + \beta_{20} INDEPENDENT + \varepsilon_2 \end{aligned} \tag{2}$$

$$\begin{aligned} PROD{-}RoR = {} & \gamma_1 + \gamma_2 S\text{-}PROD + \gamma_3 VS\text{-}PROD + \gamma_4 COMM + \gamma_5 COPR + \\ & \gamma_6 ACTOR + \gamma_7 DIRECTOR + \gamma_8 BUDGET + \gamma_9 FBWHR + \\ & \gamma_{10} FBWR + \gamma_{11} DRAMA + \gamma_{12} CHILD + \gamma_{13} CRIME + \\ & \gamma_{14} ACTION + \gamma_{15} FSK0 + \gamma_{16} FSK6 + \gamma_{17} FSK12 + \\ & \gamma_{18} FSK16 + \gamma_{19} MINIMAJOR + \gamma_{20} INDEPENDENT + \varepsilon_3 \end{aligned} \tag{3}$$

$$\begin{aligned} DISTRoR = {} & \delta_1 + \delta_2 S\text{-}PROD + \delta_3 VS\text{-}PROD + \delta_4 COMM + \delta_5 COPR + \\ & \delta_6 ACTOR + \delta_7 DIRECTOR + \delta_8 BUDGET + \delta_9 FBWHR + \\ & \delta_{10} FBWR + \delta_{11} DRAMA + \delta_{12} CHILD + \delta_{13} CRIME + \\ & \delta_{14} ACTION + \delta_{15} FSK0 + \delta_{16} FSK6 + \delta_{17} FSK12 + \\ & \delta_{18} FSK16 + \delta_{19} MINIMAJOR + \delta_{20} INDEPENDENT + \varepsilon_4 \end{aligned} \tag{4}$$

The results of regression (2) are displayed in Table 3.

Compared to regression (1), the results change considerably. While very successful production companies, successful directors, and positive critical appraisal are still important for success, BUDGET is also significant, but negatively related, to the financial success of the movies. This is well in line with the result of regression (1), where the related coefficient interpreted as an elasticity is below one. Further, the coefficient of ACTOR is no longer significant. Interestingly, distributors' size is not significantly related to overall profits while it has been negatively related to absolute admission numbers. We will turn to this point later.

Note that the overall fit of regression (2) is extremely poor, with a pseudo R^2 value of only 0.07, compared to an adjusted R^2 value of 0.48 in regression (1).[31] This is similar to the results of De Vany and Walls (1999), p. 310, who

[31]The pseudo R^2 can be interpreted similarly to the R^2. Judge, Griffiths, Carter Hill, Lütkepohl, and Lee (1985), p. 767, formulate that the pseudo R^2 measures the "uncertainty" in the data explained by the empirical results.

	Regression (2)	
Variables	RoR	
S-PROD	-0.03	(-0.36)
VS-PROD	0.43***	(4.09)
COMM	0.02	(0.24)
COPRODUCTION	-0.07	(-0.86)
ACTOR	-0.01	(-0.25)
DIRECTOR	0.16*	(1.86)
BUDGET	-6.6 e-09*	(1.87)
FBWHR	0.34***	(3.40)
FBWR	0.01	(0.15)
DRAMA	-0.06	(-0.83)
CHILDREN	-0.15	(-1.31)
CRIME	-0.06	(-0.59)
ACTION	-0.15	(-1.52)
FSK0	0.01	(0.02)
FSK6	-0.11	(-0.64)
FSK12	-0.12	(-0.69)
FSK16	-0.11	(-0.67)
MINIMAJOR	-0.10	(-0.90)
INDEPENDENT	-0.02	(-0.22)
C	-0.85***	(-4.12)
Pseudo R^2	0.07	
Number of obs.	120	

Notes: numbers in parentheses are t-statistics

*Statistically significant at $p < 0.1$

** Statistically significant at $p < 0.05$.

***Statistically significant at $p < 0.01$.

Table 3: Determinants of Overall Rates of Return

state: "That is as it should be, for were profits predictable everyone would make them." Nevertheless, the very successful type of production companies and experienced directors do not seem to be "everybody," but special.

The results of the regression of producers' rates of return are displayed in Table 4. It is apparent that the basic set of significant explanatory variables remains the same. Very successful production companies, successful directors, and positive critical appraisal are significant determinants of producer's rates of return.

MINIMAJOR and INDEPENDENT are significantly negatively related to performance here. This observation, together with our observations that distributors' size does not matter for overall rates of return, suggest that smaller distributors may not perform systematically worse then larger distributors from their own point of view.

	Regression (3)	
Variables	PROD-RoR	
S-PROD	-0.05	(-0.93)
VS-PROD	0.34***	(5.37)
COMM	0.02	(0.31)
COPRODUCTION	-0.07	(-1.25)
ACTOR	0.02	(0.59)
DIRECTOR	0.07*	(1.90)
BUDGET	-1.84e09*	(-1.83)
FBWHR	0.20***	(3.39)
FBWR	-0.01	(-0.32)
DRAMA	-0.11**	(-2.31)
CHILDREN	-0.16**	(-2.12)
CRIME	-0.04	(-0.67)
ACTION	-0.07	(-1.18)
FSK0	0.12	(0.92)
FSK6	-0.05	(-0.43)
FSK12	-0.02	(-0.16)
FSK16	-0.07	(-0.67)
MINIMAJOR	-0.16**	(-2.35)
INDEPENDENT	-0.12**	(-2.08)
C	-0.70***	(-5.38)
Pseudo R^2	0.14	
Number of obs.	120	

Notes: numbers in parentheses are t-statistics

*Statistically significant at $p < 0.1$

** Statistically significant at $p < 0.05$.

***Statistically significant at $p < 0.01$.

Table 4: Determinants of Producers' Rates of Return

We find that this presumption is supported by the results of regression (4) of the determinants of distributors' profits displayed in Table 5.

Distributors' size is not systematically linked with distributors' rate of return performance. In addition, there is no variable significantly related to DIST-RoR. The overall fit of regression (4) is even poorer than all other regressions, with an pseudo R^2 value of only 0.06.

Why is this the case? We argue that this observation is most probably linked to the amount of information available for producers and distributors. Compared to the information available at the stage of film financing and producing, the degree of uncertainty is much lower at the distribution level. Above all, the film is completed when the distributor decides on the distribution strategy, i.e., the number of release prints and the advertising measures, which account for distributor's costs. Moreover, the degree of information

	Regression (4)	
Variables	DIST-RoR	
S-PROD	0.02	(0.18)
VS-PROD	0.16	(1.18)
COMM	-0.04	(-0.31)
COPRODUCTION	-0.02	(-0.22)
ACTOR	-0.01	(-0.02)
DIRECTOR	0.02	(0.20)
BUDGET	-6.34e-09	(-1.02)
FBWHR	0.14	(1.06)
FBWR	-0.01	(-0.13)
DRAMA	-0.01	(-0.04)
CHILDREN	-0.02	(-0.11)
CRIME	-0.07	(-0.59)
ACTION	-0.14	(-1.04)
FSK0	-0.01	(-0.03)
FSK6	0.07	(0.33)
FSK12	0.02	(0.13)
FSK16	0.05	(0.26)
MINIMAJOR	0.15	(1.08)
INDEPENDENT	0.21	(1.54)
C	-0.30	(-1.13)
Pseudo R^2	0.06	
Number of obs.	120	

Notes: numbers in parentheses are t-statistics
*Statistically significant at $p < 0.1$
** Statistically significant at $p < 0.05$.
***Statistically significant at $p < 0.01$.

Table 5: Determinants of Distributors' Rates of Return

can further be increased by test screenings. This results in a relatively reliable estimate of the potential market for the film and, therefore, suitable marketing strategies. In contrast, there is less information available and the risk is higher when it comes to film production and financing. This might, however, be an opportunity for highly skillful producers and directors with the talent to produce films that enjoy above-average success, and, hence, we can detect their positive influence on a film's success.

4 Profitability of German Movies

We have shown in the previous sections that production companies of the VS-PROD type are consistently able to produce films with above-average

success, both in terms of total admission numbers and in terms of rates of return. Therefore, production companies of the VS-PROD type meet the first two conditions formulated in Section 2. This suggest that the reference film principle might be favored over committee subsidies when films by VS-PROD production companies fail to break even. Otherwise, reference subsidies tend to go to deserving films anyhow.

Using our sample data, we investigate the question of cost coverage in a disaggregated manner, i.e., for our three different types of production companies. All movies that are international co-productions are not considered, because our calculations of profits are based on domestic admission numbers. Table 6 gives the related values.

Production Company Types & Profits			
	PROD		
	Producer	Distributor	Overall
Average profits	-1,359,989	-164,808	-1,524,797
Std. dev.	1,979,115	739,775	
25% percentile	-2,361,090	-369,909	
Median	-1,292,441	-86,253	
75% percentile	-561,769	-22,014	
Sum of profits			-88,438,226
n			58
	S-PROD		
	Producer	Distributor	Overall
Average profits	-88,282	372,999	284,717
Std. dev.	5,488,466	2,053,653	
25% percentile	-2,308,970	-669,596	
Median	-1,332,264	-122,711	
75% percentile	-498,781	19,861	
Sum of profits			4,840,189
n			17
	VS-PROD		
	Producer	Distributor	Overall
Average profits	1,183,417	998,190	2,181,607
Std. dev.	6,011,214	2,437,035	
25% percentile	-1,642,470	-423,797	
Median	-1,015,952	148,246	
75% percentile	1,911,310	1,373,515	
Sum of profits			30,542,498
n			14

Table 6: Production Company Types and Profits (in Euro)

The results displayed in Table 6 show clearly that there are no profits

in the German motion picture industry as long as we observe it on the aggregated level. This is how the German motion picture business is usually considered in public debate, and what provides a stimulus to subsidization. However, with our disaggregated approach, it also turns out that production companies from the VS-PROD type are on average profitable.[32] Therefore, we can conclude that the reference principle supports VS-PROD type production companies, despite the fact that they principally operate at a profit. Moreover, it is interesting to note that the average share of subsidies of movies produced by the VS-PROD type is about 66% of the production budget and that these 66% are *not* considered in the above profit calculations.

Note that in real life, it might not be obvious that the VS-PROD type is profitable, since this type of production company also produces failures on a regular basis. However, this is just a consequence of the inescapable uncertainty attached to motion picture production. For instance, with respect to the US market, Vogel (1998) points out: "And, in fact, of any 10 major theatrical films produced, on the average, six or seven may be broadly characterized as unprofitable." (p. 31).

The question of profitability in the distribution sphere is answered in Table 7. For the analysis of distributors' profits we can use the whole sample, since international co-productions do not have to be excluded to allow for a proper calculation of profits.

	Distribution Company Types & Profits		
	MAJOR	MINIMAJOR	INDEPENDENT
Average profits	170,555	932,085	104,701
Std. dev.	1,903,007	3,309,772	1,347,372
25% percentile	-1,002,132	-528,362	-195,428
Median	-527,579	-28,221	-63,962
75% percentile	98,562	473,032	-18,645
Sum of profits	3,581,655	32,622,975	6,700,864
n	21	35	64

Table 7: Distribution Company Types and Profits (in Euro)

Interestingly, the average profits in the distribution sphere are positive for all types of distributors with a peak in the group of the mini-major type.

[32]We are aware that our results depend on the assumptions made about revenues in ancillary markets. Therefore, we have calculated profits for very successful producers with alternative assumptions of ancillary market revenues. It turned out that even with half of the values given by Frank (1995) we would still find overall profits for the very successful type of production companies. Therefore, we can consider profits to be positive even under very restrictive assumptions.

Moreover, the distribution of profits varies among distributor types. Notably, the 75% percentile of the profits of independent distributors is negative, while the 75% percentile of both other types is positive. This could indicate that independent distributors choose films with a higher economic risk than other types of distributors.

5 Conclusion

Our analysis provides several results. First, a number of determinants of performance of German movies have been identified. These are, above all, production companies that were very successful in the past (VS-PROD), and directors who have reached large audiences with their previous work. In other words, the skills of the people that are closely related to managing film project development and realization play an essential role in film performance. This contrasts with the widely reported *nobody knows* character of the motion picture business, since obviously some people do know at least a little more than others about successful movie making.[33] With respect, however, to German circumstances, one might suspect that this observation is reinforced by heavy film subsidization, since unsuccessful producers are not necessarily driven out of the market and, hence, the range of talent in the industry might be enlarged artificially.

Second, the determinants of the rates of return on films are related to the determinants of film performance in terms of absolute admission numbers. However, there are exceptions. For instance, regression results indicate a negative influence of high budgets on the rate of return on a film, although higher budgets entail a positive effect on absolute admission numbers. Therefore, it seems counterproductive to spend money, including subsidies, on movie projects with relatively high budgets. German films with high budgets do not seem to pay themselves back.

Third, the reference film principle appears to support production companies that have consistently above-average success with their films. While our analysis suggests that this holds only for production companies of the very successful type (VS-PROD), our disaggregated view on profits in the German movie industry strongly suggests that production companies with consistently above-average success are precisely the type that makes positive profits. Essentially, this means that such production companies do not need

[33] To be clear, we do not say that some people can actually predict the success of a movie, but that there are more talented people that do, on average, produce more successful movies.

subsidies to produce their films.[34] This is a clear drawback to the reference film principle as specified in the German Film Act. While it sets incentives to produce movies for the audience, the reference film principle *de facto* violates a central condition for legitimate subsidies in that it tends to support firms that do not need subsidies to produce their products! Moreover, the reference film principle is improperly defined in the economic sense; it rewards absolute admission numbers rather than profitability. Combine this result with the positive relation between budgets and absolute admission numbers and the negative relation between budgets and profits, and we arrive at the implication that the reference film principle sets incentives to produce films with excessive budgets. The committee principle, on the other hand, weakens the relationship between expenditures and earnings and distorts producers' incentives to make films suited to audience preferences. Therefore, both principles entail negative effects on economic efficiency.

Recognizing that subsidization of the German film industry is a political reality, we suggest that an adjusted reference film principle may be preferable. Such adjustments may demand that the reference film principle rewards economic success instead of absolute admission numbers and that it reduces producers' "extra" profits, for instance, by prescribing some type of sharing contract between the state and the producer. Incentives to produce for the market could still be set, but "extra" profits would be limited.

Fourth, on examining the field of distribution, it became clear that distributors categorized as independents or mini-majors are negative determinants of performance both in terms of admission numbers and producers' profits. However, these results are not relevant to evaluating a distributor's skills, since there is no systematic relation between a distributor's size and a distributor's profit performance. Moreover, there are clearly positive profits in the distribution sphere, irrespective of the distributor type. Therefore, subsidies in the distribution sphere are also questionable.

Finally, our analysis provides no evidence that supports the superstar hypothesis on the basis of our necessarily arbitrary *ex ante* popularity measure for actors. However, primarily with respect to the paramount positive effects of very successful production companies and directors, we suggest that adequate measures of talent and *ex ante* popularity may produce results that

[34]We stress here that even currently existing VS-PROD type production companies would be in danger of bankruptcy if all subsidies were abolished. The reason is that these companies produce only about 1 to 4 movies per year. Given the enormous uncertainty attached to the movie business such a small number of projects would hardly provide enough potential for risk diversification to assure the economic existence of such companies. Therefore, the structure of the entire industry has to change to allow for non-subsidized film production in Germany.

support the superstar phenomenon in the sense of Rosen (1981) or Adler (1985).

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Appendix

Table A.1: German Theatrical Market for Motion Pictures, 1995-2001

Year	2001	2000	1999	1998	1997	1996	1995
Admissions	177.9 million	152.5 million	149.0 million	148.9 million	143.1 million	132.9 million	124.5 million
Box office gross (Euro)	987.2 million	824.5 million	808.1 million	818.2 million	750.9 million	672.0 million	605.1 million
Theatre companies	1,177	1,200	1,173	1,189	1,210	1,230	1,223
Screens	4,792	4,783	4,651	4,435	4,284	4,070	3,901
Seats	884,033	873,538	844,829	802,765	796,848	768,144	732,367
Inhabitants per seat	93	94	97	102	103	107	111
Inhabitants per screen	17,166	17,178	17,649	18,495	19,154	20,150	20,929
Cinema admissions per inhabitant[a]	2.16	1.86	1.82	1.82	1.74	1.62	1.52
Average admission price (Euro)	5.55	5.41	5.42	5.50	5.25	5.06	4.86
German market share in %[b]	18.4	12.5	14.0	9.5	17.3	16.2	9.4

Source: German Federal Film Board - FFA.

[a]1994: 1.63; 1993: 1.61.

[b]Based on admissions

Table A.2: Definition of the Variables S-PROD and VS-PROD

Production company	Admissions per movie (average)	Category
Ascot Film	392,781	S-PROD
Avista	168,426	S-PROD
Boje-Buck	229,300	S-PROD
Constantin	723,106	VS-PROD
Delta	163,988	S-PROD
Diana Film	3,250,411	VS-PROD
Dream Joint Venture	137,052	S-PROD
Ecco Film	392,781	S-PROD
ENA	710,081	VS-PROD
Futura Film	144,305	S-PROD
Hager-Moss Film	1,236,373	VS-PROD
John Filmproduktion	571,930	VS-PROD
Lichtblick	123,213	S-PROD
Mr. Brown	710,081	VS-PROD
Olga-Film	137,522	S-PROD
Pandora Film	351,276	S-PROD
Prokino	137,522	S-PROD
Real Film	101,369	S-PROD
Rialto	346,204	S-PROD
Road Movies	120,427	S-PROD
Royal-Film	831,939	VS-PROD
SAM	1,315,357	VS-PROD
Senator	1,693,591	VS-PROD
Tele-München	158,104	S-PROD
Trickcompany	3,066,325	VS-PROD
UFA	206,892	S-PROD
Warner	137,052	S-PROD

Source: Business Reports of the FFA 1993-1998, own calculations.

This list enumerates all production companies that have produced German films (i) with more than 100,000 viewers (ii) premiering between 1993 and 1998, and (iii) not included in the sample used for the regressions. Classification in the category VS-PROD occurred only with firms that had average viewer numbers per film of over 500,000. It is interesting to note that German production companies usually produce only a few films per year; e.g., in only two instances between 1993 to 1998 did a production company produce more than three films in one year.

Table A.3: Well Known Actors

Adorf, Mario	
Arent, Eddi	
Béart, Emanuelle	
Becker, Ben	Schlafes Bruder (1995)
Berben, Iris	
Binoche, Juliette	Die Liebenden von Pont-Neuf (1991)
Bleibtreu, Moritz	Das Stadtgespräch (1995)
Brandauer, Klaus-Maria	
Close, Glenn	
Ferres, Veronica	Schtonk! (1992)
George, Götz	
Gerhart, Tom	
Guinness, Alec	
Heinze, Thomas	Allein unter Frauen (1991)
Jacob, Irene	Die zwei Leben der Veronika (1991)
Juhnke, Harald	
Kirchberger, Sonja	
Krebs, Dieter	
Król, Joachim	Wir können auch anders (1993)
Lauterbach, Heiner	
Makatsch, Heike	Männerpension (1996)
Marceau, Sophie	
Mueller-Stahl, Armin	
Muti, Ornella	
Ochsenknecht, Uwe	
Paul, Christiane	Knocking on Heavens' Door (1997)
Piccoli, Michel	
Potente, Franka	Nach fünf im Urwald (1995)
Richter, Ilja	
Richter, Jason James	Free Willy (1993)
Riemann, Katja	Abgeschminkt (1993)
Rois, Sophie	Wir können auch anders (1993)
Rossellini, Isabelle	
Sägebrecht, Marianne	
Sander, Otto	
Schneider, Helge	
Schrader, Maria	Keiner liebt mich (1994)
Schweiger, Til	Der bewegte Mann (1994)
Schygulla, Hanna	
Semmelrogge, Martin	
Sommer, Elke	
Streep, Meryl	
Thalbach, Katharina	
Trintignant, Jean Louis	
Vogel, Jürgen	Kleine Haie (1992)
Wiesinger, Kai	Kleine Haie (1992)

Apart from long time well known actors, actors who have recently played a leading role (as shown by the Internet Movie Database or the Internationales Lexikon des Films, respectively) in a popular movie have also been taken into account. Accordingly, these "new" well known actors have only been integrated into the analysis after enjoying their first big success (more than 400,000 admissions). In these cases we have cited the relevant films and the years in which they premiered. Finally, celebrities whose popularity has resulted in film appearances have also been listed. These are Helge Schneider, Tom Gerhart and the cabaret artists of "Badesalz".

Table A.4: Successful Directors

August, Billie	
Buck, Detlev	Karniggels (1991)
Dörrie, Doris	
Garnier, Katja von	Abgeschminkt (1993)
Hahn, Gerhard	Werner - Beinhart (1990)
Kaufmann, Rainer	Stadtgespräch (1995)
Peter, Timm	Go Trabi Go (1991)
Schaack, Michael	Werner - Beinhart (1990)
Schlöndorff, Volker	
Trotta, Margarethe von	
Tykwer, Tom	Winterschläfer (1997)
Verhoeven, Michael	
Vilsmaier, Joseph	
Wenders, Wim	
Wortmann, Sönke	Allein unter Frauen (1991)

Successful directors are, like their acting counterparts, established directors or directors who have recently directed a popular film (more than 400,000 admissions). These "new" well known directors have only been integrated into the analysis after enjoying their first big success. In these cases we have cited the relevant movies and the years in which they premiered.

Table A.5: Distributors' Size, 1993-1998

Distributor	1993	1994	1995	1996	1997	1998	Category[a]
Buena Vista	16	23	21.8	17.9	20.1	21.2	MAJOR
CI	0	5	6.2	0	0	0	MINIMAJOR
Columbia	16	9	8.5	7.6	12.4	7.2	MAJOR
Concorde	2	3	4.4	5.2	2	2	MINIMAJOR
Constantin	3	0	4.4	9.9	9	4.3	MINIMAJOR
Delphi	0	0	0	2.7	0	0	INDEPENDENT
Fox	7	8	3.3	12.7	11	21.7	MAJOR
Jugendfilm	0	0	0	1	0	0	INDEPENDENT
Kinowelt	0	0	0	1.4	5.1	5.8	MINIMAJOR [b]
Pandora	2	0	1.2	2	0	0	INDEPENDENT
Polygram	0	0	0	0	7.5	2.7	MINIMAJOR
Prokino	0	0	0	1.1	0	2	INDEPENDENT
Scotia	2	0	4.3	0	0	2.3	INDEPENDENT
Senator	3	3	3.2	0	4.5	2.1	MINIMAJOR
Tobis	3	3	1.3	0	3	2	MINIMAJOR
UIP	20	27	21.6	23.7	14.9	16.8	MAJOR
Warner	21	15	14.6	8.6	7.2	7.6	MAJOR
Other	5	4	5.2	6.2	3.3	2.3	INDEPENDENT
Sum	100	100	100	100	100	100	

Source: Blickpunkt:Film. Filmecho/Filmwoche.

[a]Approximated values are given for the years 1993 and 1994. Classification is based on average market share (admissions) between 1993 and 1998: Major starting at 10%, Minimajor starting at 1.5%, and Independent less than 1.5%.

[b]Kinowelt was the only company to record steady growth between 1993 and 1998. Accordingly, it has been categorized as Independent for the years 1993 until 1996 and as Major for 1997 and 1998.

Table A.6: Correlation Matrix of Selected Variables

	ADMISS	S-PROD	VS-PROD	ACTOR	DIRECTOR	BUDGET	MINIMAJOR	INDEPENDENT	PRINTS	Sub[a]
ADMISS	1.00									
S-PROD	0.07	1.00								
VS-PROD	0.44***	-0.14	1.00							
ACTOR	0.25***	-0.12	0.17***	1.00						
DIRECTOR	0.43***	0.14	0.28***	0.29***	1.00					
BUDGET	0.26***	0.07	0.13	0.19**	0.26***	1.00				
MINIMAJOR	0.27***	-0.05	0.43***	0.10	0.35***	0.29***	1.00			
INDEPENDENT	-0.32***	-0.01	-0.37***	-0.18**	0.23**	-0.32***	-0.69***	1.00		
PRINTS	0.66***	-0.07	0.44***	0.19**	0.33***	0.40***	0.29***	-0.50***	1.00	
Sub	0.26***	-0.08	0.20**	0.11	0.32***	0.28***	0.26***	-0.21**	0.37***	1.00

*, **, *** is statistically significant at $p < 0.1$,$p < 0.05$, $p < 0.01$, respectively.

a) "Sub" is the total amount of subsidies.

Table A.7: Correlation Between P&A and the Number of Prints at Release

Title	P&A (Euro)	Prints	P&A per print (Euro)
Feuerreiter	306,264	30	10,209
Requiem für eine romantische Frau	384,696	30	12,823
Fette Welt	255,646	34	7,519
Zugvögel	386,537	48	8,053
Trio, Das	1,210,739	55	22,014
Kurz & Schmerzlos	441,245	60	7,354
Musterknaben, Die	588,944	70	8,413
Südsee, eigene Insel	1,014,090	76	13,343
Palmetto	772,419	88	8,777
Frauen lügen nicht	613,550	98	6,261
Bis zum Horizont	434,598	156	2,786
Lola rennt	1,073,713	209	5,138
Frau Rettich...	810,909	216	3,754
Solo für Klarinette	1,027,958	229	4,489
Campus, Der	1,829,390	286	6,396
Cascadeur	1,114,105	299	3,726
Merkwürdige Verhalten..., Das	1,738,392	360	4,829
Average:			7,993
Correlation (P&A and prints):			0.79

Source: German Federal Film Board (FFA), Blickpunkt:Film, own calculations.

Table A.8 : Movies in the Sample

...und der Himmel steht still
00 Schneider - Jagd auf Nihil Baxter
14 Tage Lebenslänglich
2 Männer - 2 Frauen - 4 Probleme?
Abbuzze! - Der Badesalz-Film
Adamski
Alles auf Anfang
Alles nur Tarnung
Apothekerin, Die
Asterix in Amerika
Auf Wiedersehen, Amerika
Auge um Auge
Ballermann 6
Bandits
Beim nächsten Kuß knall ich ihn nieder
Benjamin Blümchen - Seine schönsten Abenteuer
Bewegte Mann, Der
Broken Hearts
Bunte Hunde
Cascadeur
Charlie & Luise - Das doppelte Lottchen
Childmurders - Kindermorde
Comedian Harmonists
Couch in New York, Eine
Diebinnen
Dreifache Locke, Die
Echte Kerle
Einfach nur Liebe
Erste Semester, Das
Ex
Felidae
Frankie, Jonny und die Anderen
Französische Frau, Eine
Frau Rettich, die Czerny und ich
Frauen sind was Wunderbares
Fräulein Smillas Gespür für Schnee
Friedrich und der verzauberte Einbrecher
Für immer und immer
Furchtlosen Vier, Die
Geisterhaus, Das
Gespräch mit dem Biest
Handbuch des jungen Giftmischers, Das
Harald
High Crusade - Frikassee im Weltraum
Hollow Reed - Lautlose Schreie
Honigmond
Hunger - Sehnsucht nach Liebe
Inge, April und Mai
Japaner sind die besseren Liebhaber
Jenseits der Stille
Jenseits der Wolken
Karakum
Kaspar Hauser
Knockin' on Heavens' Door
Keiner liebt mich
Lea
Leben ist eine Baustelle, Das
Legende von Pinocchio
Let's talk about Sex
Liebe und andere Geschäfte
Lola rennt
Looosers
Lorenz im Land der Lügner
Mambospiel, Das
Mann für jede Tonart, Ein
Männerpension, Die
Maria
Maries Lied
Mario und der Zauberer
Mediocren, Die
Moebius
Mr, Bluesman
Mutters Courage
Nach fünf im Urwald
Nostradamus
Nur aus Liebe
Nur über meine Leiche
Obsession
Palmetto
Peanuts - Die Bank zahlt alles
Pippi Langstrumpf
Prinz Eisenherz
Prinzenbad
Probefahrt ins Paradies
Putzfraueninsel, Die
Ratte, Die
Rennschwein Rudi Rüssel
Rotwang muß weg!
Roula
Schelme von Schelm, Die
Schlafes Bruder
Sieger, Die
Solo für Klarinette
Spur der roten Fässer, Die
Stalingrad
Stille Nacht
Story von Monty Spinneratz
Strand von Trouville, Der
Stumme Zeugin
Tödliche Maria
Tödliches Verhältnis, Ein
Totmacher, Der
Transatlantis
Tykho Moon
Und keiner weint mir nach
Underground
Unendliche Geschichte III, Die
Unhold, Der
Unter der Milchstrasse
Utz
Versprechen, Das
Werner - Das muß kesseln!!!
Widows - Erst die Ehe dann das Vergnügen
Willy Bogners White Magic
Winterschläfer
Wir können auch anders
Workaholic
Younger & Younger
Zirri - das Wolkenschaf
Zugvögel...einmal nach Inari