INTERNAL AND EXTERNAL FACTORS IN THE DEVELOPMENT OF A NETWORK ORGANIZATION IN THE ARTS: A MEDIATION ANALYSIS

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Abstract

Network organizations in the arts have recently received substantial discussion in cultural policy research. Yet, very seldom have they been empirically modelled. We analyze development of Društvo Asociacija, the cover network of non-governmental organizations and freelancers in culture and the arts in Slovenia in years 2004-2017. Using mediation analysis for time series, using generalized linear models and Granger mediation analysis, we observe three breakpoint periods in the development of the network and explore if they were the effects of internal, organizationally related factors or the mere response to external, macroeconomic changes. Our findings point to the importance of internal decisions of the organization which do not have a mediating effect to the consequences of external factors like financial crises. This shows that decisions of network organizations in the arts are not merely a reflection of changes in their environment.

Keywords: network organizations, arts and culture, mediation analysis, time series, external and internal factors

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1. Introduction: studies on network organizations in the arts and culture

Network organizations, being defined as «a group of legally independent companies or subsidiary business units that use various methods of coordinating and controlling their interaction in order to appear like a larger entity» (Baker, 1993), have become an important topic in research on cultural policy and management. A behavioral view on the topic is that network is a pattern of social relations over a set of persons, positions, groups, or organizations (Sailer, 1978; Biggart and Hamilton, 1993; Jarvenpaa and Ives, 1994), a definition which emphasizes structure and different levels of analysis. On the other hand, a strategic view of networks considers them as «long term purposeful arrangements among distinct but related organizations that allow those firms in them to gain or sustain competitive advantage» (Jarillo, 1988: 32; see also Nolan et al., 1988; Nohria and Eccles, 1993; Perrow, 1993; Jarvenpaa and Ives, 1994). Finally, a third definition incorporates organic adaptation and flexibility, suggesting they are: «... adapted to unstable conditions, when problems and requirements for action arise which cannot be broken down and distributed among specialists' roles within a hierarchy. ... Jobs lose much of their formal definition ... Interaction runs laterally as much as vertically. Communication between people of different ranks tends to resemble lateral consultation rather than vertical command [and] omniscience can no longer be imputed to the head of the concern» (Lawrence and Lorsch, 1967: 188).

Generally, network organizations are defined by elements of structure, process, and purpose (Van Alstyne, 1997). Firstly, related to structure, a network organization combines co-specialized and often intangible, assets under shared control (Eccles and Crane, 1987; Gerlach, 1992; Baker, 1993; Biggart and Hamilton, 1993). »Joint ownership« is essential and must produce an integration of assets, communication, and command in an efficient and flexible manner. Secondly, related to process, a network organization constrains participating agents' actions via their roles and positions within the organization while allowing agents' influence to emerge or fade with the development or dissolution of ties to others (Galbraith, 1974; Jarillo, 1988; Malone and Rockart, 1991). As decision-making members, agents intervene and extend their influence through association; they alter the resource landscape for themselves, their networks, and their competitors and in the process can change the structure of the network itself. Finally, a network as an organization presupposes a unifying purpose and thus the need for a sense of identity useful in bounding and marshaling the resources, agents, and actions necessary for concluding the strategy and goals of purpose (Snow et al., 1992; Nohria and Eccles, 1993).
Three main types of network organization are typically seen: (a) internal where a large company has separate units acting as profit centers, (b) stable where a central company outsources some work to others, and (c) dynamic where a network integrator outsources heavily to other companies (Van Alstyne, 1997).

The literature on networks as a method and approach for understanding structures and processes of society and organizations is large (for some of the best known works see Granovetter, 1973; 1983; Wellman and Berkowitz, 1988; White, 1992; Burt, 1995; Castells, 1999; 2007; Scott 2005). While the previous noted literature largely refers to network organizations in business, according to Kirchberg (2014) the application of explaining and analyzing real world arts organization networks is not as comprehensive, although there are a few substantial contributions to the understanding of arts organizations by networks (Thurn, 1983; Anheier and Gerhards, 1991; Gerhards, 1997; DiMaggio, 1987; Friedrichs, 1998; Albertsen and Diken, 2004). On the other hand, Kirchberg does not mention several units of literature on the topic, related to network organizations in cultural policy. Judith Staines (1995) examines the needs of cultural networks and shows how their ability to operate effectively is weakened by a lack of structural support and insufficient recognition of their real potential. Bettina Stadler (1998) examines the expectations, experiences and problems of Central and Eastern European members of European networks on the basis of a series of interviews, while Minichbauer and Mitterdorfer (2000) extend her analysis and analyze the participation of Central and Eastern European members in European/global networks and examine, document and perform individual analyses of regional and national networks in Central and Eastern Europe. In an edited volume, Cvjetičanin (2006) identifies the new tasks and changing roles of cultural policies related to cultural diversity and the newly emerging digital cultures, and calls attention to the impressive phenomenon of new ways and new actors in communication – all of which announces a restructuring of the global cultural space. Specifically, Uzelac (2006) explores the role of virtual and internet networks and provides an overview of structural aspects of networks on internet, following the social network theory. In a second edited compendium, Cvjetičanin (2011) explores what are the new perspectives of cultural networking in the 21st century. Specifically, Švob-Dokić (2011) explores the link between cultural networks and cultural policies and Uzelac (2011) explores cultural networks and the cultural sector in digital space. Some other notable works are Hieropolitanska and Rola (2013) who explore the european cooperation networks in practice; Steinkamp and Pascual (2015), exploring global cultural
networks and local cultural development; and exploratory work of IFACCA (2016). Finally, the
debate has also come to the fore with the publications of edited volumes of Innocenti (2014)
and Imperiale and Vecco (2017). Both contain an overview of research work on the topic, in
particular related to the network organizations in cultural heritage. In this manner, Watson and
Paulissen (2014) present Remapping Europe – a Remix as a case study in international and
inter-institutional collaboration and networking. Macdonald (2014) presents the concept of
»migrating heritage« as an example of networks and networking in the case of Europe and
islamic heritage. Arquez Roth (2014) presents the project Cité nationale de l’histoire de
l’immigration as another example of networking on national level. Edelman and Coy (2017)
present emerging international networks in arts and culture research and education. Finally,
Cerquetti (2017) presents the approach of building bottom-up networks for the integrated
enhancement of cultural heritage in inner areas.

Despite several detailed contributions to this topic, very seldom, the structure, process and
purpose of the network organizations in the arts have been modelled. The contribution which
should be noted is Kirchberg (2014), who models local arts network organizations in a North
German town and uses centrality measures and cluster separation for network analysis. In
particular, very few efforts have been posed to separate analysis of internal and external factors,
influencing an arts organization. Related to an organization, we define internal factors,
following an elaboration in Cirikovic (2011) as those which have an internal impact on the
organization, inside the organization, and the organization can influence them mostly. This
group of factors includes: goal, strategy, technology, size, human resources, product and
location. External factors of organizational structures come from outside, outside the
organization and the company can not influence them. These include: institutional environment,
integration processes, market and application of scientific achievements. The basic
characteristics of listed factors are their variability and flexibility over time, and their
intertwined, interdependent relationship and impact on organizational structure.

In our article, we use data on membership of Društvo Asociacija, the largest network
organization in the arts and cultural sector in Slovenia, representing nongovernmental
organizations and freelancers in culture and the arts. We use these data to model the
development of Asociacija's network membership and explore the relevant changes in years
2004-2017. Two clear breakpoints emerge in the data, related to financial support to the
organization's structure and the broad effects of financial crisis in Slovenia. We are able to
explore to which extent they were the consequence of either of the two and demonstrate the importance of own, internal organizational dynamics which did not only follow the changes in the macroeconomic and social environment. By this, we significantly contribute to the knowledge on network organizations in the arts and management of art organizations in general.

To model mediation relationships, we use mediation analysis for time series with two recent approaches: generalized linear models following Atlas et al. (2010); and so-called Granger mediation analysis, a newly developed approach to mediation analysis for time series, developed by Zhao and Luo (2017).

The article is structured in the following way. In the next section, we briefly present the case study, dataset and methods used. We also elaborate the key hypotheses and provide their justification. In the third section, we present the basic data analysis, demonstrating in a descriptive sense the dynamics of the observed phenomena. In the fourth section, we present a more detailed statistical analysis, using mediating variables and regression methods. Finally, we conclude by reflection of the findings for the research in cultural economics, management and policy, significant open paths for future research and some policy recommendations, following the context of the case study.

2. Data, methods and main hypotheses

Društvo Asociacija is an association/Društvo/2, attempting to ensure sustainable conditions for the professional functioning of non-governmental organizations and independent artists (freelancers) active in culture and the arts, seeking to improve their material, social and legal position. The network began informally in 1992, and today it is a professionally coordinated modern advocacy and service organization. It is also the main and perhaps the only larger network of nonprofit organizations in the arts in Slovenia (mainly, the art sectors in Slovenia are represented by sectorial organizations which in principle used to be formally joined in Cultural Chamber, a fictitious state supported cover organization, founded by the Slovenian legislation, but factually never operational and which seized with work in 2017). The first stage

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2 Slovenian legal corporate framework knows of two most common legal forms of nongovernmental organizations (but foundations and cooperatives are possible to found as well): Društvo, a membership organization with the aim of the benefit of its members, and Zavod, an ownership organization, set by few founders, performing activities, monitored by the founders and other legal bodies.
of its development could be seen until the year 2009, when it operated largely on voluntary basis. Main changes in the professional development of the network surely came in 2009, with accepting to carry the project »Mreženje in krepitve kapacitet NVO v kulturi« (engl. Networking and capacity building of NGO's in culture«), co-financed from the European Structural Funds. This lasted until 2012, when the public funds from almost all sources have been cut to the association (the financing from the above project and related ones ended), leaving the organization in severe financial problems, leading them to search for the possibilities of different local, national and international tenders and fundraising options. This, therefore, describes the third stage of the development of the organization. Finally, in 2014, the public funds, based on European Structural Funds have been secured again, being ensured until 2019, which describes the present stage of the organization.

The mission of Asociacija is »attempting to ensure sustainable conditions for the professional functioning of non-governmental organizations and independent artists active in art and culture and seeking to improve their systemic position« (Asociacija, 2018). Its vision is described in the following: »with careful and professional development and operation, effective and successful advocacy work and the provision of quality support services, we want to be a credible partner in placing culture and art among the promoters of the development of society, doing this by modernizing a cultural political system that will promote cultural and artistic diversity and create the conditions for equal access to a diverse cultural content« (ibid.). Its program priorities can be captured in the following, i.e. the organization fulfills its mission (ibid.):

(1) by linking, articulating and representing the common interests of network members to different stakeholders;
(2) with continuous and structured advocacy and policy-making (local, national, Western-Balkan and European);
(3) promoting the sector through information, organizing public events and researching various aspects of cultural policy;
(4) networking with actors with similar interests at European, national and local level;
(5) by linking with strategic partners and internationalization;
(6) by promoting partnerships within and outside the NGO sector in culture.
(7) by strengthening the capacity of NGOs in culture through training, counseling and mentoring.

Although membership of Asociacija has spread to over 100 institutional members (in years
2012-2015), the provided data encompasses only the current institutional members, which are 40 in number\(^3\), and are classified in six main sectorial fields (Društvo Asociacija, 2017):

- *Intermedia arts*: 9 organizations;
- *Performing arts*: 13 organizations;
- *Film*: 2 organizations;
- *Music*: 8 organizations;
- *Visual arts*: 4 organizations;
- *Literature and publishing*: 4 organizations;

The data were provided by the organization for years 2004-2017 (the provided data encompassed the name of the organization and date of becoming a member). The original data were complemented by the accessible data for the organizational characteristics, accessible in national and online registries. In our analysis, it was possible to include the following control variables:

- *Geographic location*: the city where the organization is based in (in our analysis, we use the binary classification whether the organization is located in the capital, Ljubljana, or not, being justified by the evidence on large centralization of Slovenian cultural scene, in particular in the NGO sector, see e.g. Srakar, 2017)
- *Legal status*: whether the member organization is »Društvo« or »Zavod«, see footnote 1;
- *Size of the organization*: whether the member organization has less than 5 employees, or 5 or more;
- *Age of the organization*: whether the organization is of age less than 20 years (time since its founding) or of age 20 years or more;
- *Art sector of the member organization*: as before, in six categories, Intermedia arts; Performing arts; Film; Music; Visual arts; Literature and publishing.

In our analysis, we want to explore in more detail the dynamics of the membership in the problematic years 2012-2014, as well as the reasons for significant breakpoints in the membership throughout the period.

\(^3\) We only observe the current institutional members due to limitations in the accessibility of data – the organization was unwilling to provide the data on organizations which exited the network for whatever reason which of course limits the generalizability of the findings.
Managing the internal environment is usually connected to the degree of performance achievement of a business entity (Stegall, Steinmetz and Kline, 1976; Albert, 1981). However, rare are studies that examine the impact of an internal environment as a whole (combination of all/most of the internal factors) on business strategy and performance (Daft and Weick 1984; Cyert and March 1992), which holds also for the studies of external environment. Since the latter primarily affects the survival and the growth of business entities (Covin and Slevin, 1989), researches deal with the issue of efficiency of certain business orientations/strategies in a particular environment, i.e. how the external environment affects the strategy and performance of businesses (Levitt, 1960; Hambrick, 1983; Porter, 1985; Day, 1990; Kotler, 1991; Diamantopoulos and Hart, 1993; Avlonitis and Gounaris, 1999; Pelham, 1999; Slater and Narver, 2000; Ellis, 2006; Ward and Lewandowska, 2008). However, very few studies compare the effects of internal and external environment on strategy and performance.

With this in mind we form three main hypotheses to test.

H1: The effects of internal decisions in Asociacija on organizational performance were not merely a consequence of the external factors in organizational environment.
H2: Reaction of Asociacija to the crisis in its external environment had an independent, mediating influence on the performance of an organization.
H3: The effect of internal organizational decisions in Asociacija as response to changes in their environment to their performance depended on the type of the changes.

The methods we use are a combination of descriptive analysis and statistical modelling. For the former, we explore the dynamics in the growth of the network (we stress that we only observe the current institutional members due to limitations in the accessibility of data, see Footnote 2), in total and separated in categories by individual covariates/controls. For the second we use network analysis to visualize the development of the network. Finally, we use basic algorithm described in Bai and Perron (2003) for simultaneous estimation of multiple breakpoints. In this procedure the coefficients \( \hat{\beta} = (\hat{\beta}_1, \hat{\beta}_2, ..., \hat{\beta}_{m+1}) \) are estimated by minimizing the total sum of squared residuals \( S_T \) for the \( m \)-partition \( (T_1, T_2, ..., T_m) \) which is given by

\[ S_T = \sum_{t=1}^{T} (y_t - \hat{y}_t)^2 \]

Footnote 2: Following Hansen (2001), we say that a structural break has occurred if at least one of the parameters in time series analysis has changed at the chosen level of statistical significance at some date, the breakdate, in the sample period.
\[
S_T = \sum_{i=1}^{m+1} \sum_{t=T_{i-1}+1}^{T_i} [g_t - \beta_i]^2
\]

where within the growth regime labeled \(i\) the annual growth rate \(g_t\) equals the regime-specific mean growth rate \(\beta_i\) plus a stationary error term \(u_t\), which may have a different distribution across regimes.

The break points \((\hat{T}_1, \hat{T}_2, \ldots, \hat{T}_m)\) are estimated such that \(S_T\) with the associated least squares estimate \(\hat{\beta}\) is minimized over all conceivable \(m\)-partitions while taking account of the minimum duration requirement \(h\) for each regime.

The distribution function used for the confidence intervals for the breakpoints is given in Bai (1997a; b) as a type of supF statistic, while the ideas behind this implementation are described in Zeileis et al. (2003).

Finally, we use mediation analysis, where the level of budget of the organization (Asociacija) serves as a mediating variable for the effects of general macroeconomic conditions (proxied by the level of ministry budget for culture) on the performance of the organization (proxied by the number of institutional members at each given point in time – measured in months since the beginning of the observed period, January 2004). Mediation analysis is a statistical approach used to understand how a predictor produces an indirect effect on an outcome through an intervening variable (mediator). For example, diet programme might be hypothesized to reduce food intake, which, in turn, is hypothesized to reduce the participant’s body mass index. An indirect (mediated) effect is defined conceptually as the effect of the programme on the outcome that is transmitted through the mediator. There are two essential ingredients of modern mediation analysis. First, the indirect effect is not merely a modeling artifact formed by suggestive combinations of parameters but an intrinsic property of reality that has tangible policy implications. Second, the policy decisions concern the enabling and disabling of processes (hiring vs. education) rather than lowering or raising values of specific variables. These two considerations lead to the analysis of natural direct and indirect effects (Pearl, 2014: 459).

For the estimation of mediator effects we use, firstly, the basic cross-sectional algorithm of
Baron and Kenny (1986) which proposed a four step approach in which several regression analyses are conducted and significance of the coefficients is examined at each step ($Y$ is the response, in our case the size of the network; $X$ is the predictor, in our case the level of ministry budget for culture; and $M$ is the mediator variable, in our case the level of Asociacija's budget). The detailed scheme of the approach is provided in Figure 1.

**Figure 1: Basic diagram of Baron and Kenny's approach**

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Conduct a simple regression analysis with $X$ predicting $Y$ to test for path $c$ alone, $Y = B_0 + B_1 X + e$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 2</strong></td>
<td>Conduct a simple regression analysis with $X$ predicting $M$ to test for path $a$, $M = B_0 + B_1 X + e$</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Conduct a simple regression analysis with $M$ predicting $Y$ to test the significance of path $b$ alone, $Y = B_0 + B_1 M + e$.</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Conduct a multiple regression analysis with $X$ and $M$ predicting $Y$, $Y = B_0 + B_1 X + B_2 M + e$.</td>
</tr>
</tbody>
</table>


Due to the time series nature of our problem, we also use mediation analysis as developed for time series. We use two approaches: firstly, following Atlas et al. (2010) using generalized linear models. Atlas et al. (2010) applied mediation analysis to study the brain mediators of a self-reported behavioral outcome. They utilized a general linear model (GLM) approach to model the coefficients for brain activities or single-trial betas, and thus these coefficients in their mediation model may be considered independent assuming that the temporal correlations in the time series are removed by the GLM.

Secondly, we use a recently developed Granger mediation analysis (Zhao and Luo, 2017). Zhao and Luo consider mediation analysis problem for time series as a multilevel problem. In our analysis, we use a simple, one level specification of their model as below:

\[
M_t = Z_t A + \sum_{j=1}^{p} \phi_{1j} Z_{t-j} + \sum_{j=1}^{p} \psi_{11j} M_{t-j} + \sum_{j=1}^{p} \psi_{21j} R_{t-j} + \varepsilon_{1t} \tag{2}
\]

\[
R_t = Z_t C + M_t B + \sum_{j=1}^{p} \phi_{2j} Z_{t-j} + \sum_{j=1}^{p} \psi_{12j} M_{t-j} + \sum_{j=1}^{p} \psi_{22j} R_{t-j} + \varepsilon_{2t} \tag{3}
\]

where $R$ is the response (outcome), $M$ is the mediating variable, $Z$ is the treatment, $A$, $B$ and $C$
are the parameters to be estimated, $\phi$ and $\psi$ are the parameters for the lagged effects, and $\varepsilon$ is the standard error, assumed to be correlated between the two equations and following multivariate autoregressive process of order $p$ (in the above, we determine $p$ by usual time series tests).

Zhao and Luo (2017) develop the distribution of the parameters in (2) and (3) as:

$$
\eta_j \triangleq \begin{pmatrix}
\phi_{1j} \\
\phi_{2j} \\
\psi_{11j} \\
\psi_{21j} \\
\psi_{12j} \\
\psi_{22j}
\end{pmatrix} = 
\begin{pmatrix}
-A & -C & 0 & 0 \\
0 & 0 & -A & -C \\
1 & -B & 0 & 0 \\
0 & 1 & 0 & 0 \\
0 & 0 & 1 & -B \\
0 & 0 & 0 & 1
\end{pmatrix}
\begin{pmatrix}
\omega_{11j} \\
\omega_{21j} \\
\omega_{12j} \\
\omega_{22j}
\end{pmatrix} \triangleq D\omega_j \quad (4)
$$

with parameters $\omega$ describing the structure of the relationships between errors $\varepsilon_{1t}$ and $\varepsilon_{2t}$.

3. Dynamics of membership over the years and by individual variables

Below we provide descriptive data and visualizations of the growth of the Asociacija's network. In Figure 2, we present a network visualization, using basic commands of one of the best known packages for network analysis, Pajek (see De Nooy, Mrvar and Batagelj, 2005). Already from this visualization it is apparent that a significant break happened in the year 2009, where the network more than doubled, surely a consequence of the formalization of the network and its financing (the financial crisis started to take its effects in Slovenia only in 2012, for more see Verbič et al., 2016). Also, it can be seen that only after 2015 the network again started to grow a bit more, being largely stagnant in the period between 2009 and 2015.
These effects are even more apparent in Figure 3 which presents another graphical visualization of the growth of the network. Clearly, a large breakpoint was in the second half of the year 2009, being followed by another smaller rise in 2011, and then became largely stagnant until 2015, when it again began to rise. But, clearly, in 2012 (at least) two significant reasons could be observed which could have the decisive influence to the stagnancy: cutting the public funds of the organization, leaving it largely stranded of finances («internal« reason, which had its consequences inside the organization), and, secondly, the pronounced effects of the financial crisis, which took its large effects in Slovenia only in 2012 and after (Verbič et al., 2016), being reflected also in the levels of state public budget for culture (Srakar, 2015).³

³ Third possible reason in 2012 could be related to European Capital of Culture Maribor 2012, but more than 80% of the institutional members of Asociacija come from Ljubljana and more serious activities, related to local representation, started in 2015, so we eliminated this reason as a possible cause of the stagnancy.
Firstly, one could ask whether the dynamics was caused (or reflected) by differences in organizational characteristics: their geographical location, size, age, legal status and/or art sector. In Figure 4, we present the visualization of the growth of the network by differences in those covariates. Firstly, clearly the changes in the number of members were reflected until 2015 almost exclusively for the institutional members from Ljubljana, the Slovenian capital. Secondly, the changes were also significantly more visible for smaller organizations, which are also largely predominant in the membership of Asociacija. Thirdly, the break in 2009 was visible for both young and »mature« organizations which shows that the professionalization/formalization of the network was really needed for all NGO organizations in culture, more mature and larger ones as well as the emergent. Next, there are also no particularly visible differences visible fort he two legal statuses: both Društvo, as well as Zavod experiences similar changes in memberships. Finally, it seems that the changes were more visible for performing arts organizations (being predominant in the membership in any case) and, in particular, intermedia arts organizations, which only emerged at the »scene« (in Asociacija) with the break in 2009 and are today well represented in its membership, as compared to other art sectors.

Figure 4: Growth in the size of the Asociacija's network by individual covariates
Notes: Top left: by geographic location; top middle: by organizational size; top right: by organizational age; bottom left: by legal status; bottom right: by the main art sector the organization is involved in.

Source: Own calculations, based on data of Asociacija.

From the detailed budgetary figures of Ministry of Culture and Asociacija, presented in appendix, we can clearly observe the disparity between figures and the periods in the development of Asociacija: before 2009, with a very low budget; 2009-2012 with a high budget; 2013-2015 with another period of low resources; and, finally, the period after 2015 with regaining a high level of budget due to receiving public support on continuous basis.

4. Verification of hypotheses

To verify the hypotheses, we perform the Bai and Perron (2003) structural break test, described shortly above. We perform it, firstly, for the complete (»total«) time series of all institutional members, and then for each separate series by covariates, as visualized in Figure 4. The presentation of the results is in Table 2, and, where possible, we computed also 95% confidence intervals using the above noted procedure of Bai (1997a; b).

The results confirm the visualizations in Figures 2-4. Four apparent breaks appear in the data, common to almost all series analyzed. The first one, unimportant to us, did apparently appear at the start of 2006, when the organization was not »profesionalized« yet. Yet, this break is not

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6 The problems in the impossibility of estimation lie in the small sample size, see Bai (1997a; b).
present for several of the series, and for certain of them has a »wrong« date (for Visual Arts, July 2007) or extremely wide confidence interval (Total series, Ljubljana, Zavod). For this reason, we have chosen to disregard it as a special break in the time series. Secondly, for one series (young organizations) there should be a break in 2013, but, clearly, this break does not appear for any other series, so we disregard it in the following analysis as well.

Finally, we are left with three clear breakpoints, which also fit the explanations above: the first, which happened in the second half of 2009 (in the analysis, we date its start in August 2009), the second, which started in 2012 (again, we use as the »exact« start August 2012), and, finally, the third one (end of stagnancy), which happened in accordance with previously said in 2015 (we use as exact start July 2015).

Table 1: Structural breakpoints with 95% confidence intervals

<table>
<thead>
<tr>
<th></th>
<th>Break1</th>
<th>Break2</th>
<th>Break3</th>
<th>Break4</th>
<th>Break5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film</td>
<td>Sep09 [Sep09-Sep09]</td>
<td>Sep12 [Sep12-Sep12]</td>
<td>Nov15 [Nov15-Nov15]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: In parentheses: 95% confidence interval (where possible to compute).
Source: Own calculations, based on data of Asociaciją.

To explore the reasons for the breakpoints, we perform the mediation analysis, as described above and in Figure 1. To this end we perform four regressions, using ordinary least squares (OLS) method, in order to make the results comparable among the regressions\(^7\). With this decision, the time dimension of the series is left unexploited, and we model it in two additional specifications, presented in Table 3 and 4. In further analysis mixed data sampling methods like MIDAS could be used, as the series are of different frequency (the budgetary variables are on yearly basis, while the network development is on monthly basis) and, possibly, more explicitly modelling the network structure (in our case, we are dealing with so-called ego-centric network, based on only one, central organization, Asociaciją, see e.g. Halgin and DeJordy, 2008).

Nevertheless, the results from Tables 2, 3 and 4 provide sufficient information for the verification of most of our hypotheses. Firstly, we closely follow the Baron and Kenny (1986) four step approach, presented in Figure 1.

In the first step, we perform the reduced model regression, with \(X\) (ministry budget for culture – in logarithm transformation, for the usual distributional reasons) predicting \(Y\) (size of the network, a count variable). Clearly, taken independently, the budget of the ministry does not predict the size of the network, i.e. organizational performance (the coefficient on the variable \(\text{LogBudgMoC}\) is insignificant in the regression of the first, left part). In all of the regressions, we include also the three breaks, established above, and the interactions of the breaks with the two budgetary variables, to take into account what interests as most – what was the effect of internal (Asociaciją's budget) and external (ministry budget for culture) factors on organizational performance during the breakpoints, using proxies as variables of course (the information here does not describe the problem completely, but provides important information, sufficient for the basic verification of the above hypotheses).

In the second part (»Mediator model«) we model the Step 2 of Baron and Kenny's approach – modelling the effect of predictor \(X\) (ministry budget for culture) on the mediator \(M\) (budget of Asociaciją). Interestingly, no effect of the ministry budget for culture to Asociaciją's budget could be observed, and even a negative effect of the ministry budget during the break of 2009,

\(^7\) Using OLS, all the coefficients represent marginal effects and can be compared among the used regressions. This would not be so plain when using any type of nonlinear modelling.
only confirming that the change at the time was »endogenous« – it was caused by the 
professionalization of the network based on European funds and not by some external factor.

The Step 3 of Baron and Kenny's approach consists of regressing $Y$ on $M$ and is presented in 
Table 2 as »Mediator to Response model«. The budget of Asociacija is not related to the size of 
the network in this model. But, there are strong interaction effects, pronounced for all the studied 
periods. The interaction effect of the Asociacija's budget has been positive for the break in 2009, 
negative for the downfall in 2012, and again positive for the break in 2015. Clearly, the budget 
of Asociacija was important for the development of the network, but largely only in the 
turnaround periods – positive or negative.

Finally, Step 4 of Baron and Kenny is the estimation of the full model, regressing $Y$ on both $X$ 
and $M$. This provides us the final information on the validity of initial observations from 
previous sections. Firstly, the effect of the external factors (proxied by the ministry budget for 
culture) is now strong and significant. The effect of internal factor (Asociacija's own budget) is 
insignificant and again distributed only through interactions – it was present only during the 
time of the structural breaks. The effects of three breaks appear logical: the effect of the first 
(2009) to the size of the network is positive and strongly significant, as expected, the effect of 
the second (2012) is negative, as expected, and the effect of the third is insignificant.

As controls, we used four variables: the share of Ljubljana-based institutional members at each 
time point ($ShareLJ$); the share of institutional members with »Zavod« legal status 
($ShareZavod$; again, at each time point, which is the unit of our analysis); and average age 
($AvgAge$) and size ($AvgSize$) of current institutional members at each time point of the analysis. 
The effects of those controls also appear clear: the effect of the share of Ljubljana-based 
organizations and »Zavod«'s is positive and strongly significant – but at least for the first, 
geographically-based variable, it would be interesting to see if there was any change in 2015 
and after, as one would expect a nonlinear trajectory here (as noted before, in 2015 Asociacija 
started with more pronounced »local« activities and now even has a special person-
vicepresident, assigned with this task). But, interestingly, when controlling for legal status and 
location, the average age and size of the organization are negatively related to the size of the 
network: apparently, the growth of the network has been more related to including younger and 
smaller NGO's. This again seems logical: from the history of the Asociacija, it is know that the 
found members have been some of the largest NGO's in the so-called independent sector
and, only later, the smaller organizations were joined.

Table 2: Results of mediation analysis, OLS modelling

<table>
<thead>
<tr>
<th>Reduced model, dep.var.:</th>
<th>Mediator model, dep.var.: LogBudgAso</th>
<th>Mediator to Response model, dep.var.: SizeNet</th>
<th>Full model, dep.var.: SizeNet</th>
</tr>
</thead>
<tbody>
<tr>
<td>SizeNet</td>
<td>Coeff.</td>
<td>t stat</td>
<td>Sig.</td>
</tr>
<tr>
<td>Constant</td>
<td>-37.90</td>
<td>-0.87</td>
<td>-12.45</td>
</tr>
<tr>
<td>Share LJ</td>
<td>25.92</td>
<td>4.12</td>
<td>-5.03</td>
</tr>
<tr>
<td>ShareZavod</td>
<td>31.16</td>
<td>6.39</td>
<td>-1.56</td>
</tr>
<tr>
<td>AvgSize</td>
<td>-1.34</td>
<td>-4.98</td>
<td>-0.25</td>
</tr>
<tr>
<td>LogBudgMoC</td>
<td>2.03</td>
<td>0.88</td>
<td>1.24</td>
</tr>
<tr>
<td>LogBudgAso</td>
<td>0.25</td>
<td>0.57</td>
<td>-0.35</td>
</tr>
<tr>
<td>Break1</td>
<td>563.87</td>
<td>4.42</td>
<td>-137.57</td>
</tr>
<tr>
<td>Break2</td>
<td>-69.07</td>
<td>-0.31</td>
<td>-171.56</td>
</tr>
<tr>
<td>LogBudgMoC_Break1</td>
<td>-472.45</td>
<td>-1.92</td>
<td>7.26</td>
</tr>
<tr>
<td>LogBudgMoC_Break2</td>
<td>-29.03</td>
<td>-4.35</td>
<td>-0.11</td>
</tr>
<tr>
<td>LogBudgMoC_Break3</td>
<td>25.50</td>
<td>1.95</td>
<td>-8.97</td>
</tr>
</tbody>
</table>

Notes: The asterisks denote statistical significance: *** – 1%; ** – 5%; * – 10%.

Source: Own calculations, based on data of Asociacija.

To appropriately include the time dimension in the modelling, we perform mediation analysis with two additional model specifications. In Table 3, we present results of the generalized linear models (where the link functions were gamma and Poisson). The results in the main, mediating relationships do not change much, but many coefficients for other variables lose their significance (this holds in particular for the effects of structural breaks).

Table 3: Results of mediation analysis, generalized linear models

<table>
<thead>
<tr>
<th>Reduced model, dep.var.:</th>
<th>Mediator model, dep.var.: LogBudgAso</th>
<th>Mediator to Response model, dep.var.: SizeNet</th>
<th>Full model, dep.var.: SizeNet</th>
</tr>
</thead>
<tbody>
<tr>
<td>SizeNet</td>
<td>Coeff.</td>
<td>z stat</td>
<td>Sig.</td>
</tr>
<tr>
<td>Constant</td>
<td>-25.03</td>
<td>-2.48</td>
<td>-0.06</td>
</tr>
<tr>
<td>Share LJ</td>
<td>2.85</td>
<td>2.41</td>
<td>0.35</td>
</tr>
<tr>
<td>ShareZavod</td>
<td>3.35</td>
<td>3.73</td>
<td>-0.11</td>
</tr>
<tr>
<td>AvgAge</td>
<td>-1.06</td>
<td>-5.24</td>
<td>-0.02</td>
</tr>
<tr>
<td>AvgSize</td>
<td>0.28</td>
<td>1.11</td>
<td>0.00</td>
</tr>
<tr>
<td>LogBudgMoC</td>
<td>1.26</td>
<td>2.37</td>
<td>0.13</td>
</tr>
<tr>
<td>LogBudgAso</td>
<td>0.08</td>
<td>0.68</td>
<td>-0.14</td>
</tr>
<tr>
<td>Break1</td>
<td>40.18</td>
<td>2.36</td>
<td>1.05</td>
</tr>
<tr>
<td>Break2</td>
<td>15.76</td>
<td>0.60</td>
<td>-12.69</td>
</tr>
<tr>
<td>Break3</td>
<td>-27.72</td>
<td>-1.03</td>
<td>15.29</td>
</tr>
<tr>
<td>LogBudgMoC_Break1</td>
<td>-2.09</td>
<td>-2.34</td>
<td>-0.05</td>
</tr>
<tr>
<td>LogBudgMoC_Break2</td>
<td>-0.83</td>
<td>-0.60</td>
<td>0.67</td>
</tr>
<tr>
<td>LogBudgMoC_Break3</td>
<td>1.49</td>
<td>1.04</td>
<td>-0.40</td>
</tr>
<tr>
<td>LogBudgAso_Break1</td>
<td>-0.91</td>
<td>-1.12</td>
<td>1.82</td>
</tr>
<tr>
<td>LogBudgAso_Break2</td>
<td>-0.91</td>
<td>-1.12</td>
<td>1.82</td>
</tr>
</tbody>
</table>
Table 4 presents the results of Granger mediation analysis which includes lags of the main (mediation related) variables and an autocorrelation process of the errors. We present results of three models, including different assumed correlations between errors (the actual correlation between errors of the estimated equations in (2) and (3) is negative and almost zero). The coefficients on \( A \), \( B \) and \( C \) are referring to equations (2) and (3), while \( C_2 \), \( A B_p \) and \( A B_d \) are, respectively, the total direct effect, total indirect effect based on the product method, and total indirect effect based on the difference method.

As can be seen, we cannot find evidence neither of any significant mediating (indirect effect – coefficients on \( AB \)) nor direct effects. The only strong effect visible is the logical effect of total ministry budget on Asociacija's budget. This serves as final disconfirming of mediated relationships of individual organizational decisions on the effect of macro level forces.

5. Discussion and Conclusion

We can list the findings as related to the verification of our initial hypotheses:

H1: The effects of internal decisions in organizations on organizational performance are not
merely a consequence of the external factors in organizational environment.

Although the evidence is not completely clear, we are inclined to support the hypothesis. If it would be otherwise, the coefficient of the ministry budget on the budget of Asociacija would be significant, which was not the case in the basic Baron-Kenny estimation, although it was confirmed in the GLM specification. Also, the effect of external factor (the ministry budget) should be significant in the first regression (step 1, the reduced model) which was not the case in the basic Baron-Kenny in Table 2. Although the effects of Asociacija's budget are not present in most of the models, they seem to be present related to breaks – in the crisis times, Asociacija's budget seems to have had an independent, »self-standing« effect on the performance of the organization.

H2: Reactions of organizations to the crisis in their external environment have a self-standing, mediating influence on the performance of an organization.

This hypothesis is not completely confirmed. Namely, it consists of two parts: that the reactions should have both a self-standing and mediating influence on the performance. If the effect of the internal factor would be a mediator in this case, two things should be satisfied: firstly, the effect of the external factor in the reduced model (i.e. the »raw« effect of the external factor) should be significant. Secondly, the effect of the external factor should be reduced when including the internal factor in the regression (Step 4). Exactly the opposite is the case – the effect of the external factor is enhanced after including the »mediator« (internal factor) in the analysis, at least when the time dimension is not taken into account (by Granger mediation analysis).

This, therefore, means that the internal factors possibly have self-standing effects, but do not act as mediators – there is surely no combined causal path leading from ministry budget to the budget of Asociacija and, following this, to the performance of the organization. Said in a more simple manner, the ministry budget does not act as a factor which would also have an effect on, firstly, the organizational budget, and, then, to the performance of the organization.

H3: The effect of internal organizational decisions as response to changes in their environment to their performance depends on the type of the changes.
We found evidence for the hypothesis – the behaviour of the coefficients in the three breaks seems different. We could say that reaction to the first break in 2009 was followed by large growth in the size of the network and had an effect as related to the budgetary variables. On the other hand, the reaction to the second break was not reflected so much in the relationship to the budgetary variables, to the contextual factors, therefore, be they internal or external.

What are the consequences of the findings? Although it might seem that we analyzed a particular issue, related mainly to a narrow topic in arts management, this is not so – the consequences could be large. Firstly, the article explores in more detail the role of civil society and networks in formulating cultural policies, by exploring the relationship of the development of civil society network organizations and macro-level factors, cultural policies. As networks are becoming a more and more important, sometimes even predominant form of organizations in the arts, their behaviour is of large consequence and relevance to the cultural policies in Europe. We demonstrated that sometimes the internal factors in organizations could have more important role in the performance of the organization than the policy level factors, e.g. raises and cuts in the public budgets. This shows that European cultural policies, if they would want to stir the development of network organizations, should focus more on micro level initiatives and incentives for organizations and less to the broad »cuts and raises« in the public budgets »story«. This seems of large importance and steers the path for future policies in this area – on how to stimulate civil society organizations and networks in the arts in future by policy means.

Furthermore, as stated by Cvjetičanin (2011: 4), »networks have been gradually substituting traditional diasporas in supporting the mobility of artists and other cultural actors; they link like-minded organizations and individuals over large distances into an interactive and cooperative association, facilitating participative and transformational art, as well as the exchange, promotion and distribution of cultural production«. The consequences of the findings in our article could be generalized not just to networks of organizations, but also to networks of people, even communities and diasporas. They are numerous ways in which a network can represent in today's society. In this light, out findings show that for all those forms of organization, internal dynamic can be significantly more important than external – the decision by the staff can outpace the effects of the organizational environment which again denote the importance of stimulating organizations in their internal dynamics and not influencing them. Although the findings relate to nonprofit context, we could easily transfer them also to networked entrepreneurship or even networked cultures, described by Cvjetičanin (2011).
Surely, also to the virtual networks, described by Uzelac (2006; 2011), although in this case internal and external would get a different meaning, definition and connotation.

But even larger consequences seem on the side of future research. The article is located on the border of four large disciplines, related to cultural »policies«: »direct« cultural policy research, research in arts management, and even arts entrepreneurship, and cultural economics. For future work, more developed empirical research should be applied to arts management and research in cultural policies. Issues such as causality and causal inference should be the core of future research on arts management, to finally get more detailed (and, if possible, practical) insights to help the organizations in their different stages of development. This does not mean that the specific nature of arts organizations should not be taken into account – it is possible also to develop the causality research, following e.g. insights from social and cultural anthropology and sociology of culture, demonstrating also the multisided nature of perceiving causality. But, for an organization, acting in a concrete context, decisions should be made with solid evidence. Many organizations, in the arts and in general, are asking and demanding today the information on the basis of which they could act. Empirical insights with a solid theoretical basis should be also developed with this purpose in mind.

Future research should also be broadened in terms of research on network organizations. Firstly, at this point, the research still appears unsystematic. Large areas of network organizations, apart from cultural heritage, appear underresearched. It would be important to know whether the findings such as presented in this article could be transfered to organizations in individual arts sectors (Asociacija is, of course, an »umbrella« organization, encompassing organizations from several art sectors): to the networks in performing arts, in music, in visual arts, in literature, etc. It would also be interesting to analyze the network organizations on international level, like ENCATC or similar. Sometimes, the term network of networks has been used in the arts as well (for example, in relation to Anna Lindh Foundation) which would be good to define and contextualize. Finally, it would be highly interesting to compare the characteristics of network organizations with other (non-network) organizations in the arts – what are their differences, on what does their performance depend upon, how do they grow, develop, respond to changes in their environments and crises. A lot of large open paths remain »to walk« for cultural economics, arts management and cultural policy research. But we will see which path the development in those areas will follow in future.
References


