The effect of the "Entdeckerfonds" on the beneficiaries of the program

How do children and adolescents benefit from visiting social institutions that CHILDREN supports financially? So far this question could not be empirically validated. Hence, one of **our** biggest challenges was determining a possible solution for measuring causal effects the supported programs have on the beneficiaries. During the first meeting with CHILDREN, Wiltrud de Haan presented relevant information that CHILDREN supports all organizations with the Mittagstisch program. However, not all organizations receive additional funding to provide the Entdeckerfonds program. This fact could be used for applying an empirical approach which determines causal effects of the Entdeckerfonds program by comparing a treatment with a control group. The aim of this analysis is to show that the trips provided by Entdeckerfonds program funding have a positive effect on selfworth and everyday expertise of the participating children.

Empirical Approach

The **basis** of the empirical approach is the specification of the treatment and the control group. Using the data provided by children we determine the treatment group as all organizations that receive funding for both the Entdeckerfonds and the Mittagstisch program. On the other hand, the control group represents all organizations that do not receive funding from CHILDREN to provide the Entdeckerfonds.

When analyzing the available dataset, it was not certain which organizations actually received funding for the Entdeckerfonds. As previously mentioned, the CHILDREN survey consists of two parts. The first part contains questions that are specific to the Mittagstisch program and the second part includes all questions that are relevant for organizations that receive funding for the Entdeckerfonds. The dataset shows that there are several organizations that did not provide information regarding the Entdeckerfonds program. After communicating with Wiltrud de Haan, she agreed that these specific organizations did not receive funding in a given year. Hence, we assumed that all organizations that did not provide information regarding the Entdeckerfonds in a given year did not receive funding for the program and would be part of the control group in this specific year. While further analyzing the possible treatment group we realized that there are organizations that did not completely answer the Entdeckerfonds survey. There are organizations, for example organization 103 in 2015, that did not provide information about the funding amount but answered the Entdeckerfonds survey questions such as the number of trips in a given year. In consultation with Wiltrud de Haan, one possible explanation for this occurrence could be that these organizations could not use the funding completely in the previous year. Therefore, they did not receive additional funding in the given year but were still able to organize trips for the children as part of the Entdeckerfonds program. Due to these uncertainties we determine the treatment group as all organizations that give any information in the Entdeckerfonds survey. As a result, the treatment dummy variable is specified as following:

, if organization participates in the Entdeckerfonds program in year (= treatment group), and equal otherwise (= control group)

where the treatment dummy equals 1 if organization i participates in the Entdeckerfonds program (= treatment group) and 0 otherwise (= control group)

For this specification it is important to know that the constellation of the treatment and control group changes over time. As the number of organizations supported by children increased over time, both the treatment and control group increase as well. Importantly, new organizations usually will not be offered funding for the Entdeckerfonds program. These organizations will be funded to provide the Mittagstisch program and if there is enough money available can receive funding for the Entdeckerfonds program one or two years later. Thus, these organizations switch from the control group into the treatment group and there is an overall change in the constellation of the two groups. However, there is no case where treatment is taken away from an organization.

The fact that all organizations within the control group did not answer the Entdeckerfonds survey questions was helpful to determine the control group but remains a problem when determining possible dependent variables. All variables of the Entdeckerfonds survey were not collected for the control group so there are no available data regarding the impact of the Entdeckerfonds for the control group. So, we can’t measure the impact of the Entdeckerfonds with variables that were specifically asked in the Entdeckerfonds survey. Therefore, instead of using Entdeckerfonds variables to measure the impact of the program we use variables of the Mittagstisch program as possible outcome variables in our analysis. The used variables should not be specific to the Mittagstisch program but should also be applicable to the Entdeckerfonds program and might be influenced by the fact that the organization received funding to provide the Entdeckerfonds. Furthermore, the possible outcome variable needed to be observed in every year which reduces the amount of possible variables. As a result, we identified two variables that were asked in every survey and are applicable to the context of both programs. These variables are selfworth and daytodayskills of children and adolescents. Both variables could be positively influenced by the Entdeckerfonds program.

GRAPH X & GRAPH Y

Notes: The x-axis represents the years from 2012 to 2018, the year 2011 is left out because the trips program starts in 2012. The y-axis represents the average answers from the organizations regarding to selfworth (graph x) and everyday expertise (graph y). The time trend of the average answers from the organizations in the treatment group is characterised by the solid line, the answers from the control group by the dotted line. Additionally, the linear trends of both groups are included as the straight lines.

To check whether there are differences in both variables between treatment group and control group, we created some descriptive statistics.

Graph x and graph y show the development of selfworth and everyday expertise over time. Graph x shows a difference in selfworth levels between treatment group and control group in the beginning, as well as a different trend over time between both groups. The treatment group has a positive trend whereas the average selfworth in the control group decreases over time. This leads to an increasing difference in selfworth between both groups: In 2012 organizations that were part of the Entdeckerfonds on average are visited by children with a 0.1 points higher selfworth than children in the other organizations, until 2018 the difference rises to 0.4 points. Graph y as well shows differences in trends between the treatment group and the control group, but in contrast to the average selfworth, the average everyday expertise remains nearly constant in the treatment group. In this variable, the control group has a negative trend over time. The different trends are leading to an increasing difference from around 0.06 points in 2012 to more than 0.5 points in 2018 in the average everyday expertise.

As shown by the two graphs, the organizations that are part of the Entdeckerfonds on average describe a higher proportion of their kids as more selfworth and with better everyday expertise. Moreover, the difference to organizations that do not receive the Entdeckerfonds funding increases over time. This graphical analysis is only descriptive and cannot prove a causal effect, nevertheless it supports our thesis that more trips could lead to more selfworth and a better everyday expertise.

To check the robustness of this result, we compared both groups in variables from the Mittagstisch that cannot be affected by the participation at the Entdeckerfonds. For example, the variable “monthly cooks” is not influenced by the Entdeckerfonds participation. However, in this placebo analysis we found no similar difference in trends as in selfworth or everyday expertise, which supports our findings as well.

As a first step in our empirical analysis, we test for a positive influence of the Entdeckerfonds program on the outcome variable by analysing the linear relationship between the treatment dummy and everyday expertise. In this simple linear regression, as the dependent variable is regressed on the treatment dummy

The coefficient of interest captures the simple difference estimator which measures the difference in means between treatment and control group. Our baseline estimates of equation are given in Table 1. Looking first at column 1, when we estimate equation 1, we find that the coefficient for the treatment is positive and statistically significant. This indicates a positive influence of the Entdeckerfonds program on everyday expertise of children and adolescents. With this equation one concern is that the effect is driven by omitted variables. Omitted variables are relevant variables that influence both the independent and the dependent variable. Therefore, to deal with the potential problem of omitted variable bias, we include a vector of controls in further regressions. Whereby the set of controls includes variables that might affect the everyday expertise while also influencing the treatment dummy. In order to identify the relevant controls, we constructed a correlation matrix of all variables of the data specific to the Mittagstisch program and then selected all variables that are significantly correlated with the outcome variables and the treatment dummy. As shown in Table 1, columns 2-5 include the identified control variables.

However, the set of control variables do not capture the effect of unobservable characteristics or observable variables that are not included in the CHILDREN dataset. The panel data set allows us to implement fixed effects that control for unobservable and observable characteristics. Specifically, in our analysis we introduced individual fixed effects and time fixed effects. The ID fixed effects control for organization specific characteristics that are constant over time but differ across organizations. For example, the state of an organization does not vary over time but might differ across supported social institutions. Additionally, the year fixed effects capture all variables that change over time but are the same for all organizations and within a time period. As a result of these specifications, column 6 estimates the following equation :

One central problem of using panel data is serial correlation resulting from the fact that the error term of an observation unit in a specific year is correlated with the error terms of the previous years. Therefore, serial correlation may have a substantial impact on statistical significance because normal OLS standard errors would underestimate the standard deviation of the estimated coefficients.

Source: Mostly harmless econometrics, page 236-238

* The consequences of serial correlation for clustered panels are highlighted by Bertrand, Duáo and Mulainathan (2004) and Kèzdi (2004)

The set of control variables includes variables that were observed. However, there are also unobservable variables that might influence both the outcome and the explanatory variable.

Possible variables as dependent variables

how we determined that:

The used variables should not be specific to the mittagstisch but more general and should also apply to the context of the Entdeckerfonds

possible variables selfworth, day to day skills

used these variables because these variables could be influenced both by the mittagstisch and entdeckerfonds and are not specific to the entdeckerfonds

looked at the general trends of these two variables with the difference of the treatment and control group to look at whether our idea makes sense

linear regression just to look at whether there are effects

add controls and fixed effects time and id fixedeffects --> explain why (id: specific effects of being in Bayern for example or the subsidy amount)

how fixed effects are implemented

which control variables we use

how we determined which controls

Ende??

the dataset does not allow a channel analysis but these could be possible channels that might explain the effects we find