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Going counter to the facts in program evaluation. Towards a counterfactual evaluation model (CEM)

Raluca ANTONIE¹

Abstract

The present article aims at bringing closer to the public the logic behind Counterfactual Impact Evaluation (CIE). It starts with a semantic disclosure, continuing with asserting the the main counterfactual theories and their application in the Program Evaluation field and ends with the construction of a Counterfactual Evaluation Model. The article intends to present, in an introductory manner, some of the possible and probable uses of the CEM. The main question is: does it make any sense to go counter to the facts in Program Evaluation?

Keywords: counterfactual; evaluation model; impact; effects; casual theories

Introduction. Semantic disclosure

Ever since December 1989, Romania has been trying to accomplish four dimensions of reform concerning the public administration space: *legislative reform, reform at the level of formal structures and procedures, reforms at the level of public policies and structural reforms* (Hîntea, 2011: 180). The new public management theories encourage strategic abilities and functionalities vital for the succes of each reform perspective of public administration. Limiting public management to the execution function is a continuation of the old dichotomy (legal/managerial approach) and is not in line with the new public management approach seen in all western countries (Mora, Țiclău, 2008: 96). This strategic perspective can be achieved in the presence of an accurate image of actions,

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interventions, programs and projects. We refer mainly to a clear image of their short-, medium- and long-time effects. This accuracy is possible if program evaluation tools are being used systematically. One of the most dynamic evaluation model is the counterfactual one. It is fit to the new public management paradigm from the perspective of its complexity and dynamism. “Even though management and leadership have a common basis and share key characteristics there are significant differences that make a managers and leaders job different”. (Hîntea, Mora, Țiclău, 2009: 90) Part of the common basis is the use of program evaluation and of the counterfactual evaluation, particularly. According to The American Heritage® Dictionary of the English Language, *counterfactual* is an adjective meaning “Running contrary to the facts”. More explicitly, Collins English Dictionary – Complete and Unabridged reveals for the same adjective a meaning related to Philosophy or Logic “expressing what has not happened but could, would, or might under differing conditions”. The most relevant synonyms are: *contrary to fact* and *conditional*. The concept has been successfully imported in the field of Program Evaluation through the Counterfactual Impact Evaluation (CIE). CIE mainly refers to an evaluation methodology that compares the effects of a program or of an intervention to the estimated effects of a scenario where the program and intervention are not present.

Counterfactual theories

There are several main theories explaining the concept of *counterfactual*. Most of them have their basis in Philosophy.

The first attempts. The first explicit definition of causation in terms of counterfactuals was formulated as early as 1748 by Hume. He refers to counterfactuals when defining cause and effect relationships: “We may define a cause to be an object followed by another, and where all the objects, similar to the first, are followed by objects similar to the second. Or, in other words, where, if the first object had not been, the second never had existed” (Hume, 2001, Section VII). This early definition is a synthesis of what is meant nowadays by counterfactual, in Program Evaluation as well as in other fields of research and study. But, few empiricists have tried to explain causation via counterfactuals mainly because they have felt mainly uncertainty and subjectivity. A counterfactual statement of the form “If it had been the case that *A*, it would have been the case that *C*” is true if and only if there is an auxiliary set *S* of true statements consistent with the antecedent *A*, such that the members of *S*, when conjoined with *A*, imply the consequent *C*. The set *S* generated much controversy (Goodman, 1947). Most empiricists agreed that *S* would have to include statements of laws of nature, while some thought that it would have to include statements of singular causation (Menzies, 2009).

Rigorous counterfactual analyses. The late 1960's bring the first rigorous counterfactual analyses. (Lyon 1967) This is a fruitful decade for the research and practice of program evaluation as well. For this timeline it is relevant especially the contribution of J. L. Mackie with his book "*The Cement of the Universe*" (1974). Mackie brings into attention the concept of causation as intrinsically related to the background conditions. Beginning with the early 1970s, David Lewis elaborates on the counterfactual theory of causation. In 1986 he collects all relevant articles in "*Philosophical Papers: Volume II*" published at Oxford University Press. The original theory of David Lewis, published in 1973, directly approaches, among other subjects of great interest for the counterfactual impact evaluation the counterfactual and casual dependence, the asymmetry of casual dependence and chancy causation (Lewis, 1973a; Lewis, 1973b).

Comparative similarity between worlds (Lewis 1973a) stands as the central concept in the worlds semantics Lewis uses in explaining the counterfactual causality. According to this theory, one world A is said to be *closer to actuality* than world B if the first resembles the actual world more than the second does. Consequently, any two worlds can be ordered with respect to their closeness to the actual world, while the actual world is closest to actuality, resembling itself more than any other world resembles it.

The causal dependence between events plays a central role in Lewis's 1973 theory. Schematically expressed, event number 1 (E1) and event number 2 (E2) are two separate possible events; E1 is the cause for E2 if and only if when E1 occurs, E2 occurs as well and if when E1 does not occur, E2 does not occur either. In his theories, Lewis conceives "a cause as something that makes a difference and this it makes must be a difference from what would have happened without it. Had it been absent, its effects — some of them, at least, and usually all — would have been absent as well" (1973b, p.161).

Counterfactual in program evaluation. Towards building a counterfactual evaluation model

In the field of Program Evaluation, the counterfactual theories and analysis has been adopted in the Impact Assessment area. Impact assessment refers mainly to: (1) the effects of programs and projects on medium and long term and (2) the net effects of programs and projects as distinct from the effects of other factors, variables or events. Whatever type of impact we may choose to measure, social, economic or environmental, related to a program, we have to assess effects. And effects are naturally related to causes. That is why; counterfactual analysis is fit for impact assessments. In this context the counterfactual analysis becomes a

method of evaluation. Its instruments are the diverse scenarios that can be built as “different worlds”. In Program Evaluation in general and in Impact Assessments in particular we may use the images of different worlds as scenarios to compare.

The Counterfactual method of evaluation is infinitely generous in instruments and options from this standpoint. On the one hand we have the real world, scenario number 0 (S0), and on the other hand, we may have an infinite number of imaginary scenarios S1, S2, S3 ...Sn, many of which are possible and some of which are even probable. The great refinement of the counterfactual method is to be able to distinguish first between the impossible and the possible, and then, between the possible and the probable. Once this distinction is completed, the counterfactual method of evaluation can be a valuable information source for the funding entities, for the implementers and for the (potential) beneficiaries of programs and projects. The necessary distinctions are to be made in close relationship to the background and to other similar projects and programs.

What is more, derived from the counterfactual theories, not only a method, but even an evaluation model can be recognized. As we have shown in another article (Gârboan, 2008: 45), an evaluation model stipulates the question or the set of questions that a specific evaluation seeks to answer. It also involves a certain methodology to set up the criteria for assessment (Hansen, 2005). The literature on programs' evaluation and that on organizational effectiveness offer several typologies of evaluation models. Hansen (2003, 2005) and Scriven (2003) propose some of the most recently appeared and comprehensive typologies. These mainly consist in six different categories of models (Birckmayer and Weiss 2003; Cojocaru, 2009). The six categories are: results models, process models, system models, economic models, actor models and program theory models. The counterfactual evaluation model (CEM hereafter) is part of the seventh category of evaluation models: the causation models. These derive from causation theories in philosophy and logic. The counterfactual model relays on the counterfactual causation theories of which we have already mentioned Lewis's. The main set of questions to which an evaluation done in the framework of the counterfactual model is supposed to answer is related to the following: are the results of the program, project or intervention significantly different from the results of the non-intervention? What are the most plausible/probable scenarios in the situation of the non-intervention? Is there any possibility to deduce and approximately measure their results? What are the advantages and the disadvantages of each probable scenario (for intervention and non- intervention)? Which is the most desirable scenario? Which is the worst-case scenario? Where the actual reality scenario does situate on a continuum between worst-case and best-case scenario?

The evaluation criteria are set within the counterfactual model by all the participants in the evaluation process: evaluator and experts from different fields. There are several methods to approximate the counterfactual and the consequences of every scenario: (1) comparing the effects observed on beneficiaries with those

observed on *non*-beneficiaries; or (2) using the outcome observed for beneficiaries *before* they are exposed to the intervention; (3) logic modeling methods and bench marking . However, caution must be used in *interpreting* these differences as the “effect” of the intervention. The building of a CEM starts from finding a feasible way to approximate the effects of counterfactual scenarios. Then, CEM involves the building of counterfactual scenarios and analyzing them. It ends with the writing of the evaluation report. In the present article we will focus on the existing methods of approximating the effects of counterfactual scenarios in line with the classical experiment methodology: comparing the effects of an intervention observed on beneficiaries with those observed on *non*-beneficiaries. The main difficulty of this method would be the correct selection of the two groups: the beneficiaries and the non-beneficiaries. The two groups should be as similar as possible. As there is a complex variable system, a number of steps should be followed to ensure the comparability: (1) the first step: Make a list of all possible variables relevant for the evaluation. There are going to be two sets of relevant variables: set number 1 (socio-demographic variables-that helps in building the comparison group/groups) and set number 2 (program/intervention comparison variables-characteristics specific to the program or intervention relevant for measuring its results and impacts); (2) the second step: Order the variables in the two sets according to their relation to the investigated program or intervention. A strong relation would recommend the variable for the top of the list, while a weak relation would send the variable to the end of the list; (3) the third step: Make a list of the beneficiaries or of the sample of beneficiaries specifying for each of them the values of the relevant characteristics (variables)for comparison, using the set number one of variables; (4) the fourth step: Identify a group or several groups of non-beneficiaries as similar as possible to the group of beneficiaries. The greater the number of non-beneficiary groups, the more counterfactual scenarios can be determined and the greater the probability of reaching relevant conclusions in the evaluation process; (5) the fifth step: collect the data necessary to compare the values of the second set of variables for the group of beneficiaries and the group/groups of non-beneficiaries. For this step, an important concept should be considered: globalization. During this process, globalization can intervene as an important data source or as a wedge that stimulates change (Loessner, Hinteă, and 2005:58). The impact of globalization can be small or large according to the type and specificity of the investigated intervention and of the constructed scenario. The variety of comparable outcomes „can be attributed to characteristics of local institutions and the adaptability and relative entrepreneurial character of their managements” (Loessner, Hinteă, 2005:65). In collecting the necessary data an increasing role can be attributed to the narrowing of the digital divide. In an article presenting data from a research that tries to measure the level of the digital divide existing in Romania, Dan Șandor reveals that: digital divide is continually narrowing in terms of access to technology and communication, and also in terms

of computer literacy (Şandor, 2006: 154). This means increased access to the necessary data for counterfactual program evaluation as well.

These five steps are the first five steps in the process of building a counterfactual evaluation model. To be complete, the model should also involve the following steps: (1) the sixth step: scenario-building-describe the actual reality scenario and the counterfactual scenarios based on the data collection realized at step number 5; (2) the seventh step: scenario-analysis. The analysis of the scenarios built at step number six. The analysis is based on the two sets of variables. According to the scenarios built, the variable systems can be completed; (3) the 8th step: writing the evaluation report.

Practical use of CEM

The CEM can be used fundamentally for the evaluation of programs, projects and interventions of socio-economic developments in all stages of implementation. Its extensive use touch general areas such as: public administration reform, decision-making process, Total Quality Management, organizational change etc. It can be of great help in assessing the quality of activities, programs and projects. CEM logic could also be applied in the assessment the effects of using other evaluation models, such as *Total Quality Management* (TQM). „TQM is comprised of a set of principles, tools, and procedures that help accomplish the mission of the organization both from a qualitative and quantitative standpoint. TQM is a managerial philosophy that is accomplished within the framework of a managerial system that promotes a continuous improvement with regard to all the activities within an organization. The process of continuous improvement involves three key dimensions: focus on the client; betterment of processes; and total involvement” (Şandor, 2005: 88). CEM could be used in finding the extent and the nature of TQM application impacts. Another possible use of CEM is to anticipate the desirable organizational change. “The mission of any organizational change process is to be successful (without successful results change processes are simply a waste of the organizations resources), meaning reaching the goal set by the change process, using resources as efficient as possible and perceiving the whole process as positive as possible by the entire organization” (Baba, Cherecheş, Ţiclău, Mora, 2009). What is more, CEM could also assess the effects of organizational change. CEM should be a used in the governance process as well. “Governments have been under increasing pressure to change the way they interact with citizens, open up and increase access to services provided” (Baba, Cherecheş, Mora, Ţiclău, 2009) CEM can be perceived as a driver of change, inspiring governments to find increasingly better scenarios in facing citizens’ requests. Decentralization process, mainly the settling of the new relations between the central and the local level of government (Profiroiu, Profiroiu, 2006), is one of

the most important area of public administration where program evaluation, in general, and counterfactual evaluation, in particular, could be applied.

Legislative process, mainly the settling of new regulations such as the free access to public information (Dragoş & Neamţu, 2006), is one of the most important area of public administration where program evaluation, in general, and counterfactual evaluation, in particular, could be applied. Another possible use of CEM is in the process of designing and creating new public structures such as those necessary for public marketing. As Ţiclău, Mora, Ţigănaş and Bacali argue, creating the structure in the public field is the condition for every new paradigm to be implemented “because we are talking about public administration, for a successful implementation of public marketing the necessary organizational structures needs to be created. Without a marketing bureau/department on the organizational chart no funding can be allocated legally, thus even being open and willing to carry out marketing activities public managers have to rely on financial “tricks” in order to fund these activities. (Ţiclău et al., 2010). The use of counterfactual logic in the design of the new structures refers to the conception of several scenarios of the creation and evolution of the structure, based on the available data and experience. The reform of the higher education public administration programs could use CEM in order to reduce some of the managerial deficiencies that are visible at different levels, as noticed by Hinţea, Ringsmuth and Mora, such as the lack of strategic planning and strategic management capacities, the deficiencies regarding leadership, issues related to organizational culture (Hinţea, Ringsmuth, Mora, 2006).

The main advantage of using this CEM is its comprehensive approach. It helps answering an extremely relevant question for every program: does it make a difference? It contributes to estimating casual effects of programs, projects and interventions, measuring intended and unintended effects, for different actors and in diverse circumstances. In order to add to the accuracy of the analysis, and to the benefits of the counterfactual method of evaluation, step number 6 can be further developed and enriched with step 6.1: building the best case scenario and the worst-case scenario. This artifice will help creating a continuum an which all the other scenarios can find a place. What is more important is that on this continuum, we can establish the *average treatment effect*, especially because *is the basis for cost effectiveness calculations*. (White, 2009)

Limitations and pitfalls

One of the main limitations is the subjectivity of the model. This is because the different scenarios compared with the actual reality are constructed in a hypothetical manner. Subjectivity can be limited to a certain degree by using reality-

based data from different program evaluations or case-studies. But as Stryczynski mentions, even with these data, collected from reality, we need to work with caution: “We will need our more qualitative, traditional evaluation techniques to understand to which interventions these findings can be transferred and what determines the degree of transferability” (Stryczynski, 2009). Another important limitation of the counterfactual model is the lack of data (Cojocaru & Cojocaru, 2011). Especially in countries without a well-established evaluation culture and capacity such as Romania (Malan, 2004; Curley & Perianu, 2006; Gârboan & Șandor, 2007), the lack of data from other evaluations or from other case-studies related to programs or projects, could be a pitfall in the way of using counterfactual evaluation model. Data from other countries can be used only with great care, if the situations are comparable from different relevant perspectives.

Conclusions

The CEM offers a method toolkit to perform program evaluation. It involves the qualitative and quantitative paradigm, experimental and non-experimental evaluation designs. A comprehensive and cultural effort is needed for a change to occur at all levels of the public administration. (Mora & Țiclău, 2008: 96) This effort can be corroborated with the shift from the traditionally legalistic approach to public services (continental model) which characterizes Romanian public administration similar to other Eastern European countries (Hîntea, 2008). Recent evaluation theory and practice has proved that the main counterfactual theories find an extensive application in the Program Evaluation field². But extensive attention should be rendered to the limitations and pitfalls of CEM.

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² It does make sense to go counter to the facts in Program Evaluation. Evalved: http://ec.europa.eu/regional_policy/sources/docgener/evaluation/evalved/sourcebooks/method_techniques/counterfactual_impact_evaluation/index_en.htm (31.01.2012).

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