

Quantitative and qualitative methods in economic research in the 21st century

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Economic research has always applied both quantitative and qualitative methods ever since it came into being. However, the emphasis and the dynamics of interaction between these methods have been constantly changing, following the dominant approach in social and economic sciences. From time to time either quantitative or qualitative perspectives became more accepted meanwhile few attempts were made to truly join and reconcile their results. In this study I summarize the most important features of the quantitative qualitative debate and survey some good examples of application of quantitative and qualitative methods together. The aim of this paper is exploring opportunities and possible scientific advancement in their joint usage in macroeconomic research. The development of scientific research needs the appreciation and co-operative application of both methods.

Keywords: Quantitative research methods, Qualitative research methods, Mixed research methods

1. Introduction

Development of economic research nowadays unfolds through serious methodological debates. As Economics is a social science, methodological issues of social sciences in general should have a sizeable impact on it, though its special characteristics make even the general methodological considerations problematic. Still, the outcome of these discussions, though often called much too academic, shapes progress of economic research, even if it is hard to produce true novelty amidst the ambiguous methodological environment.

One of the most widely discussed topics of methodology in social sciences is the dichotomy of quantitative and qualitative methods (Horsewood 2011). Though both of them have their role and place in scientific thinking, the emphasis put on each of them and the specific methods applied have been varying throughout the last decades. These trends and the debate going on about them are especially important for economic research, since Economics is a heavily quantified social science by its very nature.

In this paper I would like to give an overview of the quantitative versus qualitative debate and apply it to economic research, within that specifically to macroeconomic research. Qualitative and mixed methods are applied in a growing number of economic topics, still these are mostly in the microeconomic field. Is it possible and useful to apply qualitative and mixed methods also in macroeconomic research? This main question of this study is about the implications of the quantitative-qualitative debate on economic, especially macroeconomic research. I would like to find answers to what kind of qualitative, quantitative or mixed methods could fit for

macroeconomic research by both the discipline itself and the broader spectrum of social sciences. In the first part definitions and content of quantitative and qualitative research concepts is discussed. In the second part I examine the methodology of some economic articles published in the last decades. In the last part the opportunities of macroeconomic applications are demonstrated in an attempt to answer the research question.

2. The quantitative -qualitative dichotomy

The distinction between quantitative and qualitative concepts can be made for different phases of a research project. Different methodological works distinguish a varying number of phases, which can be judged as quantitative or qualitative (Hanson et al. 2019, Cameron et al. 2019). Among these research questions, types of collected data, data collection methods, research design, scientific approach, analysis methods and language of interpretation can be mentioned. Table 1 shows the characteristic features of different research phases from the quantitative and qualitative point of view. Their application, however, in different approaches is by no means exclusive.

Table 1 Quantitative and qualitative concepts in different research phases

Phase	Quantitative approach	Qualitative approach
Research questions	Verification of a well specified model	Exploration of operation of processes
Data types	Numerical	Textual
Data collection methods	Statistical	Interview, observation
Research design	built on models, formulas	iterative task repetition
Scientific approach	aims at objectivity	is aware of subjectivity
Analysis method	Mathematical, Econometric	Categorization, Logical
Language, interpretation	Mathematical, more formal texts	more quotations, more informal texts

Source: own construction, parts based on SAGE (2015)

In this article I would like to highlight and discuss only two of these phases: the type of collected data and methods of analysis.

2.1. Type of data and information

Quantitative data are those, which take a numeric form (Goertzen 2017). Qualitative data are mostly textual, non-numeric (in fact they should rather be called information). Most of the research papers, either quantitative or qualitative, use both types of information, though the importance of these different types of information is rarely equal in them. This has consequences on data handling and ultimately on the results of the applied research method. The very simple definition given above, includes some obscure points. It is very frequent and most of the times easy to convert different types of data into each other.

Qualitative information or data can be simply quantified, ie. rendered a number to them. A well-known example for this is coding the sex of persons in a data base as 1 for males and 2 for females (numeric values can be varied, of course, for econometric purposes the usage of 0 and 1 codes is more applicable). In this case originally qualitative data are converted into quantitative and called dummy variables in Econometrics. However, dummy variables do not possess all the properties of truly quantitative data, which we have to take into consideration when analyzing them. On the other hand, quantitative information is also possible to convert into qualitative, for example when numerically calculated trends are described textually as increasing, stagnating or decreasing (an example for this can be seen in Doubravsky–Dohnal 2018). However, in some cases such conversions may involve high losses of information.

It is very hard to answer, which type of data, quantitative or qualitative is more informative. Some approaches would view quantitative data containing less information, therefore see quantification as a process with information loss. This is understandable if we take into consideration that mostly the context and circumstances of collected data are not reflected in the numeric values registered in the data base. Still, if all context and circumstances can be written down as text, in principle they also could be quantified. Such quantification, however, would be too complex and incomprehensible, therefore we perceive these contexts and circumstances as unquantifiable, still important for a detailed study. Those quantitative data bases, which simply ignore more sophisticated qualitatively observed data (statistics are mostly fall into this category) will definitely lose important information.

On the other hand, quantitative data are always more punctual than qualitative data. With numeric values it is possible to measure proportions and exact distances in values, ie. it is possible to establish metric scales. We can measure the strength, and significance of correlations, frequency of phenomena and make punctual comparisons. If it is true that the World is not black and white, then the punctual measurement of the greyness of each of its characteristics will provide information, upon which prudent decisions can be made. Qualitative data do not allow the measurement, comparison and judgement of phenomena in a similar way, only in those cases, when the decision would not be on the margin, and a well-based judgement is self-evident for just a first sight.

In summary, on the basis of the above reasoning, quantitative data would always give more information if they were always available. However, some of the most important phenomena of our World are too complex for us to measure and when we attempt to obtain numeric values for this purpose, the resulted quantified data may lead to wrong decisions based on our distorted estimations. In such cases qualitative data, no matter how approximate and subtle they are, can provide a better base for a faster decision.

2.2. Research methods

The concept of quantitative methods refers to mathematical calculations with numeric values, mostly called statistic calculations. In Economics the most widely accepted quantitative methods are termed under the heading of Econometrics, which comprises

of sophisticated, still well formalized, easily automated mathematical tools. These are mostly used to measure average, general or generalizable relationships. In addition to them, lots of papers use more simple calculations of percentage growth or proportions, averages and rates only. Quantitative econometric methods are used mostly for deductive purposes, explaining or rather falsifying, confirming hypotheses.

Qualitative methods include textual analyses and descriptions, mapping, coding and categorizing concepts, identifying relations and emphasize the process of building theories. Their range is wide, almost impossible to list, as almost all those methods, not using explicit calculations, can be conceived as qualitative. Qualitative methods are flexible and informal, allowing for researchers' creativity and intuition, as they are often used for inductive research, generating new ideas. Qualitative research often uses numerical data and statistics, as well, however, the purpose of application of quantitative data mostly remains illustrative in this approach.

Regarding research methods, it is observable that the type of method is mostly aligned to the type of data used for analysis. Quantitative methods are used for analyzing quantitative or quantified data, while qualitative methods are applied in the case of qualitative data (Cameron et al. 2019). In quantitative research qualitative thoughts are either preset in the model or regarded as the researcher's intuition and are not part of the methodology. Their validity is reinforced or rejected exclusively on the basis of quantitative methods. In qualitative research, on the other hand, aggregated numeric data are used mostly only for illustration, the conclusions are made on the basis of non-measurable or hardly measurable information. Thus, results derived from numeric data by qualitative methods are regarded in both approaches as inconsistent. Is this research practice truly justified? Is not it possible to arrive at sensible and novel results by mixing these approaches?

There are some analyzing research methods, which are difficult to categorize either as quantitative or qualitative. Among them the most widely known is the method of grounded theory (Finch 2002). This method has multiple phases and is well applicable for both quantitative and qualitative data. Categorizing concepts and building up theories with their help is in the core of this method. Working with primarily logical concepts and not with numbers this method is categorized as qualitative, however, categorizing, making comparisons are exercises, which can be done equally well with numbers, as well.

Coding is a process, which is fundamental in qualitative research (Saldaña 2016, Elliott 2018). Though it is included in grounded theory, it is widely used with other methods, as well. As coding is an analytical tool compressing information and leading to categorization, it can be used both for quantitative and qualitative data applying quantitative or qualitative codes. However, notwithstanding the often numeric outlook and statistical application, coding remains an essentially qualitative process, because a lot of computations can not be done with codes. Even if we deal with numeric codes, averages, summaries do not have sense to calculate. Metric comparisons can not be done either, because we can not anticipate that a coded respondent person (e.g. a male coded as 1) is less than or prior to another, differently coded person (e.g. a female coded as 2). Numeric codes are therefore not truly quantitative, though often used in quantitative research.

Another interesting aspect of coding is its application to qualitative or quantitative information. In case of qualitative information the usage of both qualitative and quantitative codes are well documented in the research literature. However, codes and classifications applied for quantitative data are less researched. This is not for this phenomenon is rare, statistics use classifications all the time, still, these classifications contain mostly standardized, a priori codes in a preset system developed by statisticians and not the researchers. With qualitative information, on the other hand, qualitative researchers prefer emergent codes constructed by themselves in an iterative way (Elliott 2018). This aspect draws attention to that quantitative research does need qualitative elements even in its apparently pure form.

It is also true for all social sciences that the most important types of inferences can not be made with the help of only quantitative or only qualitative methods. Taking causation as an example, empirical co-movement between variables is a necessary precondition of a causative relationship, similarly and independently, logical connection of the concepts is also inevitable (Babbie 2001). As quantitative methods can not tell everything about the causes of co-movement, they in themselves may be misleading. Also, apparently logical inferences can be false, if empirical facts do not reinforce them. For drawing scientifically relevant conclusions both preconditions should be fulfilled, therefore quantitative and qualitative methods can not stand alone in finding causation.

As an answer to the above issues, there is a growing literature of the mixed methods, which use quantitative and qualitative methods and data together (Cameron et al. 2019). There are different ways to adopt such a method and its methodology is more and more canonized (SAGE 2015). However, mixed methods are still not widespread in social sciences and mostly if they are used, it is not indicated explicitly and the quantitative and qualitative research parts are kept separately. Still, this direction of scientific development emphasizes that scientific novelty can be brought only through using quantitative and qualitative methods together.

3. Quantitative, qualitative and mixed methods in contemporary economic research

Although the application of quantitative and qualitative methods in a mixed way has never disappeared completely from the Economics literature, the explicitly stated usage of mixed methods started only lately. Economics apparently makes use of it only in specific subfields. Partly on the basis of the research conducted by SAGE researchers in counting and analyzing papers with mixed methods (Hanson et al. 2019), Table 2 gives an overview of the numbers of publications written since 2000 in Economics related fields.

Table 2 Quantitative, qualitative and mixed approaches in economic papers 2000–2019

Keywords	-	research	methods	research methods	data	analysis	data analysis
Quantitative	94 980	13 647	17 468	8 190	7 156	19 404	1 584
Qualitative	64 545	17 129	13 909	9 122	8 260	16 377	1 867
Both	20 108	2 789	3 221	1 225	2 881	3 524	528
Mixed	565	150	420	106	127	70	23

Source: EBSCO data bases accessed on 20th September, 2019

In Table 2 the number of publications were taken from the results of keyword search in EBSCO data bases. The basic keywords searched are given in the first column. Additional keywords used are added in the subsequent columns. Though this inquiry is very superficial, as explicitly stated nature of research methodology does not necessarily cover the truly applied methods, the difference between the figures is so large that it can demonstrate the low prevalence of explicitly stated mixed methods in Economics related papers.

Mixed approaches in the field of Economics are concentrated on just a few disciplines. Many of the papers with mixed methods were written to examine the effect of health regulation decisions (Dansereau et al. 2017, Gorham et al. 2017) and poverty research of household economics (Thomas 2008, O'Sullivan–Howden–Chapman 2019), labour market research (Kwok 2019), marketing and project management (Cameron et al. 2019) also take significant proportions. Within macroeconomic fields policy monitoring (Dansereau et al. 2017) and cost-benefit analysis (Chen 2018) can use mixed methods at best.

3.1. Mixed research in Economics

Research in Economics, especially in Macroeconomics remained much more quantified than in other social sciences, even though some good examples of mixed research inevitably exist. It has to be remarked, however, that most of the good examples are the result of a lengthy work of research groups employing numerous researchers also as authors of the papers. This indicates that mixed research requires a lot of work and is hard to conduct it alone. On the other hand, now it is hard to imagine any well based research purely from a quantitative or qualitative point of view. In fact, also single author articles contain some elements of both approaches, even if only one of them is emphasized and elaborated in the article itself.

Good examples provide information on why the usage of mixed methods is so important for researching economic problems. Both quantitative and qualitative methods have their advantages, which can be exploited using a mixture of them. Qualitative methods are always important in building up a model for research. No matter, whether we derive the underlying logic of a tested equation from empirical observations (though this is more desirable) or speculate it from researcher's intuition, the prudent selection of variables is always the result of a qualitative process. It is also prudent if quantitatively tested models are verified through some interviews, which can reinforce the causal logical relationship, anticipated by the model. Quantitative

methods on the other hand are important in the generalization of some explored processes. Once we understand, how certain variables caused each other in a specific case, we can use statistics to verify, how universal the co-movement of the variables is (Horsewood 2011). Qualitative methods as researcher intuition is always applied, similarly to quantified or estimated trends. Without quantification and tests it is simply not verifiable, whether a phenomenon is truly important and widespread or it is only a random exemption.

3.2. Examples for mixed methods in economic research

In this section some selected articles are summarized to demonstrate, how quantitative and qualitative methods can be mixed in the research of economic issues. The articles were written in different economic fields in different countries, still they use a delicate mixture of quantitative and qualitative methods, implicitly or explicitly. The existence of such articles indicates that mixed methods do have a good place in economic research.

We can see the application of mixed method in an article, which was written on the irrigation practices and aricultural development in Ghana (Owusu 2016). Here the costs and benefits of irrigation were calculated with the help of a production function formula and statistics, meanwhile the variables were refined (irrigation types applied, working hours spent, labour types applied) with the help of interviews conducted with randomly selected farmers. Clearly, the model itself would not have been possible to build up without the empirical information of the interviews, just as the numerical information of statistics and the calculations prompted by the production function equation were also inevitable. In testing the hypotheses, quantitative testing, generalization is just as important as verifying through interviews. Only the combination of all these methods could result in a well based conclusion, which finally recommends the spreading of small-scale private pumps in irrigation as means for achieving higher incomes and productivity. Without qualitative methods it would not have been possible to reinforce that this irrigation method is really profitable under the circumstances, without quantitative analysis it would not have been possible to demonstrate that it could work for a substantial number of farms and is not only an isolated case.

Another interesting example of applying mixed methods is the research of an Austrian research group on the familiness of family businesses (Frank et al. 2019). They developed a measurement for familiness, which represent the impact of the family and its social characteristics on the business the family owns or manages. The components of familiness constitute clearly qualitative information, therefore the data collection started with qualitative methods. After a qualitative phase of selecting and formulating important dimensions an exploratory factor analysis was conducted on the quantified data to obtain a more clear picture of the factors in work. Exploratory, ie. inductive research is usually termed as qualitative, still, using factor analysis did add more insight into the issue with helping to streamline the model and reduce the number of factors, quantifying the significance and co-movement of characteristics examined. Without qualitative methods this research could not have been even started.

Still, quantitative methods were of great help already in the inductive phase and also later on, when the developed measurement was tested and refined on a larger sample.

Research using quantitative methods often utilizes qualitative information or previous results of qualitative research. For example, Farkas (2019) provides a cluster analysis of EU countries from the point of view of quality of governance. The basis for characterization of the quality of governance is qualitative by nature. In this article, this factor is measured by indices, which provide the data base for quantitative cluster analysis. Both of the two indices (WGI and WEF GCR indicators) are put together at least partly on the basis of different people's opinion, which requires the application of qualitative elements. It is also concluded in this article that a previous categorization of capitalist economic systems (liberal versus coordinated) is not relevant from the governance quality point of view (Farkas 2019). A quantitative method helped here clarify the distinction of countries and categorize them in a qualitative approach.

Notwithstanding good examples, the explicit application of mixed methods in economic research is still not customary. The quantitative tradition is very strong, especially in the macroeconomic field (Posel 2017). Though there are attempts to apply qualitative or mixed type techniques (Doubravsky–Dohnal 2018), these are not in the classical toolkit of qualitative methods. Qualitative research is mostly critical to the whole of the economic point of view (Horsewood 2011), therefore it is sometimes argued whether Economics as a basically quantitative discipline can be reconciled with qualitative methods, at all.

4. Possibilities of using quantitative, qualitative and mixed methods in macroeconomic research

In the narrower field of Macroeconomics most research is conducted on quantitative basis. Though the practical applied studies of large scale project management or cost benefit analysis of government measures can make good use of qualitative methods (Chen 2018), Macroeconomics as a more descriptive, positive basic science rarely can apply anything outside the world of numeric values. It is possible to describe trends and consequences without equations (Doubravsky–Dohnal 2018), still it seems that economic analysis of entire countries or regions based on statistics can not have too much in common with pure qualitative methods. At the highly aggregated levels it is almost impossible to comprehend processes without measurements and numeric data. Growing differences in the welfare and well-being of the countries of the World, however, have made it inevitable that traditionally applied quantitative methods cannot provide a satisfactory basis for solving the problems of social and economic development. How can we address then the issues raised by alternative qualitative approaches? Poverty research at the level of countries and the need to find causes and remedies for the World's more and more serious development problems necessitates an answer.

One way of benefiting from the advantages of qualitative approach in macroeconomic research can be the application of grounded theory to specific macroeconomic problems. Categorization of concepts and collection, quantification

of qualitative variables are among the core tasks of statistical offices. Still, statistical and macroeconomic approaches to economic phenomena are not the same. Selection from and recategorization of the aggregated data put together in statistics remains an exercise for economic researchers. Secondary data (both qualitative and quantitative) also can be obtained from different articles. Putting together information from all sources and finding patterns in it can be a truly qualitative macroeconomic exercise.

Quantitative methods are natural and inherent parts of macroeconomic research. However, facing the immediate lack of research possibilities through qualitative methods, conclusions drawn from this type of neoclassical research can be rather shaky. Due to the big number of possible causes, it is hard not to omit some relevant variables from our regression equations and the calculated correlations and coefficients are too often insignificant. It seems that rigorous application of all the assumptions needed for the validity of models lead us to theoretical speculations and oversimplifications or statements, which do not show strong connections to reality.

Empirical research is hardly interpretable for Macroeconomics. Interviews can be made only with country or region experts or leaders, who themselves may be in the trouble of secession from reality. Country analysts sometimes suggest to take long walks through the streets of an analyzed country or region, but impressions obtained within reasonable time in such a way, will definitely not provide much information even if we know the country very well (Calverley 1990). The only source of data with relatively good reliability remains national or regional statistics, which happen to be numerical and aggregated.

It seems that also macroeconomic research needs qualitative approaches, while the possibilities for using them are much narrower than in the case of other disciplines. However, there are some qualitative methods, which can be applied in macroeconomic issues, as well. Macroeconomics would benefit especially well from a more flexible conception of research methods than is customary nowadays. Qualitative methods could be applied to numeric data, as well. If countries or regions are regarded individual units with special characteristics and "behavior", which can be described or examined through statistical data, supplemented by qualitative information, like the knowledge of their respective culture, society and economic policy effects, we may gain a more punctual and logical picture of the causes of perceived phenomena and the ways to influence them in desirable directions. Some of the effects can not be seen directly in the statistical figures, still social processes operate logically and their knowledge can be important indeed, when changing the structure of economy. In order to gain deeper insight into the structure of economy both qualitative methods (virtual mapping) and less widespread quantitative calculations (accounting methods) can provide useful tools.

In summary, macroeconomic research is in an especially hard situation today, when it is questioned whether abstract, aggregated relationships exist at all. Still, at micro levels of the economy and society a progressive mixing process of different approaches is taking place slowly. If these mixed, quantitative and qualitative methods could be extended to regional and country levels, Macroeconomics also could provide more contribution to our common knowledge.

5. Conclusion

Quantitative and qualitative methods represent two different approaches and paradigms in respect of scientific research. Their differences are mostly interpreted as logically exclusive, in spite of their combined use in earlier research. Still, scientific research in the fields of social sciences need both quantitative and qualitative methods in order to draw the best possible conclusions. Qualitative methods are necessary to build up models, quantitative methods can justify generalizability, sometimes simultaneously.

What can be the direction of future development of research methods in economic fields? The answer is mixed research, finding the way of applicable combinations of quantitative and qualitative methods. However, in spite of existing good examples of its application, a need for further mixed methods in economic research still exists, because it remains a problem that most of these research projects require a great amount of resources both in time and in researchers' work. Observing research methods from the point of view of the quantitative-qualitative dichotomy, at certain points it is not clear whether scientific research phases can be characterized as quantitative or qualitative. In my opinion, these are the points, though not yet proved, where scientific methodology can advance most, finding new methods. Among these may be the application of logical qualitative methods (categorization, causation relationship, grounded theory) to quantitative data, as these may not be too demanding, still methods can be mixed in several phases of the research process.

In summary, the quantitative-qualitative debate seems to be more and more fruitless. Though it seems to be a difficult advancement, scientific thinking has to cope with the task of reconciliation of this two opposing approaches. If it is successful, the so far mathematized and mainly quantitative economic and macroeconomic scientific fields will benefit the most.

References

- Babbie, E. (2001): *The Practice of Social Research*, Wadsworth.
- Calverley, J. (1990): *Country Risk Analysis*, Butterworths.
- Cameron, R. – Sankaran, Sh. – Scales, J. (2019): Mixed Methods Use in Project Management Research. In *SAGE Mixed Methods Research*, SAGE Publications, Thousand Oaks.
ISBN: 9781526498137 DOI: 10.4135/9781526498137
- Chen, B. M. (2018): What's in a Number: Arguing about Cost–benefit Analysis in Administrative Law. *Lewis & Clark Law Review*, 22, 3, 923–963.
- Dansereau, E. – Miangotar, Y. – Squires, E. – Mimche, H. – UND – IFORD – El Bcheraoui, Ch. (2017): Challenges to implementing Gavi's health system strengthening support in Chad and Cameroon: results from a mixed methods evaluation. *Globalization and Health, BioMed Central*, 13, 83, DOI: 10.1186/s12992-017-0310-0

- Doubravsky, K. – Dohnal, M. (2018): Qualitative equationless macroeconomic models as generators of all possible forecasts based on three trend values – Increasing, constant, decreasing. *Structural Change and Economic Dynamics*, 45, 30–36. DOI: 10.1016/j.strueco.2018.01.001
- Elliott, V. (2018): Thinking about the coding process in qualitative data analysis. *The Qualitative Report*, 23, 11, 2850–2861. <https://nsuworks.nova.edu/tqr/vol23/iss11/14>
- Farkas, B. (2019): Quality of governance and varieties of capitalism in the European Union: core and periphery division? *Post-Communist Economies*, 31, 5, 563–578. DOI: 10.1080/14631377.2018.1537740
- Finch, J. H. (2002): The role of grounded theory in developing economic theory. *Journal of Economic Methodology*, 9, 2, 213–234. DOI: 10.1080/13501780210137119
- Frank, H. – Kessler, A. – Rusch, Th. – Suess-Reyes, J. – Weismeier-Sammer, D. (2019): Capturing the Familiness of Family Businesses: Development of the Family Influence Familiness Scale (FIFS). In *SAGE Mixed Methods Research*, SAGE Publications, Thousand Oaks. ISBN: 9781526498137 DOI: 10.4135/9781526498137
- Goertzen, M. J. (2017): Introduction to Quantitative Research and Data. In *Applying Quantitative Methods to E-book Collections*, Chapter 3, ALATech Source, <https://journals.ala.org/index.php/ltr/article/view/6325/8274>
- Gorham, G. – Howard, K. – Togni, S. – Lawton, P. – Hughes, J. – Majoni, S.W. – Brown, S. – Barnes, S. – Cass, A. (2017): Economic and quality of care evaluation of dialysis service models in remote Australia: protocol for a mixed methods study. *BioMed Central Health Services Research*, 17, 320. DOI: 10.1186/s12913-017-2273-5
- Hanson, W. E. – Archibald, M.M. – Radil, A.I. – Zhang, X. (2019): Current Mixed Methods Practices in Qualitative research: A Content Analysis of Leading Journals. In *SAGE Mixed Methods Research*, SAGE Publications, Thousand Oaks. ISBN: 9781526498137 DOI: 10.4135/9781526498137
- Horsewood, N. (2011): Demystifying Quantitative Methods in Comparative Housing Research: Dispelling the Myth of Black Magic. *International Journal of Housing Policy*, 11/4, 375–393. DOI: 10.1080/14616718.2011.626601
- Kwok, L. (2019): Exploratory–Triangulation Design in Mixed Methods Studies: A Case of Examining Graduating Seniors Who Meet Hospitality Recruiters’ Selection Criteria. In *SAGE Mixed Methods Research*, SAGE Publications, Thousand Oaks. ISBN: 9781526498137 DOI: 10.4135/9781526498137
- Owusu, V. (2016): The Economics of Small-scale Private Pump Irrigation and Agricultural Productivity in Ghana. *The Journal of Developing Areas*, 50/1, 289–304.
- O’Sullivan, K. – Howden-Chapman, Ph. (2019): Mixing methods, Maximising Results: Use of Mixed Methods Research to Investigate Policy Solutions for Fuel Poverty and Energy Vulnerability. In *SAGE Mixed Methods Research*, SAGE Publications, Thousand Oaks. ISBN: 9781526498137 DOI: 10.4135/9781526498137

- Posel, D. (2017): Enriching economics in South–Africa: interdisciplinary collaboration and the value of quantitative–qualitative exchanges. *Journal of Economic Methodology*, 24, 2, 119–133. DOI: 10.1080/1350178X.2017.1309746
- SAGE (2015): *Handbook of Mixed Methods in Social & Behavioral Research*, ed. Tashakkori, A. – Teddlie, Ch., on–line version, ISBN: 9781506335193 DOI: 10.4135/9781506335193
- Saldaña, J. (2016): An Introduction to Codes and Coding. In *The coding manual for qualitative researchers*, SAGE, 1–42.
https://us.sagepub.com/sites/default/files/upm-binaries/72575_Saldana_Coding_Manual.pdf
- Thomas, B. K. (2008): Methodological debate in poverty studies: towards ‘participatory qual–quant’? *Development in Practice*, 18, 2, 280–288. DOI: 10.1080/09614520801899218