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Data sharing in economics – opportunities and limitations

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The research data culture varies according to discipline. While some disciplines have established a relatively open culture towards research data, other communities are still quite reluctant in this respect. Based on the distinction between macro- and micro-data an overview about data sharing in economics is given.

Macro- and Micro-Data

In respect to data sharing it is important to differentiate between macro- and micro-data. Macro-data are aggregated data that is for example the number of all persons in a country with or without a job. These data are often freely available at the internet. So, objectively there seems to be no reason why not to share this data when researchers used them in a study. Micro-data on the other hand are data about people, households or firms, which are not or only weakly anonymized. For reasons of privacy or confidentiality these data are protected and cannot be shared with others. Moreover these data are not freely available on the internet. In Germany for example as a researcher (and only for research purposes) you can get the data as a visiting scientist on-site or in some cases via controlled data teleprocessing from Research Data Centre's¹; but you are not allowed to further share this data. What does the distinction between macro- and micro-data mean for sharing economic research data? I agree with the Open Economics Principles² which inter alia state that research data in economics should be open by default but: "(...) that are often cases where for reasons of privacy, national security and commercial confidentiality the full data cannot be made openly available. In such cases researchers should share analysis under the least restrictive terms consistent with legal requirements, (...). This should include opening up non-sensitive data, summary data, metadata and code."³

¹ <http://www.ratswd.de/en/data-infrastructure/rdc>

² <http://openeconomics.net/principles/>

³ <http://openeconomics.net/principles/>



“The status quo in empirical research in economics and management is not to share data”⁴

In a study on data sharing behavior among economists Andreoli-Versbach and Mueller-Langer (2014)⁵ find out that 82 empirical researchers (16.8%) sporadically share data, while only 12 (2.46%) share data in a comprehensive and clear way. The large majority, 394 (80.74%) neither share data nor provide any indication of whether or where the data is available. Despite the fact that open research data is supported by funding agencies, by an increasing number of academic journals, and even by researchers themselves – Open Access to data seems to be an ideal professed but not practiced. It is worthwhile to mention that Andreoli-Versbach and Mueller-Langer (2015) find strong empirical support that voluntary data sharing increases with a) academic tenure, b) the share of published papers subject to a mandatory data-disclosure policy of journals and c) personal attitudes towards open science. Furthermore, what we can observe is a discrepancy between the expected benefit for scientific progress and the individual researcher's behavior. In an online survey Fecher, Friesike, Hebing, Linek and Sauermann (2015)⁶ ask about the general perception and the individual implementation among the researchers in their sample with a group of questions on opinions on data sharing and the individual sharing experience. Most respondents (approximately 76%) agree that other researchers should publish their data and around 83% state that making data available to other researchers benefits scientific progress. On the other hand, across all disciplines, only 35% of the researchers say that it is common in their research community to share data and more respondents (37%) state that is not. It seems that researchers widely agree that it is beneficial for scientific progress to share data and that they agree that others should publish their data. However, only a minority of researchers actually share their data publicly. There is a discrepancy between the expected benefit for scientific progress and the individual researcher's behavior. Fecher et al. (2015) put it in a nutshell “(...) academia is a *reputation economy*, an exchange system that is driven by individual reputation beyond money and status. In this regard, data sharing will only see widespread adoption among research professionals if it *pays* in the form of reputation.”⁷

Modes of Sharing

From my point of view it is important to be more precise with the term data sharing. In the Knowledge Exchange report “Sowing the seed” Van den Eynden and Bishop⁸ distinguish between private management, collaborative sharing, peer exchange, transparent governance, community sharing and public sharing. Thus, public sharing is only one mode of sharing. In the survey from Fecher et al. (2015) 72% of the respondents replied that they would share data with researchers whom they know personally but only 32% said they would be willing to share data publicly. To the question whether and with whom they actually shared data, 58% said they shared data with researchers they know personally, 14% said they have made their data available to all non-commercial researchers and only 13% have shared their data publicly in the past. “Most researchers would make data available if they could decide on the scope and modalities of the data reuse: *who can access what kind of data how and when.*”⁹

4 Andreoli-Versbach, P., Mueller-Langer, F., Open access to data: An ideal professed but not practised. Res. Policy (2014), <http://dx.doi.org/j.respol.2014.04.008>

5 Andreoli-Versbach, Mueller-Langer (2014) *ibid*.

6 Benedikt Fecher, Sascha Friesike, Marcel Hebing, Stephanie Linek, Armin Sauermann: A Reputation Economy: Results from an Empirical Survey on Academic Data Sharing, Berlin and Kiel, February 2015, RatSWD Working Paper 246. http://www.ratswd.de/dl/RatSWD_WP_246.pdf

7 Fecher et al. (2015, p.3) *ibid*

8 Van den Eynden, V. and Bishop, L. (2014). Incentives and motivations for sharing research data, a researchers perspective. [knowledge-exchange.info/Default.aspx?ID=733]

9 Fecher et al. (2015, p.10) *ibid*

Incentives, Trust & Credibility

If it is true, and I believe it is, that the lack of formal recognition is the main barrier of making data available, then we need appropriate reward structures for data sharing and have to provide easy and ready to use technical infrastructure. Some tools and services are already available, like for example DataCite¹⁰ DOIs for data citation or repositories¹¹ for research data. Another promising way to foster formal recognition of data sharing are data journals. In some disciplines data journals are already a reality, but in economics there is no such thing like a data journal. In a recently held workshop about the Future of Scholarly Communication¹² Osterloh and Frey said that intrinsic motivation is the key to foster open science. To some extent I agree because at the end of the day, data sharing is about trust and credibility. The bad news is that we hardly can operationalize intrinsic motivation into concrete measures. Data sharing is not an end in itself. The purpose of data sharing is to enable the reuse of data on the one hand and verification or falsification of scientific results on the other hand. Some studies raise serious concerns regarding the credibility of empirical works in economics. For example Dewald et al. (1986)¹³ attempted to replicate 54 papers and could replicate only two. McCulloch et al. (2006)¹⁴ tried to replicate 69 articles and could replicate 14. And the same author (McCulloch et al. 2008)¹⁵ attempted to replicate 117 articles from another journal and could only replicate 9.¹⁶ Replication is a cornerstone of science and it really is bad news that no applied economics journal can demonstrate that the results published in papers are replicable.¹⁷

10 <https://www.datacite.org>

11 <http://www.re3data.org>

12 http://www.zbw.eu/en/about-us/events/calendar/2015/03/30/event/tx_cal.php/calendar/the_future_of_scholarly_communication_in_economics/

13 Dewald, W.G., Thursby, J.G., Anderson, R.G. (1986). Replication in empirical economics: the Journal of Money, Credit and Banking project. *American Economic Review* 76 (4), 587-603

14 McCulloch, B.D. / McGeary, Kerry Anne / Harrison, Teresa D.: Lessons from the JMCB Archive. *Journal of Money, Credit, and Banking*, vol. 38, No.4(2006),pp. 1093-1107

15 McCulloch, B.D., McGeary, K.A., Harrison, T.D. (2008). Do economics journal archives promote replicable research? *Canadian Journal of Economics* 41 (4), 1406-1420

16 Andreoli-Versbach, Mueller-Langer (2014, p.2) *ibid.*

17 cf. McCulloch, McGeary, Harrison (2006) *ibid.*, p. 1093

