

**Abstract of the Working Paper:**

**The Psychology of Behavioral Economics**

A Citation Analysis of Behavioral Economics Articles

Fabian Braesemann, M. Sc.\*

Behavioral economics has established the idea that the psychology of decisions is an important part of current economics. Its rise has become an interesting phenomenon of methodological change in economics that has been analyzed by historians of economic thought. However, the opinions about the origins of behavioral economics and about its influence on the main body of economic thinking diverge.

It might therefore be valuable to look at the debate from a different perspective. The objective of this study is to apply quantitative methods to evaluate the relation between psychology and economics within the sphere of behavioral economics. For this purpose, 252 articles that deal with behavioral decision problems and that were published in top-psychology and top-economics journals are investigated in a citation analysis. The empirical results of this analysis reveal that there are actually major differences in the way behavioral economics is understood in the two journal categories.

**Operationalize the Development of Behavioral Economics** To start the analysis, hypotheses about the development of behavioral economics are evolved. Some historians of economic thought, like John Davis, argue that the rise of behavioral economics indicates a transformation of the economic discipline. In the article *The turn in economics: neoclassical dominance to mainstream pluralism* (DAVIS, 2006) Davis considers the rise of different relatively new sub-disciplines within economics and develops a *cycle-hypothesis* (DAVIS, 2006, p. 8) that describes the development

of economics in reaction of these new disciplines.

According to the cycle-hypothesis, periods in which the domain of economics is expanding are followed by periods where the scope of economics is contracting. It is in contraction periods where disciplines that are rooted in other sciences begin to expand into economics. In this respect, the rise of behavioral economics and other new sub-disciplines marks the beginning of a contraction period. Davis writes:

*the competing approaches in recent economics are indeed genuinely different approaches since they each originate from sources outside economics ... behavioral economics receives its impetus from recent psychology.*

This cycle-hypothesis is the starting point for operationalizing the development of behavioral economics. If the hypothesis were correct, then it should be possible to find empirical evidence in favor of it. Therefore it is necessary to find data that is suited to evaluate the development of behavioral economics. Since scientific communication takes place mainly in scientific journals, publication data of academic articles provides the information needed for the assessment. One database that includes all important information is Thomson Reuters' *Web of Science* database.

This data consists of an innumerable amount of academic articles from all scientific disciplines. For each article, the following statistics are available: a) bibliographic information (the authors' names, the paper's title, the publication year and the journal where it was published), b) all references of the article,

c) the articles' keywords and d) the abstract of the text. This information is used to develop a number of variables that reveal, from a bibliometric perspective, what behavioral economics is about.

The reference structure of the behavioral economics articles (divided in *homogeneous* and *interdisciplinary references*) indicates to which degree the articles apply knowledge from psychology compared to economics. Additionally, a variable is constructed that provides information about the *academic background of the authors* of a certain article.<sup>1</sup> Furthermore, two dummy variables show whether a certain text consists of a *mathematical* or an *empirical model*.

This data suffices to capture the most important features of behavioral economics compared to psychology articles that deal with behavioral decisions problems. A selection mechanism, based on the citation of at least two of the ten most important fundamental behavioral economics texts<sup>2</sup> leads to 122 behavioral economics articles published in top-ten economics journals. The same mechanism provides a sample of 130 articles that deal with behavioral decision problems published in top-ten psychology journals. These documents are used to compare the development of behavioral economics, since recent psychological articles about behavioral decision problems are claimed to be the origin of behavioral economics.

Table 1: Top keywords in both sets

Economics	Psychology
behavior	behavior
choice	choice
decision	decision
preference	preference
prospect	prospect
risk	risk
theory	theory
aversion	judgment
preferences	psychology
utility	self

\*Vienna University of Economics and Business, PhD-Student, fabian.braesemann@wu.ac.at

<sup>1</sup>This *paper score* on a scale from zero to one is a weighted average of the academic background (measured as the share of economics vs. psychology publications within the first ten publications of each author) of all authors of an article.

<sup>2</sup>The ten most important foundational articles, like (KAHNEMAN/TVERSKY, 1979), are those articles that are particularly appreciated in survey articles like (CAMERER/LOEWENSTEIN, 2004) or (KAHNEMAN, 2003).

Table 1 shows the most important keywords in both subsets and indicates that the topics in both sets are, indeed, very similar. This means, that major differences in the other variables point to a different interpretation of behavioral decision problems between both sets.

**Major Differences between Psychology and Economics Articles**

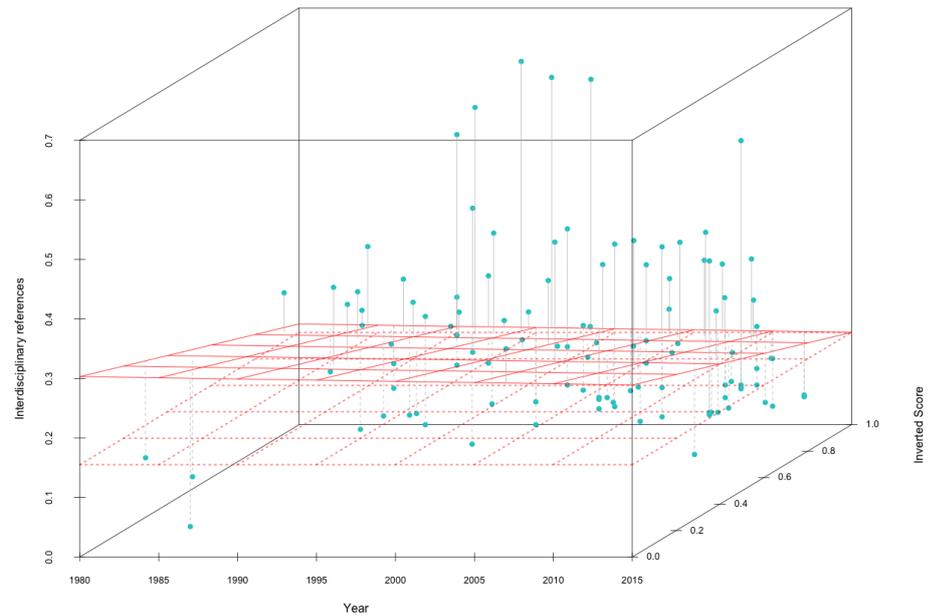
Comparing the references of the articles between both sets reveals major differences. Figure 1 shows 3D-projections of the relation between the share of interdisciplinary references, the author score and the publication year. The red grid indicates the regression plane from the multivariate regression model. Whereas there is no significant relation between the publication year and the share of interdisciplinary references in the psychology set, the share of interdisciplinary references decreases significantly with time in the economics set. This effect is even more pronounced when considering the author score (The plane in the lower figure is much more skewed). In addition, the application of mathematical models differs significantly between both subsets. Only 43% of the psychology articles applied a mathematical model, whereas this is the case in 64% of the economics articles. Furthermore, 69% of the psychology texts are related to an empirical data, and only 55% of the economics articles apply an empirical model. These differences shed light on the relation between economics and psychology within the sphere of behavioral economics.

Behavioral economics developed very differently from its psychological predecessor. Whereas both disciplines consider more or less the same topics (compare the keywords in table 1), behavioral economics uses much more mathematics and less empirical data. It is also less related to psychology than the psychology articles are to economics. And this divergence increased with time.

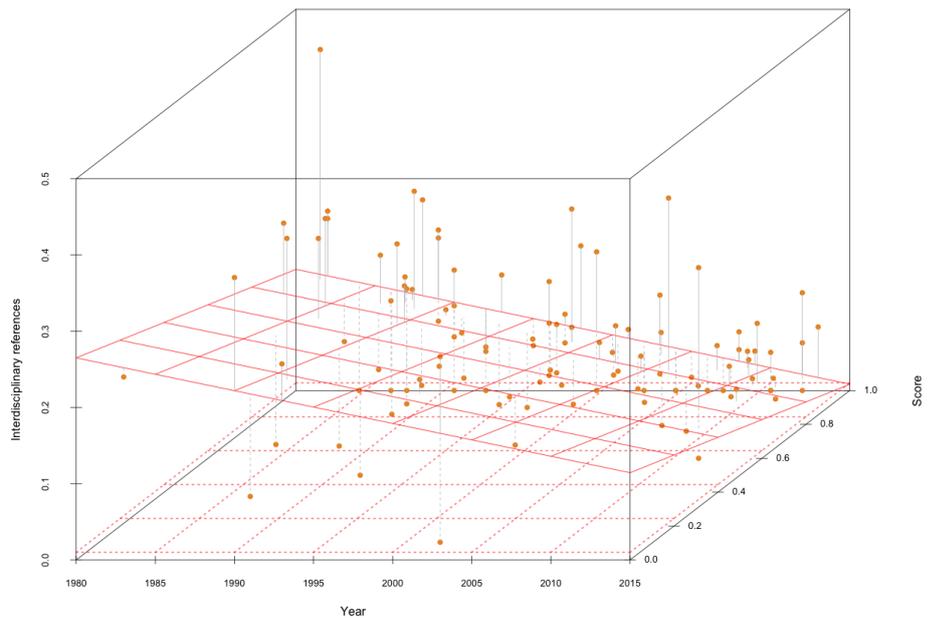
The data indicates that economics was only in the starting period of behavioral economics influenced by

Figure 1: Author score and

(a) Economics References in the Psychology Articles



(b) Psychology References in the Economics Articles



psychology (mainly by famous psychologists like Daniel Kahneman and Amos Tversky who exported their ideas to economics) and became, with the time going on, more and more mathematical and used methods. Considering this evidence, John Davis' cycle-hypothesis has to be rejected. Instead of becoming a *genuinely different approach*, behavioral economics turns out to be very much like other disciplines within economics.

**References**

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