

# The Brazilian scientific production in economics: a viewpoint under the relevance of post-Keynesianism

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## Abstract

The purpose of this article is to evaluate the importance of Brazilian researchers for post-Keynesian literature. The methodology employed uses an econometric technique in order to analyze the Brazilian participation in nine scientific journals in the course of twenty years: 1997-2016. The probability of a Brazilian co-author being greater for The Journal of Post Keynesian Economics (hereinafter JPKE) - in relation to the other journals - was evaluated by means of a logit, in which the dependent variable assumes value one when at least one co-author of the given article is Brazilian and zero otherwise. The results show that the probability of Brazilian co-authorship is greater for heterodox journals, especially JPKE.

**JEL classification:** B29, B23

**Keywords:** post-Keynesianism, logit models, history of economic thought.

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# 1 Introduction

The history of economic thought deals with different theories and thinkers who, over time, seek to explain economic functioning in a convincing way. The mainstream theory is far from being unanimous in Brazilian universities, with its critiques being mainly for its lack of adherence to the real world. According to Bresser-Pereira (2012), the core of the neoclassical theory consists of a compilation of hypothetical-deductive models that offer a closed and comprehensive view of a timeless economic system. Identifying and understanding the limits and potentials of currents of thought contrary to the mainstream in a given institutional environment can be important to understand aspects of that society.

In this sense, a statistical analysis of the academic production, which allows the inference about the relative importance of the currents of economic thought in the scientific production of researchers of a given country, can help to delimit the weight of theories opposed to the mainstream. This is only possible because scientific journals usually have a purpose related to the schools of thought, such as JPKE and post-Keynesianism.

The goal of this study is to empirically evaluate the greater participation of Brazilian researchers in journals characterized by a strong influence of post-Keynesian thought, in relation to journals of a more orthodox nature. To this end, the nine most cited journals by JPKE between 1997 and 2016, including JPKE itself, were analyzed. An estimation of a logit model was conducted, in which the journals dummies are the regressors, and the dependent variable assumes value one when at least one co-author of the given article is Brazilian and zero otherwise. The results are in agreement with the hypothesis that the probability of Brazilian co-authorship in the selected sample is greater for heterodox journals, especially JPKE.

The text is organized in 5 sections, in addition to this first introductory section. In the second section, a brief history of how the social network arose and consolidated, as well as the institutions which support post-Keynesianism, will be presented. The third section provides a descriptive analysis and relevant information regarding the data. In section 4, the empirical model applied in the study is developed. In the fifth section, the results and interpretation of the estimation of the model are presented. Finally, the last section presents the conclusions found in this paper.

## 2 Post-Keynesian literature

### 2.1 The Origins of Post-Keynesianism

It may not be an easy task to delimit the source of post-Keynesianism as a current of economic thought. The starting point for the emergence and establishment of post-Keynesianism was not merely an event, but a set of factors which has as background the dissatisfaction of a group of economists with the mainstream prevailing at that time – more specifically in the

1960s. It was during this period that the British economist Joan Robinson gave a series of lectures in the United States and, by doing so, had contact with other researchers dissatisfied with neoclassical economics [Lee, 2009, p. 80].

However, it was only in the 1970s, more specifically in 1971, in New Orleans, that Robinson shot severe criticisms to the mainstream economic during a congress of the American Economic Association. Robinson argued that the great depression created the necessary framework for the Keynesian revolution, but Keynes's General Theory was too great a disruption to be accepted by neoclassical economists. They, according to Robinson, clung to the Walrasian micro-foundations to abolish the historical time and, consequently, eliminate uncertainty, which allowed for the mainstream to suppress Keynes [Robinson, 1972]. Thus, this conference was an opening to his new book, Robinson et al. [1971], which sought to show a new economic paradigm to economists and economics students of that time [King, 2002, p. 123-5].

From this event, a group of economists that shared a sense of dissatisfaction with the mainstream began discussing and debating alternatives to the neoclassical thought, laying the foundations for a new economic current.<sup>1</sup> Among this group of thinkers was Alfred Eichner, who had come to identify with Robinson's ideas as early as 1969 [Lee, 2009, p. 78].

It was Eichner who managed to arrange a session for the group in a meeting of the Union for Radical Political Economics (hereinafter URPE), an association of economists linked to Marxism, in 1972. The session, entitled The Possibility of an "Alternative to the Neo-Classical Paradigm: a dialogue between Marxists, Keynesians and Institutionalists", indicated for Eincher that the three economic currents - Marxism, Keynesianism and Institutionalism - could mutually agree [Lee, 2009, p. 83].

But it was only in 1974, in his last post-Keynesian session at URPE, that Eichner presented his seminal paper entitled "An Essay on Post-Keynesian Theory: A New Paradigm in Economics". This study was published a year later, with co-authorship of Kregel, in the Journal of Economic Literature, and presented to the academic society the fundamental characteristics of the post-Keynesianism [King, 2002, p. 130-1; Eichner and Kregel, 1975]. In short, the publication of this article, and the 1971 seminar by Robinson, marked the birth of post-Keynesianism as an area of economic thought.

According to King [2002, p. 132-6], the late 1970s was a period of conflict between post-Keynesian and neoclassical paradigms. More than an academic dispute, the period was marked by a hunt for heresy in order to protect the true "neoclassical dogmas". This movement led post-Keynesians to join with other groups of thinkers of dissident economic currents. According to Lee [2000, p. 90-1], this connection was clearly characterized in the period, when post-Keynesian articles began to appear in the institutionalist Journal of Economics Issues (hereinafter JEI), founded in 1969.

This increasing cooperation between post-Keynesians and dissident schools was a necessary condition for the survival and proliferation of post-Keynesianism in a hostile academic environment, but it was not enough. In this sense, the emergence, in 1977, of the Cambridge Journal of Economics (hereinafter called CJE) and, a year later, the Journal of Post Keynesian Economics represented a real possibility of the belief in post-Keynesianism as a dominant paradigm in economics [King, 2002, p. 132-6].

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<sup>1</sup>At the time, the name "post-Keynesianism" was far from unanimous to groups of economists.

## 2.2 The emergence of the JPKE

In order to discuss the origins of JPKE, the listing of three thinkers is necessary, namely, Sidney Weintraub, John Galbraith and Paul Davidson. They were responsible for making the JPKE viable, through the University of Rutgers, where Davidson was a professor. With the post-Keynesian social network already sufficiently developed in the United States, the first edition of the Journal of Post Keynesian Economics (JPKE) was published in the fall of 1978 [Lee, 2009, p. 88].

The first editorial featured a statement of purpose that, according to Davidson [2002], remained relevant 25 years later: JPKE assumed the role of a journal that was receptive to innovative theoretical studies targeting contemporary economic issues, as well as encouraged a theoretical and empirical analysis that challenged the orthodox conformism that prevailed in American magazines. JPKE committed itself to the principle that the cumulative development of economic theory is only possible when such theory is continuously challenged, in terms of its ability to explain the real world as well as to provide a reliable guide to public policy.

Although JPKE and Rutgers University, by the end of the 1970s and early 1980s, constituted the main institutional framework to support post-Keynesianism, they were not the only ones to support that approach. In addition to the aforementioned JEI, in the United States, and the CJE, in England, which are part of the empirical analysis of this article, we cite the north-American Review of Radical Political Economics and Review of Social Economy, and the British Thames Papers in Political Economy [King, 2002, p. 223-4]. In general, at the end of the 1980s, the relative consolidation of the post-Keynesian paradigm through a well-defined institutional framework was clear. However, the diffusion of ideas from this school of economic thought outside the United States and England was low. The construction of social network and post-Keynesian institutional support can be seen in detail in the study of Dammski et al. [2015].

Although time has shown, to the enthusiasts of this economic current, that the revolution urged by Robinson in 1971 would not materialize, post-Keynesianism survived during the decades of 1990 and 2000 as a small but active current of economic thought. [King, 2002, p. 259-60]. The post-Keynesian thought has been disseminated around the world mainly by foreign students who have studied with post-Keynesian professors, and they have helped spread the principles of this current in countries such as Australia, Austria, Canada, France, Italy and Brazil. The dissemination of post-Keynesian thought and the ratification of the English language as dominant in the scientific society have contributed to JPKE becoming an exponent magazine in its area [Lee, 2009, p. 194].

## 2.3 Post-Keynesianism in Brazil

The gateway to post-Keynesian thought in Brazil was founded by universities with strong heterodox appeal. According to de Paula et al. [2010], in the 1980s and 1990s, the State University of Campinas – Brazil (hereinafter UNICAMP) moved towards a broader heterodox view, which was not purely Marxist, incorporating the ideas of Keynes and his followers. Luiz

G. Beluzzo, Maria C. Tavares and Mario Possas have made particularly important contributions in this regard. The postgraduate program at the Institute of Economics of UNICAMP was fundamentally important in the education of new generations of heterodox economists in Brazil. Currently, several UNICAMP professors continue to pursue their research from a post-Keynesian perspective.

de Paula et al. [2010] further emphasized another important institution in the dissemination process of post-keynesianism: the Federal University of Rio de Janeiro (hereinafter UFRJ). The institution, since the 1990s, has been strongly influenced by the post-Keynesian approach of authors like Paul Davidson. At UFRJ, the Study Group on Currency and Financial System was created, in 1997, under the coordination of Professor Fernando Cardim de Carvalho, with involvement of professors from the UFRJ itself and from other universities, such as the Federal University of Rio Grande do Sul (hereinafter UFRGS) and the State University of Rio de Janeiro (hereinafter UERJ). The studies produced by the Study Group were developed under the theoretical perspective which emerged from the work of Keynes and by the school known as post-Keynesian.

Throughout the 1990s and 2000s, other academic centers opened their doors for Keynesian researchers and many became important centers of heterodox thought. Among these are the Federal University of Minas Gerais, the Federal University of Paraná, the Federal University of Uberlândia, Fluminense Federal University, the State University of São Paulo, University of Brasília, the Getúlio Vargas Foundation, and the Catholic University of São Paulo. In 1996, the Brazilian Society of Political Economy was created. Although of Marxist origin, the Brazilian Society of Political Economy receives publications from several schools of heterodox thought in Brazil de Paula et al. [2010].

In 2008, the Brazilian Keynesian Association (BKA) was founded during a meeting at UNICAMP. The idea was to gather researchers and policy makers who shared a Keynesian view regarding economics. A joint effort of the Institute of Economics of UNICAMP and the Study Group on Currency and Financial System led to the creation of BKA, which became an important academic forum for discussion of key issues of Keynesianism and its applications in Brazil de Paula et al. [2010].

In addition to the receptivity of the Brazilian universities to post-Keynesian thought, the great bibliographic production - not only in national journals, but international as well - of post-Keynesian authors allowed their ideas to widely spread throughout the country [Carvalho, 2008]. Faced with this context, one question remains: do the empirics corroborate with Brazil's high participation in post-Keynesian journals?

### 3 Data

The database used to perform this research has been obtained through the Web of Science (WoS) platform, which provides a comprehensive research in the area of citations. WoS provides an unparalleled range of international academic literature related to a core of journals, which are rigorously selected, and discovers exclusive new information through meticulously captured metadata and citation connections Clarivate Analytics [2017].

First, it is important to emphasize that the data analyzed in this study refer only to

scientific articles of the selected journals. The process of choosing these, in turn, happened in two stages. In the first one, a long and recent period was determined for the study, from 1997 to 2016. Then, the journals most cited by the Journal of Post Keynesian Economics during these twenty years were chosen. Table 1 shows the frequency of the most cited journals by JPKE.

Table 1: Number of JPKE citations by source between 1997 and 2016

<b>Journal</b>	<b>Number of citations in JPKE articles</b>
Journal of Post Keynesian Economics	556
American Economic Review	318
Cambridge Journal of Economics	217
Economic Journal	182
Quarterly Journal of Economics	131
Journal of Economic Perspectives	125
Journal of Economic Issues	118
Journal of Political Economy	116
Econometrica	105

Source: Elaborated by the author from Web of Science data

It is not surprising that the Journal of Post Keynesian Economics is the most cited by itself in the period. In this way, the final database for this study consists of the bibliographic information of the journals in table 1, in the interval of 1997 to 2016. Figure 1 shows the graph of the proportion of articles with at least one Brazilian co-author for each journal. The prominence of the JPKE is evident, but in order to better understand the reason why, the fact that each journal has a scope has to be considered.

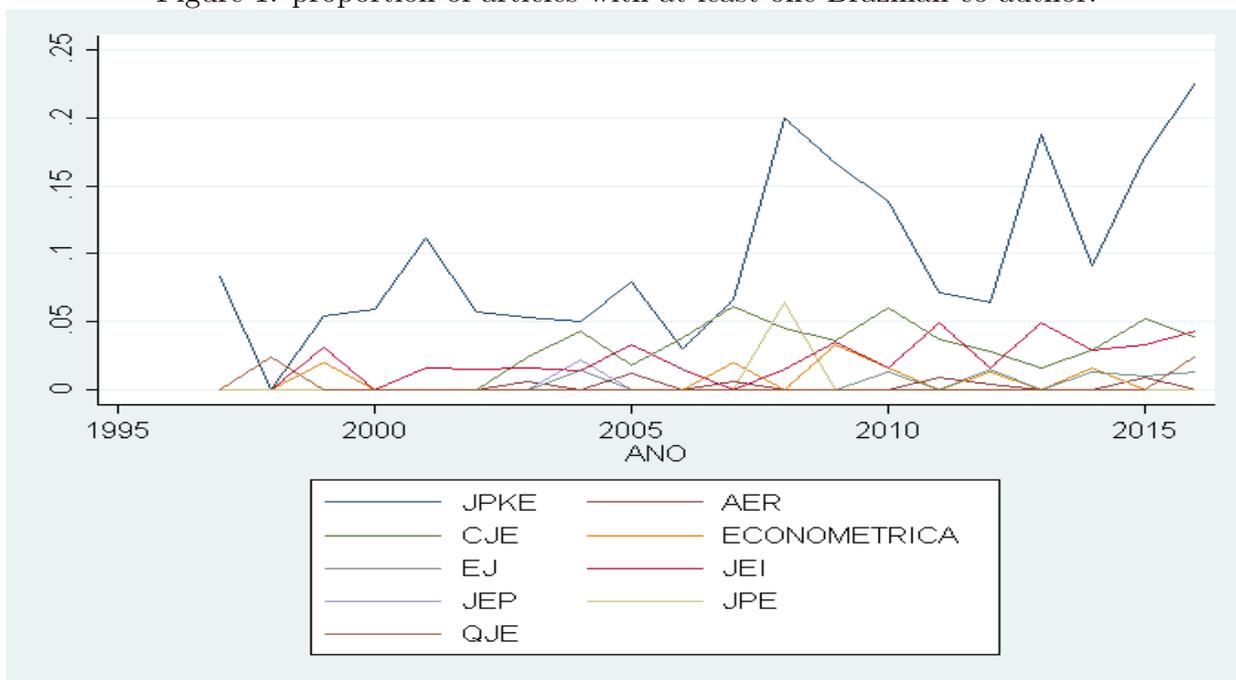
It is known that each scientific journal has its objectives based on its areas of interest. In this sense, it is important to know the setting and purpose of each of the journals used in this study. This information was collected with the SCImago platform, which provided indicators of the scientific production of each journal and country, making it a reliable and objective source of scientific content. The characteristics of each journal according to SCImago are:

## Cambridge Journal of Economics

The Cambridge Journal of Economics, founded in 1977 in the traditions of Marx, Keynes, Kalecki, Joan Robinson and Kaldor, provides a forum for theoretical, applied, policy and methodological research into social and economic issues. Its focus includes: 1) the organisation of social production and the distribution of its product 2) the causes and consequences of gender, ethnic, class and national inequities 3) inflation and unemployment 4) the changing forms and boundaries of markets and planning 5) uneven development and world market instability 6) globalisation and international integration. <sup>2</sup>

<sup>2</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=21366&tip=sid>.

Figure 1: proportion of articles with at least one Brazilian co-author.



**Note:** the variable consists of the sum of articles with at least one Brazilian co-author, in a specific year and journal, divided by the total amount of articles published by the journal in that year.

## Economic Journal

The Economic Journal is among the foremost of the learned journals in economics, and is invaluable to anyone with an active interest in economic issues. It is a key source for professional economists in higher education, business, government service and the financial sector, and represents unbeatable value for those who want to keep abreast in current thinking in economics. In recent years the number of pages has increased (it now contains 8 issues a year) while the price has been held down.<sup>3</sup>

## Journal of Economic Perspectives

The Journal of Economic Perspectives (JEP) attempts to fill a gap between the general interest press and most other academic economics journals. The journal aims to publish articles that will serve several goals: to synthesize and integrate lessons learned from active lines of economic research; to provide economic analysis of public policy issues; to encourage cross-fertilization of ideas among the fields of thinking; to offer readers an accessible source for state-of-the-art economic thinking; to suggest directions for future research; to provide insights and readings for classroom use; and to address issues relating to the economics profession.<sup>4</sup>

<sup>3</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=23011&tip=sid>.

<sup>4</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=28980&tip=sid>.

## **Journal of Political Economy**

One of the oldest and most prestigious journals in economics, the Journal of Political Economy has since 1892 presented significant research and scholarship in economic theory and practice. The journal aims to publish highly selective, widely cited articles of current relevance that will have a long-term impact on economics research. JPE's analytical, interpretive, and empirical studies in a number of areas - including monetary theory, fiscal policy, labor economics, development, micro- and macroeconomic theory, international trade and finance, industrial organization, and social economics - are essential reading for all economists wishing to keep up with substantive new research in the discipline. <sup>5</sup>

## **Journal of Economic Issues**

The Journal of Economic Issues is an internationally respected journal of institutional and evolutionary economics and serves as the official journal of the Association for Evolutionary Economics (AFEE). JEI publishes articles that describe aspects of evolving economies, economic problems, economic policy, economic history, and methodology. The primary mission of JEI is to present articles that use and develop the core ideas of institutional economics in discussions of current economic problems and policy alternatives. JEI is the leading journal for ongoing debate of institutional economic theory and a major forum for discussion of solutions to real economic problems. <sup>6</sup>

## **American Economic Review**

The American Economic Review is a general-interest economics journal. The journal is published quarterly and contains articles on a broad range of topics. Established in 1911, the AER is among the nation's oldest and most respected scholarly journals in the economics profession. <sup>7</sup>

## **Quarterly Journal of Economics**

The Quarterly Journal of Economics is the oldest professional journal of economics in the English language. Edited at Harvard University's Department of Economics, it covers all aspects of the field - from the journal's traditional emphasis on microtheory, to both empirical and theoretical macroeconomics. <sup>8</sup>

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<sup>5</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=24404&tip=sid>.

<sup>6</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=28952&tip=sid>.

<sup>7</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=22697&tip=sid>.

<sup>8</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=29431&tip=sid>.

## Econometrica

Econometrica publishes original articles in all branches of economics - theoretical and empirical, abstract and applied, providing wide-ranging coverage across the subject area. It promotes studies that aim at the unification of the theoretical-quantitative and the empirical-quantitative approach to economic problems and that are penetrated by constructive and rigorous thinking. It explores a unique range of topics each year - from the frontier of theoretical developments in many new and important areas, to research on current and applied economic problems, to methodologically innovative, theoretical and applied studies in econometrics.

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## Journal of Post Keynesian Economics

The Journal of Post Keynesian Economics is a scholarly journal of innovative theoretical and empirical work that sheds fresh light on contemporary economic problems. It is committed to the principle that cumulative development of economic theory is only possible when the theory is continuously subjected to scrutiny in terms of its ability both to explain the real world and to provide a reliable guide to public policy.<sup>10</sup>

## 4 Methodology

Binary response models, in which the dependent variable  $y$  assumes a value of 0 or 1, have been widely discussed in literature. In this methodology, the value of the variable  $y$  is associated to the probability of its realization, so that:

$$y = \begin{cases} 1 & \text{with probability } p \\ 0 & \text{with probability } 1 - p \end{cases}$$

The regression model is given by the parameterization of the probability  $p$ , by means of the regressor  $\mathbf{x}$  and a vector  $\beta$ , of dimension  $(K \times 1)$ . The conditional probability is given by:

$$p_i \equiv Pr[y_i = 1 | \mathbf{x}] = F(\mathbf{x}_i' \beta)$$

In which  $F(\cdot)$  is a cumulative distribution function (cdf), which ensures that  $0 \leq p \leq 1$ . The distribution of  $F$  must vary according to the model chosen, so that the interpretation of the marginal effects of the regression depends on the cdf chosen. In turn, the marginal effect,  $EM$ , of a variation with a continuous regressor  $j$  is represented by:

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<sup>9</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=19482&tip=sid&clean=0>.

<sup>10</sup>Available at <http://www.scimagojr.com/journalsearch.php?q=29008&tip=sid&clean=0>.

$$EM = \frac{\partial Pr[y_{i=1}|x_i]}{\partial x_{ij}} = F'(x'_i\beta)\beta_j$$

In which  $F'(z) = \partial F(z)/\partial z$  corresponds to the probability distribution function (pdf). That is, the marginal effect is a function of the regressor itself and thus varies according to the evaluation value of  $x$ . In the logit model, the marginal effect can be more easily evaluated. If the probability of realization is  $p_i = e^{x'_i\beta}/(1 + e^{x'_i\beta})$ , the marginal effect in this case is  $\partial p_i/\partial x_{ij} = p_i(1 - p_i)\beta_j$ . However, the functional aspect of the logit model makes the analysis of the marginal effect on the odds ratio more interesting, as we can see:

$$\frac{p_i}{1 - p_i} = e^{x'_i\beta}$$

$$\ln\left(\frac{p_i}{1 - p_i}\right) = x'_i\beta$$

The odds ratio,  $p_i/(1 - p_i)$  calculates the probability of  $y = 1$  in relation to  $y = 0$ . In the logit model, the logarithm of the odds ratio is linear for the regressors, thus its interpretation is simpler. Finally, the econometric model used in this study is a logit given by the following regression:

$$y_i = \beta_{aer}x_{i1} + \beta_{cje}x_{i2} + \beta_{ej}x_{i3} + \beta_{qje}x_{i4} + \beta_{jep}x_{i5} + \beta_{jei}x_{i6} + \beta_{jpe}x_{i7} + \beta_{eco}x_{i8} + \beta_{ano}T_i + \beta_{aut}w_i + \epsilon_i$$

In which the dependent variable  $y_i$  takes value 1 when the article  $i$  has at least one Brazilian co-author and 0 otherwise. The independent variables  $x_{ij}$  com  $j = 1, 2, \dots, 8$  represent the journals dummies. If the article  $i$  is in the journal  $j$ , then  $x_{ij}$  takes value 1, otherwise its value will be zero. It is worth noting that the variable referring to JPKE was omitted from the regression, since it will be our baseline variable. Thus, the interpretation of the estimated parameters of the other dummies must always be done in relation to JPKE, as we will see in the results section. Finally, the variables  $T_i$  and  $w_i$  denote the year the article was published and the number of co-authors of the article  $i$ , respectively.

The econometric model presented here has obviously a poor specification, that is, there are other unused variables related to  $y_i$ . However, given the purpose of this article, we should only check if the correlation between the omitted variable and the variables indicating the journals is sufficient to change the order of interpretation of the estimated parameters. This idea will be further explained in section 5.

## 5 Resultados

The results of the logistic regression were very interesting. First, it is easy to note, from table 2, that all coefficients are negative and significant at 1% in relation to the journals dummies. Therefore, the probability of finding a Brazilian co-author is greater for articles of

Table 2: Logit regression - probability of at least one Brazilian co-author

	Coef.	Standard Deviation	Odds Ratio
AER	-4.198***	0.369	0.015
CJE	-1.434***	0.226	0.238
ECONOMETRICA	-3.193***	0.407	0.041
EJ	-3.631***	0.435	0.026
JEI	-1.631***	0.234	0.195
JEP	-4.780***	1.013	0.008
JPE	-3.923***	0.723	0.019
QJE	-4.140***	0.727	0.015
Trend	0.073***	0.015	1.076
Co-authors	0.345***	0.093	1.413
Constant	-150.155***	31.754	
Pseudo R	0.202		
Obs.	12122		

\*\*\* Significant at 1%

the Journal of Post Keynesian Economics, which is the baseline variable, than for the other journals of the sample. The trend variable  $t$  is positive and significant at 1%, indicating an increase in the participation of Brazilians in the authorship of articles over the years.

Table 2 shows the results of the odds ratio. Regarding the journals dummies, it is possible to see that a JPKE change in any other journal of this analysis leads to a decrease in the chance of Brazilian co-authorship, since the coefficients are all smaller than one (as expected, given the results of table 2). More specifically, the chance of finding at least one Brazilian co-author in AER is 0.015 times smaller than in JPKE, for example. In this sense, it is worth mentioning that, after JPKE, CJE and JEI are the journals with the greatest probability of having a Brazilian co-author, respectively.

Thus, three important journals for the consolidation of the institutional support structure to post-Keynesianism presented a greater relative participation of Brazilian authors than other journals. The results, therefore, suggest that the post-Keynesian/heterodox thought has a strong influence on Brazilian researchers.

## 6 Conclusão

This study applied the logit model in order to evaluate the correlation between Brazilian co-authorship and post-Keynesian scientific journals, especially JPKE. The basic information used to conduct this study was: binary variable for the participation of Brazilian co-author, dummies related to economic journals and trends. The period of analysis comprised 20 years: 1997-2016. The journals selected for the investigation were the most cited by JPKE during these 20 years.

The results revealed that JPKE had a greater probability of Brazilian co-authorship,

followed by CJE, which also has a post-Keynesian approach. The third of the list was JEI, which has an institutionalist character. In sum, the results suggest that the participation of Brazilian researchers is directed towards studies that deviate from the economic mainstream. Undoubtedly, institutions with a strong heterodox view, such as UNICAMP and UFRJ, collaborated on the results obtained in the econometric model. Although we can resort to the institutional network formed by Brazilian universities to explain this fact, there are historical and sociological factors that cannot be ignored and need space in the research agenda of the field.

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