

## WHAT HAPPENS WHEN TRANSACTION COSTS GO DOWN? EVIDENCE FROM A NATURAL EXPERIMENT IN LIBRARIES

### **Autoria**

Matheus Albergaria

Economia/FECAP e Universidade de São Paulo (USP)

### **Resumo**

A literatura relacionada a custos de transação testemunhou um impressionante crescimento nas últimas décadas. No entanto, poucos estudos conseguiram avaliar os impactos de custos de transação espaciais em um ambiente de campo. O presente artigo busca preencher essa lacuna, ao responder a seguinte pergunta: o que acontece quando custos de transação diminuem em um local, mas não em outro? Empregando um novo conjunto de dados relacionado a mais de 20.000 transações em distintas bibliotecas durante um período de cinco anos (2011/2015), exploramos uma variação quasi-experimental no timing da introdução de uma tecnologia redutora de custos de transação (caixas de devolução). Contrariamente a argumentos padrão baseados em custos de transação, reportamos um resultado no qual a instauração de caixas de devolução tende, em média, a aumentar a probabilidade de atrasos nas bibliotecas.

**WHAT HAPPENS WHEN TRANSACTION COSTS GO DOWN?  
EVIDENCE FROM A NATURAL EXPERIMENT IN LIBRARIES**

**ÁREA TEMÁTICA: Estratégia**

## WHAT HAPPENS WHEN TRANSACTION COSTS GO DOWN? EVIDENCE FROM A NATURAL EXPERIMENT IN LIBRARIES

### Resumo

A literatura relacionada a custos de transação testemunhou um impressionante crescimento nas últimas décadas. No entanto, poucos estudos conseguiram avaliar os impactos de custos de transação espaciais em um ambiente de campo. O presente artigo busca preencher essa lacuna, ao responder a seguinte pergunta: o que acontece quando custos de transação diminuem em um local, mas não em outro? Empregando um novo conjunto de dados relacionado a mais de 20.000 transações em distintas bibliotecas durante um período de cinco anos (2011/2015), exploramos uma variação quasi-experimental no *timing* da introdução de uma tecnologia redutora de custos de transação (caixas de devolução). Contrariamente a argumentos padrão baseados em custos de transação, reportamos um resultado no qual a instauração de caixas de devolução tendem, em média, a aumentar a probabilidade de atrasos nas bibliotecas.

### Abstract

The literature related to transaction costs witnessed an impressive growth over the last decades. However, few studies were able to evaluate the impacts of spatial transaction costs in the field. The present paper fills this gap by answering the following question: what happens when transaction costs go down in one location but not in another? Employing a novel dataset related to more than 20,000 transactions in distinct libraries during a five-year period (2011/2015), we exploit quasi-experimental variation in the timing of introduction of a cost-saving technology (return boxes). Contrarily to standard arguments based on transaction costs, we find a result in which the instauration of return boxes tend, on average, to raise the probability of delays.

**Keywords:** collective goods; information commons; spatial transaction costs.

## INTRODUCTION

At least since Coase's (1937) seminal contribution, academics and policy makers incorporated transaction costs as an important ingredient in their analyses. These costs, defined as the “. . . cost of using the price mechanism” (Coase, 1937, p. 390) or “. . . the costs of running the economic system” (Arrow, 1969, p. 59), have played a fundamental role in several areas of knowledge, such as accounting, business strategy, economics, marketing, and law, just to cite a few (Macher and Richman, 2008). In theoretical terms, transaction costs constitute a major element in explanations related to vertical integration (Klein, Crawford and Alchian, 1978; Williamson, 1985, 1996). In empirical terms, the literature on transaction costs' measurement is currently recognized as a “success story”, since many studies attested the importance of such costs by employing alternative methods and proxies to a variety of settings and time periods (Macher and Richman, 2008; Masten, 1996; Ruester, 2010; Williamson, 2000).

Despite all the progress made over the last decades, few studies evaluated the impacts of transaction costs over common-pool resources in a field setting. The present paper takes an alternative route to understand the effects of transaction costs in this kind of setting. In particular, we try to answer the following question: what happens when transaction costs go down in a common-pool resource? We investigate the importance of transaction costs in a specific type of common-pool resource, by exploiting variation in the timing of introduction of a cost-saving technology. We consider such an introduction a *proxy* for lower transaction costs, since return boxes correspond to a practical and faster way for returning items in libraries, saving time for both library users and staff.

According to Huck and Rasul (2010, p. 1), transactions costs may “. . . be related to the time costs of decision making”. We follow a similar approach in this paper and propose that the introduction of return boxes may reduce transaction costs by lowering users' time costs when returning specific items to the library. Users could save time by directly returning items through the boxes, instead of going to the library's front desk. Alternatively, users could save time by not going to the library, which can be located, several floors above university entrance, for instance. Given these possibilities, we hypothesize that return boxes, by reducing transaction costs, would enhance performance measures in the libraries that decide to adopt them. For example, one could expect that the number of delayed items would reduce after the introduction of a return box. Alternatively, one could expect a rise in the number of early devolutions, since users would have more opportunities to return items they borrowed from the library.

We exploit variation in the introduction of a cost-saving technology (return boxes) in different libraries, located at distinct *campi* of the same university. Before 2012, users had to return books in person in each library. After that year, one library introduced a return box in the university campus where it operated, while another library did the same one year later, in 2013. This unique feature of the data allows me to employ a difference-in-differences research design to evaluate the effects of the policy implemented in each library. If lower transaction costs were relevant in this setting, then one would

expect to find a significant effect of such costs over library users' performance measures, as predicted by standard theories of vertical integration, for instance. Contrarily to the previous rationale, we uncover a result in which the instauration of return boxes either increases some measures, such as borrowings' effective duration and users' delays, at the same time that it does not exert any significant effect over item counts. These results have important implications for theories based on transaction costs, with a special emphasis over common-pool resources.

The remainder of the paper proceeds as follows. Section 2 contains a selective description of the related literature, as well as its relation to the present paper. Section 3 describes the data and research design employed in the empirical analysis below. Section 4 contains the analysis' main empirical results, while section 5 reports sensitivity analysis tests. Finally, section 6 concludes.

## RELATED LITERATURE

This paper dialogues with distinct literatures. First, the results reported in the paper represent a new way to watch the importance of transaction costs in a field setting, when compared to a long tradition in the literature focused on vertical integration issues, only (Klein, 1990; Klein, Crawford and Alchian, 1978; Williamson, 1985, 1991). For example, in the case of previous contributions related to vertical integration, it may be hard to disentangle firms' decisions based either on transaction costs or on other features of the data, such as contracts' incompleteness. One advantage of the present setting is that we are able to isolate the effects of lower transaction costs over behavior in a field setting. A related point is that, while most of the empirical literature focused on the consequences of such costs for vertical integration processes in firms (Joskow, 1987; Parmigiani, 2007; Poppo and Zenger, 1998, 2002), we present an analysis based on their effects over users' behavior in an information commons, a library. To the best of our knowledge, this is one of the first papers to relate transaction costs to an information commons in a field setting<sup>1</sup>.

Second, and related to the latter point, the results in this paper add to a well-established literature in social dilemmas, with a special emphasis over common-pool resources' management (Demsetz, 1967; Hardin, 1968; Olson, 1965; Ostrom, 1990, 1999, 2010). While there exists a large volume of evidence related to social dilemmas in artificial settings – such as laboratory experiments (Andreoni, 1988; Fehr and Gächter, 2000; Murphy and Cárdenas, 2004) – the present paper reports results related to a social dilemma in a unique field setting, an information commons. This setting has the advantage of not needing external interventions from the researcher, as well as not being subject to “demand effects”, a common problem reported in the experimental literature (Al-Ubaydli, List and Suskind, 2017; Fréchet, 2015; Kagel, 2009). Although there

---

<sup>1</sup> It is important to note that there is a well-established theoretical literature relating transaction costs to common-pool resources (North, 1990; Ostrom, 2005). The present paper distinguishes itself from these contributions by empirically measuring the impacts of lower transaction costs over behavior in a specific type of common-pool resource, an information commons. See Boddewyn and Doh (2011) for a discussion of collaborative arrangements among public and private parties for the provision of public goods in a global business environment.

were previous research efforts related to common-pool resources' management in field settings, most of them focus on studying environmental themes such as forests, fisheries, and wildlife, in general (Cárdenas and Ostrom, 2004; Fehr and Leibbrandt, 2011; Rustagi, Engel and Kosfeld, 2010). This paper differs from previous contributions by expanding the scope of analysis and focusing on a specific type of common-pool resource, an information commons (Hess and Ostrom, 2007).

Third, this paper dialogues with other papers presenting the results of field experiments involving transaction costs. We specifically refer to the contributions by Funk (2007, 2010) and Huck and Rasul (2010), in which the authors test the importance of lower transaction costs in distinct field settings. In the first paper, when evaluating the effects of the instauration of a cost-saving technology (postal voting) over voter turnout, the author cannot find significant effects of such an instauration. On the other hand, in the second paper, the authors find significant effects of lower transaction costs over fundraising campaigns in Germany. The present paper differs from these contributions by empirically exploring the impacts of transaction costs in a common-pool resource. Similarly to Funk (2010), this paper contributes to a new body of evidence which questions the importance of transaction costs in specific settings<sup>2</sup>.

Finally, the results described here also add to the growing evidence related to processes of institutional change in distinct settings. We see the introduction of a cost-saving technology as a change in the “rules of the game”, as originally proposed by North (1990, 1991)<sup>3</sup>. In this sense, the present paper contributes to the understanding of institutional change in a very specific setting (Ostrom, 2007). As a consequence, the results here reported add to a well-established literature related to the impacts of institutional change at distinct levels of aggregation, both in the short and long run (Aoki, 2007; Greif, 1998; Greif and Laitin, 2004; North, 1990, 1994).

## DATA AND METHOD

### *Institutional background and data*

We have access to confidential daily data related to library users of a private university in São Paulo, Brazil, for the 2011-2015 period. This rich dataset corresponds to the detailed transactions of distinct libraries located in

---

<sup>2</sup> Aragón (2015) also tests the effects of lower transaction costs in a field setting. However, the author focus his analysis on the impacts of property rights' improvements over local communities in Canada. See also Alston and Mueller (2011) and Monteiro and Zylbersztajn (2012), who study the importance of insecure property rights in Brazil and selected countries, respectively. Foss and Foss (2005) discuss the importance of property rights for strategy theories, emphasizing that these theories “... paid little attention to transaction cost-reducing practices” (p. 542).

<sup>3</sup> Although we adopt North's (1990, 1991) definition, we are aware that this corresponds to a specific definition of institutions. See Eggertsson (1990) and Hodgson (2006) for alternative definitions and related discussions on the theme. Joskow (1995) and Williamson (2000) describe some of the main concepts related to the New Institutional Economics. Commons (1931) corresponds to a seminal contribution related to Institutional Economics.

different university *campi* of the same university. The data contain detailed information on 1,950 individual users, covering more than 20,000 daily transactions for the entire sample period. This corresponds to an unbalanced panel, since each library user may borrow different numbers of specific library items at distinct moments.

The data contain information on users' socioeconomic characteristics – such as gender, date of birth, and address – as well as library's confidential information, with each user's identification number, university category (high school, undergraduate, master's, MBA, former student, professor, and employee) and area of study (management, accounting, economics, international relations, advertising, and secretariat). For each user in the data, we are able to identify her department and category. The data also contain the dates when each user borrows specific items from the library, as well as each item's code, and title. Based on each title, we are able to build a measure of area of expertise for each book in the sample, such as management, accounting, economics, and law.

One important information regarding the libraries studied in this paper relates to their location and size. As stated above, these libraries belong to different *campi* of the same university, two located in central neighborhoods in São Paulo (Liberdade and Largo do São Francisco), and one located in an upper-class neighborhood (Pinheiros). The Liberdade unit is the oldest and largest library of the three: founded in 1902, it contained 31,193 books in the 2015 year. In the case of the Largo do São Francisco (San Fran) unit, it dates from 2006, containing 2,883 books, in 2015. Finally, the Pinheiros unit dates back to 2011, having 883 books. Although these different locations may affect user behavior in each library, it is worth noting that two of these libraries (Largo do São Francisco and Pinheiros) serve the same type of user, MBA students, mainly. Because of this feature, we only consider MBA students in the estimations below. In doing so, we want to make both treatment and control groups more comparable, and to respect the identification condition of a difference-in-differences research design, namely parallel trends.

Libraries also differ in terms of dates of instauration of the cost-saving technology studied in this paper. In the beginning of the 2012 academic year, two libraries (Liberdade and Pinheiros) introduced return boxes in their facilities. At first, the Liberdade unit introduced two return boxes, while the Pinheiros unit introduced one return box, only. One year later, the university decided to relocate the box from Liberdade to the Pinheiros unit. This institutional setting provides me with the opportunity to compare distinct situations involving reduced transaction costs: first, by comparing similar libraries (Largo do São Francisco and Pinheiros), which received treatment at different points in time; second, by comparing distinct libraries (Liberdade and Largo do São Francisco), which differ in their treatment intensities (two return boxes *versus* one box). We follow this strategy in the robustness section by comparing distinct pairs of libraries over time, after the instauration of their respective return boxes.

We also have access to the library's official yearly reports. These reports contain rich institutional information related to the library's internal workings over the 2005-2015 period. Based on this information, we are able to build predicted devolution dates for each user in the sample. Each user can renew books after the predicted devolution date expires, conditional on a waiting list

managed by library staff. Although we do not have access to information on such lists' content, we can observe when users renew library items by comparing the dates of borrowings of the same item over time. This information allows me to build additional performance measures for each user in the sample, such as renew rates, the number of items that each user borrows every time she goes to the library, as well as measures of delays over time (equal to the difference between predicted and effective devolution dates for each item borrowed). Finally, we build measures of early returns (in the case of users who return books before the predicted date), and books' usage (equal to the number of times that users pick a specific book). We complement the data with academic calendar information related to exam weeks occurred in the university over time, as well as holydays, vacations, and weekends.

### *Empirical Strategy*

A unique feature of the libraries studied in this paper is the fact that one of them introduced a return box in its daily operations in the beginning of 2012 (Largo do São Francisco), while the other did the same one year later (Pinheiros). By estimating econometric specifications in which we control for users' observed characteristics, we are able to compare the behavioral responses of library users who had access to the boxes (treatment group) to users who did not (control group). This institutional feature allows me to employ a difference-in-differences research design to test the main hypothesis we pose in the paper. This hypothesis is the following:

*H<sub>1</sub>: the introduction of a return box in a library, by lowering transaction costs, would improve user performance measures. Specifically, such an introduction would lower delays, and borrowings' effective durations, at the same time that it would raise early returns and item counts.*

To test such a hypothesis, we run different versions of the following econometric specification:

$$(4.1) Y_{ist} = \alpha + \gamma(\text{Treatment}) + \lambda(\text{Post-Policy}) + \beta(\text{Treatment} \times \text{Post-Policy}) + \sum_t(\psi_t) + \varepsilon_{ist}$$

Here,  $Y_{ist}$  represents potential outcomes for individual  $w$  (equal to 0 or 1), in library  $s$  (treatment or control), at time  $t$ . In most specifications below,  $Y_{1ist}$  corresponds to the proportion of delays by user  $w$  and period  $t$ , after the introduction of a box in the library, while  $Y_{0ist}$  corresponds to the same proportion before such an introduction. The term "*Treatment*" corresponds to an indicator variable, which assumes unity value in the case of the library that received a box, and 0, otherwise. The term "*Post-Policy*" corresponds to an indicator variable that assumes unity value for the period posterior to 1/1/2012, and 0, otherwise. We also include academic year, book, and user fixed-effects as controls in the regressions below (captured by the term  $\alpha$ ), as well as time effects, such as days of the week, weeks in the year, and specific years, in some specifications ( $\psi_t$ ). In the case of the term  $\varepsilon_{ist}$ , it has a conditional mean of zero ( $E(\varepsilon_{ist} | s, t) = 0$ ). The parameter of interest, representing a causal estimate in this context, is  $\beta$ , which corresponds to a difference-in-differences estimate.

## RESULTS

The main empirical challenge in the present setting is to find an appropriate counterfactual, that is, a control group that would present behaviors consistent with the behavior of the treatment group, given the absence of the treatment. Table 1 presents summary statistics for selected variables for both groups (treatment and control) in the pre-policy period:

Table 1 – Descriptive statistics – pre-policy period (2011)

VARIABLE	Control Group	Treatment Group	Total Sample
Age	32.70 (7.29)	32.70 (7.35)	32.70 (7.35)
Female	0.72 (0.45)	0.60 (0.49)	0.60 (0.49)
Scholarship	0.18 (0.38)	0.29 (0.45)	0.29 (0.45)
Business Book	0.55 (0.50)	0.39 (0.49)	0.40 (0.49)
Accounting Book	0.24 (0.43)	0.25 (0.43)	0.25 (0.43)
Economics Book	0.08 (0.27)	0.04 (0.19)	0.04 (0.19)
Law Book	0.01 (0.07)	0.08 (0.28)	0.08 (0.27)
Management	0.45 (0.50)	0.27 (0.44)	0.27 (0.45)
Accounting	0.54 (0.50)	0.73 (0.44)	0.72 (0.45)
Observations	192	4,268	4,460

Source: author's calculations, based on library data.

Notes: (a) Standard deviations reported in parentheses.

One important feature of the data in the table relates to the imbalance between treatment and control groups, in this case. Specifically, when looking at the control group (Pinheiros), one notices that it contains far less observations (192) than the treatment group (Largo do São Francisco, with 4,268 observations). This imbalance between both groups translates in a total sample that directly reflects characteristics from the treatment group. We try to circumvent this problem in two different ways: first, we employ matching estimators to obtain a better balance between the two groups; second, we consider variation in the control and treatment groups to evaluate the robustness of main results. We discuss these alternative procedures in the robustness section below.

In table 2, we present the results of difference-in-differences estimations for the 2011-2012 period. In the table, the dependent variable corresponds to the proportion of delays in the period, that is, to the number of times that each user in the sample delays returning items to the library, given her total number of borrowings (named "Prob.(Late)"). This variable corresponds to a dummy variable that assumes unity value every time a user presents a positive value for her delays. We run this first specification to evaluate "extensive margin" effects of the introduction of return boxes over user behavior in the libraries. In the table's second to fifth columns, we progressively add covariates to the specifications in the table to control for fixed-effects that may bias the resulting estimates, a common practice in difference-in-differences studies. We also consider alternative ways to control for the existence of distinct trends in the treatment and control groups: in the table's fifth column, we follow Besley and Burgess (2004) by including library specific time trends, while in the sixth

column, we consider distinct weekly time trends for each group. Finally, we follow Bertrand, Duflo, and Mullainathan (2004), and cluster standard errors by the number of courses offered at the university<sup>4</sup>.

Table 2 – Effects of return boxes over probability of delays

VARIABLES	(1) Prob.(Late)	(2) Prob.(Late)	(3) Prob.(Late)	(4) Prob.(Late)	(5) Prob.(Late)	(6) Prob.(Late)
DiD Coefficient	0.33*** (0.057)	0.33*** (0.055)	0.32*** (0.054)	0.33*** (0.051)	0.36*** (0.048)	0.36*** (0.059)
Acad. Year Fixed Effects	No	Yes	Yes	Yes	Yes	Yes
Book Fixed Effects	No	No	Yes	Yes	Yes	Yes
User Fixed Effects	No	No	No	Yes	Yes	Yes
Time Trends	No	No	No	No	Yes	Yes
Mean Dep. Variable	0.53	0.53	0.53	0.53	0.53	0.53
Observations	12,993	12,993	12,993	12,993	12,993	12,993
Adj. R-squared	0.059	0.095	0.095	0.098	0.098	0.100

Source: author's calculations, based on library data.

Notes: (a) The dependent variable in the specifications corresponds to the probability of delays in the library. (b) Standard errors clustered by course (reported in parentheses). (c) "Acad. Year Fixed Effects" correspond to a set of dummies for 6 days of the week, 51 weeks for each year, and the 2012-year. (d) "Book Fixed Effects" correspond to a set of dummies for books' area of study (business, accounting, economics, and law). (e) "User Fixed Effects" correspond to a set of dummies for users' group ages (24-30, 31-40, 41-50, 51-60, 60+), gender (female), area of study (business and accounting), and time at school (0 to 4 years). (f) Sample Period: 2011-2012. (g) Statistical significance: \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01.

The table's first column corresponds to an econometric specification for equation (1) with no controls. In the table's second column, we add dummies for each week in the year, days of the week, and year. We do this to capture academic year fixed effects. In the third column, we add book dummies (accounting, management, economics, and law books) to capture differences in terms of specific items borrowed by library users. In the fourth column, we add a rich set of user-related covariates to capture users' fixed effects: their gender, age group, area of study, and time at school. In the fifth and sixth columns, we repeat the specification in the fourth column, but we consider distinct types of time trends.

One main result emerges from the table: the introduction of return boxes tends, on average, to raise the probability of delays among library users. Although there are differences in terms of the adequacy of each specification (given by the values of the coefficient of determination,  $R^2$ ), we find a positive effect of the introduction of return boxes over delays. Specifically, such an introduction rises the probability of delays by 62%, approximately ( $= 0.33/0.53$ ). This result contradicts the previous rationale based on the main hypothesis that we want to test in the present setting, i.e., that return boxes, by lowering transaction costs, would improve library performance measures. If anything, boxes tend to raise delays in the period after its instauration.

In table 3, we present difference-in-differences estimates in which we substitute the dependent variable with alternative measures of library users' performance. These variables are the following: borrowings' effective duration, borrowings' delays, the proportion of early devolutions (named "Early Returns"), and the number of items that each user borrows every time she goes to the

<sup>4</sup> There are 47 courses in the university during the 2011-2015 period. These courses differ from the areas of study (management, economics, accounting, international relations, advertising, and secretariat) that a student may choose when she enrolls in the university.

library (“Item Count”). In the case of each specification, we include a full set of covariates to capture distinct types of fixed effects, as well as variable time trends, in the spirit of Besley and Burgess (2004):

Table 3 – Effects of return boxes over library performance measures

VARIABLES	(1) Effective Duration	(2) Delays	(3) Early Returns	(4) Item Count
DiD Coefficient	3.48*** (0.381)	3.21*** (0.243)	-0.16*** (0.059)	-0.58 (0.359)
Acad. Year Fixed Effects	Yes	Yes	Yes	Yes
Book Fixed Effects	Yes	Yes	Yes	Yes
User Fixed Effects	Yes	Yes	Yes	Yes
Time Trends	Yes	Yes	Yes	Yes
Mean Dep. Variable	8.50	2.27	0.24	2.97
Observations	12,993	12,993	12,993	12,993
Adj. R-squared	0.072	0.081	0.039	0.056

Source: author’s calculations, based on library data.

Notes: (a) The dependent variable in the specifications corresponds to borrowings’ effective duration (first column), borrowings’ delays (second column), early returns (third column), and item count (fourth column). (b) Standard errors clustered by course (reported in parentheses). (c) “Acad. Year Fixed Effects” correspond to a set of dummies for 6 days of the week, 51 weeks for each year, and the 2012-year. (d) “Book Fixed Effects” correspond to a set of dummies for books’ area of study (business, accounting, economics, and law). (e) “User Fixed Effects” correspond to a set of dummies for users’ group ages (24-30, 31-40, 41-50, 51-60, 60+), gender (female), area of study (business and accounting), and time at school (0 to 4 years). (f) Sample Period: 2011-2012. (g) Statistical significance: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

In the case of the alternative performance measures considered in the table, the results confirm the previous empirical pattern related to the probability of delays. In particular, the introduction of return boxes in one of the libraries tends, on average, to raise borrowings’ effective durations and delays by a similar magnitude, in both cases (around three days). On the other hand, there is a negative correlation between boxes and early returns, suggesting that users delay returning books ahead of time, in this case. Finally, it is worth noting that the boxes do not affect the number of items that users borrow when they go to the library.

## CONCLUSION

Transaction-cost theory constitutes one of the most important contributions in social sciences today (Coase, 1992; Williamson, 2010). Previous research brought new insight to the mechanisms through which transaction costs affect important decisions in distinct areas, such as accounting, economics, management, and law (Macher and Richman, 2008). However, despite all the progresses made, few studies were able to evaluate the impacts of transaction costs over an information commons in the field. The present paper tries to fill this gap by studying the impacts of lower transaction costs in a specific type of information commons, a university library.

By exploiting variation in the introduction of a cost-saving technology (return boxes) in distinct libraries over time, we evaluate the impacts of lower transaction costs in a field setting. The main advantage of the present context is the fact that we are able to isolate the influence of transaction costs over behavior, as opposed to most previous contributions in the literature. Contrarily to standard arguments based on transaction costs, we find a result in which the

instauration of return boxes tends, on average, to raise the probability of delays, and borrowings' effective durations, at the same time that it lowers early returns and does not affect item counts.

## REFERENCES

- AL-UBAYDLI, O.; LIST, J. A.; SUSKIND, D. L. What can we learn from experiments? Understanding the threats to the scalability of experimental results. **American Economic Review (Papers and Proceedings)**, v. 107, n. 5, p. 282–286, 2017.
- ALSTON, L. J.; MUELLER, B. **Priests , conflicts and property rights: the impacts on tenancy and land use in Brazil** University of Colorado Working Paper Series. Boulder: [s.n.].
- ANDREONI, J. Why free ride? Strategies and learning in public goods experiments. **Journal of Public Economics**, v. 37, n. 3, p. 291–304, 1988.
- AOKI, M. Endogenizing institutions and institutional changes. **Journal of Institutional Economics**, v. 3, n. 1, p. 1, 2007.
- ARAGÓN, F. M. Do better property rights improve local income? Evidence from First Nations' treaties. **Journal of Development Economics**, v. 116, p. 43–56, 2015.
- ARROW, K. The organization of economic activity: issues pertinent to the choice of market versus nonmarket allocation. *In: The analysis and evaluation of public expenditure: the PPB system*. [s.l: s.n.]. p. 59–73.
- BERTRAND, M.; DUFLO, E.; MULLAINATHAN, S. How much should we trust differences-in-differences estimates? **Quarterly Journal of Economics**, v. 119, n. February, p. 249–275, 2004.
- BESLEY, T.; BURGESS, R. Can labor regulation hinder economic performance? Evidence from India. **Quarterly Journal of Economics**, v. 119, n. 1, p. 91–134, 2004.
- BODDEWYN, J.; DOH, J. Global strategy and the collaboration of MNEs, NGOs, and governments for the provisioning of collective goods in emerging markets. **Global Strategy Journal**, v. 1, n. 3–4, p. 345–361, 2011.
- CÁRDENAS, J. C.; OSTROM, E. What do people bring into the game? Experiments in the field about cooperation in the commons. **Agricultural Systems**, v. 82, n. 3, p. 307–326, 2004.
- COASE, R. H. The nature of the firm. **Economica**, v. 4, n. 16, p. 386–405, 1937.
- \_\_\_\_\_. The institutional structure of production. **American Economic Review**, v. 82, n. 4, p. 713–719, 1992.
- COMMONS, J. Institutional economics. **American Economic Review**, v. 21, n. 1, p. 648–657, 1931.
- DEMSETZ, H. Toward a theory of property rights. **American Economic Review (Papers and Proceedings)**, v. 57, n. 2, p. 347–359, 1967.
- EGGERTSSON, T. **Economic behavior and institutions**. Cambridge: Cambridge University, 1990.
- FEHR, E.; GÄCHTER, S. Cooperation and punishment in public goods experiments. **American Economic Review**, v. 90, n. 4, p. 980–994, 2000.
- FEHR, E.; LEIBBRANDT, A. A field study on cooperativeness and impatience in the Tragedy of the Commons. **Journal of Public Economics**, v. 95, n. 9, p. 1144–1155, 2011.

- FOSS, K.; FOSS, N. J. Resources and transaction costs: how property rights economics furthers the resource-based view. **Strategic Management Journal**, v. 26, n. 6, p. 541–553, 2005.
- FRÉCHETTE, G. Laboratory experiments: professionals versus students. *In*: FRÉCHETTE, G.; SCHOTTER, A. (Eds.). . **Handbook of Experimental Economic Methodology**. New York: Oxford University, 2015. p. 360–390.
- FUNK, P. Is there an expressive function of law? An empirical analysis of voting laws with symbolic fines. **American Law and Economics Review**, v. 9, n. 1, p. 135–159, 2007.
- \_\_\_\_\_. Social incentives and voter turnout: evidence from the Swiss mail ballot system. **Journal of the European Economic Association**, v. 8, n. 5, p. 1077–1103, 2010.
- GREIF, A. Historical and comparative institutional analysis. **American Economic Review**, v. 88, n. 2, p. 80–84, 1998.
- GREIF, A.; LAITIN, D. D. A theory of endogenous institutional change. **American Political Science Review**, v. 98, n. 4, p. 633–652, 2004.
- HARDIN, G. The tragedy of the commons. **Science**, v. 162, n. 3859, p. 1243–1248, 1968.
- HESS, C.; OSTROM, E. Introduction: an overview of the knowledge commons. *In*: HESS, C.; OSTROM, E. (Eds.). . **Understanding knowledge as a commons: from theory to practice**. Boston: MIT Press, 2007. p. 3–26.
- HODGSON, G. M. What are institutions? **Journal of Economic Issues**, v. XL, n. 1, p. 1–25, 2006.
- HUCK, S.; RASUL, I. Transactions costs in charitable giving: evidence from two field experiments. **The BE Journal of Economic Analysis & Policy**, v. 10, n. 1, p. 31, 2010.
- JOSKOW, P. L. Contract duration and relationship-specific investments: empirical evidence from coal markets. **American Economic Review**, v. 77, n. 1, p. 168–185, 1987.
- \_\_\_\_\_. The New Institutional Economics: alternative approaches. **Journal of Institutional and Theoretical Economics (JITE)**, v. 15, n. 1, p. 248–259, 1995.
- KAGEL, J. H. Laboratory experiments. *In*: FRÉCHETTE, G.; SCHOTTER, A. (Eds.). . **The methods of modern experimental economics**. Oxford: Oxford University, 2009.
- .
- KLEIN, B. Contracts and incentives: the role of contract terms in assuring performance. *In*: WERIN, L.; STAHL, I. (Eds.). . **Contract: determinants, properties and implications**. Oxford: Blackwell, 1990. p. 149–180.
- KLEIN, B.; CRAWFORD, R. G.; ALCHIAN, A. A. Vertical integration, appropriable rents, and the competitive contracting process. **Journal of Law and Economics**, v. 21, n. 2, p. 297, 1978.
- MACHER, J. T.; RICHMAN, B. D. Transaction cost economics: an assessment of empirical research in the social sciences. **Business and Politics**, v. 10, n. 1, p. 1469–1529, 2008.
- MASTEN, S. E. Empirical research in transaction-cost economics: challenges, progress, directions. *In*: GROENEWEGEN, J. (Ed.). . **Transaction cost economics and beyond**. Boston: Academic Publishers, 1996. p. 41–64.
- MONTEIRO, G. F. A.; ZYLBERSZTAJN, D. A property rights approach to strategy. **Strategic Organization**, v. 10, n. 4, p. 366–383, 2012.

MURPHY, J. J.; CÁRDENAS, J.-C. An experiment on enforcement strategies for managing a local environment resource. **Journal of Economic Education**, v. 35, n. 1, p. 47–61, 2004.

NORTH, D. C. **Institutions, institutional change and economic performance**. Princeton: Princeton University, 1990.

\_\_\_\_\_. Institutions. **Journal of Economic Perspectives**, v. 5, n. 1, p. 97–112, 1991.

\_\_\_\_\_. Economic performance through time. **American Economic Review**, v. 84, n. 3, p. 359–368, 1994.

OLSON, M. **The logic of collective action: public goods and the theory of groups**. Cambridge: Harvard University, 1965.

OSTROM, E. **Governing the commons: the evolution of institutions for collective action**. New York: Cambridge University, 1990.

\_\_\_\_\_. Coping with tragedies of the commons. **Annual Review of Political Science**, v. 2, n. 1, p. 493–535, 1999.

\_\_\_\_\_. **Understanding institutional diversity**. Princeton: Princeton University, 2005.

\_\_\_\_\_. **Developing a method for analyzing institutional change** Workshop in **Political Theory and Policy Analysis**. [s.l.: s.n.]. Disponível em: <[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=997837](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=997837)>.

\_\_\_\_\_. Beyond markets and states: polycentric governance of complex economic systems. **American Economic Review**, v. 100, n. 3, p. 641–672, 2010.

PARMIGIANI, A. Why do firms both make and buy? An investigation of concurrent sourcing. **Strategic Management Journal**, v. 28, n. 2007, p. 285–311, 2007.

POPPO, L.; ZENGER, T. Testing alternative theories of the firm: transaction cost, knowledge-based, and measurement explanations for make-or-buy decisions in information services. **Strategic Management Journal**, v. 19, n. 9, p. 853–877, 1998.

\_\_\_\_\_. Do formal contracts and relational governance function as substitutes or complements? **Strategic Management Journal**, v. 23, n. 8, p. 707–725, 2002.

RUESTER, S. **Recent developments in transaction cost economics** Dresden **University of Technology**: Dresden University of Technology (Dept. of Business and Economics) Working Paper Series. Philadelphia: [s.n.]. Disponível em: <<http://search.proquest.com/docview/189872778?accountid=10297%5Cnhttp://ssrn.com/abstract=1535903>>.

RUSTAGI, D.; ENGEL, S.; KOSFELD, M. Conditional cooperation and costly monitoring explain success in forest commons management. **Science**, v. 330, n. November, p. 961–965, 2010.

WILLIAMSON, O. E. **The economic institutions of capitalism**. [s.l.] The Free Press, 1985. v. 12

\_\_\_\_\_. Strategizing, economizing and economic organization. **Strategic Management Journal**, v. 12, n. Special issue: Fundamental Research Issues in Strategy and Economics, p. 75–94, 1991.

\_\_\_\_\_. **The mechanisms of governance**. New York: Oxford University, 1996.

WILLIAMSON, O. E. The New Institutional Economics: taking stock, looking ahead. **Journal of Economic Literature**, v. 38, n. 3, p. 595–613, 2000.

WILLIAMSON, O. E. Transaction cost economics: the natural progression. **American Economic Review**, v. 100, n. 3, p. 455–476, 2010.