

Inside the Black Box: Partnerships in Rio de Janeiro, 1870-1891*

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Abstract

We use newly-constructed individual-level data on partnership contracts in late nineteenth century Rio de Janeiro to examine differences between limited and unlimited liability firms and partners, and to assess the impact of a major institutional reform that facilitated the formation of joint stock companies on the terms of partnership contracts. Contrary to expectation, we find that most unlimited partners contributed capital and received profit shares, and most non-managing limited partners received salaries. Limited partners contributed more capital and received lower salaries and profit shares than their unlimited partners; unlimited partners in limited firms received more favorable terms than those in unlimited firms. Finally, we find suggestive evidence that the reforms reduced the extent of income smoothing for the limited partner and increased the average quality of unlimited liability partners in limited liability firms. These findings highlight the role of incentives and the desire for income smoothing in shaping contract terms.

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1. Introduction

Business partnerships were a crucial organizational form during the nineteenth century, often outnumbering corporations by a very wide margin.¹ Moreover, despite conventional wisdom that emphasizes unlimited liability in partnerships as opposed to limited liability in joint stock companies, partners could have limited liability and partnerships with limited liability were in fact numerous.² Entrepreneurs could establish partnerships where at least one partner had limited liability, known in Brazil as a *sociedade em comandita* (henceforth limited partnerships) or partnerships where no partners had limited liability, referred to as a *sociedade em nome coletivo* (henceforth unlimited partnerships)³, and they could become limited or unlimited partners. Partners with unlimited liability worked and managed the firm in return for profit shares and salaries, and they were personally held liable for their firm's liabilities above and beyond their capital contribution. Limited liability partners contributed capital to the firm in return for profit shares and, as we show, also sometimes salaries. They were not personally liable for their firms' liabilities, and they were not allowed to take an active part in managing the firm or working in it. That is, limited liability partners were passive investors in the firm rather than active partners, although they were allowed to offer advice to the active partners and to monitor the firm's finances.⁴

This paper's main goal is to shed light on limited and unlimited partnerships by analyzing data assembled from a set of richly detailed contracts of business partnerships in the Brazilian archives. We ask: how different were limited partnerships from unlimited partnerships? How different were the contract terms of the limited partner from those of the unlimited partner? And how did the emergence of joint stock companies affect contractual relationships within partnerships? Answers to these questions contribute to our understanding of the logic of partnerships as well as the effects of institutional reform on the organization of these firms.

¹ Duol, "Popularity of Partnership," p. 8, reports that partnerships accounted for 30 percent of all U.S. firms (including proprietorships) in non-agricultural sectors. Lamoreaux and Rosenthal, "Corporate Governance and the Plight of Minority," p. 4, report that two-thirds of multi-owner firms in U.S. manufacturing were organized as partnerships circa 1900. Lamoreaux and Rosenthal also present figures for France where partnerships formed the bulk of new multi-owned enterprises during this period (with limited liability companies forming a small fraction of all partnerships).

² See Lamoreaux, "Constructing Firms."

³ We use the term "Limited Partnership", as opposed to "Limited Liability Partnership", in order to emphasize that the limited liability firms we are referring to throughout the paper have as limited partners only a subset of their partners (and the rest are unlimited partners). This is in contrast to the "Limited Liability Partnership", or LLP, known to prevail today in the US, where *all* partners have limited liability and can participate in the operation of the firm. For consistency, we also use the term "Unlimited Partnership", as opposed to "Unlimited Liability Partnership."

⁴ Brazil, *Codigo Comercial*, Art. 314, "Os socios comanditarios não podem praticar acto algum de gestão (the limited partners may not practice any act of management)," but can "tomar parte nas deliberações da sociedade (take part in the deliberations of the partnership)." The classic annotated version of the code is Salustiano Orlando de Araujo Costa, *Codigo Commercial do Imperio do Brazil*. Unless otherwise noted, we follow this authority in interpreting the meaning of specific articles of the code.

The complete registers of partnerships in Rio de Janeiro are available in Brazil's National Archive and their analysis allows us to probe fundamental aspects of this form of business enterprise. Hundreds of partnerships were registered every year in the ledgers of the Junta Comercial of Rio de Janeiro.⁵ Our data suggest that these contracts brought together thousands of partners and millions of dollars in capital. For 1870, 1888 and 1891, we collected full information on all partnership contracts registered in the books, including partner-level information on salaries (usually denoted as a monthly draw on the current account and/or annual profits), profit shares, capital contribution, and the partners' liability status. We also matched partners with a comprehensive set of property records for Rio de Janeiro for 1888 which provides us with an additional measure of partners' wealth.

The years from which we chose to collect data allow us to test the effect of the vast expansion of joint stock companies on the relative contractual terms (profit shares, salaries and the shares of the capital contributions) received by partners with and without limited liability. Specifically, institutional innovation in the aftermath of the declaration of a republic in 1889 facilitated the relatively easy establishment of joint-stock companies. These changes led to a large increase in the number of new joint-stock companies in increasingly diverse sectors of the economy.⁶ At the same time, partnerships remained the main organizational form for smaller businesses. We test whether the average terms of unlimited partners in limited partnerships changed differentially after the reforms compared with the terms of the limited partners. Similarly, we test whether the average terms of unlimited partners in limited partnerships changed differentially after the financial reforms compared with the terms of partners in unlimited partnerships. These questions are interesting because they shed light on the relative economic advantages of limited vs. unlimited partnerships and the effect of broader financial development (as proxied by the reforms) on these partnerships, which comprised a large swathe of the economy.

Our first set of regressions compares the cross-sectional differences between limited and unlimited liability partners. This paper is, to the best of our knowledge, the first to examine the different contractual terms of these two types of partners. The results of these regressions suggest that, in limited partnerships, limited partners received lower profit shares than unlimited partners, they had lower

⁵ The Junta Comercial can be translated, roughly, as Chamber of Commerce. However, the Junta and its tribunal had far more sweeping powers than its North American counterpart, including an array of judicial prerogatives and the ability to send merchants to jail or to ban them from business. In this regard, we view the use of the term Chamber of Commerce as misleading when applied to the Brazilian case.

⁶ Haber, "Financial Markets," pp. 146-178, esp. 151-153: "The more important, long-term effect of the *Encilhamento* was that it financed the creation of large numbers of joint-stock manufacturing companies." Eulalia Maria Lahmeyer Lobo's, *História do Rio de Janeiro*, two volume study of industrialization in Rio de Janeiro offers further support for this position.

salaries, and they contributed higher shares of the firm’s capital. We interpret these terms as the “price” investors were willing to pay for having limited liability and for not having to devote their own labor to the partnership. At the same time, the limited partner often received a regular “salary” despite not taking an active role in managing the firm, implying that he received some insurance from the firm – something unavailable to investors in joint stock companies.

We then compare the terms of the contract of unlimited partners in unlimited partnerships with those in limited partnerships. This analysis shows that unlimited partners in limited partnerships received better terms: they had lower capital contributions, higher profit shares, and higher salaries. These findings are consistent with the positive selection of unlimited partners into limited firms over unobserved (to us) dimensions such as management ability and productivity. This is unsurprising in the sense that investors who cannot work in the firm (limited liability partners) are more likely to trust able people to look after their money.

Finally, we use a difference-in-differences approach to test how the financial reforms affected: (1) the limited partners (compared with unlimited partners in limited firms); and (2) the unlimited partners in limited partnerships (compared with unlimited partners in unlimited partnerships). We note that, while these reforms were a key event in 1890, they occurred in a context of other economic and political changes that might have affected the environment in which partnerships operated (see Section Two). So while the 1890 financial reforms are likely to have played the main role in the changes in partnership contracts, we cannot disentangle the effects of the reforms from the effects of the other changes occurring between 1888 and 1890. We find that limited partners after the 1890 reforms received lower salaries, suggesting that insurance motives may have become less important once limited partners could invest their money more easily in joint-stock companies.⁷ Additionally, while

⁷ Note that, perhaps surprisingly, limited partners very rarely invested in multiple partnerships, at least according to the most complete data we have been able to evaluate. Namely, in the 1889 city directory, firms are listed along with partners (including the specification of limited partner), allowing us to see whether partners in our 1888 database are investors in other firms during that same year. A preliminary study, based on a manual matching process to ensure accuracy, suggests that in 1888 the rate of participation in multiple firms was no more than ten percent among individuals listed as limited partners in the 1888 partnership registries. We cross-checked partners in all existing partnerships listed in the city directory. Firm names and partner names occur on different lines in the database, so it was necessary to return to the Almanak page image to confirm whether partners were, in fact, members of multiple firms. One reason for why partners tended to invest in only one partnership could be that partners’ capital contributions to their firm were most often relatively large shares of their overall wealth. We collected separate information on property ownership by matching property records with our partnership sample. The average annual rental value of property for property owners in our sample is about 32 1870 British pounds. A back of the envelope calculation that imputes ten times the annual rental value as the property sale value provides us with a measure of the value of property owned by our partners which can be added to their capital contributions to arrive at a rough measure of combined business and real estate wealth. It is worth pointing out that capital contributions formed the bulk (86%) of our measure of wealth. Another reason might be that partners generally specialized in a single line of business and did not want to invest in businesses they did not understand and in which they could not monitor the other partner.

the cross-sectional results already suggested that unlimited partners received better terms than limited partners, the difference-in-differences results suggest that unlimited partners working in limited liability firms received even better terms after the reform compared with unlimited partners in unlimited liability firms: they received higher profit shares and contributed less capital to the partnership.

Other papers have studied partnerships in the nineteenth century.⁸ Besides the historical contribution of extending the analysis of partnerships to Brazil, our paper contributes to this literature both by focusing the analysis on the partner level rather than the firm level, and by studying the effect of financial market deregulation on partnerships.

The paper proceeds as follows. In section Two, we briefly describe the economic and institutional context of late-nineteenth-century Rio de Janeiro and provide a summary of the rules governing partnerships. With the economic and institutional context clarified. In section Three, we describe the data and provide a detailed description of partnership contracts in Brazil during the latter part of the nineteenth century. In section Four, we describe the empirical strategy and results. Specifically, in section Four we first document the differences between limited and unlimited partnerships. Second, we study the differences in the contract terms between the limited and unlimited partners in limited firms. Third, we evaluate whether and to what extent unlimited partners received better terms in limited partnerships than in unlimited partnerships. Fourth, we focus on family firms and examine differences in contract terms between family members and non-family partners. Finally, we examine the effect of the 1890 financial reform, which introduced to entrepreneurs the option of investing their capital in joint stock companies, on the contract terms of limited and unlimited partners.

2. Economic and institutional background

Brazil between 1822 and 1889 was the only long-lasting monarchy in the Western Hemisphere. For most of the years prior to the sweeping reforms of 1890, the Emperor of Brazil was Dom Pedro II. His regime, though buffeted in the early years by regional revolts, was marked by a general sense of stability. As a constitutional monarch, Pedro II ruled through an appointed Council of State and an elected Congress. The regime was weakened by poor performance in the Paraguayan War (1865-70)

⁸ See, e.g.: Lamoreaux and Rosenthal, “Contractual Tradeoffs”; Lamoreaux, “Partnership Form”; Guinnane, Harris, Lamoreaux, and Rosenthal “Putting the Corporation in its Place”; Duol, “Next Best Thing”; Hilt and O’Banion, “Limited Partnership in New York”; Gomez-Galvarriato and Musacchio, “Larger Menus and Entrepreneurial Appetite”; Bodenhorn, “Partnership Hold-Up”; and Kessler, “Limited Liability in Context.” Also quite relevant, though not solely focused on partnerships is Lamoreaux, *Insider Lending*.

and struggles over the continuation of the slave system, leading eventually to a belated abolition decree, signed by Pedro II's daughter, the Princess Isabel, on May 13, 1888.⁹ A coup d'état led by the army and backed by elements of the elite and urban middle class brought about a declaration of a republic on November 15, 1889.¹⁰ This new republican regime ushered in the substantial reforms of the laws governing joint-stock companies, as well as the whole financial system, in 1890-91.

Between 1850 and 1900, the city of Rio de Janeiro was transformed from a sleepy imperial capital into a burgeoning modern metropolis by the development of railway links to the interior, European immigration to the city, particularly from Portugal, and the rise of banking and joint-stock companies.¹¹ The population of the city trebled in these decades, and the volume of exports more than doubled.¹² Together, these developments encouraged urbanization and industrialization, which in turn influenced the structure of the business community, including partnerships.

The Commercial Code of 1850, adopted by the Brazilian empire at the same time that the Atlantic slave trade was finally suppressed, and meant to help spur the modernization of the economy, provided the basic template for the formation and regulation of partnerships and other business organizations.¹³ Joint-stock companies were also considered in the original 1850 code, but these firms required a charter. Chartering, however, depended on imperial government authority and very few joint-stock companies were formed before the 1880s. It was only in 1882 that the chartering law was revised and joint-stock companies were allowed in most sectors of the economy without governmental permission.¹⁴ The declaration of a republic in 1889 allowed further institutional innovation. Stephen Haber's work on the cotton textile industry in Brazil shows that the institutional changes of 1889-91

⁹ For an excellent critical biography of Dom Pedro II, see Barman, *Citizen Emperor*.

¹⁰ da Costa, *The Brazilian Empire*.

¹¹ Note that in this paper, unless otherwise stated, our unit of analysis is the city of Rio de Janeiro, not the province of the same name. The city was also sometimes referred to as the Court (a Corte) of the Brazilian Empire. The best overview of the modernization of Brazil during this period remains Graham's, *Britain and the Onset of Modernization in Brazil, 1850-1914*. For the important role of the railroads in Brazil's economic development during the second half of the nineteenth century, see Summerhill, *Order Against Progress*.

¹² The population figure for the city of Rio de Janeiro in 1849 was 205,906; by 1872 it had increased to 274,972; finally, in 1890, it had risen dramatically to 522,651. First figure from Karash, *Slave Life*, p. 166, citing the census of the city conducted by Roberto Haddock Lobo; other years reported in Brazil, IBGE, *Recenseamento*. Export figures from Lobo, *Historia do Rio de Janeiro*, vol. 1.

¹³ The articles of the Brazilian Commercial Code of 1850 and the French Commercial Code of 1807 are usually very similar and sometimes identical. Beginning with the early articles regarding the right to engage in business (limits for minors and married women) and extending through the articles requiring businesses to maintain clear and complete account books, the Codes are virtually identical. The French Code, Book 1, Title 3, section 1 defines much the same menu of options as found in Brazil, including nearly identical rules for unlimited and limited partnerships. Source: Rodman, *The commercial code of France*. For a good commentary on the French code during the period in question, see Leopold, *The French Code of Commerce*.

¹⁴ Brazil, *Lei n. 3150*. This law maintained a few restrictions, including a rule that legislative approval was required for chartering a bank of emission and, interestingly from the perspective of partnerships, joint-stock companies involved in food and food provision were also restricted (art. 1, sec. 2, sub sec. 3).

with respect to capital markets had profound effects at the industry level. In particular, the boom in credit financed a great number of new joint-stock companies in increasingly diverse sectors of the economy.¹⁵

Whereas the growth of capital markets and the number and scale of joint-stock companies was impressive, especially after 1890, the traditional partnership sector grew much more slowly, if at all, in Rio de Janeiro after 1888. In fact, measured in constant terms, the mean value of partnerships declined between 1888 and 1898, precisely when the number and size of joint-stock companies was exploding.¹⁶ Although addressing the declining real capitalization of partnerships by 1898 is beyond the scope of the present paper, we see this trend as further confirmation of the hypothesis that larger enterprise, and investment more generally, tended toward the joint-stock form at the expense of partnerships.

Precise measurement of the weight of partnerships in the local economy is probably impossible, but it is likely that they accounted for the greater part of Rio de Janeiro's manufacturing and warehousing and a substantial part of retail trade circa 1870.¹⁷ By 1888, partnerships shared space with a rising number of joint-stock companies, and, it appears, also began to adopt contracts that provided at least some of the advantages of that model of business incorporation. In order to help place partnerships in context, it is useful to estimate the number and value of joint-stock companies as a point of contrast.

By 1886, according to one careful estimate, the market value of the companies listed on the Rio de Janeiro stock exchange amounted to 213,000 contos, or \$80,940,000 in current US dollars.¹⁸ In order to place this figure in perspective, we estimate the combined capitalization of business partnerships located and registered in Rio de Janeiro in 1888. We consider the total number of partnerships extant in 1888 according to the city directory, approximately 2,100, and estimate a total value for all these partnerships by applying to all partnerships the mean value of partnerships newly registered that same

¹⁵ Haber, "Financial Markets," pp. 146-178, esp. 151-153: "The more important, long-term effect of the *Encilhamento* was that it financed the creation of large numbers of joint-stock manufacturing companies." Lobo's, *História do Rio de Janeiro* two volume study of industrialization in Rio de Janeiro offers further support for this position.

¹⁶ We collected a smaller, partial sample of contracts for the year 1898. Our aim in this regard was to see whether there were major changes in partnerships in the first decade of the Old Republic (1889-1930).

¹⁷ Analysis of the listings of businesses and merchants in the *Almanak Laemmert*, Rio de Janeiro's city directory, reveals that in 1870 there were at least 1,000 partnerships active in the city.

¹⁸ Musacchio, "Law and Finance," p. 66. Note that Brazil's currency in the nineteenth century was the mil-réis, written 1\$000. One thousand mil-réis equals one conto, written 1:000\$000. A conto was worth approximately 500 dollars in 1870 and 1888. In 1898, after a major bout of inflation and expanding money supply, the conto was worth about 150 dollars.

year.¹⁹ The result of this calculation implies a total capitalization of all partnerships in Rio de Janeiro in the realm of 112,000 contos.²⁰ Since this value reflects the capitalization of partnerships in the city of Rio de Janeiro alone, the comparison with the market capitalization of the joint-stock companies is problematic. Nevertheless, these rough calculations suggest the orders of magnitude of investment in joint-stock companies (on the Rio de Janeiro exchange) and partnerships (located in the city of Rio de Janeiro).

After the declaration of a republic and the ensuing changes to the laws regarding joint-stock companies and capital markets more broadly, the capitalization of joint-stock companies jumped to 671,000 contos as of 1895.²¹ In real terms, total private capitalization, without counting debentures, grew at a rate of over 5 percent per annum during the period 1886 to 1895.

The number of companies listed and traded on the Rio de Janeiro stock exchange rose from an average of 12 in the decade of the 1860s to an average of 54 by the last years of the 1880s, rising again to over 100 companies in the late 1890s.²² Most of these companies were banks, insurance companies, and railroads—not, that is, the kind of smaller business firms associated with partnerships in our database.²³ The argument, therefore, is not that companies that would have been partnerships necessarily switched to the joint-stock form, at least not before the 1890s. Rather, particularly in the 1888 sample and thereafter, investors increasingly had the choice of putting some or all of their resources into joint-stock companies as an alternative to partnerships at a time when the growth of banking and infrastructure in Brazil abetted the rapid increase in the size and number of joint-stock companies.

We have collected lists of shareholders and directors in joint-stock companies in Rio de Janeiro and have found evidence of partners who also invested in shares of public companies. As a test of the

¹⁹ Note that we collected a smaller sample of 308 firms from 1888 on which we base the bulk of our analysis in this paper. We lacked sufficient resources to collect full information on all 527 firms. Instead, we collected a random sample of firms which ended up providing us with 308 observations,

²⁰ These figures measure slightly different things (market capitalization is not the same thing as the capital contributed by business partners), so the comparison is meant merely to suggest orders of magnitude. The estimate of total capitalization of partnerships was calculated by multiplying the ratio 3.98 times 28,127 contos, the sum of capitalization of firms registered in 1888. The ratio 3.98 is the number of firms in the city directory divided by the number of 1888 firms in our dataset. It generates a number to multiply against in order to estimate the total capitalization of partnerships existing at that time.

²¹ Musacchio, “Law and Finance,” p. 69. For a good survey of the banking sector in particular (which accounted for nearly two-fifths of the total market capitalization of joint-stock companies during the early 1890s, see Triner, *Banking and Economic Development*.

²² For the number of firms listed on the exchange, see Levy, *História*, pp. 107, 245.

²³ Indeed, in terms of capitalization, banks, railroads, and public utilities accounted for about two-thirds of the total capital raised by joint-stock companies circa 1891, Levy, *História*, p. 164. For a good study of the process by which common partnerships did at times transform into joint-stock companies (in this case in textiles), see von der Weid, *O fia da meada*, esp. pp. 31-52.

cross investment in partnerships and joint-stock companies, we collected a list of over 1700 shareholders from 50 large joint-stock companies circa 1891.²⁴ We then compared these names with the names of the partners in our database. There were 51 matches, out of over 2100 individual partner listings we observe in our dataset, suggesting that some individuals invested in both partnerships and joint-stock companies, although the number of matches is not particularly large. These cross investors tended to be wealthier than the average partner, and were no more or less likely than the average partner to be limited partners.²⁵ Further research will be required to ascertain the degree to which this subset of entrepreneurs shifted their pattern of investment toward stocks, and whether limited partners diversified more than unlimited partners, but at the very least we can be certain that the phenomenon of investment in both partnerships and joint-stock companies existed.

Along similar lines, an analysis of estate inventories (akin to probate records) indicates that, in the period in question, the average proportion of decedents' wealth in stocks and bonds rose from 11.2 percent to 32 percent at the same time that business assets declined from 14.4 percent to 11 percent of inventoried wealth. Capital that might have flowed into partnerships increasingly ended up in stocks and bonds as Brazil's institutions improved and capital markets expanded.²⁶ Another common avenue for investment was land and, especially, urban property. Evidence from estate inventories recorded in the city of Rio de Janeiro during the 1870s and 1880s, for instance, shows that between 29 and 39 percent of wealth was accounted for by urban real estate.²⁷ According to these records, as well as property tax rolls, the average annual return on these investments (calculated as annual rental value) was approximately ten percent of the market value of the property. Partnership contracts evolved in response to this changing environment. The next section takes a closer look at the details of these contracts and the rules that governed them.

²⁴ Junta Comercial do Rio de Janeiro – Sociedades Anonimas, Livro 61 – 1891 – Codigo de Fundo: 46 – Secao de Guarda. Seven out of the 50 joint-stock companies in our list had no shareholders listed.

²⁵ The mean capital of the partnerships from which the matches were obtained was an elevated sum of 209,015 1870 Mil-Reis (the mean capital contribution of the partner who also owned stock in the sample was 60,240 1870 Mil-Reis), indicating that cross investors tended to be significantly wealthier than the mean partner. Approximately a third of the partners who were found to own stock in the sample were limited partners, which is in rough proportion to the number of limited partners in our overall sample. However, when looking at the proportion of limited partners by individual years in our sample, we observe a steady increase in the proportion of shareholders found to be limited partners. In particular, in 1870, only 1 out of the 9 partners identified as shareholders was a limited partner, while in 1888 this figure increases to 3 out of 18, and in 1891, 11 out of the 24 partners identified as shareholders were limited partners. Note that the increase in the absolute number of partners identified as shareholders over the years is reasonable, as the shareholder information in use is from 1891.

²⁶ Post mortem estate inventories, Arquivo Nacional, Rio de Janeiro. 1868-73 N = 87; 1885-1888 N = 143. Further detail regarding the estate inventory data reported in Frank, *Dutra's World*, p. 88.

²⁷ *Ibid.*, p. 88.

3. Data

Formal business partnerships were required to register with the Junta Commercial in Rio de Janeiro. Registration served two purposes. First, it allowed the state to regulate and tax businesses in accordance with the Commercial Code of 1850. Second, and more importantly for our purposes, it allowed individuals to pool their resources in larger enterprises under the discipline of the rules of the Junta. Registration as a formal partnership carried consequences for relations among partners as well as for relations between the partnerships and outside creditors. Recent work by Aldo Musacchio demonstrates that, in the nineteenth century, the Commercial Code was enforced vigorously when partners committed fraud or otherwise attempted to avoid their obligations.²⁸

Over the period in question, there were three main types of business partnership in Rio de Janeiro (and Brazil more broadly): 1) *sociedades em nome coletivo* (common, unlimited liability); 2) *sociedades em comandita* (limited liability); and 3) *sociedades de capital e indústria* (capital and industry, with or without limited liability). This paper focuses on the first two types since they comprised the vast majority of all partnerships and are also more analytically tractable. For the sake of readability and consistency, we will refer to these forms as “unlimited” and “limited” partnerships. Unlimited partnerships predominated, although this form declined relative to limited partnerships over the period covered by our data. In common (unlimited) partnerships, each member took on unlimited liability. The limited liability form of partnership was formed when one or more “silent” partners, protected by limited liability, provided capital to an enterprise to be managed by one or more active partners with unlimited liability.²⁹

The archival source of the data used in this paper is housed in the National Archive of Brazil in Rio de Janeiro. The archive itself consists of the registry books maintained by the Junta Commercial. These books contain detailed contracts regarding new, renewed or modified, or dissolved firms for all registered partnerships in the city of Rio de Janeiro. Our data collection proceeded as follows: for 1870, we collected full information on all partnership contracts registered in the books pertaining to that year (books 638-640). Some firms registered in the books for 1870 were actually initiated in 1869; we collected these as well. We also noted the incidence of partnership contracts outside the city, but did not collect full information on these cases. Finally, we noted basic information about each case of dissolution throughout the year. For 1888, our procedure was the same. We collected all of the

²⁸ Musacchio, “Law and Finance,” pp. 81-82, sec. 4.4. For contemporary commentary on the Commercial Code and a clear exposition of the rules regarding payment of creditors and rights and duties of partners, see *Codigo Commercial*, esp. pp. 361-477.

²⁹ Note that there were also partnerships of “industry,” which joined together partners with capital with partners who offered their skilled labor. In many cases, the “industry” partnerships were also set up with limited liability.

information on contracts regarding firms within the city of Rio de Janeiro (in books 204-217) and the supplemental partial information regarding firms outside of the city and dissolutions. As with the 1870 data, the initiation date of firms in the 1888 books included some firms started in 1887. Finally, we collected data on firms in 1891 from books 244, 245, 248, 252, and 254. These data cover firms with initiation dates ranging from December 1890 through September 1891. As with the other years, we also collected abbreviated information from these books regarding firms outside of the city and dissolutions.

A detailed analysis of the specific clauses underpinning partnership contracts reveals sophisticated and sometimes complex arrangements. The first clauses are generic, stipulating the names of the partners, the form the contract would take, the type of enterprise, the address, and the duration of the enterprise.³⁰ There are scores of different kinds of enterprises listed in the contracts, ranging from bakeries and tailoring shops up to major import-export houses. In order to assess the effects of partnership characteristics according to a specific and very important and common type of enterprise, we use a dummy variable (broker commission) for brokerages and commission houses in the regression analysis.³¹ These were among the largest, most complex, and most highly capitalized firms in the database.

Next are clauses indicating the capitalization of the partnership, the amount each partner brought to the table, and the nature of their contribution to the firm. Among artisan and retail establishments, the capital often included equipment and stock provided by one or more partners. After specifying the distribution of capital, contracts usually stipulated the rules for the use of the firm name in business and private dealings. Many contracts forbade the use of the firm name in private matters or in business affairs outside of the narrowly defined purposes of the firm. In some contracts, only one partner was given the right to use the firm name in the course of business—for instance, in signing contracts for goods or services.³²

All contracts included a clause indicating which partner or partners would be in charge of maintaining the firm's account ledger. The ledger was to be updated regularly, to include all relevant data and correspondence, and to be used at the end of each year to audit the balance of the firm, including detailed information on all assets and liabilities.³³ And, as if this was not enough to dissuade

³⁰ *Codigo Comercial*, art. 5.

³¹ For an extended study of these firms, see Joseph Sweigart, *Coffee Factorage and the Emergence of a Brazilian Capital Market, 1850-1888* (New York: Garland, 1987).

³² Lamoreaux and Rosenthal, "Legal Regime," esp, tables 2-4, explore the importance of such clauses limiting the activities of one or more partners.

³³ *Codigo Comercial*, art. 10, sec. 4.

cheating, merchants were required by the Commercial Code to maintain a detailed daily log of their transactions.³⁴ Failure to produce these books, in the case of a legal proceeding against the merchant, could result in a stint in prison.³⁵ In general, the larger the firm, the more detailed were the restrictions on the activities of various partners.³⁶ The contracts we studied in detail generally set forth either annual or monthly draws that the partners could make on the current account for personal expenses. These amounts were referred to as salaries or “draws” in the contracts both for unlimited partners who worked in the firms and for limited partners who did not.³⁷ As a whole, the vast majority (94%) of partners in our sample were entitled to such draws (the figure was 97% for unlimited partners and 89% for limited partners). The average annual salary figure was about 2630\$ 1870 *mil-réis*.³⁸

It is unclear to what extent the draws were contractually guaranteed amounts or whether their provision was conditioned on the firm’s performance and its ability to allocate these payments out of its profits. In the former case, the draws would be regarded as ongoing expenses borne by the firm over the course of its fiscal year (such as salaries are treated in accounting books). Unfortunately, we do not observe accounting ledgers, actual profits for the firms studied, or the actual draws provisioned by the firms. Nevertheless, we note that the majority (69%) of the contracts for which we observe salary data specify draw amounts on a monthly basis, rather than an annual basis.³⁹ Given that profits are only assessed at the end of the fiscal year, this is an indication that the draws were treated as a fixed expense, independent of annual profit results, and it therefore seems reasonable to assume that they had more of a guaranteed nature to them. At the same time, the majority (66%) of the contracts for which we observe salary data also specify the draw amounts as an upper bound for the total amount of money each partner can withdraw for their personal expenses,⁴⁰ thus allowing the partners flexibility to negotiate the exact amount to be withdrawn. Additionally, in partnership dissolution documentation

³⁴ Ibid., arts. 12 and 13.

³⁵ Ibid., art. 20.

³⁶ Lamoreaux and Rosenthal, “Legal Regime,” tables 2-4, pp. 42-44, find the same pattern in French partnerships.

³⁷ The language regarding these payments varied in the contracts. Some contracts referred to the payment as salary (*salário*, *ordenado*, etc.) whereas most contracts merely stated that a given partner had the right to withdraw a certain amount from the partnership per month (or year) for personal expenses against his current account and/or his share of annual profits.

³⁸ Brazil experienced significant inflation during the last decades of the nineteenth century. Unfortunately, there is no truly reliable price index for Brazil during this period. Given a variety of imperfect options, and following the example of Summerhill, *Order Against Progress*, 86, we use a wholesale price index for Brazil to deflate the values in our dataset. Luis Catão, “A new wholesale price index for Brazil,” *Revista Brasileira de Economia* 46:4 (1992), 519-533, esp. p. 530. The index values for the relevant years of this study are: 71.57 (1870), 55.96 (1888), and 81.86 (1891).

³⁹ Broken down by years, 86%, 88%, and 42% of the contracts observed with salary data specify monthly payments for 1891, 1888, and 1870, respectively.

⁴⁰ We specified such an occurrence when the term “up to” appeared in the salary amount discussions in the contracts. Broken down by years, 72%, 78%, and 52% of the contracts observed with salary data specify the payments as upper bounds for 1891, 1888, and 1870, respectively.

we have obtained,⁴¹ we find evidence that occasionally a partnership would dissolve without its partners receiving the salary stipulated in the firm's contract. It thus seems that while the draws were not fully guaranteed, they can largely be thought of as routine monthly payments. For unlimited partners we interpret these clauses as salaries; for limited partners the interpretation is more complex since limited partners did not (and legally could not) work in the firm except on a passive advisory/monitoring basis. For limited partners, therefore, these clauses are perhaps best thought of as a sort of legally enforceable insurance mechanism that reduced the volatility of earnings.

Among smaller contracts, the draw tended to be high relative to capitalization, suggesting that these firms probably provided their partners with their primary source of income and that these payments were akin to salaries. Larger partnerships, to be sure, had higher draws in nominal terms, but quite a bit lower draws relative to capitalization. It seems likely that these partners expected to derive some of their income from the division of profits, which was accounted for separately in the contracts, rather than from a regular salary. Earnings in a form of profit shares were nearly universal in our sample with 99% of the partners receiving a positive profit share.

The contracts also specified the precise capital contribution made by each partner. As with profit sharing, capital contributions were nearly universal in our sample across all years, with more than 95% of the partners contributing some capital to the enterprise. In fact, 95% of unlimited partners made some capital contribution to the firm, although, as we shall see, their average contributions were lower than those made by limited partners.

Finally, all contracts contained clauses dealing with the event of the death of a partner or the dissolution of the partnership for other reasons prior to the end of the contracted period. In most cases, these clauses merely stipulated that the procedures of the Junta Commercial and the Commercial Code would be followed.⁴² Most contracts included a provision that disputes be settled by arbitration, sometimes citing the relevant paragraphs in the Commercial Code in this connection. Some contracts included more creative clauses regarding the potential dissolution of the partnership. These clauses included monetary penalties for early withdrawal and, in one instance, a precocious non-compete provision in which the defecting partner was barred from opening a competing shop in the same

⁴¹ Junta Comercial, Livros de Registros n. 204-05 (1888) and 245 (1891), ANRJ.

⁴² By including these clauses, contracts further reduced the degree of uncertainty associated with problems of untimely dissolution, see *Codigo Comercial*, arts. 344-353. The default position was one in which a complete inventory of the firm's assets was undertaken within 15 days of the dissolution and, after paying creditors in the order determined by the code, the remaining assets were divided among the partners according to the proportion of their capital contribution. During this process, the partner in charge of the liquidation was required to provide the other partners with a monthly report regarding the process of the liquidation.

neighborhood.⁴³ It is important to note that, in the absence of judicial intervention, untimely dissolution was only permitted in cases where all partners agreed to it or when the firm was constituted without a set time limit.⁴⁴

The contracts also indicated how profits and other responsibilities were to be divided. There was a wide variation in profit sharing across firms in all years. In a general sense, profit shares were strongly correlated with capital contributions; however, there was considerable remaining variation even after accounting for capital shares. These salary setting and profit sharing clauses, along with stipulations regarding rights to sign papers in the company name, served to reduce uncertainty and inhibit misconduct.

Most partnerships stipulated a specific period of association, although a substantial number of partnerships, increasing in proportion over the period studied, were registered without limit of time. Every three-to-five years, most partnerships needed to be renewed or unwound. As we shall see, there were several reasons for firms to adopt fixed time horizons. The most important of these was that time-delimited firms were not construed legally as “at will” partnerships and were thus less susceptible to untimely dissolution. Partnerships with open time horizons could be dissolved at the whim of any individual partner, whereas without judicial intervention time-delimited partnerships could only be dissolved in the event that *all* partners agreed to dissolution.⁴⁵

Table 1 provides partnership-level summary statistics of the main information we coded, both for all years pooled together, and for 1870, 1888 and 1891 separately. We collected information on 263 partnerships in 1870, 215 partnerships in 1888, and 188 partnerships in 1891.⁴⁶ The tables reveal that most partnerships were unlimited liability, but the percentage of limited liability firms increased from 17% in 1870 to a third in 1888 and 1891. Most partnerships had two or three partners, but partnership size increased between 1888 and 1891. The average total capital of partnerships in our data is 69,864 1870 Mil-Reis. The total capital increased substantially between 1888 and 1891 with the average amounting to 102,592 1870 Mil-Reis by 1891. The capital contributions of each partner to the partnership were quite even, with a Herfindahl index for capital contributions of about a half in all

⁴³ Contrato, Santiago & Alves, Livros de Registros, Junta Comercial, ANRJ.

⁴⁴ *Codigo Comercial*, art. 335, sec. 3.

⁴⁵ Prior to the end of the stipulated contract period, expulsion of partners was restricted and required a judicial finding of moral turpitude, incapacity, or the like. *Codigo Comercial*, art. 336. It comes as no surprise that family partnerships were overrepresented among firms with open time horizons: the danger of “at will” defection from a family firm must have been lower.

⁴⁶ The number of partnerships reflects our firm-level data set after dropping all firms that had at least one of the variables in our analysis with an empty value. This amounts to dropping 12, 17, and 0 firms for 1870, 1888, and 1891, respectively.

years. About a third of all partnerships in 1870 were based on equal sharing of profits, but this fraction increased to 52% in 1888, and fell slightly to 46% in 1891. Almost all partnerships in 1870 stipulated a time-delimitation clause described above, but by 1888, 24% of partnerships did not have this clause. About 16% of partnerships were family firms and this number did not vary much over the period under study. About two-thirds of all partners in 1870 and 1888 were Portuguese, but this number dropped to 44% in 1891. The relatively high fraction of Portuguese partners is reflective of the strong hold that the Portuguese merchant community continued to exercise over the economy of Rio de Janeiro, a reflection of Brazil's colonial past. The Portuguese merchant community was fairly large (it formed the majority of merchant businessmen through the 1870s) and was a cohesive group. Relevantly, there was a historical divide between this community and the Brazilian-born merchant community. We thus include a variable indicating whether the partner is Brazilian rather than Portuguese to examine whether these tensions caused the contract terms of Portuguese partners to be different.

Table 2 provides firm-level summary statistics, by firm type. We observe 177 limited firms and 489 unlimited firms. The table reveals that limited firms had, on average, a larger number of partners than unlimited firms, greater capital contribution, and less concentration of the capital contribution shares amongst the partners. Additionally, while limited firms were more likely than unlimited firms to be family firms and have a smaller fraction of Portuguese partners, they were less likely than unlimited firms to be based on equal sharing. Lastly, limited firms were more likely to be brokerage firms than unlimited firms, while unlimited firms were more like to operate in the dry goods industry than limited firms.

Table 3 provides partner-level summary statistics of the main information we coded, both for all years pooled together, and for 1870, 1888 and 1891 separately. These are the partners in the partnerships we collected (and described above). We collected information on 545 partners in 1870, 488 partners in 1888 and 443 partners in 1891.⁴⁷ Based on a name matching algorithm we found that fewer than 5% of our partners participated in multiple partnerships.⁴⁸ The fraction of limited partners increased over time in our sample, with only 6% of partners having limited liability in 1870, but 15% and 17% of partners having limited liability in 1888 and 1891, respectively. The fraction of partners making positive capital contributions remained uniformly high throughout the period (97% of all partners made positive capital contributions averaged over the three years of data) as did the fraction of

⁴⁷ We exclude from our analysis all partners with a missing value for one of the variables of interest. This is in order to ensure consistency of the sample across all variations of the regression analysis. This amounts to dropping 95, 85, and 73 partners for 1870, 1888, and 1891, respectively. Including these partners in the regressions for which they did not have missing values did not change our results substantially.

⁴⁸ Note that this is a lower bound since our sample is a subset of all extant partnerships.

partners receiving a profit share, with 99% of all partners receiving a share (averaged over 1888 and 1891). Unfortunately, we do not have data on profit shares and wealth for 1870. Finally, for the purposes of the analysis, we also define profit shares relative to a reference point of equal sharing. We define the “normalized profit share” variable to equal $\left[s_i - \frac{1}{N} \right]$ where s_i is the share of profits received by partner i and N is the number of partners in the firm. It measures the deviation from equal sharing and is equal to zero when profits are divided equally. It is positive when the partner gets more than an equal share and it is negative when the partner gets less than an equal share. We similarly define normalized capital share to create a measure of the share of a partner’s capital contribution that is not mechanically related to firm size.

4. Empirical strategy and results

We proceed in five steps. First, we seek to quantitatively document the differences between limited and unlimited partnerships. Second, we study the differences in the contract terms between the limited and unlimited partners in limited firms. Third, we evaluate whether and to what extent unlimited partners received better contract terms in limited partnerships than in unlimited partnerships. Fourth, we analyze differences between family members and non-family partners in family firms. Finally, we examine how all of these differences changed after the 1890 reforms that provided entrepreneurs with the option of investing in joint-stock companies.

4.1 The variables predicting whether a partnership had limited liability

Our analysis begins with firm-level OLS and probit regressions where the dependent variable takes the value 1 if the firm is limited liability. The limited liability structure may mitigate the potential negative effect on the limited partner of opportunistic behavior on the part of the unlimited partner by placing an upper bound on potential losses. It also increases the costs to the unlimited partner of opportunistic behavior because there is at least one partner who does not share the burden if the firm fails. A limited liability structure could thus have been preferred in cases where other mechanisms that reduce opportunistic behavior were less effective. For example, mutual monitoring to reduce opportunistic behavior could have been easier in small partnerships, so that small partnerships could rely on monitoring and might have had less need for the limited liability option to reduce opportunistic behavior.⁴⁹ Conversely, larger firms, where monitoring was more difficult, might have been more

⁴⁹

For a discussion of the determinants of equality and the role of group size, see Abramitzky, “The Limits of

likely to adopt limited liability.

Table 4 presents the results of this analysis. In columns 1 and 2, we pool the data across all years. Columns 3-5 present results from regressions run separately for 1870, 1888, and 1891 respectively. The regressions suggest a general increase in the fraction of limited liability firms between 1870 and 1888, and a further increase in that fraction between 1888 and 1891. Another robust finding suggested by this table is that partnerships with more partners tended to be limited firms, either suggesting that not that many people were required to run the firms, or that trust issues as discussed above played a role in partnership contracts. Other findings are that partnerships with a higher fraction of Portuguese were less likely to have limited liability when looking at the partnerships for all years, but this relationship was weaker in individual years.⁵⁰ Capital contributions were more concentrated in the hands of a few partners in limited partnerships than in unlimited partnerships (although this relationship is only significant for 1888). Limited partnerships are not associated with significantly higher or lower total capital (controlling for the number of partners). Additionally, limited firms were not more or less associated with equal sharing, time delimitation clauses, or being family firms. In 1891, limited partners were more associated with broker firms, but this relationship does not seem to hold for 1888 or 1870. In summary, over this time period limited partnerships were somewhat larger than unlimited partnerships, but did not seem to be different along several other contract characteristics including (per partner) capitalization.

4.2 Limited partnerships: differences in the contract terms between the limited and unlimited partners

Next, in Sections 4.2 and 4.3, we carry out a series of partner-level regressions with the aim of studying (1) whether partners who had limited liability received higher profits, earned higher salaries, or contributed more capital than unlimited partners in limited firms; and (2) whether unlimited liability partners in limited firms received higher profits, earned higher salaries, or contributed more capital than their counterparts in unlimited firms. In all regressions we include a set of control variables that comprise a set of firm-level variables such as total firm capital, the number of partners⁵¹, whether the

Equality”.

⁵⁰ Portuguese partners were somewhat different from non-Portuguese. They tended to belong to smaller partnerships and earn somewhat higher salaries. However, they were not more likely to belong to family firms or to limited firms or to be limited partners.

⁵¹ Note that the coefficient on the number of partners in partner-level regressions is mechanically close to zero and is thus not presented. Specifically, in a univariate regression of normalized capital (profit) shares on partnership size using a sample comprising all partners, the coefficient on partnership size will be zero by construction. Indeed, the coefficient on partnership size for unlimited firms is close to zero in all regressions that include all partners from unlimited firms.

firm existed in any prior form, as well as whether a firm was a brokerage firm--defined roughly as firms listed to be primarily working on commission and consignment. We also control for a set of partner-level variables including nationality and whether the partner was one of two or more family members in the firm. Because profit shares, salaries and capital contribution are jointly determined, we also include profit shares, capital, and salaries received as right hand side variables when they are not being used as left hand side variables. We do not attempt to account for the simultaneity and so these regressions are best interpreted as best linear predictions. For symmetry, when the dependent variable is measured in 1870 Mil-Reis (salary), we control for the capital contribution in 1870 Mil-Reis, but when the dependent variable is a share (profit share), we control for the capital share. For robustness, we also include one specification where we predict salary and control for the capital share.

Specifically, we compare the (normalized) share of profits, the salaries, and the (normalized) share of capital contributions of the limited and unlimited partners in limited partnerships. We run partner-level OLS and quantile (median) regressions where the alternative dependent variables are the partner's normalized profit share (Table 5), his log of salary (Table 6), and his normalized capital share (Table 7), and the main explanatory variable is whether the partner had limited liability.

The regressions pool observations from the years 1888 and 1891. We also ran specifications that included wealth, as proxied by a partner's rental holdings culled from the Rio property records as a control and the results were very similar to those presented here and so we omit them.⁵² The first few columns of each table present results from OLS regressions with and without various sets of controls, the second to last column presents results from a median regression, and the last column presents results from the OLS regression with partnership fixed effects. In the latter, the source of identification is within-partnership, i.e. whether within the firm the limited partner differs from the unlimited one in profit share, salary and capital contribution. In all the regressions (except for the median), we compute heteroscedasticity-robust standard errors and allow for intra-firm correlation in the error terms.

Tables 5-7 show that in limited partnerships, limited partners had worse terms than their unlimited counterparts, namely limited partners had lower profit shares, lower salaries and higher capital contributions than their unlimited counterparts. Limited partners were the primary investors in the partnership. In return for limited liability and not taking part in any active management, the limited

However, the coefficient on partnership size for limited firms in these regressions (captured by the interaction between partnership size and firm type) need not be zero since we are only considering a subset of all partners in limited firms.

⁵² The coefficient on wealth was generally small and statistically insignificant, except for in the regressions predicting profit shares when comparing unlimited partners across firm types, where higher wealth is associated with higher profit shares. This could be because wealthier people contribute assets to the firm that we do not see, or that they have high unobservable (to us) skills, or maybe greater wealth creates more outside options through more connections and just sheer attractiveness, and thus generates greater bargaining power.

partner contributed a higher share of the capital and received a lower profit share and a lower salary. That is, the lower profit share, the lower salary and the higher capital contribution can be viewed as the "price" for getting limited risk and not being required to manage or work in the firm.

A somewhat surprising finding is that the limited partner got some of his return in the form of a "salary" (as it is referred to in the contract) despite not taking an active role in managing the firm. The salary (or capital draw) clauses can be viewed as clauses that determine dividend policy in order to protect the limited partners from the lock-in of their capital. This finding may imply that the limited liability partners received some insurance from the firm (an insurance they could not get in joint stock companies) to protect their investments against very low profits or having a lazy or incompetent partner.

Other factors determined partners' salaries, profit shares and the shares of capital contributions. In particular, profit shares were strongly predictive of both salaries and shares of capital contributions, so that a higher profit share was associated with both a higher salary and a higher share of capital contributions. In general, larger partnerships (i.e. partnerships with more partners) paid lower salaries and partners made larger capital contributions. Finally, it does not appear that Portuguese partners received different terms than the native Brazilians in limited firms. However, Portuguese partners did receive higher salaries in firms with a larger share of Portuguese (regressions not shown).

4.3 Differences in contract terms between the unlimited partners in limited vs. unlimited partnerships

In this section, we compare the salaries, and the shares of profits and capital contributions of the unlimited partners in limited vs. unlimited partnerships. Specifically, we run partner-level OLS regressions where the dependent variables are the unlimited partner's (normalized) profit share (Table 8), his log of salary (Table 9), and his (normalized) share of the capital contribution (Table 10). The main explanatory variable of interest is a dummy for whether the unlimited partner was in a limited partnership (as opposed to an unlimited partnership). The columns in each table are as in Tables 5-7, described in the previous section, excluding the fixed effects regression column, as our variable of interest does not vary at the partner level within firms and can not therefore be included in such a regression.

The tables suggest that, compared with unlimited partners in unlimited partnerships, unlimited partners in limited partnerships contributed a lower share of the overall capital, received higher profit shares, and higher salaries (and note that the median regression standard errors may be underestimated since we are not allowing for intra-firm correlation in the errors). These findings are consistent with

positive selection of unlimited partners to limited firms. That is, unlimited partners in limited firms were “better” than those in unlimited firms as reflected by their higher shares of profits, higher salaries, and lower shares of capital contributions. This is to be expected if limited partners could identify more productive unlimited partners and enter partnerships with them. Alternatively, it could be that unlimited partners in limited firms had to bear more risk because the limited partner had limited liability, and therefore required higher incentives. Finally, it could be that unlimited partners were required to work harder in limited firms, so that the better terms they received were merely compensation for their greater efforts.

4.4 Family firms

In this section, we test whether there were systematic differences in contract terms between family members and non-family members in family firms. One possibility is that family members looked out for each other’s interests and thus got better terms (higher salaries, higher profit shares and lower shares of capital contribution). Alternatively, it could be that family members in family firms were the main investors, and they hired non-family members to work for their firms, in which case we expect family members to contribute more capital than non-family members to the firms.

Specifically, we focus on family firms and compare the contract terms of family members vs. non-family partners in the sample of 112 family firms in our data.⁵³ Most of these firms involve brothers, sons, or cousins. Table 11 presents the partner-level regressions where the dependent variables are as stated above. These tables suggest that family members received similar terms to non-family members, that is family members did not receive substantially different profit shares or salaries, and they did not contribute more or less capital than non-family members. We also compared family firms to non-family firms along other observable dimensions; we did not find any substantive results, and so omit those results here.

4.5 The effect of the 1890 financial reforms on limited and unlimited partners: difference in differences

In this section, we test whether the 1890 financial reforms that significantly expanded the option of investing in joint stock companies differentially affected the limited and unlimited partners in limited

⁵³ Note that we constructed the family firm variable using a very conservative method of matching surnames among partners. We discounted matches of very common surnames unless we had further corroboration of a family relationship (e.g., the firm name included mention of family relations, such as & sons). A potential weakness in our method would arise in cases where family connections cannot be drawn according to surnames, such as in-law relationships. On this basis, our analysis should be seen as an examination of a large number, but not the entire universe, of family firms.

partnerships. In addition, we test whether these reforms differed with respect to unlimited partners who worked in limited vs. unlimited firms. We expected the reform to affect limited and unlimited partners differently because the reform radically increased the investment opportunity (joint stock) for investors thereby providing an additional avenue for investment for limited partners. It is unclear, however, which type of partner is expected to benefit more from these reforms. It could be that a limited partner will now enter a partnership only if he is able to find an exceptionally talented unlimited partner, and otherwise he will just invest in the stock market, an option previously unavailable. This would imply that unlimited partners in limited firms post reform could be expected to be more productive than before the reforms. Thus, given that the cross sectional regressions (Tables 8-10) suggest better terms for the unlimited partner in the limited firm compared with the unlimited partner in an unlimited firm, we should expect to see these differences in contract terms be even greater post reform. At the same time, because the limited partner was the main investor, we could expect the bargaining power of limited partners post reform to increase, and their contract terms to thus improve post reform (relative to unlimited partners). On the other hand, we could expect investors to be willing to take more risk in partnerships because post reform they could diversify their portfolio better through the stock market. It thus remains an empirical question whether the reform improved the relative terms of the limited or the unlimited partner.

We use a difference-in-differences approach to examine this question. That is, we compare partners in limited and unlimited partnerships before and after the reforms. The following table illustrates how we test for whether the reforms affected the limited and unlimited partners in limited partnerships differently, but the same strategy applies for testing the effect of the reforms on unlimited partners in limited partnerships compared with unlimited partners in unlimited partnerships:

Sample: limited partnerships	1888	1891
Limited liability partners	Y1	Y2
Unlimited liability partners	Y3	Y4

where Y1 is the mean (or median) normalized profit share, log of salary, normalized share of the total capital contribution, or total capital contribution in contos of limited liability partners in 1888 (pre-reform), and Y2 is the corresponding quantity for limited liability partners in 1891 (post-reform). Similarly Y3 and Y4 are the mean (or median) log of salaries, profits shares, or shares of the capital

contributions of unlimited liability partners pre and post reform.

The difference-in-differences is $((Y4-Y3)-(Y2-Y1))$ or, equivalently, $((Y4-Y2)-(Y3-Y1))$. The difference-in-differences estimate is the change in outcomes (salaries, profit shares or capital contributions) that occurs in the limited liability partners group that is on top of changes that occur in the unlimited liability partners group over the same period. The estimate simultaneously controls for both time trends $(Y2-Y1)$ and time-invariant differences between the two groups $(Y3-Y1)$. Specifically, we run the following OLS regression:

$$Y = \beta_0 + \beta_1 Post + \beta_2 LimitedPartner + \beta_3 PostLimitedPartner + X' \delta + \varepsilon$$

where *Post* is a dummy variable for the year 1891, *LimitedPartner* is a dummy variable for whether a partner has limited liability, and *PostLimitedPartner* is the interaction between these two variables. The coefficient of interest is β_3 - did limited partners post reform get better contract terms relative to the unlimited partners in limited partnerships?

It is important to point out that such a strategy cannot control for differential time trends in the two types of firm. As a potential check, we explore whether any differential time trends existed before the reforms by looking at data from 1870 and repeat the above regression for pre-reform data only. Specifically we use data from 1870 and 1888, “pretending” that the reforms occurred sometime in between those years. We expect β_3 to be zero in these regressions, unless the terms for unlimited and limited partners were on different time trends.

Finally, we note that since we are obtaining identification off time trends and the financial reforms were part of a larger set of major changes in the economic regime, our results capture the net effects of these different policy changes and we cannot determine the relative contributions of different policies to the changes in contract terms. However, absent any data on the channels through which these reforms affected policy, the reduced form results presented here are a useful first approximation to the effects of the reforms on partnership contracts.

4.5.1 Limited partnerships: limited partner vs. unlimited partner

This section tests how the difference in profit shares, salaries, and capital contributions between the limited and unlimited partners in limited firms changed after the 1890 reforms.

Table 12 presents results from these regressions using data from the years just before (1888) and just after (1891) the reforms.

The regressions suggest that compared with the unlimited partners, the salaries of the limited partners deteriorated post reform, suggesting that insurance might have become a less important motive for them. The regressions also suggest that the reforms had little or no effect on the relative profit shares and capital shares of limited partners.

Table 13 presents results of these regressions for pre-reform data (1870 and 1888) to test for differences in pre-existing trends. These tables suggest that there were no significant differences in pre-reform trends in salaries and capital contributions of limited partners compared with unlimited partners, so that the lower salaries post reforms were likely an effect of the reform rather than pre-existing differences in trends.

4.5.2 Unlimited partners in limited vs. unlimited partnerships

This section tests how the difference in salaries, profit shares and capital contributions between the unlimited partners in limited firms and those in unlimited firms changed after the 1890 reforms.

Table 14 presents results from these regressions using data from the years just before (1888) and just after (1891) the reforms. The table suggests that the difference in terms between unlimited partners in limited firms and unlimited partners in unlimited firms increased post-reform, with unlimited partners in limited firms receiving even better terms post reform than their counterparts in unlimited firms. Specifically, the profit shares of unlimited partners in limited firms vs. unlimited firms increased post reforms and their capital contributions decreased. These results may suggest that limited partners became more “picky” post reforms, perhaps because they now could invest their money in the stock market, and they only entered partnerships with exceptionally productive unlimited partners. Alternatively, it could be that unlimited partners were expected to do more work or to take more risks in limited partnerships post reform, so that their better terms simply reflect additional compensation for these additional activities.

Table 15 presents results of these placebo regressions for pre-reform data (1870 and 1888) to test for differences in pre-existing trends. It is worth pointing out that we do not present partnership fixed effects estimates for this case because there are very few cases in the data of multiple unlimited partners in limited liability firms. This table suggests that these results do not just reflect different pre-reforms trends, because there were no significant differences in salaries or capital contributions of limited partners compared with unlimited partners between 1870 and 1888.

5. Conclusions

Several key results emerge from our partner-level analysis of firms in Rio de Janeiro. By shifting the frame of analysis from firms to partners, we are able to begin to shed light on the logic of partnership from within the firm at the level of individual partners. This analysis is possible owing to the numerous detailed partnership contracts registered with the Junta Commercial in Rio de Janeiro.

Our most important findings cluster in three areas of interest: the contract terms of the limited liability partner, the contract terms of the unlimited liability partner, and the effect of a major institutional reform on the relative contract terms of the two.

First, we find that capital contributions were near universal for all partners, irrespective of liability status. This is interesting since it suggests an attempt to tie the incentives of the unlimited partners with their firm's profitability insofar as profit shares were generally calculated on the basis of their capital contributions. Second, we find that more than 60% of all limited liability partners received fixed periodical payments from their partnerships. This was referred generally as a draw in the partnership records and was not distinguished in any way from the draw of the unlimited liability partners. Note, however, that limited liability partners were forbidden by law to participate in the running of the firm. Therefore, we interpret this "salary" as an income smoothing device for the limited liability partner. We next find that limited liability partners obtained *lower* profit shares and lower salaries than did unlimited partners; at the same time, limited partners contributed *more* capital to their firms. We argue that this should be interpreted as the price investors were willing to pay for the protection of limited liability and the related fact that they did not (and in fact were not allowed) to provide labor or management to the partnership.

Second, with regard to unlimited partners, our results suggest that these partners received better terms (lower capital contributions, higher profit shares, higher median salaries) when they were partners in limited firms as opposed to unlimited firms. This is consistent with positive selection over unobserved dimensions such as management ability and productivity. Such a finding is expected given that investors who cannot provide management ability or productivity (limited liability partners) are more likely to trust able people to manage the firm.

Taken together, these findings help to illuminate the internal logic of limited versus unlimited partnership in Rio de Janeiro, as well as the main differences between types of partners. Beyond this, we also attempt to assess the effect of a major institutional reform on the contract terms received by limited and unlimited liability partners. Beginning in the 1880s, the joint-stock company emerged as a major alternative vehicle for investment and business organization. This process underwent a sharp institutional shock with the reforms of 1890, after which many more joint-stock companies were

formed in a context of easy credit and rapidly expanding money supply. Under these conditions, we find that limited partners post reform received lower salaries. This finding suggests that limited partners could now diversify their portfolios by investing their money in various joint stock companies, thus receiving insurance previously only available by withdrawing a salary from their partnership. Moreover, we find evidence that, compared with the unlimited partner in unlimited firms, the unlimited partner in limited firms improved his terms post reform, suggesting that limited partners may have become more selective after the reforms and only entered partnerships with exceptionally productive unlimited partners.

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TABLE 1
Summary Statistics of Firm-Level Data

Variable	All Years			1870	1888	1891
	Mean (Std. Dev.)	Min.	Max.	Mean (Std. Dev.)	Mean (Std. Dev.)	Mean (Std. Dev.)
Limited Liability Firm	0.27 (0.44)	0	1	0.17 (0.37)	0.33 (0.47)	0.32 (0.47)
Family Firm	0.16 (0.36)	0	1	0.16 (0.36)	0.17 (0.37)	0.15 (0.36)
Fraction Portuguese	0.62 (0.42)	0	1	0.70 (0.38)	0.66 (0.40)	0.44 (0.44)
Number of Partners	2.47 (0.86)	2	9	2.32 (0.56)	2.40 (0.65)	2.74 (1.26)
Equal Share	0.44 (0.50)	0	1	0.37 (0.48)	0.52 (0.50)	0.46 (0.50)
Time Delimitation	0.82 (0.38)	0	1	0.94 (0.23)	0.76 (0.43)	0.71 (0.45)
Herfindahl: Capital	0.52 (0.16)	0	1	0.55 (0.16)	0.50 (0.13)	0.49 (0.18)
Capital (1870 Mil-Reis)	69,864 (122,744)	762	874,298	48,342 (88,994)	67,573 (97,260)	102,592 (172,977)
Dry Goods Industry	0.13 (0.34)	0	1	0.16 (0.37)	0.13 (0.33)	0.09 (0.28)
Cloth Merchant	0.11 (0.32)	0	1	0.14 (0.35)	0.11 (0.32)	0.08 (0.27)
Broker Commission	0.16 (0.37)	0	1	0.12 (0.33)	0.16 (0.37)	0.22 (0.41)
Log (Firm Capital)	10.18 (1.44)	6.64	13.68	9.93 (1.31)	10.21 (1.45)	10.49 (1.54)
Observations		666		263	215	188

Notes: "Equal Share" is a dummy variable with the value 1 if all partners equally share profits and zero otherwise. "Herfindahl Capital" measures the concentration of capital contribution, equaling the sum of c_i^2 for all partners in the firm, where c_i is the capital share contributed by partner i out of total capital contributed by all partners. All variables with "Firm Capital" are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913.

TABLE 2
Summary Statistics of Firm-Level Data by Firm Type: All Years

Variable	Limited Firms			Unlimited Firms			P-value
	Mean (Std. Dev.)	Min.	Max.	Mean (Std. Dev.)	Min.	Max.	
Family Firm	0.20 (0.40)	0	1	0.14 (0.35)	0	1	0.0515
Fraction Portuguese	0.50 (0.42)	0	1	0.66 (0.41)	0	1	<0.0001
Number of Partners	2.93 (1.22)	2	9	2.30 (0.61)	2	6	<0.0001
Equal Share	0.34 (0.47)	0	1	0.48 (0.50)	0	1	0.0013
Time Delimitation	0.81 (0.40)	0	1	0.82 (0.38)	0	1	0.6310
Herfindahl: Capital	0.49 (0.20)	0	1	0.53 (0.14)	0	1	0.0043
Firm Capital (1870 Mil-Reis)	96,402 (136,111)	1,918	874,298	60,258 (116,194)	762	874,298	0.0008
Dry Goods Industry	0.07 (0.26)	0	1	0.15 (0.36)	0	1	0.0099
Cloth Merchant	0.14 (0.34)	0	1	0.11 (0.31)	0	1	0.2949
Broker Commission	0.24 (0.43)	0	1	0.13 (0.34)	0	1	0.0006
Log (Firm Capital)	10.63 (1.36)	7.07	13.95	9.90 (1.48)	6.15	13.95	<0.0001
Observations		177			489		

Notes: "Equal Share" is a dummy variable with the value 1 if all partners equally share profits and zero otherwise. "Herfindahl Capital" measures the concentration of capital contribution, equaling the sum of c_i^2 for all partners in the firm, where c_i is the capital share contributed by partner i out of total capital contributed by all partners. All variables relating to capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. Standard errors are in parenthesis. "P-value" represents the p-value for the T-test for the null hypothesis of equality between the two means for the variable.

TABLE 3
Summary Statistics of Partner-Level Data

Variable	All Years			Observations	1870	1888	1891
	Mean (Std. Dev.)	Min.	Max.		Mean (Std. Dev.)	Mean (Std. Dev.)	Mean (Std. Dev.)
Any Profit Received	0.99 (0.07)	0	1	1,476	N/A	1 (0.00)	0.98 (0.13)
Profit Share	0.39 (0.15)	0	1	931	N/A	0.41 (0.13)	0.37 (0.16)
Normalized Profit Share	-0.01 (0.09)	0	0	931	N/A	-0.01 (0.08)	-0.01 (0.10)
Any Salary Received	0.94 (0.23)	0	1	1,476	0.96 (0.20)	0.97 (0.16)	0.89 (0.31)
Salary (1870 Mil-Reis)	2,792 (3,953)	0	100,000	1,476	2,095 (4,728)	3,405 (3,335)	2,974 (3,369)
Log(Salary)	7.11 (1.97)	0	11.51	1,476	6.89 (1.70)	7.57 (1.53)	6.86 (2.55)
Any Capital Share	0.97 (0.18)	0	1	1,476	0.96 (0.21)	0.98 (0.14)	0.97 (0.17)
Capital Contribution (1870 Mil-Reis)	26,880 (46,410)	0	568,293	1,476	18,784 (36,620)	29,023 (44,282)	34,482 (56,859)
Log (Capital Contribution)	9.05 (2.14)	0	13.25	1,476	8.62 (2.26)	9.26 (1.92)	9.33 (2.14)
Partner Capital Share	0.41 (0.22)	0	1	1,476	0.43 (0.23)	0.41 (0.19)	0.38 (0.22)
Normalized Capital Share	0.00 (0.19)	-1	1	1,476	-0.01 (0.22)	0 (0.16)	0 (0.18)
Profit Share / Capital Share	1.17 (0.91)	0	10	908	N/A	1.18 (0.88)	1.17 (0.95)
Limited Partner	0.12 (0.33)	0	1	1,476	0.06 (0.25)	0.15 (0.36)	0.17 (0.37)
Brazilian National	0.26 (0.44)	0	1	1,476	0.19 (0.39)	0.28 (0.45)	0.34 (0.47)
Family Member	0.14 (0.35)	0	1	1,476	0.14 (0.35)	0.15 (0.36)	0.12 (0.32)

Notes: All partner-level summary statistics exclude observations with missing values for any of the variables under review, except for the variable "Profit Share / Capital Share", which is not included in the regression analysis. This is to ensure a consistent sample across all regression analysis. "Any Profit Received", "Any Salary Received", "Any Capital Share" are dummy variables receiving the value 1 if the profit / salary / capital contribution of the partner is positive and zero otherwise. "Normalized Profit Share" is equal to $[s_i - 1/N]$, where s_i is the share of profits received by partner i and N is the number of partners in the firm. "Normalized Capital Share" is equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed to the firm, and N is the number of partners in the firm. All variables relating to salaries or capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. All variables related to profits were not available for 1870 and are calculated only for 1888 and 1891.

TABLE 4
Predicting Limited Firms

	(1)	(2)	(3)	(4)	(5)
	OLS	Probit	OLS	OLS	OLS
	All Years	All Years	1870	1888	1891
Family Firm	-0.018 (0.051)	-0.021 (0.052)	0.020 (0.069)	-0.107 (0.087)	-0.043 (0.095)
Fraction of Portuguese	-0.079* (0.044)	-0.085* (0.045)	-0.094 (0.064)	-0.124 (0.082)	-0.030 (0.079)
Numbers of Partners	0.167*** (0.027)	0.177*** (0.040)	0.198*** (0.054)	0.296*** (0.065)	0.134*** (0.035)
Equal Share	-0.034 (0.037)	-0.031 (0.040)	0.037 (0.050)	-0.075 (0.071)	-0.063 (0.074)
Time Delimitation	0.014 (0.045)	0.011 (0.046)	-0.019 (0.099)	-0.043 (0.073)	0.075 (0.072)
Herfindahl: Capital	0.278* (0.145)	0.317** (0.146)	0.203 (0.164)	0.527* (0.281)	0.278 (0.223)
Log (Firm Capital)	0.007 (0.014)	0.009 (0.016)	0.015 (0.023)	0.006 (0.028)	-0.007 (0.028)
Dry Goods Industry	-0.024 (0.043)	-0.033 (0.056)	0.008 (0.066)	-0.044 (0.097)	-0.087 (0.121)
Cloth Merchant	0.058 (0.058)	0.063 (0.062)	0.006 (0.067)	0.043 (0.099)	0.187 (0.122)
Broker Commission	0.091* (0.052)	0.081 (0.054)	-0.057 (0.075)	0.044 (0.094)	0.220*** (0.083)
1891 Dummy	0.079* (0.044)	0.091* (0.052)			
1888 Dummy	0.168*** (0.040)	0.187*** (0.047)			
R-Squared	0.154		0.101	0.185	0.175
Observations	666	666	263	215	188

Notes: "Equal Share" is a dummy variable with the value 1 if all partners equally share profits and zero otherwise. "Herfindahl Capital" measures the concentration of capital contribution, equaling the sum of c_i^2 for all partners in the firm, where c_i is the capital share contributed by partner i out of total capital contributed by all partners. All variables relating to capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913.

Columns (1) and (3)-(5) are estimated using ordinary least squares. Column (2) is a probit regression, and the estimation represent marginal effects. T-test significant at ***1%, **5%, *10%.

TABLE 5
Comparing Limited and Unlimited Partners in Limited Firms: Predicting Normalized Profit Share

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	Median	FE
Limited Partner	-0.026** (0.013)	-0.090*** (0.015)	-0.083*** (0.016)	-0.074*** (0.004)	-0.084*** (0.021)
1891 Dummy		-0.001 (0.006)	0.001 (0.006)	-0.003 (0.003)	
Existing Earlier		-0.006 (0.005)	-0.009* (0.005)	-0.014*** (0.003)	
Log (Firm Capital)		-0.004 (0.003)	-0.006 (0.003)	0.000 (0.002)	
Number of Partners		0.001 (0.003)	0.004 (0.004)	-0.002* (0.001)	
Time Delimitation		-0.008 (0.006)	-0.008 (0.006)	-0.015*** (0.004)	
Broker Commission		-0.005 (0.007)	-0.006 (0.007)	-0.014*** (0.004)	
Brazilian National		-0.001 (0.008)	-0.002 (0.008)	-0.006* (0.003)	0.006 (0.022)
Family Member		-0.013 (0.015)	-0.014 (0.015)	-0.011** (0.005)	-0.026 (0.047)
Normalized Capital Share		0.311*** (0.050)	0.305*** (0.050)	0.252*** (0.010)	0.308*** (0.062)
Log (Salary)			0.004* (0.002)	0.002** (0.001)	0.005 (0.004)
R-Squared	0.019	0.329	0.336		0.362
Observations	350	350	350	350	350

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to partners in limited firms from 1888 and 1891 in the dataset. The dependent variable is "Normalized Profit Share", equal to $[s_i - 1/N]$, where s_i is the share of profits received by partner i and N is the number of partners in the firm. "Normalized Capital Share" is similarly calculated, equal to $[c_i - 1/N]$, where c_i is now the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. Columns (1)-(3) are estimated using ordinary least squares, column (4) is estimated using median regression, and column (5) is estimated using fixed effects at the firm level.

Standard errors are in parentheses. For columns (1)-(3) and (5) standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 6
Comparing Limited and Unlimited Partners in Limited Firms: Predicting Log Salary

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	OLS	OLS	OLS	Median	FE
Limited Partner	-1.945*** (0.445)	-1.656*** (0.326)	-1.457*** (0.328)	-1.700*** (0.419)	-0.079 (0.092)	-1.316*** (0.407)
1891 Dummy		-0.671** (0.268)	-0.653** (0.265)	-0.660** (0.265)	-0.312*** (0.087)	
Existing Earlier		0.718** (0.277)	0.726** (0.278)	0.724*** (0.273)	0.169* (0.089)	
Log (Firm Capital)		0.382** (0.158)	0.502*** (0.151)	0.426*** (0.137)	0.717*** (0.056)	
Number of Partners		-0.760*** (0.124)	-0.789*** (0.124)	-0.761*** (0.122)	-0.539*** (0.038)	
Time Delimitation		-0.006 (0.279)	0.022 (0.283)	0.016 (0.279)	0.059 (0.096)	
Broker Commission		0.309 (0.315)	0.285 (0.312)	0.291 (0.308)	-0.033 (0.099)	
Brazilian National		0.14 (0.296)	0.146 (0.291)	0.155 (0.293)	0.057 (0.088)	-0.703 (0.570)
Family Member		0.269 (0.227)	0.336 (0.236)	0.309 (0.233)	-0.064 (0.124)	0.665 (1.013)
Log (Capital Contribution)		0.023 (0.030)	-0.05 (0.037)		-0.033 (0.023)	-0.037 (0.091)
Normalized Capital Share				0.721 (1.022)		
Normalized Profit Share			4.121*** (1.423)	3.027* (1.720)	2.956*** (0.480)	3.818* (1.952)
R-Squared	0.126	0.341	0.358	0.358		0.182
Observations	350	350	350	350	350	350

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to partners in limited firms from 1888 and 1891 in the dataset. "Normalized Capital Share" is equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. "Normalized Profit Share" is equal to $[s_i - 1/N]$, where s_i is now the share of profits received by partner i and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. Columns (1)-(4) are estimated using ordinary least squares, column (5) is estimated using median regression, and column (6) is estimated using fixed effects at the firm level. Standard errors are in parentheses. For columns (1)-(4) and (6) standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 7

Comparing Limited and Unlimited Partners in Limited Firms: Predicting Normalized Capital Share

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	Median	FE
Limited Partner	0.204*** (0.027)	0.209*** (0.026)	0.238*** (0.023)	0.200*** (0.012)	0.251*** (0.029)
1891 Dummy		-0.003 (0.005)	0.001 (0.008)	0.020 (0.017)	
Existing Earlier		0.006 (0.006)	0.008 (0.007)	0.007 (0.017)	
Log (Firm Capital)		0.001 (0.003)	0.003 (0.005)	0.009 (0.008)	
Number of Partners		-0.007*** (0.003)	-0.004 (0.005)	-0.013* (0.007)	
Time Delimitation		0.000 (0.006)	0.008 (0.008)	0.016 (0.018)	
Broker Commission		0.016** (0.006)	0.016* (0.008)	0.012 (0.013)	
Brazilian National		-0.009 (0.015)	-0.005 (0.013)	-0.012 (0.017)	0.004 (0.046)
Family Member		0.003 (0.013)	0.014 (0.020)	0.030 (0.024)	0.038 (0.073)
Log (Salary)			0.003 (0.004)	0.004 (0.003)	0.003 (0.008)
Normalized Profit Share			0.983*** (0.110)	1.031*** (0.085)	1.074*** (0.144)
R-Squared	0.277	0.282	0.505		0.54
Observations	350	350	350	350	350

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to partners in limited firms from 1888 and 1891 in the dataset. The dependent variable is "Normalized Capital Share", equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. "Normalized Profit Share" is similarly calculated, equal to $[s_i - 1/N]$, where s_i is now the share of profits received by partner i , and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. Columns (1)-(3) are estimated using ordinary least squares, column (4) is estimated using median regression, and column (5) is estimated using fixed effects at the firm level.

Standard errors are in parentheses. For columns (1)-(3) and (5) standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 8
Comparing Unlimited Partners in Limited vs. Unlimited Firms: Predicting Normalized Profit Share

	(1)	(2)	(3)	(4)
	OLS	OLS	OLS	Median
Limited Liability Firm	0.005 (0.006)	0.082*** (0.021)	0.082*** (0.021)	0.090*** (0.000)
1891 Dummy		0.002 (0.004)	0.004 (0.004)	0.000*** (0.000)
Existing Earlier		-0.008* (0.004)	-0.008* (0.004)	0.000 (0.000)
Log (Firm Capital)		-0.004*** (0.001)	-0.006*** (0.002)	-0.000*** (0.000)
Number of Partners		0.006*** (0.002)	0.008*** (0.002)	-0.000*** (0.000)
Number of Partners *		-0.013** (0.006)	-0.014** (0.006)	-0.020*** (0.000)
Limited Firm		-0.005 (0.004)	-0.005 (0.004)	0.000 (0.000)
Time Delimitation		0.001 (0.005)	0.003 (0.005)	0.000** (0.000)
Broker Commission		-0.009* (0.005)	-0.010** (0.005)	-0.000*** (0.000)
Brazilian National		0.000 (0.006)	0.001 (0.006)	0.000 (0.000)
Family Member		0.393*** (0.031)	0.390*** (0.030)	0.400*** (0.000)
Normalized Capital Share			0.004* (0.002)	0.000** (0.000)
Log (Salary)				
R-Squared	0.001	0.467	0.47	
Observations	783	783	783	783

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to the unlimited partners from 1888 and 1891 in the dataset. The dependent variable is "Normalized Profit Share", equal to $[s_i - 1/N]$, where s_i is the share of profits received by partner i and N is the number of partners in the firm. "Normalized Capital Share" is similarly calculated, equal to $[c_i - 1/N]$, where c_i is now the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913.

Columns (1)-(3) are estimated using ordinary least squares and column (4) is estimated using median regression. Standard errors are in parentheses. For columns (1)-(3) standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 9
Comparing Unlimited Partners in Limited vs. Unlimited Firms: Predicting Log Salary

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	OLS	Median
Limited Liability Firm	0.444*** (0.146)	0.497** (0.247)	0.452* (0.250)	0.478* (0.267)	-0.077* (0.039)
1891 Dummy		-0.414*** (0.141)	-0.420*** (0.142)	-0.417*** (0.142)	-0.128*** (0.033)
Existing Earlier		0.089 (0.208)	0.101 (0.210)	0.103 (0.209)	0.059 (0.036)
Log (Firm Capital)		0.445*** (0.083)	0.494*** (0.077)	0.466*** (0.076)	0.533*** (0.017)
Number of Partners		-0.526*** (0.189)	-0.549*** (0.187)	-0.540*** (0.190)	-0.181*** (0.020)
Time Delimitation		-0.063 (0.147)	-0.049 (0.148)	-0.049 (0.148)	0.025 (0.036)
Broker Commission		-0.297 (0.272)	-0.312 (0.271)	-0.31 (0.271)	-0.027 (0.043)
Brazilian National		0.245 (0.188)	0.257 (0.189)	0.26 (0.188)	0.199*** (0.036)
Family Member		-0.235 (0.240)	-0.242 (0.239)	-0.244 (0.239)	-0.220*** (0.047)
Log (Capital Contribution)		0.017 (0.023)	-0.026 (0.022)		0.011 (0.011)
Normalized Capital Share				0.035 (0.420)	
Normalized Profit Share			1.891** (0.734)	1.674** (0.849)	2.006*** (0.189)
R-Squared	0.015	0.196	0.205	0.205	
Observations	783	783	783	783	783

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis.

The analysis is limited to the unlimited partners from 1888 and 1891 in the dataset. "Normalized Capital Share" is equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. "Normalized Profit Share" is equal to $[s_i - 1/N]$, where s_i is now the share of profits received by partner i and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913.

Columns (1)-(4) are estimated using ordinary least squares and column (5) is estimated using median regression. Standard errors are in parentheses. For columns (1)-(4) standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 10
**Comparing Unlimited Partners in Limited vs. Unlimited Firms: Predicting Normalized
Capital Share**

	(1)	(2)	(3)	(4)
	OLS	OLS	OLS	Median
Limited Liability Firm	-0.086*** (0.010)	-0.216*** (0.035)	-0.213*** (0.036)	-0.169*** (0.000)
1891 Dummy		-0.004 (0.006)	-0.005 (0.006)	0.000*** (0.000)
Existing Earlier		-0.004 (0.006)	0.007 (0.007)	-0.000*** (0.000)
Log (Firm Capital)		0.005** (0.002)	0.008*** (0.002)	0.000*** (0.000)
Number of Partners		-0.006** (0.002)	-0.010*** (0.003)	-0.000*** (0.000)
Number of Partners *		0.040*** (0.009)	0.037*** (0.010)	0.030*** (0.000)
Limited Firm		-0.008 (0.006)	0.002 (0.006)	-0.000*** (0.000)
Time Delimitation		0.016** (0.008)	0.007 (0.008)	0.000** (0.000)
Broker Commission		-0.004 (0.010)	0.009 (0.008)	0.000*** (0.000)
Brazilian National		0.017** (0.008)	0.009 (0.008)	-0.000*** (0.000)
Family Member			-0.001 (0.002)	-0.000*** (0.000)
Log (Salary)				
Normalized Profit Share			1.174*** (0.062)	1.150*** (0.000)
R-Squared	0.054	0.077	0.502	
Observations	783	783	783	783

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to the unlimited partners from 1888 and 1891 in the dataset. The dependent variable is "Normalized Capital Share", equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. "Normalized Profit Share" is similarly calculated, equal to $[s_i - 1/N]$, where s_i is now the share of profits received by partner i , and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913.

Columns (1)-(3) are estimated using ordinary least squares and column (4) is estimated using median regression. Standard errors are in parentheses. For columns (1)-(3) standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 11
Comparing Family Members to Non-Members in Family Firms

Dependent Variable	Normalized Profit Share		Log Salary		Normalized Capital Share	
	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS
Family Member	0.012 (0.016)	0.007 (0.014)	0.046 (0.403)	-0.206 (0.493)	0.025 (0.020)	0.013 (0.018)
1891 Dummy		-0.008 (0.009)		-0.422 (0.367)		0.008 (0.008)
Existing Earlier		-0.017* (0.009)		0.703 (0.585)		0.013 (0.008)
Log (Firm Capital)		-0.003 (0.003)		0.502 (0.316)		0.002 (0.003)
Number of Partners		0.007 (0.006)		-0.601* (0.315)		-0.001 (0.006)
Time Delimitation		0.007 (0.008)		-0.604* (0.328)		-0.003 (0.008)
Broker Commission		0.015** (0.007)		-0.873 (0.721)		-0.006 (0.011)
Brazilian National		-0.012 (0.010)		0.913 (0.601)		0.002 (0.016)
Log (Capital Contribution)				-0.118 (0.101)		
Normalized Capital Share		0.371*** (0.075)				
Normalized Profit Share				2.957*** (0.925)		0.963*** (0.143)
Log (Salary)		0.005** (0.002)				-0.001 (0.004)
R-Squared	0.003	0.378	0.000	0.191	0.005	0.365
Observations	172	172	172	172	172	172

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to partners in firms with family members from 1888 and 1891 in the dataset. "Normalized Capital Share" is equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. "Normalized Profit Share" is similarly calculated, equal to $[s_i - 1/N]$, where s_i is now the share of profits received by partner i , and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. All columns are estimated using ordinary least squares. Standard errors are in parentheses, are heteroscedasticity robust, and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 12

Difference-in-Differences 1888-1891: The Effect of the Reforms on Limited vs. Unlimited Partners in Limited Firms

Dependent Variable	Normalized Profit Share				Log Salary				Normalized Capital Share			
	(1) OLS	(2) OLS	(3) Median	(4) FE	(5) OLS	(6) OLS	(7) Median	(8) FE	(9) OLS	(10) OLS	(11) Median	(12) FE
1891 * Limited Partner	-0.036 (0.025)	-0.031 (0.022)	-0.005 (0.007)	-0.028 (0.027)	-1.471* (0.793)	-0.576 (0.645)	-0.292** (0.138)	-0.547 (0.762)	-0.02 (0.053)	0.028 (0.045)	-0.030 (0.022)	0.032 (0.057)
Limited Partner	-0.008 (0.017)	-0.069*** (0.018)	-0.073*** (0.006)	-0.072*** -0.024	-1.191*** (0.383)	-1.443*** (0.413)	-0.013 (0.098)	-1.069** (0.459)	0.214*** (0.033)	0.226*** (0.029)	0.218*** (0.015)	0.237*** (0.037)
1891 Dummy	0.011 (0.011)	0.013 (0.010)	-0.003 (0.005)		-0.483** (0.193)	-0.429* (0.217)	-0.217** (0.089)		0.000 (0.021)	-0.009 (0.019)	0.030** (0.014)	
Additional Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R-Squared	0.029	0.343		0.368	0.185	0.361		0.187	0.278	0.507		0.542
Observations	350	350	350	350	350	350	350	350	350	350	350	350

Notes : All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to limited firms from 1888 and 1891 in the dataset. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. "Normalized Capital Share" is equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. "Normalized Profit Share" is similarly calculated, equal to $[s_i - 1/N]$, where s_i is now the share of profits received by partner i , and N is the number of partners in the firm. Columns (1)-(2), (5)-(6), and (9)-(10) are estimated using ordinary least squares, columns (3), (7) and (11) are estimated using median regression, and columns (4), (8) and (12) are estimated using fixed effects at the firm level.

"Additional Controls" are: Existing Earlier, Log (Firm Capital), Number of Partners, Time Delimitation, Broker Commission, Brazilian National, Family Member in the OLS and median regressions, and only Brazilian National and Family Member for the Fixed Effects regressions. For each dependent variable, "Additional Controls" also includes the two other dependent variables listed above, except for column (7), where we include "Log(Capital Contribution)", instead of "Normalized Capital Share". For the OLS regression with "Log Salary" as the dependent variable, we also ran the same regression as column (6), only with "Log(Capital Contribution)", instead of "Normalized Capital Share" as one of the control variables, in order to compare the effect of the level of capital contribution on the salary level, and the results were similar to those reported in column (6). Standard errors are in parentheses. For columns (1)-(2), (4), (5)-(6), (8), (9)-(10), and (12), standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 13

Difference-in-Differences 1870-1888: Comparing Limited vs. Unlimited Partners in Limited Firms

Dependent Variable	Log Salary				Normalized Capital Share			
	(1) OLS	(2) OLS	(3) Median	(4) FE	(5) OLS	(6) OLS	(7) Median	(8) FE
1888 * Limited Partner	-0.756 (0.494)	-0.784 (0.492)	-0.056 (0.073)	-0.637 (0.504)	-0.106 (0.064)	-0.106 (0.065)	-0.024 (0.048)	-0.111 (0.069)
Limited Partner	-0.434 (0.311)	-0.436 (0.362)	0.050 (0.062)	-0.514 (0.336)	0.320*** (0.055)	0.327*** (0.056)	0.239*** (0.039)	0.342*** (0.061)
1888 Dummy	0.832*** (0.298)	0.573** (0.279)	0.356*** (0.049)		0.041 (0.027)	0.041 (0.027)	-0.015 (0.033)	
Additional Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
R-Squared	0.075	0.172		0.156	0.357	0.366		0.376
Observations	276	276	276	276	276	276	276	276

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to limited firms from 1870 and 1888 in the dataset. "Normalized Capital Share" is equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. Profit data at the partner level were not available for 1870. Columns (1)-(2) and (5)-(6) are estimated using ordinary least squares, columns (3) and (7) are estimated using median regression, and columns (4) and (8) are estimated using fixed effects at the firm level.

"Additional Controls" are: Existing Earlier, Log (Firm Capital), Number of Partners, Time Delimitation, Broker Commission, Brazilian National, and Family Member in the OLS and median regressions, and only Brazilian National and Family Member for the fixed effects regressions. For each dependent variable, "Additional Controls" also includes the other dependent variable listed above. For the regression with "Log Salary" as the dependent variable, we also ran the same regression as column (2), only with "Log(Capital Contribution)", instead of "Normalized Capital Share" as one of the control variables, in order to compare the effect of the level of capital contribution on the salary level, and the results were similar to those reported in column (2). Standard errors are in parentheses. For columns (1)-(2), (4), (5)-(6), and (8), standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 14

Difference-in-Differences 1888-1891: The Effect of the Reforms on Unlimited Partners in Limited vs. Unlimited Firms

Dependent Variable	Normalized Profit Share			Log Salary			Normalized Capital Share		
	(1) OLS	(2) OLS	(3) Median	(4) OLS	(5) OLS	(6) Median	(7) OLS	(8) OLS	(9) Median
1891 * Limited Firm	0.014 (0.012)	0.020* (0.011)	0.007*** (0.000)	-0.05 (0.295)	0.027 (0.282)	-0.062 (0.072)	0.000 (0.021)	-0.034* (0.019)	-0.007*** (0.000)
Limited Firm	-0.001 (0.007)	0.079*** (0.021)	0.090*** (0.000)	0.460*** (0.130)	0.466** (0.203)	-0.064 (0.052)	-0.087*** (0.013)	-0.206*** (0.035)	-0.184*** (0.000)
1891 Dummy	-0.003 (0.003)	-0.001 (0.004)	0.000*** (0.000)	-0.434* (0.224)	-0.424** (0.189)	-0.123*** (0.037)	0.000 (0.000)	0.003 (0.004)	0.000*** (0.000)
Additional Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
R-Squared	0.002	0.473		0.035	0.205		0.054	0.504	
Observations	783	783	783	783	783	783	783	783	783

Notes : All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to limited partners from 1888 and 1891 in the dataset. "Normalized Capital Share" is equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. "Normalized Profit Share" is similarly calculated, equal to $[s_i - 1/N]$, where s_i is now the share of profits received by partner i , and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913.

Columns (1)-(2), (4)-(5), and (7)-(8) are estimated using ordinary least squares and columns (3), (6) and (9) are estimated using median regression.

"Additional Controls" are: Existing Earlier, Log (Firm Capital), Number of Partners, Time Delimitation, Broker Commission, Brazilian National, Family Member in the OLS and median regressions, and only Brazilian National and Family Member for the Fixed Effects regressions. For each dependent variable, "Additional Controls" also includes the two other dependent variables listed above. For the regression with "Log Salary" as the dependent variable, we also ran the same regression as column (5), only with "Log(Capital Contribution)", instead of "Normalized Capital Share" as one of the control variables, in order to compare the effect of the level of capital contribution on the salary level, and the results were similar to those reported in column (5). Standard errors are in parentheses. For columns (1)-(2), (4)-(5), and (7)-(8), standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%, **5%, *10%.

TABLE 15

Difference-in-Differences 1870-1888: Comparing Unlimited Partners in Limited vs. Unlimited Firms

Dependent Variable	Log Salary			Normalized Capital Share		
	(1) OLS	(2) OLS	(3) Median	(4) OLS	(5) OLS	(6) Median
1888 * Limited Firm	0.107 (0.324)	-0.003 (0.287)	-0.126 (0.096)	0.035 (0.027)	0.028 (0.025)	0.014*** (0.000)
Limited Firm	0.354 (0.297)	0.236 (0.241)	0.142* (0.077)	-0.122*** (0.024)	-0.317*** (0.062)	-0.306*** (0.000)
1888 Dummy	0.725*** (0.131)	0.572*** (0.101)	0.396*** (0.043)	0.006** (0.003)	0.004 (0.005)	-0.000*** (0.000)
Additional Controls	No	Yes	Yes	No	Yes	Yes
R-Squared	0.086	0.322		0.043	0.057	
Observations	924	924	924	924	924	924

Notes: All partner-level analysis excludes observations with missing values for any of the variables under review. This is to ensure a consistent sample across all types of analysis. The analysis is limited to unlimited partners from 1870 and 1888 in the dataset. Profit data at the partner level were not available for 1870. "Normalized Capital Share" is equal to $[c_i - 1/N]$, where c_i is the share of capital contributed by partner i , out of total capital contributed by all partners, and N is the number of partners in the firm. All variables relating to salaries and capital contribution are in 1870 Mil-Reis according to an index for wholesale prices in Brazil for 1870-1913. Columns (1)-(2) and (4)-(5) are estimated using ordinary least squares and columns (3) and (6) are estimated using median regression.

"Additional Controls" are: Existing Earlier, Log (Firm Capital), Number of Partners, Time Delimitation, Broker Commission, Brazilian National, and Family Member in the OLS and median regressions, and only Brazilian National and Family Member for the fixed effects regressions. For each dependent variable, "Additional Controls" also includes the other dependent variable listed above. For the regression with "Log Salary" as the dependent variable, we also ran the same regression as column (2), only with "Log(Capital Contribution)", instead of "Normalized Capital Share" as one of the control variables, in order to compare the effect of the level of capital contribution on the salary level, and the results were similar to those reported in column (2). Standard errors are in parentheses. For columns (1)-(2) and (4)-(5) standard errors are heteroscedasticity robust and clustered at the firm level. T-test significant at ***1%. **5%. *10%.