IV. EMPLOYEE SPINOFFS: PERFORMANCE AND AGGLOMERATION
Evidence From Brazil

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Introduction

- Where do new firms come from? One answer is from other firms: employees spin off to form their own businesses.
- In this project we will, for the first time, compute the share of employee spinoffs in a representative sample of a country's new firms using precise and replicable criteria, and compare basic indicators of their performance to those of other entrants.
- Our performance results will shed new light on the process of learning within firms.
- We will also show that employee spinoffs can play a key role in the initiation and expansion of industry agglomerations. This role is only just beginning to receive attention (Klepper 2009)

Employee spinoffs and government policy

- Employee spinoffs raise unavoidable issues for government policy.
- It is common for employers to ask key employees to sign contracts that restrict their ability, in the event of separation, to compete with their former employers.
- Governments must decide whether to enforce these "covenants not to compete." In the United States, such enforcement varies widely from state to state and has even changed within states over time (Garmaise 2007).
- Our preliminary results support the contention of Gilson (1999) that variations in enforcement can influence the regional patterns of industry agglomeration.
- In the developing country context, the fact that employee spinoffs outperform other new entrants (according to our preliminary results) may suggest innovations in entrepreneurship policy, such as in Tunisia where state enterprises have offered their employees two-year leaves during which they can attempt to start their own businesses (Nabli and Nugent 2008).

Our Brazilian data

- Our data derive from the linked employer-employee records **RAIS** from the Brazilian labor ministry, which offer comprehensive individual employee information on occupations, demographic characteristics and earnings, along with employer identifiers.
- The rules on tax ID assignments make it possible to identify new firms (the first eight digits of the tax ID) and new plants within firms (the last six digits of the tax ID). [Contrast with U.S. data.]
- Our data include 71.1 million employees (with 556.3 million job spells) at 5.52 million plants in 3.75 million firms over the sixteen-year period 1986-2001 in all sectors of the economy.
- We limit our attention to the years 1995-2001 to ensure that firms we label as new have not operated for at least a decade. In addition, RAIS offers detailed CNAE industry information starting in 1995. The Brazilian classification system CNAE recognizes 564 economic activities at the finest (four-digit) level, comparable to the European NACE and the international ISIC classifications.
- During our 7-year sample period, 1.54 million new firms and 2.17 million plants entered (of which 581 thousand new plants were created within incumbent firms).

Spinoff definition A: Director/manager

- We take two complementary approaches to identifying employee spinoff firms in the RAIS data, and let each approach act as a check on the robustness of the other.
- In the first approach, we locate the human capital essential to founding the new firm in its director or manager.
- **Definition A: Director/manager spinoff. A director/manager employee spinoff is a new firm whose top paid director (or top paid manager if there are no directors) previously worked for an incumbent firm in the same four-digit CNAE industry.**
- The top paid director or manager may be the owner of the firm, or may have recruited financial backing from investors who own the firm but are not employed by it. Alternatively, investors may have recruited an experienced director or manager to run a new firm that was their idea. In the latter case, some (but not all) of the human capital essential to founding the new firm is embodied in the unobserved investors.
- Note that the director/manager spinoff definition will miss many "vertical" spinoffs, in which the top paid director or manager leaves his incumbent firm to independently produce an input he previously supplied to his former employer internally. For example, an accountant for a manufacturing firm may start an accounting firm that caters to the manufacturing industry. His new firm will not have the same four-digit CNAE industry as his former employer and will therefore be missed by the director/manager spinoff definition.

Spinoff definition B: Quarter-workforce

- Our second approach locates the human capital essential to founding the new firm in a group of employees who embody its "core competence." Of course the core competence of a firm is unobserved, so we do not know which or how many employees embody its core competence.

- For help we turn to a fact about director/manager spinoffs: on average, the director/manager "brings along" from the parent 23 percent of the non-management employees of the new firm.

- This suggests that a reasonable cutoff for the share of employees in the new firm that is needed to transfer essential technologies or work routines from the parent firm is one-quarter.

- **Definition B: Quarter-workforce spinoff. A quarter-workforce employee spinoff is a new firm of five or more employees, at least 25 percent of whom previously worked for the same incumbent firm.**

Comparing the spinoff definitions

- We restrict the quarter-workforce definition to new firms with five or more employees because below five employees any new firm with an employee who can be traced to previous employment would automatically be a spinoff. In other words, by restricting ourselves to firms with five or more employees, we ensure that a “team” that embodies the core competence of the new firm must have at least two employees.
- An advantage of the quarter-workforce definition over the director/manager definition is that we are not restricted to firms with a paid director or manager, nor are we restricted to “horizontal” spinoffs.
- The obvious disadvantage is that without the presence of a director or manager it is entirely possible that no essential human capital is embodied in the group of employees.

Spinoffs versus divestitures: legal forms

- Both spinoff definitions A and B are vulnerable to the problem that the offspring firms may not be truly new. An incumbent firm that divests itself of one or more divisions creates a "new" firm that is likely to satisfy both of our spinoff definitions. (One might think the same problem could arise if a firm is sold, creating a "new" firm that is again likely to satisfy both of our spinoff definitions. However, a firm that is sold retains its firm identifier and therefore is not coded as a new firm in our data.)

- We receive some help with this problem from the coding of firms by legal form in the RAIS data set. By Brazilian commercial law, there are two broad categories of legal form: incorporated firms, and associations or partnerships without independent legal existence. Most important for our purposes, associations or partnerships cannot be owned by companies, but only by physical persons. So, if an employee spinoff is an association or partnership, it is not likely to be a divestiture.

- In contrast, spinoffs that are incorporated as Corporation under private control, Close corporation, or Limited liability company are quite possibly divestitures.

Divestiture definition

- Inverting the common criterion in the labor literature that a mass layoff is a reduction of the existing workforce by 30 percent or more (e.g. Jacobson, LaLonde and Sullivan 1993), we label a new firm a divestiture if it is an incorporated firm (or if it has unknown legal form), and if it absorbs 70 percent or more of the employees of a plant of an incumbent firm.

- **Definition C: Divestiture. A divestiture is a new firm with legal form coded as Corporation under private control, Close corporation, Limited liability company, or as unknown that absorbs 70 percent or more of the employees of a plant of an incumbent firm.**

- We use the share of employees of an existing plant rather than an entire incumbent firm because a typical divestiture scenario is one in which a parent firm divests itself of a particular plant, which becomes a new firm. This conservative approach makes it more difficult to classify a new firm as an employee spinoff.

New ventures of incumbent firms

- We contrast these types of new firms with new ventures of incumbent firms. Around one to three percent of incumbent firms in our data expand, diversify or otherwise grow new ventures either by starting new plants or by acquiring existing plants (2.7 percent in 1995, 1.4 percent in 2001).

- **Definition D: New ventures of incumbent firms. A new venture is a plant, or group of plants, that is added to an incumbent firm. An expansion venture is a new venture within the same CNAE four-digit industry, and a diversification venture is a new venture in a different CNAE four-digit industry.**

How common are spinoffs relative to other new firms?

- Assess relative to pools of potential spinoffs
- For Definition A, only new firms with at least one director or manager are potential spinoffs. These turn out to constitute only 5.0 percent of all new firms.
- For Definition B, only new firms with at least five employees are potential spinoffs. These are 21.5 percent of all new firms. So having a director or manager proves to be much more rare than having five or more employees.
- From these respective pools, director/manager spinoffs and quarter-workforce spinoffs respectively account for 17.0 and 29.3 percent of new firms. The ranking is to be expected given the greater restrictiveness of the director/manager spinoff definition.
- We can assess the overlap between our two spinoff definitions by considering the subset of new firms that have both a director/manager and at least five employees. Within this subset 59.2 percent of director/manager spinoffs are also quarter-workforce spinoffs but only 37.5 percent of quarter-workforce spinoffs are also director/manager spinoffs. This again emphasizes that Definition A is more restrictive than Definition B.

Initial size of spinoffs versus other entrants

- To understand differences upon entry between employee spinoffs, other new firms and diversification ventures of incumbent firms, we compare measures of their initial size. We do not consider expansion ventures in our comparisons, following Dunne, Roberts and Samuelson (1988) for whom expansion ventures are not a form of entry.

- Table 1 shows regressions for initial employment at new firms and diversification ventures. Columns (1) and (2) cover firms and ventures that have at least one director or manager and columns (3) and (4) cover firms and ventures with at least five employees. Size is measured by the log of the number of employees and the log of the wage bill on December 31 of the calendar year in which the firm or venture is first observed.

- The key explanatory variables are indicators for employee spinoff, divestiture, and diversification venture, alongside controls for four-digit CNAE industry and cohort (entry year of firm or venture). The omitted baseline firm type is unrelated new firms. The exponential functions of the coefficients on the key indicator variables therefore show, within an industry and within a cohort, the ratios of the sizes of employee spinoffs, divestitures, and diversification ventures of incumbent firms to unrelated new firms.

Spinoffs are in between unrelated new firms and diversification ventures of incumbent firms

Table 1: SIZE AT ENTRY

	Director/manager		Five or more employees	
OLS	Log Empl.	Log Wage Bill	Log Empl.	Log Wage Bill
(exponentials of coefficients)	(1)	(2)	(3)	(4)
Employee spinoff	1.86	1.96	1.12	1.28
	(.02)***	(.03)***	(.004)***	(.005)***
Divestiture	2.65	2.92	1.40	1.59
	(.06)***	(.07)***	(.009)***	(.01)***
Diversification venture	3.12	3.89	1.69	2.10
	(.05)***	(.08)***	(.01)***	(.02)***
Obs.	79,198	79,198	347,709	347,709
R^2	.29	.31	.13	.15
Mean Dep. variable	1.75	.40	2.07	.37
CNAE industry panels	552	552	561	561
Cohort panels	7	7	7	7

Consistency with comparable U.S. results

- Diversification ventures of incumbent firms are three to four times larger than unrelated new firms among firms with directors or managers and about twice as large among firms with at least five employees.
- This is consistent with the findings of Dunne et al. (1988) for U.S. manufacturing entrants, who state (p. 504) that "new-firm entrants in each industry are on average 28.4% as large as existing producers, while diversifying-firm, new-plant entrants are 87.1% … as large."
- Some of our result is driven by the minority of diversification ventures with multiple plants. However, if we repeat the entire exercise at the plant level (not shown), diversification plants are still two to three times larger than plants of unrelated new firms among plants with directors or managers, and 21 percent larger in employees or 57 percent larger in wage bill among plants with five or more employees.

Spinoffs versus divestitures: Size at entry

- In all regressions, divestitures are closer in size to diversification ventures than to unrelated firms (the same holds true at the plant level). This supports our criteria for identifying divestitures since they should look like ventures of incumbent firms rather than new firms.
- Employee spinoffs, on the other hand, are much closer to the entry size of unrelated new firms than to diversification ventures of incumbent firms (though the reverse is true at the plant level). The performance of director/manager spinoffs relative to diversification ventures is somewhat stronger than that of quarter-workforce spinoffs.
- Later, we will suggest an interpretation of our spinoff results in terms of the Jovanovic (1982) model of firm entry and exit.

Exit (survival) regressions

- A basic measure of performance is survival. Table 2 shows regressions for the exit of new firms and diversification ventures, covering firms and ventures with at least five employees. (Results for firms with at least one director or manager are broadly similar, so we omit them to save time.)
- We estimate a linear probability model, using as dependent variable an exit indicator that takes the value of one for exiting new firms or ventures and zero otherwise. The mean of the dependent variable is therefore the share of new firms and diversification ventures that have exited after one through six years, and we see that it rises from 9 to 49 percent for firms and ventures with at least five employees.
- Again, the key explanatory variables are indicators for employee spinoff, divestiture, and diversification venture, alongside controls for four-digit CNAE industry and cohort.
- Exit probabilities for diversification ventures will be overestimated relative to exit probabilities for new firms because we do not consider a new firm to have exited as long as any plant associated with it is active, even if all its initial plants have exited. We will harmonize the treatment of exit in future work.

Spinoffs survive longer than unaffiliated new firms

Table 2: EXIT OF NEW FIRMS AND VENTURES WITH FIVE OR MORE EMPLOYEES

Exit by	$t+1$	$t+2$	$t+3$	$t+4$	$t+5$	$t+6$
OLS	(1)	(2)	(3)	(4)	(5)	(6)
Employee spinoff	-.03	-.05	-.06	-.07	-.07	-.07
	(.001)***	(.002)***	(.002)***	(.003)***	(.004)***	(.006)***
Divestiture	-.03	-.07	-.09	-.11	-.12	-.11
	(.002)***	(.004)***	(.005)***	(.006)***	(.008)***	(.01)***
Diversification venture	-.02	-.03	-.05	-.06	-.07	-.08
	(.002)***	(.003)***	(.004)***	(.005)***	(.006)***	(.009)***
Obs.	307,303	251,930	197,870	145,820	87,883	43,747
R^2	.02	.04	.06	.07	.10	.12
Mean Dep. variable	.09	.20	.29	.37	.43	.49
CNAE industry panels	561	559	556	553	541	523
Cohort panels	6	5	4	3	2	1

Again, consistent with comparable U.S. results

- In Table 2 the explanatory variables typically have their largest impacts after five years, with most of the impacts already felt after three years.
- A diversification venture is 7 percent less likely to exit than an unrelated new firm after five years. This is again consistent with the findings of Dunne et al. (1988, p. 513) for U.S. manufacturing entrants, who compute exit rates for diversification ventures from 6 to 14 percent lower than for new firms after five years, depending on cohort.
- The exit performance of divestitures is even stronger than for diversification ventures.
- Finally, quarter-workforce employee spinoffs have exit probabilities as much as seven percent lower than unrelated firms.

Exit regressions controlling for “trackable” employees

- Our aim has been to establish stylized facts regarding employee spinoff performance relative to other new firms and ventures rather than test hypotheses about relative performance. Nevertheless, there is a mechanical reason why Definition A and especially Definition B spinoffs should show better performance, and we would like to control for this.
- Application of both definitions requires that we be able to track workers at a new firm to previous employment. Mechanically, then, employees at a Definition A and especially Definition B spinoff are more likely than employees at an unrelated new firm to have formal sector work experience. It would not be surprising if such firms were to survive in the formal sector longer.
- In the first two columns of Table 3, therefore, we add a control variable for the share of new firm or venture employees who are “trackable.” As expected, a greater share of trackable employees is associated with reduced exit probabilities. However, the impact on exit probabilities of spinoffs is only slightly reduced from Table 2.

Additional controls do not qualitatively change the results

Table 3: EXIT OF NEW FIRMS AND VENTURES WITH FIVE OR MORE EMPLOYEES: ADDITIONAL SPECIFICATIONS

	Specification 1		Specification 2		Specification 3	
Exit by	$t+1$	$t+5$	$t+1$	$t+5$	$t+1$	$t+5$
OLS	(1)	(2)	(3)	(4)	(5)	(6)
Employee spinoff	-.02 (.001)***	-.07 (.004)***	-.02 (.001)***	-.07 (.004)***	-.02 (.001)***	-.07 (.004)***
Divestiture	-.03 (.002)***	-.12 (.008)***	-.03 (.002)***	-.11 (.008)***	-.03 (.003)***	-.10 (.009)***
Diversification venture	-.02 (.002)***	-.07 (.007)***	-.01 (.002)***	-.06 (.007)***	-.01 (.002)***	-.05 (.007)***
Share: Trackable employees	-.02 (.002)***	-.01 (.008)*	-.01 (.002)***	-.002 (.008)	-.01 (.003)***	-.009 (.009)
Log Initial employment			-.01 (.0007)***	-.03 (.002)***	-.01 (.0007)***	-.03 (.002)***
Share: Shifted parent employees					-.0004 (.0007)	-.01 (.002)***
Obs.	307,303	87,883	307,303	87,883	267,782	77,992
R^2	.02	.10	.02	.10	.02	.11
Mean Dep. variable	.09	.43	.09	.43	.08	.43
CNAE industry panels	561	541	561	541	561	540
Cohort panels	6	2	6	2	6	2

Exit controlling for initial size

- Are the lower exit probabilities of employee spinoffs (and divestitures and diversification ventures) relative to unrelated new firms explained by their larger initial sizes? To answer this question we add the log of the number of initial employees as a control variable in the third and fourth columns of Table 3.

- This is indeed associated with lower exit probabilities. The impact on exit probabilities of diversification ventures is slightly reduced, but the impacts on exit probabilities of employee spinoffs and divestitures are unchanged.

- It is clear that the lower exit probabilities of employee spinoffs relative to unrelated new firms are an element of superior performance over and above greater entry size.

Exit controlling for share of parent's employees absorbed

- Finally, it is possible that some of the apparently better performance of employee spinoffs relative to unrelated new firms results from an overly restrictive definition for divestitures. In other words, some employee spinoffs may actually be planned divestitures even though they contain less than 70 percent of the employees of any plant of their parent firm.
- To control for this possibility, in the fifth and sixth columns of Table 3 we add a variable for the share of employees of the plant of the parent firm from which the new firm or venture absorbs the most workers.
- This variable has a negative association with exit probabilities at the longer time horizon for new firms and ventures, but the coefficients for employee spinoffs are unaffected.

Interpreting the results using the model of Jovanovic (1982)

- Dunne, Roberts and Samuelson (1989, p. 679) interpret their findings regarding the performance of diversification ventures relative to new firms in terms of the Jovanovic (1982) model of firm entry and exit.
- In their view a diversification venture inherits the unobserved productivity parameter of its parent and the posterior distribution of that parameter. Since the parent is selected for high productivity relative to the typical new firm by virtue of having survived for some period of time, the diversification venture is also selected for relatively high productivity and therefore relatively large size at entry.
- Moreover, the variance of the posterior distribution inherited by the diversification venture will be lower than the variance of the distribution for a new firm, and therefore it is less likely that the diversification venture will draw a low productivity realization that causes it to exit.

Spinoff and learning within firms

- A natural extension of the reasoning of Dunne et al. (1989) to employee spinoffs is to assume that a spinoff's unobserved productivity parameter is a convex combination of the productivity parameter of its parent firm and of an unrelated new firm. This will yield size at entry and exit rates that are in between those of diversification ventures and those of unrelated new firms.

- This interpretation is consistent with the idea that employees take knowledge from parent firms to spinoffs, but that the knowledge is not necessarily alienable intellectual property as in the literature on high-tech spinoffs.

- Future research: The performance of spinoffs relative to diversification ventures and unrelated new firms may vary with industry characteristics that affect the extent to which employees can inherit the key elements that make a firm successful.

Spinoffs and agglomeration (industry clustering)

- Economists have long recognized the role of external economies in driving industry agglomeration or clustering (Marshall 1920).
- External economies explain how clusters snowball, but cannot explain how they start, before there are enough firms to create external economies.
- To explain how clusters start, economists have turned to chance (Arthur 1990) or small locational advantages that are magnified by the subsequent external economies (Marshall 1920, pp. 268-9).
- Klepper (2009) suggests a different explanation, pointing to employee spinoffs from an exceptional parent as the first firms (in addition to the parent) to "arrive" at a location, thereby generating the external economies that attract subsequent unrelated new firms. He documents the role of spinoff firms in initiating the automobile industry cluster in Detroit and the semiconductor industry cluster in Silicon Valley.

Why might spinoffs start industry clusters?

- In explaining why employee spinoffs locate close to their parents, Klepper (2009, p. 12) states that "entrants have valuable economic and social knowledge about their home region." Gompers, Lerner and Scharfstein (2005, p. 578) elaborate, explaining that

  "[parents expose] would-be entrepreneurs to a network of suppliers of labor, goods, and capital, as well as a network of customers. Because starting a new venture requires suppliers and customers to make relationship-specific investments before it is guaranteed that the venture will get off the ground, networks can be particularly useful in alleviating this chicken-and-egg problem."
- These networks are likely to be local, and new entrepreneurs are likely to have less ability than mature entrepreneurs to go beyond them.
- Alternatively, spinoffs may locate close to parents because both are taking advantage of unobserved characteristics of the location.
- We compare the locations of spinoffs to new plants owned by the same parents. This comparison controls for the match between the competencies of the new firms/plants and any inherent advantages of the location, and for potential complementarities with the parent itself.
- If spinoffs locate even closer to the parent than the parent's own new plants, we have evidence not only that spinoffs can start agglomerations but also that the mechanisms of learning from parents and limited geographical scope of new entrepreneurs are at work.

Spinoff versus new venture location in same municipality as parent

- Table 4 reports regressions for the frequency of same-municipality entry by type of entrant.
- The sample contains only parent firms that spawn at least one employee spinoff plant and at least one own new plant (an expansion venture in the same industry or a diversification venture in a different industry) with at least five employees during the sample period.
- The 7,187 multi-municipality parents in the sample reproduce at high rates, spawning 14,483 employee spinoffs and 58,662 new-venture plants between 1995 and 2001.
- The dependent variable is an indicator for the same municipality, and our regressor of main interest is an indicator for an employee spinoff plant. Since the sample includes only parents that spawn both spinoff plants and own new-venture plants, we can include parent fixed effects in the regression and identify the within-parent tendency of new plants to locate in the same municipality as the parent.

Spinoff plants locate closer to parents than the parents' own new plants

Table 4: Location Choice of Entrants Relative to Parents

Same municipality as parent	Multi-municipality parents		Single-municipality parents	
OLS	(1)	(2)	(3)	(4)
Employee spinoff	.34 (.017)***	.29 (.012)***	.11 (.015)***	.10 (.015)***
Same *CNAE* industry as parent	.12 (.015)***	.06 (.008)***	.05 (.017)***	.002 (.016)
Share: Employees from parent	.14 (.013)***	.16 (.012)***	.16 (.030)***	.19 (.029)***
Log Initial employment	-.03 (.006)***	.01 (.004)	-.01 (.006)*	.02 (.007)***
Parent-firm FE		yes		yes
Obs.	73,145	73,145	9,003	9,003
R^2 (within)	.25	.21	.26	.28
Mean Dep. variable	.595	.595	.712	.712
CNAE industry panels	529	529	410	410
Cohort panels	7	7	7	7
Parent municipality panels	1,720	1,342	653	228
Parent-firm panels		7,187		2,670

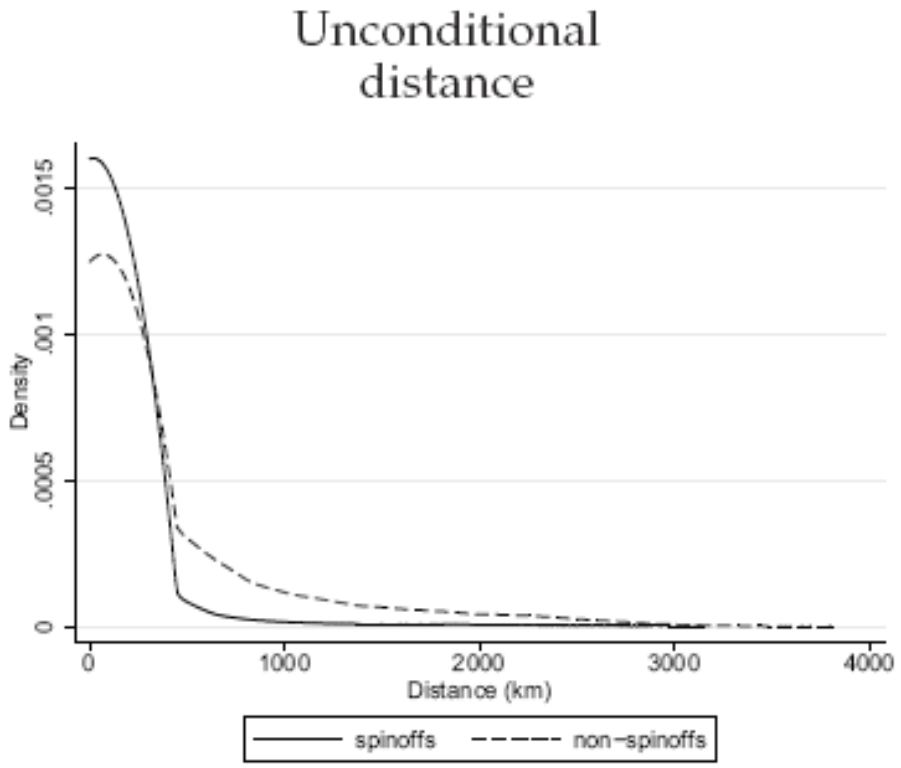
Single- and multi-municipality parents

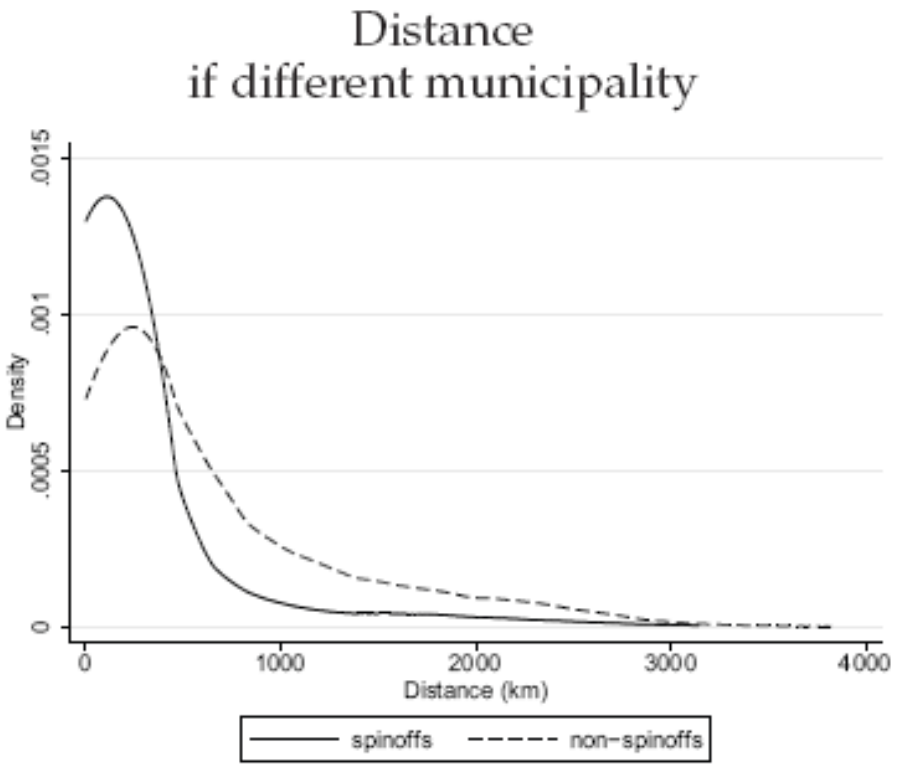
- Table 4 shows results for multi-municipality parents (columns 1 and 2) and single-municipality parents (columns 3 and 4) and documents that employee spinoff plants locate in the same municipality significantly more frequently than the parents' new-venture plants. All specifications condition on the new plant's industry and the parent's municipality with fixed effects.
- When we include parent-firm fixed effects in addition (columns 2 and 4), the relative frequency of locating in the same municipality as the parent drops somewhat in magnitude. Even within the same parent, however, employee spinoffs locate significantly more often in the parent's municipality than own new-venture plants.
- Single-municipality parent firms have plants in only one municipality in the year immediately preceding the year of spinoff entry. Location in the "same" municipality as the parent is therefore unambiguous, but these parents may themselves be selected for limited geographic scope so there is less possibility for difference between new ventures and spinoffs.
- For multi-municipality parents, theory dictates that we define "same" relative to the parent *plant*'s municipality for spinoffs. But what is the reference municipality for new ventures? We use the parent *firm*'s employment mode municipality. Insofar as parent firms may sometimes want to locate new plants near existing outlying plants, this biases our results.
- I believe the true behavioral effect is probably in between the result for single-municipality parents and the result for multi-municipality parents.

Spinoff versus new venture distance from parent

- A concern with a binary indicator for same municipality is that parents may open new lines of business within their existing plants, making it a potential artifact of reporting that spinoffs locate in their parents' municipalities more frequently than new ventures.
- We therefore assess the robustness of our findings with a continuous distance measure that also captures entry outside a parent's municipality. Figure 1 depicts kernel density estimates for the distance between a parent firm's mode municipality and the new plant's municipality for the same sample of parent firms as in Table 4.
- There is a marked difference in the probability mass for parent-entrant distance. Employee spinoffs locate close to the parent with considerably higher frequency in the lower tail and a parent's own new-venture plants locate further away from the parent with markedly higher frequency in the upper tail. Even when we restrict the sample to only entrants outside the parent's municipality in the right-hand side graph of Figure 1, the shift in the probability mass remains noticeable.

Figure 1: Frequencies of distance between new plant and parent





Using exporter data to identify competition for customers

- A potentially important reason for spinoffs to locate closer to parents than the parents' own new plants is that the spinoffs have not only learned about the parents' customers but are actively competing for them (Rauch and Watson 2004).
- We cannot observe competition for local customers, but by focusing on exporting parents and spinoffs we can see the extent to which the latter share the export destinations of the former.
- Moreover, we can observe whether the spinoffs stick with the export destinations their parents served when the spinoffs were born, even as the parents move on to other destinations, indicating that the spinoffs learned of the customers from their parents rather than that they serve the same destinations because they have the same characteristics.
- The data on exporters and destinations are from the Brazilian customs office SECEX. We have merged them with the RAIS data.

Commonality of export destinations measured at time of spinoff

- Table 5 groups employee spinoffs by the number of export destinations where they sell and shows the share of export destinations in a given year that employee spinoffs have in common with their parent's set of export destinations at the time of spinoff entry [example].
- The spinoff sample spans all private sectors of the economy, including services, so that most spinoffs between 1995 and 2001 are non-exporters.
- Those spinoffs that export are on average more successful than their parents in reaching larger numbers of export destinations (column 6): parents of spinoffs with one export destination reach only .8 export destinations on average, for instance, and parents of spinoffs with four or five export destinations reach only 1.9 destinations on average. In general, the mean number of a parent's export destinations is strictly lower than a spinoff's number of destinations.

Regressions for all other countries

Table 5: COMMON EXPORT DESTINATIONS OF SPINOFFS AND PARENTS

Spinoff export destinations	Share of Spinoff export destinations in common with Parent (at t)				No. of Spinoffs	Mean Parent export destinations	Non-spinoff/ non-parent common dest.
	t	$t+1$	$t+2$	$t+6$		1995-2001	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
0					96,613	.2	
1	.322 (.010)	.306 (.009)	.350 (.011)	.252 (.004)	1,351	.8	.273 (.004)
2–3	.409 (.014)	.403 (.013)	.337 (.011)	.513 (.014)	715	1.1	.240 (.004)
4–5	.455 (.018)	.509 (.019)	.577 (.018)	.208 (.009)	353	1.9	.209 (.005)
7–9	.515 (.016)	.543 (.026)	.342 (.006)	.500 (.040)	157	2.2	.177 (.006)
10+	.666 (.022)	.588 (.018)	.635 (.013)	.665 (.013)	124	3.1	.135 (.004)

Spinoffs share export destinations with parents more than comparable firm-pairs

- Spinoffs have between a fifth and two thirds of their export destinations at any time in common with their parent's destinations at the time of spinoff entry. These figures are computed as the averages of the shares, NOT by dividing total spinoff destinations by total parent destinations. The parent average number of destinations is brought down by exiting parents. Spinoffs with a larger number of destinations tend to have more destinations in common with their parents.
- Upon spinoff entry (column 1 in Table 5), the commonality of export destinations between spinoffs and parents is considerably larger than between non-spinoffs and non-parents in the same four-digit CNAE industry and municipality (column 7): the share of common spinoff/parent destinations is 20 percent higher for single-destination spinoffs, and almost four times higher for exporting spinoffs with ten or more destinations, compared to non-spinoffs and non-parents.
- For any given number of destinations that spinoffs reach, they tend to keep the share of common destinations relatively similar over time. This supports the hypothesis that knowledge about client needs and product appeal abroad is brought along by the spinoff's founders, and not forgotten.
- Other figures (not reported to save space) show that, in contrast, the contemporaneous overlap between parent and spinoff export destinations falls as time elapses since spinoff birth.

A potential role for spinoffs in maintaining and expanding clusters

- In future research, we will investigate the origins of spinoffs' knowledge in more detail by analyzing whether their parents export identical or different products prior to entry (at the Harmonized-System 6- and 8-digit levels), in addition to looking at overlapping export destinations. We will conduct additional robustness comparisons by contrasting non-spinoffs' export destinations and products with those of spinoffs and spinoff parents.
- We want to investigate not only whether and why spinoffs start agglomerations but also their contribution to the snowballing process relative to other new firms and plants once the agglomerations get started.
- We can use the RAIS data to identify industry-municipality clusters, and then compare spinoff activity between clusters and non-clusters. For example, we can investigate whether incumbent firms spawn spinoffs at a higher rate relative to own new plants in clusters.
- Controlling for sector, we can test whether spinoffs enter more frequently or perform better relative to unrelated new firms in cluster versus non-cluster municipalities.