Online Supplement to
Mobilizing Social Capital Through Employee Spinoffs

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E Alternative Quantification of the Aggregate Impact of Social Capital

In contrast with the quantification exercise in the main text, the supplementary exercise here maintains the model's assumptions that all firms have the same size and that all new firms are spinoffs, and uses coefficient estimates of departure hazards at parents in addition to coefficient estimates of retention hazards at spinoffs.

E.1 Theoretical lower bound on the aggregate impact of social capital

We start by restating aggregate output (9) from Section 6:

$$\bar{X} = \bar{M}\bar{x} = \bar{M}\left\{\bar{q}\,\mu_H + (1-\bar{q})[p_0\,\mu_H + (1-p_0)\mu_L]\right\}.$$

Aggregate output $\bar{X}$ increases with the economy-wide fraction of workers with known match quality $\bar{q}$. Social capital therefore contributes to aggregate output by raising the share of known workers at every entrant.

To quantify the importance of social capital for aggregate performance, it is helpful to find the economy-wide fraction of employees with known match quality $\bar{q}$ in the absence of social capital. We begin with the observation that $\alpha = 0$ implies $q_i(0) = 0$ for all firms i. If there is no networking at the parent, then spinoffs have to start with a completely unknown workforce. Subsequently, the fraction of known workers $q_{i,\alpha=0}(t)$ is determined entirely by the age of the firm. From equation (7), we have

$$q_{i,\alpha=0}(t) - q^* = -q^* \exp\{-(\delta + \theta\gamma + \phi p_0)t\}. \qquad \text{(E.1)}$$

When it helps clarity, we abbreviate the rate of convergence with

$$\eta \equiv \delta + \theta\gamma + \phi p_0.$$

In the absence of social capital, the share of known workers at birth is zero so that the initial deviation from steady state is $-q^*$. Subsequently, the share of known workers strictly increases and becomes arbitrarily close to q^* (a vanishing difference between $q_{i,\alpha=0}(t)$ and q^* as firm age increases arbitrarily).

The Poisson process of birth and exit of firms at rate θ yields an exponential steady state distribution of firm age with parameter θ. Concretely, the steady state fraction of firms with age less than t is $G(t) = 1 - \exp\{-\theta t\}$. Changing variable from t to q, we obtain the steady state fraction of firms with a share of known workers less than q, $F_{\alpha=0}(q)$. We use equation (E.1) to solve for t as a function of q. Rearranging and taking natural logarithms of both sides, we have

$$\ln(q^* - q) = \ln(q^*) - \eta t \quad \text{or} \quad t = [\ln(q^*) - \ln(q^* - q)]/\eta.$$

Making the change of variable then yields

$$\begin{aligned} G[t(q)] &= 1 - \exp\{-(\theta/\eta)\ln(q^*)\}\ \exp\{(\theta/\eta)\ln(q^* - q)\} \\ &= 1 - (q^* - q)^{\theta/\eta}/(q^*)^{\theta/\eta}. \end{aligned}$$

The steady state fraction of firms with a share of workers of known type less than q is therefore

$$F_{\alpha=0}(q) = 1 - \left(\frac{q^* - q}{q^*}\right)^{\theta/\eta}. \tag{E.2}$$

Using the density associated with this distribution function, we integrate over q between 0 and q^* and obtain a remarkably simple expression for the economy-wide average q in the absence of social capital:[38]

$$\bar{q}_{\alpha=0} = \frac{1}{1 + \theta/\eta}\, q^* = \frac{\phi p_0}{\delta + \theta(1+\gamma) + \phi p_0}. \tag{E.3}$$

As the rate of growth $\eta = (\delta + \theta\gamma + \phi p_0)$ of each firm's $q_i(t)$ to the long-term known-worker share

[38] The density is $f_{\alpha=0}(q) = (\theta/\eta)[1/(q^* - q)][1 - F_{\alpha=0}(q)]$ so that the indeterminate integral over q becomes $\int q\, \mathrm{d}F_{\alpha=0}(q) = -[\theta q + \eta q^*][1 - F_{\alpha=0}(q)]/[\delta + \theta(1+\gamma) + \phi p_0]$.

increases, or as the rate of firm exit and entry θ becomes small, $\bar{q}_{\alpha=0}$ approaches q^* under (4). The reason is that the value of q for all but the youngest firms will be near q^*, or nearly all firms are old. On the other hand, as the growth rate of $q_i(t)$ to its long-term value becomes small, or as the rate of firm entry and exit becomes large, $\bar{q}_{\alpha=0}$ approaches zero. The reason now is that the value of q for all but the oldest firms will be near $q_i(0) = 0$, or nearly all firms are young.

The smaller is $\bar{q}_{\alpha=0}$ in the absence of social capital, the greater is the scope for social capital to increase aggregate output. From equation (E.3) we therefore see that the potential effect of social capital on aggregate output increases with the rate of spinoff creation θ and decreases with the rate of employer learning ϕ.

We cannot compute $\bar{q}_{\alpha>0}$ in the presence of social capital because we lack a closed-form solution for the distribution of q in the population of firms when there is social capital (see Theorem 1 and its proof in Appendix B). Therefore we cannot compute the difference in the share of known workers with and without social capital $\Delta\bar{q} = \bar{q}_{\alpha>0} - \bar{q}_{\alpha=0}$. However, we can derive a formula that establishes a *lower bound* for the increase in $\bar{q}$ attributable to social capital.

Consider a benchmark parent with a share of workers with known match quality $q_p(t_{i0}) = q^*$ and the case where a spinoff from the parent starts with $q_i(0) < q^*$. From equation (6) we know that the share of workers with known match quality at startup is

$$q_i(0) = [1 - q_p(t_{i0})]\psi \quad \text{for} \quad \psi \equiv (1-\gamma)\alpha p_0 < 1. \tag{E.4}$$

It follows that $(1 - q^*)\psi < q^*$ for the benchmark parent with $q_p(t_{i0}) = q^*$. Our evidence in the next subsection will show that the case $(1 - q^*)\psi < q^*$ is the empirically applicable one. For this case we can state the following lemma.

Lemma 3. *Suppose the condition $(1 - q^*)\psi < q^*$ is satisfied. Then the bounds on the steady-state distribution of q in the presence of social capital are $(1 - q^*)\psi$ and q^*.*

Proof. We will call the steady-state support $[(1-q^*)\psi, q^*]$ the *absorbing interval*. Consider a firm in the absorbing interval, with $q_i(t) \in [(1 - q^*)\psi, q^*]$. By the firm dynamics under equation B.1, a firm in the absorbing interval cannot age to a $q > q^*$. The firm cannot be parent to a spinoff with $q_i(0) < (1 - q^*)\psi$ because no parent has a known match-quality share larger than q^* in the absorbing interval, so that the lowest possible q for a spinoff to start with is $q_i(0) = [1 - q^*]\psi$. Moreover, the largest possible q for a spinoff from a parent in the absorbing interval is $q_i(0) =$

$[1-(1-q^*)\psi]\psi$. It it straightforward to show that $[1-(1-q^*)\psi]\psi < q^*$ by the condition of the lemma.[39] The interval $[(1-q^*)\psi, q^*]$ is therefore an *absorbing interval*: no firm that enters this interval can exit it other than by death, nor can its spinoffs start outside the interval.

Next, consider a firm with $q_i(t) \in (q^*, 1]$. This firm will age to q^* from above or exit. All spinoffs of this firm will start with $q_i(0) \in [0, (1-q^*)\psi)$. Finally, consider a firm with $q_i(t) \in [0, (1-q^*)\psi)$. This firm will evolve into the absorbing interval or exit. The maximal share of workers with known match quality at a spinoff from this firm is ψ because the least informed parent at $q_p(t_{i0}) = 0$ spawns a spinoff with $q_i(0) = (1-0)\psi = \psi$. For a sufficiently small social network α, the best spinoff starts inside the absorbing interval with $\psi \le q^*$, where $\psi \le q^*$ is equivalent to $\alpha \le \phi/[\eta(1-\gamma)]$ by the definitions of ψ and q^* in (E.4) and (4). We have thus shown for sufficiently small social network size $\alpha \le \phi/[\eta(1-\gamma)]$ that, beginning from a point in time when there is a positive mass of firms in each of the intervals $[0, (1-q^*)\psi)$, $[(1-q^*)\psi, q^*]$, and $(q^*, 1]$, there will be a continual shift of the mass of firms into the absorbing interval $[(1-q^*)\psi, q^*]$, or exit, and no shift of the mass of firms out of this interval. Since the mass of firms is constant, it follows that as age t grows arbitrarily large the mass of firms outside the absorbing interval vanishes.

The proof for a large social network size $\alpha > \phi/[\eta(1-\gamma)]$ (so that $\psi > q^*$) is a little more involved. Note that spinoffs from a parent in the interval $q_i(t) \in [0, 1-q^*/\psi)$ start with $q_i(0) \in (q^*, \psi]$ for large network size. To establish that the steady-state support $[(1-q^*)\psi, q^*]$ is also the absorbing interval for large network size, we need to show that spinoffs stop entering into the adjacent interval $q_i(0) \in (q^*, \psi]$ as parent age t grows arbitrarily large. It is useful to state the following sequence of equivalent inequalities, which all follow from the single condition of the lemma $(1-q^*)\psi < q^*$:

$$(1-q^*)\psi < q^* \;\Leftrightarrow\; 1 - \frac{q^*}{\psi} < (1-q^*)\psi < \frac{\psi}{1+\psi} < q^*.$$

Figure E.1 depicts the respective points. Note that parents in the adjacent interval $(q^*, \psi]$ spawn spinoffs that start in the interval $q_i(0) \in [(1-\psi)\psi, (1-q^*)\psi)$. As a consequence, no new firm starts below the lower threshold $(1-\psi)\psi = \psi \sum_{t=0}^{1} (-\psi)^t$, and incumbent firms evolve into the absorbing interval or exit, so that the mass of firms in the left-most interval $[0, (1-\psi)\psi)$ vanishes.

[39] For a spinoff to start with $q_i(0) = q^*$, the parent must have $q_i(t) = 1 - q^*/\psi$. Note that another parent with $q_i(t) = (1-q^*)\psi$ must have a higher share of known workers because $(1-q^*)\psi > 1 - q^*/\psi$ is equivalent to the condition of the lemma $(1-q^*)\psi < q^*$. Therefore a spinoff from a parent with $(1-q^*)\psi$, which starts with $q_i(0) = [1-(1-q^*)\psi]\psi$, must start strictly below q^*. Figure E.1 depicts the three points $\{1-q^*/\psi, (1-q^*)\psi, q^*\}$.

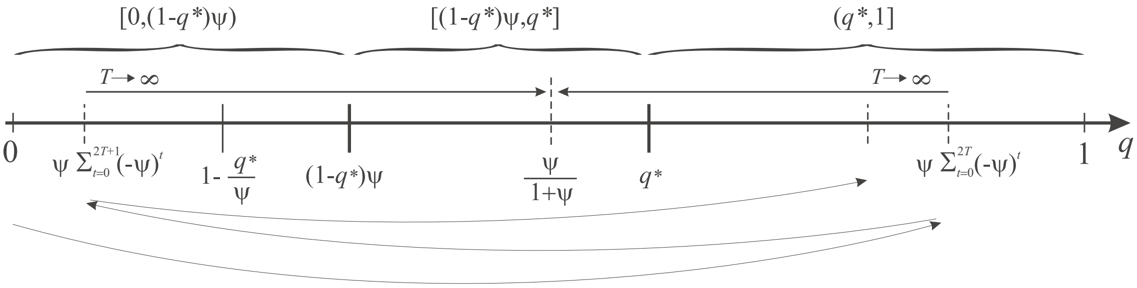

Figure E.1: Illustration of Lemma 3

In turn, parents at $(1-\psi)\psi$ or above spawn spinoffs at or below $\{1-(1-\psi)\psi)\}\psi < \psi$. As a consequence, no new firm starts above the upper threshold $\{1-(1-\psi)\psi\}\psi = \psi\sum_{t=0}^{2}(-\psi)^t$ anymore, and incumbent firms evolve towards the absorbing interval or exit, so that the mass of firms in the upper part of the adjacent interval $[\{1-(1-\psi)\psi)\}\psi, \psi]$ vanishes. Thus the upper threshold above which no startup enters is $\psi\sum_{t=0}^{2T}(-\psi)^t$, which converges to $\psi/(1+\psi)$ from above as $2T = 0, 2, 4, 6, 8, \ldots$ grows arbitrarily large. The lower threshold below which no startup enters is $\psi\sum_{t=0}^{2T+1}(-\psi)^t$, which converges to $\psi/(1+\psi)$ from below as $2T+1 = 1, 3, 5, 7, 9, \ldots$ grows arbitrarily large. (Parents at $\psi/(1+\psi)$ spawn spinoffs with $\psi/(1+\psi)$, while parents with $q_i(t) < \psi/(1+\psi)$ spawn spinoffs with $q_i(0) > \psi/(1+\psi)$ and vice versa.) Since the upper threshold ultimately crosses q^* (because $\psi/(1+\psi) < q^*$), no new firm starts outside the absorbing interval anymore. The mass of firms is constant, so it follows that as T grows arbitrarily large the mass of firms outside the absorbing interval vanishes also for large social network size. □

Lemma 3 states that, in the presence of social capital, all new firms in steady state are founded with a share of workers with known match quality at least as large as $(1-q^*)\psi$. In the absence of social capital, new firms start with a known match-quality share of zero. By the empirically confirmed condition of the lemma, all new firms start with a known match-quality share lower than the known match-quality share in very old firms, which is intuitively plausible. In the following Proposition, we use Lemma 3 to establish a lower bound on the impact of spinoff-mobilized social capital on $\bar{q}$.

Proposition 4. *Suppose the condition $(1-q^*)\psi < q^*$ is satisfied. Then the lower bound on the* *increase in $\bar{q}$ attributable to spinoff-mobilized social capital equals*

$$\Delta\bar{q}_{\min} = \frac{\theta(1-q^*)\psi}{\delta+\theta(1+\gamma)+\phi p_0}. \tag{E.5}$$

Proof. This expression is the difference between $\bar{q}_{\alpha=0}$ from (E.3) and the same integral with the lower limit $(1-q^*)\psi$ instead of zero. Since the limits of integration are the bounds on the true steady-state distribution of q, the latter integral computes what the value of $\bar{q}_{\alpha>0}$ would be if all new firms were born with $q_i(0) = (1-q^*)\psi$. Since $(1-q^*)\psi$ is actually the lower bound for $q_i(0)$ for all firms, and $q_i(0)$ evolves towards q^* at the same rate for all i, the distribution used to compute $\bar{q}_{q_i(0)=(1-q^*)\psi}$ is first-order stochastically dominated by the true distribution of q in the population of firms. It follows that $\bar{q}_{q_i(0)=(1-q^*)\psi} < \bar{q}$. □

The expression $\Delta\bar{q}_{\min}$ increases with network size α since $\psi = (1-\gamma)\alpha p_0$ increases with α. The expression also increases with θ, the rate of entry and exit of new firms, because social capital operates by increasing the share of workers with known match quality at new firms. Finally, the expression decreases with ϕ, the rate of employer learning, since employer learning is a substitute for the employee learning embodied in social capital (note that q^* increases with ϕ).

To quantify the lower bound impact of social capital on $\bar{q}$ in (E.5), we use estimates from the following subsection.

E.2 Calibrating the steady-state proportion of known match quality $\bar{q}$ with and without social capital

The entry rate of spinoffs in our model is θ. In this calibration exercise, we maintain our model's assumption that all new firms are spinoffs. In line with this assumption, we use the rate at which new firms enter as our measure of θ. We compute this rate for each year in our sample and divide the number of new firms entering in that year by the number of existing firms (see Table E.1). For our final estimate of θ, we average these rates over all seven sample years, which yields $\theta = 0.0816$. Though this is an unweighted average, it is virtually identical to the employment-weighted average (0.0814).

The separation hazard for team members of any tenure with a spinoff firm is constant at $\delta + \theta\gamma$. If we set γ to zero as for our main quantification exercise (Section 6 and Appendix D), the separation hazard for team members equals δ. We can estimate the separation hazard for team

Table E.1: ESTIMATES OF THE ENTRY RATE θ

	1995	1996	1997	1998	1999	2000	2001	Average
Number of Firms	564,129	573,953	618,630	645,704	668,765	700,636	754,893	646,673
Incumbent	523,575	533,028	564,294	597,168	617,750	647,972	702,067	597,979
New	40,554	40,925	54,336	48,536	51,015	52,664	52,826	48,694
Entry Rate θ	0.0775	0.0768	0.0963	0.0813	0.0826	0.0813	0.0752	0.0816

Source: RAIS 1995-2001, employee spinoff firms.
Note: Definition of employee spinoff (quarter-workforce criterion) as described in MRT.

members separately for each time period, using our regression results. Our preferred specification is that of Table 3 in the main text. For each period, the sum of the coefficients on the team indicator β and the retention hazard for non-team workers yields an estimate of $1-\delta$, the retention hazard for team members. As our estimate of the retention hazard for non-team workers we use the sample mean of the retention indicator for non-team workers in the regression sample of Table 3. Table E.2 reports β, the retention hazard for non-team workers, and δ for each period $t{+}1,\ldots,t{+}6$. We use the average over $t{+}1,\ldots,t{+}6$ as the estimate of δ with which we calibrate our model.

Calibration of the employer learning rate ϕ, the unconditional probability p_0 that a random match will be high quality, and the social network size α is more involved. We need to know $1-q_{i0}(\tau)$, the proportion of the non-team worker cohort that was hired at the founding time of firm i and that is of *unknown* match quality when the cohort has tenure τ.

We start by restating how we infer the learning rate ϕ, similar to our derivations for the main calibration exercise in Appendix D. From the proof of Proposition 1, we know that the difference between the average retention hazards for team members and non-team workers (the retention hazard gap) equals $\beta=[1-q_{i0}(\tau)][\phi(1{-}p_0)+\theta\alpha p_0]$. This difference is equal to the coefficients on the team indicator β in our retention hazard regressions in Table 3. Note that, in discrete time, the share of workers employed in the previous year τ who are still employed in the current year $\tau{+}1$ depends on the share of workers that were of unknown match quality in the previous year τ. We then have:

$$\beta(\tau{+}1)=[1-q_{i0}(\tau)](\phi{-}\phi p_0+\theta\alpha p_0). \tag{E.6}$$

For $\tau=t+1$, this equation simplifies to

$$\beta(t{+}2)=\phi{-}\phi p_0+\theta\alpha p_0 \tag{E.7}$$

Table E.2: ALTERNATIVE PARAMETER ESTIMATES

	$t+1$	$t+2$	$t+3$	$t+4$	$t+5$	$t+6$	Average
Retention hazard gap β	0.0732	0.1058	0.0601	0.0432	0.0364	0.0207	
Non-team worker retention hazard rate	0.7169	0.6081	0.7171	0.7641	0.7929	0.7817	0.7301
Team-member separation rate δ	0.2099	0.2861	0.2228	0.1928	0.1707	0.1976	0.2133
Unknown match qual. sh. $1-q_{i0}$	1	0.5680	0.4079	0.3437	0.1954		
Employer learning rate ϕ	0.5117	0.3159	0.1743	0.4417			0.3609
Unconditional match qual. p_0	0.8442	0.7477	0.5427	0.8195			0.7385
Social network size α	0.3794	0.4283	0.5902	0.3908			0.4472

Notes: The retention hazard gap β is the coefficient estimate for the team members indicator in the retention regression in Table 3 (first row). The non-team worker retention hazard is the predicted retention rate from all regressors of Table 3, except the team indicator. The separation rate δ is one less the sum of β and the predicted non-team worker retention hazard. The share of unknown match quality in a non-team worker cohort $1-q_{i0}$ is 1 at $t+1$ by convention and follows equation (E.9) with firm age. The employer learning rate ϕ follows from (E.10), the unconditional probability of high match quality p_0 from (E.7), and social network size α from (E.11).

because, as stated for the main calibration exercise in the text, we take the share of non-team workers of known match quality to be zero at the beginning of a spinoff's second (instead of the first) year of operation, so $1-q_{i0}(t+1)=1$.

Equation (E.6) can also be rewritten in terms of growth factors so that the constants ϕ and p_0 drop out:

$$\frac{\beta(\tau+2)}{\beta(\tau+1)} = \frac{1-q_{i0}(\tau+1)}{1-q_{i0}(\tau)}. \tag{E.8}$$

Using $1-q_{i0}(t+1)=1$ (from our convention that the share of non-team workers of known match quality is zero at the beginning of the second year) and combining it with the above equation allows us to infer

$$1-q_{i0}(\tau+1) = [1-q_{i0}(\tau)]\beta(\tau+2)/\beta(\tau+1) \tag{E.9}$$

recursively for $\tau+1=t+2,\ldots,t+5$. Table E.2 shows the results.

Now we rewrite in discrete time the expression for the relative change in the share of known match quality workers from the proof of Lemma 2, and obtain

$$\frac{q_i(\tau+1)-q_i(\tau)}{q_i(\tau)} = \frac{1-q_i(\tau)}{q_i(\tau)}\,\phi p_0 + [1-q_i(\tau)]\,(\phi-\phi p_0+\theta\alpha p_0)$$

after setting γ to zero. Note that this relationship also applies to the non-team worker cohort and its known match-quality share $q_{i0}(\tau)$. Expressing the same relationship in terms of the unknown match-quality share $1 - q_{i0}(\tau)$ yields

$$\frac{[1 - q_{i0}(\tau{+}1)] - [1 - q_{i0}(\tau)]}{1 - q_{i0}(\tau)} = -\phi - \theta\alpha p_0 + [1 - q_{i0}(\tau)](\phi{-}\phi p_0 + \theta\alpha p_0)$$

after some manipulation. Using equations (E.6) and (E.8) in that last expression allows us to solve for ϕ in terms of the retention hazard gap coefficients, the share of non-team workers with unknown match quality $[1 - q_{i0}(\tau)]$ and $\theta\alpha p_0$:

$$\phi = [1 - q_{i0}(\tau)]\beta(t+2) - \frac{[1 - q_{i0}(\tau{+}1)] - [1 - q_{i0}(\tau)]}{[1 - q_{i0}(\tau)]} - \theta\alpha p_0. \tag{E.10}$$

Our last step is to solve for αp_0. To do this, note that Figures 1 and 2 in the main text show a peak at 42-48 months (3.5-4 years) of tenure for the departure hazards of parent workers to spinoffs. It is reasonable to assume that social networks are fully formed by then, so we can use the departure hazard to spinoffs for workers with 42-48 months of tenure to help calibrate αp_0. As our measure of departure hazard, we average the probability estimate at 42-48 months of tenure (shown in Figure 3) for parents below or at the median size with the probability estimate for parents above median size, yielding an overall departure hazard estimate of 0.1101.[40] Setting γ to zero, this departure hazard equals

$$0.1101 = \alpha p_0[1 - q_{i0}(t+4)]. \tag{E.11}$$

Using the unknown match-quality share $[1 - q_{i0}(t+4)]$ among non-team workers only, instead of a firm's overall unknown match quality share $[1 - q_i(t+4)]$, presupposes that all workers at the parent with three-and-a-half to four years of tenure are non-team workers. Also note that the correct formula for the departure hazard is multiplied by θ. That is because the true departure hazard would be computed over all existing firms, not just parents. Since we condition on firms that actually have spinoffs, and the larger parents have spinoffs every year, a conservative approach is to assume that the parent has a spinoff with probability one in every year.

Equation (E.11) produces an estimate of αp_0 equal to 0.3203. Plugging this value into equation (E.10) yields estimates of ϕ for $\tau = t+1, ..., t+4$. Regardless of τ, however, the coefficient

[40] Probability estimates are obtained from parent-year fixed effects regression of the departure hazard to spinoff on the set of tenure bin indicators, conditional on worker characteristics as in Table 3 as well as current occupations, the log monthly wage and a full set of gender interactions. The probability estimate for workers with 42-48 months of tenure is the coefficient on a dummy for this tenure bin plus the predicted value from remaining regressors (including the constant for the omitted tenure bin coefficient of 60 to 72 months). The probability estimate is 0.2034 for firms below median size, and 0.0168 for firms above median size. Median size is 62 employees.

$\beta(t+2)$ is the same in all calculations of ϕ. Once we have ϕ, we can use equation (E.7) to solve for $p_0 = 1 - [\beta(t+2) - \theta\alpha p_0]/\phi$ and equation (E.11) to solve for $\alpha = 0.1101/\{p_0[1 - q_{i0}(t+4)]\}$. Table E.2 reports the results.

The above estimates allow us to compute the lower bound on the aggregate impact of social capital under the maintained assumptions of the model. We first verify that the condition of Lemma 3 holds empirically. By the preceding estimates, $\psi = \alpha p_0 = 0.3203$, and q^* can be computed using the estimates from Table E.2 in (4) to obtain $q^* = 0.5555$. We then have $0.1424 = (1 - q^*)\psi < q^* = 0.5555$.

We can therefore use the estimates in the last column of Table E.2 to compute the lower bound on the relative counterfactual drop in $\bar{q}$ (the economy-wide fraction of employees with known match quality) that would occur if spinoff-mobilized social capital were absent. Similar to the computations in the main text, our measure is the ratio

$$\frac{\Delta\bar{q}_{\min}}{\bar{q}_{\alpha=0}}.$$

Using our estimates from Table E.2 in the formulas (E.5) and (E.3), we obtain $\Delta\bar{q}_{\min} = 0.0207$ and $\bar{q}_{\alpha=0} = 0.4747$, yielding a counterfactual 4.4 percent increase in $\bar{q}$ attributable to spinoff-mobilized social capital.

F Sectoral and Occupational Characteristics of Spinoffs

To further characterize properties of spinoffs, we tabulate frequencies of employee spinoffs by sector and tabulate frequencies of occupations within spinoffs.

Table F.1 shows the distribution of both new and existing firms by sector and knowledge intensity. Following MRT and the definitions in the paper, we restrict the sample of new firms to those with at least five employees at foundation so as to separate employee spinoffs. Compared to existing firms, new firms and especially employee spinoffs occur slightly less frequently in Brazil's non-high-tech sector by the OECD (2001) classification. In contrast, new firms and especially spinoffs are founded more frequently than existing firms in the high-tech manufacturing sector and in knowledge-intensive services. Looking at individual industries, employee spinoffs are founded considerably less frequently than existing firms in commerce and the hospitality industry (hotels and restaurants). In contrast, spinoffs occur particularly frequently compared to the distribution

Table F.1: DISTRIBUTION OF NEW FIRMS BY SECTOR AND KNOWLEDGE INTENSITY

OECD (2001) classification, CNAE 1-digit sector	New Firms[a]			Existing
	Spinoffs	Divest.	Unrelated	Firms[b]
Non-high-tech sectors	81.7%	82.4%	82.8%	84.4%
High-tech manufacturing[c]	2.4%	2.6%	1.5%	1.8%
Knowledge-intensive services[d]	15.3%	14.5%	14.9%	13.3%
Agriculture and fishery	1.6%	1.7%	1.3%	1.6%
Mining, food processing and textiles	8.1%	8.2%	8.1%	5.9%
Manufacture of wood, metal products, chemicals	8.7%	8.2%	7.0%	6.5%
Manufacture of machinery and equipment	2.9%	3.0%	2.3%	2.1%
Utilities and construction	7.2%	6.1%	8.5%	3.3%
Commerce, repair services, hotels and restaurants	40.3%	50.0%	46.2%	50.5%
Transport, telecommunication, finance, insurance	4.9%	4.6%	3.4%	4.1%
Real estate activities and business services	17.8%	10.8%	13.0%	14.5%
Education, health, social and public services	4.2%	3.8%	4.4%	5.3%
Other social or personal services	3.7%	2.9%	4.8%	5.8%
Unknown	.6%	.5%	.8%	.4%

[a]New firms with at least five employees.

[b]Includes all formal sector firms reported in RAIS, including those with *natureza juridica* coded as Public administration, State-owned limited liability company, State-owned closed corporation, Corporation with some state control, Cooperative, Consortium, Business group, or Branch of foreign company.

[c]Includes High-tech and Medium-high-tech manufacturing.

[d]Includes Telecommunication, Finance and insurance, Business services (excluding real estate activities), Education and health services.

Source: RAIS 1995-2001.

Notes: High-tech and knowledge-intensity classification according to OECD (2001) based on *CNAE* 4-digit industry. Entry size is the total of founding employees with employment at any time during the new firm's first year.

Table F.2: OCCUPATION SHARES AT SPINOFF, TEAM VS. NON-TEAM

	Employees in	
	Team	Nonteam
	(1)	(2)
Prof. or Manag'l. Occ.	.139 (.0004)***	.098 (.0003)***
Tech'l. or Superv. Occ.	.174 (.0004)***	.166 (.0004)***
Unskilled Wh. Collar Occ.	.160 (.0004)***	.173 (.0004)***
Skilled Bl. Collar Occ.	.407 (.0005)***	.396 (.0005)***
Unskilled Bl. Collar Occ.	.120 (.0003)***	.168 (.0004)***
Observations	954,326	819,331

Source: RAIS 1995-2001, workers at employee spinoff firms in the founding year.
Notes: Definition of employee spinoff (quarter-workforce criterion) as described in MRT. Occupations at present employer. (Table 2 reports previous occupations at last employer.) Standard errors in parentheses.

of existing firms in real estate and business services, construction, and the manufacture of wood, metal products, and chemicals.

Table F.2 reports the frequencies of occupations within non-team workers and team workers at spinoffs in their founding years. Within white-collar occupations, the relatively more skill intensive professional/managerial and technical/supervisory occupations are more frequent among the team members (who previously worked for the same parent firm), whereas the unskilled white-collar occupations are less frequent than among the non-team workers (who did not work for the parent firm). Similarly within blue-collar occupations, the more skill intensive occupations are also more frequent among the team members than among non-team members. As Table 2 documents, team members also used to work in more skill intensive occupations at their previous employer than did (trackable) non-team members.