The Value of Revolving Doors in Public Procurement

Klenio Barbosa
Oxford University

Stephane Straub
TSE and World Bank

Boston University

November 2016
Revolving Doors and Public Contracts
Drinks, junkets and jobs: How the insurance industry courts state commissioners

By Michael J. Mishak | Center for Public Integrity  October 2

Ex-diretor da OAS licitou obra da empresa na gestão Wagner

14/01/2016 02h00 - Atualizado em 14/01/2016 às 10h25

Credit Raters Join the Rated

Data Show Number of Analysts Taking Jobs at Companies They Helped Rate

By JEANETTE NEUMANN
December 2, 2011
**Negative View:** Revolving Doors lead to inefficiency (e.g., high prices)

“The availability of jobs in industry can have a subtle, but debilitating effect on an officer’s performance during his tour of duty in procurement management assignment. If he takes too strong a hand in controlling contractor activity, he might be damaging his opportunity for a second career following retirement. Positions are offered to those officers who have demonstrated their appreciation for industry’s particular problems and commitments.”

J. Ronald Fox (Former Assistant of the Secretary of Defense, U.S.) 1974 (Quoted in Laffont-Tirole, 1993)

**Positive View:** Open Revolving Door raises efficiency (e.g., low prices)

“If, in fact, the revolving doors are closed, those who have skills and competency that can only be used fully through postagency employment in the private sector may find the public sector less attractive and decide not to enter. This concern is shared by the U.S. Government (1989): “[Restrictive limitations] will necessarily reduce the number of qualified persons who would be otherwise willing to enter into federal employment.”

(Che, 1995)
Two Polar Views: Impact of Revolving Doors on Public Procurement

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Research Question

- **Aim**: to make an empirical investigation of the effects of Revolving Door on Public Procurement
  - how prevalent are workers’ movements between public institutions and their private suppliers?
  - how have those movements affected the procurement outcomes (public expenditure, volume, prices)?

- **Context**: Brazilian Public Procurement
  - Brazilian Data on Health Procurement and Formal Workers’ career path
  - Novel Data allows us to create “Revolving door” indicators by combining:
    - **ComprasNet’s Data Warehouse**: Identity of all public institutions and private suppliers in all purchases of medical supplies, hospital equipments and prescription drugs made by federal govt + state and local governments for pooled purchases. Period 2000-2009.
    - **RAIS**: annual census of all formal sector workers, who worked for public suppliers (firms) or public bodies (administrations) between 1998 and 2009.
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We analyze the existence of career changes in two directions:

- Officials work first for a public body and then join a private supplier.
- Officials work first for a private supplier before joining a public body.

We then show how movements of procurement officials affect procurement outcomes:

- **Aggregate measures:** proba of getting contracts, amount of contracts
- **Contract-level measures:** price, volume and contract value
- **Value for workers:** compensation and career path (later).

We expect effects to differ depending on:

- Whether movts reward skills or connections
- Related incentives: willingness to signal competence vs. softness on the job
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- **Theory:**

- **Empirics:**
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Our Contributions and Preview of the Results

1. First evidence on revolving doors effects based on administrative data in the context of procurement.

2. First paper that can effectively measure the efficiency gains or losses for public bodies / private suppliers / workers created by revolving doors movements: information on prices.

3. First evidence of revolving doors outside US, here for a large emerging country: Brazil.

4. Evidence on +/- revolving doors effects, depending on direction and timing of movements, characteristics of parties (public body, private supplier, type of workers).

5. Evidence of spillover effects of revolving door connections to other transactions, allowing to disentangle incentive effects.
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The Plan of the Talk

1. Databases and Revolving Doors’ Indicators

2. Empirical Analysis:
   - Prevalence of revolving doors in public procurement
   - Effect of revolving doors on procurement outcomes: direct and spillover effects
   - Making sense of results: An information story

3. Next Steps and Future Research

4. Final Remarks and Conclusion
Databases

- **Procurement Data:** Contract value, volume and price paid for (standardized) pharmaceutical and medical supplies by national hospitals, medical centers and other health agencies + kind of procurement contracts used, and identity of officials (occupation and duties). 3,210,567 contracts over a set of 1,647,105 different items-products (highly skewed), between 4,474 firms and 972 administrations over 2000-2009.

  **Source:** ComprasNet’s Data Warehouse

- **Workers’ Data:** Individual characteristics (education, age, gender), work contract information (political appointee, civil servant, temporary, regular worker), worker’s occupation (directors, managers, and others), current and past employers, compensation, for 10,050,913 workers, who worked for public suppliers (firms) or public bodies (administrations) between 1998 and 2009.

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Merging Procedure of the Databases

ComprasNet's Data Warehouse: health procurement 2000-2009
3,210,567 contracts between 4,474 firms and 972 administrations
(identified by ID number - CNPJ first 8 digits)

RAIS-MIGRA: 1998-2009
Using ID number, extract all individuals who worked at some point for these 4,474 firms and 972 administrations: 10,050,913 individuals

For all firm-administration pairs (154,673), identify individuals who worked at some point for both parties.
Create Revolving Doors (RD) dummy variables for these pairs, depending on the type of movement.
## Identifying Revolving Doors: Individual Level

<table>
<thead>
<tr>
<th>Connection</th>
<th>t−n</th>
<th>t</th>
<th>t+n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin-Firm-Past</td>
<td>Administration</td>
<td>Firm</td>
<td></td>
</tr>
<tr>
<td>Admin-Firm-Future</td>
<td>Administration</td>
<td>Firm</td>
<td></td>
</tr>
<tr>
<td>Firm-Admin-Past</td>
<td>Firm</td>
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<td></td>
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<td>Administration</td>
<td></td>
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</tbody>
</table>
Revolving Doors’ Variables: Individual Level

- **Administration-Firm Dummies:**
  
  \[
  \text{Admin-Firm-Past}_{ijkt} = \begin{cases} 
  1 & \text{if individual } i \text{ employed in firm } j \text{ at time } t \\
  & \text{has worked for administration } j \text{ before time } t. \\
  0 & \text{otherwise.}
  \end{cases}
  \]

  \[
  \text{Admin-Firm-Future}_{ijkt} = \begin{cases} 
  1 & \text{if individual } i \text{ employed in administration } k \text{ at time } t \\
  & \text{becomes a worker for firm } j \text{ after time } t. \\
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- **Firm-Administration Dummies:**
  
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- **Remark:** Those dummies are also broken down in political appointee, civil servant, and job occupation (e.g., director/manager), and then aggregated to the admin-firm-contract level.
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Empirical Analysis

- **Part I: Prevalence of revolving doors in public procurement**
  1. How prevalent are workers’ movements between public institutions and their private suppliers?
  2. Which are the worker’s characteristics of their work contracts that make workers to move between administration and suppliers?

- **Part II: Effect of revolving doors on procurement outcomes**
  1. Direct effect, overall and by types of worker
  2. Spillover effects
### Descriptive Statistics

**Revolving Door Data: Individual Level**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Workers</th>
<th>% of the Total Number of Workers*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Admin-Firm (DFDR)</strong></td>
<td>3,639</td>
<td>0.03621%</td>
</tr>
<tr>
<td><strong>Firm-Admin (DBDX)</strong></td>
<td>5,164</td>
<td>0.05138%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>D=1</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin-Firm (DFDR): Appointed</td>
<td>152</td>
<td>0.00151%</td>
</tr>
<tr>
<td>Admin-Firm (DFDR): Civil Servants</td>
<td>3,304</td>
<td>0.03287%</td>
</tr>
<tr>
<td>Admin-Firm (DFDR): Other Workers</td>
<td>183</td>
<td>0.00182%</td>
</tr>
<tr>
<td>Admin-Firm (DFDR): Directors</td>
<td>39</td>
<td>0.00039%</td>
</tr>
<tr>
<td>Admin-Firm (DFDR): Non-Directors</td>
<td>3,600</td>
<td>0.03582%</td>
</tr>
<tr>
<td>Admin-Firm (DFDR): Appointed-Director</td>
<td>35</td>
<td>0.00035%</td>
</tr>
<tr>
<td>Admin-Firm (DFDR): Civil Servants-Director</td>
<td>4</td>
<td>0.00004%</td>
</tr>
<tr>
<td>Admin-Firm (DFDR): Other Workers - Director</td>
<td>0</td>
<td>0.00000%</td>
</tr>
</tbody>
</table>

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<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm-Admin (DBDX): Appointed</td>
<td>295</td>
<td>0.00294%</td>
</tr>
<tr>
<td>Firm-Admin (DBDX): Civil Servants</td>
<td>4,722</td>
<td>0.04698%</td>
</tr>
<tr>
<td>Firm-Admin (DBDX): Other Workers</td>
<td>147</td>
<td>0.00146%</td>
</tr>
<tr>
<td>Firm-Admin (DBDX): Directors</td>
<td>125</td>
<td>0.00124%</td>
</tr>
<tr>
<td>Firm-Admin (DBDX): Non-Directors</td>
<td>5,039</td>
<td>0.05013%</td>
</tr>
<tr>
<td>Firm-Admin (DBDX): Appointed-Director</td>
<td>92</td>
<td>0.00092%</td>
</tr>
<tr>
<td>Firm-Admin (DBDX): Civil Servants-Director</td>
<td>24</td>
<td>0.00024%</td>
</tr>
<tr>
<td>Firm-Admin (DBDX): Other Workers - Director</td>
<td>9</td>
<td>0.00009%</td>
</tr>
</tbody>
</table>

* The total number of workers is 10,050,913.
For each revolving door dummies created (RD), we create:

$$RD_{jkt} = \max_i \{RD_{ijkt}\}$$  

Example: Admin-Firm-Past_{jkt} dummy is equal to 1 if firm $j$ employs at time $t$ at least one individual, who has been previously employed by administration $k$.

All RD dummies were also created for political appointees, civil servants, and job occupations (e.g., directors/managers) at admin-firm-contract level.
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### Descriptive Statistics

**Revolving Door: Firm-Admin-Contract Level**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>D=1</th>
<th>Mean</th>
<th>% Total Amount of Contracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any Revolving Door</td>
<td>1,950,318</td>
<td>39,722</td>
<td>2.04%</td>
<td>5.41%</td>
</tr>
<tr>
<td>Admin-Firm</td>
<td>1,950,318</td>
<td>20,472</td>
<td>1.05%</td>
<td>2.73%</td>
</tr>
<tr>
<td>Admin-Firm-Past</td>
<td>2,299,776</td>
<td>13,710</td>
<td>0.60%</td>
<td>1.86%</td>
</tr>
<tr>
<td>Admin-Firm-Future</td>
<td>1,950,310</td>
<td>12,169</td>
<td>0.62%</td>
<td>1.85%</td>
</tr>
<tr>
<td>Firm-Admin</td>
<td>1,950,318</td>
<td>26,835</td>
<td>1.38%</td>
<td>5.01%</td>
</tr>
<tr>
<td>Firm-Admin-Past</td>
<td>2,299,776</td>
<td>19,050</td>
<td>0.83%</td>
<td>4.19%</td>
</tr>
<tr>
<td>Firm-Admin-Future</td>
<td>1,950,310</td>
<td>16,585</td>
<td>0.85%</td>
<td>4.46%</td>
</tr>
</tbody>
</table>

**Correlation Matrix**

<table>
<thead>
<tr>
<th></th>
<th>Admin-Firm</th>
<th>Firm-Admin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admin-Firm</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Firm-Admin</td>
<td>0.2937</td>
<td>1</td>
</tr>
</tbody>
</table>
How do workers’ movements between public institutions and their private suppliers affect outcomes in Brazilian health public procurement?

1. Empirical Strategy

2. Estimation Results and Findings
Empirical Strategy

- To identify how worker’s movements between administrations and firms affects on price, volume and contract value

\[ y_{ljkt} = \alpha_l + \kappa_t + \tau_{jk} + RD_{jkt}'\beta + W_{ljkt}'\gamma + u_{ljkt}, \]

- The parameter $\beta$’s are identified by comparing the overtime variation of the outcome variables for $jk$ pairs which experienced some “movement” with those of the pairs which did not experience “movement”.

Barbosa and Straub (FGV & TSE)
Empirical Strategy: An Illustrative Example
Administration to Firms

Consider the following pair of firms-admin:

1. **Revolving door group**: Firm \( j \) - Admin \( k \) trade every period, and have a worker \( i \) who has moved from Admin-\( k \) to firm-\( j \).

2. **Counterfactual**: Firm \( l \) - Admin \( k \) trade every period, but they did not have a worker who moved between them: \( \text{Firm-Admin}_{lkt} = 0 \), in a given period.
**Empirical Strategy: An Illustrative Example**

Administration to Firms: Figure(a)

<table>
<thead>
<tr>
<th>Revolving Door Group:</th>
<th>worker i location</th>
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### Revolving Door Group:

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### Counterfactual Group:

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</table>
Threats to the Identification Strategy

- Control for any time invariant determinants that may affect movements, by looking at within-pairs estimates.

- Control for time variant observable characteristics:
  - Admin budgets, firms sales, awarding procedure
  - Product specific time variant characteristics: price

- Time variant unobservable characteristics, by differing along additional dimension of heterogeneity:
  - Revolving doors corresponding to different types of workers ($D_w$ dummies: appointees, civil servants, directors):

\[
y_{ljk} = \alpha_l + \kappa_t + \tau_{jk} + RD'_{jkt} \beta + (RD'_{jkt} * D_w) \delta + W'_{ljk} \gamma + u_{ljk},
\]

- Other aspects: size of admin / firms; Regions
Estimation Strategy and Counterfactual

- Include all dummies together: cross-control for other types of connections in one regression (Model A)

- Include dummies one by one, and remove observations with other types of connections: counterfactual is set of observations without any connections (Model B)

- Remark: Only Model A’s estimations will be reported (results are pretty much the same).
Estimation Strategy and Counterfactual

- Include all dummies together: cross-control for other types of connections in one regression (Model A)

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Remark: Only Model A’s estimations will reported (results are pretty much the same).
**Issue:** We have a large number of firm-administration pairs (154,673), and products (1,647,105), so for convenience we transform original variables into deviations from firm-administration means.

\[
(y_{ljk} - \bar{y}_{jk}) = \phi + \alpha_l + \kappa_t + RD'_{jkt} \beta + (W_{ljk} - \bar{W}_{jk})' \gamma + (u_{ljk} - \bar{u}_{jk}),
\]

**Estimation Remarks:**

- Not a balanced panel.
- We include pair, product, and time fixed effects.
- Outcome variables are in log: prices, contract value, contract quantity, yearly amount.
**Challenge: Estimation**

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\[
( y_{ljk} - \bar{y}_j ) = \phi + \alpha_l + \kappa_t + R D'_{jkt} \beta + ( W_{ljk} - \bar{W}_j )' \gamma + ( u_{ljk} - \bar{u}_j ),
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\]

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Estimation: Outcome variables

1. Firm-Admin pair-level’s yearly outcomes
   - We first collapse the data by firm-administration pairs, and look at the effect of revolving doors within pairs on:
     - Amounts of contracts

2. Firm-Admin contract-level’s outcomes
   - We then use the contract-level data, and look at the within-pairs, within-products effect of revolving doors on:
     - Prices
     - Quantities
     - Contract value
Estimation: Outcome variables

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   - We first collapse the data by firm-administration pairs, and look at the effect of revolving doors within pairs on:
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   - We then use the contract-level data, and look at the within-pairs, within-products effect of revolving doors on:
     - Prices
     - Quantities
     - Contract value
Estimation Results

- Overall effect of revolving doors: aggregating all movements dummies

- Movements from Administration to Firm

- Movements from Firm to Administration
## Estimation Results

### Overall effect of Revolving Doors

<table>
<thead>
<tr>
<th></th>
<th>Yearly Amount</th>
<th>Prices</th>
<th>Quantity</th>
<th>Contract Value</th>
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<td>-0.1800***</td>
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**Fixed Effects**

- Firm-Admin F.E.  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  

- Product F.E.  
  - NO  
  - NO  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  

- Time F.E. (Year)  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  
  - Yes  

- Obs  
  - 156,325  
  - 156,325  
  - 1,950,318  
  - 1,950,318  
  - 1,950,318  
  - 1,950,318  
  - 1,950,318  
  - 1,950,318  

Barbosa and Straub (FGV & TSE)
Summary Results
Overall effect of Revolving Doors

- **Yearly data:** Increase amounts

- **Contract data:**
  - decreases prices
  - increases quantity
  - decreases total value

⇒ If this is the net effect, then revolving door movements are beneficial overall (public sector buys more at lower price).
## Estimation Results

### Administration to Firm Movements

<table>
<thead>
<tr>
<th>Yearly Amount</th>
<th>Prices</th>
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### Fixed Effects

| Firm-Admin F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Product F.E.    | NO  | NO  | Yes | Yes | Yes | Yes | Yes | Yes |
| Time F.E. (Year) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

| Obs             | 156,325 | 156,325 | 1,950,318 | 1,950,318 | 1,950,318 | 1,950,318 | 1,950,318 | 1,950,318 |

Barbosa and Straub (FGV & TSE)  
Revolving Doors
Summary Results
Administration to Firm Movements

- **Yearly data:**
  - Increase amounts / number of contracts (mostly in second period of relationship when worker has moved to the firm (Admin-Firm-Past)).

- **Contract data:**
  - Clear negative effects on prices, quantity and total value
  - They lead to smaller contracts, at lower prices.
  - In relative terms, prices decrease and quantities increase when the worker moves from the administration to the firm.
## Estimation Results

### Administration to Firm Movements: Political Appointees/Civil Servants/Directors

<table>
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<tr>
<th>Yearly Amount</th>
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<td>Admin-Firm-Past x Appointed</td>
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<td>0.070</td>
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### Fixed Effects

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</table>

Barbosa and Straub (FGV & TSE)  
Revolving Doors
### Summary Results

**Administration to Firm Movements: Appointees/Civil Servants/Directors**

- **Yearly data:** The increase in amounts is driven by civil servant’s movements.

- **Contract data:**
  - Prices: Civil servants’ / directors’ movts. reduce prices, Appointees’ movts. raise prices.
  - Quantity: Civil servants’ movts. lead to smaller contracts, Appointees’ movts. lead to weakly bigger ones.
  - Total value: Civil servants’ / directors’ movts. reduce value, Appointees’ movts. raise value.

⇒ **Civil servants’ (directors) revolving door movements seem to be beneficial overall (buy more at lower price), and Appointee’s movements seem to be detrimental (bigger contracts at higher price).**
Possible interpretation:

- While in public sector, worker attempts to display competence by doing his job: he brings prices down and favors competition among suppliers, also reducing quantities going to each of them.

- Having secured a post-administration job thanks to favorable signal, worker now uses his skills to allow the firms that hired him to win more contracts. This goes through tougher competition, hence lower prices.

- Signaling occurs in early stage of relationship and is directed to all firms. So effect is also bad for specific firm in the pair.

- Once worker has moved to this firm, it becomes more competitive.

⇒ **Overall**: Support for benign view of efficiency-enhancing revolving door.

- Effects are driven by civil servants (directors) movements (detrimental for appointed ones)
Possible interpretation:

- while in public sector, worker attempts to display competence by doing his job: he brings prices down and favors competition among suppliers, also reducing quantities going to each of them.
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- Effects are driven by civil servants (directors) movements (detrimental for appointed ones)
**Possible interpretation:**

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### Estimation Results

#### Firm and Administration Movements

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**Firm-Admin**

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**Firm-Admin-Past**

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**Firm-Admin-Future**

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**Fixed Effects**

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<th>Yes</th>
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<tr>
<td>Firm-Admin F.E.</td>
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<td>Product F.E.</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>Time F.E. (Year)</td>
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<td>Yes</td>
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**Obs**

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</thead>
</table>

Barbosa and Straub (FGV & TSE)
Summary Results
Firm and Administration Movements

**Yearly Amount:**
- Positive impact on amounts of contract per year in second period of relationship when worker has moved to the administration (Firm-Admin-Past).

**Contract level:**
- Weakly positive effect on prices (it depends on controls).
- Positive effect on quantity overalls
- Positive effect on value overall
## Estimation Results

### Firm and Administration Movements: Political Appointee/Civil Servants/Directors

<table>
<thead>
<tr>
<th>Yearly Amount</th>
<th>Prices</th>
<th>Quantity</th>
<th>Contract Value</th>
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<tbody>
<tr>
<td></td>
<td>No Control</td>
<td>Controls</td>
<td>No Control</td>
</tr>
<tr>
<td>Firm-Admin-Past x Appointed</td>
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<td>-0.261</td>
<td>-0.4958***</td>
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<td>(p-value)</td>
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<td>0.384</td>
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<tr>
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<td>0.3433***</td>
<td>0.1256***</td>
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<td>(p-value)</td>
<td>0.000</td>
<td>0.001</td>
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<tr>
<td>Firm-Admin-Past x Director</td>
<td>0.246</td>
<td>0.286</td>
<td>0.239</td>
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<td>(p-value)</td>
<td>0.636</td>
<td>0.581</td>
<td>0.122</td>
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<td>Firm-Admin-Future x Appointed</td>
<td>0.447</td>
<td>0.382</td>
<td>-0.9040***</td>
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<td>(p-value)</td>
<td>0.326</td>
<td>0.401</td>
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<td>Firm-Admin-Future x Civil Servant</td>
<td>0.010</td>
<td>0.017</td>
<td>0.0892***</td>
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<td>(p-value)</td>
<td>0.919</td>
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<td>0.105</td>
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### Fixed Effects

| Firm-Admin F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Product F.E.    | NO  | NO  | Yes | Yes | Yes | Yes | Yes | Yes |
| Time F.E. (Year) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs             | 156,325 | 156,325 | 1,950,318 | 1,950,318 | 1,950,318 | 1,950,318 | 1,950,318 | 1,950,318 |

Barbosa and Straub (FGV & TSE)

Revolving Doors
Summary Results
Firm and Administration Movements: Political Appointee/Civil Servants/Directors

- **Yearly data:** The increase in amounts is driven by appointees and civil servant’s movements (resp. first and second period of the relationship)

- **Contract data:**
  - Prices: Appointees’ movts. reduce prices, Civil servants’ and directors’ movts. raise prices.
  - Quantity: Civil servants’ movts. weakly lead to bigger contracts. Appointees’ effect ambiguous.
  - Total value: Appointees’ movts. reduce value, Civil servants’ and directors’ movts. raise value.

⇒ **Appointees’** revolving door movements seem to be **beneficial** overall (buy more at lower price), and **Civil Servants’** movements seem to be **detrimental** (bigger contracts at higher price).
Summary Results: Interpretation
Firm and Administration Movements

- Connected firms appear to have larger contracts, at higher prices. In this case, the worker is already in one specific firm from the start: the anticompetitive effect kicks in immediately.

  Detrimental effects of Revolving Doors!

- The negative effects are stronger for civil servants (and to some extent directors)

- **Remark:** Evidence that appointees’ movements are not detrimental
Next, we look at "spillovers", for evidence of effects related to the incentives of moving worker:

- How do workers in a connected pair affect other outside firms / admin dealing with the place where they currently work?

- This should provide evidence of whether they are tough and make extra effort on the job or alternatively whether they shirk / collude and favor counterpart.
Before he moves from Admin 3, guys lower prices from other firms he is dealing with.

Consistent with procurement official being efficient.
After guys moves to Firm 3, Admin 3 buys at higher prices from other firms
Consistent with procurement official being efficient.
Before he moves from Firm 3, this firm sells lower quantities at lower prices to other admin.

Consistent with collusion between Firm 3 and Admin 3.
After he moves to Admin 3, Admin 3 buys at higher prices from other firms
Consistent with guys taking bribes
Other dimensions of heterogeneity

- Admin to firm (beneficial) effect stronger for small administrations, while firm to admin (detrimental) one stronger for big administrations.
- Negative finding (price increase) in firm to admin case mostly found in the Northeast region.

To be done:

- Goods versus Services: very standardized (drugs, other standard goods)
- Exogenous variation in the movements: political cycles and number of political appointed workers.
We study the link between workers’ movements between public institutions and their private suppliers, career changes in two directions, and how this affect outcomes in Brazilian health public procurement.

We find both beneficial and detrimental effects of revolving doors.

Direct and spillover effects consistent with interpretation based on collusion in one case, and reward for high-skill workers in the other one.

Information / incentive story:
- in admin-to-firm mvts, individuals trying to establish a reputation to gain connections (future counterpart not known)
- in firm-to-admin mvts, individuals using their already established connections (counterpart known).

Complex incentive issues are challenging for policy recommendations.