Quarterly Journal of Economics

Abbreviated Style Guide for Authors

1. Title: The title should be typed in capital letters. If there is an acknowledgment note, attach it to the title, not the author's name.
2. Abstract: Provide JEL codes in the abstract upon submission of article to the journal. JEL codes should be separated by a comma and end with a period.
3. Abbreviations should be defined upon first use. However, these broadly accepted standard acronyms and abbreviations do not need to be spelled out at all: OLS, GDP, GNP, std. err., and std. dev.
4. References:
   a. Full references should be provided in accordance with style of The Quarterly Journal of Economics.
      i. Only first author appears as Surname, First name: Smith, John
      ii. Second and successive authors appear as First name Surname: John Smith
      iii. Do not use “et al.” in the reference list. The last author in the list will be preceded by “and”: Smith, John, Sarah Jones, Bob Davis, and Jane Brown.
      iv. Do use “et al.” for references with 4 or more authors in the in-text citations: (Smith et al. 2006).
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   b. References in the text and notes should use parentheses and dates, i.e., Keynes (1936) or Samuelson (1947, p. 37) or (Hansen, 1938), depending on usage.
   c. Reference Style is as follows:
      i. Information needed for journals: Author's last name, author's first name, "Title of Article," Name of Journal, volume number (year), page numbers, NOT preceded by pp. (Indent second et. seq. lines.)
      ii. Information needed for books: Author's last name, author's first name, Title of Book, editor(s') name(s) if appropriate, eds. (city of publication, state, in 2-letter Post Office form: publisher, year). (Indent second et. seq. lines.)
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6. Use p (lowercase) for probability; no leading zeroes before decimal.
7. Figures: Authors should provide color-neutral descriptions of color figures in anticipation of black-and-white printing. This journal does not print color; it is color online only. Figure sizes should be legible when run in actual size of a QJE page: 4.16 inches (10.58 centimeters) wide by 7 inches (17.78 centimeters) high.
8. Tables: Heading (i.e., Table I) should be centered and should use roman numerals. The title of the table should be centered in initial capitals and lowercase letters. Table columns are referred to with Arabic numerals surrounded by parentheses and are not capitalized. Example: In column (4) we impute the missing values.
9. Equations: Center the equation on the page. Equation numbers should be flush at the left margin surrounded by parentheses, i.e., (1). Equations will be considered parts of sentences; punctuate accordingly. Equations in appendix should be numbered sequentially from those in the text (not equation A.1, but equation 46). Yet, figures and tables in the appendix are numbered sequentially starting with A.1, etc. Number using Arabic numerals. Mathematics in type. Strive for simplicity. All letter symbols will appear as italics in print (except cov, max, 1n, etc.), unless vectors are explicitly referred to and then the symbols will appear in boldface.

10. Fractions: Should be set as case fractions and not linear. (e.g., \( \frac{1}{x} \) is correct; \( 1/\text{x} \) is incorrect.)

11. Proofs: Proofs, etc., should be typed as: Proof of Theorem 1_. This heading is paragraph indented and italicized, and the rest of the paragraph is typed with the same margins as the rest of the paper. If QED is used, place at the right margin following the proof, and is indicated with a “■”

12. Headings: Style for the different heading levels to be followed:
   a. Heading level 1: Roman numeral with period and words all uppercase.
      i. Example: I. LEVEL ONE HEADING
   b. Heading level 2: Italic Roman numeral (same Roman numeral as the level 1 heading) followed by an uppercase letter (no space in between Roman numeral and the uppercase letter) and no period at the end of the heading. If text runs on to a second line, it should be indented.
      i. Example: I.A. Level Two Heading
   c. Heading level 3: Arabic numerals, paragraph indented, and a period at the end. Text starts on the same line, directly after the heading.
      i. Example: 1. Level Three Heading. We have two data...
   d. Heading level 4: Lowercase alphabet, paragraph indented, italic, and has a period at the end. Text follows on the same line.
      i. Example: i. Level Four Heading. We have two data...
   e. Other: Centered, no numbers, all caps.
      i. Example: SUPPLEMENTARY MATERIAL, APPENDIX, REFERENCES

EXAMPLES OF QJE STYLE ARE AVAILABLE IN FOLLOWING PAGES:
Movers and Shakers

Robert Akerlof and Richard Holden

Most projects, in most walks of life, require the participation of multiple parties. While it is difficult to unite individuals in a common endeavor, some people, who we call “movers and shakers,” seem able to do it. The article specifically examines moving and shaking of an investment project, whose return depends on its quality and the total capital invested in it. We analyze a model with two types of agents: managers and investors. Managers and investors initially form social connections. Managers then bid to buy control of the project, and the winning bidder puts effort into making investors aware of it. Finally, a subset of aware investors are given the chance to invest, and they decide whether to do so after receiving private signals of the project’s quality. We first show that connections are valuable since they make it easier for a manager to “move and shake” the project (i.e., obtain capital from investors). When we endogenize the network, we find that while managers are identical ex ante, a single manager emerges as most connected; he consequently earns a rent. In extensions, we move away from the assumption of ex ante identical managers to highlight forces that lead one manager or another to become a mover and shaker. Our theory sheds light on a range of topics, including entrepreneurship, venture capital, and anchor investments. JEL Codes: D31, D85, G30, I.28

I. Introduction

Most projects—in business, politics, sports, and academia—require the participation of multiple parties. In business, they usually involve, among other things, raising capital from disparate sources. Many projects fail—or do not even get off the ground—because of the difficulty of bringing together the relevant parties. Although it is not easy to unite individuals in a common endeavor, some people—often called “movers and shakers”—seem able to do it. This article develops an equilibrium theory regarding who these movers and shakers will be and why they receive outsized compensation for their endeavors.

Skill, of course, helps in obtaining participation since people are more inclined to participate in skillfully run projects. Another

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III.B. Reduced-Form Evidence

Input Tariffs and Domestic Varieties. In this section, we relate input tariffs to the number of new products introduced in the market by domestic Indian firms. We then examine the relationship between input tariff reductions and other variables that are relevant in endogenous growth models, such as firm sales, total factor productivity, and R&D.

To explore the impact of input tariffs on the extensive product margin, we estimate the following equation:

\[
\ln(n^q_{it}) = \alpha_i + \alpha_t + \beta \tau^{\text{imp}}_{qt} + \varepsilon_{it},
\]

where \(n^q_{it}\) is the number of products manufactured by firm \(i\) operating in industry \(q\) at time \(t\), and \(\tau^{\text{imp}}_{qt}\) is the input tariff that corresponds to the main industry in which firm \(i\) operates. This regression also includes firm fixed effects to control for time-invariant firm characteristics, and year fixed effects to capture unobserved aggregate shocks. The coefficient of interest is \(\beta\), which captures the semielasticity of firm scope with respect to tariffs on intermediate inputs. Standard errors are clustered at the industry level.

In GKPT (2010a), we found virtually no evidence that firms dropped product lines during this period; 53% of firms report product additions during the 1990s, and very few firms dropped any product lines. Thus, the net changes in firm scope during this period can effectively be interpreted as gross product additions.

Table IVa presents the main results in column (1). The coefficient on the input tariff is negative and statistically significant: declines in input tariffs are associated with an increase in the scope of production by domestic firms. The point estimate implies that a 10–percentage point fall in tariffs results in a 3.2% expansion of a firm’s product scope. During the period of our analysis, input tariffs declined on average by 24 percentage points, implying that within-firm product scope expanded 7.7%. Firms increased their product scope on average by 25% between 1989 and 1997, so our estimates imply that declines in input tariffs accounted for 31% of the observed expansion in firms’ product scope.

In GKPT (2010a), we find that the (net) product extensive margin accounted for 25% of India’s manufacturing output growth during our sample. If India’s trade liberalization impacted growth only through the increase in product scope, our estimates imply that the lower input tariffs contributed 7.8% \((0.25 \times 0.31)\)
4th level headings are formatted the same as 3rd level headings except they are set in sentence case.

If referencing an article with more than four authors, list the first author, “et al.” then the year of publication.

If footnotes are continued from a previous page then a single line is placed above the continued footnotes.

**Feature 5: comparison to outside rate.** Randomly chosen mailers included a comparison of the offered interest rate to a higher outside market rate. When included, the comparison appeared in boldface in the field below “Loans available in other amounts. . . .” Half of the comparisons used a “gain frame”; for example, “If you borrow from us, you will pay R100 rand less each month on a four month loan.” Half of the comparisons used a “loss frame”; for example, “If you borrow elsewhere, you will pay R100 rand more each month on a four month loan.”

Several papers have found that such frames can influence choice by manipulating “reference points” that enter decision rules or preferences. There is evidence that the presence of a dominated alternative can induce choice of the dominating option (Huber, Payne, and Puto 1982; Doyle et al. 1999). This suggests that mailers with our dominated comparison rate should produce (weakly) higher takeup rates than mailers without mention of a competitor’s rate. Any dominance effect probably operates by inducing greater deliberation (Priester et al. 2004), and presenting a reason for choosing the dominating option (Shafir, Simonson, and Tversky 1993), particularly because the comparison is presented in text. Invoking potential losses may be a particularly powerful stimulus for demand if it triggers loss aversion (Kahneman and Tversky 1979; Tversky and Kahneman 1991), and indeed Ganzach and Karsahl (1995) find that a loss-framed message induced significantly higher credit card usage than a gain-framed message in a direct marketing field experiment in Israel. This suggests that the loss-framed comparison should produce (weakly) higher takeup rates than either the gain-frame or the no-comparison conditions.

**Feature 6: cell phone raffle.** Many firms, including the Lender and many of its competitors, use promotional giveaways as part
TABLE II

FIVE-YEAR AVERAGE EARNINGS INEQUALITY AND SHORT-TERM MOBILITY

<table>
<thead>
<tr>
<th>Year</th>
<th>5-year average earnings</th>
<th>Gini (average)</th>
<th>Rank correlation after 1 year</th>
<th>Permanent (5-year average) log-earnings variance</th>
<th>Transitory log-earnings variance</th>
<th>#Workers ('000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
</tr>
<tr>
<td>1939</td>
<td>0.357</td>
<td>0.380</td>
<td>0.859</td>
<td>0.416</td>
<td>0.581</td>
<td>0.865</td>
</tr>
<tr>
<td>1960</td>
<td>0.397</td>
<td>0.324</td>
<td>0.885</td>
<td>0.371</td>
<td>0.447</td>
<td>0.564</td>
</tr>
<tr>
<td>1980</td>
<td>0.347</td>
<td>0.264</td>
<td>0.885</td>
<td>0.426</td>
<td>0.519</td>
<td>0.661</td>
</tr>
<tr>
<td>2002</td>
<td>0.421</td>
<td>0.435</td>
<td>0.897</td>
<td>0.514</td>
<td>0.594</td>
<td>0.588</td>
</tr>
</tbody>
</table>

A. All

B. Men

<table>
<thead>
<tr>
<th>Year</th>
<th>5-year average earnings</th>
<th>Gini (average)</th>
<th>Rank correlation after 1 year</th>
<th>Permanent (5-year average) log-earnings variance</th>
<th>Transitory log-earnings variance</th>
<th>#Workers ('000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
</tr>
<tr>
<td>1939</td>
<td>0.340</td>
<td>0.365</td>
<td>0.853</td>
<td>0.373</td>
<td>0.494</td>
<td>0.091</td>
</tr>
<tr>
<td>1960</td>
<td>0.272</td>
<td>0.291</td>
<td>0.855</td>
<td>0.288</td>
<td>0.362</td>
<td>0.052</td>
</tr>
<tr>
<td>1980</td>
<td>0.310</td>
<td>0.329</td>
<td>0.889</td>
<td>0.337</td>
<td>0.425</td>
<td>0.062</td>
</tr>
<tr>
<td>2002</td>
<td>0.426</td>
<td>0.440</td>
<td>0.898</td>
<td>0.569</td>
<td>0.591</td>
<td>0.061</td>
</tr>
</tbody>
</table>

Notes: The table displays various measures of 5-year average earnings inequality and short-term mobility measures centered around select years, 1939, 1960, 1980, and 2002 for all workers (Panel A) and men (Panel B). In all columns except (4), the sample is in year t and it is defined as all employees with non-zero wages in the corresponding year. Earnings are computed using log-earnings. Column (2) reports the Gini coefficient based on average earnings from year t to t+2. Column (5) reports the average across years t−2,…,t+2 of the Gini coefficients of annual earnings. Column (6) reports the rank correlation between annual earnings in year t and annual earnings in year t+1 in the sample of workers in the core sample (see Table I footnote for the definition) in both years t and t+1. Column (7) reports the variance of log-earnings from year t to t+2. Column (7) reports the variance of the difference between log earnings in year t and the average of log earnings from year t−2 to t+2. Column (8) reports the number of workers in thousands.
Table I summarizes the key short-term mobility trends for all (Panel A) and men (Panel B) with various mobility measures for selected years (1939, 1960, 1980, and 2002). In sum, the movements in short-term mobility series appear to be much smaller than changes in inequality over time. As a result, changes in short-term mobility have had no significant impact on inequality trends in the United States. Those findings are consistent with previous studies for recent decades based on PSID data (see, e.g., Gottschalk [1997] for a summary) as well as the most recent SSA

II. CALIFORNIA SCHOOL FINANCE

California was known in the postwar era for its high-quality, high-spending school system. By the 1980s and 1990s, however, California schools were widely considered underfunded. In 1995, per-pupil current spending was 13% below the national average, ranking the state 35th in the country despite its relatively high costs. Capital spending was particularly stingy, 30% below the national average.11 California schools became notorious for their overcrowding, poor physical conditions, and heavy reliance on temporary, modular classrooms (see, e.g., New York Times [1989]).

Much of the decline in school funding has been attributed to the state's shift to a centralized system of finance under the 1971 Serrano v. Priest decision and to the passage of Proposition 13 in 1978. In the regime that resulted, the property tax rate was fixed at 1% and the state distributed additional revenues using a highly egalitarian formula.12 Districts were afforded no flexibility and there was little provision for capital investments. In 1984, voters approved Proposition 46, which allowed school districts to issue general obligation bonds to finance capital projects.13 Bonds are proposed by the school district board and must be approved by


13. Noneducational public entities (e.g., cities, sanitation districts) can also issue general obligation bonds using a similar procedure. An alternative source of funds is a parcel tax, which also requires voter approval but imposes fewer restrictions (Orrick, Herrington & Sutcliffe, LLP, 2004). These are comparatively rare. Although we focus on general obligation bonds in the analysis below, we present some specifications that incorporate parcel taxes as well.
Two part equations are indicated with a small case letter next to the corresponding numeral.

To this end, using analysts as a unit of observation, we estimate the following linear probability models:

\begin{align}
(4a) \quad \text{Promotion}_{it+1} & = \alpha + \beta_1 \text{Bias}_{it} + \beta_2 \text{Coverage}_{it} + \beta_3 \text{Bias}_{it} \\
& \times \text{Coverage}_{it} + \beta_4 \text{Controls}_{it} + \varepsilon_{it+1}.
\end{align}

\begin{align}
(4b) \quad \text{Demotion}_{it+1} & = \alpha + \beta_1 \text{Bias}_{it} + \beta_2 \text{Coverage}_{it} + \beta_3 \text{Bias}_{it} \\
& \times \text{Coverage}_{it} + \beta_4 \text{Controls}_{it} + \varepsilon_{it+1}.
\end{align}

Our coefficient of interest is $\beta_3$. Following Hong and Kubik (2003), $\text{Promotion}_{it+1}$ equals one if an analyst $i$ moves to a brokerage house with more analysts, and zero otherwise; $\text{Demotion}_{it+1}$ equals one if an analyst $i$ moves to a brokerage house with fewer analysts, and zero otherwise; Controls is a vector of controls including forecast accuracy, natural logarithm of an analyst’s experience, the size of the brokerage house. We also include year fixed effects, broker fixed effects, and analyst fixed effects. We estimate our regression model using a pooled (panel) regression and calculating standard errors by clustering at the analyst level.

Revisited equations can be indicated with an apostrophe after the corresponding numeral; more apostrophe's can be added if revisited more that once.

\begin{align}
(8') \quad \max_{x_i,s,d} \Pr \left[ x_i \mid s \cap d \right],
\end{align}

where $x_i \equiv \{x \in X : x_i = x_i\}$, where $x_i \in H_i$, $\forall i \in I$. Thus, conditional on fixing $x_i$, scenario $s$ is the exact equivalent of the scenario in Definition 1. A solution to problem (8') always exists due to the finiteness of the problem.

This procedure generates a representation $s_i^j \cap x_i^j \cap \eta$ for hypothesis $h_r$, which is the general counterpart of the representation $s_i^j \cap h_r \cap \eta$ used in the class of problems in (7). Accordingly, (8') yields a ranking of all possible representations $s_i^j \cap x_i^j$ of $h_r$ that in turn ranks all elements in $h_r \cap \eta$ in terms of their order of recall. Formula (9) can now be directly applied to calculate the local thinker’s probabilistic assessment. In the case of exhaustive hypotheses in the general class (7′), that assessment can be written as

\begin{align}
(9'') \quad \Pr^L(h_r \mid d) = \frac{\left[ \sum_{k=1}^{b} \Pr \left( s_i^k \cap x_i^k \mid h_r \cap d \right) \right] \Pr(h_r \cap d)}{\sum_{r=1}^{N} \left[ \sum_{k=1}^{b} \Pr \left( s_i^k \cap x_i^k \mid h_r \cap d \right) \right] \Pr(h_r \cap d)}.
\end{align}

Expression (9'') is an immediate generalization of (9'). Except for Proposition 1, which is proved only for problems in (7),
Sample figure:

**Figure VIII**

Long-Term Mobility: Rank Correlation in Eleven-Year Earnings Spans

The figure displays in year $t$ the rank correlation between eleven-year average earnings centered around year $t$ and eleven-year average earnings centered around year $t + X$, where $X = \text{ten, fifteen, twenty}$. The sample is defined as all individuals aged 25 to 60 in year $t$ and $t + X$, with average eleven-year earnings around years $t$ and $t + X$ above the minimum threshold. Because of small sample size, series including earnings before 1937 are smoothed using a weighted three-year moving average with weight of 0.5 for cohort $t$ and weights of 0.25 for $t - 1$ and $t + 1$. The same series are reported in lighter gray for the sample restricted to men only (in which case, rank is estimated within the sample of men only).

Proof: This proof is based on Hendel and Lizzeri (2003). When $K > (\theta_H - \theta_L)/2$, then $c^*_H = c^*_L = E[\theta] + K = (\theta_L + \theta_H)/2 + K$ and there is no exit. This is equivalent to the case described above in which the participation constraints do not bind. I need to prove that when $K < (\theta_H - \theta_L)/2$, the noncontingent contract is allocationally equivalent to the optimal contingent contract that satisfies $c^*_H = \theta_H$ and $c^*_L = \theta_L + 2K$. Consider the noncontingent contract $c^*_H = c^*_L = \theta_L + 2K$. Under this contract, high-productivity individuals will exit and get their outside option $\theta_H$, since $\theta_H > \theta_L + 2K$. Low-productivity individuals will stay and get $c_L = \theta_L + 2K$ since $c_L = \theta_L + 2K > \theta_L$, which is their outside option. A noncontingent contract with exit of high-productivity individuals is thus allocationally equivalent to the optimal contract described in Proposition 1. Notice that the BC (which is $c_L \leq \theta_L + 2K$ under exit) is satisfied, the PCs are satisfied, and the objective function is maximized.

**Definition 1.** Denote by $F_r$ the set of dimensions in $X$ left free by $h_r \cap d$. If $F_r$ is nonempty, a scenario $s$ for $h_r \cap d$ is any event $s \equiv \{x \in X \mid x \neq x_t\}$ for all $t \in F_r$. If $F_r$ is empty, the scenario for $h_r \cap d$ is $s \equiv X$. $S_r$ is the set of possible scenarios for $h_r \cap d$.

A scenario fills in the details missing from the hypothesis and data, identifying a single element in $h_r \cap d$, which we denote by $s \cap h_r \cap d \in X$. How do scenarios come to mind? We assume that hypotheses belonging to class (7) are represented as follows:

A2 (Recall by Representativeness). Fix $d$ and $h_r$. Then the representativeness of scenario $s_r \in S_r$ for $h_r$ given $d$ is defined as

$$
\Pr(h_r \g s_r \cap d) = \frac{\Pr(h_r \cap s_r \cap d)}{\Pr(h_r \cap s_r \cap d) + \Pr(h_r \cap s_r \cap \neg d)},
$$

where $\neg h_r$ is the complement $X \setminus h_r$ in $X$ of hypothesis $h_r$.

The agent represents $h_r$ with the $b$ most “representative” scenarios $s^k_r \in S_r, k = 1, \ldots, b$, where index $k$ is decreasing in representativeness and where we set $s^k_r = \emptyset$ for $k > M_r$. 

**Proof:**

This proof is based on Hendel and Lizzeri (2003). When $K > (\theta_H - \theta_L)/2$, then $c^*_H = c^*_L = E[\theta] + K = (\theta_L + \theta_H)/2 + K$ and there is no exit. This is equivalent to the case described above in which the participation constraints do not bind. I need to prove that when $K < (\theta_H - \theta_L)/2$, the noncontingent contract is allocationally equivalent to the optimal contingent contract that satisfies $c^*_H = \theta_H$ and $c^*_L = \theta_L + 2K$. Consider the noncontingent contract $c^*_H = c^*_L = \theta_L + 2K$. Under this contract, high-productivity individuals will exit and get their outside option $\theta_H$, since $\theta_H > \theta_L + 2K$. Low-productivity individuals will stay and get $c_L = \theta_L + 2K$ since $c_L = \theta_L + 2K > \theta_L$, which is their outside option. A noncontingent contract with exit of high-productivity individuals is thus allocationally equivalent to the optimal contract described in Proposition 1. Notice that the BC (which is $c_L \leq \theta_L + 2K$ under exit) is satisfied, the PCs are satisfied, and the objective function is maximized.
For the New York areas, the average standard deviation of new prices is 0.087 (the fifth statistic).

**APPENDIX II: NUMERICAL SOLUTION METHOD**

To solve the firm's problem, we apply the projection method with Chebyshev collocation discussed by Judd (1998). Specifically, we approximate each of the two value functions $V_A(p, z; \alpha)$, $V_N(p, z; \alpha)$ by a sum of Chebyshev polynomials:

\[
V_A(p, z; \alpha) = \sum_{i=0}^{M_P} \sum_{j=0}^{M_Z} a_{ij}^A T_i \left( \frac{2P - P_m}{P_M - P_m} - 1 \right) T_j \left( \frac{2z - z_m}{z_M - z_m} - 1 \right),
\]

\[
V_N(p, z; \alpha) = \sum_{i=0}^{M_P} \sum_{j=0}^{M_Z} a_{ij}^N T_i \left( \frac{2P - P_m}{P_M - P_m} - 1 \right) T_j \left( \frac{2z - z_m}{z_M - z_m} - 1 \right),
\]

where $T_i(\cdot)$ is the $i$th-order Chebyshev polynomial, $a_{ij}^A$, $a_{ij}^N$ for $i = 0, \ldots, M_P$, $j = 0, \ldots, M_Z$ is a set of coefficients. The $M_P \times M_Z$-element matrices, $a^A$ and $a^N$, denote these coefficients. We choose values for $a^A$ and $a^N$ to get the differences between the right- and left-hand sides of equations (10) and (11) to be close to zero at predetermined grid points. Let $p_j$, for $j = 1, \ldots, N_P$ denote the values of $p$ satisfying $T_{N_P}(p) = 0$, where $N_P \geq M_P$. Similarly, choose $z_j$, with $j = 1, \ldots, N_Z$. Let $A_p$ denote the $M_p \times N_p$ matrix with components $A_{p,ij} = T_{i-1}(p_j)$, for $i = 1, \ldots, M_P$, $j = 1, \ldots, N_P$, and $A_z$ be the $M_z \times N_z$ matrix with components $A_{z,ij} = T_{j-1}(z_j)$, for $i = 1, \ldots, M_Z$, $j = 1, \ldots, N_Z$. Let $R_A(\alpha)$, $R_N(\alpha)$ denote the $N_P \times N_Z$ matrices formed by evaluating the residuals of the equations (10) and (11) respectively, using the decision rule $r'(p, z; \alpha)$ at the $N_P \times N_Z$ values of $(p, z)$. We select the $2M_P M_Z$ elements of $a^A$, $a^N$ so that the $2M_P M_Z$ equations, $A_p R_A(\alpha) A_z$ and $A_p R_N(\alpha) A_z$ are zero.

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**BANK OF CANADA**

**REFERENCES**

all the results in the paper generalize to hypotheses of type (7').
The only caveat is that in this case element \( s^* \cap h_0 \cap d \) should be
read as the intersection of the set of specific values chosen by the
agent for representing \( h_0 \) with the data and the chosen scenario,
that is, as \( s^* \cap x^*_t \cap d \), which is the \( t \)th ranked term according to
objective (8').

UNIVERSITAT POMPEU FABRA, CREI, UNIVERSITAT POMPEU FABRA, CEPR
HARVARD UNIVERSITY

REFERENCES

References heading is listed in small caps and centered
References follow CMS 17.3b; if same author(s) is listed more than once for different articles then this can be indicated with a dash

Affiliations are listed in all caps and are placed before the references
Appendix Sub-headings are indicated with a capital letter.

Equation numbers in the Appendix continue from the main article.

### Tables within Appendixes are listed with a capital “A” followed by a corresponding numeral.

#### A. Proof of Lemma 2

By Proposition 1, the kid’s expected material payoffs in the equilibrium of the matching game are

\[
U^k_i = \int_{0}^{\pi_i(z)} g(z)[c \pi_i(z) + (h - l)(1 - \pi_i(z))]dz + \int_{\pi_i(z)}^{1} g(z)[c + w] \pi_i(z) + l(1 - \pi_i(z))]dz.
\]

(24)

22. Along similar lines, Baron (2007) has studied the role of a nonprofit agency that certifies the players’ types, in a version of this model with exogenous values.

### Table A.1

<table>
<thead>
<tr>
<th></th>
<th>All CPS</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total observations</td>
<td>118,843</td>
<td>102,389</td>
<td>16,454</td>
</tr>
<tr>
<td>Weight</td>
<td>0.217</td>
<td>0.246</td>
<td>0.189</td>
</tr>
<tr>
<td>PFA dummy</td>
<td>0.511</td>
<td>0.577</td>
<td>0.434</td>
</tr>
<tr>
<td>Log real hourly wage</td>
<td>0.031</td>
<td>0.038</td>
<td>0.024</td>
</tr>
<tr>
<td>Inverse Mills</td>
<td>0.025</td>
<td>0.038</td>
<td>0.008</td>
</tr>
<tr>
<td>Widowed</td>
<td>0.018</td>
<td>0.025</td>
<td>0.003</td>
</tr>
<tr>
<td>Divorced</td>
<td>0.023</td>
<td>0.028</td>
<td>0.016</td>
</tr>
<tr>
<td>Never-married</td>
<td>0.001</td>
<td>0.004</td>
<td>0.000</td>
</tr>
<tr>
<td>0-3 school years</td>
<td>0.015</td>
<td>0.019</td>
<td>0.006</td>
</tr>
<tr>
<td>4-6 school years</td>
<td>0.015</td>
<td>0.019</td>
<td>0.006</td>
</tr>
<tr>
<td>High school degree</td>
<td>0.020</td>
<td>0.023</td>
<td>0.018</td>
</tr>
<tr>
<td>College degree</td>
<td>0.024</td>
<td>0.027</td>
<td>0.020</td>
</tr>
<tr>
<td>Advanced degree</td>
<td>0.024</td>
<td>0.027</td>
<td>0.020</td>
</tr>
<tr>
<td>Potential exp—15</td>
<td>0.024</td>
<td>0.027</td>
<td>0.020</td>
</tr>
<tr>
<td>Midwest</td>
<td>0.024</td>
<td>0.027</td>
<td>0.020</td>
</tr>
<tr>
<td>West</td>
<td>0.024</td>
<td>0.027</td>
<td>0.020</td>
</tr>
<tr>
<td>Kids 0–6</td>
<td>0.024</td>
<td>0.027</td>
<td>0.020</td>
</tr>
</tbody>
</table>

Note: Omitted groups are current married, same occupation, 15 years or older, Northeast region.