Outline

1. Introduction
2. Motivation and Related Literature
3. Model
4. Results
5. Conclusion
Research Questions

1. What are the effects of educational corruption on growth?
2. How does educational corruption impact educational attainment?
3. What impact does educational corruption have on the education wage premium?
4. In what ways does social status interact with educational corruption?
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Rumyantseva (2005) defines two main types of educational corruption:

1. Involves students directly i.e. bribing on exams, bribing for class credit, or bribing for entrance
2. Does not involve the students directly but impacts the resources available to them

This paper focuses on the first type and more specifically entrance bribes.
What is educational corruption?

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How prevalent is educational corruption?

- **UNESCO report** suggests it is a global problem.
- Field study by Shaw (2007) shows:
  1. 80% of students thought their university to be corrupt
  2. 18% of students bribed for entry
  3. 45% of students bribed to pass an exam
- World Bank study conducted in Kazakhstan shows:
  1. 69% percent of those students who bribed did so for entry
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- Selection of Talent
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  - Pinera and Selowsky (1981) GNP 5% higher

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Preliminaries

- Two-period OLG model with production where agents are heterogeneous in:
  - initial wealth \((a)\)
  - ability \((\mu)\)

- Agents can choose to go to school or not but entry is not guaranteed.

- If an agent decides to attempt schooling he faces probability \(\pi(m)\) of getting in and becoming a manager \((m)\).

- Agents who choose not to go to school join the workforce immediately and remain laborers \((l)\) for the rest of their life.

- Those agents who do not get into school become laborers.
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- Those agents who do not get into school become laborers.
Following Fershtman et. al (1996) we also assume that agents also enjoy the endogenous status of their occupation. Status for managers $S_{t+1}^m$ is defined as the average ability of managers to the average ability of laborers.
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Households

Agents who choose not to go to school maximize lifetime utility over $c_t$, $c_{t+1}$, and $a_{t+1}$:

$$\max U(c_t, c_{t+1}) = \ln(c_t) + \ln(c_{t+1}) + \ln(S_{t+1}^l)$$

subject to

$$c_t + a_{t+1} \leq w_t^l + r_t a$$
$$c_{t+1} \leq r_{t+1} a_{t+1} + w_{t+1}^l$$
$$a_{min} \leq a_{t+1}$$
Agents who choose attempt to go to school maximize over $c_t$, $z_t$, $a_{t+1}$, $c_{t+1}^s$ where $s \in [m, l]$:

$$
\max E_t U(c_t, c_{t+1}^s) = \ln(c_t) + \sum_s [\ln(c_{t+1}^s) + \ln(S_{t+1}^s)] \pi(s)
$$

subject to

$$
c_t + a_{t+1} + z_t \leq r_t a
$$

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c_{t+1}^m \leq r_{t+1} a_{t+1} + w_{t+1}^m \mu \text{ w.p. } \pi(m)
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c_{t+1}^l \leq r_{t+1} a_{t+1} + w_{t+1}^l \text{ w.p. } 1 - \pi(m)
$$

$$
a_{min} \leq a_{t+1}
$$

$$
z_t \leq z_{max}
$$
Probability Functions

- What should determine entrance probability for agents?
  - Ability $\mu$?
  - Bribe $z_t$?

$P1: p(\mu, z_t) = (\mu - 1)\gamma + (1 - \gamma)\left(\frac{z_t}{z_{max}}\right)^\alpha$ where $\gamma \in [0, 1]$, $\alpha \in (0, 1)$ and $\mu \in [1, 2]$

$P2: p(\mu, z_t) = (\mu - 1)\gamma + (1 - \gamma)(\mu - 1)\left(\frac{z_t}{z_{max}}\right)^\alpha$
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The firm maximizes profits subject to CES production technology:

\[ Y_t = A_t \{ a[bK_t^\theta + (1 - b)NM_t^\theta]^{\frac{\rho}{\theta}} + (1 - a)NL_t^\rho \}^\frac{1}{\rho} \]

where \( a > 0, \ b > 0, \ \theta > 0 \) and \( \rho > 0 \)

Following Fershtman et. al (1996) technology evolves according to:

\[ A_{t+1} = (1 + g_{t+1})A_t \]

\[ g_{t+1} = \tau NM_{t+1} \] (1)
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A stationary rational expectations equilibrium

1. Agents maximize utility subject to constraints.
2. Distribution of managers and laborers is time invariant along with prices.
3. Expectations about social status and factor prices are confirmed.
4. Factor prices are equal to their respective marginal products.
Calibration

- Following Duffy, Papageorgiou, and Perez-Sebastian (2004): \( \theta = .4, \rho = .5, b = .5, \) and \( a = .4 \)
- Thus we have the following free parameters to experiment with:
  - \( \delta = \) importance of social status (.5)
  - \( \gamma = \) importance of ability in probability of entrance
  - \( \alpha = \) power on probability function (.5)
- We impose nonnegativity constraint for \( a_{t+1} \)
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Zagorsky (2007) shows that there is no significant relationship between wealth and ability for U.S.

We experiment with 2 types of distributions:

1. **Distribution 1**: positive correlation between wealth and ability
2. **Distribution 2**: zero correlation between wealth and ability

We will just look at Distribution 2 today:
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Growth and Educational Corruption

Annual Growth Rate and Corruption

- Growth (P1)
- Growth (P2)

Importance of Ability [\(y\)]

Annual Growth Rate [%]
Wage Premium and Educational Corruption

![Graph showing wage premium and corruption vs. importance of ability.]

Philip Shaw

Educational Corruption and Growth
Percent Educated and Educational Corruption

Proportion Educated and Corruption

Proportion Educated %

Importance of Abilit (y)

- % Educated (P1)
- % Educated (P2)
Empirical Results

- Use TI’s corruption perceptions index (CPI) as a proxy for educational corruption
  - 0 highest level of corruption
  - 10 lowest level of corruption
- Data for wage premium taken from Handbook for Educational Economics
- Calculate average annual growth rate in RGDPPC over period 1973-2003 (PWT)
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Estimation Method

- Nonparametric estimation of conditional moment functions:
  1. $E(\text{growth}|\text{CPI})$
  2. $E(\text{wagepremium}|\text{CPI})$
  3. $E(\text{educated}|\text{CPI})$

- Use H-M, H-S, and SELR tests for model specification
Growth and Educational Corruption

(a) Data

(b) Model
Wage Premium and Educational Corruption

(c) Data

(d) Model
Percent Educated and Educational Corruption

(e) Data

(f) Model
### Results From the Model

#### Empirical Results

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**Philip Shaw**  
**Educational Corruption and Growth**
## More Results From the Model

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### More Results From the Model

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A Note on Social Status and Growth

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\[ S_{t+1}^m = \left( \frac{\bar{\mu}_m}{\bar{\mu}_l} \right)^\delta \]

where:

\[
\bar{\mu}_m = \frac{\int \int \psi_{t+1,m} \mu f(\mu, a) d\mu da}{\int \int \psi_{t+1,m} f(\mu, a) d\mu da}
\]

\[
\bar{\mu}_l = \frac{\int \int \gamma_{t+1,l} \mu f(\mu, a) d\mu da + \int \int \Theta_{t+1,l} \mu f(\mu, a) d\mu da}{\int \int \gamma_{t+1,l} f(\mu, a) d\mu da + \int \int \Theta_{t+1,l} f(\mu, a) d\mu da}
\]
### Table: Results for SELR, H-S, and H-M statistics (5% level)

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<td>$H_0$: quadratic</td>
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