The Impact of Hiring Quotas on Employment, Wages, and the Skill Premium: Evidence from Saudi Arabia

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Introduction

Quotas and affirmative action policies are used in many countries to favor members of disadvantaged or underrepresented groups.

- Improve employment outcomes among targeted groups
- Impose costs on other workers and firms

Empirically difficult to measure the overall effects:

- Clear quotas are relatively rare
- Policies often apply only to a small subset of firms or industries
- Spillovers make it difficult to identify aggregate effects

We look at effects of Nitaqat nationalization policy in Saudi Arabia.
Introduction

Objectives

Spillovers to non-treated firms and non-targeted workers are likely very important in evaluating the effects of quotas:

- Employment effects
- Competitive effects
- Wages

Previous work on firm-level effects of Nitaqat:

- Increase in Saudi hiring of 96,000 workers
- 50% increase in firm exit
- Significant decrease in average firm size
- Suggestive evidence of poaching from other firms
Introduction

Objectives

1. How are firms meeting their Saudization targets?
   - Hire unemployed Saudis
   - Poach experienced Saudis from other firms
   - Reduce Saudi turnover
   - Reduce expatriate employment

2. What does this mean for the composition of Saudi private sector employment?
   - Occupation mix
   - Human capital
   - Firm-level wage premia

3. How did market-level outcomes respond?
   - Wages
   - Total employment
   - Firm exit
Background: Nitaqat Program Structure

The Nitaqat program is an ongoing quota policy started in 2011 by the Saudi Ministry of Labor to incentivize firms to replace foreign workers with unemployed Saudis

- Requires private-sector firms to achieve employment quotas for Saudi nationals
- One of the world’s largest quota-based labor market policies
- Broad scope: applies to firms across all industries
- Clearly-defined and well-enforced
  - Quotas were firm, compliance closely monitored, and sanctions for non-compliant firms were triggered automatically
Background: Nitaqat Program Structure

Overview

- All private-sector firms were sorted into categories based on 41 industry and 4 size groups
- Saudization percentage quotas announced for each industry by size cell
- Firms assigned to color bands based on Saudization percentage relative to cell quotas
  - For example, cutoffs for medium-sized construction firms were:
    - Red: 0-2%
    - Yellow: 2-6%
    - Green: 6-28%
    - Platinum: 28+
- Sanctions imposed on firms in Yellow and Red bands
  - Included limitations on visa issuance and foreign recruitment assistance
  - Automatically triggered through integration of Nitaqat database and visa renewal system
Data Overview

Merge Nitaqat program data with employee records from the General Organization for Social Insurance (GOSI)

- Nitaqat program data from the Ministry of Labor (weekly) [2011-2013]
  - Entity-level employment measures and color band assignments
  - Nitaqat firms employ over 95% of Saudis in the private sector workforce

- Engagement-level data from GOSI (monthly) [2009-2014]
  - Information for Saudis on:
    - job characteristics (occupation, salary, location, start and end dates)
    - worker characteristics (age, gender, education)
  - 8.9 million observations (worker x firm x position x salary)
  - 2.8 million Saudi workers
Data

Worker Types

For each firm define three groups of workers:

1. Retained workers from previous month
2. Workers hired from other firms
   - Appear in GOSI records of another firm since 2009
3. Workers hired from outside private sector labor force
   - Do not appear in any available GOSI records since 2009
Empirical Strategy

The analysis uses three main empirical tools to identify the program effects:

1. Regression Kink Design (RKD)
   - Incentive to hire Saudis is increasing with baseline distance below the quota cutoff
   - Examine how outcomes vary with quota distance

2. Firm and Worker Wage Effects
   - Compare firms in Red and Yellow color bands to Green firms in the same industry by size cell

3. Market-level analysis using local labor markets approach (in progress)
Empirical Strategy: RKD

Incentive to increase Saudization is increasing with distance below the Green/Yellow cutoff quota
Empirical Strategy: Firm Wage Effects

We estimate firm-specific wage premia using worker-firm wage decomposition methods (Abowd, Kramarz, and Margolis 1999; Card, Heining, and Kline 2013)

- Additional amount a firm would pay for the same worker relative to reference firm
- Estimate the following:

\[
\ln(\text{earnings})_{it} = \alpha_i + \psi_{J(i,t)} + X_{it}'\beta + \eta_{iJ(i,t)} + \epsilon_{it}
\]

- Time-varying controls: month dummies and age cubic (linear omitted)
- Match effect: assumed to be random effect
- Firm effects only identified within “connected set”—we use largest connected set (90% of employment)
- Identification derives from workers moving across firms
Results

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3. How did market-level outcomes respond?
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How are firms meeting their quotas?

Total Employment and New Employment

Nitaqat corresponded with large increases in total employment and new private sector labor market entrants.

![Total Private Sector Saudi Employees, Monthly](image)

![New Employees, Firm Transitions, and Exits, Monthly](image)
How are firms meeting their quotas?

Overall change in percentage was positive for yellow firms and negative for green firms:

![Change in Saudization Percentage](image.png)
How are firms meeting their quotas?

Largest source of improvement for Yellow firms was hiring previously unemployed workers:

Change in Saudization Percentage: New Entrants
How are firms meeting their quotas?

Consistent with overall trends, most of these workers were HS-educated or below:

![Graph showing the change in Saudization percentage from market entrants for New Entrants: HS- and New Entrants: College+)](image)
How are firms meeting their quotas?

Yellow firms also less likely to experience turnover than Green firms:

Change in Saudization Percentage: New Entrants
How are firms meeting their quotas?

Hiring experienced workers actually most common among Green firms:

**Change in Saudization Percentage: Previously Employed**

![Graph showing change in Saudization percentage from previously employed workers.](image)
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2. What does this mean for the composition of Saudi private sector employment?
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   - Returns to human capital
   - Firm-level wage premia

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Occupations and Wages

Aggregate Wages

Period saw aggregate decrease in average wages

- Wages within occupation and education groups increasing
Higher growth in low-skill occupations over Nitaqat period:

Emp. Share by Skill Percentile

Emp. Level by Skill Percentile

[Graphs showing employment share and level by skill percentile for July 2011 and October 2012]
Occupations and Wages

Skill Distribution

Large increase in employment of HS-educated workers:

Monthly Saudi Employment by Education

- Diploma+
- High School
- Secondary
- Elementary/Illiterate

Data
Occupations and Wages
Returns to Education

Decreasing wages among HS-educated workers:

Average Wages

Skill Premium
Occasions and Wages

Firm Wage Premia

Wage premia higher at Green firms, but evidence that they rose at Yellow firms relative to counterfactual:

Firm Wage Effects Post-Nitaqat
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Next Steps

Goal: estimate aggregate effects of the quota on Saudi employment and wages using a local labor markets approach

→ National-level quotas generate variation in Nitaqat intensity across local labor markets

1. Geographic
   ▶ Treat commuting zones as separate markets to identify the effects of an economic shock on local markets
   ▶ Vary size of CZ to identify level of spillovers

2. Estimated
   ▶ Use pre-quota career histories to identify distinct labor markets by location, industry, occupation, gender, etc.
   ▶ Firm by occupation pairs (nodes) are linked if any worker has worked at both jobs
Next Steps

Local Labor Markets: Geographic

Quota Distance by City: Share of Baseline Saudi Employment (60 minute commuting zones)
Next Steps

Local Labor Markets: Estimated

Use GOSI career data to construct job partitions:

Summary

1. How are firms meeting their Saudization targets?
   - Mostly by hiring previously unemployed Saudis
   - Most of these were HS-educated or less
   - Yellow firms also more likely to retain existing workers

2. What does this mean for the composition of Saudi private sector employment?
   - Largest increases in low-wage occupations
   - Driving decrease in wages for HS-educated workers
   - Increase in skill premium
   - Some evidence that Yellow firms catching up in terms of firm-specific wage premia

3. How did market-level outcomes respond?
   - Coming soon!