Shooting the Goose that Lays the Golden Egg: The Case of UAE Employment Policy

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Abstract

**Purpose:** This is a policy paper that analyzes the economic impact of mandated employment quotas for citizen workers among firms in the United Arab Emirates (UAE). We demonstrate the nature of the efficiency losses associated with these quotas, and then explore a workable policy alternative that can achieve the same employment objectives with lower efficiency loss.

**Design/methodology/approach:** We begin with an extensive discussion of UAE labor policy, together with some data and salient features of the UAE labor market. We use this discussion to motivate and analyze a theoretical model of the way in which labor quotas impact firm production, input employment and efficiency. We then extend this model to our proposed policy alternative.

**Findings:** The UAE’s labor quotas create inefficiencies on a number of fronts, including productive inefficiency, higher product prices, and the possibility of reducing the number of jobs available to citizen workers. Our proposed policy alternative has the potential to ameliorate these efficiency losses, while still creating jobs for citizens.

**Originality/value:** Labor quotas for citizen workers are a unique brand of labor regulation that has largely escaped economic analysis. Understanding their implications is informative in the context of labor market regulation generally, and particularly for countries with large expatriate labor forces that struggle to provide job opportunities for citizens.

**Keywords:** Employment policy, employment quotas, emiratization, United Arab Emirates, UAE

JEL classification - J23, J24, J31
I. Introduction

Countries around the world have provided economists and policy analysts with a plethora of interesting examples of programs and policies that, though often adopted for admirable reasons, have gone astray and produced unintended and counter-productive results. In recent years, the countries of the Gulf Cooperation Council (GCC)\(^1\) have adopted labor quota policies designed to boost employment of their own nationals in the private sector workforce. These policies appear to be a good candidate for inclusion in this list of counter-productive policies and, despite virtually universal adoption by countries in the GCC, have largely escaped serious economic analysis.

These policies are designed to address an increasingly important issue in the Gulf region. Namely, all GCC countries have large expatriate workforces and all have high unemployment rates among their own citizens, with particularly low rates of native employment in the private sector (Forstenlechner and Rutledge, 2011 and Forstenlechner et al. 2012).

Emiratization, the policy adopted by the United Arab Emirates (UAE), is typical of countries in the GCC.\(^2\) One feature of Emiratization is a mandate requiring target industries to maintain a minimum ratio of Emirati workers to expatriate workers. In this paper, we explore the implications of these mandated quotas. Our analysis suggests that the policy approach adopted by GCC countries generally, and the UAE in particular, will, at a minimum, reduce economic growth and frustrate attempts to increase citizen employment, and, at worst, will actually reduce the number of jobs available to citizen workers.

Our paper is organized as follows. In Section II we provide a brief description of the background and core pillars of “Emiratization” policy. We outline important features of the UAE

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1 The GCC countries are Saudi Arabia, Oman, Qatar, Bahrain, Kuwait and the United Arab Emirates.
2 All other GCC countries pursue similar policies, e.g. Saudization in Saudi Arabia and Omanization in Oman.
labor market in Section III. Section IV contains a brief review of literature on employment regulation and Section V contains our analysis of the implications for Emirati employment of the current Emiratization policy. In Section VI, we propose a policy alternative that addresses some of the inefficiencies associated with the quotas imposed by Emiratization. Section VII contains our concluding comments.

II. Emiratization Policy

The UAE is a small country, in both income and population, which has grown rapidly over the last few decades. Prior to the financial crisis of 2008, the UAE regularly exceeded 7% annualized GDP growth (CIA). Oil exports, which yield extraordinary revenue, have been the primary engine of this growth. However, the limited skills and work experience of Emirati workers has meant that migrant labor has been required to achieve the country’s high rate of growth.

Current estimates by the Economist Intelligence Unit (EIU) put the expatriate population at about 90% of the UAE’s total population. Tables 1 and 2 provide estimates of the percentage of Emirati nationals in the workforce by labor categories for the emirates of Abu Dhabi and Dubai, the two largest emirates. Emiratis comprise only 5.0% of the labor force in Dubai (excluding the Public Administration and National Defense sectors which hire a large proportion of Emiratis) and only 13.5% in Abu Dhabi.³

³ The higher overall participation of Emiratis in Abu Dhabi’s workforce is due primarily to the size of its public sector, which employs a large number of Emirati workers.
Table 1: Employment by Nationality and Economic Activity, Dubai, 2011 (Percentages)

<table>
<thead>
<tr>
<th>Economic Activity</th>
<th>Emirati</th>
<th>Expatriate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture and Hunting</td>
<td>0.28 %</td>
<td>99.72 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Fishing</td>
<td>12.0 %</td>
<td>88.0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Mining</td>
<td>13.0 %</td>
<td>87.0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Supply and Transport Equipment</td>
<td>6.0 %</td>
<td>94.0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.78 %</td>
<td>99.22 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Construction</td>
<td>0.07 %</td>
<td>99.93 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Wholesale and Retail</td>
<td>1.62 %</td>
<td>98.38 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Transport, Storage, Communication</td>
<td>2.16 %</td>
<td>97.84 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Real Estate</td>
<td>2.37 %</td>
<td>97.63 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Financial Intermediation</td>
<td>13.0 %</td>
<td>87.0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Hospitality</td>
<td>0.3 %</td>
<td>99.7 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Education</td>
<td>8.0 %</td>
<td>92.0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Health and Social Work</td>
<td>9.0 %</td>
<td>91.0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Public Administration and Defense</td>
<td>67.0%</td>
<td>33.0 %</td>
<td>100 %</td>
</tr>
<tr>
<td>Other</td>
<td>1.26 %</td>
<td>98.74 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Rapid growth in expatriate employment has been accompanied by high and rising unemployment among Emiratis. A recent government estimate sets unemployment at 13% for UAE nationals overall, and at 23.1% for young UAE nationals (The National, January 13, 2011). High, and rising, unemployment of Emirati nationals is one of the most pressing problems currently facing the UAE and it has become a dominating issue in the UAE’s economic and political discourse. Until recently, public entities have been able to ameliorate this friction by employing large numbers of Emiratis in the public sector, but at this point the public sector is no longer able to absorb all new Emirati workers entering the labor force.

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4 Estimates and reports vary significantly by source, but one important thing to note is that residence visas are tied to employment for expatriates, so the unemployment rate among expatriates is effectively zero. Thus, the unemployment rate among Emiratis will always be significantly higher than the reported overall unemployment rate.

5 The UAE government is increasingly concerned about labor costs in maintaining its large public sector workforce, which is described at this point as “saturated” (The National, January 12, 2011).
Emiratization policy is designed to address this problem by promoting private sector employment for Emirati nationals. This policy includes measures to increase education and training for nationals, and measures to diversify the UAE economy, but the central feature of the policy is quotas on employment of Emirati workers among private sector employers. Specifically, Emiratization requires that employers in target industries maintain a minimum ratio of national to expatriate workers in their work force. The long-term target appears to be 55%, according to a 2009-2012 Emiratization plan developed by the UAE State Audit Institution.

The Ministry of Labor assigns quotas and enforces Emiratization targets by sector. At present, the quotas for specific industries seem subject to change, and implementation has been uneven. The banking sector, a primary target of Emiratization, has achieved approximately 35% Emiratization, and is required to increase its employment of Emiratis by 4% annually. Current guidelines require that the share of Emirati employees in the insurance industry, another target industry for Emiratization, increase by 5% annually (The National, May 5, 2011). While the current economic climate has decelerated the implementation of these quotas, government officials continue to strenuously defend the use of quotas, threatening fines and loss of trade licenses for firms that fail to satisfy Emiratization quotas (The National, January 25, 2010).

III. The UAE Labor Market

Before addressing the consequences of Emiratization, it is perhaps worth noting a few stylized facts about the UAE labor market that constitute the context for our analysis. First, the government specifically targets relatively high-skill job classifications. Finance, banking, insurance and aerospace engineering are among the industries specifically targeted by the government. (Gulf News, February 24, 2011; Emiratization in Abu Dhabi).

In addition, the government appears to be cracking down on firms that satisfy the quotas on paper by using “ghost workers” who appear on employment rosters but do not actually work (The National, May 5, 2011). Kuwait is another regional example. Members of the legislature there are proposing to reduce the number of foreigners from 2.7 million to 1.35 million within the next five years, to impose country-specific quotas for expatriate workers and to limit expatriate workers to five years of employment in Kuwait. (Gulf News, February 1, 2014).
expatriate labor is essentially permanent. Residence visas for expatriate workers are issued for periods of three years, but are renewable and expatriate workers can stay as long as they keep their jobs. Expatriate workers who return to their home countries are readily replaceable.

Second, Emirati workers and expatriate workers are not typically perfect substitutes for each other. Low-skill jobs tend to be low prestige jobs and are not socially acceptable among Emiratis. The data contained in Tables 1 and 2 on employment for expatriates and nationals by job classification supports this observation. With respect to high-skill jobs, there is a shortage of Emiratis with the human capital required for these jobs. As documented in a report by Price-Waterhouse-Coopers, 94% of CEOs sampled from the UAE claimed to be dependent on expatriate workers and only 12% were “satisfied” with the number of skilled Emiratis available.

Third, expatriate workers appear to accept changes and variations in working conditions and wages more readily than do Emirati workers. For example, variations in UAE currency value against the Euro have caused real wages of some employees to fluctuate by as much as 30%, but this appears to cause no significant labor flight. Also, it is not unusual for employers in the UAE to unilaterally change original contract agreements upon contract renewal. While this practice seemingly creates a reputational danger that could discourage migrant workers, so far it does not appear to have caused major problems in retaining expatriate labor.

Fourth, given the small size of the UAE economy relative to the number of foreign workers available, expatriate labor exists in effectively unlimited and perfectly price-elastic supply. Firms in the UAE encounter few problems recruiting all the expatriates they are willing

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8 As an additional example, in 2005, 20,000 jobs for taxi drives opened with preference for Emirati workers. Between 2005 and 2009, there was only one phone call from an Emirati worker expressing interest in a position – he did not take the job. (The National, May 24 2009)
9 The UAE dirham is pegged to the dollar.
to employ. For the period between 1995 and 2004, the number of expatriate workers increased more than 100%, according to a 2005 UAE Human Resources Report.

Fifth, employing Emirati workers is significantly more costly than employing expatriate workers. According to both the IMF and UAE government publications, Emirati workers with college degrees are paid 32% more than expatriate workers with similar qualifications (IMF 2006).

Sixth, the UAE public sector is the primary employer of Emirati workers. These government jobs provide generous compensation packages and low work hours. Near the end of 2011, the UAE government increased salaries of all federal employees by a minimum of 35% (Financial Times, November 30, 2011). For some jobs, wages rose by 100%. The IMF (2006) has specifically warned that wage increases are not adequately tied to productivity in the public sector and that they have far outpaced productivity increases generally. Public sector wages that are well above competitive levels engender a preference for public sector jobs among Emirati workers, making it difficult for private firms to compete for these workers. Additionally, there is a prevailing view among private sector employers that Emirati workers who accept private sector jobs are likely to leave when there is an opening in the public sector. This appears to contribute to the reluctance of private firms to hire, and incur training costs, for workers whom they perceive as “short-timers.”

Seventh, wage convergence among Emirati and expatriate labor need not hold in equilibrium because mobility for expatriate workers within the UAE labor market is limited. Expatriates are not allowed to change jobs without the express consent of their current employer, and employers sponsor the employee’s residence visa. As a consequence, changing jobs can be

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10 About 90% of public sector jobs are held by UAE nationals. The Financial Times (November 30, 2011) estimates that at least 80% of UAE citizens are employed in the public sector. Indeed, many of these jobs are reserved specifically for UAE nationals.
costly for expatriate workers. In some cases, those who wish to change jobs, even when the job change coincides with the end of their labor contract, must leave the country for at least six months before they are allowed to return. In short, changing jobs effectively requires a sacrifice of six months of income. The following quote appears to speak to the heart of the matter (Gulf News, September 11, 2005):

*Private sector workers whose labor cards have been cancelled will not be issued new work permits by the Ministry of Labor and Social Affairs before the completion of six months of leaving their last jobs, according to a report in Arabic Daily. “...Now it will take six months before a new work permit can be issued by the ministry,” (the Arabic Daily report) said. “...The move aims to prevent the transfer of professional and experienced employees from one job to another, which in turn would cause damage to business owners in various sectors,” ...*

Eighth, the UAE maintains an extremely generous welfare state for its nationals. All 800,000 UAE citizens receive free education, health care and heavily subsidized utilities. Emirati men can claim free land and interest-free loans to build a house, while the marriage fund provides a US $19,000 payment towards wedding costs. In total, the average Emirati male receives about US $55,000 a year, according to Bloomberg citing a study conducted by Zayed University in Dubai (Bloomberg, 2007).

Ninth, Emirati workers have discharge protection. The Ministry of Labor explicitly prohibits private employers from firing Emirati workers for any reason other than an outright violation of UAE labor law (Gulf News, February 19, 2009).

All of these factors constitute barriers, either supply-side or demand-side, to private sector employment of Emiratis. Generous welfare programs both reduce the incentive for Emiratis to work and raise the reservation wage for those who do enter the labor force. This, combined with the extremely attractive working conditions in the public sector, significantly curtails private sector labor supply among Emiratis. On the demand side, private employers view
Emiratis both as relatively unproductive and highly protected. Expatriate workers are far less risky from the perspective of employers, especially since their mobility is limited by law.

IV. Related Work

Other countries in the Gulf region face a similar problem and have adopted domestic labor market regulations similar to those adopted in the UAE. However, previous work on private sector employment mandates for national labor is scarce. Russel (1989) observes that in Kuwait, a country moving forward with *Kuwaitization*, migrants have become “deeply embedded” in the Kuwaiti society and labor force. As a result, they have amassed significant job-specific capital, and so the costs of replacing them with nationals are high.

In Bahrain, another GCC state facing a similar problem, Franklin (1985) argues that the process for distributing a share of the country’s prosperity to citizens in the form of benefits and subsidies emphasizes status and authority rather than productivity. The difficulties of motivating Bahrainis to enter vocational occupations, especially when those occupations are viewed as having low social status, are formidable. Franklin’s argument implies that, in order for *Bahrainization* to be effective, either the culture has to change or jobs that give Bahrainis status and authority must be created. Looking back at Tables 1 and 2, there are clear analogies to the situation in the UAE. In terms of acceptance on the other side of the market, Forstenlechner and Mellahi (2011) argue that there is significant positive momentum: employers view such policies as far more appropriate and legitimate in industries where employment of locals is already significant. Randeree (2012), in a study on localization policies in GCC states, argues that a sustained development of a national workforce is best accomplished by hiring national

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11 Forstenlechner et al. (2012) specifically cites “perceived lack of relationally orientated motivation and the ambiguities over the differing rights afforded to employees” as the primary reason that employers are reluctant to hire UAE nationals.
employees in the private sector at entry level positions and then allowing them to work their way through the organizational hierarchy.

The localization policies designed by Gulf countries have produced only marginal improvements in the expatriate/national employment ratio. As Russel (1994) argues, the aftermath of the 1991 Iraq invasion of Kuwait is a natural experiment that exogenously accomplished what policies could only dream of achieving. The war dramatically altered the composition of the Kuwaiti population as migrants fled the country, and thus provided an opportunity to rethink the role of migrants in Kuwaiti society. But, 19 years after the First Gulf War, the IMF reported that that the ratio of non-Kuwaiti to Kuwaitis was 41%, only slightly below pre-war levels.12 That is, after a large exogenous shock and an opportunity for the country to reconsider its employment of migrants, it returned essentially to where it had started.

The economic literature on employment protection and labor productivity in general is extensive. However, this particular variety of regulation is somewhat different because it sets quotas for a particular input (Emirati labor) as a function of the amount of some other input employed (expatriate labor).

Employment protection laws such as those found in Europe have been studied extensively. Saint-Paul (2002) argues that, in supporting employment protection laws, employees trade off lower living standards for greater job security because employment protection maintains workers in less productive jobs in the aggregate.

Autor, Kerr and Kluger (2007) find that discharge protection for workers reduces employment flows as firms engage in capital deepening. Since UAE policy prohibits private

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12 The IMF reports that from 2001 to the second quarter of 2005, there were 470,000 new work visas issued, though they do not report the number cancelled over this same period.
sector employers from firing Emirati workers, this result is particularly salient in the UAE context.

Ljungqvist and Sargent (1998) analyze the European unemployment problem during the 1980s by looking at the effects of the welfare state on the supply of labor. Immediately after World War II, unemployment in welfare-generous European countries was very low, but it skyrocketed in the 1980s. The authors conclude that a welfare state with generous entitlements programs is a “ticking time bomb” waiting to explode because, although the system functions as long as there are no major economic shocks, labor markets lose their ability to cope during turbulent economic times. They attribute this inability to cope in turbulent times to adjustment costs of firing and hiring, lack of wage flexibility and to mismatching in labor markets. There are clear parallels to the UAE. The UAE’s generous welfare state has many of the same features as European welfare states.

There is no work, of which we are aware, that attempts to measure the efficiency implications of Emiratization for the UAE economy. The overreaching issue in this lack of research appears to be data availability. It is difficult to overstate the lack of reliable data availability in the UAE and in the region generally. IMF reports consistently warn of “structural weaknesses with respect to data quality, coverage, periodicity, timeliness [and] consistency” in the UAE’s economic statistics. Even commonly reported aggregate statistics like inflation rates and unemployment rates are either unavailable for the UAE or are generally regarded as unreliable. Thus, while there are no data available to calibrate the magnitude of our model’s implications, we can address in general terms the nature of the economic consequences and present a framework for estimating these consequences given appropriate data. That is the task to which we now turn.
V. The Model

To study the impact of the emiratization quota on Emirati employment, we consider a model where a representative firm uses a production function with three inputs: capital (K), native Emirati labor (N) and expatriate labor (E). The production function $F(K, N, E)$ is assumed to be continuous, twice-differentiable and everywhere strictly concave. For ease of exposition, we here assume that the representative firm is small and is a price-taker in both output and input markets. The appendix extends the analysis to the case of market power in both the product market and in the input markets; the qualitative nature of the results is the same. The emiratization quota requires that a fraction $\rho$ of the labor used in the production of the final good be Emirati labor. Letting $P$ denote the product price, $r$ the price of capital, $w_N$ the price of native Emirati labor and $w_E$ the price of expatriate labor, the firm’s objective is to maximize:

$$\Pi = P \cdot F(K, N, E) - rK - w_NN - w_EE$$  \hspace{1cm} (1)

Subject to the emiratization quota, parameterized as:

$$N \geq \rho(N + E)$$  \hspace{1cm} (2)

The Lagrangian corresponding to this constrained maximization problem is:

$$L = P \cdot F(K, N, E) - rK - w_NN - w_EE + \lambda(N - \rho(N + E))$$  \hspace{1cm} (3)

The first order conditions determining labor employment are:\textsuperscript{13}

$$\frac{\partial L}{\partial N} = P \cdot \frac{\partial F}{\partial N} - w_N + \lambda(1 - \rho)$$  \hspace{1cm} (4)

$$\frac{\partial L}{\partial E} = P \cdot \frac{\partial F}{\partial E} - w_E + \lambda \rho$$  \hspace{1cm} (5)

Setting both equal to zero, and letting $MRP_N$ denote the marginal revenue product of Emirati workers and $MRP_E$ denote the marginal revenue product of expatriate workers gives:

\textsuperscript{13} We address here the case where the quota is binding. The case where the quota is nonbinding is trivial, and the quota has no efficiency consequences in this case.
\[ MRP_N - w_N = -\lambda(1 - \rho) \quad (6) \]
\[ MRP_E - w_E = \lambda\rho \quad (7) \]

Dividing (7) by (6) gives:

\[ \frac{MRP_E - w_E}{MRP_N - w_N} = \frac{-\rho}{1-\rho} \quad (8) \]

A binding quota implies that \( MRP_N - w_N < 0 \). If Emirati workers were more productive on the margin than their wage, then the firm would employ supra-quota levels of Emirati workers voluntarily. Given this, (8) implies that \( MRP_E - w_E > 0 \). Had there been no regulation, the firm would have employed both types of labor up to the point where marginal revenue product and wage are equal. The quota distorts productive efficiency in that it forces the firm to use an input bundle that is not cost minimizing – on the margin, Emirati workers are less productive than the wage they are paid, while expatriate workers are more productive than the wage they are paid. The expression in (8) shows that the magnitude of this distortion depends on the quota rate, \( \rho \).

Table 3 shows the degree to which the quota distorts the ratio of marginal products, as a function of \( \rho \), for the case where the quota is binding. Observe that it rises at an increasing rate as \( \rho \) rises and approaches infinity as \( \rho \) approaches 1. This certainly leaves open the possibility that, in an attempt to raise \( MRP_E \), the distortion will induce the firm to lower overall employment so much that the total number of jobs available to Emirati workers actually falls in response to an increase in \( \rho \). Later in this section, we show simulation results for specific functional forms of the production function that highlight this possibility.
To think about the firm-level distortion in more detail, we start with the case where Emirati and expatriate labor are perfect substitutes, indistinguishable in the production process. If $w_E < w_N$, then the firm will use only expatriate labor in the absence of regulation. In this case, a higher quota substantively amounts to an increase in the composite wage $\rho w_N + (1 - \rho)w_E$ since each unit of labor must be employed in this proportion. The firm will reduce its overall employment of labor in order to bring labor’s marginal revenue product back to equality with the higher composite wage. There is both an increase in intensity of capital employment (the substitution effect) and a general scaling back of output (the output effect) that contribute to the reduction in labor usage.

In this case, because the two types of labor are indistinguishable, the inequality between marginal revenue product and wages identified in (8) is strictly attributable to wage differences, and indeed Emirati workers are paid more than expatriates with the same qualifications, as noted in section III. However, we also noted in section III significant evidence that the two types of workers are not perfect substitutes, and that in fact $MRP_N < MRP_E$, at least in expectation.

<table>
<thead>
<tr>
<th>$\rho$</th>
<th>$\frac{MRP_E - W_E}{MRP_N - W_N}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>0.11</td>
</tr>
<tr>
<td>0.2</td>
<td>0.25</td>
</tr>
<tr>
<td>0.3</td>
<td>0.42</td>
</tr>
<tr>
<td>0.4</td>
<td>0.66</td>
</tr>
<tr>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>0.6</td>
<td>1.5</td>
</tr>
<tr>
<td>0.7</td>
<td>2.33</td>
</tr>
<tr>
<td>0.8</td>
<td>4.0</td>
</tr>
<tr>
<td>0.9</td>
<td>9.0</td>
</tr>
</tbody>
</table>

Table 3: Ratio of marginal products for different quota rates
Discharge protection and the high number of Emirati workers who exit the private sector soon after the firm invests in a costly training period reduce the employer’s expectation of an Emirati worker’s long-term productivity. Furthermore, the generous welfare state for Emiratis, attractive working conditions in the public sector and limited mobility for expatriate workers all widen the artificial wage gap between Emirati and expatriate workers.

These results extend to both to firms that produce output in imperfectly competitive markets and to firms that buy their inputs in imperfectly competitive markets, as shown in the appendix. Imperfect competition in the product market distorts marginal revenue product below the competitive level by the same proportion for both Emirati workers and expatriate workers. Imperfect competition in the input markets distorts the marginal factor cost of hiring an additional worker above the wage rate, with the larger distortion in the market with the more inelastic labor supply. Given the small size of the UAE economy and the ease with which local firms can retain expatriate workers, we can assume that firms face a highly wage elastic supply of expatriate workers. Thus, the larger distortion of marginal factor cost is for Emirati labor, which only strengthens the conclusions here.

To illustrate more concretely the nature of the quota’s impacts on Emirati employment for a profit maximizing firm, we consider a firm with a CES production function that solves the optimization problem defined in (1) and (2). We will start with a simple baseline case before exploring the sensitivity of the results to variations in the parameters of the problem. Our baseline case is a firm with production function:

\[ F(K, N, E) = \left( K^{-2} + N^{-2} + E^{-2}\right)^{-0.8/2} \]  

\[ (9) \]

\[ ^{14} \] That Emirati labor is less productive than expatriate labor on the margin is obvious prima facie since quotas are binding. As noted earlier, the IMF (2006) warns generally that wage increases appear to exceed productivity gains and specifically cautions that wage increases in the public sector are not sufficiently tied to productivity. This spills over to private sector firms hiring Emiratis because of the abundance of public-sector jobs held by Emiratis.
We begin by assuming that all input costs are equal and normalized to 1. Figure 1 shows how the profit-maximizing level of Emirati employment $N$ varies with the quota rate $\rho$.\textsuperscript{15}

![Figure 1: Emirati employment for different quota rates](image)

Given the form of the production function, the optimal input employment in the absence of a quota is to hire equal numbers of Emirati and expatriate workers. Thus, quota rates that are lower than $\rho = 0.5$ are not binding and have no impact on Emirati employment. Increasing the quota rate above $\rho = 0.5$ initially increases Emirati employment, but eventually reduces Emirati employment even below the level that would have existed without regulation. As compliance costs grow, the firm complies with the labor quota not by hiring more Emirati labor, but by substituting capital and by scaling back its production. This simple example demonstrates that the number of Emirati workers hired may actually fall in response to higher Emirati employment quotas. We now proceed to consider a number of variations on this baseline case that demonstrate the sensitivity of this result to the parameters of the problem, guided by our discussion of the UAE labor market in section III.

\textsuperscript{15} We set the output price to 10 and normalized so that each unit of $N$ stands for 100 workers.
Our baseline case assumes that Emirati and expatriate wages are equal, but we know from section III that Emirati workers are paid substantially more than expatriate workers with the same skill set. Figure 2 illustrates the profit-maximizing level of Emirati level employment for a firm with the production function in (9), and with expatriate wage normalized to $w_E = 1$, but with Emirati wage $w_N > 1$. As illustrated on the diagram, Emirati wages that are higher than expatriate wages reduce the threshold level for which higher quota rates $\rho$ are actually able to increase Emirati employment. This makes intuitive sense since compliance becomes even more expensive as the Emirati wage grows, leading the firm to more quickly substitute capital or scale back production.

![Variations in Native Wage](image)

**Figure 2: Emirati wage higher than expatriate wage**

A second issue raised in section III is that Emirati workers are often perceived to be less productive than expatriate workers. Thus, we consider production functions of the following form:

$$F(K, N, E) = (K^{-2} + \theta N^{-2} + E^{-2})^{-0.8/2}$$

(10)

In this case, $\theta < 1$ represents the degree to which an Emirati worker is less productive than an expatriate worker. Figure 3 shows the profit-maximizing level of Emirati employment for firms
with production functions in (10), for various levels of $\theta$. Similar to inflated Emirati wages, lower productivity of Emirati workers relative to expatriate workers reduces the threshold quota rate for which increases in $\rho$ have the potential to create additional Emirati jobs.

![Variations in Native Productivity](image)

**Figure 3**: Emirati workers less productive than expatriate workers

A third issue is that different industries may face a different level of substitutability across inputs. To study this possibility, we consider production functions of the following form:

$$F(K, N, E) = (K^r + N^r + E^r)^{0.8/r}$$

(11)

For CES production functions, declines in $r$ indicate less substitutability across inputs; the limit as $r \to -\infty$ is a Leontief production function with no substitutability across inputs. Figure 4 shows the profit-maximizing level of Emirati employment for firms with production functions in (11), for various values of $r$. Here, the effect is twofold. As inputs become less and less substitutable, the total number of Emirati employees may rise. For example, a company may need native speakers with local connections for customer relations. On the other hand, the firm has fewer options to substitute to capital inputs as a cost control measure when the quota rises, so the output effect is stronger and induces a more rapid decline in Emirati job openings as the firm’s profit-maximizing output falls.
Finally, we consider the possibility of imperfect competition in the labor market for Emirati workers. As discussed in section III, this is a real possibility for many firms given the limited number of Emirati workers with suitable training for high-skill jobs, and the ease with which firms are able to retain expatriate employees. Our baseline case had a perfectly elastic supply of Emirati labor available at a wage $w_N = 1$. We now consider firms that face an Emirati labor supply function $w_N = 1 + \frac{1}{\phi} L^{\phi}$. The limit $\phi \to \infty$ corresponds to a perfectly elastic supply of Emirati labor at wage $w_N = 1$, with reductions in $\phi$ indicating less than perfect competition. Figure 5 shows the profit-maximizing level of Emirati employment for firms that face different Emirati labor supply elasticities. Lower elasticity in the market for hiring Emirati workers increases compliance costs and thus reduces the opportunities for increases in the Emirati employment quota $\rho$ to create more jobs for Emiratis.
Overall, it is not straightforward that higher quota rates will create more jobs for Emirati workers among profit-maximizing firms. Higher Emirati wages, lower productivity of Emirati workers and a relatively inelastic labor supply among Emirati workers aggravate the problem, and these phenomena are all characteristic of the UAE labor market.

Our analysis focuses on profit-maximizing choices at the firm level. For general equilibrium analysis at the market level, we refer the reader to Marchon and Toledo (2014) for perfectly competitive markets and to Toledo (2013) for imperfect competition. In the perfectly competitive case, rising unit costs from employment quotas can spur exit from the industry and higher consumer prices, leading to deadweight losses in product markets. The possibility that exit can reduce Emirati employment opportunities is particularly problematic for firms such as financial institutions that can easily outsource services. There is anecdotal evidence that this is already happening. Practically, capital-intensive industries appear to be the main targets of Emiratization policy. Jobs in Arab culture represent status and authority, as discussed in section IV, and the Emirati population has shown little interest in labor-intensive industries. If capital-intensive industries send large numbers of expatriate workers back to their home countries in order to comply with the quota, the output effect from rising factor prices could be significant and could
drive these industries out of the UAE completely. Recent studies on the Nitaqat (employment quota) system in Saudi Arabia by Ramady (2013) and Peck (2013) demonstrate that this is a real possibility, and that the distortions could be large. For example, Peck finds that the program increased the number of Saudi workers hired only by 96,000 workers, which amounts to a 0.2% increase, over a 16-month period, but the cost was significant and the program caused approximately 11,000 firms to shut down, a nearly 50% increase in the exit rate.

For the imperfectly competitive case, Toledo (2013) suggests that the general equilibrium impact of Emiratization may be less severe in markets where firms earn substantial monopoly rents, as Emiratization costs can be paid out of excess profits without necessarily inducing exit.

The overall point is that Emiratization quotas create distortions on more than one front, and that there is the potential to create harm for Emirati workers that offsets whatever benefits Emiratization creates.

**VI. A Policy Alternative – Taxation and Emiratization**

The Emirati employment quota embedded in the Emiratization program has at least three major flaws. First, the 55% target set for Emirati employment appears to be arbitrary. Second, the program targets employment rather than productivity. Third, the policy has been implemented without apparent consideration for differences in production technologies across domestic industries. As a direct consequence of these flaws, the increased costs associated with meeting employment quotas will reduce overall labor usage and that will, at least in part, offset the higher proportion of jobs allocated to Emiratis. Further, the relationship between Emirati and expatriate labor could feature either substitutability or complementarity. If Emirati and expatriate labor are substitutes, then jobs for Emiratis can be created by reducing the expatriate labor force.
However, it may also be the case that relatively low-wage expatriate workers sustain jobs among the Emirati population in some industries.

We now turn to a workable alternative that, while not fully addressing all of the flaws of Emiratization, can reduce the efficiency losses experienced by firms and, hence, reduce the detrimental impact of the policy on Emirati employment.

Suppose that firms have the option to “buy out” of the Emiratization quota. That is, a firm can choose to satisfy $N^* = \rho(N + E)$ or can choose to pay a tax of $t$ for each worker by which it is short of the quota $N^*$. That is, the firm’s total tax bill is $\bar{t} = t(N^* - N)$. Substituting back the definition of the quota gives:

$$\bar{t} = t[\rho(N + E) - N]$$

(12)

For a firm that opts to ignore the quota and pay the tax, the profit function is:

$$\Pi = P \cdot F(K, N, E) - rK - w_NN - w_EE - t[\rho(N + E) - N]$$

(13)

The solution is similar to the case above. We can obtain the same characterization of the profit-maximizing input allocation among the two types of workers given in (8). There is an interesting difference, though. In this case, first order conditions give:

$$(MRP_E - w_E) - (MRP_N - w_N) = t$$

(14)

The left side can be thought of as the net marginal benefit of disregarding the quota by one more worker. The firm gains one more expatriate worker who is more productive than his wage and discharges one Emirati worker who is less productive than his wage on the margin. The firm will continue to take advantage of the buyout up to the point where the marginal benefit equals the marginal cost, $t$.

On the other hand, for a firm that obeys the quota completely, the first order conditions corresponding to the constrained optimization problem in (3) give:
\[(M_RP_E - w_E) - (M_RP_N - w_N) = \lambda\] (15)

In this case, we interpret the Lagrange multiplier $\lambda$ as the “shadow benefit” at the optimum of relaxing the constraint by one worker.

Combining (14) and (15), it is now easy to see which firms will take advantage of the buyout. If the production process is such that the tax exceeds the marginal benefit of relaxing the constraint by even one worker (i.e. if $t > \lambda$), then the firm will not use the buyout and will satisfy the quota completely. However, if the benefit is sufficient, then the firm will use the buyout, and will continue to use it up to the level where marginal benefit equals marginal cost, as in (14). For firms that pay the tax, marginal compliance costs are equated across firms.

This scheme is analogous to the well-known result that emissions taxes can achieve the same abatement in pollution at lower cost to society than uniform emissions quotas – the latter can result in wildly divergent marginal compliance costs. The buyout allows firms with dire cost consequences of complying with the Emiratization quota to ignore it at a cost. The firms complying with the mandate in full will be those that can comply with the lowest costs on the margin.

A simple numerical example suffices to illustrate the way in which this scheme can induce efficiency improvements. Consider two equally-sized firms that each could create 7 jobs for Emirati workers. Table 4 shows the marginal compliance cost for each additional job created. Note that firm A’s compliance costs are lower than firm B’s compliance costs. Perhaps firm A has jobs that are currently vacant and could be staffed by newly trained Emirati workers, but firm B relies heavily on incumbent workers who have skills specific to the position, so it is relatively more costly for firm B to increase its employment of Emirati workers.
Suppose that the government’s objective is to create eight jobs for Emirati workers across these firms. A uniform labor quota would require each firm to create four jobs. This imposes costs of 70 on Firm A and costs of 100 on Firm B, for a total compliance cost of 170.

By contrast, a lower-cost way to create eight Emirati jobs is to for Firm A to create five jobs and for Firm B to create only three jobs, which reduces total compliance costs to 160. This can be achieved by setting the quota at five Emirati workers but allowing firms to buy out of it by paying a tax $30 < \tau < 40$ for each worker by which it is short of the quota. It is easy to see that Firm A will obey the quota, but that Firm B is better off by hiring only three Emirati workers and paying the tax instead of hiring the fourth and fifth workers. Thus, this combination of the tax and quota induces the efficient distribution of the eight Emirati jobs across firms. This is only second-best efficiency in the sense that the scheme still increases social costs relative to no regulation, but it does improve efficiency (relative to the quota alone) subject to the constraint that eight Emirati jobs must be created.

Thus, policymakers can set tax and quota rates jointly to achieve Emirati employment objectives by sector. While the government may have various short-run and long-run objectives in mind as it implements labor policy, the point is that the combination of a buyout and a quota allows the government to create jobs for Emiratis while minimizing efficiency losses.
experienced by firms and ultimately passed on to those Emiratis themselves. Industry-level data on differential productivity and wages and on capital-labor ratios are needed to calibrate these tax rates and quotas. As discussed earlier in the paper, these data are not presently available, and indeed the lack of reliable data available to researchers and policymakers constitutes a major impediment to concrete policy formation and evaluation in the UAE.

VII. Conclusion

There is no question that increasing private-sector employment among UAE nationals is an important policy goal for the rulers of the UAE; improving standards of living for their people keeps their support intact. However, a structural change of this nature will be effective and sustainable when it arises organically from market-based conditions – it cannot permanently remain the product of government mandate without the kinds of negative consequences that accompany regulation.

At its core, Emiratization misses the mark by targeting employment rather than productivity. For a country to make progress, people need not just to have a job but to do a job. Increasing the skill set of Emiratis is important, but no single policy remedy will address the issue of Emirati employment effectively in the absence of broad institutional reform. Government handouts and unrealistically posh working conditions in the public sector raise significant barriers to employing Emiratis in the private sector. Nonexistent mobility of the expatriate workforce artificially widens the wage gap even further.16

Emiratization aims to help Emirati workers find jobs in the private sector, but our analysis shows that a quota is an unattractive way of going about this objective, particularly

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16 Ending the visa sponsorship program, which would create mobility for expatriates, is likely to face stiff opposition. Recent reports from Arabian Business place Kuwait and Bahrain as the only two GCC countries in favor of scrapping visa sponsorship requirements.
given the institutional characteristics of the UAE labor market. Developing a productive and competitive Emirati labor force in the UAE will continue to challenge UAE policymakers.
Appendix: Extension to the case of imperfect competition in the product market and in the labor market

For ease of notation, the main text considers the case where both output and inputs are priced competitively. This appendix extends the analysis to imperfect competition in both the output market and in the market for labor inputs. In this case, the product price $P$ is a decreasing function of output $F(K, N, E)$, and the wage functions $w_N(N)$ and $w_E(E)$ are increasing in employment of each input. That is, higher wages must be paid in order to attract a larger number of workers. The firm’s constrained profit-maximization problem is now characterized by the following Lagrangian:

$$\mathcal{L} = P(F(K, N, E)) \cdot F(K, N, E) - rK - w_N(N) \cdot N - w_E(E) \cdot E + \lambda(N - \rho(N + E))$$

The first-order conditions for employment of labor are:

$$\frac{\partial \mathcal{L}}{\partial N} = P \cdot MP_N \left(1 + \frac{1}{\varepsilon}\right) - w_N \left(1 + \frac{1}{\eta_N}\right) + \lambda(1 - \rho) = 0$$

$$\frac{\partial \mathcal{L}}{\partial E} = P \cdot MP_E \left(1 + \frac{1}{\varepsilon}\right) - w_E \left(1 + \frac{1}{\eta_E}\right) - \lambda \rho = 0$$

Here, $MP_N$ and $MP_E$ denote the marginal physical product of Emirati and expatriate labor, respectively; $\varepsilon$ is the price elasticity of demand for the final product; $\eta_N$ and $\eta_E$ denote the wage elasticity for Emirati and expatriate labor supply, respectively. Combining the two equations above into an expression analogous to (8) gives:

$$\frac{P \cdot MP_E \left(1 + \frac{1}{\varepsilon}\right) - w_E \left(1 + \frac{1}{\eta_E}\right)}{P \cdot MP_N \left(1 + \frac{1}{\varepsilon}\right) - w_N \left(1 + \frac{1}{\eta_N}\right)} = \frac{-\rho}{1-\rho}$$

With respect to the product market, the intuition is that price has to be cut when output increases as a result of additional input employment. This distorts the marginal revenue product below that from the competitive case. As $\varepsilon \to -\infty$ and the product market approaches perfect competition, the marginal revenue product of hiring an additional worker converges to that given by the
competitive case in (8). Of note, imperfect competition in the product market distorts the marginal revenue product of both Emirati and expatriate labor by the same proportion.

With respect to the input market, the intuition is that hiring more workers requires offering a higher wage to all workers, which raises the marginal factor cost of hiring an additional worker above the wage paid to that worker. As input employment approaches perfect competition, with \( \eta_N \to \infty \) and \( \eta_E \to \infty \), the marginal factor cost of employing an additional worker converges to the wage, as in (8). Importantly for our analysis in the main text, the larger distortion of marginal factor cost occurs in the labor sector with the more inelastically supplied labor.
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