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Filling Labor Shortages through Immigration: An Overview of Shortage Lists and their Implications

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Pick up any paper, report, or book about immigration and the economy, and it probably will not be long before you encounter a reference to labor shortages. Some skills and abilities are in short supply, even in times of recession, and sometimes vacancies in certain sectors are particularly hard to fill.

Since immigration brings new workers to the economy who might fill these gaps, immigration policy represents a logical part of any strategy that addresses recruiting difficulties.

Immigration policies designed to alleviate perceived shortages of labor have been around for decades, and the idea of targeting immigration to needy parts of the economy is not new.

The United States' Bracero Program, for example was a series of bilateral labor agreements with Mexico that emerged in response to tight labor supply in agriculture during and following World War II. Regional migration policies in Australia and Canada were also designed, in large part, in response to perceived local labor shortages. And dedicated visa programs for specific occupations or sectors in which host countries wish to increase labor supply — for example, in agriculture or health — are common.

But over the past ten years, wealthy countries have frequently attempted to fine-tune immigration flows by maintaining lists of critical occupations into which immigration should be facilitated. The points systems in New Zealand and Denmark, for example, reward prospective immigrants working in designated occupations. Canada maintains a list of occupations in high demand, and France, Ireland, and the United Kingdom all introduced a shortage list of some kind between 2006 and 2008.

What are labor shortages, how do countries go about measuring them, and how effectively can policymakers use such information to increase labor supply in targeted areas of the economy? How do these policies work and what impact do they have? This article addresses some of the technical, philosophical, and policy-related questions raised by the

practice of maintaining shortage lists and translating them into immigration policy.

What is a Labor Shortage?

Defining labor shortages is not straightforward, but a simplified definition is that when the demand for a given type of worker exceeds the number of willing candidates at the prevailing wage and working conditions in that occupation, a shortage is thought to occur.

Economists disagree as to whether "labor shortages" exist at all: if particular skills are scarce, employers will raise wages and more workers will come forward or seek training to join the occupation. In practice, however, this is not always the case.

Some periods of tight labor supply are transient, disappearing once the market has had time to adjust. Others persist, perhaps because demand continues to rise faster than supply can catch up, or because the work is inherently difficult or unappealing. In some occupations, international competition with producers abroad might mean that employers cannot raise wages and remain economically viable.

In other cases, such as with highly renowned scientists or talented businessmen, one could argue that a shortage exists because one can never have too much of a good thing. Or a recruitment difficulty of sorts might arise in fields where workers perform a socially valuable function — teachers, nurses, and caregivers, for instance — but taxpayers are not willing or able to pay the high price that would be required to attract more of them into the profession.

In other words, "shortages" come in different shapes and forms. It may in fact make more sense to refer to them as "recruiting difficulties", since this is how they are experienced in practice by employers.

Identifying Labor Shortages

Because various types of shortages exist, identifying and measuring them is quite difficult.

Rapidly rising wages can be a good indicator for identifying labor shortages since employers will typically be forced by the market to pay more for skills that are scarce, but will not occur in cases where earnings are held back by international competition or taxpayers' desire to get more for less. Low unemployment can also be a useful — if imperfect — indicator, as it can signal tight labor supply in the short run, but could also reflect transient or seasonal variations in the number of workers needed. However, unemployment by occupation is difficult to measure accurately.

The number of unfilled vacancies provides a potential measure, but occupations with short job tenure and high turnover experience higher vacancy rates even when plenty of job seekers are available to work. And more fundamentally, the fact that employers would like to find workers with a particular skill set does not mean they can realistically expect to find them.

To see why, consider a firm designing software to help farmers track the genetic characteristics of rare breeds of cows. Ideally, they would like to hire a software programmer who understands cow breeding and genetics. But how many of these people exist? This is not a case of a shortage in expert programmer-breeder-geneticists, but rather an instance where an employer must lower their recruitment expectations.

During the economic boom of the 1990s, which was fueled in large part by advances in the field of technology, US employers did exactly that. Employment in the information technology (IT) industry ramped up at an impressive speed, and firms hired much less experienced candidates. When the dot-com crash reduced demand for their services, firms once again raised their expectations and began to hire more highly qualified workers. Was there a shortage of qualified IT workers during the boom? Did that shortage cease to exist because employers "made do" with less qualified employees? The answer is not clear-cut.

Additionally, shortages or hiring difficulties cannot be described as an either-or (binary) category, wherein an occupation either experiences a shortage or it doesn't. There is no objective point after which one can confidently assert that an employer faces a shortage.

In general, therefore, one must measure hiring difficulties relative to other occupations, rather than in absolute terms (which would be impossible even in theory). This means that analysts must choose a somewhat arbitrary cutoff or threshold, or even choose *a priori* what proportion of occupations should be found to face shortages.

Considerations of Accuracy and Timeliness

Perhaps the greatest challenge that economists face when measuring labor shortages is accuracy or, more specifically, accurately identifying and analyzing occupations that genuinely reflect groups of people with similar skills.

Statistically representative data sources like labor force surveys categorize workers by occupation, but the formal title of the occupation to which a worker belongs is a very crude measure of the skills that his or her job requires. Occupational categories often fail to account for a huge variety of required experience, qualifications, and abilities.

Moreover, even within occupations, skill needs change over time. For example, one might be able to estimate the wage increase for engineers from one quarter to the next with relative accuracy, but engineers come in numerous varieties — many of which have little in common with one another.

Official data are also generally not sufficiently powerful (i.e., the sample size is generally too small) to zero in on very specific occupations. For smaller and more-specialized fields, it becomes increasingly difficult to analyze shortages with precision. Unemployment might skyrocket among biologists, for example, but if a firm requires a scientist with a detailed understanding of a specific kind of fish, it may still be difficult to find a qualified employee.

A second, though perhaps less troubling, challenge is timeliness. Labor market conditions are somewhat variable but data sources — and shortage lists — respond with a time lag. The United Kingdom and New Zealand, for instance, update their shortage lists every six months, while others (such as Ireland) adjust the list periodically without a specific timetable.

By the time the data is analyzed (sometimes months after it was collected) and a profession added to the shortage list, and by the time foreign workers have applied for the jobs, obtained visas, and arrived in the destination country, the recruiting difficulties they were supposed to alleviate may have disappeared. For their part, existing workers might have responded to signs of high demand and trained to enter the profession. Alternatively, economic conditions might have changed, decimating demand in cyclical industries. In cases where hiring was difficult precisely because of a business cycle boom, a downturn could reduce employment demand quite fast.

These realities mean that policymakers who expect immigrants to respond in real time to skills shortages as they emerge and promptly return home as the shortages recede are likely to be disappointed.

The challenges inherent in measuring labor shortages, together with the issues of accuracy and timeliness, means that the actual number of shortage occupations might not automatically adjust to the economic cycle — a concern for some policymakers.

Case Study: The United Kingdom

To illustrate some of the philosophical and policy complexities that any practical attempt to channel immigration towards shortage occupations must grapple with, a quick overview of the United Kingdom's recently instituted — and relatively comprehensive — shortage analysis is useful.

The UK Migration Advisory Committee (MAC) — a group of five economists supported by a small secretariat — uses both quantitative and qualitative data to produce a list of occupations into which the government is recommended to facilitate immigration. The quantitative component comprises statistical analysis of wages, employment, unemployment, and vacancies as measured by 12 particular "indicators" (See Table 1).

Table 1. The Indicators and Thresholds Used for the First UK Shortage List, Fall 2008

Type of Indicator	Indicator	Threshold To Be Met
Price-based	Change in median hourly pay for all employees (%)	Median plus 50% of the median

	Change in mean hourly pay for all employees (%)	Median plus 50% of the median
	The pay premium a worker gets by working in the occupation, holding age and region constant	Median plus 50% of the median
Volume-based	Change in unemployment by occupation (%)	Median plus 50% of the median
	Change in estimated level of employment (%)	Top quartile
	Change in median hours for full-time employees (%)	Top quartile
	Change in proportion workers in occupation for less than one year	Median plus 50% of the median
"Indicators of imbalance"	Change in median vacancy duration	Top quartile
	Ratio of vacancies to unemployment in the occupation	Top quartile
Employer-based perceptions	"Skill shortage vacancies" as a percentage of all vacancies	Median plus 50% of the median
	"Skill shortage vacancies" as a percentage of all hard-to-fill vacancies	Top quartile
	Skill shortage vacancies as a percentage of total employment	Median plus 50% of the median

Source: Migration Advisory Committee, "Skilled Shortage Sensible: Review of Methodology" (London: Migration Advisory Committee, March 2010), 54. **Available online**.

It's important to note that occupations often experience shortage according to some indicators, but not according to others. Indeed, the correlation between the indicators is not particularly strong. An occupation must meet a given threshold for at least half of the indicators in order to make the shortage list (e.g., wages must be rising by a certain rate or unemployment falling below a certain level).

Qualitative analysis is also quite central to the MAC methodology, and consists of evidence gathered from employers, regional public-sector "skills councils", and other interested parties such as labor unions. It is used to confirm or reject the statistical evidence of hiring difficulties, and in some cases to identify specific subcategories within an occupation that are thought to face a shortage while the rest of the occupation does not. The March 2010 list, for example, includes pediatric dental consultants but not other dental practitioners.

The committee takes into account the extent to which they believe employers in a given occupation are making efforts to train UK workers or entice them into jobs by improving working conditions. They also consider alternatives to immigration, including how easily employers could outsource the work abroad or mechanize labor-intensive tasks. Additionally, they examine the likely contribution of immigrants to innovation, the United Kingdom's global competitiveness, and the quality of public services.

In other words, measuring shortages in the United Kingdom is not simply a statistical exercise driven by quantitative data, but also requires substantial qualitative judgments. This is especially the case if the goal is to produce a fine-grained analysis. The same was true of a similar shortage-type exercise in Canada in the 1980s, which was designed to set annual targets for immigration into specific occupations.

As MAC itself emphasizes, "top-down indicators do not, in themselves, provide unassailable evidence of shortage, or a lack thereof."

Shortage Lists in Policy

Most countries that incorporate some notion of shortage into their immigration systems create a single list of occupations deemed to experience shortages, rather than distinguishing between degrees of hiring difficulty in each occupation. Some lists are based on complex analyses of the kind described in the United Kingdom, while others are based purely on consultations and qualitative evidence.

In either case, the function of the shortage list is to make immigration easier for workers in these occupations or to prevent inflows into occupations that are not on the list.

Shortage-targeted immigration is commonly made easier in one of two ways: by alleviating some of the requirements employers face for the recruitment of immigrants or by rewarding or qualifying an otherwise ineligible immigrant based on their skills, experience, or occupation in a field deemed to have a shortage.

Employers hiring foreign workers in shortage occupations in the United Kingdom and France, for example, are relieved of the requirement to advertise the job to resident workers — a process known as the "labor market test." The labor market test is designed to demonstrate that few resident workers are available to take the job (i.e., that there is a labor market shortage), and is a widely used requirement for employer-sponsored visas around the world. In the case of shortage lists, however, an occupation on the list is already deemed to be in shortage, thus negating the need for the labor market test. In keeping with this policy, workers are required to have a job offer in order to get a visa for a shortage occupation.

Countries with points systems that admit workers on the basis of the number of "points" they score for their education, work experience, or other characteristics sometimes award additional points to shortage occupations. Migrant workers seeking admission through points systems may or may not be required to have a job offer. New Zealand, for example,

awards points to potential immigrants with qualifications, work experience, or a job offer in designated "future growth areas" or areas of "absolute skills shortage."

In practice, offering points on the basis of shortage occupations means that the bar is lower for workers entering those occupations — they may be able to enter despite lower levels of formal education, substandard earning potential, or fewer of whatever other criteria the points system rewards. Consequently, immigrants who otherwise would not have gained entry are admitted for the sake of filling vacancies in certain industries.

In the United Kingdom, for instance, foreign workers who entered under the shortage occupation route in 2008 and 2009 earned less, on average, than other employer-sponsored immigrants. This makes some policymakers uncomfortable, and may serve as recognition of the fact that salaries do not always reflect the social benefits of certain types of occupations, such as with care workers.

The idea that shortage lists enable less-skilled workers to immigrate has particular implications in regimes with fixed quotas or targets for economic-stream immigration, such as the United Kingdom or Australia. This is because less qualified workers take a "place" that could have been occupied by a higher-earning, more skilled immigrant.

A widely publicized example of this phenomenon in Australia was that, under the prevailing shortage list system in early 2010, a hairdresser might qualify for skilled migration but an environmental scientist with a PhD from Harvard University might not. Concerns that Australia's shortage list created inflows of low-paid cooks and hairdressers contributed to the recent decision to no longer award points for specific occupations.

The United Kingdom is currently addressing this concern by implementing changes that would prevent sub-degree level workers from entering as employer-sponsored workers, whether or not they are engaged in a shortage occupation. The most likely effect of this policy will be a reduction in the number of shortage occupation entrants, giving slightly greater priority to other routes where workers by and large already have higher earnings and qualifications.

The use of shortage lists to restrict immigration to specific occupations is also quite common. The impact of doing this depends on how broad the list is (i.e., the number of occupations it covers) and whether other immigration routes are available for employers whose occupations are not listed.

Restricting immigration to a relatively narrow set of occupations — a step that has, on occasion, been proposed but not implemented in the United States and the United Kingdom — is problematic, especially for highly skilled and specialized occupations where the scarcity of different types of workers is measured with only limited accuracy. The inherent problems of analyzing shortages make it important to provide other routes of employment-based immigration, rather than relying on shortage lists alone.

Finally, systems that channel immigration into certain occupations at the expense of others

run the risk of "flooding" the labor market for some occupations while leaving others entirely dry. This was a criticism of Canada's experiment with assessing labor market shortages in the 1980s, a policy the country subsequently abandoned.

Fine-tuning or Micromanaging?

Governments turn to shortage lists because they want to ensure that immigrants fill jobs where the need is greatest and where competition with the resident labor force is limited. In some cases there is also political motivation — the desire to show constituents that policy is targeting the most valuable types of immigration.

Do shortage lists represent beneficial fine-tuning, or problematic micromanaging? As with so many immigration policies, the true impact depends on the details of the implementation.

Inaccuracy of the list matters less if immigrants require a job offer before they migrate, as they do in the United Kingdom. The stakes are also lower if other routes of employment-based immigration are available for employers who cannot easily recruit from the domestic labor force, but whose occupations are not included on the official list. This is especially the case if the list covers a small proportion of occupations.

Timeliness, on the other hand, becomes less important when lists focus on very highly skilled professions whose practitioners are likely to fare well in the labor market in the long run, regardless of variable demand.

Perhaps shortage lists serve some useful functions, but governments should not expect them to deliver too much. Some may find that, instead of distinguishing between shortage and non-shortage occupations, it makes more sense to focus on admitting workers with high levels of human capital or a proven demand for their skills, while making special allowances for more limited categories of workers who find it difficult to enter through other channels.

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