

# IDENTIFYING AND RESPONDING TO SKILLS SHORTAGES

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**Abstract:** Skills shortages limit economic growth. Tight labor markets in the United States have highlighted for policy-makers the problems that skills shortages create for the economy. Yet, it is difficult to document and respond to skills shortages. No single, direct measure identifies a skills shortage. Identification requires multiple economic indicators. When skills shortages are identified, prescription of responses to alleviate shortages is equally problematic. Selection of investment in training as one response requires that other factors affecting labor supply and price must be ruled out as contributing causes of shortages.

## INTRODUCTION

An adequate supply of human capital is essential to the smooth functioning of any economy, especially as economies are becoming more skill-based than ever. The skills of workers contributed more than a quarter of all growth in labor productivity during the 1990s in the United States (U.S. Department of Labor, 1999). Investment in the creation and maintenance of human capital especially is important to sustain this growth.

Concern is evident, however, that the supply of human capital in the United States is inadequate to meet current and future needs. Labor markets are tight. Unemployment for the entire United States during 1999 was at its lowest rate in 28 years (U.S. Department of Labor, 1999), and the unemployment rate was below 4% in nearly one-half of the nation's metropolitan areas (Koropeckyj, 1999). The Board of Governors of the Federal Reserve Bank (1999), the central bank of the United States, noted that, "The demand for labor continues to outstrip the readily available supply of labor in most areas....tight labor markets remain the norm." Most regions of the United States reported widespread labor shortages during the third quarter of 1999, continuing a pattern observed over several years. Retail sales, manufacturing, and construction sectors of the economy have experienced the most difficulty filling job vacancies.

Training is often seen as one solution to skill shortages. Prerequisite to investment in training motivated to meet skill shortages is however, the validation that skill shortages, indeed, exist. And, if shortages are verified, then training is but one prescription for curing problems realized from shortages. In this paper, I review methodology for identifying skill shortages in labor markets. In brief, no single method is available for identifying skill shortages. Rather, evidence is needed from multiple points of view. Also, I discuss the variety of policy and program responses to skill shortages possible in addition to training investment. As with diagnosing the existence of skill shortages, prescribing solutions to shortages is difficult and uncertain.

## IDENTIFICATION

According to Veneri (1999), “Shortages occur in a market economy when the demand for workers...is greater than the supply of workers who are qualified, available, and willing to do [a] job” (p. 15) at prevailing wages. No single data source exists to measure skill shortages. Rather, labor market data often are used to corroborate anecdotal reports from employers and other observers and analysts.

Blank and Stigler (1957) found three definitions in use for defining skills shortages:

1. In what Blank and Stigler (1957, p.23) described as the “social demand” definition, which determines that a shortage exists if the number of workers is less than the number needed. For example, a shortage of physicians would exist if the number of physicians per 100,000 people was less than the number that planners and other experts believe is needed to adequately treat the population.
2. Another definition offered by Blank and Stigler (1957, p. 23) indicated that a shortage exists if the quantity of labor that is demanded is greater than the quantity supplied at the prevailing wage. This definition takes a cross-sectional point of view to define the shortage.
3. Still another definition provided by Blank and Stigler (1957, pp. 23–24) takes a longitudinal perspective. From this point of view, a shortage exists when the number of workers available increases less rapidly than the number of workers needed at the salaries paid in the recent past. Blank and Stigler (1957, p. 24) asserted that one consequence of a shortage defined in this way is that substitution of labor inputs will occur from one skill level to another. For instance, rising salaries might not increase the supply of registered nurses, but might stimulate the substitution of practical nurses or health care aides for more highly trained and credentialed registered nurses.

Arrow and Capron (1959) introduced the concept of a “dynamic shortage” (p. 301) to extend the Blank and Stigler definition by describing a labor market in which demand continually outpaces supply. Conditions for a dynamic shortage include rapid and continuing increase in demand for a skill set, low elasticity of supply (low responsiveness of supply to wage changes), and sluggish adjustment of wages to market signals. The last condition is a recognition of imperfections in information in labor markets.

Frank and Sobel (1970) focused on institutional constraints as additional market imperfections creating skill shortages to explain how shortages could exist at the same time as high levels of unemployment and worker displacement. They defined a shortage as “a situation existing over an extended period of time in which employers were unable to hire at going wages or salaries sufficient numbers of qualified persons to fill positions for which there were budgeted funds and for which personnel were required to meet existing demands for services (Frank & Sobel, 1970, p. 7). Based upon their analyses of six occupations in the Chicago and St. Louis labor markets during the mid–1960s, they concluded that market pressures often were insufficient to increase supply. They concluded that wage changes, by themselves, were weak policy instruments for reducing shortages.

More recent studies by Cohen (1995) and Trutko, Barnow, Chasanov, and Pande (1993) have taken the approach that no single empirical measure of skill shortages exists. More likely, none is likely to be developed (Veneri, 1999, p. 17). Instead, a variety of indirect indicators, many statistical and some anecdotal, are assessed to investigate the existence or potential of a skill shortage. For instance, Cohen (1995, pp. 29–39) recommends the use of the following indicators:

1. Occupational unemployment rate—This indicator is something of a misnomer because a person cannot be in an occupation and unemployed. Instead, this indicator refers to the last or most

recent occupation of the unemployed person. Clearly, the unemployed might seek jobs in any occupation, not just the one from which they separated.

2. Averaged changes in occupational employment—This indicator reflects the trend in the demand for labor.
3. Weekly wage changes for full-time workers in an occupation—This indicator reflects the intersection of supply as well as demand conditions. However, most wage data are collected for all workers, not merely new hires whose wages might reveal market effects of a shortage more than for tenured workers.
4. Forecasted occupational employment growth—Such a forecast is conditioned on assumptions and changes about future economic structure. Comparisons are made between likely occupational supply and forecasted employment.
5. Forecasted occupational replacement openings—Job openings in occupations are due to employment growth and the need to replace workers who die, retire, or otherwise leave the occupation. Existence of openings indicates a shortage.
6. Aliens receiving labor certifications—This indicator tracks foreign-born, non-U.S. born workers receiving permanent labor certification allowing immigration for work in the United States. The major advantage of this indicator is that it summarizes independent determinations made on thousands of cases in which employers assert they cannot find and hire citizens of the United States.

## **RESPONSE**

Is the identification of evidence for a skills shortage sufficient to justify investment in training to alleviate the shortage? Certainly not by itself. Other alternatives to training investment are possible and need to be considered as training policy is specified.

Perhaps wages offered are inadequate to ensure an adequate supply of human capital. However, as Frank and Sobel (1970) observed, labor markets often a slow to respond to wage changes. Improving working conditions is another alternative. For instance, perhaps more and higher quality school teacher would seek teaching employment if the workplace of the school was less autocratic and bureaucratic. Also, non-wage compensation such as benefits and other amenities might help improve supply. For example, Santa Clara County in California, the home of Silicon Valley, is finding it hard to attract teachers because housing is priced too high to be affordable on teachers' salaries. Therefore, under consideration is the development of teachers' housing (described by some as "teacher ghettos") that would be subsidized partially or completely.

Among the other options available for alleviating identified labor shortages include:

1. Making it easier and more attractive for older worker to choose not to retire,
2. Enticing skills immigrants and relaxing immigration restrictions for skilled workers in demand,
3. Inducing workers currently out of the labor force to re-enter,
4. Substituting workers with similar or transferable skills to enter the occupation which has a short supply of workers,
5. Reducing barriers to entry into occupations by relaxing credentialing and licensing requirements that are not shown to be essential for job performance, and
6. Encouraging geographic mobility of workers within the country to regions with skill shortages.

## CONCLUSION

No single source of information provides evidence for the existence of a skills shortage. Rather, multiple, indirect indicators using existing data might represent the best source of information available. Even if a skills shortage is identified, training is only one solution among many that are possible to alleviate the shortage.

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