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Changing Work Organization in Small Manufacturers: Challenges for Economic Development

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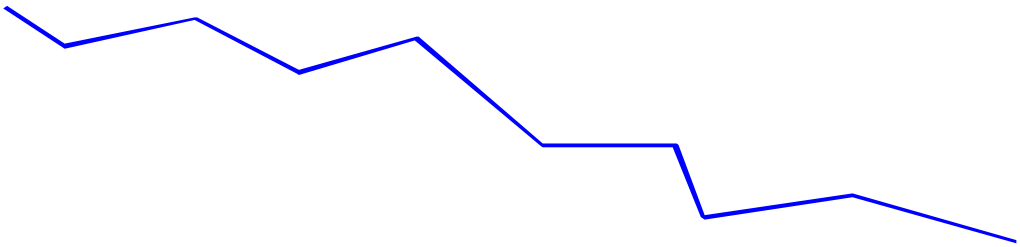

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Changing Work Organization in Small Manufacturers: Challenges for Economic Development

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ABSTRACT

This working paper reviews the growing literature on the changing employment practices of small and medium-sized manufacturers. Specifically, we examine the literature in four areas: (i) Hiring Practices, (ii) Employment Security and Retention, (iii) Career Ladders, and (iv) Economic Development Policy. Observers disagree about the extent to which restructuring has taken place in smaller firms, the nature of workplace change, and the impact of this change on employees. The policy arena is just as contentious; a variety of strategies have been proposed to provide employment opportunities, particularly for low-income populations. By synthesizing the research to date and evaluating the key debates in this area, this literature review will assist practitioners of economic development in making the leap to workforce issues.

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INTRODUCTION

The economic expansion of the 1990s created conditions in labor markets that would have seemed inconceivable even a few years earlier. Job growth and accompanying declines in unemployment finally reached some of the most disadvantaged job seekers, such as welfare recipients, who entered employment in record numbers. At the same time, the booming economy sent mixed signals. Processes of workplace restructuring transformed labor markets and eliminated pathways for worker advancement, particularly in manufacturing.

Increased competition placed pressure on small- and medium-sized manufacturers to lower costs and rein in new investments. Traditional methods of hiring, managing, and promoting workers inside many enterprises broke down and were replaced by workforce systems that relied heavily on low-wage, temporary, and subcontracted labor. At the same time, the shortage of skilled production workers reinforced the "low road" hiring practices of these companies, encouraging employers to poach employees from their competitors rather than train their own. In order to keep their labor needs flexible and costs low, many small companies now offer only low-wage, low-skilled employment. Because these labor practices reduce the potential gains from job creation, they pose a growing challenge to economic development practitioners.

Economic development practitioners are beginning to recognize that labor market conditions play an integral role in their ability to attract, retain, and nurture businesses. If the workforce needs of businesses cannot be met by the supply of local job seekers and if the needs of job seekers cannot be met by the provision of decent jobs, then even the most well-crafted economic development policies will founder.

Understanding and meeting the workforce needs of business requires different skills, information, and policy tools than those used in decision-making about conventional "bricks and mortar" economic development. Much of the workforce-related information economic development practitioners receive comes from representatives of large companies (that participate in Private Industry Councils, for example) or from the popular business literature, which speaks primarily to Fortune 500 companies and not to the typical small manufacturer. The lack of knowledge about small- and medium-sized manufacturers with older production systems is unfortunate because these companies continue to be the backbone of many local economies.

This paper reviews the growing literature on the changing employment practices of small and medium-sized manufacturers. Specifically, we examine the literature in four areas: (i) Hiring Practices, (ii) Employment Security and Retention, (iii) Career Ladders, and (iv) Economic Development Policy. Observers disagree about the extent to which restructuring has taken place, the nature of workplace change, and the impact of this change on the poor. The policy arena is just as contentious; a variety of strategies have been proposed to provide employment opportunities, particularly for low-income populations. By synthesizing the research to date and evaluating the key debates in this area, this literature review will assist practitioners of economic development in making the leap into workforce issues.

BACKGROUND

Manufacturing accounts for about 18 percent of the nation's employment and remains a strategically important component of many regional economies (Census of Manufacturers, 1996). The majority of manufacturers are small- and medium-sized businesses (under 500 employees), privately held, and in the printing, industrial machinery, fabricated metal, and food products industries. The National Tooling and Machining Association, for example, estimates that its typical member has about 29 employees and $3 million in sales (Ackerman, 1997).

Manufacturing production systems are in the throes of great change. From the 1950s through the 1970s, oligopolistic market structures sheltered large corporations from product competition while wage increases tied to rising productivity allowed unions to gain a share of the profits for their members (Appelbaum and Berg, 1996). Workers engaged in mass production expected some measure of job security, advancement opportunities, and steady raises from their employers (Harrison, 1994). In exchange, employers could expect loyalty and the development of firm-specific skills as employees advanced along an established career ladder. In mass production systems, workers developed skills by repeating the narrowly defined and often routine tasks defined by union job classifications.

Starting in the 1970s, financial deregulation, an overvalued dollar, technological change, and foreign competition drastically altered the environment in which large American manufacturers operated. Foreign corporations challenged American dominance in steel, automobiles, consumer durables, and other product markets that had been the backbone of the U.S. economy. In this increasingly unstable environment, domestic manufacturers faced declining or uncertain profitability and were forced to restructure (Harrison and Bluestone, 1988). To lower fixed costs, large companies shifted job tasks previously performed in-house to external contractors. Firms shed excess capacity and outsourced tasks that did not qualify as "core competencies," creating new opportunities and challenges for the small suppliers from which they obtained parts and intermediate products.

Because of the increasing frequency of outsourcing, most small and medium-sized manufacturers are now suppliers to larger firms as opposed to original equipment manufacturers. Large customers place pressure on their suppliers to reduce prices (by keeping costs low), speed up their delivery times, and keep additional inventory on hand—all while insisting that quality standards remain high (Luria, 1996; McCormick, 1996; Weber, 1999). In effect, these large customers exert market pressure on their predominantly small suppliers to bear the brunt of upturns and downturns in product demand, and, as a result, production schedules for small firms are highly unstable. In his study of 1,000 establishments with fewer than 500 employees, Luria (1996) found that even though, on average, the volume of company sales had risen in the early 1990s, most had also experienced significant downturns in demand during the same period. As large customers streamlined production, they sought to decrease the number of vendors. At the same time, they solicited from a larger pool of potential suppliers in pursuit of the lowest quotes and highest quality. Indeed, Luria found that competition for each contract

appeared to be increasing—smaller suppliers were quoting each job against more competitors than in previous years.

Small firms have pursued different kinds of strategies to adjust to increased competition and uncertainty. A subset of small manufacturers have made efforts to redefine critical production tasks (e.g., through the use of numerically controlled machine tools) and restructure relations with their own suppliers (e.g., just-in-time production). These firms, which many authors have dubbed "high road" or "high performance" (Appelbaum et al., 2000; Appelbaum and Batt, 1994; Brown and Reich, 1997; Gittleman, et al. 1998; Osterman, 1999), have managed to supplement price/cost-based competitive strategies with quality-based ones.[1] High performance strategies allow firms to compete on the basis of continual innovation, customer service, and product quality. Rather than skimp on capital investment, high performance companies invest in new equipment and the training necessary to achieve productivity gains from it.

Because high performance firms have the capacity to improve productivity and quality while lowering costs, flexible work practices can lead to mutual gains for employers and employees (Harrison, 1994; Kochan and Osterman, 1994). They have adopted new systems of work organization to operate self-contained stations or "cells" where workers are responsible for a variety of tasks, including quality control and machine setup. Such multi-skilling practices, including work teams, quality control circles, and job rotation within a few broad classifications, require investments in training and workforce development. Studies have found that these innovations offer workers greater wages, autonomy, input into decision-making, and employment security (Appelbaum et al., 2000; Osterman, 1999).

Evidence suggests that larger firms have a greater scope to manage changing customer demands in a quality-oriented way and are increasingly turning to high performance work systems to improve competitiveness (Brown and Reich, 1997).[2] But how widespread are these high road practices among smaller manufacturers? These practices appear to be penetrating the small firm sector as well, although at a much slower pace (Kelley, 1996). Luria (1996) found that, compared to previous years, some smaller shops were spending more time and money on technical training and investing in new computer-controlled technologies that automated scheduling, manufacturing, and quality assurance. These firms tended to have high capital-to-worker ratios and paid higher wages across their workforce (Jenkins and Florida, 1999; Luria, 1996). Among the thousand small metal forming shops he studied, Luria found that 15 to 20 percent of these establishments were becoming more productive, and, in these shops, wages were also rising.

Although some small- and medium-sized manufacturers have been able to adopt high performance practices, the transition is neither complete nor painless. Most small manufacturers remain entrenched in "low road" practices, competing for market share and pursuing flexibility primarily by lowering costs, often by withholding investment in new equipment or workforce upgrading. These firms allow uncertainty about future sales to disable their budgeting and planning processes and to discourage investment. They are reluctant to upgrade technology and use advanced telecommunications and production technologies. Luria (1996: 12) notes that these companies "keep as much as possible of their cost structure 'variable' (i.e., composed of unskilled labor and materials and other

factors of production that can be added or shed as needed rather than becoming permanent features of the business). That means minimizing capital investment; otherwise, expensive machinery would sit idle whenever orders fell, driving costs per unit through the roof."

Most small manufacturers have also sought flexibility through lowering labor costs—by reducing the number of full-time employees (e.g., substituting part-time, contract and contingent workers), suppressing wages, flattening career ladders, or further outsourcing production. Because they can undermine the value of local economic development efforts, we explore the changing workforce practices of manufacturers in more depth in this review.

HIRING PRACTICES

The competitive environment in which small and medium-sized manufacturers operate influences every aspect of work organization. Hiring practices—the point of entry for workers into the firm—depend on a range of factors. On the supply side, these factors include the unemployment rate, adequacy of vocational preparation systems, and composition of the local industrial base from which potential employees may be hired. On the demand side, hiring decisions depend on product demand, capital intensity, and the skill requirements of production.

Most entry-level occupations in manufacturing require workers with strong basic skills. In manufacturing, as in other sectors, the requirements for entry-level jobs are considerably higher than in the past (Cappelli, 1993; Murnane and Levy, 1996). Many positions require workers to possess an understanding of new manufacturing practices and technologies such as process flow, quality assurance, and just-in-time production (Jenkins, 1999).

As Jenkins (1996: 6) points out, most employers are looking for entry-level workers who possess the following attributes:

- Employable – Drug free, reliable, with strong work habits and the ability to work well with others;
- Trainable – Able to read and perform basic math at the nineth grade level or above, apply basic principles of science and technology, use computers, solve practical problems and communicate effectively, both orally and in writing;
- Technically literate – Can perform basic shop math, use common measuring devices, read blueprints and schematics and demonstrate familiarity with machine operations; and
- High school graduate (or possess a GED) – There are exceptions, but most employers in more technologically advanced firms (which pay higher wages) require applicants for entry-level skilled jobs to have a high school credential.

A recent survey found that employers most frequently report they are looking for workers who are reliable and who have a positive attitude (Regenstein, Meyer and Hicks, 1998).

Although few employers claim that prior work experience or previous training are required, many request references from previous employers as well as a reason for leaving the last job when considering an applicant for employment.

Manufacturers may recruit to fill open positions using conventional methods such as employment agencies and newspaper advertisements. Less costly and more common methods include relying on informal networks, primarily walk-ins and word-of-mouth referrals from current employees. In his 1996 study of the employment prospects for less-educated workers in four U.S. cities, Holzer found that referrals made by current employees and walk-ins accounted for 35 to 40 percent of the new applicants hired. Newspaper advertisements accounted for 25 to 30 percent of the hires, and state employment services accounted for less than 5 percent. Holzer's findings are supported by a survey of the hiring practices in Chicago manufacturing plants (Jenkins and Theodore, 1998), which found that employers viewed referrals from current employees as the most effective method for hiring new production workers and laborers. Employers reported that current employees were best able to identify high-quality workers who could fit in to the work environment. Manufacturers were least satisfied with the quality of referrals from public employment agencies.

Employers often rely on screening methods to test applicants' qualifications and to identify potential new hires who may have poor skill levels and aptitudes. The study of Chicago manufacturers found that almost two-thirds of the employers used reference checks, half of them administered drug tests, and more than one-third tested applicants' basic English and math skills (Jenkins and Theodore, 1998). For many employers, the best proxy for aptitude was previous experience in manufacturing. Respondents reported that 70 percent of new hires for higher skilled positions had more than five years of experience in manufacturing.

Low unemployment rates present challenges for small- and medium-sized manufacturers seeking to fill both skilled and unskilled positions, particularly because they often do not employ the full-time human resource managers necessary to find workers in tight labor markets.[3] In 1998, 65 of the nation's 100 largest metropolitan regions reported unemployment rates of under 4 percent (Headen, 1998). Many rural areas also experienced tight labor market conditions in manufacturing, aggravated by problems of poor transportation access (McGranahan, 1998). After a decade of corporate restructuring and downsizing (from roughly 1985 to 1995), demand for skilled manufacturing workers increased dramatically in the late 1990s, due, in part, to the retirement of large portions of the manufacturing workforce.[4] Manufacturers may face a major human resource crisis if they cannot replace these retirees.

Manufacturers already complain frequently about the shortage of workers for skilled manufacturing jobs. The National Tooling and Machining Association, a trade group, estimates that the metalworking industry is short at least 20,000 people nationwide (Ackerman, 1997). Similarly, a National Association of Manufacturers' survey of firms with 500 or fewer employees reported that nearly 35 percent of 1,400 respondents cited "finding and keeping qualified employees" as their most serious problem (Miller, 1998). In another recent survey, rural manufacturers reported that the "quality of available labor" was a major problem, especially among firms that paid below-average wages (McGranahan, 1998).

Shortages of qualified workers present challenges to large as well as small firms. Unfortunately, large firms are better able to "poach" workers from their smaller competitors, suppliers and customers. This practice is not new; larger companies have historically relied on their supplier bases as a pool of new employees (Cappelli, 1999). The Big Three automobile makers, for example, commonly use their supplier bases to obtain trained and tested workers that can quickly be used in production or engineering operations (Smith, 1996). Employees often gain improved pay, benefits, and career ladders by re-employing with the Big Three.

The primary problem with this trickle-up arrangement is that smaller suppliers are stripped of their best workers. After investing time and resources in training, small companies forfeit the benefits of this training to other firms (Lynch, 1993). As large customers move to replace their aging workers in the coming years, the raiding is likely to intensify and take place in far away locales. For example, Boeing recently sent recruiters to New England seeking machinists to help fill a $1.4 billion backlog in work orders. Allied Signal in Phoenix began recruiting in the Midwest after receiving complaints about poaching from several of its local parts suppliers (Siekman, 1998). Intensified poaching of workers has caused some smaller firms to move away from areas with concentrations of similar industries to regions with less labor market competition – such as rural areas and southern states (Smith, 1996; Rubinstein, 1996; Kenney and Florida, 1993).

Another way that hiring practices of manufacturers have changed in response to volatile product markets and labor shortages is the increased use of temporary staffing agencies (Cappelli et al., 1997; Peck and Theodore, 1998). Staffing agencies take on many of the responsibilities traditionally handled by human resource departments. These include: recruitment, screening, hiring, payment of wages and benefits, and payment of employment taxes, such as unemployment insurance and workers' compensation. Manufacturers may use temporary staffing agencies as a low-cost way to "shop" for permanent employees, or more commonly, as a way of bringing on workers who remain in temporary status for the duration of their employment. More than one-third of temporary help workers nationwide are in the "light industrial" sectors of the economy, performing work as assemblers, hand packers, and material movers in factories and warehouses (NATSS, 1999).

For most of the past twenty years, the use of part-time and temporary (what economists refer to as "contingent") staffing arrangements in the U.S. has been viewed as an anomaly. Only recently has a consensus formed that contingent work is more than a short-run deviation from "regular business practices." Recent survey evidence indicates that contingent work has become institutionalized in the majority of U.S. businesses. According to the National Association of Temporary and Staffing Services, 90 percent of companies now use temporary help services (NATSS, 1999). A survey by Olsten Corp. found that 49 percent of manufacturers now use "blended" workforces, work systems designed to make use of temporary, outsourced, and part-time workers as well as independent contractors alongside their full-time employees (cited in *Quality* 1998).

The findings from several national employer surveys have shed light on many of the reasons behind the growing use of nonstandard employment arrangements (Houseman, 1997; Osterman, 1994, 1999; Blank, 1998). The most common reason

employers use temporary agencies is to staff peak periods or to handle short-term increases in demand for products or services. In addition to handling workload fluctuations, employers hire temporary workers to fill-in before a regular employee is hired and to fill-in for a regular employee who is ill, on vacation, or on family medical leave. The third most common reason why employers use contingent workers is to screen workers for regular jobs. But Houseman (1997) also found that a significant percentage of employers use contingent workers on a more permanent basis to reduce wages and benefit costs across the board (see also Mangum, Mayall and Nelson, 1985). Importantly, her survey revealed that the use of contingent workers by employers was positively related to the provision of good benefits packages (pension and health insurance benefits) to their regular, full-time employees.[5]

EMPLOYMENT SECURITY AND RETENTION

The shift to more flexible forms of production and the intensified poaching of skilled workers appears to be creating problems for many smaller manufacturers in the form of increased turnover, workforce instability, and breakdowns in internal skill-development systems (Appelbaum and Batt, 1994; Luria, 1996). Workforce instability does not just hurt workers; it also hinders the ability of employers to plan work orders and production timetables.

Employers experienced higher rates of turnover in the 1990s than they had in the two previous decades (BNA, 2000). In particular, turnover increased sharply among those businesses with fewer than 250 workers. Small manufacturers report losing about 40 percent of their workforce every 12 months (Siekman, 1998). The entry-level job market in particular is characterized by considerable "churning." A survey of 500 small employers revealed that in half of the firms surveyed, the majority of entry-level workers stayed with the employer for one year or less (Regenstein, Meyer and Hicks, 1998). Another study found that young employees now work for more employers and have shorter tenures at each job site (Bernhardt et al., 1998).[6] Even in manufacturing, where workers tend to be older and presumably less mobile, job tenure is much shorter than it once was—the odds of a job separation in manufacturing are 30 percent higher for workers in the 1990s than for workers two decades ago (Bernhardt et al., 1998). Rapid job churning is most pronounced among workers with less than a high school education (Monks and Pizer, 1998).

Of course, turnover may be either employer-initiated (firings and layoffs) or worker-initiated (resignations and retirements). These separations are often referred to as "involuntary" or "voluntary," respectively. While there is an obvious difference between choosing to leave and being forced to leave a job, especially in terms of one's eligibility for unemployment insurance, dissolving an employment relationship is most often a joint decision (Rodman, 2000).[7] The greater the threat of being laid off involuntarily, for example, the greater the likelihood of voluntary separation (Stoikov and Raimon, 1968).

Despite evidence of record job creation in the United States in the 1990s, urban and rural economies have still experienced large-scale layoffs arising from plant closing,

downsizing, and mergers and acquisitions. Following a surge in downsizing in the recession of the early 1990s, permanent job loss remained quite high throughout the decade (Valletta, 1998; Hipple, 1997). In particular, layoff incidence increased sharply between 1994 and 1995, due in part to a delayed response by defense-dependent contractors to declines in the military procurement budget. Even in the late 1990s, involuntary job leaving constituted a relatively small share of the unemployment incidence (14 percent on average) (Economic Policy Institute, 1999). Although small manufacturers often find ways to retain their most valued employees during downturns in business volume, pressures to lower costs force companies to do more with less.

What explains the increasing frequency of employment turnover in the economy? A certain amount of turnover is to be expected from a dynamic economy; individuals choose employers and positions, and employers decide which employees are suited to filling available jobs. Specific environmental factors, however, contribute to higher rates of turnover. Voluntary turnover tends to follow the business cycle. During periods of economic prosperity, workers have greater confidence in their ability to migrate to other, often better paying, jobs (Economic Policy Institute, 1999). At the same time, when a strong economy leads to labor shortages, workers filling entry-level positions are more likely to be young, have little work experience, and few proven skills. These workers have a higher propensity to quit or be fired (Cappelli, 1999). The opposite is true during recessions.

A number of studies have explored the causes of employee turnover. In their summary of this literature, Cotton and Tuttle (1986) note several factors that appear to be positively correlated with decreases in turnover. These include: age, job tenure, number of dependents, wages or salaries, job satisfaction, union presence, and aggregate unemployment rates. This supports earlier findings that younger, less experienced, and non-unionized workers are more likely to voluntarily leave jobs or be fired. More educated workers are also more likely to be job leavers, although for a different set of reasons.

In addition to employee characteristics, the quality of a job may encourage or discourage turnover. A study of both manufacturing and service employment found that "the characteristics of the jobs to which less educated workers have access, including starting wages, occupations, and industries, seem to affect their turnover rates independently of personal characteristics" (Holzer and LaLonde, 1998: 24-25). Another study found that businesses that pay higher wages experience less turnover. Employers whose entry-level employees stay for an average of two years are also more likely to report that the establishment provides health insurance, paid sick leave, and paid vacation (Regenstein, Meyer and Hicks, 1998). A study of manufacturing employees found that total compensation (including monetary awards such as merit raises and benefits) had a large positive effect on voluntary turnover (Lust and Fay, 1989).

Thus, not all manufacturers experience high turnover. Those establishments that approximate the high performance model described earlier are less likely to have problems with employee retention (Jenkins and Florida, 1999). In such companies, employees are likely to be given opportunities for advancement and on-the-job training, two other factors that are highly correlated with retention (Lynch, 1993). A study of the 30 steel mini-mills found that firms with "commitment"-oriented human resource

systems (which allowed workers more discretion in carrying out their job tasks and involvement in managerial decisions) experienced less turnover than firms with "control"-oriented systems (where emphasis was placed on compliance with specified rules and procedures) (Arthur, 1994). The commitment-oriented firms did not pigeon hole employees into narrowly defined jobs and allowed them significant voice in defining job tasks. In order for job retention to be beneficial to the worker in the long-run, employees must have career advancement opportunities within the organization and employers must be willing to train and advance their low-skilled workers to more highly skilled positions rather than hire from outside (Brown et al., 1998).

What are the implications of high rates of turnover? Some believe that turnover is a sign of a healthy economy in which workers have many opportunities and employers have the flexibility to hire the workers best suited to the job (Ryscavage, 1995). However, there are costs to high turnover as well. When employers experience difficulties finding qualified replacement workers, turnover can raise the cost of both recruitment and operations because employers often must pay costly overtime or hire less productive temporary workers. A study of the costs of turnover among entry-level staff estimated costs ranging from 25 percent to 50 percent of a worker's annual pay (Coopers & Lybrand, 1997). The study found that most of the turnover cost, about 85 percent, is related to productivity loss. Costs are highest in work teams or manufacturing line situations in which an employee's work performance is likely to influence other employees. Also, it is more difficult to replace employees with firm-specific skills.

Job insecurity is a serious problem for workers as well. Income growth, benefits, and promotion are typically attained through stable employment with one firm. A lack of tenure can limit future employability because employers may be wary of an employee with an unstable work history. There is some evidence that short and/or erratic spells of work could disadvantage individuals seeking work. While earlier studies found that young workers' income increased with each job change, more recent work demonstrates that in the longer term, job instability has a negative effect on wage growth (Berhardt et al., 1998) and benefits (Regenstein, Meyer and Hicks, 1998; Gladden and Taber, 1999). These findings may be due to the fact that during earlier periods, job changes were less frequent and were related to skill development.

A *lack* of turnover, however, may imply that employees are bypassing better job opportunities or that the market presents them with few opportunities for advancement. When other, better jobs are available, staying at a bad job imposes opportunity costs of forgone alternative employment. It is often in the interest of employees, after entering the work force and establishing a stable work record, to search for jobs with better opportunities and rewards. Too often, however, high turnover actually prevents career progression as workers cycle in and out of poorly paid, dead-end jobs (Rogers, 1995; see also Holzer, 1999). For many job seekers, career progression is halted before it even begins.

Employees are working for individual employers over shorter tenures—whether by choice or because jobs are being created and destroyed at a rapid rate. Overall, current research does not conclude that managers have little commitment to their workers. However, this research does demonstrate how the market pressures being

exerted on small manufacturers to keep costs low and variable may create working conditions that discourage retention and loyalty.

CAREER LADDERS

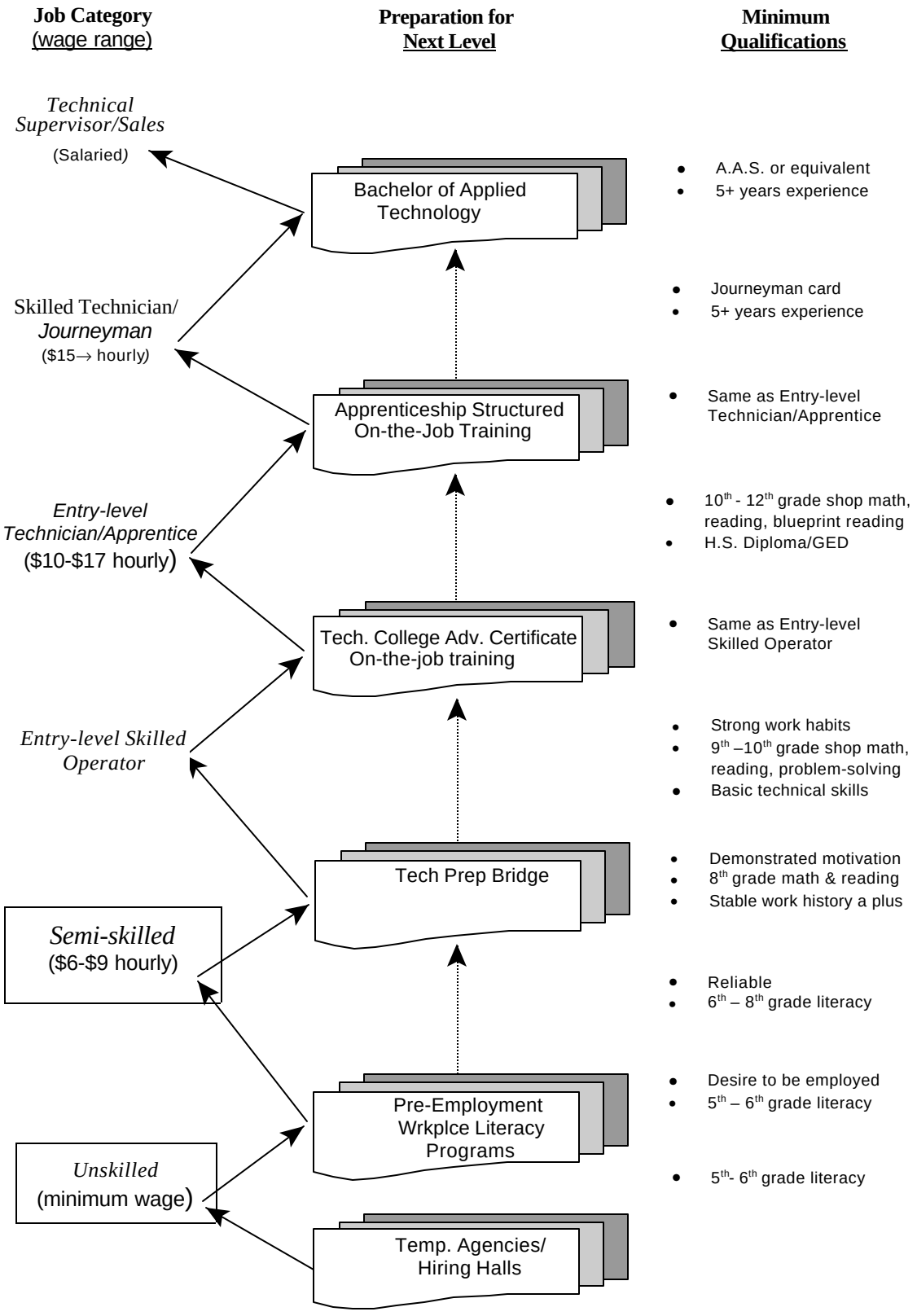
Job stability will only lead to increased wages and benefits if career ladders exist and if workers obtain the skills to advance up them. The "ladder" theory of career advancement suggests that workers, gaining skills, experience, and seniority, advance from entry-level work into better paying, higher skilled occupations. This model suggests that employers also benefit because labor productivity increases as workers accumulate knowledge about the production process. Although such a ladder may not exist in a single manufacturer, the concept of a career ladder is still appropriate for understanding occupational mobility in a local economy as well as within an industry. A stylized model for manufacturing is presented in Figure 1.

For most production jobs, the traditional model has been for employers to seek entry-level applicants with strong basic skills. In the case of the metalworking industry, for example, employers prefer to hire workers who have completed high school, are able to read and write English, and can demonstrate proficiency in mathematics (Theodore, 2000). Strong communication skills and the ability to work well with others are also required for work sites organized around team concepts. Entry-level metalworking employees often begin as helpers or assistants to experienced operators. The responsibilities of an assistant include material feeding, removal of finished products, and clean up. As their responsibilities increase, trainees adjust feed speeds, change cutting tools, and inspect the quality of finished products.

As workers gain familiarity with technology and work practices, they may be selected to become machine operators responsible for an entire set of machinery. In most cases, metalworking machine operators learn their trade on the job. During this time, workers develop a basic proficiency in operating machines, and hone these skills over the course of several years as they improve their techniques and become highly skilled operators. Workers who advance to the position of set-up operator are required to exercise discretion over the entire work process and must be "multi-skilled" since they work with several machines (many of them computer-controlled) and often in teams. Increasingly these workers communicate with other functional areas within the workplace and even with customers.

Moving between semi-skilled assistant and the skilled machine operator positions is critical to advancing from low-wage to livable wage employment (Jenkins, 1999). Whereas the median hourly earnings of a material handler (semi-skilled) in the Chicago metropolitan area was $9.90 in 1998, the median wage of machinists was $14.08 an hour. The most advanced production positions, such as a CNC programmers/machinists, pay median hourly wages around $21 (see Table 1). Although rigid, union seniority rules traditionally guarded the rungs on the ladder, calibrated wages, and made promotion decisions more predictable (Dresser and Rogers, 1998).

Figure 1: Job/Training Ladder to a Career in Manufacturing



Source: Davis Jenkins, *Beyond Welfare-to-Work: Bridging the Low-Wage-Livable-Wage Employment Gap*. Chicago: Great Cities Institute, 1999.

Table 1: Sample Job Titles in the Manufacturing Job Ladder

Job Category	Sample Job Titles	Median Hourly Wage (1998)
Technical Supervisor	Shift Supervisor	Salaried
	Team/Group Leader	NA
Skilled Technician/ Journeyman	CNC Programmer/Machinist	$21.63
	Designer, CAD	$22.50
	Electrician	$19.49
	Machine Builder	$21.20
	Machinist, Journeyman	$17.50
	Maintenance Machinist	$16.12
	Maintenance Mechanic	$17.95
	Mold Maker, Journeyman	$22.00
	Model Maker	$19.33
	Tool and Die Maker	$22.00
Entry-level Technician/ Apprentice	Apprentice	$11.13
	CNC Machinist, Set up and Operate	$16.10
	Draftsman, CAD	$16.34
	Estimator	$13.55
	Inspector, Final	$13.28
	Machinist	$14.08
	Maintenance Worker, Toolroom or Production	$13.95
	Welder, ARC/MIG/TIG	$13.86
Entry-level Skilled	Assembler, Skilled	$11.92
	Inspector, In Process	$10.75
	Grinder, Surface	$11.50
	Material Handler	$ 9.90
	Set-Up Operator (die setter, die casting drill press, CNC, heat treatment, lathe, milling machine, punch press, printing press, misc. machine setter)	$9.00-$14.00
	Shipping/Receiving Clerk	$10.00
	Stockroom, Toolroom or Production	$11.50
	Untility Worker, Toolroom or Production	$9.23
	Welder, Spot	$9.05
Semi-skilled	Assembler	$8.75
	Forklift Driver	$8.50
	Operator (die casting, drill press, injection molding, press brake, screw machine, turret lathe, other semi-skilled operator)	$7.00-$8.75
	Packer	$8.50
Unskilled	Laborer	$6.25

Source: Davis Jenkins, *Beyond Welfare-to-Work: Bridging the Low-Wage-Livable-Wage Employment Gap*. Chicago: Great Cities Institute, 1999.

Does this model still hold? It appears that the pressure for flexibility has disrupted job ladders and muddled job responsibilities, especially in smaller shops. Recent studies suggest that career ladders are becoming flatter and that certain entry-level occupations are becoming disconnected from high quality jobs to which workers had traditionally advanced (Cappelli et al., 1997; Cappelli, 1999). Even those workers who progress beyond the most poorly paid entry-level jobs may find that the career paths offered by their employers have been dramatically shortened or eliminated.

Career ladders are already truncated or non-existent in many small companies because of the low division of labor. The smallest firms often have the fewest opportunities for promotion; their highest paid positions have the least turnover. Like their larger customers, small manufacturers are frequently turning to temporary staffing agencies to provide entry-level workers without providing room for advancement to these workers.

The emphasis on reducing payroll costs may have lead some managers to define jobs more narrowly and make them even more routine in order to employ less-skilled, lower cost workers or substitute capital equipment for labor (i.e., "low road" behavior) (Appelbaum et al., 2000). Falling average wages in small manufacturers "make clear that high-roaders are a declining proportion of the small manufacturer population" (Luria, 1996: 16).[8] Throughout the economy the number of entry-level jobs, such as shipping and receiving, proliferated during the economic expansion of the late 1990s (Wright and Dwyer, 1999).

Surprisingly, at the same time there has been downgrading in the skill requirements of many entry-level jobs. Other studies have found that manufacturing employment has shifted toward higher skilled jobs. Higher skilled manufacturing jobs are becoming increasing complex—due in large part to the introduction of new workplace practices that emphasize decision-making, problem-solving, and teamwork as well as to the growing use of computer technologies—and workers are now expected to take on increased responsibilities (Cappelli and O'Shaughnessy, 1993; Teixeira, 1998). These two findings—an increase in entry-level *and* higher-skilled jobs—do not necessarily contradict each other. Instead, they support the hypothesis that the distribution in job growth during the 1990s recovery was bipolar—weighted heavily on the bottom and top ends of the spectrum (Wright and Dwyer, 1998). It may be that the jobs that link the two ends—the "bridge" jobs—are missing (Jenkins, 1999).

The breakdown of career ladders within a given company is reinforced by the fact that manufacturers continue to lose some of their best employees to customers and competitors. Poaching of quality workers reduces incentives to make investments in individual workers through training. American firms have long held the reputation for investing less in skills training than many of their foreign competitors (Dertouzos, Solow and Lester, 1989; Lynch and Black, 1996; MacDuffie and Kochan, 1995; Appelbaum and Batt, 1994). Small manufacturers in particular appear to invest little in training their workforce. Luria (1996: 12) notes that where the typical large company "spends about 2 percent of payroll on training shop workers in its large plants, the training investment in a typical small-plant employee is less than 0.5 percent of payroll." Employers may claim

that the tasks performed are either not dangerous or not unique enough to warrant training but the underlying reasons relate back to their inability to capture a return on their investment (Weber 1999a). As responsibility for product and process control is shifted downward to lower tiers of the supply chain, it will become more difficult to maintain quality and other performance goals vital to the success of business without high performance work systems backed investments in the training of current employees.

IMPLICATIONS FOR ECONOMIC DEVELOPMENT POLICY

How do corporate restructuring and workforce change affect economic development activities? Most economic development programs were crafted during the era of deindustrialization when retention and attraction of *any* job was necessarily the objective. In periods of long-run employment growth, however, alternative goals are necessary. Flexible staffing arrangements, flatter career ladders, reduced training, and skilled worker shortages mean that job creation can no longer be regarded as the primary measure of successful business development. Instead, economic development programs must help firms move toward high performance work systems that provide more stable, higher quality jobs.

Local economies will be unable to sustain high growth rates unless firms invest in new technologies, implement innovative workforce systems, and undertake skill development of their employees. All of these activities require the development of a coordinated economic and workforce development system that is responsive to the needs of both firms and workers (Giloth, 1998; Harrison and Weiss, 1998a, b).

Conventional urban economic development strategies—e.g., low-interest loans, property tax abatements, and brownfield redevelopment—are geared almost exclusively toward meeting the "bricks and mortar" needs of businesses despite evidence that a key factor in business location decisions is the availability of qualified labor. Rural development policy has also tended to focus exclusively on infrastructure, credit and business assistance (McGranahan, 1998). Human capital investments are too often viewed as ancillary to the primary goal of real estate and business growth, or worse, as a cost to be minimized (Ranney and Betancur, 1992). However, firms frequently leave localities because they cannot find residents with the qualifications for vacant positions—not simply, as many contend, because of the lack of developable space or the heavy tax burden (Giloth, 1998). Economic development staff must think of labor as an asset that, along with its arsenal of financial incentives, can be used to attract and retain business.[9] Especially during periods of low unemployment and shortages of skilled production workers, they have little choice but to adopt workforce-focused policies.

Businesses want workers with basic skills who are prepared for work; tax abatements and credits that encourage firms to hire unqualified workers are counterproductive. Most localities lack the means of addressing these skill shortages and connecting workforce development to ongoing industrial retention and attraction efforts. Existing job training programs are often loosely connected to actual employment needs and operate without any guarantee that their graduates will find positions in the

occupations for which they have been trained (Jenkins, 1999; Weber, 1999b; Harrison and Weiss, 1998b). This means that job seekers may not achieve the hoped-for wage gains or the career-track jobs that prompted their participation in a training program. Moreover, programs to boost the supply of skills through mandated training or new workforce development programs—in the absence of action by firms to adopt new approaches to organizing work—may not improve demand or the utilization of skills. The resulting lack of coordination between economic development and workforce development systems compromises the effectiveness of economic development efforts.

In recognition of these needs, practitioners across the country are fashioning alternative workforce-centered economic development strategies that address both the demand for and supply of labor. Some strategies are designed to help workers move from low-paying entry-level jobs into higher skilled employment with advancement opportunities. Others seek to improve incumbent worker training systems. Still others seek to make the workforce-related gains from traditional economic development incentives more explicit. What these programs share in common is a shift away from a focus only on the *number* of jobs to improving the *quality* of jobs available in a local economy. They also create a place for new actors: non-profit job training providers, community colleges, and government agencies involved in workforce development—organizations that have traditionally been absent from economic development decision-making. The following sections explore two specific policy strategies at greater length.

Community Career Ladders

For many workers, job-based learning, skill development, and meaningful wage progression will only occur through movement across employers and industries (Hertzenberg, Alic and Wial, 1998). The Community Career Ladders (CCL) approach is designed to address the manifold problems of career instability, turnover in the entry-level segment of the labor market, and skilled worker shortages at the higher end (Dresser and Rogers, 1998; Newman, 1999). Under this approach, an intermediary organization, typically a community college or community-based job training and placement provider, works with employers, employees, and other service providers to devise routes of advancement for workers from low-wage employment to successively better occupations. Through CCLs, a mobility path, which moves workers to different employers or across industries, is mapped out, in essence creating multi-employer career paths in place of traditional employer career paths that have become nonfunctional for a growing number of workers. A stylized model is presented in Table 2.

At this point, the CCL model is relatively new and has only been adopted in a small number of locales (see Fitzgerald and Carlson, 2000; Herzenberg, Alic and Wial, 1998). In western Michigan, for example, fast food franchises are linking with manufacturers to move entry-level food service workers into manufacturing jobs. Cascade Engineering, a plastic parts manufacturer, and the local Burger King franchises pooled their recruitment and selection efforts. If applicants did not have the skills for Cascade's production positions but appeared to be good workers, they were offered jobs at Burger King. And Burger King employees, rather than quit their low-paying jobs,

were offered vocational counseling and the possibility of better positions at Cascade (Wessel, 1997). In Massachusetts, three hospitals and the hospital workers' union are cooperating to design training programs and advancement opportunities for housekeepers, food service and clerical workers. Once they have completed the requisite training, participants can move into career ladder jobs in health care, such EKG technicians.

In contrast to typical patterns of high levels of turnover in entry-level positions, CCLs hold the promise of a different pathway for workers with limited work experience and few vocational credentials. Workers who could not envision remaining with an employer for an extended period of time because wages are low and advancement opportunities are few benefit from the relative ease of access to these jobs and the chance to establish a solid work history, with the knowledge that improved employment opportunities lie ahead. In addition to pay and work experience, participation in the program provides workers with an expanded network of future job contacts through participating employers.

Table 2: Model Community Career Ladder

Stage 1	Job seekers with little employment experience and few vocational credentials participate in job-readiness activities offered by an employment training and placement provider.
Stage 2	A labor market intermediary with experience in job placement assists job seekers who have little or no employment experience and/or multiple barriers to employment into entry-level jobs (such as shipping and receiving and assemblers) with few hiring restrictions. The aim at this stage is for the worker to build a steady work history, albeit at low wages.
Stage 3	Once the worker retains a job for a prescribed period of time, he or she is ready to participate in "bridge" training (see Jenkins 1999) in preparation for advancement to another employer offering better employment – such as skilled assembly, set-up operators, or quality inspector. A community organization or community college would offer this training to individuals while they are employed.
Stage 4	The labor market intermediary certifies worker success with the initial employer as well as successful completion of bridge training, and assists workers in identifying suitable employers that are participating in the Community Career Ladder program and offering higher-level jobs.
Stage 5	After a period of time, workers may seek further advancement opportunities and will work with the labor market intermediary to identify appropriate job-training programs and/or higher-level employment opportunities.

For employers, CCLs provide an alternative method for worker recruitment. Employers seeking to fill low-wage jobs but who also experience difficulties hiring and retaining entry-level workers benefit from this arrangement in several ways. This strategy assists employers with high-turnover workforces in developing plans for the "managed turnover" of their employees. As we have stated, high levels of unplanned turnover are typical in low-paying occupations and are both disruptive to workplaces and quite costly to businesses. Rather than simply trying to cope with this turnover, employers participating in the CCLs program have access to a ready supply of entry-level job applicants while also being better able to prepare for their departure from the company after a set period of time. This has the benefit of reducing the costs of worker recruitment as well as providing workforce stability around which work orders can be planned.

Employers that provide higher paying jobs, but for whom recruitment of new workers is a problem because of higher employment requirements, are better able to access workers who, through CCLs, have a proven track record and are prepared for higher-paying, more demanding jobs. Workers who have participated in job-readiness activities followed by work experience in an entry-level job (and perhaps additional job training) may be ready to fill vacancies in occupations in which employers are experiencing recruitment difficulties.

Finally, government agencies and community providers of job training and placement services benefit from CCL programs. The expanded range of prospective job openings for their clients, as well as the opportunity to fashion targeted training programs to foster career and wage progression, improves both initial employment opportunities and long-run employment outcomes.

Labor Market Intermediaries

Because career ladders are no longer orderly or predictable, intermediaries have stepped in to make the "map" for labor market access and advancement easier to navigate (Dresser and Rogers, 1998; Osterman, 1999; Elliot and King, 1999; Giloth, 1998). Organizations such as Project Quest (San Antonio, Texas), the Garment Industry Development Center (New York City), and the Center for Employment Training (San Jose, California) have taken on many of the responsibilities formerly carried by employers and job seekers, such as recruitment, identification of employment opportunities, screening, placement, and training (see Harrison and Weiss, 1998b).

Their familiarity with a particular industrial sector allows labor market intermediaries to develop strong long-term relationships with employers while, at the same time, their knowledge of the local community (through local block clubs, churches and social service organizations) gives them access to a pool of available workers. This knowledge also allows them to react to changing needs of industry, assist with industrial modernization, and to prepare workers for entry into new and changing occupations (Flynn and Forrant, 1995). Intermediaries "provide institutional infrastructure that can provide the clarity, incremental skill growth, and career trajectories of the old corporate

ladder system while still being flexible and responsive to emerging needs in the new economy. An intermediary can level the playing field between all workers by filling information gaps and by acting as the surrogate social network that helps individuals access jobs" (Dresser and Rogers, 1998).

The Wisconsin Regional Training Partnership (WRTP) is the largest intermediary in the country with 40 member firms employing approximately 60,000 workers in the Milwaukee area.[10] The Wisconsin AFL-CIO helped found WRTP to respond to the lack of training opportunities in the metalworking industry–a process which they viewed as a threat to the continued employment of their members. The Wisconsin AFL-CIO and Navistar formed WRTP to conduct incumbent worker training, modernization, and future workforce development programs. In return for WRTP's assistance, partner firms are required to:

- Devote a growing percentage of payroll to training front-line workers;
- Train according to standards set across companies;
- Adapt their hiring and internal labor market promotions to worker achievement on those standards; and
- Administer the enhanced training budgets through joint-labor management committees.

Incumbent worker training takes place in joint labor-management-government worker education centers. WRTP staff directs firms to available resources for funding and curriculum development. The unions within WRTP identified plant modernization as a priority because they believed implementing technological innovations within smaller metalworking firms could prevent many of the firms from taking the low-road to remain competitive in the industry. The Partnership carries out its modernization program with the Wisconsin Manufacturing Extension Program (MEP) to increase partner firm access to current production technology–particularly smaller firms in the industry that do not have resources to modernize their production technology. Labor and management work together at the plant level to investigate options and discuss the impacts of modernization and jointly work with the MEP to implement modernization (technology and work organization) programs on the shop floor.

The Partnership works with manufacturing firms hiring to hire inner city workers identified by the Milwaukee Jobs Initiative (MJI). WRTP identifies the skills required for the jobs and prepares workers for the entry-level jobs. The Partnership also helps establish peer-training networks inside the firm to help new entrants inside the plant. Most of the jobs offered by WRTP partner firms start at $10 per hour, so demand for the jobs is high. The MJI placed several hundred workers into WRTP firms in 1997. The training programs have also enhanced the productivity of the partner firms, strengthened the role of labor in the production process while increasing wages for incumbent workers, and stabilized job loss in an industry hard hit by outside competition.

These two workforce-centered approaches to economic development begin to confront the challenges presented by workplace restructuring. However, additional regulatory changes are necessary, both to improve career progression and reduce the potentially inefficient practice of labor poaching. For example, pensions and health

insurance can be made more portable so that these benefits are not limited to tenure with a single employer (Osterman, 1999). In general, policy makers need to think about *employment* retention over the course of a worker's career rather than *job* retention with a particular employer. Economic development officials must shift their focus from job creation to ensuring that an individual builds skills and stays in work for a long enough period of time to build a work history that will open up future opportunities, perhaps at other employers in related industries. Such an approach is consistent with the "sectoral" strategies—targeting a collection of firms with shared production methods and/or labor forces—currently touted by academics and policy makers (Porter, 2000; Rosenfeld, 2000; Wiewel, 1999).

CONCLUSION

American manufacturers simply cannot compete with low-wage countries on the basis of labor costs. When they decide to pursue labor cost-cutting, rather than performance-enhancing strategies, firms may dampen productivity in the long-run and make it harder to hold on to their best employees. Moreover, cost-cutting strategies, such as the widespread use of low-wage temporary workers, jeopardize many of the goals of local economic development.

Small producers must pursue economic advantage based on performance—improved product quality, flexibility, innovation, and product differentiation, all of which require a high-quality workforce. In order to implement the new technologies that are necessary for these firms to meet higher quality standards and compete for larger contracts, they must build long-term capacity by investing in new relations of workforce organization. Initial access to an adequate supply of workers who can read, do basic math, and possess basic problem-solving skills is only the first step. Businesses must provide on-the-job training and an atmosphere conducive to firm-based learning in order to retain and capture the productivity gains from valued employees. In the absence of strong union representation, increased productivity is one of the only means through which employers can raise wages.

Firms that do not make productivity enhancing investments run the risk of providing dead-end, low-paying jobs that do not contribute much to the local economy in terms of local earning power. Conversely, firms that elect to make these investments can develop a skilled and stable local workforce able to make home purchases and contribute more to the revenue base of the locality. This, in turn, can lead to a decreased reliance on transfer payments from the state and federal government.

Because firms are free to take different strategic paths, economic development policymaking needs to assist those firms trying to make the transition to high performance workplaces. They can do so by improving the supply and the access of job seekers to good jobs, which increasingly involves sectoral, firm-to-firm initiatives as opposed to tax breaks oriented toward individual companies. They can also create an environment that encourages firms to modernize in ways that do not displace workers or downgrade the quality of available jobs. Public support for related investments in workforce development and firm modernization can yield significant returns for regions and workers, benefits that do not have to come at the expense of business.

[1] The "performance" measures to which the moniker refers often include increases in productivity growth, quality (e.g., ISO 9000 status), rates of customer retention, and employee retention.

[2] A 1993 survey of a random sample of 800 larger U.S. manufacturing establishments found that roughly 35 percent report the use of teams, 55 percent rotate workers between teams, and 45 percent use quality circles (Osterman, 1994). More recent evidence suggests that the use of teams and quality circles among manufacturers is on the rise in larger establishments.

[3] It is more than likely that production managers at small firms will also be the personnel managers by default.

[4] The shortage of highly skilled production workers can also be linked to the dissolution of career ladders and apprenticeship programs—which will be discussed in our section on job ladders.

[5] Houseman (1997) offers two possible explanations for this finding. First, employers may wish to provide different benefits packages to different groups of workers, a practice that would be in violation of federal labor laws. Staffing certain occupations through temporary help agencies would allow employers to offer premium benefit packages to regular workers while excluding contingent workers from such benefits. An overall savings from wages and benefits could then be achieved. A second possible explanation is that before employers are willing to provide costly benefits packages to workers they prefer to screen prospective employees, initially hiring them as temporaries prior to offering them regular employment.

[6] These studies do not distinguish between retail, service and manufacturing employment. By analyzing turnover and job change across all sectors, they may be capturing the effect of the increasing proportion of jobs that are now in service sectors of the economy (i.e., deindustrialization). Average monthly turnover in 1991 in retail trade, for example, was 9.8 percent, accounting for the largest share of total turnover actions of all industries (Ryscavage, 1995).

[7] Researchers report high level of inconsistency among reasons given for work termination (Olson, Berg and Conrad, 1990).

[8] The benchmarking survey conducted by the Michigan Manufacturing Technology Center detected an upward trend in wages in small manufacturers beginning in 1998 (personal communication with Dan Luria, 2000).

[9] This does not imply that all economic development practitioners need to be involved in all aspects of workforce development. Fortunately, in most areas there is a sophisticated network of community-based organizations with solid track records in job training and placement (see Harrison and Weiss, 1998b; Straub and Robinson, 2000).

[10] Chirag Mehta provided this description of the WRTP.

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