

**Does “Trickle Down” Work?**  
**Economic Development Strategies**  
**and Job Chains in**  
**Local Labor Markets**

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## Introduction

### **SURFACE RIPPLES AND VERTICAL CHAINS**

Jobs, jobs, jobs. Across the country, state and local economic development programs have promised to deliver jobs. It may seem self-evident that more jobs are better than less; yet, one can be sympathetic and still ask what a job is actually worth. Who gets new jobs in an area? Wouldn't many of those workers be employed anyway? To what extent do benefits spill over to others in a community? Do gains trickle down to improve the welfare of those most in need?

These are basic questions. Answering them requires both solid theory and well-calibrated empirical estimates. Too often these questions are simply left unaddressed. More often they are answered in only vague terms. Yet, these are crucial issues for evaluating job creation efforts. Gross job counts tell us very little about the efficiency of job generation. In fact, "head counting" can be highly misleading, celebrating high levels of turnover while saying very little about the gains that actually stick in the local economy.

The purpose of this volume is to explore a new framework for evaluating economic development projects. This framework, *the job-chain approach*, makes far more transparent both the potential justifications for economic development subsidies and the very real limitations that surround such activities. It also allows us a more accurate account of job creation and avoids many of the criticisms that accompany the "numbers games" often associated with economic development evaluations. Charlatan estimates only undermine the credibility of economic development programs, thereby bolstering the inherent reluctance of local officials to submit their programs to evaluative scrutiny.

Economic development projects create new jobs. Each new job can generate a job chain if and when it is filled by an employed worker who leaves behind another vacancy. In turn that vacancy may attract a

worker from yet a third job and so on down the chain. Chains can be long or chains can be short. Chains end when an unemployed worker, someone previously out of the labor force, or an in-migrant to the labor market takes a vacancy. Fundamentally we claim that the proper evaluation of an economic development project requires an accounting of the welfare gains made along the various job chains generated by that project.

Job chains are the mechanisms for observing and measuring “trickle down.” Attempting to answer the “Does Trickle Down Work?” question yields substantially more than a simple numerical estimate of how low-income workers are affected by typical economic development programs. The job-chains model developed in this book presents new insights into local economic development evaluation and strategy.

In the first instance, the job-chains model revisits and reinterprets the concept of the job multiplier. Standard employment multipliers focus exclusively on horizontal multipliers—increasing demand for locally produced goods and services. The job-chains model alerts us to the existence of vertical multipliers—links that work through job vacancies created by job changers. The method for estimating job-chain length is similar in spirit to conventional input–output analysis. Thus, the analytic roots of this volume should not be foreign to informed practitioners, policymakers, and researchers. What is new, however, is the application of this analytic framework to understanding labor market dynamics.

Second, the job-chains model forces a reconsideration of the welfare value of employment creation. The benefits of job creation come from the job chains that are initiated in local labor markets. This volume develops an intuitive technique for evaluating those benefits. The mechanics of job chains result in these benefits spreading more broadly across the local population than the original new jobs that created them.

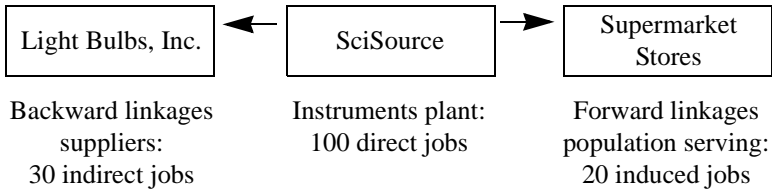
Third, adopting a job-chains perspective affords new insights into labor market dynamics. On the one hand, local employment growth has often been viewed as initiating a mechanistic process whereby a pool of workers is matched to a pool of jobs. In these accounts scant attention is given to the role played by prices in general and wages in particular. Alternatively, pure market models of wage adjustment, whereby new jobs promote the emergence of a new price structure and markets

clear quickly, often present an overly sterile picture of what is essentially a dynamic choice process in which workers actively build career paths and firms explore a range of options in training, promoting, and recruiting labor. The job-chains model complements these approaches by introducing individual preferences and behavioral probabilities into job choice.

The job-chains approach is likely to be of utility to a range of audiences in the economic development community. For the practitioner, the job-chains model presents a powerful tool for assessing the opportunities and constraints of subsidizing job creation. For the policymaker, adopting a job-chains perspective sheds new light on many time-honored policies for promoting economic development, such as targeting, industrial recruitment, and people-based strategies. For the researcher, accounting for trickle down when evaluating job creation presents a series of analytical challenges that can be met within the framework of the job-chains model.

## **MULTIPLIERS IN PRACTICE: A HYPOTHETICAL CASE STUDY**

To clarify the central issues, consider the following case study, a hypothetical example drawing on our experiences in the city of Chicago. A major scientific instrument manufacturer, SciSource, already has two plants in the Midwest but none in Chicago. The company approaches the city with a proposal to build a small production facility which will specialize in a new type of spectrophotometer. This plant is expected to employ 100 workers. SciSource has hired a consultant who calculates that using a job multiplier of three (as long suggested by the Illinois Chamber of Commerce), every new job in SciSource will bring two more jobs to the city. The city in turn consults with its own economic development staff, who use the U.S. Department of Commerce's Regional Input-Output Modeling System (RIMS II) to reach the conclusion that SciSource's claims are substantially overstated. A more appropriate multiplier would be 1.5. Both of these estimates are traditional horizontal multipliers (Figure 1.1).

**Figure 1.1 Horizontal Multiplier**

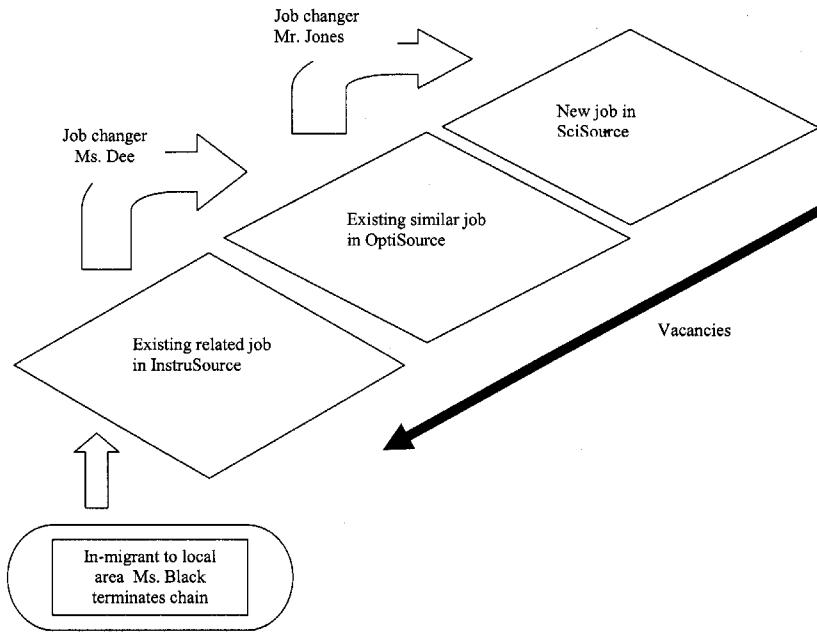
The traditional horizontal multiplier includes in addition to new direct jobs in the new facility, new indirect jobs in supplying businesses and new induced jobs in those businesses providing goods and services to workers with more wages to spend.

Horizontal multipliers trace linkages through product demands. Of the additional 50 new jobs, the city's planners are expecting 30 to be created in local firms that supply inputs to SciSource, firms like Light Bulbs, Inc. in Figure 1.1. These new jobs in suppliers are called indirect jobs. The planners also expect to see 20 new jobs in various retailing and service sectors that meet the consumer demands of the new workers at SciSource and its suppliers like Light Bulbs, Inc. These induced jobs are in Supermarket Stores and similar local firms.

Even as the horizontal multiplier demand ripples out through various businesses, there is a second vertical job-chains multiplier at work below the surface. Many, indeed most, of the new jobs at SciSource, Light Bulbs, Inc., and Supermarket Stores will be filled by workers already employed in Chicago. Thus, a high-skilled job at SciSource may attract John Jones, who currently holds a similar job at OptiSource. OptiSource doesn't compete with SciSource in the product market, but both firms hire in the same labor markets. Mr. Jones changes jobs. Now, OptiSource must fill the vacancy that Mr. Jones has left behind (Figure 1.2).

OptiSource searches and hires Ms. Mary Dee. Ms. Dee currently holds a less-well-paying job at InstruSource, another firm in the city. Again, InstruSource doesn't compete with either SciSource or OptiSource in their product markets, but it hires similarly trained workers. InstruSource hasn't expanded recently and Ms. Dee hasn't been able to advance there, even though she is qualified for the next job up the ladder. In switching to OptiSource, she, like Mr. Jones, has left a vacancy

**Figure 1.2 Job Chains and Vertical Multipliers**



behind at OptiSource. Will this job changing go on forever? Not likely. At some point a vacancy in the chain will be filled by someone who doesn't currently hold a job in the area. In Figure 1.2 this occurs when InstruSource hires Ms. Sara Black, who has just moved to Chicago from Indianapolis. From the vantage point of the local labor market, the chain ends here.

The new job at SciSource has led to a total of three workers being hired in the city as vacancies opened along the chain. Every new job created in the traditional horizontal multiplier process gives rise to this type of vertical multiplier. A new job at Light Bulbs, Inc. sets off a vertical chain, as does a new job at Supermarket Stores. But, the evaluators of the SciSource project have little basis on which to estimate these chain impacts and no way to measure the total size or distribution of the economic gains to the various types of participants. Nor can these evaluators give assurances that the new high-skilled vacancies at

SciSource and other local companies will trickle down to low-skilled workers.

## **BUILDING TOOLS FOR JOB-CHAINS ANALYSIS**

The hypothetical example of employment tremors generated by a new job at SciSource implies a particular worldview of the labor market, one with a measure of slack (underemployment/unemployment) and a fairly rigid wage structure. If most workers are fully employed at or close to their maximum productivity, then much of the movement in job chains can be characterized as mere “churning.” In such a world, economic development projects would be unlikely to generate substantial benefits. For movement along job chains to take on significance, the labor market must be characterized by substantial involuntary underemployment or unemployment. Only in such a world does creating jobs stand a chance of yielding substantial welfare payoffs.

Chapter 2 presents the economic mindset that underpins this entire book: an economy where wages are relatively rigid and labor markets are less than perfect. The existence of slack in the labor market means that policies and incentives for job creation can amount to more than a zero-sum game of displacement. Subsidies can create real opportunities without supplanting existing economic activity. The chapter makes the case that the real world unfortunately very much meets these fundamental conditions. A dynamic market economy necessarily generates persistent and inefficient underemployment. Opening vacancy opportunities to workers along job chains promises both efficiency gains and welfare improvements as workers move up to fuller employment and higher wages. Accepting the premise of inherent underemployment (except in periods of exceptional prosperity), it follows that demand-side policies can lead to real economic development. This is true not just at the macro level but at the local level as well. In local markets, labor supply is generally considered highly elastic. Markets can readily call on the unemployed, new entrants, and in-migrants when conditions pick up. The availability of this labor also explains why wages can remain relatively rigid. Thus, as our focus increasingly narrows, from macro level to local level to firm level, employment changes or shocks

will result in less and less wage adjustment. The slack inherent in the market allows workers to move up and increase their personal welfare without creating pressure on firms to adjust rigid wage structures.

The traditional approach to project evaluation, impact analysis, usually counts jobs or payrolls without seriously considering the economic welfare they generate. In Chapter 3 we review the variations of this technique, including recent efforts to combine it with aspects of cost–benefit analysis. We highlight the limitations of impact analysis as currently practiced, singling out key issues that are handled inadequately. These issues include unsatisfactory treatment of the counterfactual situation in which the economic development project did not exist, the all-or-nothing nature of much impact assessment, failure to incorporate endogenous change generated by an economic development project, and the failure to recognize the interrelatedness between efficiency and distribution. In order to obtain a broad-brush view of the current state of impact assessment, we synthesize a large corpus of studies and find that the absence of any standard evaluation method leads to considerable noise in the estimates of program efficiency.

Chapter 3 also considers extensions of impact studies meant to measure the distributional consequences of economic development projects. The hypothetical case study presented earlier in this chapter is expanded according to the current state of the art. However, even this augmented exercise in impact analysis still treats the counterfactual in a perfunctory manner and cannot provide very much insight into welfare and distributional effects. These shortcomings have serious implications for both economic development valuation and practice. In the absence of an adequate underlying model, much evaluation is reduced to stocktaking, and practice is left uninformed about exactly what kind of jobs to promote and to whom they should be promoted.

In Chapter 4 we go on to construct the basic job-chains model, drawing on insights from welfare economics. The primary local gain arising from economic development projects will be realized by individuals moving up toward full employment and high wages. Evaluation of the project will need to account for the welfare gains triggered as new vacancies open up and a ripple-through effect is set in motion. The job-chains model outlined in this chapter describes the mechanics of chain creation and the three basic measures of chain operation: chain length, efficiency effects, and distributional outcomes. Much effort is

expended in identifying the chains themselves. If we had direct data on job chains we could avoid much of this exercise. For example, housing researchers who use a chain approach can fairly easily collect data on how a new house generates a chain of moves in a community. Unfortunately, we have no chance of identifying specific jobs in the way a housing researcher can identify a specific housing address. Under the circumstances we must build our model from data on individuals and not jobs. The most relevant data concern job moves. For any given type of vacancy, we can determine the proportion of the workers filling that type of vacancy drawn from other job categories, the unemployed, out of the labor force, and in-migration. If these proportions are stable we can, in effect, construct average job chains for each original type of vacancy. These averages draw on the matrix tools of Leontief input-output analysis and supplement Leontief-type models by introducing a probabilistic element to estimating the length of chains. Once average chains are defined, it is a relatively easy matter to define measures of welfare efficiency and distributional impact.

Chapter 5 applies this approach to job chains to make real estimates of the three measures. The basic data source for our empirical efforts is the Panel Study of Income Dynamics (PSID). The key findings here support the notion that chains starting with higher-skilled jobs are longer, but they are relatively less efficient than those starting from mid- and low-skilled openings. Chains starting with higher-skilled workers generate lower levels of welfare per dollar of direct wages and do little for those most in need. Invariably they are truncated by in-migrants and only rarely do they reach down to the lowest income groups. Different specifications of opportunity costs of labor do not seem to alter these results. The chapter revisits the hypothetical case study presented earlier and reestimates its economic development effects using the job-chains model rather than the standard treatment of impact analysis. The results show that the imagined project (a scientific instruments plant) simulated in the case study creates substantial numbers of mid-level jobs with some modest trickle-down impacts for the lowest skill groups. Juxtaposing this with a second hypothetical case study (a management consultancy firm) which directly provides the local economy with primarily high-wage jobs results in more limited job multiplier effects, lower welfare gains, and a very marginal trickle-down impact. We can thus conclude that the trickle-down impacts of

job chains are often limited. Economic development projects must be carefully designed if they are to reach those most in need.

A number of extensions of the basic model are presented in Chapter 6. The first of these compares boom and bust years. Intuitively, we expect local economic development activity to expand in recessionary times. An increase in the supply of (unemployed) labor will induce changes in the welfare and distributional impacts of an economic development project. Our basic estimates, however, are hardly affected by years of expansion and contraction. Chains originating in high-wage jobs are likely to be truncated before reaching the lower groups in both boom and bust.

A second comparison is across geographical divisions of the country. Again, we find very few deviations from our basic estimates of welfare gain. While the broad regional aggregates used here may be concealing local patterns, we are not convinced that these local differences can be discovered in currently available data sets on job changes. Achieving greater spatial detail with these limited data inevitably reduces measured labor flows and increases noise.

We also make a comparison between net job growth in services and manufacturing. While the latter does seem to promote more trickle down, this would seem to emanate from its concentrated wage distribution in the middle of the earnings hierarchy and not from any greater internal mobility in manufacturing. This finding may seem surprising as internal promotion ladders are often perceived as major vehicles for promotion in the manufacturing sector. Our findings cannot support this view. Finally, we consider internal (within-firm moves) versus external (between-firm moves) job chains. Our estimates indicate the importance of between-firm moves for improving the lot of those at the lowest levels of the job hierarchy. Within-firm promotional opportunities would seem to favor the higher-wage groups.

In Chapter 7 we return to the fundamental questions of policy. Where do our theory and empirics position us with respect to long-standing debates over economic development policy? In particular, what do they imply about the trade-off between equity and efficiency and the debates of people versus place prosperity, industrial recruitment versus indigenous development, and manufacturing versus services? For example, in the efficiency versus equity debate, the job-chains perspective suggests that the traditional distinction between

these two concepts may be too sharply drawn. Because of the existence of underemployment and unemployment, especially among the less skilled, improving efficiency also means improving equity. A further example relates to the debate over employment in the city center versus employment in the suburbs. The traditional view pits suburban employment centers as expanding at the expense of contracting inner city employment. A job-chains approach, which emphasizes interconnectedness in the labor market, suggests that suburban employment growth could in fact create employment opportunities for inner city residents (as suburbanites who previously commuted work closer to home and open up vacancies in the city).

The chapter then addresses the central theme of this volume: does trickle down work? As suggested above, the answer is a cautious and reserved, "Yes, but not very well." The policy implication of this central finding is that job chains in the real world do not promise an alternative to well-constructed and direct policy instruments for targeting the lower reaches of the jobs hierarchy. Finally, the chapter concludes with a proposal for more "chain-wise" thinking in the evaluation of economic development. Much is currently possible, although practical progress is contingent on political as much as technical considerations.