Transforming Local Economies: Lessons from the Northeast Brazilian Experience

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Abstract

This research started with an attempt to find and explain cases of competitiveness and upgrading among particular sub-sectors, firms, and micro-regions in the textile, garment, footwear, furniture, and irrigated fruit (for export) sectors in the nine states of Northeast Brazil. In searching for explanations for good (and poor) performance, and the policy implications therein, our fieldwork led, time and again, to matters relating to training, technical assistance, and research. This came as no surprise, particularly given the last decade's findings and related policy advice on the importance of upskilling of the workforce, of "soft" and other process improvements in contrast to "hard" improvements like equipment and production technology, and of the key role to be played in this process by large sophisticated buyer firms–often outsiders–in a tutelary and "tough-love" relation to their smaller-firm local suppliers. These concerns were being taken seriously in all of our cases, but there was a clear *absence* of advancement in some of them in contrast to clear progress in others. Four factors help explain this contrasting pattern of outcomes. *First*, despite the fact that much of the policy advice and the literature on which it draws focuses on the transformative effects of large *buyer* firms, the most impressive effects were sometimes associated with large *input-supplying* firms–and for reasons that seemed obvious, once they were discovered. *Second*, the otherwise laudable public-private partnerhips and informal networks around training, technical assistance, and research that evolved between government actors, training-and-research institutes, and the large firms in a particular locale, sometimes *excluded* small and medium firms (SMEs) from the web of support, though not deliberately. The exclusion was driven in part by a mutual attraction between professionals of these institutions and their large-firm counterparts–an attraction that proved fatal to developmental impacts. The exclusion was sometimes driven as well as by governors and other powerful politicians who construed their political fortunes as depending on the "landing" and good treatment of a large outsider firm. In the less excluding outcomes, powerful political leaders found it in their electoral interests to go against this grain and push for more "inclusive" institutional actions and styles. *Third*, the literature tells us that while large outsider firms in developing countries generally invest liberally in training their workforce, SMEs in developing countries do *not*–with the latter firms therefore often requiring, paradoxically, more experienced workers than the former. This leads to a classic case of "market failure," and hence one of the few remaining strong rationales for public subsidy and support in the local economic-development field. Working in the opposite direction, however, the eagerness of state governments and training institutions to cooperate and partner with large firms led them to generously subsidize the workforce training–usually customized to the particular firm–of firms that were likely to invest in training anyway. This exacerbated the market failure, rather than remedying it. *Fourth*, though the current concern about upgrading local economies focuses on the building of ongoing *formal* institutions of training, technical assistance, and research within a region–and bringing single sophisticated outsider firms to the region as benefit-spreading "Trojan horses"–one of our cases of a footwear cluster rested partly on the importance of longstanding *in*formal networks reaching from local SMEs to advanced firms, clusters, and institutions *outside* the region–and the bringing back into the region of advanced practices by these myraid firms themselves.

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Explanations and acknowledgments

This draft paper is part of a larger project supported by a *convênio* between the Massachusetts Institute of Technology and the Bank of the Northeast. The purpose was to carry out and draw on a set of specific sectoral studies that could contribute to the debate about re-thinking regional policy–based on the experience of the last 20 years or so in these sectors (garments, footwear, textiles, irrigated fruit production for export). The project, starting in 1997 and headed by myself and my colleague Richard Locke, included research carried out by several M.I.T. doctoral students–for periods of up to three months at a time and, in the case of two doctoral dissertations (Octavio Damiani and Raquel Gomes), one year. These papers are listed in Annex I to this paper.

I am grateful to my colleague Richard Locke, and to the doctoral students whose papers I draw on and cite in the text, for entering into and participating so fully in what became a stimulating and engaged small community of true colleagues. The students are Rodrigo Serrano, Monica Pinhanez, Marcela Natalicchio, Nichola Lowe, Raquel Gomes, Sylvia Dohnert, Octavio Damiani, Tito Bianchi, and Mansueto Almeida. Thanks also to Monica Amorim and Jose Oliveira. I am especially grateful for the good fortune of having had Raquel Gomes as a research assistant during part of this period.

All this would not have been possible without the generous support of the Bank of the Northeast (BN), and particularly ETENE within the BN–for both the remarkable logistical support and, more importantly, their interest in our research, the invaluable feedback on the papers listed in the annex, and the time they spent answering our questions and enlightening us about matters Northeastern. None of this would have come to pass, moreover, without the unstinting support and interest of Byron Queirós, President of the Bank of the Northeast, and Osmundo Rebouças, Director of the Bank of the Northeast. The same can be said of the Department of Urban Studies and Planning at M.I.T. and particularly Bish Sanyal, Chair, for doing much more than making the project possible. His enthusiasm for this endeavor as an innovative way of combining teaching with research made the project an integral part of the curriculum at M.I.T. and, for this reason, in many ways more satisfying.

This particular paper draws in part on the papers produced by Almeida, Bianchi, Dohnert, Gomes, Lowe, Natalacchio, and Pinhanez, and many discussions we had around them, as noted throughout the text. I also had several interviews over the 1997-2000 period–with and without them and Richard Locke–in the states of Ceará, Pernambuco, Rio Grande do Norte, Paraíba, and Maranhão (from an earlier research project there supported by the state government). The interviews were conducted with owners and department directors of firms mainly in the garment, footwear, and textile industry, and with growers of melon in Rio Grande do Norte, as well as with industry associations, input suppliers, training and research institutions, branch banks, state labor offices, academics, elected officials, and staff and officials of the Bank of the Northeast and of the governments of the aforementioned states.

Particularly helpful was feedback on seminars by Richard Locke and myself early on in the research and, later, on the student papers, at ETENE in the Bank of the Northeast, and facilitated by its director, Adriano Sárquis and then Everton Correia. I am also grateful for feedback on the student papers from faculty at the Economics Department of the Federal University of Pernambuco and the Joaquim Nabuco Institute. I also thank Jacob Lima of the Federal University of Paraíba for his colleagueship, and for reading earlier drafts and generously discussing facts and interpretations with me, during his stay in Cambridge over this past academic year.

This paper does not summarize the findings of the project papers, though it draws substantially on some of them as a basis for setting forth certain views and findings about this topic. Needless to say, some of my interpretations may not necessarily be shared by all members of the group, nor by the institutions that supported the project.

1. Introduction

We started our research looking for cases of competitiveness and upgrading among particular sub-sectors, firms, and micro-regions in the garment, footwear, textile sectors, and irrigated fruit (for export) sectors of Northeast Brazil. In searching for explanations for good (and poor) performance, and the policy implications therein, our fieldwork led, time and again, to matters relating to training, technical assistance, and research. Sometimes, these effects worked through public or public-private institutions like SENAI, SEBRAE, EMBRAPA and other such institutions; sometimes, they worked through the presence of large firms in the region, either directly or indirectly, at times in combination with a training center; and sometimes they were set in motion by the actions of governors and other high-level public officials.

A word about terminology. For purposes of brevity, I am using the word "training" as a kind of shorthand to refer to a mix of training, technical assistance, and–sometimes–research. In practice, moreover, the lines between these three areas were often blurred. Similarly, though "workforce training" might be considered somewhat specialized–restricted to training institutes like SENAI and SENAC–the line between the training of workers and the *owners* of small firms is often blurred. This brings a broader array of institutions into the discussion, like SEBRAE, and also indicates the importance of training issues to the larger matter of upgrading and innovation by small-firm *owners*. Finally, the term "training" may apply to paths of learning–and consequent upgrading–that do not necessarily pass through formal training institutions like SENAI and SEBRAE. In what follows, then, I use the word "training" to refer to a variety of situations that

contribute through learning to the upgrading and modernization of Northeast firms.

In certain ways, the salience of matters of training in our histories was surprising. Current explanations for industrial modernization, and accompanying policies and subsidies, have long focused more on other things–particularly, public credit for investment for new plant and equipment, new equipment as embodying the most advanced practices, and a strong belief in the powerful catalytic and modernizing effects on local firms of large modern firms coming from the outside. In a recent survey of firms in Brazil and other Latin American countries, for example, the owners and managers of modern firms expressed the belief that "technical transfer" of more advanced production methods took place mainly through, and was embodied in, the new equipment they purchased (Cassiolato & Lastres [2001]). Similarly, development banks and other analysts of firm creditworthiness or sectoral modernity–in Brazil and other developing countries–routinely look to equipment *age* as a key indicator. The newer the equipment, the more advanced is the firm or sector is considered to be.

In particular, the vision of the catalytic outside firm that transforms backward economies is embodied in the "implicit" industrial policy of the governments of many countries–central, state, and municipal. They offer significant subsidies to recruit modern firms from the outside that, it is expected, will act as catalytic development agents in the region and have a transformative effect on local firms. In the Brazilian states, the so-called *Guerras-Fiscais* package of subsidies and other inducements to outside firms constitute a key piece of the economic-development policies of the state governments, often complemented with investment and working-capital credit provided at attractive rates by public development banks.

In certain ways, the centrality of training and related matters revealed in our cases is *not*

surprising, in that it is consistent with a parallel current of thinking on modernization of manufacturing in a post-trade-liberalized world. *First*, and in the narrowest sense of training, current thinking about competitiveness in a globalized, trade-liberalizing world focuses on the importance of a better educated and trained workforce. This is partly because of the greater need for worker discretion, multi-tasking, and working in teams–all requiring more and different kinds of skill. *Second*, the role of "learning" by firms has taken on more and more importance in the current thinking on international competitiveness, partly because of the importance attributed to "upgrading" the quality, design, and marketing of products.

Third, recent research on upgrading and reducing costs in developing countries has focused on the central importance of the so-called "soft" processes–reduction of wastage of raw materials, better management of inventory, improved shopfloor layout, etc. (Mody and Egan 199X). Improvements of this nature often turn out to reduce costs even *more* significantly, particularly in traditional and labor-intensive industries like garments and footwear, than reductions in labor costs. In trying to recruit outside firms, however, the Northeast state governments often focus instead on policies and practices that reduce the cost of labor–selling their "comparative advantage" as one of cheap labor–while at the same time bestowing less policy attention on the "soft" improvements. Similarly, this research shows that many firms in developing countries use equipment quite inefficiently–a significant cost, given the high cost of capital in these countries. This adds a cautionary note to the above-mentioned view that new equipment of itself characterizes an efficient and productive firm.

Fourth, and finally, there is by now a considerable body of literature that challenges the veracity of the claim that large modern firms from the outside actually exert, on balance, positive

effects on local firms in a region. Humphrey (199X) finds, for example, that very few among a region's or country's efficient and modern firms actually achieve the stature of exporters. In addition, he shows, the rest of a region's economy–including sectors that are thriving–is made up of firms that will *always* be on a track that will be separate and parallel to the few high performers–namely, the leader firms. The former firms, that is, will not simply trudging along in the footsteps–albeit several steps behind–of the high performers. The example of the catalytic firm's practices is not necessarily the right example for them.

Other studies point to certain *undermining* effects that large outsider firms may wreak in even healthy local economies–whether the firms are global buyers procuring from and upgrading local suppliers, or direct outsider investments in plants in the region. Cassiolato & Lastres (2001), for example, chronicle the undermining effect on local R&D capacity of the arrival of outside firms in several Latin American countries, including Brazil. Schmitz and Kaplinsky, among others, find that global buyers and even FDI plants in developing countries often insist that *their* local suppliers procure their equipment and other inputs from abroad, displacing the previous purchases of these suppliers on the local market.[1]

Looking at Mexico after NAFTA, Piore *et al.* (199X) find that a global footwear buyer developed strong tutelary customer-supplier relations with a small handful of preferred suppliers–the strongest ones in existence. While this is consistent with the transformation effect that global buyers are said to have on local firms, Piore also found that the rest of the footwear

[1]With respect to the Sinos Valley footwear-producing cluster in Rio Grande do Sul, Schmitz (199X) reports that global footwear buyers insisted that their Brazilian suppliers buy their machinery abroad from suppliers whose equipment they preferred; equipment manufacture for footwear production is a major subsector of the Sinos Valley footwear supply chain. Kaplinsky (199X) found a similar displacement of local suppliers in the autoparts industry of South Africa, with the arrival of multinational auto assemblers.

sector–accounting for the large majority of firms, output, and employment–was sinking into even further stagnation in the face of the increasing cheap shoe imports that followed from trade liberalization. Finally, a recent review of the vast literature on the effects of foreign direct investment on the local economy (Hanson 2001) found that, beyond several case studies, the evidence is not systematic enough to make an argument for consistently positive (or negative, for that matter) spillover effects of foreign direct investment. One would expect these cautionary tales to also apply to outsider investment *within* Brazil–from the South and Southeast to the Northeast.

The purpose of this paper is not to take on these debates, nor to assume that the effect of outsider firms is more negative than positive (or vice versa). Nor do I deny the important role played thus far in Northeast Brazil's economic development by policy support for large modern firms recruited from elsewhere in Brazil, subsidized investment credit, and modernizing of equipment. It also merits notice, however, that in the playing out of industrial policy–whether explicit, as in the days of import-substituting industrialization, or implicit, as currently with the *Guerras Fiscais*–the importance attributed to these latter factors is out of proportion to the attention paid to these "softer" aspects of modernization, which have gained even more prominence in the current era.

In a certain sense, the standard policy measures–providing credit, replacing old equipment, recruiting outsider firms–are *easier* to embody in policy and practice than the "soft" processes, which include matters related to training. This is because they are more conspicuous, and translate into more easily standardized and well-defined solutions–credit, equipment, packages of subsidies to attract firms; they produce more immediate and tangible results (equipment, new plants); and they are capable of using up–ironically–significantly more finance than the more diffuse, much less

costly, and sometimes institutionally more complex arrangements that a sustained environment of learning and upgrading requires.

With this background in mind, the findings presented below show that: (1) the positive impact of large outside firms on the local economy often takes paths that are different than those with which we are most familiar; (2) current policies of state and federal governments on training and technical assistance could be changed toward greater effect, and with little expenditure in relation to that on the current subsidies for investment in new plant and equipment; (3) large firms may have stronger *indirect* than direct training effects on firms in the local economy through the exit of their workers to smaller firms, but at the same time, this positive spillover is gained at the cost of considerable inefficiency; and (4) the nature of the impact of transformative firms on local firms is often determined by the dynamics of the relationship between large firms and public training institutions, like SENAI–sometimes for the good, but sometimes for the bad.

In what follows, I provide both positive and negative examples–though spending less time on the bad examples–so as to set the stage for a better understanding of the dynamics of the good examples, and the lessons to be learned from them. All of these findings point to the centrality of learning through training in its broadest sense for the upgrading of manufacturing competitiveness.

Section 2 discusses the spillover effects of workers leaving large firms in the context of state-government policies of subsidizing large-firm training and, more generally, of the availability of training to small and medium firms. Section 3 describes the circumstances under which public-private partnerships between large firms and training institutions actually ended up *narrowing* the benefits to small and medium firms; Section 4 describes the conditions that produced just the opposite outcome–namely, the large-firm presence actually did have substantial training effects on local firms, sometimes in partnership with a training institution and sometimes not. Section 5

concludes.

2. The great training spillover

In our field work, we watched for the generally acknowledged transformative and other spillover effects of large, modern firms in the vicinities where they were located–their tutoring of supplier firms in better production practices, the example they set for local firms producing similar products, and their connections to outside markets. The impact most mentioned in our interviews by local firms and other observers, however, had little to do with these factors.[2] It was less direct, and not intended either by the firm or by government policy. Sometimes, in fact, it was the result of *weakness* or misfortunes of the leader firm, rather than the stuff of transformative strength. Or, it was the result of economically "perverse" incentives emanating from social policy and labor legislation.

Simply, workers left their jobs at large modern firms (LFs) to work for small and medium firms (SMEs) in the region, carrying with them new production skills, work discipline, and other kinds of tacit knowledge about the workplace. A good portion of these firm-leavers, moreover, founded their own, smaller firms, sometimes in the informal sector. Others took jobs in smaller firms, some even preferring informal firms because of the higher take-home pay (no deductions for payroll taxes) and not having to pay income taxes. The firm-leavers included not only unskilled workers with little prior experience in the sector but, just as important, trained technicians and professionals who had performed technical, supervisory, and managerial functions in the large firm they had left.

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[2]This section and the one following deals principally with the favorable impact of "anchor firms" or "leader firms" on existing firms producing the *same* or a similar product. The fourth section deals with the more familiar *linkage* effect–the impact on local supplier or customer firms.

The training and hiring of large labor forces by leader firms generated another benefit, again inadvertently and indirectly, in the form of "startup capital" provided by severance pay for those workers who left to start new firms. This kind of investment or venture capital is typically not available for smaller firms from formal credit institutions. Though many firm-leavers received this lump sum because they were fired or laid off when the large firm downsized, others actually asked their employers to "fire" them for the express purpose of starting a new firm.[3] This practice is not peculiar to the Northeast or Brazil; surveys of the source of capital for small-firm startups in various countries often show severance pay to be a significant factor.[4]

That smaller firms benefit from hiring workers who have left large firms is not new. The literature of SMEs, and of the informal sector, has provided us with an explanation of how and why this works, as explained below. I introduce this section with the subject of the "firm-leavers," however, because it was the most consistently cited example that emerged from our interviews about the developmental effects of large modern firms. What's more, policy advice now focuses considerably more on workforce training as well as basic education–particularly for developing regions–spurred by the new pressure to export and to compete with imports in today's trade-liberalized world. A better-trained and more literate workforce is considered key to the constant upgrading in product quality, design, and production processes–let alone keeping costs

[3]Large firms are not as resistant as one might expect to "firing" workers simply for the purposes of providing them with startup capital, because they do not bear all of the cost--a significant portion of the severance payment being paid by government-financed unemployment insurance and hence they do not bear the cost of the severance payment.

[4]E.g., Maloney (199X). Indeed, in an explicit affirmation of the value of "severance" pay as start-up capital, some European countries have experimented with altering their unemployment-insurance and social-security schemes so as to mimic these effects of severance payments, by giving laid-off workers the option of taking their unemployment insurance or pension payments in one lump sum at the start (Egan, etc.).

down–required to compete today.

Finally, though workforce training might be considered a somewhat specialized area–restricted to training institutes like SENAI and SENAC–the line between the training of workers and the *owners* of small firms is actually quite blurred in reality. This not only brings a broader array of institutions into the discussion, like SEBRAE, but it indicates the broader applicability of training issues to the larger issue of upgrading and innovation by firm *owners*.

In our research, we heard of the dispersion of these firm-leavers into small and medium firms (SMEs) in the surrounding local economy in sectors and places as varied as footwear in Paraíba (Pinhanez 1998), garments in Ceará and Pernambuco (Dohnert 1998), and irrigated export melon production in Rio Grande do Norte (Gomes 1999).[5] In these cases, the large leader firm (or firms) inadvertently facilitated the passing on of highly tacit learning about new production practices through the workers who left them. In providing a widely available pool of experienced labor to the local SME economy, they seemed to providing an important public good–an achievement at which *direct* public investment in training had been less successful.

Attesting to the value to SMEs of this prior training with large firms, small firms producing garments and footwear often *required* that a job applicant have prior experience "at the large firm," as a qualification for hiring (Dohnert 1998). Consistent with this view, LF workers in certain sectors often view their time at the large firm as a passage to "something better"–namely, a job at a smaller firm, perhaps even informal (Lima 199X). Also attesting to the value of LF training on the job, SME firm owners often disparaged direct-training institutions like SENAI, in reporting that

[5]The diffusion of firm-leaver technicians and professionals was most striking in this latter case, where supervisors and managers (many of them agricultural technicians or engineers) left the large leader firm and started their own medium-size firms, growing the same product–melons for export.

they preferred to hire ex-workers with experience at large firms–rather than those formally trained at SENAI or other formal training institutes–because the firm-leavers were "more productive" (Dohnert 1998).

The SME views of formal training programs at SENAI and others are not inconsistent with those of professional observers of Brazil's otherwise highly reputed National Training Service (SENAI)–an autonomous industry-associated body with public funding.[6] These evaluators have urged SENAI and other training institutes in Brazil to make their training more relevant not only to large-firm needs, but to the challenge of *upgrading* agglomerations of small and medium firms (SMEs), and in a way that fit their needs and constraints.

Obviously, the fruitful spillover effect of the LF firm-leavers was particularly perceptible in regions that already had a considerable number of smaller firms producing the same product at the time the large firm moved there–like the garment firms of Recife and Fortaleza, and the shoe firms in and around Campina Grande and João Pessôa.[7] It is worth calling attention to this point, however, because the recent *interiorização* policies of some Northeast state governments in recruiting outside firms have reduced the potential value of this effect. Namely, they have provided greater incentives for large firms to locate *far from* the already developed regions of the coast and

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[6]See, e.g., Claudio Moura Castro. On the large-firm side, see recent comments of the president of Hering, the Blumenau-headquartered garment firm with plants in the Northeast, on SENAI in the Gazeta Mercantil of 6 June 2001–with respect to problems resulting from SENAI's contracting out of its training services (*terceirização*).

[7]We did run across a case–that of irrigated melons in Rio Grande do Norte–which was the only one where such a spillover effect took place in a region where there were originally no other producers of melon, let alone any other irrigated export crop. For many years, there was only one large leader firm, followed later by two other leader firms). There, nevertheless, professionals and technicians exiting the leader firm(s)–mainly agricultural engineers or technicians–started the first smaller firms in the region, which produced the same product. It was almost ten years after the leader firm initiated large-scale production, however, that this beneficial spillover started to occur–resulting mainly from problems requiring substantial downsizing of the leader firms.

certain interior towns that have been the home of existing SME production.[8] In these interior regions, agriculture was the main source of employment yet persistently stagnant and afflicted by periodic droughts; unemployment was therefore higher and poverty greater, and manufacturing activity or dynamic service-sector activity was spare. Though the employment-creating concern behind this industrial policy of *interiorização* has a long and respectable history, the policy also leads to foregoing the most important transformative effects of large leader firms.

Training subsidies

Toward the goal of meeting the challenge of better training the Brazilian workforce, the Brazilian federal government has earmarked generous training subsidies to a large federal program, The Worker Support Fund (FAT/Fundo de Amparo ao Trabalhador). SENAI receives a significant share of these funds, in addition to university centers and myriad private firms and nonprofits, many of them newly formed to take advantage of the subsidies.

Training subsidies for large firms in particular–FAT and otherwise–have figured importantly in the incentive packages offered by state governments to firms they recruit from the outside. State governments provide the training subsidies to the firms they recruit, which cover 100% of wage costs (at the minimum wage) for up to three months, usually of firm-specific training on its shopfloor. The minimum wage is substantially higher than the wage paid to trainees by smaller artisanal firms that use the apprenticeship system. Just as important, the state government

[8]The concern about *interiorização* and the providing of greater subsidies and other incentives to firms that open up plants in the interior is now new. A second phase of the earlier Northeast-wide fiscal incentives of FINOR/SUDENE introduced a point system meant to deal with this same concern, though it also reflected an attempt to more equitably distribute these resources among states, as well as between capital cities and the interior.

sometimes makes the training-wage subsidies available to the new plant for a *larger* pool of job candidates than it needs to hire, and from which a final selection will be made at the end of the training period; the size of the group trained at the firm may be 30-50% larger than those actually hired at the end of the training period.[9] As noted before, the training is completely firm-specific. Trainees have no formal contract with the firm–they are considered "scholarship-holders" (*bolsistas*) of the state during the training period.

Though the training subsidies may not represent a significant financial share of the total recruitment package–which includes tax exemptions, investment credit, discounts on public utility services, and investments in infrastructure–they may nevertheless amount for a significant share of public expenditure for workforce training in a Northeast state. My rough and conservative estimate for Ceará over the 1995-1998 (until June) period suggests an expenditure of R$20 million in training subsidies, or R$5.7 million per year (in US$, roughly the same amount at exchange rates prevailing during that period).[10] In addition, the newly-located large firms appeared to value the training subsidies more for reasons other than their pure cost savings, as explained further below.

Before turning to the policy significance of the training subsidies and the spillover effects of this training through firm leavers, a few words on how and why this spillover works.

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[9]Dohnert (1998, and e-mail communications to the author).

[10]In Ceará, the 369 firms recruited to the state from the outside during the 1995-1998 (through June) period were projected to create 74,200 jobs. I estimate the cost conservatively, assuming that only *half* these jobs (37,100) were supported with training subsidies--because some projects or jobs did not materialize, or some firms may not have needed the subsidies). Also conservatively, I have not included in the cost an estimate for the trainees that were *not* contracted by the firm at the end of the training period. (Our interviews in footwear and garment firms suggested that, with the subsidies, some firms trained up to 50% more job candidates than they intended to hire.) Multiplying the monthly minimum wage of that time (R$180) by three months gives R$540 subsidy per-trainee per-three-month period (roughly equivalent to US$540 at that time), for a total of more than R$20 million over this 3-1/2 year period–R$5.7 million per year. Based on raw data from the Secretaria de Desenvolvimento Econômico, as reported in Tyler (1998:pp. 32-33, Table 7). The estimate is mine and not Tyler's.

Why do workers leave?

Why would workers want to leave large firms to work for smaller and often informal firms in the same sector, given that the large firms–particularly the most modern and foreign firms–are said to offer better work conditions, higher wages, formal labor contracts, observance of the minimum wage or collective wage agreements, training with salary, and perquisites like subsidized meals, and medical and dental services? Smaller firms, after all, often provide no training at all, for reasons explained below, or train through apprenticeships paying low or no wages.

First, research in Brazil and elsewhere has shown that many workers apply for work at a large firm with the *express* intention of staying there for a few years and then taking their experience and training elsewhere later. In sectors where large firms hire large numbers of unskilled workers–like garments and footwear–the unskilled and inexperienced worker often views the large firm as the only place where he or she can get a first job (Lima 199X). At the same time, they view such a job as starting them on a path away from unskilled, low-paid work–mainly through "free" training and experience (often including basic literacy training) that will be valued subsequently by smaller employers or those in other sectors. They view their large-firm jobs as a temporary stepping stone to "something better," like an office or shopping mall.[11]

In our interviews, some LF managers confirmed these "temporary" perspectives of their workers, in the form of a complaint that at least some of their workers were always looking for "someplace better" to work, especially if they had more education and experience than the others. These views were somewhat surprising, given the prevailing impression that "factory jobs" in large

[11]For evidence of such perceptions by workers, see Lima's studies (199X) of Paraíban textile-factory workers.

sophisticated plants are very much sought after by workers, unskilled and skilled, and given that internationally competitive firms in the late 20th century are said to need a better-educated and -trained workforce.

Second, and related to the above, many workers complain of the "authoritarian" nature of supervision in large factories, the stressfully fast pace of work, and the punishments meted out for misbehavior that they judged to be harsh–including, and sometimes particularly, in plants using the modern high-performance, flexible practices. Some point to these conditions in explaining their preference for the more "tolerant" environment of smaller firms, even if wages and working conditions are worse.[12]

Third, and as noted above, LF workers see their job as providing future access to startup capital for opening a small firm–an otherwise unavailable source of finance. They therefore ask to be "fired" or provoke being fired in order to receive severance pay that they can use to start a new business or supplement their salaries in a smaller firm. Toward the same goal, they may also receive unemployment insurance for six months after being fired. If working in an informal firm, the severance pay will compensate for the lower wages they will earn, in addition to the higher take-home pay, free of payroll and income taxes.

For all these reasons, and in a reverse of the usual perception, many factory workers *desire* their job at a factory to be temporary. They are drawn out of the large, sophisticated firm by the

[12]Lima (199X) reports numerous complaints of this nature, some of which are cited further below, as well as Natalicchio (2001). This preference for what we consider to be inferior, less modern workplaces was also one of the striking findings of Vilma Moreira's (199X) study of "labor cooperatives" in the garment sector in Ceará. Women who had worked previously in garment factories and received fringe benefits as well as a mandated wage, preferred these smaller and more socially desirable workplaces, where they were paid by the piece and "not constantly yelled at" by a supervisor; this, despite the fact that in the labor cooperative, their contracts were uncertain, the pay was lower, they did not receive fringe and other benefits, and the cooperative was operated more like an arm of a firm than a cooperative with member "voice."

appeal of a less "authoritarian" work environment, a more desirable job with their new human capital of on-the-job LF experience, the relative ease of getting voluntarily "fired" (with the employer relieved of much of the cost of severance pay, not to mention unemployment insurance), and–for those who start their own firm–the "easy" finance for these ventures, in the form of severance pay and unemployment insurance provided by the social insurance system.

This set of incentives and disincentives–arising out of both the organization of large firms and the particulars of labor legislation–seems to make informality and informal work more appealing than they otherwise might be. In one sense, then, the stream of firm-leavers is *not* necessarily associated with increased modernization of the larger economy of which a large firm is a part.

High turnover: why firms let their workers go

In certain ways, this stream of firm leavers may be consistent with improved productivity and efficiency in a large firm. This would appear to be true, *if* managers can shed less capable workers in this way and hence cope more easily with the ups and downs in demand, or if a firm is downsizing as part of a modernization project. At the same time, however, we know that labor-turnover rates are high in Brazilian traditional industries such as garments, footwear, and textiles.[13] In some instances, then, the stream of firm-leavers may also represent a symptom of low-productivity, and hence less-modern production methods from an international point of view. High turnover becomes particularly troublesome, that is, when high-performance production practices are

[13]See, e.g., Natalicchio (2001).

introduced–like cell production and teams, as was occurring in the plants we visited–because they require more teamwork, varied skills, discretion, and training. Developing a workforce with these traits takes time and investment in training. When turnover is higher, the return to this investment is reduced.

Downsizing also has two faces. On the one hand, it may reflect modernization of a firm against a background of robust demand. On the other hand, it may also reflect slumps in the market or belt-tightening macroeconomic measures like high interest rates–the cause of much downsizing in Brazil in the 1990s. These bad times would fall, presumably, as least as heavily on the smaller firms to which the trained and laid-off workers are now available, reducing thereby the value of this spillover benefit. Regardless of the times, downsizing or plant closings can simply reflect poor management practices by the firm.

Poor management, for example, contributed distinctly to the downsizings and other problems of the three large leader firms that produced irrigated melon for export in Rio Grande do Norte.[14] As a result of these problems, and partly at the direction of their creditors, the leader firms released many workers and professionals into the local economy in the mid-1990s. It was these "leavers,"in turn, who founded smaller melon-growing enterprises, or went to work for them–all this happening almost ten years *after* the leader firm had begun its pioneering work. The stream of firm-

[14]This conclusion emerges clearly from the work by Gomes (1998, and Ph.D. dissertation in progress). For example, these firms made highly costly investment in deep tubewells that would not have been economic without the highly subsidized credit. (This may have been particularly economically imprudent, in retrospect, given that much shallower waters have now been discovered in the region and on these same properties, almost a decade later, which also made the entry of smaller commercial growers economically viable for the first time only ten years after melon production began.) Production acreage of the large leader firms had expanded into the realm of diseconomies of scale, particularly with respect to the management of labor, also made possible in the 1980s by several years of large, highly subsidized loans. This effect was enhanced by lenient treatment of delinquency among the leader firms out of concern for employment in the local economy.

leavers from the leader melon firms, then, was in this case a sign of *weakness*–not of the transformative strength of the leader-firm metaphor

Though the exodus of large-firm workers to SMEs provides an important spillover benefit in good times, then, it may also reflect bad times–reducing significantly, thereby, the value of the spillover. In the bad-times scenario, the greater the misfortunes of large firms–whether due to their own poor management or weakness in the economy or in their particular product markets–the greater would be the flow of firm-leavers. In the 1990s, for example, when a large Southern-Brazilian shoe firm (Azaléia) closed a branch plant in Campina Grande in Paraíba and laid off several hundred workers, small and medium footwear firms in the surrounding area commented appreciatively on the new availability of trained workers.[15]

These kinds of unexpected benefits of bad fortune often turn out to be the stuff of dynamic development. But the weakness or inefficiencies that triggered them are certainly not compatible with our prevailing image of large leader firms as introducing more efficient and modern production to the regions where they locate.

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[15]Pinhanez (1998). Though the departing firm and others reported that it left the state eight years after moving there because the state government had failed to come through with promised tax exemptions, its profits in the early years were strong enough to "counter-balance" the absence of the promised subsidies. This was partly due to its being the first large shoe firm to arrive in that state in response to the state's recruitment initiatives. Later, after other large shoe firms opened branches in the state, the original firm lost the advantage of the first-comer to a market. With the arrival of the subsequent firms, its profits were partly competed away, now making the absence of the promised subsidies more significant. Though there are clearly other explanations for the loss of this large plant, this particular one is important for policy in that it illustrates the much greater advantage that the first-comer has, and hence its willingness to move with perhaps much less subsidy than it might normally receive. Interestingly, the policy implications of this particular interpretation are somewhat at odds with those currently being discussed in the state of Ceará. There, a suggestion has been put forward that "late-comers"–rather than "first-comers"–should receive less subsidy because the former are in a better position because they will reap the externalities created by the arrival of the pioneers.

Fear of training

The Northeast state governments' use of public funds to finance firm-specific training by large firms is not unusual. The U.S. Southern states started this practice more than 30 years ago in recruiting labor-intensive industries from the more developed U.S. Northeast, particularly in textiles, garments, and furniture. At the same time, however, subsidizing firm-specific training of the workforces of large firms is just the opposite of what public-sector economics and the analysis of market failure would prescribe for treating the problem of a poorly trained workforce at the regional level.

In the absence of training subsidies, that is, large firms typically invest their own resources in training, partly because of economies of scale in training. For various reasons, in contrast, small and medium firms typically do *not* invest their own resources in training their workers. It is too costly and, more significantly, SME firm owners fear–with good reason–that workers, once trained by them, will take their newly acquired human capital and leave for better working conditions and higher wages elsewhere. This sometimes causes SMEs to not even avail themselves of publicly subsidized training for their workers, let alone training for which they have to pay, as evidenced by some reports of the "lack of demand" for training programs offered by SENAI and SEBRAE.[16] (Some of this weakness in demand, of course, is a reaction to the inconvenience, lack of relevance, and unsatisfactory quality of certain courses offered–a subject I return to later.)

The well-grounded fear of SME owners about losing their investment in training contributes to a serious constraint on their modernization. Even those SMEs that might be inclined to invest in

[16]For example, in early 2001, the report of an Israeli mission to Ceará reported on the apparent lack of demand for SME training in the state's interior (CED report too?)

increased productivity will refrain from investing in training their workers–as opposed to, for example, investing in better equipment. For the better firms with access to credit from development banks, the inclination to modernize through equipment purchase is reinforced by the much easier availability of credit for equipment than for the working-capital needed for improvement in "soft" processes like training. All this adds up to a low-productivity trap for many SMEs and the local economy of which they are a part. The well-grounded fear of SME owners of losing their investment in training, then, contributes to a serious constraint on their modernization.

They dynamic of this "market failure" represents one of the classic justifications for public intervention: the "market," left on its own, provides training for workers in large firms but *not* in small and medium firms.[17] Yet the latter often account for a large portion of employment and output in poor regions. To complicate these problems, the existing public support for both SME and LF training seems to exacerbate the market failure, rather than reduce it–though the large firms obviously appreciate the training subsidies. For those concerned about modernization of SMEs and local economic development in the Northeast, this poses a policy challenge of significance. The classic solution to this kind of market-failure dilemma lies partly in improved, publicly-supported training for SME rather than LF workers (and owners). Some examples follow in Section 4.

The hesitancy of SMEs about investing in training–and the corresponding willingness of large firms to invest in training their own labor–is not a peculiarly Brazilian phenomenon, or limited to current times. More than 20 years ago, Schmitz (1977) observed this same phenomenon in the

[17]A study of training programs in the U.S. South noted the same disparity between the willingness of large firms, *vs.* small and medium ones, to invest in their workers' training (Batt & Osterman, 199X).

Pernambuco garment sector (1977).[18] This translates into the seeming paradox that SME firm owners often requiring *more* prior training and on-the-job experience of job applicants than do large modern firms–at least in the sector we canvassed.[17]

Reflecting a variation on this same dynamic, Maloney (1999) suggests that the greater financial ability of large firms to invest in training their own workforces also leads them to pay higher wages ("efficiency wages") than smaller firms, in order to protect the investment in training by making it more attractive to workers to stay. Particularly relevant to Northeast Brazil, in fact, Maloney links this phenomenon to the problem of illiteracy. Based on a cross-country comparison of several Latin American countries, he suggests that the lower the literacy and experience of the labor force in a particular country or region, the *more* that large firms need to compensate by investing in training. As a result, they pay an *even higher* wage relative to that paid by smaller firms in order to keep their workers from leaving and hence protect this investment. This, he says, helps account for his finding that the gap between formal-sector (FS) and informal-sector (IS) wages is *higher* in countries with *lower* levels of literacy.[18] In Maloney's set of countries, Brazil ranked toward the lower end on literacy with respect to other countries. We know, in turn, that Northeast

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[18]I thank Leonardo Guimarães and Patrício Araujo of the Fundação Joaquim Nabuco and the Economics Department of the Federal University of Pernambuco, respectively, for drawing my attention to the Schmitz study.

[17]I thank Leonardo Guimarães and Patrício Araujo of the Fundação Joaquim Nabuco and the Economics Department of the Federal University of Pernambuco, respectively, for drawing my attention to the Schmitz study.

[18]Maloney (199X). This explanation is quite different, Maloney points out, from the more usual explanation for higher wages in the large-firm sector as *vs.* the informal sector–namely, that they are a result of labor legislation and other requisites of formality like minimum wages and labor unions, which are said to "artificially" raise wages and hence contribute to the existence of a lower-paying, lower-productivity informal sector alongside the formal sector. Though he finds these factors to be significant in his analysis, they are nevertheless much less so than the role of illiteracy and poor public education in contributing to the differential. In his terms, then, the wage gap between formal and informal wages arises not only out of the greater premium on the training supplied by large firms to their workers, but is exacerbated by inadequate public resources invested in public education.

literacy is considerably lower than the average for Brazil, which would cause the formal-informal sector gap in wages–and, hence, the need for greater compensatory training by large firms–to be even higher.

It is important to note that the link Maloney traces from illiteracy through LF compensatory training to higher gaps between formal- and informal-sector (or small-firm) wages is quite different than the typical causal explanations of the IS/FS earnings gap, which point to "rigidities" in the labor legislation, unionization, and minimum wages. More importantly, the policy implications are different. In certain ways, in fact, the corrective policy changes inspired by the Maloney analysis would be *easier* to carry out, at least in political terms, than those requiring serious changes in the labor legislation and the institutional environment in which large firms operate. In addition to correcting the market failure in training with respect to SMEs, that is, reducing the need for large firms to compensate for low literacy by increased training would require an improvement in basic education. And around this particular goal, there is now substantial consensus in Brazil.

The real value of training subsidies

Northeast state government officials would argue that the training subsidies to large firms constitute an important part of the package of attracting large firms to locate in their states. The large-firm managers we interviewed, however, reported valuing something *other than* the subsidy itself.[19] As noted above, a good part of the recruitment subsidy for newly-located firms did not involve actual training services provided by SENAI or other public entities; rather, it took the form

[19]This was also reported by Dohnert (1998, and e-mail communications).

of publicly-financed "scholarships" (*bolsas*) to workers to train for up to three months on the shopfloor of the firm, which represented the length of time needed to get them up to normal productivity.

The firm managers we interviewed appreciated the fact that the subsidy arrangement allowed the firm to legally train the workers in its factory and gradually integrate them into production *without* the firm's having to enter into a legal employment contract with them (*carteira assinada)*, pay fringe benefits, and be subject to the regulations regarding firings and layoffs–until the end of the three-month period, when the trainee would be hired or let go. The relief from these obligations, and the full public subsidization of the training, also made it attractive for the firm to train more workers than it intended to hire; this allowed it to weed out the less capable ones after the training period–reported by Dohnert (1998) to account for up to 50% of those trained in the large garment plants she visited--without having incurred any obligations under the labor law. With the subsidy program, then, the firm could provide shopfloor training to substantially more job candidates than it intended to hire, at no extra cost and for several weeks.

Large garment and footwear firms recruited by the state government of Ceará in recent years provide an example of how this worked. The subsidy training program stipulated a period of 60-90 days, during which trainees were paid the minimum wage–which was about X% lower than the prevailing wage. Some trainees, firm managers reported, became fully productive as early as the third week or later, and were integrated into normal production, well before the 60-90 days of the subsidy period. Even in these cases, the firm did not formally contract with the trainee or increase the wage to the prevailing level until the end of the stipulated training period. Firms did not necessarily return the part of the subsidy corresponding to the period for which it was no longer

necessary (Dohnert 1998:42-43).

In conclusion, the public training subsidies represented an unusual opportunity for firms to contract large numbers of worker-trainees, train them in firm-specific techniques at public cost and, after the training period, keep the best and dispense with the rest. Without the public subsidy and the "scholarship-holder" status of the trainees, this would not be legally possible or financially desirable. It is not surprising, then, that firms valued this flexibility with respect to the labor contract, and the ability to choose from a larger pool of workers not hired by them but under their direct supervision for three months, at least as highly as the monetary value of the subsidy itself.

These kinds of subsidies, it is important to point out, were *not* available in the SME sector, where the market-failure problem creates a stronger argument on these grounds for subsidy. If anything, as noted before, the current tendency is just the opposite–to start *charging* for SME training, or charge even more than previous prices, in an otherwise laudable effort of the training institutions to finance their own costs. Though the Northeast has many serious initiatives to train SME workers or their owners (SENAI, SEBRAE, etc.), their record is still uneven in terms of contributing to learning and upgrading among these firms.

Wanting training and not getting it

SMEs wanting customized training, it seemed, often could not get it. In an emblematic story, Dohnert (1998) reports on the attempts of SMEs in the Pernambuco *agreste* garment cluster to obtain training courses from SENAI that would enable them to upgrade their production. These SMEs–the so-called *sulanqueiros* of the *municípios* of Santa Cruz de Capibaribe and Toritama–told

her of how they had approached the SENAI training center in Caruaru with the request for a training course for their workers. (Caruaru is in a neighboring *município* about an hour's ride away.) When the SENAI officer told them they would have to pay for the courses, they decided–as the officer reported in exasperation–that they "weren't interested." "Typical of the *sulanqueiros*," he said, "they never want to pay for anything!"[20] Consistent with the *sulanqueiro* side of the story, however, the records of this SENAI center revealed numerous unattended requests for training by groups of small and medium firms.

Providing public services to firms for free, of course, is not in keeping with the current policy environment of charging for services. SENAI itself has been under pressure to increasingly self-finance its activities. It is also true, however, that state governments are at the same time providing considerable *free* training subsidies to recently-recruited large firms out of the aforementioned FAT grants and other public resources, sometimes in addition to technical assistance and research support. Hence, if there is anything to be disparaged in the story of the *sulanqueiros* who wanted a SENAI training course "only if it were for free," it is more importantly a state of affairs in which large firms–which would willingly pay to train their workers–receive public subsidies for this purpose while SMEs are at the same time charged for such customized training or otherwise discouraged from modernizing this way.

[20]SENAI does not charge for its standardized courses in its Caruaru center, but does charge for the more customized kind of course the *sulanqueiros* requested.

Second-best solution or trap?

On the one hand, then, the public training subsidies for large firms provided through the Northeast state governments might be interpreted as an ingenious incentive that facilitates worker training while at the same time helping firms to avoid formal contracting of labor during the training period–thereby attracting outside firms by providing something they truly value. On the other hand, though this assistance is clearly superior in the eyes of the firm, it is far from superior for the regional economy and as a rationale for public subsidy, let alone for reducing the workforce-training problem among small and medium firms.

First, it is not clear that the training subsidy makes a difference in influencing firm's decisions to locate or expand in certain places as opposed to others–as is consistent with the research findings that large firms will invest in training on their own. None of the firms we interviewed mentioned the training subsidies as factors in influencing their decisions to locate in a particular state. They stressed most consistently the exemption from the 17% value-added tax (ICMS), and the "*confiabilidade*" of the state governments with which they negotiated their packages. Similarly, in a formal survey by Vasconcelos (1999) of the reasons firms chose to locate in Ceará, they ranked *confiabilidade* highest.[21] In that firms expressed particular appreciation to us for the way in which the training subsidies enabled them to train new workers *without*–and before–having to contract them formally, this could also be accomplished without necessarily subsidizing so liberally the training costs.

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[21]It should be noted, however, that the survey instrument did not specify "training subsidies" as one of the choices to be made by firms in this closed-ended questionnaire. The training subsidies would have been included, implicitly, in the option "incentives" (i.e., tax exemptions, project-specific infrastructure, etc.)–which did not distinguish between the various types of incentives.

Second, providing publicly-subsidized firm-specific training of many more workers than are meant to be employed at the end of the training period appears to be an inefficient use of public resources, unless those trained and not employed are now more employable in the same sector elsewhere.[22] Highly firm-specific training of this nature, moreover, is often not "portable" to firms of different sizes–as illustrated by some examples in the following section–and hence does not solve the larger problem of developing a trained workforce. Also, and as noted earlier, many of the large firms recruited by state governments were located in the rural interior, particularly in Ceará, and hence at some distance from the labor markets demanding these kinds of skills.

Third, one might still make a "second-best" argument for the indirect training spillovers, and for therefore publicly subsidizing large-firm training. The training subsidies for the workforce of large firms may at least relieve, in the short run, the constraints of the Northeast's workforce illiteracy and low skills on these modernizing firms, and in this sense would seem to represent a step in the right direction toward a more literate workforce. This may make more short-term sense than waiting for a significant improvement in the region's literacy and workforce skills. One might argue that this initial support for large-firm training might actually lead to broader support for public education from business elites, once they develop a taste for a better-trained workforce. It could just as reasonably be argued, however, that the *reverse* would occur: the more you were able to compensate for the literacy and skill deficits, the less concern you would have about basic education. This possibility is not only consistent with Maloney's findings about firms' investing more in training to compensate for illiteracy, but with comments made to us about the education and

[22]This is a matter, however, on which we found no research. Research tracing SENAI trainees, however, does exist. A study of SENAI trainees some years ago found a relatively small percentage of them employed in the sector for which they were trained (SENAI 19XX).

skills of their workers–as explained momentarily.

The "second-best" argument for publicly-subsidized large-firm training might also make some sense in light of the aforementioned vote of no confidence of SME firm owners for workers trained by SENAI, at least in relation to those job candidates with on-the-job experience at large firms. Some formal evaluations of the training institutions echoed this implicit criticism (e.g, Castro's 199X review of SENAI training). It is not clear whether the current abundance of FAT subsidies for training provided outside the firm will improve the situation. The FAT subsidies, in accordance with the current policy concern on upgrading the Brazilian workforce, seem generous and easy to come by This is partly attested to by the cottage industry of private training firms that has sprung up in response to the increased funding, and the fact that adequate monitoring and evaluation mechanisms do not seem to be in place. If the quality of the training by the new firms and nonprofits–as well as by SENAI and other semi-public institutions–is not customized and is questionable on other grounds, then the large-firm subsidies might represent a reasonable short-run alternative. But this is, at best, a second-best justification for free training of LF workforces, while not adequately meeting the market-failure problem of developing a trained workforce sought out by small and medium firms.

Fourth, and most importantly, this second-best solution could seriously undermine the chances for a first-best solution to be implemented. It enables individual large firms to *get around* the low literacy and skills of the Northeast workforce, without requiring the improvement of basic and vocational education. Some large-firm managers we interviewed, for example, seemed pleasantly surprised by the performance of their illiterate and unskilled new labor forces, and even expressed a preference for workers *without* previous experience in the sector, or without "too much"

basic education. Without the support of business elites for improved public education and training, in other words, the LF training subsidies could turn into a permanent substitute–and a less efficient one at that–for educating and training a region's workforce. This could also reduce the support of business elites for increased public expenditures on public education.

Though this chain of logic might seem highly conjectural, this is exactly what happened in the U.S. South. Various scholars of this backward region's economic history routinely point to the recruitment of outside firms with training and other subsidies as a contributing factor to the region's persistent poverty and poor quality of its public services, particularly education (and health). The subsidies are said to have been a drain on the public revenues available for these services.[23] To the extent that the subsidies enabled large firms to get around the literacy deficit, moreover, this could contribute to reducing the support of business elites in these labor-intensive sectors for increased public expenditures and taxes for basic education, or at least explaining their lack of strong pressure on government for improved basic education.[24]

A firm-level explanation for this dynamic, in turn, is provided by the aforementioned study by Maloney of wage levels in large Latin American firms relative to informal-sector firms provides a firm-level explanation of this dynamic. In regions where illiteracy was higher, that is, large firms

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[23]In a review of the state of Ceará's industrial recruitment policies, Tyler (1998) makes the direct link between the loss of these tax revenues and inadequate expenditures on education in criticizing the policies. Nevertheless, among the various critiques of industrial-recruitment policies in Brazil–the so-called *Guerras Fiscais*–one hears less of this particular critique with respect to public expenditures on education. This is perhaps because much of the Brazilian subsidies to recruited firms comes out of exemption from the value-added sales tax of up to 17%, which the states collect for the federal government. Also, Brazilian states now receive funds from the federal government earmarked for education. In the U.S. South, the subsidies came first out of municipal-bond issues–tax-exempt at the federal-government level; when the federal government blocked this drain on its tax revenues by the states, the states moved to other ways to subsidize–such as exemptions from the corporate income tax.

[24]This argument has been made frequently by historians of U.S. Southern development. See, e.g., Cobb (199X) and Wright (199X).

tended to invest more in training in order to compensate for the lower literacy and skills of the workforce.

The experiences of the Brazilian Northeast and the U.S. South suggest the existence of a certain low-level trap that may be difficult for such regions to escape. Firms compensate for low literacy by investing more in firm-specific training (whether publicly or privately financed), and this leads–via the lack of elite demand for workforce education–to continued low literacy. Relying on training spillovers from larger firms to smaller ones, in sum, would seem to be an inefficient and blunt instrument–especially when publicly subsidized–for providing badly-needed literacy and skill levels to a modernizing economy.

Conclusion

This section has suggested that the subsidizing of firm-specific labor training for newly-opened large manufacturing plants is economically inefficient under certain circumstances. It subsidizes firms that would invest in training anyway, and does not adequately train the workforce for those firms that require productivity improvements but will *not* invest in training on their own, because of their inability to capture the benefits of that investment. The training may trickle down to the smaller firms indirectly, when they have a chance to hire someone who has been trained by and worked at a large firm. But this is contingent upon random events, some of which bespeak weakness rather than strength–such as poor performance and layoffs by the large firm, higher-than-desirable rates of labor turnover, generalized downturns of the economy, and a set of production practices and work organization that may be less cutting edge than appears.

This, together with the attraction of using severance payments to start new firms or to work for untaxed wages in informal-sector firms, causes experienced workers–in whose training the firm *and* the public sector have invested–to leave for "something better" elsewhere. This is not the stuff of our image of the transformative large firm. Given that an educated and trained workforce is considered more and more central to the upgrading of firms in today's economy, and that many SMEs that want to upgrade their firms nevertheless have good reason *not* to invest in training, this seems to represent a textbook case of market failure and, hence, *for* public attention.

3. Spillover interrupted

Our search for the circumstances under which large anchor firms had transformative effects on local firms led us to a set of positive spillovers that worked indirectly through the mediating role of a training or technical-assistance center operating in the immediate vicinity. The existence of such a center, however, turned out to be not sufficient to guarantee the spillover, which occurred strikingly in some cases but *not* in others. This and the following two sections explore these two different spillover paths, analyze the circumstances under which one is taken rather than the other, and draw some lessons for policy and planning. As noted earlier, I use the word "training" not just to refer to formal courses and centers created for that purpose, but also as a shorthand for the many varieties of learning by local firms that lead to upgrading. The training institutions themselves, moreover, are often providing a mix of training, technical assistance, and sometimes even research. With respect to smaller firms, finally, the line between the training of firm workers and firm owners is often blurred in reality, even though separate institutions exist for the training of workers (SENAI) as *vs.* small-firm owners (SEBRAE).

Drawing on a handful of examples, this section describes the circumstances under which the large-firm presence did *not* result in spillover to local firms–or even inhibited it–despite the presence of a training institution in the region to help serve that purpose. The following section, drawing on another set of cases, describes the elements of the opposite scenario, where there was indeed a distinct synergy between the large firm, the small and medium firms, and a training or other public institution. I present the low- or nil-spillover cases first, in order to set the stage for understanding the dynamic by which the second set of cases generated such fruitful results. I devote

more attention to the high-spillover cases because of their obvious implications for policy.

Distance and fatal attraction

Among the cases of large firms and nearby training centers that we reviewed, we found that those located near groups of smaller local firms in the same sector had more spillover effects in the local economy than those that were located at a distance. This came as no surprise, of course, given that it is by now well understood that the impact of firms on each other's learning and upgrading is importantly influenced by spatial proximity. Two further and less obvious considerations, however, complicated the workings of this otherwise positive spatial dynamic.

First, we found that the distance that inhibits spillover benefits could actually be much smaller than one might think–even only a 45-minute car or bus-trip of separation–for reasons that will become apparent later.

Second, it was not only distance that inhibited spillovers but, less obviously, a powerful gravitational pull between a large firm and the public institutions located near it–public institutions that were meant to provide services to *all* firms. The SENAI training centers of this section gravitated toward large firms–or a single large firm–and narrowed their service function to them, limiting their impacts precisely in a situation where public support could have had the most effect. This problem can best be described as a kind of mutual attraction between large firms and nearby training institutions, which can be "fatal" to the normal spilling of benefits. Because some of the causes and effects of this mutual attraction are less obvious than those related to physical proximity, I spell them out briefly before setting forth the examples.

There are at least four forces that lead to the gravitational pulls between large firm and public support institutions. *First*, despite the focus on the importance of subsidies in attracting large firms from outside a region, such firms are often attracted on their own to locations that are near SENAI and other centers engaged in training, technical assistance, and research. The attraction was fed, in turn, by public policies and subsidies that encourage it, as explained below.[26]

Second, the sheer economic and political weight of a large firm in a particular locality enabled it to influence and monopolize the agenda of the public institutions. This, without much effort or even awareness by either party that an increasingly exclusive embrace was occurring.

Third, effective firm associations in the vicinity of the public institution and the large firm were often absent, so that the public institution was not under nearby pressure from smaller-firm users for more service. Even when firm associations *were* present, interestingly, they did not necessarily apply themselves to collectively analyzing the bottlenecks to upgrading and to making demands on the service institution. Sometimes, they were used–and perhaps even created–for principally political purposes. Without competing demands on these public institutions from local contenders for assistance in upgrading, the large firm simply filled the vacuum.

Fourth, and as happens in many sectors, professionals in training and technical assistance centers were often drawn to the "most modern" clients in their field, as embodied in the more sophisticated technology, advanced training of managers and owners, and other features of the large anchor firm. This is somewhat akin to the much-noted problem of agricultural researchers and extension agents being drawn to larger farmers and more highly capitalized farming technology.

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[26]Dohnert in particular also makes this point (1999:42)

Excluding centers

This subsection presents some examples of the spillover-inhibiting effects of the mutual attractions between large firms and training centers. The following subsection concludes with some comments of significance for policy and programs.

In Pernambuco and Ceará, two states with a strong tradition of garment production in the Northeast,[27] SENAI has three important training and research centers for this sector. They are located where there is at least one large leader firm–*Caruaru* in the interior *agreste* region of Pernambuco; *Paulista*, an industrial district on the periphery of Recife in Pernambuco; and *Acarape* in the interior of Ceará.[28] For the footwear sector, some examples are included from the states of Ceará and Paraíba.

Paulista is an industrial district at the edge of the state's capital city, which was created by the state government in an earlier period with SUDENE/FINOR incentives–the same having been done by several other Northeast state governments during that period. The SENAI center there has for many years trained workers mainly for one large firm–originally headquartered in the Southern state of Santa Catarina–Hering (then Fibrasil, now Vicunha). This firm has been the only garment firm in the Paulista industrial district, and the largest garment producer in the state and one of the

[27]The Northeast garment industry is dominated by medium and small firms, as is often the case in this sector, which is one of the most important employers in the manufacturing sector of the region.

[28]In laying out the examples related to garments and footwear in this paper, I draw respectively on Sylvia Dohnert's study (1998) of the garment sector in Pernambuco and Ceará, and Monica Pinhanez' study (1998) of the footwear sector in Ceará and Paraíba–as well as various e-mail exchanges and conversations with them. I am solely responsible for any errors in the interpretations. I also participated in some interviews with owners and managers of these firms in these areas, as well as in the centers and local government.

largest in the country; it employed between 2,000 and 5,000 in the 1990s.[29] The center's location, moreover, is certainly *not* "distant": it is only 45 minutes by car from a longstanding cluster[30] of small and medium garment producers in Recife and, hence, it is not obvious why the center would not be engaged with these smaller firms as well.

SENAI's center in *Caruaru* is a two-hour drive from Recife in the *agreste* region of Pernambuco, where there are also several small and medium garment firms. More significantly, the Caruaru SENAI center is roughly half that distance by car from a vibrant cluster of medium and small garment firms in the *município* of Santa Cruz de Capibaribe–the so-called *sulanqueiros*–which has produced low-priced "popular" garments and marketed them throughout the Northeast since the 1960s.[31] Despite its seeming proximity to the *sulanqueiros*, however, the Caruaru center serves mainly one large knitwear manufacturer in Caruaru, Sabra, modifying its course curriculum regularly to meet Sabra's needs.

For example, when Sabra started using a different kind of sewing machine without springs–the only firm in the region to adopt the new machinery–SENAI accommodated by adapting the machines it used for training garment workers of the region (Dohnert, p. 43). Though reflecting a laudable responsiveness to the cutting-edge technology adopted by a large leader firm, this change also made SENAI's training courses of considerably *less* value to the small and medium garment

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[29]The firm had approximately 2,000 workers at the time of our interviews there.

[30]I am using the word "cluster" rather sloppily throughout, and more broadly than is usually meant, in order to avoid the more cumbersome, albeit more accurate, word, "agglomeration."

[31]This garment cluster actually includes another *município*, Toritama, but the cluster is widely referred to as Santa Cruz de Capibaribe. "*Sulanca*" is a combination of two words–*helanca* and *sul*. *Helanca* was a synthetic knit fabric popular in the 1960s when the cluster began; traders-turned-manufacturers in Santa Cruz first bought their cloth from textile firms and wholesalers in São Paulo, purchasing the bolt-ends and seconds for their lower prices.

firms in Caruaru, let alone in Santa Cruz de Capibaribe. The Caruaru SENAI center, by the way, is the same one that had dismissively turned down the request of a group of *sulanqueiro* firms for a customized training course for its workers, and had several unattended requests for training on its records from small firms. Even though the center was only an hour's distance from the thriving *Sulanca* garment cluster, then, this was still not close enough to prevent the excluding embrace between that center and a single large firm.

We found similar cases of "fatal attraction" in Ceará. The first examples come from the footwear sector of that state, a center of artisanal shoe production for many decades. In 1983, as Pinhanez reports, the state government created a technological center for the leather-goods industry (the NCTA), located in the metropolitan region of the capital city of Fortaleza. This would seem to have been a good location for spillover and synergy because of a concentration of small and medium shoe firms there. Soon thereafter, nevertheless, the center was serving only a few large firms, and training only their workforces; the technology used by the center was far beyond the capacity of the numerous small and medium shoe firms in Fortaleza. As with the SENAI center in Paulista, moreover, the state had located the NCTA center in an industrial district at the edge of the city, about a half hour or so from the part of town where the shoe firms were located.

A variation on this story also involves footwear in Ceará, where the state government had more recently supported the creation of a training center for the leather-goods sector in the secondary cities of Juazeiro do Norte and Sobral. Despite the longstanding tradition of artisanal footwear production by small and medium firms in these two towns, the centers served mainly the training needs of a few large firms recently recruited there, using technology that was too advanced for the majority of local firms. To the extent that these centers did offer courses for smaller firms,

they were traditional and standardized, rather than the more customized and iterative problem-solving approaches now considered most useful. They focused on cutting and other production processes, and did not teach firms about the modernizing "soft" improvements in management, shopfloor layout, handling of inventory, and the reduction of raw-materials wastage.[32]

The final example of low-spillover effects of large firms and training institutes involves garments, and takes place in the interior *município* of *Acarape* in Ceará, which is nevertheless at a distance of only 45 kilometers from the capital city, where most of thes state's garment firms are clustered–both large and small. This case is quite different from the others, in that it involved a *deliberately* remote location, as part of the state's policy of recruiting outside firms to interior areas with no pre-existing production in this or other manufacturing sectors, in order to reduce unemployment. In such cases, state governments have typically placed existing training and other centers at the special disposal of the new firm, or opened a new branch center just for the purposes of serving that firm.

In the interior and rural area of Acarape, to which the state government had recruited a large garment firm, it supported the creation of a Technical Center for Garment Linings (Fundação Centro Tecnológica de Formação de Confeccionistas). Municipal governments in the area, in turn, paid for

[32]Unlike the Pernambuco examples, it should be noted, these centers eventually had to be closed or were radically changed, partly because of bankruptcies and other problems among the large firms they were serving. These problems and transformations, however, did not lead to greater inclusion of existing small and medium firms, such that the benefits of the subsidies to the large firms were even more limited than in the Pernambuco examples.

The earliest of these efforts, the NCTA described in the text, was actually closed down in 1987, and then re-incarnated in 1990 on the campus of the university in Fortaleza–in an experiment that also led to a shutdown in 1990. Pinhanez' study spells out the details of these developments.

the transport of 1,400 workers to the training site, for periods lasting from 30 to 60 days.[33] The state government channeled FAT training subsidies to the firms to cover minimum-wage payments to the job candidates for the duration of the training period, and funded the workers' wages during the training period, as detailed in the previous section. The Acarape center's training was firm-specific and the equipment used by the center was donated by the firm–a not uncommon feature of these public-private partnerships.[34]

The Acarape center and its large firm qualifies much more as being "distant"–in this case, from Ceará's well-known cluster of garment firms concentrated in the capital city on the coast–than were the Paulista and Caruaru centers from their nearby local garment clusters. There were no other existing garment firms in the region to make any claims on the center's training. Indeed, the new training center was the result of a policy–*interiorização*–to offer even greater subsidies to outside firms if they chose to locate in the state's interior, with the purpose of creating employment in this chronically depressed agricultural region. The labor force was largely illiterate and without experience in manufacturing, having worked mainly–if at all–in agriculture and related jobs.[35] This made these regions particularly appealing for their low-cost and docile labor, as noted by the newly-

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[33]This training actually involved participants in new "labor cooperatives," rather than a central production plant. The state government suggested this form of production to firms it was recruiting from the outside as a way of substantially reducing production costs, and supported the formation of the cooperatives in various ways. The cooperatives were a way of decentralizing production to smaller workshops located at a certain distance from the main plant, and drew on unemployed women in a region of stagnant agriculture. The cooperatives, among other things, allowed the firm to "contract" labor rather than employ it directly, thus avoiding the payment of fringe benefits–which could amount to 50% of the payment to labor. Because of various public criticisms of the labor cooperatives as a violation of labor regulations, the state no longer officially supports the cooperatives with subsidies, though some still continue to operate.

[34]The Rio Grande do Norte state government made a similar arrangement with a large garment firm in a rural area, where SENAI worked in combination with another training institute, SINE (see Lima 1997:148,151).

[35]Many in this new workforce in garments were women without previous paid employment.

arriving firms and the state's economic-development promoters.

In contrast to the previous cases, then, the more distant location of the training center and its client large firm was the fruit of deliberate policy. At the same time, this approach to employment-creation had the disadvantage of inhibiting the spillover effects of large leader firms in local economies. It was not matched with equally serious initiatives and subsidies for the upgrading of already-existing firms in the region.

Implications

The preceding cases illustrate a process of mutual attraction by which public institutions and single large firms gravitate to each other. The public institution tends to customize its subsidized services to the needs of a particular large user or users. Local firms, in turn, are often not organized in groups or, when they are, capable of collectively carrying out a strategic analysis of their problems or gaining the attention of public authorities, who themselves may not know exactly how to help. The absence of strong demand pressures on the training institution from local firms creates a void that is filled by the large firm, which knows exactly what it needs and, by its very size and modernity, wields considerable power. This tends to crowd out needed public-sector action that would–as in the examples of the next section–help spill the benefits of the large- firm presence to the regional economy.

In addition, the above examples show that there can be a clear trade-off between the (1) the employment-creating benefits of recruiting large firms to locate in rural regions with high unemployment, and (2) the costs in the form of limited or nil positive spillover effects of the large leader firms on the local economy. If one is to opt for this benefit despite its cost–as may be

desirable in various circumstances–it is important to note that one is at the same time giving up on one of the important policy justifications for recruiting large firms in the first place–namely, their transformative effects on the local economy.

The previous examples have also shown that the conception of "distance" for a large firm or training center from a cluster of smaller firms in the same sector is much shorter than one would think, in terms of the significance of distance in limiting transformative effects on local firms. Even the distance to the industrial districts at the edge of many Northeast capital cities and to other locations at only an hour's ride away from groups of firms seems to limit the relationship of small firms to training centers, while at the same time facilitating the monopolization of the center's attention by the large firm closer by. Particularly ominous, the resulting lack of linkages to the local economy makes the receiving region quite vulnerable if the recruited firm picks up and leaves some years hence, when the subsidies expire or even before, when the profits of the first-comer subside. In cases of such low linkage effects, regions that aggressively recruit outside firms in one period often suffer this kind of abandonment in a subsequent period, resulting in the devastation of the local economy. This is one of the lessons learned at great cost by the U.S. Southern states over the last two decades.

Though the dedication of public training and technical-assistance services and subsidies to large firms often makes good sense in certain circumstances, the picture of our examples, put together with the discussion of the previous section on training subsidies, adds up to a relative neglect of smaller and medium local firms in training and technical assistance and, hence, in support of their upgrading. This contrasts with a distinct favoring of outside firms in public support and subsidies, which is not explicitly articulated as policy. It is these large firms, moreover, that are

most likely to invest their own resources in training *anyway*–as *vs.* the smaller and local firms, for which the return to public investment in training and technical assistance is much higher, because of the fear of training.

That SENAI and other training institutions like SEBRAE may have certain shortcomings is not a new finding. Critiques directed at these institutions' activities–large-firm as well as small-firm–have touched on the need to serve a larger variety of firms, to use more up-to-date and customized approaches to training, to be more responsive to firm-customer needs and, toward these ends, to enter into more public-private partnerships. Our examples show, however, that some of the public-private partnerships between firms and training institutions actually occur at the cost of excluding local firms. All public-private partnerships, in other words, are not equal, and some will be much better than others–as the following section will show.

This discussion also suggests that some of the causes of the problems of the formal training institutions lie beyond their will–such as the elements of the "fatal attraction" noted above, the relative weakness of informed demands for service by local firms that counter-balance those of the large firm, and the enticements of state governments for centers to work with the large modern firms. These particular problems are–unlike charging for services, etc.–*not* within the training institution's control. They can be reduced substantially, however, by the action of enlightened state governments.

Finally, though the existence of small-firm associations in a region often leads to collective efforts to upgrade, it just as often does *not* have this effect. This suggests a certain cautionary note with respect to the current enthusiasm for public support for the creation of small-firm associations as a sure path toward upgrading. Since the circumstances under which associations contribute or

not to local upgrading take us into the realm of politics and political economy, and since some of the examples on which the analysis rests are presented in the following section, I present these particular examples and the argument in a later section (yet to be completed).

Public institutions operating in the "command area" of a large firm are not necessarily doomed to act out the scenario illustrated in this section, nor are the spillover effects of large firms necessarily so limited. I turn now to some more positive examples and their implications.

4. Large firms as transformative agents

Our fieldwork revealed several cases that were distinct exceptions to the limited impact of the last section's examples. Based on this narrow sample of sectors in a few Northeast states, we would expect there to be more. Their lessons might well be similar to the ones drawn here.

The *first* set of cases involves two training centers located near one or a few large firms–as in the previous section–but for which the results were just the opposite, with significant benefits to local firms. The *second* set of cases involves relations between large *supplier* firms and their local customer firms; one of these cases even includes a highly beneficial partnership between the large firm and a SENAI training center, which was including of local firms, rather than excluding. This look at large input suppliers stands in contrast to the cases of the previous two sections, which had to do with the local firms producing a *similar* product to the large firm. The *third* case illustrates a dynamic of training and the diffusion of technology, that does not involve large leader firm at all. I include it for reasons that will become clearer below. Together, the cases suggest important lessons for policy and further research.

Two centers and their setting

This subsection looks into the effects on the interaction between large leader firms, local firms, and public training institutions–first in the leather-goods sector of Campina Grande in Paráiba, and, second, in the garment sector of Fortaleza in Ceará.

Leather Goods in Campina Grande. Campina Grande in the state of Paraíba is the home to Brazil's second most important SENAI training and research center for the leather-goods sector, the CTCC (Technological Center for Leather and Shoes).[36] Despite the weight of two large shoe manufacturers recruited to Paraíba from southern Brazil in the 1980s–accounting for from 40% to 80% of the state's shoe production–the CTCC did *not* end up, in contrast to the previous section's examples, serving these firms exclusively.

By the time the large footwear firms opened plants in Paraíba, Campina Grande and its hinterlands were teeming with tanneries and shoe firms--medium and small, formal and informal–many of them producing for local markets with artisanal methods. At the time of our research in the late 1990s, several associations of shoe producers existed–among informal-sector firms, small firms, tanneries, workers in the sector. There was a long history of interaction of these associations with *municipal* government in Campina Grande, as well as with state government, and with the engineering campus of the federal university located there, the third largest in the country. Indeed, the president of the Federal University of Paraíba in the 1970s–a prominent engineer with substantial influence in the federal-government institutions that funded Brazilian universities and researchers–had lobbied vigorously in the federal capital to have SENAI's second leather-goods center located in Campina Grande.

Pinhanez' description of this dense web of institutions, including overlapping ownerships or more informal or kinship ties among leather-goods and leather-processing firms, represents a

[36]This section draws in substantial part on Pinhanez' study of the footwear sector in Paraíba and Ceará. The most important SENAI leather-goods center is in Novo Hamburgo in Rio Grande do Sul, in the midst of the Sinos-Valley footwear cluster which, along with the Franca region in São Paulo, constitute the most important source of Brazilian footwear exports.

scenario almost exactly the opposite to that of the exclusive embrace depicted above between the SENAI centers in Caruaru and Paulista and one or a few large firms. The various associations spawned by the long development of the footwear industry, in turn, had made sustained demands on the public sector for technical assistance and training. This history–namely, the inclusiveness of these public institutions *prior* to the recruitment of large modern firms to the state, and the economic importance they attributed to the "traditional" footwear sector–seemed to make less imaginable the narrowing of attention of the training center and other public programs to the new large firms. The interactive history of these firm associations and public bodies helped to induce important spillovers from the larger outside firms to the traditional footwear sector. Just as important for a footloose industry like footwear, this history also helped the Paraíban footwear sector to survive the departure of two large outsider firms in the 1990s when the incentives expired–Azaléia in Campina Grande and Brochier in João Pessoa–which had come to the state earlier. In the early 1980s, that is, Paraíba had successfully recruited a large outside firm, Azaléia–and later, Alpargatas–to Campina Grande.[37] When Azaléia closed its plant almost ten years after opening it in Campina Grande, the region suffered much less than typically occurs after the loss of such a large employer. Many of the laid-off workers and professionals either started their own firms or were easily and enthusiastically absorbed by existing footwear firms, which had grown steadily and become more sophisticated in the interim.

In a telling and earlier facet of this story, Paraíba's footwear associations had reacted angrily when the state government announced its successful recruitment of the new Azaléia plant in the

[37]Azaléia is headquartered in Rio Grande do Sul, has for some time exported about 20% of its output, and is known currently for its modern production practices and high investment in worker training. Azaléia actually left Campina Grande *before* the incentives expired, for reasons explained in a later footnote.

early 1980s. In voicing their discontent, moreover, they were concerned much more about competition from the much larger firm in the *labor* market than in the *product* market. The higher wages typically paid by such firms, and their significantly greater number of jobs offered, often results in their luring away the best workers of local firms–professionals and higher-skilled, as well as blue-collar–thereby decimating the supply of tacit knowledge and experience that has accumulated through the years. After debating this problem–and relying on public bodies for mediating a relationship with the large newcomer–the local association was able to move away from its intransigence because Azaléia agreed to an arrangement whereby it provided training to local firms in the newest production techniques.

Three key elements of this outcome were clearly missing in the previously-told stories of the SENAI centers in Caruaru and Paulista, and those of the shoe sector in Ceará. *First*, producers pressured state government about their concerns in an organized and effective way. *Second*, the state government took the concerns of these more traditional firms quite seriously, and was open to making some kind of accommodation. *Third*, the government did not simply respond to the pressure by acceding to the plea to "protect" the footwear sector by suspending its efforts to recruit Azaléia. Rather, it actively *mediated* a final arrangement with the firm that forged important training spillovers from the new large firm to existing local firms–spillovers that would not otherwise have occurred. *Fourth*, and finally, the newly-recruited firm was *also* amenable to this accommodation. Though this in itself may not seem worth stressing, recruiting governments are often afraid to ask for such concessions, for fear of "scaring away" the outside firm; or, simply, they often do not have a focused idea of what to ask of arriving firms that would have a positive impact

on local firms.[38]

The local firms' fear of the competitive effect of the large firm in their *labor* market, particularly for skilled labor and professionals, merits some comment. Although some of the research on direct investment by outside and multinational firms concerns itself with the possibly destructive or "market-destroying" aspects on previously existing local production, these concerns nevertheless focus on the *product* market: the new firm, that is, may displace less efficient and less productive local firms producing the same product–as well as, in many cases, similarly local input-supplier firms. (e.g., Aitken, *et al.* 199X). The focus on the *product* market, however, tends to overshadow the possibly more serious impact of a large outsider firm on the *labor* market on which existing local firms depend, particularly for more skilled and professional labor. As is well known, such labor is in scarce supply in the Northeast, as attested to by the fact that large firms coming in from the South and Southeast in the garment and shoe sector often import supervisorial staff, let alone managers. It is the best and most efficient of the local firms, moreover, that will depend most on skilled labor and professionals and hence have serious trouble coping with this kind of competition in the labor market–exactly the firms one expects to *survive* the "creative destruction" of upgrading.[39]

The literature and the policy advice, in sum, focus mainly on the positive effects of the

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[38]I elaborate further on this point, and give several examples of *quid-pro-quos* asked of outside firms that did not scare them away and were beneficial to local firms, in a previous paper of this project, "The Economic Wars Between the States" (2000).

[39]The greater seriousness of this problem–as opposed to competition in the product market–came through in recent protests in New Zealand to the government's negotiations to recruit a Motorola plant there. The recruitment effort elicited fierce opposition from various small software firms in that same locale, and for exactly the same reasons as the Paraíba firms feared Azaléia: they were convinced that the higher salaries and larger number of job openings of Motorola would drain them of their software professionals.

"creative destruction" of inefficient firms. Discussions of the negative effects of large firms coming from outside the region, in turn, tend to focus on *product* rather than *labor* markets.[40] Put together with the enthusiasm of economic-development officials for the presumed spillover of new techniques from the large outside firm to local firms, this relative neglect of the *labor*-market side of the story tends to overshadow the troubles created for the more efficient local firms by the "vacuuming away" of their skilled labor force by just-arrived large firms.

In contrast to the cases of the previous section, in sum, the outcome of this particular story was, on balance, positive. The outsider firm responded to the outsider firm responding to the footwear association's concerns by entering into a training relationship with them. This kind of positive spillover is exactly one of the standard arguments made for recruiting large firms from the outside. In this case and others, however, it probably would not have occurred–as it did *not* in the examples of the previous section–without the mediating presence of interested public bodies, and the history of active firm associations and their interaction with these bodies. Just as significant, and as Pinhanez makes clear, the traditional shoe sector was a source of *pride* to various public officials in Paraíba. This contrasts with the scorn often expressed by public officials and bank officers on the traditional shoe sector in Ceará, or the *sulanca* garment cluster in Pernambuco.

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[40]Even those studies accounting for the "market-destroying" *vs.* "market-enhancing" effects on product markets of foreign direct investment in particular countries–like the Aitken *et al.* studies noted above–report that on balance the net effect is positive, with exceptions for particular countries like Colombia and Pakistan. (In a review of this literature for the Group of 24, Hanson [2001] contests this kind of judgment, saying that the existing research has not yet been systematic enough to prove one side or the other.)

There is another current of literature, particularly among Latin American researchers of economic development, that find more mixed or negative results (CEPAL, Arbix, Cassiolato & Lastres [2001]). One example from this literature–in addition to those cited in an earlier section of this paper–relates to the undermining effects of foreign direct investment on national systems of innovation (Cassiolato & Lastres [2001]).

The garment center in Fortaleza. The story of the SENAI garment training center in Fortaleza seems to be the mirror opposite, as Dohnert's study reveals, of the two SENAI centers in Paulista and Caruaru of Pernambuco. The Fortaleza center does not serve a single large firm exclusively or even mainly, and it is one of three public bodies serving–and located in the midst of–a dense web of medium and small firms, as well as some large ones. As in the shoe sector of Campina Grande, there is more than one association of garment firms–two composed of large firms, one of microenterprises, and some other neighborhood-based garment producers.

In contrast to the *absence* of strong demand-side pressures on the SENAI center from local firm associations in the Pernambuco cases, Fortaleza's garment associations successfully pressured the SENAI center there some years ago to initiate a course designed to teach workers skills in multi-tasked production, one of a set of new high-performance practices used by large modern firms. In 1997, in addition, the Fortaleza SENAI center inaugurated the most modern CAD (computer-assisted design) garment laboratory in the country, with the idea of training small and medium firms to design a complete garment collection for one season rapidly. Among other activities directed toward small and medium firms, the Fortaleza center is teaching these firms to adjust their garment patterns to standard sizes predominating in retail outlets–another major step in upgrading the product. Not only does this outcome contrast sharply with that of the Pernambuco centers but–perhaps to the surprise of those concluding that Ceará always does things better than Pernambuco–it also contrasts with what happened in Ceará *itself* in the shoe sector, as chronicled in the previous section.

Some of the important groundwork for this felicitous outcome in Ceará's garment sector broader and more rooted outcome in Fortaleza was laid in the early 1980s. At that time, and as

recounted by Dohnert, a delegation of large garment firms had approached the state's governor to "rescue" them from a crisis of excess capacity. The governor responded sympathetically with, among other things, a program that aggressively promoted the image of Ceará's garment industry throughout Brazil, including participation of these firms in national trade fairs. Importantly, however, he insisted on including small and medium firms in these efforts, including having their own stands at the trade fairs.

Actually, this story of the garment sector was not the only case we discovered for which the path to large-firm spillovers to smaller local firms worked its way through initial appeals by large firms to government for special subsidies and other favors. As in the Ceará case, the governors or other involved officials insisted on smaller-firm inclusion or linkage-stimulating measures as a *quid-pro-quo*. Though I discuss these cases and their implications in a later paper, suffice it to say here that this path of power and political access by large firms is quite different from our image of the catalytic leader firm. Namely, the transformative firm is usually thought to work more directly through the market–firm to firm–with the leader firm tutoring the local firm it buys from, or setting an example for local firms producing the same product.

Among the benefits of this explicit inclusion of small and medium firms in a public program meant initially to subsidize *large* firms, Ceará came to be known as Brazil's second largest garment pole.[41] This past history, moreover, must surely have contributed to the later habit of strategic demand-making on public bodies by firm associations of the Fortaleza garment case. The earlier support, that is, surely nurtured an expectation that public institutions might be responsive to the

[41]Ironically, Dohnert's review of a long series of state-level data on garment production in Brazil over two decades showed that Ceará never was higher than *fourth* place in garments. If these data are trustworthy, this makes the success of the Brazil-wide image campaign in favor of Ceará garments an even more impressive feat of marketing.

expression of needs related to improving productivity, design, and marketing. This contrasts, moreover, with the behavior of some other small-firm associations we observed, which pressured simply for relief in the form of increased subsidies or exemptions from taxes and regulations. Though reducing costs, these latter measures would not in themselves contribute to improved productivity, design, and marketing.[42]

Though located in an area with important large garment firms and originally attending to their needs, in sum, Fortaleza's SENAI garment training center was nevertheless the most inclusive of the three garment centers. And even though it also started by training the workforce of large firms–like the others–it eventually moved vigorously into problem-solving training and technical assistance for small and medium firms.

One might be tempted to attribute this contrast to differences in policy between the Ceará and Pernambuco state governments, in accordance with current popular comparisons in which Ceará did well and Pernambuco did poorly. But the Ceará training story in the *footwear* sector belies such an interpretation, because it has more in common with the less felicitous stories of the two Pernambuco garment centers than with this Ceará history of more inclusive state support to the garment sector–to which public bodies dedicated themselves more seriously and effectively than in *footwear* to linking to existing producers and their organizations.

Ceará garments and Paraíba footwear also have more in common because of the stronger history in both cases of SME associationalism, demand-making on public institutions, and proactive public institutions. The latter viewed these "traditional" sectors as "important" to the state's

[42]I developed this issue is at length in a draft paper from this project entitled, "Small firms, the informal sector, and the Devil's Deal," and a subsequent–yet to be completed–paper on the political economy of spillovers from large firms to small.

economy and its strategy for economic modernization–rather than, as we commonly heard elsewhere, "backward" and "hopeless." For all these reasons–and also based on similar histories in other countries–one suspects that if the large footwear-producing firms were to leave Ceará tomorrow in search of lower labor costs, they would probably leave more unemployment in their wake than when Azaléia left Paraíba.

It is difficult, based on our research thus far, to construct a completely satisfying explanation of these two contrasts–between garments and footwear in Ceará, and between footwear in Paraíba and Ceará. [43] Part of the explanation lies in the different history of these sectors and states and, hence, might seem difficult to replicate. Without disregarding these peculiarities, however, there are still some general lessons to be learned from the two sets of comparisons. They reveal the importance of public institutions that viewed the traditional sector as raw material for modernizing, rather than as hopelessly backward, and of demand-making by SME associations that arose from serious attempts to analyze the sector's barriers to modernization, and to reduce them.

[43]I have not touched on all the possible explanations for these differences that came up in the course of the research, for lack of sufficient time and space to pursue them. Pinhanez, for example, reports several observations from *Cearenses* and *Paraíbanos* alike that Ceará's large footwear firms represented an "industrial elite" that contributed to the "disdainful" view of traditional shoe firms encountered among public officials and banks; in Paraíba, this explanation suggests, there was no such "footwear elite" that would come to have such an effect on local thinking. I might modify this interpretation to add that there *was*, indeed, a footwear elite–in Campina Grande, at least. But it was local, based in small and medium firms, and inter-linked through family and multiple firm ownerships to each other *and* to supportive and locally-based public institutions. At least, this is the interpretation that would emerge from Pinhanez' study.

Large suppliers and small customers

In the second set of cases involving significant training spillovers from large firms to small, the path that leads to this outcome is quite different, even though the principal case used for illustration also involves a SENAI training center. In each of the following cases, the propelling force is the large firm acting out of its own self interest and, in the principal example of this subsection, partnering with a SENAI training center to augment the effect. This partnership and its beneficial impact, in fact, was another case of mutual "attraction" between a training center and a large firm, but it was felicitous rather than fatal. Though this case was the only one of four to involve a SENAI training center, all the cases are similar in that the leader firm supplied *inputs* to smaller and local firms–rather than buying from them, or producing a similar product. For reasons that will become clear below, this constitutes a major difference between this and the previous examples. The distinction is important, because the thinking about transformative firms–as well as the literature–focus almost exclusively on their beneficial impact as *customer* firms, or as firms producing the same product more productively.

The principal story of this section involves the SENAI training center in São Luis of Maranhão, and its partnering with a large outside producer of wood-finishing products–Sayerlack–to train small firms in the furniture production sector. The story was researched and chronicled by Bianchi (1996). In order to illustrate the general point about input suppliers, the subsection concludes with three examples of a variation on this same dynamic in Ceará–through a large manufacturer of zippers for garments (YKK), a major Brazilian manufacturer of clothing fabric

(Vicunha), and a producer of labels for garments (Haco)–all documented by Dohnert.

SENAI, Sayerlack, and it local customers. Sayerlack is an originally-Italian multinational producer of varnishes, stains, and sealants, now with headquarters in Cajamar in the state São Paulo, accounting for 65% of the Brazilian consumption of these products. It has distributorships throughout the country, including in São Luis, the capital of Maranhão, where this partnership took place. Maranhão has two important furniture producing areas–one in the capital city of São Luis, where many retail furniture outlets operate, and the other far away in the city of Imperatriz and surrounding towns like Açailandia, located in a timber-producing region.

In contrast to the other cases, the Sayerlack-SENAI program in São Luis trained the workforce (and firm owners themselves) of the supplier firm's myriad existing and potential *customer* firms, rather than its own workforce or smaller firms producing a similar product. This large leader firm, moreover, had no production facilities in the region, only a distributorship–again in contrast to our image of the transformative effects of on local firms of a large *manufacturing* firm. In addition, Sayerlack seems to have been the more active partner in this relationship–at least in the beginning–pressing for the upgrading of SENAI *and* local firms through innovative and widely-accessible training. Indeed, Sayerlack clearly bested SENAI's existing training program in SENAI for the furniture sector which, as a result of the partnership, improved substantially.

Furniture producers, obviously, are an important source of demand for Sayerlack's products. Its distributorships offer short training courses limited to the post-production, finishing stage–sanding, staining, sealing, and varnishing. This kind of finishing–including antiquing, marbling, and other exotic finishes–allows firms to improve the quality of the product without

making any basic changes in the techniques of assembly or the quality of the wood. These, in turn, enabled the rustic producers of Maranhão to upgrade their product and start exporting to larger and more demanding markets far to the south in São Paulo.[44] Up until 1990, these techniques were basically unknown in most of Maranhão, and the state imported most of its furniture from elsewhere.

Although SENAI's São Luis center has offered since 1988 a course for the employees of small and medium firms, as well as owners, it was not well attended. The course meets five days a week for a few hours for three months, at night after an workers have finished an eight-hour shift, for a total of 300 hours–and for which it charges a nominal fee of $10. It graduates only 12 trainees every six months. As is common with such formal training for small-firm owners and their workers, the course lasted too long–firm owners did not want to be absent from their business for that length of time, and also did not want their employees to be away from work for so long.[45] Much of the instruction, moreover, took place in a classroom rather than on the firm premises or settings similar to these.[46]

On its own, and starting in 1992, Sayerlack developed a highly hands-on and customized training program, that is more akin to a demonstration of finishing techniques. It trimmed down the unwieldy length of the course and altered its timing to be more convenient for firm owners and

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[44]Bianchi's paper also includes a fascinating story of the important role played by long-haul truck drivers in brokering the connection of these small and rustic producers to the much more sophisticated São Paulo market.

[45]These concerns are consistent with the aforementioned fear of small and medium firms about investing in training for their workers, and their preference for hiring workers with experience in other firms, rather than from training programs at SENAI.

[46]In fairness to SENAI, its courses in furniture-making have a somewhat different purpose than Sayerlack's–teaching the artisanal trade of carpentry and not just finishing; hence it appeals to a somewhat different clientele, including those *outside* the sector who want to learn a trade.

employees; the course takes only three days for a total of 24 hours, and is offered on weekends every other month. Sayerlack introduced other customer-friendly innovations like a mobile painting room that could be attached to any particular firm's workshop and used for training by other firms in the community, and a mobile boat-classroom that it mounted in a mobile SENAI boat-laboratory. Even before the Sayerlack opened its distributorship in São Luis in 1992, it had an informal agreement with the SENAI center to use its laboratory and its boat to offer its courses in towns of otherwise difficult access along the Amazon and its tributaries (particularly in the neighboring state of Pará). The firm provided its courses without charge.

Sayerlack eventually decided that if it "partnered" with SENAI, this could broaden the reach of its course and, thereby, the sale of its products. SENAI gave its imprimatur, advertised the courses broadly, and contributed instructors for the courses. Sayerlack, in turn, trains SENAI instructors in the finishing techniques at its headquarters in São Paulo; the newly trained SENAI instructors use these training materials in teaching finishing techniques to furniture producers in Maranhão and other states.

In certain ways, the outcomes of this case seemed more consistent with the goals driving public-sector subsidization of training and technical assistance than those of the outcomes of the two previous sections:

First, the Sayerlack/SENAI partnership reduced dramatically the reluctance of small firms to invest in training for their workers, by limiting the time that workers (or owner-trainees) had to be away from the firm. *Second*, the economic benefits of Sayerlack's training were more direct and more broadly spread among SMEs in the sector. This is quite different from the SENAI/large-firm

training partnerships of Pernambuco and Ceará in the garment and footwear sectors–the benefits of which were in many cases limited to a small number of large firms. The benefit also seems more robust than the spillover benefit of the large-firm training subsidies, working indirectly through the departure of experienced workers from large firms to start or work in smaller firms.

Third, the partnership between the large firm and the public training institute in the Sayerlack case enabled SENAI *itself* to learn how to train better: the partnership arrangement gave it a stake in, and an opportunity to observe at close hand, a highly effective training program by a large firm. *Fourth*, and most significant, the training of these rustic furniture-producing firms enabled them to upgrade dramatically the quality of their product and hence to compete in the markets of São Paulo, which would have otherwise remained beyond their reach. This contrasts with the more artisanal approach of the SENAI course which, while covering all aspects of production and targeted at small producers, also kept them and their firms in their place.

Finally, it should be noted that this successful private-public partnership provided these courses to small-firm users for *free*. At the same time, the public sector, to the extent that it subsidizes SENAI, would seem to have borne the *smaller* portion of the costs of this subsidy. Sayerlack, that is, donated its materials, a training course to SENAI technicians, and a locally-based technician, out of its interest in promoting its products. This detail is significant in that policy advice on improving the quality of public training today, including with respect to SENAI itself, focuses on the importance of *charging* for services. The purpose of this otherwise reasonable-sounding advice, of course, is for the service-providing institution to finance a larger portion of its expenditures. More relevant to the point at hand, charging is also meant to use "user voice"–and the option to *not* buy the service if it is inadequate–as a way of driving improvements in service quality.

In this sense, charging will lead to "demand-pressured" service that is more relevant to user firms, more user-friendly, and more cutting edge.

In the Sayerlack example, the "user" aspect of market forces is *also* driving the improvement, but the user is not being charged. The dynamic of improvement works instead through the *self-interest* of the provider in selling, not the service, but the product it distributes and to which the service is attached. This drives both the improvement of the training *and* the inclusion of as many firms in the service as is possible. Sometimes, then, there are more powerful ways of eliciting improvement in training and other services than charging for services.

Input suppliers and training in Ceará. Dohnert found three cases of significant training and other benefits also provided by large input-supply firms to their smaller customer firms, in the garment sector in Fortaleza. (These cases did not involve a partnership with a training institute.) In each of these cases, as in the Sayerlack story, the assistance enabled these firms to produce a better product and become more competitive in wider and sometimes more upscale markets. The assistance was also free, and valued highly by the customer firms.

Vicunha, one of Brazil's largest fabric manufacturers, particularly of denim, offers its customer firms free advice on fabric cutting and laundering techniques, the best kind of cloth for a particular garment, and factory layout–for small customer firms as well as large. Many of the small jeans firms visited by Dohnert reported that they had learned about factory layout and other "secrets" of production to Vicunha and other cloth suppliers.

Similarly, the world's largest zipper manufacturer–the Japanese multinational, *YKK*, located a plant in Fortaleza in the mid-1990s.. It assists myriad small and medium firms–as well as large–in

producing jeans. It makes the zippers available to each firm in bulk form, provides machinery on request for rental, customizes the zippers to each firm's required length, and instructs firms in how to prepare the denim for the zippers and to install them. This kind of attention helps the small firms to reduce inventory, allows them to adapt more quickly to changes in fashion requiring different-sized zippers, and reduces wastage of the fabric–all of which lead to lower costs and improvement in product quality. Yet a third input-supplier locating in Fortaleza in the 1990s–*Haco*, a large manufacturer of knitwear labels–provides similar assistance to its customer garment firms.[47]

All three firms, it is important to point out, had been generously courted by the state government and, as a result, were the beneficiaries of substantial subsidies from the state, subsidized credit from development banks, and/or FINOR subsidies for capital. Indeed, in the case of at least two of these cases, the state government intentionally recruited the input-supplying firm, knowing that its large garment cluster would prove particularly attractive for location there. Whether the state had these training benefits to the sector in mind–in addition to the direct employment effects of these three large new plants–there is no reason why public bodies promoting economic development could not target the firms they recruit in this way, and contribute to enhancing the spillover effect. The Sayerlack case is an obvious example of the latter.

Conclusion. Large input suppliers with aggressive marketing programs, in sum, may represent a somewhat under-appreciated instrument for reducing the market failure associated with

[47]In yet another example from Southern Brazil, which was not part of our study, a sophisticated and up-scale tile-manufacturer provided technical assistance to local tilers in installing the tiles (Meyer-Stamer 1999). The firm had received complaints from final consumers that the installed tile was cracking; the company verified that the installation by tilers was inadequate, and hence saw to it that they received free training in installation of the tiles.

training of the SME workforce–as well as the model of a modernizing development agent. The under-appreciation results from not differentiating between *types* of firms, and their place in the supply chain. The literature on buyer-driven supply chains as in garments and footwear have also riveted our attention elsewhere–namely, on *customer* firms as transformative agents through the tutoring of their local suppliers, rather than the large supplier firms of this section. Customer firms *limit* their tutoring to a narrow range of preferred suppliers, whereas for input-supply firms, the possibilities are infinite–the more customer firms tutored, the more product gets sold. What's more, this broad training benefit is direct and focused on upgrading–in contrast to the indirect, diffuse, and randomly occurring departure of workers at large firms–trained at the firm for free with public subsidies–to found or work in smaller firms. Finally, the product-promoting and free assistance of the input suppliers–whether in partnership with training institutes or not–also serves the firm's desire for good public relations with government and elected officials. All this, in a way that leads to upgrading the style and quality of service to the SME sector and, hence, of its products and its marketing.

This is a "mutual attraction" between two parties, in sum, that spills benefits to many firms, rather than limiting them. Given the widespread enthusiasm for public-private partnerships today, the public promotion of them would do well to apply a more discriminating eye.

Paraíba and the Third-Italy connection

The third example of widely spread training and technical-assistance benefits is quite different from the others. It had nothing to do with spillovers from a large firm located in an area of SME production. I include it here, however, because it illustrates a path to SME learning and upgrading that does not receive much attention–perhaps precisely because it does *not* require a transformative outsider firm nor substantial government support to set it in motion.

Our current belief in the strength of the outsider firm as a catalyst of development–and the consequent attempts of governments to attract such firms and make them comfortable–may well overshadow these other important paths toward upgrading and, hence, policy choices. These other paths, in turn, may sometimes lie more within the control of public-sector actors and have more predictable effects than the vagaries of development-by-catalytic-firm. The outsider firm, after all, may or may not decide to locate in one's state, may or may not link up to local firms, may contribute more on balance to the weakening or "creative destruction" of local firms than to their nurturing, and may or may not depart the region suddenly, after several years of public subsidy embodied in the initial recruitment incentives.

This story, then, reveals a seemingly viable additional path to upgrading whereby small and medium firms do not necessarily need, in order to compete, the leader-firm's connections to international markets, its tutelage in modern production, design, and marketing techniques, and its access to capital markets. Finally, the story helps to pinpoint a particular problem we found in official attitudes about traditional small- and medium-firm production and, hence, in public policies in this area.

In Paraíba, Pinhanez (1998) found several small and medium footwear firms that were quite modern in their production practices, had upgraded considerably, and were exporting and/or competing successfully in the domestic market. Several workers, professionals, or firm owners of this group had passed through a period of learning about production, design, and marketing in Italian shoe factories and training institutions,[48] in the north-central region known as the Third Italy. Before this Italian experience, these individuals were firm owners or their sons and daughters, employees of these firms, or students just graduated from the professional footwear-training program at the Campina-Grande campus of the federal university or the leather-goods center in Campina Grande. They brought back with them to Campina Grande, as Pinhanez reports, a modern technology and "a new attitude." (pp. 31-32) They returned to their (or their parents') firms or, in some cases, founded new firms.

By the early 1990s, a handful of firms headed by "alumni" of the Italian experience stood out from the more traditional ones. They had even radically transformed their pre-Italian production practices–improving the quality of their product, working conditions, and safety and environmental practices (e.g., the firms Rosana Porto, Modena, and Desiderio). They used modern practices in storing raw materials, reducing wastage, and better utilizing scrap. These are exactly the kinds of "soft" improvements that have significant impacts in reducing costs and enhancing competitiveness, often moreso than reductions in labor costs, particularly in the traditional footwear sector (Mody 199X). Through their associational relations with other firms in the region, they preached the managerial vision embodied in the Third-Italy experience, including the idea that a cleaner, safer, and environmentally more careful production environment led to higher productivity. The Italian

[48]The receiving institution in Italy was PISIE, the well-known Politecnica Internazionale per lo Sviluppo Industrialle.

experience also left them with permanent networks in the Italian footwear industry, which they drew upon subsequently for advice.

This story of the Italian connection is only a part of a richer and more complex picture painted by Pinhanez in her study of the shoe industry in Paraíba. Suffice it to mention here, for purposes of what follows, three elements of the story that are important to the subject at hand. Most importantly, the Italian connection was brokered by a strong set of local Paraíban institutions in which the leather and leather-goods sector was embedded–including the Campina Grande campus of the Federal University of Paraíba (where the engineering school was located) and various technical programs spawned by interaction between the university and shoemakers, tanners, and their associations, as supported by state and local government.[49] These institutions facilitated and supported the Italian connection, and the alumni returned to firms or the institutions that supported the program.[50] As noted above, moreover, this took place during a time when at least two large

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[49]As noted elsewhere, the Ceará state government tried to create this kind of institutional synergy between the footwear sector and the university and training institutes, but without much less success. For example, the *Cearense* counterpart (NTCC) to Paraíba's technical center in the leather and leather-goods sector (CTCC) is relatively inactive in comparison to the NTCC. The CTCC not only serves a broad swath of local firms, but participates in efforts to recruit outside firms, accompanying government officials to São Paulo and other states where "desirable" modern shoe firms are located.

[50]That the Paraíbanos went to Italy, rather than another country or even southern Brazil, was probably important to the outcome. Italians and Brazilians have long felt a cultural affinity to each other, they have for some time shared an interest in each other's development experiences, and the Italian language is easier for Brazilians to understand than some others.

With respect to the language issue, in fact, Pinhanez cites the comments of the owner of a Paraíban shoe firm who had no other choice but to send his technicians for training–up through the 1970s–to the faraway state of Rio Grande do Sul, Brazil's most southernmost state, which had the only serious technology and training institute in leather and leather goods at that time. (Rio Grande do Sul is one of the two leading states–along with São Paulo–in Brazilian shoe production.) Reminiscing about that time, he reported his technician-trainees had a difficult time adapting to southern Brazilian conditions: "The cold weather was unbearable for many of them....many courses were taught in German, since the local population is mostly composed of German immigrants. One of our students took a whole course conducted in German, without even speaking the language." He went on to say that the center allowed only one student per year to be sent from the Northeast to take the course offered to tannery technicians (p. 32)

outsider firms were present in footwear production in Paraíba and, subsequently, closed down and laid off several hundred workers. Though the state had provided subsidies to the outsiders, and continues to do so, it and the municipal government, training centers, and the university had also supported local producers strongly.

From father to son. That some of the alumni of the Italian training experience were the sons and daughters of traditional family footwear firms in Paraíba contributed to their Italian sojourn leading to a major transformation in production style from one generation to the next. This particular sequence of events is not unusual in stories of successful clusters–the trips abroad, the corresponding upgrading of practices upon arriving back home, the networks formed with firms and institutes in the more advanced country.[51] Indeed, the Third Italy itself represented just such a progression, though the vast literature on the subject has not explored exactly how this happened.[52]

Though stories about the inter-generational transformation of a traditional sector are not unusual, our interviews with public officials tended to reveal the *opposite* assumption–that is, the

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[51]For example, the successful transformation of the advanced ceramic and textile/garment cluster in the southern state of Santa Catarina, in response to the pressures brought by trade liberalization and high interest rates, also involved prior trips to Italian industrial districts to study best practices (Meyer-Stamer 1998).

[52]Capecchi (199X) in particular identifies the inter-generational transformation. It is interesting that despite the considerable literature on the dynamics of the Third Italy when it burst onto the scene in the 1980s--and despite the great interest in applying its lessons elsewhere, including Northeast Brazil--there is little research on how exactly the inter-generational transformation took place–from artisanal and traditional to modern, flexible, cutting edge. (Personal communication with Arnaldo Bagnasco, an Italian scholar of the Third Italy.)

Another typical father-son history of transformation, on a smaller scale, is provided in a recent study by Bowles (1999:3), which recounts the success of a fishing cooperative in Toyama Bay, Alaska. He points to a similar father-son dynamic of continuous transformation, whereby "the elder members pass on their skills and the more educated younger members teach others the new high tech methods" (Bowles' source for this case material is a study by Erika Sekis [sp?] and Jean Philippe Plateau [1999]).

unlikelihood that the kind of father-to-son (and father-to-daughter) modernization found in the Paraíba case could ever occur. In one version of these comments, bank managers and other public officials spoke of how the owner of the typical solid local firm would entrust his business, upon getting older, to an "inadequate" son. The son, the story goes, would have neither the smarts nor the serious interest to manage the business properly, let alone modernize it. The passing of the reins to the son, then, would result in the decline of the firm and loan delinquency or default, or simply continued low productivity--not the stuff, to be sure, of sectoral transformation.

A second and parallel story of discontinuity cropped up in interviews involving the histories of successful transformations in a particular sector with a long tradition of production, such as textiles in Ceará or Pernambuco. In this narrative, the transformation emerges from a completely *new* cast of characters–namely, large firms that started from scratch, often from outside the region or the sector. As the story goes, the previous firms were "entrenched" in their old-fashioned ways, wedded to old machinery, and unable to adapt to new modes of production. When transformation finally took place, the previous generation of firms simply ceased to exist, often failing *en masse* in the aftermath of a severe economic crisis–whether from the competitive pressures of trade liberalization, economic recession, or high interest rates.

This view is aptly reflected in Pinhanez' reports of the frequent expressions of disdain she heard from development officials in Ceará about the "hopelessly" traditional nature of the leather-goods industry there. The only way to reform the sector, one official said, was "to breed a new generation of entrepreneurs arising from large firms" (p. 13); the problem would be solved, another said, "only when the current generation dies and a completely new one emerges" (p. 48). A new generation of firms, then, had to rise up from the ashes of the old. This exact image of an all-

consuming fire followed by the emergence of a generation of new and better firms characterizes the oft-told story about the transformation of the Pernambuco textile industry in the 1970s, when all the obsolescent equipment was gathered together in a yard and burned, so as to make sure it would not reappear somewhere else.[53] The wrenching change of these narratives of transformation are far from the continuity of the father-to-son transformation of the Paraíba/Italy story, and others like it.

Continuities or breaks? Is one of these views more accurate, in simply factual terms, than the other? Or is it simply that some sectoral transformations involve the continuous type, like Paraíba, while others are distinctly discontinuous, like the Pernambuco textile story and also the story of the modernization of Ceará's industry in the 1990s? Although discontinuity may well figure importantly in many cases sectoral transformation, these stories contain important threads of continuity as well. Our research was not extensive enough to answer these questions satisfactorily, but they would seem to be important ones for further exploration because of their relevance for policy. Implicit in the narratives about inadequate sons and completely re-born sectors is the assumption that *dis*continuity is required for "serious" transformation. In turn, this assumption *itself* strongly shapes and reflects current views about appropriate policies today.

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[53]This story relates to the modernization of the textile industry in Pernambuco in the 1970s, with the support of the public subsidies–particularly for venture capital (FINOR/SUDENE) and investment credit (public development banks). The officials involved in this initiative told of how the powerful and traditional "textile elite" of the state had been highly resistant to modernization, as evidenced–among other things–in their old and outdated equipment. Since the textile sector was an important one in the state, these officials had pressured the industry to completely replace their equipment, with the support of substantial public financing. When the new equipment was installed, officials arranged for these firms to gather the old equipment in one place and *burn* it–out of fear that it would re-surface on the second-hand market and drag the industry back down. As told, the story conveys the excitement of a dramatic victory in the war against backwardness. The image of a yardful of burning textile machinery–perhaps apocryphal?–remains in one's mind the power of the metaphor of development as highly discontinuous..

More specifically, the assumption of discontinuity is clearly implicit in the catalytic role widely believed to be played by the anchor firm, which brings something totally new from the outside and shakes up local ways of doing things. Hence the importance placed by state governments and other public institutions on attracting firms from other regions or countries, as well as the political popularity of such initiatives and the extent to which such recruitment has become a centerpiece of the economic development initiatives and public investments of many states. The discontinuity assumption also lies behind the skepticism we found among various public officials about focusing "serious" development initiatives on *local* firms--formal as well as informal, medium as well as small. It also lies behind the disdain–sometimes bordering on embarrassment--expressed by public officials toward small-firm clusters in their midst.[54]

It is a tribute to the power of the "discontinuity" perspective on economic development that clusters like the *sulanqueiros* and other concentrations of "traditional" firms scattered throughout the Northeast are seen as embarrassments rather than as–with a little help from the state, as in the Paraíba story–potential "Third Italies."[55] Curiously, moreover, the "discontinuous" views of

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[54]The only two occasions on which we heard expressions of respect for, and serious curiosity about, the *sulanqueiro* garment cluster in the Pernambucan *agreste* involved *private-sector*, rather than public, figures. The first instance involved the marketing manager of the largest garment firm in Pernambuco and one of the largest in all Brazil. In response to a question about whether he feared cheap Chinese imports–as several other firms or firm associations had reported--he said, "it's not the Chinese competition I fear most, but that of the *sulanqueiros*!" (He did say, however, that he had not visited the region "yet"–it is about an hour or two by car from his plant–but he "very much wanted to.") The other example involved a visiting mission of Japanese garment firms, which informed their state-government hosts in the economic-development department that they gave high priority to visiting the *sulanqueiro* cluster.

[55]A few other examples of "spurned" local production clusters include the Serra do Ibiapaba near the western edge of the state of Ceará, where horticultural production by small growers has flourished, and which supplies much of the tomatoes–for example–consumed throughout the whole Northeast; and the irrigated small- and medium-farming in the middle-Jaguaribe River region of Ceará, as well as a thriving metal-mechanic sector there. (For the Jaguaribe-River development, see Tagle [1994]; for a rich description of the economy of tomato-growing and marketing in particular, see Finan [19XX]).

transformation persist despite the very popularity among many development technicians in the Northeast of the Third Italy *itself.* The history of that story, as the literature suggests, was clearly one of continuous transformation from traditional local firms to highly modern and successful exporters.

Finally, the view of manufacturing modernization as discontinuous also contributes to the common view of local and traditional firms as pathetic--a sign of malaise, illegality, poverty, and chronic unemployment. This relegates them to a policy category called "small firms" and "informal sector" that belongs, in turn, to the domain of social and welfare policy–and not "serious" economic development.

Whether one finds discontinuity or continuity in trying to plumb the transformational histories of sectors for their policy lessons, then, will depend partly on the eyes of the beholder. All the more reason, in turn, to get the stories right, because of the independent power they tend to acquire as historical "lessons" about policy. Even if research reveals strong elements of discontinuity in such stories, moreover, there are still important suggestions for policy to be learned from the more continuous pieces. Whether or not we find out that the Paraíba story of the modernizing second son or daughter is less common than that of the inadequate son, for example, this case nevertheless shows us how public institutions can contribute to inspiring the sons and daughters of a cluster of firm owners to transform it, and give them the means to do so.

Seen in this light, the problem of the "inadequate son" who receives the business from his father is not so much that he lacks skills and seriousness, but that he does not see his parents' business as the "modern" or more challenging environment in which he wants to spend his work life. Seeing his father's firm as possibly looking like something akin to the Third Italy, rather than

as being stuck in the "old-fashioned" world of his parents, may generate as powerful a dynamic of transformation as that brought by setting down a "leader firm" from outside.

Going outside, or bringing the outside in? As a mechanism of transformation, then, the Italian apprenticeships have some of the same elements as those embodied in the metaphor of the "anchor firm." Just as with the anchor firm, the Italian connection introduces new visions and practices, as if by stealth, from outside–like a "friendly" version of a Trojan horse. There are, however, some important differences. In the anchor-firm model, the "better" world from outside is brought to the region by a large firm; in the Paraíba variation, individual linked to the sector themselves "go" to the outside–the Third Italy, in this case–and bring back what they learn.

Also significant in this comparison of bringing the outside in, many of the direct benefits of public subsidies in the anchor-firm case are internal to the recruited firm–the tax exemptions, the credit subsidies, the firm-specific infrastructure, the discounts on charges for water, electricity, etc. This is not to mention the *magnitude* of the subsidies. They would appear to be much greater than the kind of support required to facilitate training and apprenticeships abroad, as well as to finance local institutions supporting the sector.[56]

In cases like the Paraíba story, in contrast, a substantial share of the benefits of public

[56]Little economic analysis seems to have been done on the magnitude of these subsidies, even though the current period is seen as one of much less subsidization of industrial development than the previous one, up through the 1980s. Though IPEA has attempted to calculate the cost of these subsidies, the calculation–and others like it–tend to be limited to the cost of foregone taxes in the future. The arguments based on future tax revenues foregone are criticized by defenders of the policy on the grounds that these future revenues would not have been forthcoming in the first place without the recruited firm, and that the employment provided by the firms generates considerable tax revenue indirectly through sales and other consumption taxes. There are also, however, other subsidies in these recruitment packages that are current and substantial–particularly, subsidized credit from development banks, infrastructure provision, and reduced charges for ongoing services like water, power, and gas. I have not seen a calculation of them, nor did our research agenda and time constraints allow for this particular exploration.

support are *external* to individual firms and, hence, have a larger and more sustained impact on the local economy. They take the form of externalities accruing to a region and a sector from exposing the owners and technicians of many firms to best practices elsewhere. Most important, this takes place in a way that creates *permanent* networks with faraway world-class producers–networks facilitating access to information and markets, as well as improved production practices. Given that the ratio of external-to-internal (or public-to-private) benefits may be relatively low in the case of some leader firms, or less certain, it is ironic that the transformative-firm model has nevertheless achieved the status of "implicit" industrial policy worthy of substantial subsidization. The kind of public support illustrated by the Paraíba story, in contrast, does not get much press--even though it suggests a clear role that public institutions can play.

5. Conclusion

This paper started with one of the most oft-mentioned spillover effects of the presence of a large firm in a region–publicly supported formal training of the workforce of large firms (Section 2). The training, together with the large numbers of workers employed with such firms, contributed to generating a stream of experienced workers *leaving* the large firm to work in or start smaller firms. The paper also pointed to certain drawbacks in this indirect spillover mechanism, and the public subsidies devoted to it. The "release" of a trained workforce into the labor market of a region often seemed dependent on various contingencies, some related to weakness rather than strength–poor performance by the firm itself, bad times in the economy, and certain inadvertent incentives in the labor legislation. In addition, this form of subsidization appeared to be economically "perverse," in that large firms are typically willing to invest their *own* resources in training, whereas small and medium firms are *not*. This is only partly because training investments have economies of scale. More significantly, SMEs typically fear losing their workers if they place them in training courses and, hence, their investment. This provides a strong "market- failure" justification for subsidization of the training of workers of small firms, not large firms.

Section 3 of the paper revealed an important caveat about the spillovers of large leader firms and their training–or more broadly, learning and upgrading–spillovers. Under certain conditions, public training institutions like SENAI tended to gravitate to an exclusive relationship with a few large firms in their midst, excluding the others–and attraction that was mutual. This narrowing of benefits tended to happen less when: (1) large firms were located directly in the midst of clusters of smaller local firms producing the same product or in the same supply chain; (2) associations of these

firms had strategic visions of how to improve productivity, and effectively pressured public institutions in their midst for support; and (3) government itself and other nonprofit institutions with power pursued an explicitly "including" strategy of support to the sector.

Section 4 reported, among other things, that learning spillovers from large firms were especially significant when the leader firm was a supplier of *inputs* to the smaller local firms rather than–as in the familiar story of the catalytic firm–a close-by *customer* of smaller local firms (or a global buyer from the outside). This finding is significant, given that much of the literature on the modernizing effects of large outsider firms in a region has to do with their tutelary role as the *customers* of local supplier firms, rather than as suppliers of inputs to smaller and local user firms. Large customer firms, in helping their suppliers to upgrade, tend to *limit* the number of firms from which they will buy to a small number of preferred suppliers. This is just the opposite of the large *input* suppliers, who have a strong self interest in promoting the greater use of their products by customer firms–the more, the better.

This place of large input suppliers in the supply chain, relative to large customer-firms, also provides fertile ground for more benefit-spilling public-private partnerships between the firm and public training institutions–in contrast to the excluding outcomes of Section 3. As illustrated by the Sayerlack case, the partnership spread the benefits of training widely and, significantly, also led to improvements in the quality and relevance of the training institution's courses–exactly what such partnerships are expected to do. This is an important finding, because formal training institutions are often criticized for producing worker-graduates not demanded by firms–as our interviews with smaller firms showed–for not being up to date in their practices, and for not customizing their training to issues faced by the firms in training.

Most of the public-private partnerships with large leader firms that we encountered for training did not *involve* this kind of tutelary dynamic between a large input-supplier and its customer firms–whether mediated or not by a training center. More characteristically, they brought together large firms with training institutes (or simply subsidies) in order to provide for firm-specific training for the workforce of that one firm. This kind of relationship limited substantially the spilling of learning benefits outside the large firm

The fourth section's last case–involving training and dissemination of new practices and the resulting modernization of several small and medium firms, including exporting by some–worked through a training experience with Italian firms and training institutes in the footwear sector, and in Italy. For the *Paraíbano* firms involved, it brought international exposure to best practices and insertion into these networks in a way that did not require exposure to a sophisticated large firm at home. Local public support institutions and firm associations got together to help send workers and managers of local firms outside the country to the Third Italy–to be trained in firms and training institutes in the footwear sector. This experience *outside* the region not only provided distinct skills but, as a model of best-practice development, had the potential to transform the sector to which its trainees returned.

Although the theme of beneficial learning effects runs across all the examples of the fourth section, the examples themselves show how broad and diffuse such effects can be in a sector, going beyond the narrowly-construed concept of formal training, and having potentially transformative effects on local development in a sector. This explains how it is that the question about the spillover or catalytic effects of large firms, with which this paper started, could have narrowed itself

down to the subject of training and then opened back up widely.[57]

[57]The lens of training–and the questions we asked in our interviews about the capabilities and skills of the work forces of the large firms we interviewed–led us surprisingly into an even broader subject area, that of public education, to which I turn in another paper.