

Regions

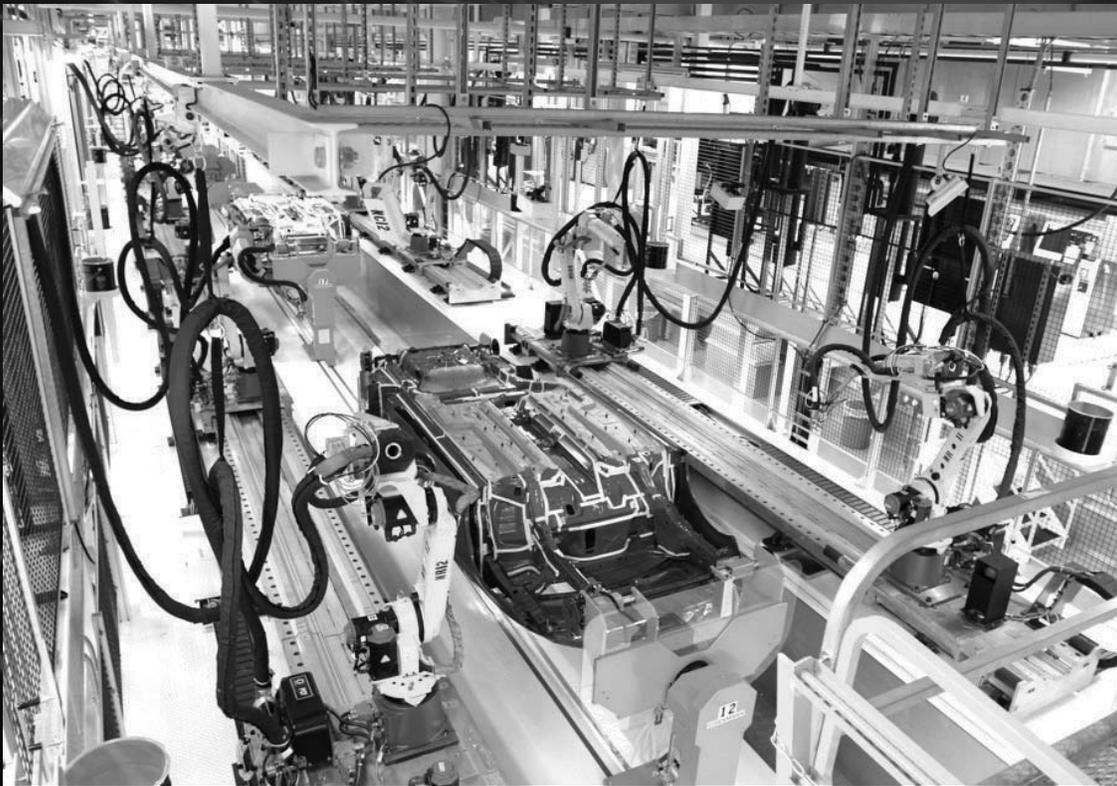
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RETHINKING REGIONAL MANUFACTURING POLICY



- **Reshoring and manufacturing renaissance: myth or movement?**
- **Cross-border regions**
- **Reappraisal of place-based policies**

development efforts may never be enough to stem or completely reverse the offshoring trend, these efforts will encourage reshoring in some key sectors. Only time will tell whether these

initiatives prove successful, but the mere existence of the term reshoring in popular lexicon suggests that there is something to the idea of a manufacturing moment.

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SHARING THE BIOPHARMACEUTICAL WEALTH: GROWTH AND EQUITY BENEFITS OF A “WORKING REGIONS” APPROACH

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Although biopharmaceuticals is one of the most heavily-studied industries in the regional policy field, few scholars have examined manufacturing policy for the sector. In many ways, an emphasis on the laboratory over the shop floor is understandable; biopharmaceuticals is fundamentally science-driven, and the translation of knowledge from basic research through the development and commercialization of drugs and therapeutics is of great interest to those who study the innovation process. Additionally, with the offshoring of routine drug manufacturing and gains in capital-intensity and productivity of domestic production facilities, the proportion of biopharmaceutical employees devoted to production in the advanced industrialized countries has dropped dramatically since 1980. As an indicator of this, 2002 was the last year in which the Pharmaceutical Research and Manufacturers of America (PhRMA) asked a question about production employment in its annual membership

survey.

Cultivating and securing bio-manufacturing jobs in addition to bio-research jobs, however, holds out the possibility that bioscience-specialized regions can pursue equity goals through diverse employment opportunities as they remain on the cutting edge of innovation. Combined with investments in vocational training institutions, including community colleges, the project of recruiting pharmaceutical manufacturers and encouraging them to tightly couple research and production activities (as well as giving research-focused operations incentives to undertake manufacturing) can result in the growth of high-paying employment for moderately educated workers. While research conducted in the late 1990s and early 2000's suggested that change in the industry — namely the shift from synthetic chemistry to molecular biology, and the rise of dedicated biotechnology firms — reinforces the spatial clustering of biotechnology and research & design in distinct locations remote from biotechnology manufacturing operations (Gray 2002, Bagchi-Sen et al. 2004), there is evidence that co-locating R&D with manufacturing and encouraging cross-pollination between them can also be a viable competitive strategy (Feldman & Ronzio, 2001).

The potential for regional policy and institutional action to encourage research and production-related employment growth in tandem is exemplified by the case of North Carolina. Our research suggests that the efforts and achievements of the Biotechnology Center (Biotech Center), a quasi-public, state-funded organization, have been a major factor in North Carolina's emergence as a leading biopharmaceutical region. Since its creation in 1981, the Biotech Center has sought to convince pharmaceutical companies that have located manufacturing in North Carolina to build research capacity there; to help homegrown bioresearch establishments move into production; and to better connect production and R&D capabilities. This has yielded high paying jobs for recent university graduates. Equally important, it has helped pull down the bioscience career ladder so that it now includes “rungs” for those with modest technical training beyond secondary education including many displaced from traditional manufacturing industries including textiles, furniture, and tobacco processing.

The Biotech Center has adopted three main strategies in its pursuit of more equitable employment opportunities. First are efforts to replace jobs lost in traditional pharmaceuticals that

have resulted from industry mergers and consolidation. The Biotech Center has worked closely with home-grown bioscience firms on the cusp of manufacturing, providing a mix of grants, loans and technical assistance to help them develop in-house manufacturing capabilities. To this end, the Biotech Center has invested heavily in multi-purpose institutions like BTEC, a state of the art pilot manufacturing facility housed at North Carolina State University that allows firms to test out production-related research before bringing it in-house. (For additional examples see Clark, 2014.) The Biotech Center also supports strategic industrial recruitment, targeting non-local firms that are in need of a new manufacturing facility, convincing them to establish that base in North Carolina (Lowe 2014). Recent firm recruitments in biomanufacturing include Novartis, Merck and Medicago.

Second, the Biotech Center, in close partnership with the state's community college system, has created a robust and flexible biomanufacturing workforce development infrastructure. The result is a customizable system that offers both classroom and job-site training. With this system in place, the Center and its partner institutions are in a position to convince bioscience firms to relax standard hiring protocol and employ workers that have transferable manufacturing skills and experience but less than a four-year bachelor's degree (Lowe, 2007). In some cases, the Center has worked with traditional pharmaceutical firms that are shedding employees, to support the transition of incumbent production workers

in conventional pharma-manufacturing jobs to those involving molecular based production systems in growing biotechnology firms.

Finally, in an effort to tightly couple production and innovation functions, the Biotech Center offers support to established biopharmaceutical manufacturers that develop in-house R&D capabilities. Key here are continuing investments in undergraduate and graduate training programmes in applied bioscience research that help replenish the regional talent pool.

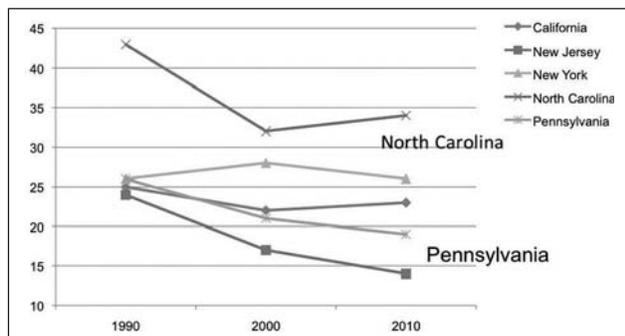
Our comparison of North Carolina — which experienced a 23.5% growth rate in bioscience employment between 2001 and 2010 — with Pennsylvania, a traditional bio-pharma stronghold that experienced a 4.9% decline during the same period, further supports the argument that institutional innovation is a key determinant of both growth in the bioscience sector and equity in the distribution of that growth. The state of Pennsylvania, and particularly the Philadelphia metropolitan area, worked from initial advantage to become the first bio-pharmaceutical hub in the United States, and the state's path-dependent prominence in both research and production persisted through the 1980s. The state still has a large number of employees in biopharmaceuticals and a high degree of specialization in the sector. However, Pennsylvania possesses neither a sector-focused entity with the comparable capacity of the North Carolina Biotechnology Center nor a commitment to the complementarity of research and production in biopharmaceuticals. Policymakers in Pennsylvania are heavily focused on nurturing research

and commercialization partnerships, attracting and providing venture funding to start-ups at critical junctures, and training high-level scientists and laboratory technicians. They do not think of the state's traditional strengths in manufacturing as an asset to the retention, growth, or attraction of bioscience enterprises, and their policy practices reflect this discounting of production's potential. In metropolitan Philadelphia, there was overt conflict among key decision makers in the mid-2000s over whether there existed a complementary relationship between production and R&D, with many policy and industry leaders maintaining that the brightest future for the state lay exclusively with a research orientation (Wolf-Powers, 2012).

The divergence in outcomes for the two states over the past decade extends beyond differential employment growth rates. As seen in Figure 1, production- and transportation-related occupations are more prevalent in North Carolina than in other biopharmaceutical-specialized states, indicating that the occupational breakdown within biosciences is more distributed and diverse. Furthermore, the workforce in bioscience occupations is significantly more diverse educationally in North Carolina than in Pennsylvania (Figure 2). Many North Carolinians with high school degrees in combination with industry-specific vocational training are finding and maintaining employment in this growing sector.

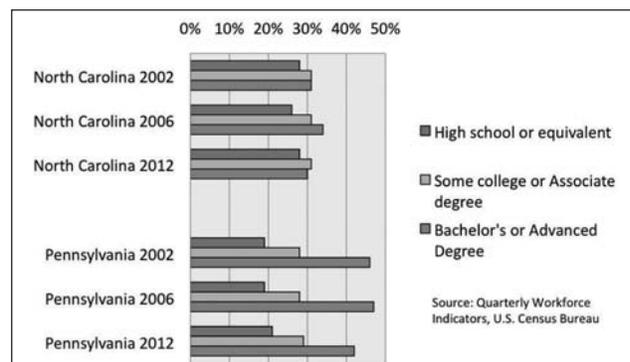
Specifically with reference to the biosciences, Feldman & Ronzio (2001) argue that innovation ecosystems and learning networks can be solidified and

Figure 1: Percentage of biopharmaceutical industry employees in production and transportation occupations – 1990, 2000, 2010



Source: Integrated Public Use Microdata Samples (IPUMS), University of Minnesota Population Center. Data is for Census Code 181, Drug manufacturing

Figure 2: Education by Percentage of Workers, Pharmaceutical & Medicine Manufacturing (NAICS 3254), North Carolina and Pennsylvania 2002-2012



Source: Quarterly Workforce Indicators, U.S. Census Bureau

made more robust through place-bound linkages between research and production, particularly early-stage production. Our case research strongly suggests that organizing a deliberate policy strategy around the linkage of research and production can function as pro-equity policy in addition

to spurring industry growth. The findings support Jennifer Clark's (2013) hypothesis that "working regions" — regions in which policies focus simultaneously on building research and production capacity — generate superior and more evenly distributed economic and labour

market outcomes. Broadly speaking, they also suggest opportunities for regional development practitioners to promote a more inclusive future in advanced manufacturing.

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QUANTIFYING THE VALUE OF PLACE-BASED EXCHANGE WITHIN A GLOBAL PRODUCTION NETWORK: THE CASE OF HIGH POINT NORTH CAROLINA'S FURNITURE MARKET

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Introduction

The household furniture industry in central North Carolina provided a critical manufacturing base for the American South in the early twentieth century and ultimately encompassed a network of firms throughout the Southeastern United States. At its zenith in the 1980's, the household furniture industry employed over 90,000 workers in North Carolina. However, beginning in the 1990's, the sector experienced plant closures, significant job losses, and the development of offshore production facilities in low wage countries in a similar pattern observed in many mature U.S. manufacturing clusters. The production facilities that remain

are at two ends of a spectrum: high-end wood furniture for customers willing to pay a premium for craftsmanship and upholstered furniture less sensitive to offshore labour costs due to their high transportation costs, and the importance of customization and short lead-times in the market segment (Buciuni & Micelli, 2013).

The High Point Market, as one of the major furniture tradeshows in the world, attracts over 150,000 visitors annually. The Market anchors the industry to the region due to its ability to create value for furniture designers, manufacturers, wholesalers, retail buyers, and related industries by reducing transaction costs related to the buying and selling of furniture; increasing knowledge about industry design and technology trends; and facilitating professional social networking through sponsored events. Through this value creation, the region maintains its status as a global place brand for the household furniture industry (Bathelt,

Golfetto and Rinallo, 2014).

Despite the shifting geographies of production and increased global competition, the furniture cluster maintains high value functions that are essential to the long-term viability of the remaining firms. The central North Carolina region is home to several headquarters of globally competitive firms and is a key location for the wholesaling and marketing of furniture for the household consumer market. The bi-annual High Point Market held in High Point, NC, is a critical gathering for the industry's diverse set of producers, designers, buyers, and financiers, and is known to be where producers exhibit products and negotiate sales agreements. During the three weeks of Market each year, the City of High Point comes alive and hotels and restaurants throughout the region are packed. However, when visitors leave, activity subsides and showrooms empty. The key question we ask in this paper is: How important is the High Point Market to the overall health of the

Regions

THE VOICE OF THE MEMBERSHIP

The question of how to shape regional policies to incubate, support, and sustain emerging manufacturing technologies and spur job creation in incumbent industries is the subject of extensive debate in the wake of the global recession. This issue of *Regions* focuses on the grand challenge facing academics and policymakers: how to rethink Regional Manufacturing Policy in and for a 21st century economy — both as an empirical issue for analysts and a question of policy innovation. The Regional Survey articles showcase scholarship on recent developments in manufacturing policies in advanced industrialized countries including the shift toward comprehensive regional strategies to support advanced manufacturing. These studies underscore the increasingly spatial dimension of manufacturing strategies as policymakers recognize the importance of linking research and design functions to local production networks. This goal places new emphasis on regional institutions as both the implementation framework and as a key factor differentiating regional capacities. This issue also contains short articles on issues for the development of Cross-Border City-Regions, a re-appraisal of place-based thinking in regional development and community responses to the negative consequences of structural change.

