Federalist Industrial Policy: State and Federal Governmental Efforts at Industrial Modernization in the 1980s

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Over the last two decades state economic development programs have proliferated [14]. Prior to the late 1970s, most state economic development policy makers practiced a "traditional" approach that presumed that new investment flows to areas with the lowest costs. Consequently, state governments should maintain low factor costs and offer incentive packages. In the early 1980s, many states reconsidered their approaches under the pressures of economic recession, international competition and cut-backs in federal aid to states. Policy reformers no longer emphasized the supply side of the economic development equation. Rather, they looked to the demand side, attempting to identify, anticipate and even help create markets on which private producers could capitalize. These "entrepreneurial" states' policies presumed that regional economic growth depended on home-based firms, usually smaller and start-up companies, and that competitive advantage could be established by upgrading factors of production, even if this drove up business costs [5; 25].

Policies to revitalize older industries called attention to technology and to the needs of small and medium-size enterprises (SMEs). Here the new policy advocates emphasized the need to modernize existing enterprises through industrial extension services that would assure that small firms (usually defined as with fewer than 100 employees) had access to the best existing business practices, technologies and worker training. To accomplish this end, the industrial extension service would both draw on established state institutions, (such as small business development centers [SBDCs], the community college system and public universities) and create new centers for transferring proven, "off-the-shelf" technologies. Together these public institutions would link forces to form a network that small firms could access to help identify their deficiencies and find ways for correcting them [27].

During the 1980s this emphasis on assisting smaller firms through an industrial extension service and through programs that linked business to the

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state's educational/research institutions and venture capital sources found wide acceptance both among the states and the federal government. By 1987 forty-three states had some type of entrepreneurial policy that linked university and vocational research to industry, including industrial services aimed at diffusing new technologies to SMEs [7].

The federal government, too, became involved in this movement as it attempted to address America's declining international economic position. In 1988 Congress passed the Omnibus Trade and Competitiveness Act. As part of this legislation, Congress reorganized the Department of Commerce's National Bureau of Standards, a research agency responsible for national standards, into the National Institute for Standards and Technology (NIST). The new agency had a practical mission, to advance manufacturing practices among the nation's smaller businesses. As industrial modernization policies advanced both at the state and federal level, a controversy over their efficacy emerged. While admitting difficulties in measuring success, proponents argued that state assistance to smaller establishments provided net social benefits. Their claims rested primarily on comparative studies that showed foreign, particularly German and Japanese, firms to be more productive than their U. S. counterparts [27]. These two nations had comprehensive industrial programs (IEPs) that proponents claimed accounted for much of the differential. These advocates also cited surveys that demonstrated business' receptivity to existing programs [24].

None of these arguments convinced critics. Opponents questioned whether the early successes depended on the program's proficiency or the economy's robustness [7; 8]. Since no precise means existed to measure these programs contributions to a state's economic growth, fiscal conservatives and newly elected governors targeted entrepreneurial initiatives as state economies declined.

While many critics pointed to specific abuses, the arguments drew on established propositions found in collective action and public choice theory. Essentially, these theories contend that special interests, including the interests of private firms, political entrepreneurs and implementing agencies, can capture governmental programs [22; 21]. According to these theories, captured programs misspend taxpayers contributions, interfere with market mechanisms, bias investments and cause sub-optimal economic growth.

In this essay, we enter this important debate over the wisdom of an IEP. However, we join the debate in a nonpartisan manner, with no intention of settling the issue. Econometric tools have been unable to decompose an IEP's contribution to a state's economic growth. Yet, as we have observed, these programs have proliferated. This reality demands that policy makers act more prudently. Here, collective action theory may be of great assistance, if adopted analytically rather than polemically. While collective action theory recognizes that these programs have sufficient political incentives to inspire institutionalization, the same theory also acknowledges benefits that arise if these services efficiently correct market imperfections. We draw on collective action theory in this balanced manner to develop rational program guidelines.

The essay divides into three parts. First, we use collective action theory to consider IEPs, both as correctives to market failures and as means for political entrepreneurship. Then, we make these ideas tangible by examining one state's

discussions to create an industrial extension service. New Hampshire (NH) provides an excellent case, since the state's conservative biases work against interventionist policies. Yet, as we will see, the political incentives seem to have persuaded public administrators in 1993 to forge ahead in planning a public industrial network, even though the business community in the state did not seek the service.

In explicating these arguments, we raise questions about the real social benefits from a state subsidized industrial extension service and explore the tendency for a "government-led industry initiative" to supply client services without justification and without sufficient understanding of industry needs. By raising these questions, we do not offer condemnations. Instead, we suggest the need to undertake these efforts more prudently: 1) by consulting with private industry and organized workers, 2) by demanding cost-sharing between the public sector and the intended beneficiaries, 3) by developing credible measures to hold the programs socially accountable, and 4) by adjusting activity appropriately over time.

Market Failure and Industrial Extension Services

In this section, we argue that under conditions of market failure (information asymmetry, externalities and free-rider problems) the private sector will not organize a state-wide industrial extension network/service, resulting in an suboptimal supply of this service. However, if private firms do not have good reasons to act collectively to secure an IEP, we suggest that political entrepreneurs in the economic development community do. These incentives include the opportunity to expand their agencies and to bolster their personal reputations.

Industrial extension services include technical and managerial assistance and workforce training. These services can help firms upgrade capabilities to secure or sustain competitive advantage. In the absence of government intervention, individual firms must estimate the costs and benefits of industrial services and invest in a level of services which maximize their long-term profitability. A market failure arises when *information is asymmetric* between service suppliers and users, and uncertainty and variance exist in the cost/benefit ratio. Smaller firms have a difficult time evaluating the value of services and assessing the differences among suppliers; service suppliers, though, have reasonable information about the quality of their services.

In other words, the market for industrial extension services may contain "lemons." Once firms perceive that "lemons" exist, companies will discount appropriately for these services. Such discounting may result in lower quality service providers driving higher quality service providers out of the market. The net effect would be either for smaller establishments to underuse the market for industrial services or for the market to collapse altogether. Such circumstances could justify government intervention.

We can further specify this problem if we consider industrial extension services as a "collective" mechanism that substitutes for firms' privately sharing technical information. The sharing of information among firms helps them reduce search costs for finding new, complementary technologies and best

managerial practices. The sharing of technological information has benefitted from recent developments in electronic networks, which have improved service efficiencies and expanded their potential scope.

Still, not all information networks arise spontaneously as part of on-going production relationships. The Department of Defense (DOD) has required their contractors to share technical information which has benefitted those included within the DOD network [11]. State governments have also initiated public information networks as part of their industrial extension programs [3]. The most effective systems provide two services. First, the system offers assistance to small firms in helping them stay abreast of current "best business practices," (e.g., business planning, operations management, inventory control, quality management, and employee training). Usually, such expertise does not exist with a single provider, but is dispersed among various public and private organizations. To access these expertises a network must be formed that may require significant investment. Moreover, the system can only provide smaller firms with best practices when these are "benchmarked" against national or even international standards. The second service comprises what we consider advanced business practices. These may include information on the latest developments in manufacturing technology or access to research centers where firms can solve sophisticated product or process problems. Although these services usually account for only a small percentage of service providers' activities, capital expenditures are needed to interconnect the provider with the myriad of industrial research centers that a state and a nation possesses.

Yet, because of the information asymmetries smaller establishments may find it difficult to calculate accurately a private consultant's benefits and so may discount heavily in purchasing services. This would result in private industrial service entrepreneurs having inadequate incentive to make the large capital investments needed to build an effective network.

While these efforts may benefit the smallest firms, what interests do medium-size manufacturers (250 to 2,000 employees) have in an IEP? These firms often have the staff and external connections to assess and implement best known practices as well as the resources and experience to hire consultants where internal expertise are lacking. Thus, these companies could view a public information network as a vehicle for nurturing rivals and so resist collective efforts for instituting this policy. However, medium-size firms need not interpret the system in this manner; they could instead view it as a public endeavor to strengthen a region's competitive advantage by upgrading small firms to be more sophisticated, suppliers and customers.

Whether medium-size firms finally interpret the formation of a public information network as a competitive threat or advantage depends largely on the organizational process used for establishing a public informational network. And, given the complex nature of the alleged benefits, a precise calculation as to how any individual firm might gain from the system remains speculative. Even if medium-sized firms recognize these potential benefits, they, nonetheless, may not invest in coordinated efforts to secure this public good. These firms may find it rational to free ride, i. e., to wait until others have expended time and money to attain a public industrial extension service. Private industry can choose yet another alternative to collective action, in essence "voting with their feet"

[31]. Firms can move to those states that offer the desired industrial services.

In sum, asymmetric information suggests market failure, while unenlightened and enlightened self-interest pose problems for private sector collective action. If a network of industrial services to SMEs is to be assured, then, the public sector must take action. Usually, public intervention requires a governmental coordinator or entrepreneur who views the project's success as a positive benefit to her own career or organization [12]. State governments assume this role because only they can coordinate resources for erecting a system dedicated to local manufacturing needs.

Hence, the collective action problem remains a "local one," where state government entrepreneurs function as the principal coordinators, even when federal grant programs induce state action and the federal government sets national standards to assure the system's uniformity and effectiveness. In constructing an industrial services network for SMEs, the political entrepreneur must offer local SMEs attractive incentives to induce them to join a public initiative. For example, a state entrepreneur might promise that participation will give a firm advantages in shaping public policy and gaining access to public officials; that a state-wide IEP will preserve or upgrade the state's competitive advantages and reduce the need for firms to move their operations elsewhere. Once in the process, the political entrepreneur must educate the private sector of the rewards that their collective action might bring, garner the appropriate public support for the undertaking, and implement an administrative structure that can both deliver the public services and legitimate itself by designing means to calculate social returns. To assure the program's success first in finding public support and then in its operation, the political entrepreneur must select private members with the appropriate client base and the reputation needed to assuage others to join the effort. The formation of public sector supported IEP also requires the participation of governmental agencies outside the entrepreneur's direct control. Typically, these include the governor's office, vocational institutions, economic development agencies, the university system, small business development centers, and regulatory bodies that oversee manufacturing installations. The entrepreneur's task will be made easier should her institution be rich with resources and be a legitimate lead organization. To elicit endorsements, the entrepreneur must enumerate benefits that each public institution will receive. This task will be substantially less complicated should the governor find the project desirable.

Even without the governor's endorsement, the entrepreneur may be able to win support from other public institutions. The entrepreneur can promise her counterparts reduced transaction costs in delivering services to their clients. For example, she can suggest that by participating in the design and administration of a state manufacturing network, vocational schools will gain detailed information to serve their client firms and students. Universities, too, will gain knowledge regarding local industries' advanced skills and research needs. This information will become increasingly important as DOD research funds dwindle and the university seeks alternate ways to finance faculty research.

In all, our conceptual discussion suggests that firms may tend to undersubscribe to private industrial services, opening the way for government intervention. And because these public benefits are not easily calculable, private

firms in all likelihood will not incur the costs and cooperative encumbrances that collective action demands. Nor can public policy makers easily calculate the social benefits needed to meet stringent, Coasian conditions for state intervention. Still, public officials have incentives to promote these programs, as testified by the 43 existing programs. Thus, the private market tends to undersupply industrial services, while the public sector has a bias to supply them. This understanding leads us to expect that public officials will act to provide public industrial services even without industry lobbying. As the federal government becomes active in this field, its programs will encourage a proliferation of industrial extension services by offering state officials tangible grant benefits [27]. We review NH's recent efforts at creating an IEP to give these theoretical conclusions some perspective.

The Case of New Hampshire

New Hampshire affords an excellent case, for few states have such a conservative/libertarian bias. Yet, even here strong support among public administrators for IEP has arisen. However, the political climate has confined these efforts, limiting the dollars to be spent and forcing public officials to elicit private industry support. That support did not come automatically; public administrators induced private industry leaders to volunteer by having the Governor directly ask for their participation. And once public officials gained industry's assistance they had to educate these industrialists on the IEP's potential benefits. Even when enlightened, private sector participants agreed with the Governor's directive that no new state funds be spent in creating an IEP. Thus, NH provides a story consistent with collective action theory, one that includes policies for striking a balance between under-and-oversupplying industrial services.

In every respect, NH's political composition encourages a weak, noninterventionist state. Its bicameral legislature consists of a 24 member state senate and a house of representatives with over 400 members with terms lasting 2 years. Legislators truly volunteer their services, receiving $200 per biennium. The low compensation levels contribute to a lack of legislative expertise, as typically a third of the legislators are freshmen. And unlike most other states, NH's legislators lack any advisory staff to help them assess complex scientific and technological issues. The executive branch contains similar institutional constraints. The governor serves only a two-year term, giving him insufficient time to develop a program independent of his constituency. Furthermore, the governor is constrained by his dependence on a 5-member Executive Council (elected every two years) which must approve all major executive branch appointments and budget allocations. The Governor has weak control over the executive branch; its commissioners (approved by the Executive Council) serve longer terms than the Governor, making them less dependent on the Governor and more receptive to their client base.

New Hampshire remains the only state without both a broad-based personal income tax and a state sales tax. Although the state has other sources of revenue, principally its business profit tax and its meals and rooms taxes, NH's state and local tax revenues per capita remain well below the New England

average [13]. Because of its limited revenues, NH's state expenditures fall below both regional and national averages on a per capita basis. These figures capture NH's citizens' reluctance to amplify the state's authority.

New Hampshire's Low Cost Economic Development Strategy

Well into the 1980s, NH politicians claimed that the state's economic successes had occurred because of its libertarian values. While other states were busy subsidizing business to relocate or adopting entrepreneurial policies to spur economic development, NH's Department of Resources and Economic Development (DRED) adhered to the belief that the state's low taxes assured job creation. Over the past two decades, NH's economy grew at a faster rate than the national average. Between 1977 and 1987 NH's service sector employment expanded at an annualized compounded rate of 7.1% as compared to the 5.6% national average; manufacturing employment increased 0.6% between 1967 and 1987, compared to the national average which declined by 0.1% per annum. Even though the service sector led in job creation, manufacturing showed substantial strength: between 1967 and 1987, productivity advanced at an annualized growth rate of 7.3%, output at rate 6%, and wages at 3%. In each of these categories NH outperformed the nation. New Hampshire's growth came largely from (1) Massachusetts' computer companies investing in NH to benefit from cost advantages; and (2) from the state's DOD contracts between 1980 and 1985. However, after a period of impressive growth, manufacturing employment in NH dropped over 21% between 1984 and 1992 and unemployment more than doubled to over 7%.

New Hampshire Reconsiders Its Economic Development Strategy

As public officials understood the severity of NH's recession, they reviewed the state's economic development efforts and moved cautiously toward entrepreneurial economic policies. DRED issued a "Strategic Plan for Economic Development," in March, 1991. This document emphasized that economic development primarily depended on retaining and expanding small businesses that made up the vast majority of the state's economy [30]. The Report called for local public/private partnerships to provide infrastructural, marketing and financial assistance for SMEs. The Report claimed that these efforts would benefit from an understanding of the state's leading and emerging industries.

The Postsecondary Education System likewise reviewed its mission. Postsecondary education developed a working relationship with the National Institute of Standards and Technology's (NIST) Northeast Manufacturing Technology Center (NEMTC), and through this contact coveted a NIST grant to plan a Postsecondary-based IEP. New Hampshire's hard times also forced a rethinking about the University of New Hampshire's (UNH) linkages to the state's economy. Many legislators argued that NH needed a center where private firms could collaborate with UNH researchers on specific product and process problems. In June 1991, the Industrial Research Center (IRC) was created. This legislation pleased UNH's new President, Dale Nitzschke. He had pledged to the Trustees that UNH would contribute to the state's economic development efforts.

To keep his word Nitzschke looked to the Whittemore School of Business and Economics (WSBE), where he found a receptive Dean who encouraged the formation of a New Hampshire Industry Group (NHIG) to work with DRED and the IRC. Thus, by 1992 an informal network had formed among these three groups, but it did not include the most important player, Postsecondary Education.

That changed in the summer of 1992 when NIST requested formal proposals (RFPs) for planning state IEPs. The possibility of federal matching funds became a powerful incentive to coordinate these public groups. Although DRED and NHIG initially attempted to coordinate the state's effort in responding to the NIST-RFP, three separate proposals emerged only two weeks before the deadline, one written by NHIG, another by IRC and a third by Postsecondary. When the bargaining process concluded merging the proposals, Post-Secondary emerged as the Partnership's lead organization. The NHIG still remained an informal body with a limited mission, to provide analytic skills for the state's economic efforts. The IRC had an operating budget, but it was only biannual and only large enough to employ one staffer, its Director. As a new agency, it had no clout with other state offices nor had it developed an independent client base among NH's SMEs.

The logical leadership choice appeared to be DRED, the state's economic development organization. Yet, DRED's organization and its resource base prevented it from being the Partnership's coordinator. Unlike many state economic development agencies, DRED also has responsibility for the state's tourist and natural resource industries. The Office of Business and Industrial Development (OBID) remains among DRED's smallest units, but its importance goes beyond its size because it oversees the state's two major revenue sources: the Business Profit Tax, and the Meals and Room Tax. Thus, DRED traditionally has sought to recruit new firms and to promote tourism. Even when DRED reassessed its priorities in its 1991 strategic plan, OBID adopted programs that prevented it from leading the state's IEP effort. The Office followed a two-prong approach: 1) it assisted local development through a Business Visitation Program; and 2) it marketed these locales to firms interested in relocating to NH. These activities made the Office a captive to the local development authorities, reproducing NH's decentralization biases.

Postsecondary Education confounded this bias. It consists of seven associate degree granting colleges, coordinated by a central administration. Each college offers training and technological assistance to local businesses [17]. Given these resources, the System's Commissioner, Jeff Rafn, declared that Postsecondary would be the leader in the state economic development. To implement this vision, Postsecondary maintained important connections to the federal government, which allowed Rafn to design programs in keeping with national trends such as those promoted by NIST. Among Rafn's initiatives two stand out: 1) the electronic integration of the colleges through Internet, which now serves as the federal communication system for the nation's emerging industrial extension service; and 2) plans to build Technology Deployment Centers at each college, that provide general and specialized technological and educational services to industry. Through these Centers, Rafn hoped to make Postsecondary NH's primary SME service provider and communication link to

the national industrial network [20]. To implement this strategy, Rafn had ample funds; in 1992, Postsecondary's Central Administration had a budget of nearly $3 million. Thus, Rafn assured the public/private partners that action would occur even without federal funding.

Forging a Governor's Technology Partnership

Postsecondary, DRED, the IRC and NHIG, had initiated the state's effort at building an IEP. But, such a network required private enterprise input. Indeed, NIST made this a condition in its review process. Ironically, then, these public agencies pursued SMEs to join a partnership that--unknown to these firms' managers--would be beneficial to them. The NHIG and IRC led this effort by approaching members of WSBE's advisory board and others. In each case, the firms agreed to participate in the partnership, primarily because of the civic status associated with membership. With only one exception, no invited member had any knowledge of public industrial extension systems or of NIST. To guarantee these participants' long-term involvement, the public partners devised a process to educate these industrialists and to vest them in this collective undertaking.

When the NIST grant was put together, the New Hampshire Technology Partnership had a planning budget of approximately $150,000 that doubled for the NIST-RFP matching funding requirement. The bulk of these funds came from Postsecondary with DRED contributing only $3,000 of in-kind services. Not one of its five private partners contributed to the budget. And, control still rested in the public sector. With an operating budget, the Partnership began work even though it lost the NIST grant. However, all work stopped after Senator Warren Rudman announced his retirement, and Governor Judd Gregg declared his candidacy for the vacancy. The Partnership waited for the new governor, which turned out to be Steve Merrill, a conservative Republican. Both Commissioner Rafn and Rice tried to inform the new Governor of the Partnership's activities. Delays occurred as Merrill dealt with the state budget. Yet, the delays played to the Commissioners' advantage, for during this period NIST announced a New England Conference on Industrial Modernization and the DOD's Advanced Research Projects Agency (ARPA) announced a $471 million grant program. Because of its excellent conference facilities, NIST selected UNH as the host for the regional meeting. This fact plus NIST's letters requesting each Governor to send a delegation to the two-day April conference gave Commissioners Rice and Rafn the opening they needed to discuss the Partnership with Governor Merrill. The expected ARPA-RFP added credibility to the Commissioners' arguments.

Induced by the federal government, Merrill endorsed the Technology Partnership, renaming it the Governor's Technology Partnership (GTP) and rearranging its membership. The Governor appointed 6 of his Commissioners, while he slightly modified the private sector composition. He named two co-chairs: Commissioner Rafn (affirming Postsecondary's lead) and Andy Lietz, the COO of Hadco, the nation's leading merchant circuit board manufacturer. On April 14th the Governor met with the Partners in his Council Chambers where he asked them to draft an IEP plan, one that relied on existing services and did

not require new funds. When the Governor left the meeting, the GTP's Co-chairs had to consolidate the individuals into a working group. With one exception, the private sector Partners had no working contact with the Governor or the Commissioners.

The NIST conference provided an excellent opportunity for getting this process underway. At the conference, the Partners learned about extension services' alleged benefits and about practices in the U.S. and Europe. The conference, too, helped build solidarity among the members, particularly between the two co-chairs. At this meeting Jeff Rafn and Andy Lietz built enthusiasm for the project and set the agenda for the next Partnership meeting which laid out the GTP's plan for gathering information about user needs. On October 29, 1993 the GTP reported to the Governor. The plan called for an electronically connected delivery service to facilitate information flows, networking and training. Postsecondary Education and the SBDC would be the major service providers, while the electronic system would interconnect them and NH to other state and national manufacturing programs. The GTP made specific recommendations about governance and private contributions. First, the GTP would remain as the oversight board. Second, member firms would lend executives for one year to be center directors. Finally, each participating firm would adopt smaller companies to improve their business capabilities.

Conclusions

New Hampshire's experience provides evidence that SMEs may have little to do with an IEP's initiation. For NH, leadership came from public agencies that had much to gain from a state industrial network. For firms the initiative primarily brought benefits in connecting them to important public officials. Where the public agencies had incentives to oversupply services, private industry remained skeptical, wanting documentation on industry needs and evidence that existing services were being rationalized to meet these needs. On the other hand, public officials persuaded industry leaders about the program's potential benefits and secured private commitment through in-kind services. But NH's initiative would not have occurred without the federal grants.

This experience conforms to collective action theory's justifications for public action and warnings against its excesses. Information asymmetry suggests social benefits from a public IEP; however, difficulties in calculating benefits and free rider issues inhibit spontaneous private collective action. Yet, public officials have powerful incentives to institute an IEP independent of private demand. Left solely to private or to public means, one would expect too few or too many industrial extension services. Hence, the need for a public/private partnership. An effective public\private partnership begins with cost sharing. Both parties must bring something to the table, whether in cash or in-kind contributions. Also, procedures must be used to assure the services' pertinence and cost-effectiveness. Moreover, states must develop methods to assess businesses' needs and to evaluate industrial service performance. This allows the public and private sectors to monitor program effectiveness and to adjust programs to correct for deficiencies or changing economic conditions.

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