Fixing network failures? The contested case of the American Manufacturing Extension Partnership

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Abstract
The article uses a case study of the American Manufacturing Extension Partnership to explore economic and industrial policy in the contemporary USA. Extensive quantitative and qualitative data are mobilized to show that: (a) the agency is pressured politically to limit its activities to ‘blunt’ remedies for identifiable ‘market failures’; even as (b) regional centers in fact often orient also, and sometimes instead, toward ‘coordination-oriented’ policies to mitigate ‘network failures’; and (c) these latter generate better results, on average, for client manufacturers. The findings challenge neo-institutional claims that economic policies are most effective only when complementary to the dominant institutional coordinating capacities embedded in the existing American political economy, or when they have the exceptional support of the American security establishment. They are, however, consistent with an alternative neo-Polanyian approach that explains when and how street-level policymakers dispersed across American federalism sometimes sidestep the ideological hegemony of ‘market fundamentalism’.

Key words: embeddedness, industrial organization, institutional complementarity, public policy, regional economies, USA

JEL classification: L5 regulation and industrial policy, P1 capitalist systems, B5 current heterodox approaches

1. Introduction
Economic, industrial and technology policies are contentious, especially in the American context. The debate is dominated publicly by the ideology Block (2008, p. 170) brands market fundamentalism, by the idea that industry and citizenry alike fare best when private sector firms are ‘left alone to respond autonomously and spontaneously to the signals of the
marketplace’. But it is marked too by politicians’ fears that a failure to ‘create new high value added economic activities in the home economy will ultimately threaten their citizen’s standard of living’, thus eroding consent (Block, 2008, p. 170). So, prominent and powerful groups such as the American ‘President’s Council on Science and Technology’ must publicly eschew ‘industrial policy, in which the government invests in particular companies or sectors’, since such policies are so associated with visions of hamhanded and corruptible bureaucrats trying to ‘pick winners’. Somehow, though, they are nonetheless ‘unabashed’ in their call for a new ‘innovation policy’ wherein the American state (or states) would help ‘firms and industries compete globally’ by identifying ‘industrial partners willing to co-invest with the government [in] for example, … technology infrastructure and the creation of clusters’ and the like (PCAST, 2011, emphasis in original).

Such sharp conceptual distinctions between ‘industrial’ and ‘innovation’ policies are of little actual use in policy analysis. There is no sustained industry without innovation and little innovation without industry, so most in the academy think of ‘industrial’ policies as the larger and inclusive set, as ‘restructuring policies in favor of more dynamic activities generally’ (see, e.g. Rodrik, 2004, p. 2) (and we will do the same). Still—terminological sophistry or no—the President’s council’s explicit call for state co-investment with industrial partners is theoretically interesting for at least two reasons. It is interesting first because it anticipates a set of policy frames—conventionally defined as the frames institutional actors use ‘to construct the problem of a specific policy situation’ (Schon and Rein, 1995, p. 33)—that have in fact since underpinned programs rolled out by the Obama administration to support American manufacturing industries. These include the ‘National Network for Manufacturing Innovation’ (NNMI), which consists in seven institutes hoping to bring together ‘talents and capabilities from the public and private sector into a proving ground for cutting-edge technology’; the ‘Investing in Manufacturing Communities Partnership’ (ICMP), which presumes to help designated communities to develop more coordinated develop economic development strategies by ‘synchronizing grant programs across multiple departments and agencies’; and other such programs (see Manufacturing.gov for an overview).1

It is interesting also because there is considerable, prominent and theory-driven skepticism about the effectiveness of those policy frames even among some of those who explicitly eschew ‘market fundamentalism’. That skepticism has been especially pronounced, often in this Journal, in the ‘Varieties of Capitalism’ (VoC) approach to the study of political economy (Hall and Soskice, 2001b; Hall and Thelen, 2009; Tepe et al., 2010). That approach links longstanding neo-institutional concerns about the feasibility of ‘coordinated’ industrial policy in the decentralized American polity (e.g. Mann, 1997) to a theory of ‘institutional complementarities’ to argue that the relative dearth of strong associational interlocutors in the American private economy reflects ‘institutional practices in which . . . actors are imbricated [and] which may not be immediately susceptible to change’ (Hall and Thelen, 2009, p. 13). This predicts ‘distinctive ideal-typical patterns of coordination among firms and other actors in the political economy’ but not just. It also predicts that American policymakers should find themselves ill-positioned to implement ‘coordination-oriented policies’ that require ‘high levels of information about the activities of the firm’. They should get their best

1 Last accessed June 03, 2016. There are seven NNMI institutes at time of writing. Plans are in the works to expand the network to 16.
results when they rely instead on institutionally compatible ‘market incentive’ policies that ‘do not put extensive demands on firms to form relational contracts with others’ (Soskice, 1999, p. 128; Hall and Soskice, 2001a, p. 47).

Linda Weiss (2014, p. 19) recent articulation of a ‘governed interdependence’ approach to the study of American industrial and technology policy offers amendment. Drawing on Crouch (2005, 2010) and Campbell (2011)’s criticisms of the VoC approach, Weiss (2014, pp. 13, 19) writes that ‘institutional complementarities’ in fact consist in ‘two basic types: complementarity may either reinforce a tendency or compensate for that tendency’, and maintains that the American ‘National Security State [NSS] and the permanent defense preparedness around which it has formed’ has served in just such a compensatory capacity. She highlights the peculiar importance in American politics of ‘international imperatives (both geo-political and geo-economic)’ but argues that those politics are mediated across a ‘national antistatist value set’. This generates a political economy ‘highly resistant to institutionalized funding for outright commercial ventures, yet highly supportive of most things to do with defense and national security’ (Weiss, 2014, p. 7). Contra the VoC, it also identifies instances of highly effective and sustainable coordination-oriented industrial and technology policies in the American Liberal Market Economy. However, for Weiss those policies are sustainable only because the ‘commercial activism of ... national security agencies’ underpins a series of ‘hybrid organizational forms that merge public and private resources in distinctive and often intricate ways’ (Weiss, 2014, p. 7).

In this article, we articulate a contrasting view that is more cautiously optimistic about the possibilities of coordination-oriented policy in the USA. We articulate that view by applying a ‘neo-Polanyian’ approach to the study of the American Manufacturing Extension Partnership (MEP). The MEP is a small agency located within the National Institute of Standards and Technology (NIST) that has long been identified as characteristic in both its strengths and its weaknesses of the decentralized American industrial policy apparatus (Sabel, 1996; Shapiro, 2001; Hallacher, 2005; Whitford, 2005; Block, 2008). It was founded in 1988 to ‘[work] with partners at the State and Federal levels on programs that put [small- and mid-sized manufacturers] in position to develop new customers, expand into new markets and create new products’ (NIST MEP website). It consists today in a coordinating headquarters outside Washington DC, and approximately 60 regional ‘centers’ collectively charged with delivering a variety of services to eligible firms across the country (‘approximately’ because the number has varied slightly over time). Its federal budget has usually been in the neighborhood of $100–$120 million (in current dollars) but is in effect larger because the centers—which are chartered as independent non-profit agencies—relax for a majority of their support on a combination of additional local and state grants and fees charged for the services they provide to client manufacturers.

Neo-Polanyian approaches owe especially (but not only) to studies by Fred Block and collaborators, many again published in this Journal (see, e.g. Block, 2007, 2008, 2011; Block and Keller, 2009, 2010; Schrank and Whitford, 2009; Fuchs, 2010; Keller and Block, 2012; Keller and Negoita, 2013; Block and Somers, 2014).² Those studies have focused less on patterns of institutional complementarity—however construed—than on the dynamics of Polanyi’s so-called ‘double movement’, on the clash between organized and ‘definite’ social

² For the most expansive articulation of the ‘neo-Polanyian’ agenda in economic sociology to date, see Block and Somers (2014).
forces ‘aiming at the establishment of a self-regulating market’ on the one side and a more disparate but equally definite array of forces ‘relying on the support of those most immediately affected by the deleterious action of the market’ on the other (Polanyi, 1944, pp. 132, 141; Block, 2007; Block and Somers, 2014). Neo-Polanyians do not presume that ‘counter-movements will [inevitably] secure political victories’, nor that victories got will necessarily to be progressive. The core claim, really, is just that modern capitalist economies are best analyzed as ‘loosely coupled systems’ in which shifting and often cross-cutting alliances of definite social forces repeatedly force ‘economic and political actors [to] find ways to keep strains or difficulties in one part of the economic mechanism from having a dramatic impact elsewhere’ (Block, 2007, p. 7).

Neo-Polanyians draw a conceptual distinction that parallels Hall and Soskice’s now-standard policy dichotomy between ‘market incentive’ and ‘coordination-oriented’ policy-making, but that is closer in its conceptual terminology to modes of thinking characteristic of those concretely tasked with making and delivering policy at the so-called ‘street-level’. The policy frames those policymakers most often articulate focus first on their need to decide when and where to intervene. In the American context they often root ideologically in the idea—found in Weimer and Vining’s (2011, p. 71) popular policy analysis textbook—that ‘market failures’ constitute the only really indisputable ‘economic rationale for public participation in private affairs’. Those frames direct the policymaker not just to ‘identify both the precise type of problem that gives rise to [a] market failure’ but also ‘the different types of bureaucratic malfunctions (non-market failures) likely to occur when public officials attempt a cure’ (Zerbe and McCurdy, 2000, p. 10). They do more than just enable and—if ‘government failure’ is a greater risk—restrain policy activity, however. They also direct it, in the sense that the policymaker is expected to try first to get the prices ‘right’, to begin by considering ‘an incentive that will allow the market to correct itself, such as a tax expenditure’ before weighing ‘more aggressive treatments such as the creation of a government monopoly’ (Zerbe and McCurdy, 2000, p. 10; Schrank and Whitford, 2011).

The principal alternative to market failure policy frames, at least for purposes here, are those that give more weight to the salience of what Schrank and Whitford (2009, 2011) define as ‘network failures’. They are grounded in claims that more explicitly collaborative ‘network’ forms of transactional governance are sometimes functionally superior, including especially in organizational fields marked by some combination of unstable demand, rapidly changing knowledge, and/or complex interdependencies between component technologies (Powell, 1990, 2001). That functional superiority justifies instances of public participation in private affairs intended to strategically rewire relationships among and between a delimited set of public and/or private actors in ways that are not, however, necessarily guided by the ‘economists’ injunction . . . to “get the prices right”’ (Whitford, 2012, p. 5). This frees the policymaker from the default deployment of policy tools intended to ‘correct’ the market and allows her rely even as a first resort on ‘coordination-oriented’ tools (which may still include directed subsidies) intended to foment ‘more extensive relational or incomplete contracting, network monitoring based on the exchange of private information inside networks, and more reliance on collaborative, as opposed to competitive, relationships’ (Hall and Soskice, 2001a, p. 8; Schrank and Whitford, 2011).

Neo-Polanyian analyses have relied on this distinction in studies that counter claims—made for instance by VoC institutionalists such as Deeg (2012, p. 1257)—that a ‘resurgent
U.S. economy swept aside any notions of activist industrial policy in the 1990s’. They do not dispute that rising globalization in fact led many large American companies to lose interest in direct support for their domestic operations and to lobby instead for the incorporation of intellectual property into their ‘renewed push for increasing free trade’ (Deeg, 2012, p. 1257). They argue, however, that the growing reliance of powerful global producers on suppliers and other external resources gives them a potential interest in more indirect forms of support for their increasingly decentralized American industrial base, and point out—as Wade (2011, p. 230) does—that an ‘array of US industrial programs [have] aimed at creating networks and overcoming network failures, using not just subsidies, protection and regulations (“hard” measures) but also advice, persuasion and threat backed by the authority of the government (“soft” measures)’ (Wade, 2011, p. 230). This leads them to argue that support for activism in American industrial policy has not so much been ‘swept aside’ as transformed (see also Schrank and Whitford, 2009).

Many of the programs cited in neo-Polanyian studies to date do have links to the commercial activism of the national security agencies but some do not. This raises the possibility that Weiss (2014) may have conflated the level of support in the USA for programs associated with the NSS with their form. Her descriptions of ‘hybrid organizational forms that merge public and private resources’ in the USA could, in short, just reflect an interaction between American federalism and the formation of new links between relatively autonomous state agencies and countermovements associated with ‘the small firms at the heart of the emerging network economy’ (Schrank and Whitford, 2009; Keller and Block, 2012, p. 649; see also Evans 1995 on embedded autonomy). Block (2008, p. 186), for instance, is well aware that the Advanced Research Projects Agency (ARPA; housed in the pentagon) pioneered ‘targeted resourcing’ and ‘economic brokering’ between the public and private sector; but he shows also those practices have since spread to the Department of Energy (DOE) and beyond. Similarly, Keller and Block (2012, pp. 630, 639) recognize that American ‘Small Business Innovation Research’ (SBIR) program gets about half of its allocation from various agencies somehow related to the Department of Defense (DOD); but they observe also that the SBIR nonetheless enjoys broad support both across a range of agencies and ‘within the business community because it has helped nurture thousands of successful innovative firms’.

Our additional contribution relative to extant neo-Polanyian (and related) studies is straightforward. Whitford (2005) uses an analysis of the MEP system to challenge Hall and Soskice’s (2001a) interpretation of the relative feasibility of different forms of economic and industrial policy in the USA, but relies heavily on qualitative data and focuses on a single MEP center; we analyze the system as a whole across a longer period of time and provide quantitative tests of key claims. Studies of coordination-oriented policy in the USA by Block (2008); Block and Keller (2009); Schrank and Whitford (2009); Keller and Block (2012); Wade (2012); Keller and Negoita (2013) (among others): (a) can offer only limited challenge to Weiss’s (2014, p. 7) arguments, since they too often focus on programs shaped by the ‘commercial activism of the national security agencies’ (Weiss, 2014, p. 7); and (b) have not had means to directly test their claims against an explicit counterfactual reliance on blunter market-making policy instruments. By exploiting the considerable heterogeneity internal to an MEP system—which lacks the political cover of defense appropriation—and developing a novel approach to identifying the effects of policymaking oriented toward the mitigation of network failures in existing but underutilized administrative data, we provide the
strongest and most directly comparative test of the contrast between neo-Polanyian and competing institutionalist approaches to date.

2. The MEP as signal case

The MEP is identified as a signal case, as a case particularly indicative of more general tensions in American state developmentalism, by Sabel (1996, p. 282) for whom it was exemplary of an ‘experimental federalism’, of a form of policymaking attuned to ‘the new models of organization’ that had then begun to transform manufacturing industries; by Shapira (2001, p. 978), who saw a ‘model of “reinvented” technology policy that is comprehensive, locally-managed, and demand driven’ to be contrasted with ‘the fragmented and “technology-push” methods of previous federal and technology transfer programs’; by Block (2008, pp. 171, 181), for whom it is perhaps the most ‘dramatic instance’ of the decentralized character of the ‘hidden’ American developmental network state; and by others too numerous to name well (see especially Wessner, 2013). It is also regularly cited in cross-national comparative work as the closest American analogue of Germany’s Fraunhofer Institutes and Steinbeis Centers and of Japan’s Kohsetsushi centers, identified in their own right as key elements of the more explicitly coordinated industrial and technology policy infrastructures of those two countries (e.g. Hassink, 1997; Kolodny et al., 2001; Shapira, 2008).

The legislative history and evolution of the MEP shows directly why the program is appropriate for purposes here. The Omnibus Trade and Competitiveness Act of 1988 that birthed NIST MEP (among other programs) was written and passed by a Democratic congress, but had garnered some Republican support as well. The program grew slowly at first because the first President Bush’s support for technology policy was constrained by ‘philosophical opposition among his people’ (Miller, 1993), so it consisted in 1991 in just seven pilot centers with a budget of a mere $14 million (normalized to 2011 dollars; see Wessner, 2013). However, the MEP was cited often in a Clinton campaign that made ‘The economy, stupid’ its theme, and it was slated for rapid expansion in Clinton’s proposed ‘National Competitiveness Act of 1994’ (H.R. 820 and S.4). It was also the subject of congressional hearings where Democratic and Republican representatives, as well as personnel from many state and federal agencies and from small and large American manufacturers, called loudly for ‘a federally funded modernization program’ that would be a ‘partnership’ rather than ‘a rigid industrial policy whereby a central government would try to direct . . . resources in one direction or another’ (US congressional record, 1994).

Those ambitious plans predictably met with stiff opposition from—in Polanyian terms—definite social forces bolstered ideologically by conservative foundations committed to the establishment of a self-regulating market (or, in Weiss’s terms, mobilizing the power of an American antistatist value set). That opposition notably ran well beyond standard blanket declarations of conservatives’ ‘dim view of government intervention in the marketplace’ (to quote a powerful Republican senator at the time, see Behr, 1994, p. C2) and interestingly drew on arguments that explicitly paralleled what Dobbin (1993, p. 251) referred to at the time as ‘political sociology’s conventional wisdom’. That is, they argued in effect that ‘American state structure is better suited to inchoate, misguided bailouts characterized by political graft than to coherent, disinterested, planning on the Japanese model’ (Dobbin, 1993, p. 251). For instance, a widely circulated issue bulletin published by the Heritage
Foundation in 1993 went beyond just a condemnation of the ‘flawed’ idea that ‘government bureaucrats have superior knowledge to that of entrepreneurs’ to depict American federalism as especially prone to ‘political pork projects . . . lobbied for most successfully by interest groups’. The MEP was especially castigated the grounds that centers would ostensibly ‘tend to be located in districts of the most powerful Congressmen, rather than where they are needed’ (Eckerley and Walker, 1993, p. 2).

The National Competitiveness Act did not pass in 1994, or really ever in quite the form its proponents envisioned. Still many of its programs did eventually make it in some form or other into law. Those elements obviously (at this point) include the MEP, which did not grow to the 130 centers once envisioned but did reach its current size and budget by the end of Clinton’s presidency (60 or so centers and $85 million, or ~$120 million in 2014 dollars).

We emphasize, however, that neither the program’s founding and survival nor its sometimes travails can by themselves adjudicate between the various approaches in play in our argument. It is misleading to assert—as Weiss (2014, p. 12) does—that VoC neo-institutionalism is a ‘state-excluding approach . . . [w]here the United States is concerned’. In fact, Hall and Soskice (2001a, p. 8) write explicitly that the tendency for firms in Liberal Market Economies to ‘coordinate their activities primarily via hierarchies and competitive market arrangements’ is not due so much to the absence of the state as it is to the precise nature of its presence. Affirmative state action—rigorous antitrust, ‘laws that rely heavily on the strict interpretation of written contracts’, and the like—are explicitly linked to the relative inability of American ‘business networks or associations’ to ‘circulate reputations for reliability . . . quickly and widely’ and therefore to sustain more ‘collaborative, as opposed to competitive relationships’ in the political economy (Hall and Soskice, 2001a, p. 31).

Hall and Thelen (2009, p. 13) describe ‘the achievement of coordination [as] a political problem’. They maintain that ‘active support for a specific mode of coordination must be mobilized on a relatively continuous basis from actors who are conscious of the limitations as well as the advantages of any particular course of action’ even as ‘the feedback effects of existing institutions work to the disadvantage of an institution’s challengers’ (Hall and Thelen, 2009, p. 13). This does not predict that proponents of the MEP should have buckled in the face of opposition. It implies, rather, that they would have strong incentive to respond to those like Michael Boskin in 1992 (Bush’s Chief Economic Adviser at the time) who said they were wary of state-guided ‘partnerships’ but potentially ‘quite sympathetic [to the MEP] if a clear case could be made that there’s some market failure, that there are [for instance] such scale economies that the government could [deliver key services] at much lower cost than the private sector’ (US congressional record, 1992). The VoC approach predicts, therefore, that centers will have been most sustainable and most effective insofar as they orient toward ‘blunt’ activities that principally mitigate market failures and that are therefore ‘incentive compatible, namely complementary to the coordinating capacities embedded in the existing political economy’ (Hall and Soskice, 2001a, p. 46, italics in original).

The predictions of Weiss’s governed interdependence approach differ little, at least as regards the MEP, since proponents of the program have not often been able to exploit the compensating institutional space of the NSS. Neo-Polanyians, however, do offer clear contrast. They do not dispute the institutionalized salience in the American context of policy frames that depict market failures as the only really indisputable ‘economic rationale for public participation in private affairs’ (Weimer and Vining, 2011, p. 71), and are quick to concede that key elements of the American developmental state are hidden or even stymied.
by the demand that they favor an ‘incentive that will allow the market to correct itself, such as a tax expenditure’, before looking toward ‘more aggressive treatments’ (Zerbe and McCurdy, 2000, p. 10). However, they argue also: (a) that the tendency of companies in many industries to rely increasingly on suppliers and other third parties for both production and innovation creates new space for a countermovement of sorts; (b) that this allows and may even encourage ‘street-level’ policymakers dispersed across the American federal bureaucracy to mobilize support for the more deployment of coordinated policy instruments responding not just to market failures but to network failures as well; and (c) that this may occur even without the political cover of defense preparedness.

3. Data

We rely on four key sources of data. The first are publicly available studies. These include an extensive and recent review of the MEP system that touches also on its history and development recently conducted by the National Research Council (Wessner, 2013), as well as published transcripts of the relevant congressional hearings, and the like. The second consists in ‘self-study panel review’ reports that each center is usually required to produce every third year. These are relatively standard in format, similar enough that they are easily comparable across centers. They usually include: a history of that center; a description of organization and governance; an accounting of some characteristics of the service territory; a list of services on offer; a summary of relationships with other public and private actors in the regional industrial ecosystem; an account of that center’s performance on various metrics; and a summary of that center’s strategic direction and vision for its future. The reports are reviewed by a panel of three peer center directors and a representative of NIST MEP headquarters, who provide recommendations to which the center is expected to respond in the next such review. In late 2010, NIST MEP provided us with the most recent self-study (at the time), inclusive of the response of the review committee for each center (mostly 2009 and 2010 reviews).

Our third source of data consists in interviews conducted at NIST MEP headquarters and at centers, as well as observations made at public meetings. We attended two national meetings that brought NIST MEP administrators, center directors and key staffers together where we spoke informally with a broad array personnel and observed discussions of strategy and other issues. We have been in regular contact with administrators working (primarily) out of NIST headquarters near Washington DC, and visited eight regional MEP centers. Center selection for these visits aimed (on the basis of our analysis of panel reviews) to maximize variety in organizational models and strategies. The visits were conducted in 2013 and 2014, and lasted between one and two days. We interviewed center directors, personnel involved in the direct delivery of services to clients, personnel managing relationships with clients, representatives of third-party organizations with which centers were collaborating and, in most cases, personnel at client firms as well. We did not share the identities of centers we visited or of those interviewed outside the research team, so interviewees could speak freely without fear of repercussions. We know some centers alerted NIST MEP headquarters that we visited, but do not know if all did. Most interviews were recorded, with permission from interviewees on the assurance that only their organizational roles—and not their names—would be used in publication.

Our fourth source of data consists in two databases provided to us by NIST MEP, for the years 2003 to 2009 inclusive. One relies on centers’ quarterly reporting to NIST of all projects
conducted with client manufacturers. It includes basic demographics on those clients (NAICS industry code, firm size, sales and so on), the number of hours of project work conducted with the client, how much was billed, whether any services were delivered by third parties, and some information on the nature of the service. The other consists in the results of a regular survey of client manufacturers conducted a third-party firm contracted by NIST. Clients are asked to estimate the effect of any project work on sales (retained or increased), costs, job growth and investments. They are surveyed if there is a project where, according to the providing center, there was potential for measurable impact (Voytek and Carbone, 2007; Voytek et al., 2004). No client is surveyed more than once a year; they are instead asked to sum the impact on various metrics of all projects in a given calendar year. When linking the databases, we aggregate quarterly project reports to an annual level. NIST MEP provided this data on the condition that we mask the identities of both private firms and particular centers.

We asked extensively about reporting practice and are confident that centers consistently report interactions whenever there is project work. There is heterogeneity in the reporting of more fleeting engagements. Fortunately, those less intensive engagements matter little for our argument, so we have excluded projects where manufacturers or engaged in less than 5 hours of project work with a center, or reported no (as opposed to low) impact (records of no impact are almost exclusively in cases where the interaction was fleeting). This results in a panel data structure of 58 227 MEP-client interactions across the 60 centers, which reduces to 18 551 interactions when aggregating to annualized projects. Figure 1 summarizes the full dataset of MEP-client interactions in map form. Stars represent the geographic location of MEP centers, while the dots indicate the locations of clients that have done

Figure 1. Map of geographical distribution of centers and clients they have served.

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3 We discuss potential biases that may result below, when we present our analysis. We show that the direction of bias is conservative relative to our findings so we think this an unequivocally unproblematic step (i.e. it makes sense on both theoretical and methodological grounds).
project work with centers between 2003 and 2009 (stars are main offices; many centers keep satellite offices as well and have field staff located across their territories). Territories mostly correspond to state boundaries (there are multiple centers in California, Wisconsin and Pennsylvania; there were until recently two centers in Illinois; and under some modalities of counting for reporting purposes, there are multiple centers in New York).

4. The MEP system and the salience of market failure policy frames

Proponents of the MEP have responded—as VoC neo-institutionalism and Weiss both predict, but as neo-Polanyians also allow—to repeated attacks on the system’s budget with policy frames that resonate with those who depict market failures as the only really legitimate ‘economic rationale for public participation in private affairs’ (Weimer and Vining, 2011, p. 71). The contours of this frame are easily seen across studies and technical reports published in the early years of the program (see Wessner, 2013 for a review). They reflect concerns: (a) that large ‘Original Equipment Manufacturers’ rely increasingly on smaller suppliers for parts and services; (b) that those smaller manufacturers often have less access to emerging technologies and technical skills; (c) that this in turn affects the broader global competitiveness of American manufacturing industries; and (d) that there are high fixed costs to diffusing new technologies and practices to a dispersed population that ‘does not know what it does not know’ (to use a phrase repeatedly given us in interviews). So, for instance, a representative of the centers responded to an attack on the system’s budget in 2002 with the claim that centers did not need federal support to survive. But, he said, they would be then forced to scrap ‘the public mission of serving the underserved market of small manufacturers’ and would sell instead to larger firms ‘where the bucks are; that is why there was a market failure in 1998, and the reason for it still exists today’ (Manufacturing & Technology News, 2002).

This reliance on frames focused on the mitigation of a particular set of clearly identifiable market failures has shaped the functioning of the program. It is manifest in the division of labor between the administrative hub at NIST (near Washington DC) and the chartered public-private partnerships (i.e. centers) arrayed across the country. The former does not pass on funds en bloc, but focuses the subsidy by (a) investing in a set of relatively standardized tools and services oriented toward the specific needs of small- and mid-sized manufacturers that are then made available to center personnel at no or low cost; (b) using monitoring and metrics to require centers to meet performance standards that measure both the impact of project work in terms of costs savings, new sales, and jobs generated at client manufacturers as well as the number of clients served in a given territory; and (c) allowing centers to ‘draw down’ their potential allocation of funds only insofar as they locate alternative ‘matching’ sources of support equal to at least twice the federal outlay. Centers are allowed to match from other non-federal government sources and to take some in-kind contributions, but have been required to obtain a significant portion of their funding in the form of project work conducted with and billed to manufacturing firms with less than 500 employees. This is intended to ensure that centers meet a ‘market test’ of sorts but helping them to get the prices ‘right’ through subsidies to amortize costs associated with the provision of services to a diverse and dispersed clientele.

That division of labor has also been linked to systematic efforts to mobilize and leverage the ‘political appeal’ of a program that is ‘directed at approximately 380 000 small- and
medium-sized firms’ located across all 435 congressional districts and that therefore has ‘a built-in constituency and lobbying arm, and support from Governors’ (Hallacher, 2005, p. 75). Centers bring clients from across the country to an annual ‘Hill Day’ in Washington DC where they drop in on congressional representatives who are also given analyses and reports that aim to both to justify and quantify the public’s return on its investment. Those reports are built from the same monitoring and metrics used to ensure that centers meet performance standards (and that serve as our fourth source of data, but aggregate the underlying data into systemwide measures. They consistently argue that the MEP’s ‘nationwide network and infrastructure’ in fact generates ‘impacts beyond the costs of operating the program’ (NAPA, 2004, pp. 54–55) with for instance a 2011 report declaring that the system had, in 2009, ‘creat[ed] and retain[ed] more than 72,000 jobs; help[ed] firms increase and retain sales by over $8.4 billion; leverag[ed] nearly $1.9 billion in new private sector investments; [and] generat[ed] cost savings of over $1.3 billion’ (MEP, 2011).

Depictions of NIST MEP as a successful response to identifiable market failures have helped the program and its proponents to defend its budget notwithstanding repeated attacks by opponents in congress (see Hallacher, 2005 for a detailed discussion). Still, reviews of the MEP system by Stone and associates, and Center for Regional Competitiveness (2010) and Wessner (2013) show that there has nonetheless been considerable concern, even among proponents of the system, that American small- and mid-sized manufacturers have been (and are) in need of services that run beyond the MEP’s longstanding specialization in more off-the-shelf process improvement and lean manufacturing services. That concern is notably accentuated by the doubts about the program’s ability to respond to network failures due precisely to some combination of: (a) a division of labor that allows NIST MEP to translate policy prognoses into activities at the street level only indirectly, by way of the provision of technical expertise to centers, coordination of center activities, and oversight and reporting; and (b) to the difficulties of standardizing services that aim to generate collaboration in order to ‘foster growth, innovation and sustainability’ (Stone and associates, and Center for Regional Competitiveness, 2010, p. 7). In short, it is a concern that parallels VoC neo-institutional assessments of the difficulty of implementing coordination-oriented policy in a decentralized polity.

5. Associational entrepreneurship and network failure policy frames

The arguments of Neo-Polanyians, VoC neo-institutionalists and Weiss alike are consistent with Peter Evans’ (1995, p. 59) writing on embedded autonomy, in the sense that all highlight the significance of ‘institutionalized channels for the continual negotiation and renegotiation of goals and policies’. Yet while none disputes that fragmented American business and employers’ associations often ‘lack the encompassing character required to administer such policies well’ (Hall and Soskice, 2001a, p. 48), each reads the implications of associational fragmentation differently. VoC neo-institutionalists expect centers to be most effective when they ‘do not put extensive demands on firms to form relational contracts with others’ (Soskice, 1999, p. 128). For Weiss (2014, p. 7), ‘hybrid organizational forms that merge public and private resources’ require the support of the ‘commercial activism of the national

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4 There are many such reports. This one is exemplary. NIST MEP also produces customized analyses variety of geographic levels, which helps of course in lobbying state and local government support.
security agencies’. The neo-Polanyian view that we sustain predicts that relatively autonomous street-level bureaucrats in the interstices of American federalism will sometimes embed among firms whose interests have been remade by the break in manufacturing industries with vertical integration, and who are therefore in pursuit of protection from the ‘deleterious action of the market’ (Polanyi, 1944, p. 132; Evans, 1995; Schrank and Whitford, 2009; Piore, 2011).

Interviewees were well aware that many of their activities were focused toward the mitigation of the market failures that have long justified the program’s budget. Centers often used their public funding to underwrite administrative overhead and to employ technical and field personnel who identify, develop and deliver still-needed process improvement projects at client manufacturers, often drawing on tools provided by the program’s investment in tools oriented toward the need of small- and mid-sized manufacturers (‘Continuous Improvement for Job Shops’; ‘Lean Innovation Value Stream Mapping’; etc.). These activities are important in the day-to-day operation of most centers given sustained demand from clients, and they translate into client fees as well as state and local political support. But, importantly, interviewees were also openly of the view that many of their clients needed or would need additional services in the face of an evolving technological and competitive environment. They even indicated that the disjoint associational structure of American business was in fact a barrier to their ability to deploy coordination-oriented policies, and conceded in effect that those policies require ‘high levels of information about the activities of the firm’ (Hall and Soskice, 2001a, pp. 46–47).

Their response, however, ran seemingly counter to VoC predictions. They told us that they would often move affirmatively to identify and even foment resources and partner organizations—both public and private—in their regional industrial ecosystems, thus acting as institutional or associational entrepreneurs. They often did so, moreover, expressly to develop means to acquire the information they would need to ‘improve the competencies of firms . . . by addressing their needs with relative precision’ (Hall and Soskice, 2001a, p. 47). One center, for instance, required its agents located across its territory to take an active role in their local manufacturing associations or, if necessary, to establish that association in parts of the state where they did not yet exist. Those ‘manufacturing councils’ were then coordinated with each other through the MEP center and, by the time of our interview in 2013, had grown to the point that they provided the MEP with the ‘relationship network’ center staff needed to ensure that their initiatives ‘fit with the needs of the [regional] manufacturing community’. Another said the existing ‘Manufacturers and Business Association’ in his area was ‘not what [he] would call a champion for business development, workforce development. They are more for—they’re an insurance company’. And, precisely because that organization was not what his manufacturing base needed, his staff had worked closely instead with other elements of the state’s industrial policy infrastructure and with local chapters of national sectoral associations—the region had a strong sectoral specialization—to organize consortia of firms to collaborate on issues of technology and skill development.

Examples drawn from our qualitative data show the existence of competing policy frames in play across the MEP system but do not allow us to assess their relative prevalence across different centers. They do, however, help to operationalize the distinction between blunt responses to market failures and the use of coordinated policy instruments that respond to network failures into NIST MEP administrative data. We do this, first, by isolating and tagging in the data all one-off ‘point solution’ projects delivered by centers to clients.
(the ‘point solution’ was a term used in interviews). Those interactions are plausibly oriented primarily or at least very disproportionately toward the mitigation of market failures because they consist disproportionately in services that are available in similar—if not equivalent—form from private consultants with the exceptions that: (a) they have been tailored to the needs of smaller manufacturers and delivered at a cost that exploits scale; (b) their specific fit to the needs of smaller manufacturers and their pricing reflect the program’s access to state and federal subsidies; (c) they are thus consumed by clients at a higher rate than they would absent their provision by the system; and (d) they should therefore generate larger impacts than those the private sector alone would have produced (i.e. the reported impacts should be—and in fact are—greater than the combined cost of state and federal subsidies and client fees paid).

To identify more coordinated activities that disproportionately respond to network failures, we rely first on a measure of centers’ engagement with particular client manufacturers. Centers often balance their mandate (and the political pressure) to serve a large number of manufacturers in their territories with efforts to simultaneously develop deeper engagements with a more restricted set of firms. These, they argue, allow them to generate more substantial impacts across the industrial ecosystem (i.e. greater ‘ROI’ on the time invested). One, for instance, said his center did not spread its activities across too many client manufacturers because the goal ‘after you have this relationship with your client company is to become a “change agent” so you can leverage your time in introducing companies to new and changing services and initiatives that are out there’. Another said longer-term relationships, especially with manufacturers that were subsidiaries of larger (and often out of territory) companies, allowed them to develop relationships with companies at multiple levels and consequently to orient projects toward the bigger picture where larger impacts on the regional economy could be got. So, to statistically identify this sometimes tendency for interactions between centers and particular client manufacturers to thicken into durable relationships, we use a running count of the number of uninterrupted sequential interaction years between a manufacturer and an MEP center. We re-start our count from zero if a center–client interaction was interrupted for at least 1 year.5

We use two different measures to get at how centers generate interaction between actors from multiple organizations (therefore encouraging firms to form relational contracts). We define a project as peer-bridging whenever it involves multiple client manufacturers.6 We define a project as expert-bridging whenever a third party—an individual or organization who was not employed either by the coordinating center or the client firm—delivered some of the consulting services. Though neither directly measures the role and effect of association building by MEP centers, they do test interviewees’ claims to serve the manufacturing community in part by embedding themselves into ongoing webs of relationships. They include—for peer-bridging—such things as a ‘lean manufacturing workshop’ conducted with a

5 For example, a manufacturer with only one interaction with an MEP center in 2005 would represent the baseline case against which we can compare another client with interactions in, say 2003, 2004 and 2005. The latter would receive a score of two in 2004 and three in 2005. And so on. We restart at zero to ensure conservative estimates.

6 Note that our data does not allow us to pick up all such instances described to us in qualitative interviews, since MEP centers only systematically record interactions where the client manufacturer pays some fee; our measure is thus a conservative measure.
producer of agricultural sorters, a job shop contract manufacturer, a metal stamper, and a maker of custom cable products; and a workshop on ‘optimizing equipment performance’ conducted with a tube and hose manufacturer and two different steel fabricators (that were not, however, competitors since each occupied a different product niche). For expert bridging, we mean cases like one in 2005 where a center brought in experts from the state technical college system to provide training in cellular manufacturing to a producer of heating systems; in 2006 when that same center relied on a private consultant to help a maker of precision-engineered filtration products conduct a ‘Market Development’ project; and so on.7

Figure 2 offers a first descriptive analysis. It plots the relative share of each center’s projects (i.e. of center–client interactions in our panel) with clients that had also conducted a project in the previous year on the X-axis (i.e. relationship-thickening); where a third party was substantially involved on the Y-axis (i.e. expert-bridging); and where at least two client manufacturers were involved are on the Z-axis (i.e. peer-bridging), represented in terms of point size with smaller points closer to the origin. The origin is thus representative of the share of ‘point-solution’ work oriented toward the mitigation of market failures (i.e. centers close to the origin and represented by small points rarely bring third-party experts into projects with clients, conduct multiple repeated projects with the same manufacturers, or generate opportunities for peer-bridging). The figure is broadly consistent with neo-Polanyian

Figure 2. Variation in service delivery models across centers.

Notes: Values on all three dimensions refer to the share of clients that a center engages in the respective service delivery practice (indicated by X-axis, Y-axis, or Z-axis [point sizes]) at least once during the period we observe. Centers labeled as A, B, C and D are chosen for illustrative purposes.

7 Examples are drawn (literally) at random from our database, just to give the reader a sense of what we mean. Our argument is not about the importance of any such single event, but about that their cumulation in patterns across place and time reflects variation in policy frames.
claims that autonomous experimentation by street-level bureaucrats generate substantial variation at the state and local level (Polanyi, 1944, p. 141; Schrank and Whitford, 2009). Center A, for instance, is primarily focused toward point-solution work, but is an outlier. Center B does not engage in expert bridging, but involves more than 20% of its clients in repeated interactions across years and frequently engages in peer bridging as well. Center C relies extensively on expert-bridging and also works repeatedly with the same clients but is low in the peer-bridging dimension. Center D is high on all three dimensions. And so on.

6. Estimating effects

We conducted a cross-sectional ordinary least squares (OLS) regression with fixed effects for geographical regions to test whether different sorts of interactions between centers and clients generate different results. This regression cannot respond to market fundamentalists who hold with Becker (1985) that ‘the best industrial policy is none at all’; that would require us to show first that the MEP system generates better results than the private sector alone. Our data only allow for a comparison of outcomes among firms that have already selected (or been selected) into a treatment group. We are unconcerned, however, for two reasons. First, Jarmin (1999) has ‘estimated the effect of manufacturing extension on [labor] productivity growth’ using a two stage model that allowed him to control for client selection, and finds that effect to be both positive and significant. Second, even analyses like Jarmin’s (1999) must reckon with the fact that ‘“ceteris” is never quite “paribus”’ (Sabel, 1982, p. 24). The relevant counterfactual is not really the absence of an organization like the MEP (by whatever name) given the prevalence across advanced economies—including liberal market economies—of some form of industrial policy targeted toward small- and mid-sized firms; the elimination of the MEP would beget efforts from other agencies, including many at the state and local level, to fill the void in some manner or other (Wessner, 2013; Ezell and Atkinson, 2011).

Given our questions, we might like to directly measure changes to network structure as a mediating variable. Unfortunately, the data for such an operation cannot plausibly be gathered at reasonable cost. But we can still ask whether the activities we have identified as oriented toward the mitigation of network failures systematically generate better or worse results on the performance indicators that NIST MEP measures in their client survey. Those indicators, to remind, include estimates of the effect of project work on costs, on sales retained or increased, on job growth, or new investments. The dependent variable in the regression sums cost reduction with sales retained or increased. We use this summed indicator both because interviewees believed those dollar results to be the most consistently

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8 Jarmin (1999) uses the Census Bureau’s Longitudinal Research Database to compare changes in labor productivity at client plants to otherwise similar non-client plants. We do not have the means to link our establishment-level data to data from the Longitudinal Research Database, and therefore no ability to generate a control group of ‘untreated’ firms. We thus limit ourselves to research questions that do not require such a group.

9 In short, it is not possible to compare client outcomes to the outcome that would most plausibly have occurred in the context of the self-adjusting market. Note also that both clients and non-clients are interacting with the American state at a multitude of levels whether or not they engage with the MEP or other such programs.
measured across different centers and projects, and because it plausibly allows for comparisons of the ‘relative precision’ with which centers have managed to ‘improve the competencies of firms’ (Hall and Soskice, 2001a, p. 47). There is also no particular reason, \textit{a priori}, to expect differences in association between other possible indicators available in the data and our principal independent variables. We do log the variable to account for an expected right skew in the distribution (the most successful projects are known to generate outsize results).

Our main independent variables are our measures of peer-bridging, expert-bridging and relationship-thickening. We include controls for client size (measured in the numbers of employees), since larger firms are generally able to larger total impacts from project work;\textsuperscript{10} the size of the project (measured in fee dollars) as more complex project work generally garners higher fees as well as the expectation of a larger impact on the bottom line; and, although we have no prior expectations, for industry as it is possible that there may be differences in the competitive context and thus in the potential for measurable improvement (using the NAICS code at the two-digit level, NAICS 33 as the omitted category). To ensure that our measures of repeated engagements measure what we think they do—familiarity across time—we control for the intensity of engagement, measured in logged delivery hours during a given year (more hours should again be associated with larger impacts).\textsuperscript{11} To check that our findings are not driven by a single outlier region alone, we re-estimated the model while excluding the observations from one center territory at a time.\textsuperscript{12}

Figure 3 displays the results of two models in box-whisker form, where the whiskers identify one and two SDs (the latter marks the 95\% confidence interval).\textsuperscript{13} The main independent variables are rendered as categorical; omitted categories correspond to the origin in Figure 2. Model 1, displayed as the lighter (upper) of the two lines, can be read as a simultaneous comparison with controls of differences in logged dollar impact generated at clients when projects differ from such point solutions along the dimensions of our three measures (to underscore: the comparison here is between projects; differences due to center quality or region are controlled with fixed effects). Model 2, displayed as the darker (lower) line, is the same but includes interactions (rows 3.a.ii and 3.b.ii) between center hours and our peer-bridging variables.

In both models, controls for hours, amount billed and firm size are positive as expected (displayed in rows labeled 4–6; controls for industry are omitted from the figure as they are

\textsuperscript{10} A $100,000 in cost savings at a company with $1,000,000 in annual sales is a very large project; it is less significant and more easily got at company with $10,000,000 in annual sales.

\textsuperscript{11} Table A1 in the Appendix provides descriptive statistics.

\textsuperscript{12} We estimated 60 models with one region removed each time. The directions and significance levels were consistent, except for the term for peer diversity, which was insignificant when data of one center was removed. We keep the term in the model, however, because the direction remained the same, even when it lost significance. We also estimated our model on 60 different region-level subsets. We had to drop nine regions in this robustness check due to a lack of sufficient variation on at least one variable (due in some cases to idiosyncrasies of center strategy and in others just to the fact that some centers are quite small). These tests revealed the expected variation with respect to regional operations, supporting our argument that street-level variation reflects policymakers’ ability to leveraging relationships.

\textsuperscript{13} We find box-whisker reporting to be far more intuitive than the more conventional table with asterisks. We also provide the same results in the more conventional table form in Table A2.
of little interest). The coefficients for the main independent variables are displayed in rows 1.a–3.b.i and rows 7–8. They require some interpretation but are nonetheless consistent with neo-Polanyian claims that network failures are amenable to policy-repair in American manufacturing industries even in contexts that lack the political cover of defense appropriations. They are also contrary to claims that American policymakers ought generally to get their best results from blunt market-fixing industrial policy instruments that ‘do not put

Figure 3. Box-whisker plot of regression results.

Notes: Point estimates represented as triangles. Boxes (thick whiskers) are one SD, while (thin) whiskers are two. The latter corresponds almost exactly to the standard 95% confidence interval. Estimates are for two fixed-effects OLS regressions (fixing region/center, which perfectly overlap). Plots are of main effects model only (light points and whiskers); and a model with interaction terms (dark gray points and lines). A constant is included in the models but not plotted to improve legibility. See Table A2 for a table version of the results that includes the intercept and industry controls. $N$: 18851; $R$-square: 0.14 (for both models).
extensive demands on firms to form relational contracts with others’ (Soskice, 1999, p. 128).

Initial evidence for this two-pronged interpretation of the results is found in rows 1.a–c. A market failure policy frame directs policymakers to disperse projects across a wide a number of clients both as a matter of policy equity—the subsidy should be equally available to all—and because centers are straightforwardly construed as a vector of information diffusion. If centers are primarily delivering relatively standard services that do not require high levels of information to address firm needs with relative precision, the first project in a series should offer the best chance for the center to exploit expertise that had not been previously available to the client firm. Subsequent projects might still be valuable in the sense that benefits may still outweigh costs, but we should expect declining marginal returns insofar as any ‘low hanging fruit’ would presumably have been picked. Our models, however, reveal that repeated engagements generate larger reported impacts (on average) than do first projects. Row 1.a shows that the marginal effect of a project conducted in year $t + 1$ is greater than the effect in year $t$, that in year $t + 2$ greater still, and in years $t + 3$ greater still. This gives credence to interviewees who argued that the ‘thickening’ of relationships across years allowed them to undertake and successfully complete more complex projects with the potential for larger returns (for instance, one field agent said, ‘you know, you can’t hit them with everything all at once; if it is your first visit you can’t hit them with everything’).

The expert-bridging variables are in rows 2.a, 2.b and 7. Row 2.a combine a client’s exposure to one or two different experts (i.e. one project with third-party A, or one project with A and one with B). Row 2.b reports the impact of a project with a third (or fourth, etc.) party to whom the client had not previously been exposed. Insofar as centers are not well-embedded into their territories or are unchecked by the community and so at risk of graft, there are concerns that center staff could either ‘cherry pick’ the projects with the greatest potential impact while farming out others or that they could just be funneling work to confidantes. The actual results show the contrary. The expert-bridging indicators are positive and significant, which is consistent with claims in interviews that center staff are (on average) able to use the high levels of information they have about firm needs in their territories to diagnose problems and to effectively identify resources. The positive coefficient reported in row 7 indicates, also, that the effect of repeat interactions holds even when the services are not delivered directly by center staff. This suggests that triadic ties are complements rather than substitutes, and fits with field agents (to take the words of one) who described the way in which they introduce clients to third-party experts as follows: ‘You kind of interview them, or we’ll interview them, and ... sometimes I will just say, ‘You need to use this person’, because you kind of know it’s a good fit.’

These results also dovetail with the findings reported in rows 1.a–c to provide an internal check against reporting biases in the data that aggregate into our dependent variable. We have built a conservative bias into our analysis, at least relative to neo-Polanyian claims, since we excluded projects where manufacturers either reported no impact or engaged in less than 5 hours of project work. Such projects would be classified, almost without exception, as the delivery of service oriented toward ‘point solutions’. Not only are such fleeting interactions underreported (as per our interviews), their inclusion in the analysis would have increased the measured relative effects of relationship-thickening and expert-bridging even with controls for project hours. But there is still the potential concern that a consolidation of trust across repeat interactions might bias our measurement of the effects of relational
thickening, since clients who are happy with their field-staff may inflate results so that the center in question will then perform better on NIST MEP metrics. We cannot exclude that systematic inflation has occurred; but, if it has, then the results reported in rows (rows 2.a–b and 7) are even stronger. Those rows show that the effects of centers’ bridging to experts also engender better outcomes than do initial interactions with center staff, and that the effects of repeat interaction hold up even if the first interaction was an instance of expert bridging. If clients are in fact inflating results to favor center field staff, the bias for expert service delivery would run in the other direction.

Finally, the coefficients for the peer-bridging variables are reported in rows 3.a.i, 3.b.i and in model 2 (the lower/darker model). We do not ask how many different parties are present at particular interactions (beyond, of course, the third that renders it minimally triadic). We ask just whether and how instances of peer-bridging affect outcomes relative to the baseline case. As with expert-bridging, we aggregate. The average impact (net of controls) of services delivered to two or more clients simultaneously produce less impact than do point solutions. Row 3.a.i reports the first two such instances; row 3.b.i for the third and beyond. This is not surprising given that instances of peer-bridging tend by their nature to be less intensive and are definitionally less tailored (on average) to the needs of particular firms.14

We ran model 2 with interaction terms since interviews suggest that such engagements nonetheless provide unmeasured ancillary benefits through the generation of opportunities for horizontal communication and collaboration between firms. The interaction terms themselves (in rows 3.a.ii and 3.b.ii) are positive, while the main effect of peer-bridging is more negative than in model 1. This is consistent with increasing returns net of other effects to the hours that firms work with a center if they participated previously in such peer-bridging interactions. Though not dispositive, it suggests that centers may in fact generate their best results when oriented toward activities that generate opportunities for relational contracting (i.e. that respond to network failures).

7. Conclusion

The American MEP system is marked by ongoing tensions between definite social forces demanding market-making policies and a more disparate array of forces pressuring economic and political actors to ‘keep strains or difficulties in one part of the economic mechanism from having a dramatic impact elsewhere’ (Block, 2007, p. 7). The first manifest not just in attacks on the program’s budget but also in pressure to orient toward a set of relatively well-identified market failures. The second exploit centers’ dependence on state and local sources for funding and legitimacy to push them to react also to less well identified but no less consequential network failures (Schrank and Whitford, 2009). Centers are constrained by the disjoint associational structure of American business, but have nonetheless sought to develop and to exploit resources and partner organizations in their regional industrial ecosystems. They almost universally orient toward both market and to network failures, though to different degrees. However, they generate larger impacts in dollar terms for interactions that orient more toward the latter than the former, which suggests that they are at least sometimes able to overcome ‘feedback effects of existing institutions [that] work to

14 They do, however, also cost less per firm to deliver as well and may still make sense from a ‘return on investment’ (ROI) point of view independent of the results here.
the disadvantage of an institution’s challengers’ (Hall and Thelen, 2009, p. 13) and to acquire the information they need ‘to improve the competencies of firms . . . by addressing their needs with relative precision’ (Hall and Soskice, 2001a, p. 47).

Our findings and argument dovetail with Block’s (2008) delineation of a ‘hidden’ American developmental state; Fuchs’ (2010) description of ‘embedded network governance’ at DARPA; Keller and Block’s (2012, p. 650) classification of the American SBIR as ‘a paradigmatic case of government helping to overcome network failures’; Keller and Negoita’s (2013) identification of attempts in the American DOE ‘to seed and support complex innovation networks’ in the wind and battery industries; and other such work in a more or less neo-Polanyian theoretical vein. In part, we confirm with new evidence that activism in American industrial policy was not so much ‘swept aside’ as redirected and hidden amid the resurgence of the American economy in the 1990s (contra Deeg, 2012, p. 1257). However, that evidence is much stronger for key claims, and comes across a study of a program largely insulated from the ‘commercial activism of the national security agencies’ (Weiss, 2014, p. 7). We have shown, specifically, that efforts by American policymakers to reinforce the capacities of actors for non-market coordination may be more effective than a reliance on blunter market-making policy instruments even in the American liberal market economy and even outside the anomalous institutional space engendered by American bellicism.

Our arguments therefore contrast prevalent VoC neo-institutionalist understanding of what it means for American economic policy to be ‘incentive compatible’, including especially the notion that well-meaning policymakers ought principally to rely on ‘market-based incentives’ of various sorts—indeed of their ideology otherwise—since efforts to instead ‘reinforce the capacities of actors for non-market coordination’ ought ostensibly to founder for lack of associational support (Hall and Soskice, 2001a, pp. 46–47). This does not, and cannot, the VoC typology per se; in fact, we think it likely that the population of firms served by the American MEP are channeled by their embedding in American liberal market institutions to ‘coordinate their activities . . . via hierarchies and competitive market arrangements’ (Hall and Soskice, 2001a, p. 8) more often than do otherwise similar firms in coordinated market economies such as Germany and Japan. Nor do we intend generally to gainsay the sometimes empirical salience of institutional complementarities in the reproduction of persistent ‘national differences in economic performance and policy’ (Hall and Thelen, 2009, p. 8). Our target VoC claim is not, however, a trivial foil; that precise understanding of incentive compatibility is the key actionable implication of the theory developed in the influential introduction to that influential volume.

Our findings also contrast Weiss’ (2014, p. 7) claim that ‘hybrid organizational forms that merge public and private resources in distinctive and often intricate ways’ are feasible in the American context only when they have the political cover that comes with plausible contribution to American military might. We certainly accept that the American industrial policy regime has been profoundly shaped by the NSS, and do not dispute that the MEP system’s growth has been both shaped and stunted amid claims that its funding and operation is inconsistent with what she refers to as the American ‘national antistatist value set’. Certainly, the program’s proponents have been forced repeatedly to fight rearguard challenges even despite robust evidence that the MEP generates positive returns on public investment; and the resulting constraints on the program’s budget means that centers can conduct projects with only a small percentage of the small- and mid-sized firms that might potentially
benefit from their services. But again, the foil is not trivial. The normative implications of her argument are put up for grabs by findings—like ours—that challenge her claim that it would be well-nigh impossible to ‘normalize’ the American state by highlighting the role and capacity of civilian agencies as a form of hidden developmental state that undertake industrial policy functions’ (Weiss, 2014, p. 13).

The significance of this challenge and objection is easily seen in light of recent commitments by the Obama administration to a series of new manufacturing and technology programs. We mentioned the NNMI, the IMCP in our introduction as they are especially prominent, but there are also others. We have in mind initiatives that expect state bureaucrats to retain their autonomy not just from the political demands of market fundamentalists but from the needs of the NSS even as they embed themselves sufficiently to coordinate a range of federal agencies, universities, and private-sector organizations. Our findings would potentially bear, for instance, on programs focused less on jobs and manufacturing per se than on the mitigation of climate change. The American ‘Clean Energy Investment initiative’ announced in June 2015 is exemplary: the initiative relies on the belief that a series of executive actions affecting the Departments of Energy and Treasury, and the Small business administration can help to mobilize and coordinate large new capital commitments gotten by the administration from a ‘consortium of long-term investors, including major pension funds and endowments … that would not otherwise be invested in climate solutions’.15

It is tempting in the face of findings like ours to the VoC argument that American policymakers ought generally to garner their best results from market-based incentives, to read it just as the identification of a heuristic, a policy frame of first resort to be scrapped when a particular agency or policy entrepreneur happens to be endowed with the relational resources they need to address ‘firm needs with relative precision’ (Hall and Soskice, 2001a, p. 47). Indeed, Weiss’s (2014, p. 7) focus on spaces of institutional compensation in fact should inspire just such a casting, in the sense that she identifies the commercial activism of the national security agencies as a critical—rather than contingent—condition for the sustained formation of ‘hybrid organizational forms that merge public and private resources’ in the interstices of American federalism. Our findings show, by contrast, why a default orientation toward the framing of policy problems as market failures is far from neutral.

Centers orienting their activities toward the mitigation of network failures are not just exploiting their embedding in a relatively thick set of inter-organizational relationships; the opposite is true as well. The street-level deployment of policy frames that run against the grain of a ‘hostile political philosophy’ (Block, 2008, p. 171) has not merely allowed, but has in fact led, actors both inside and outside the NSS to actively pursue strategies requiring them to restitch and reconfigure relationships in the industrial ecosystem. This does not mean the standard worries in the American liberal market context—that coordination between the public and private may reduce as often as not to collusion in the pursuit of rents—are misplaced. It often and demonstrably does. But it does mean that American policymakers can and should heed Rodrik’s (2004, p. 3) oft-cited observation that most effective economic, technology and industrial policymaking today depends upon ‘setting[s] in which

private and public actors come together to solve problems in the productive sphere, each side learning about the opportunities and constraints faced by the other’. To focus just on those standard worries is to forget that such settings are less discovered than constructed and that it is quite possible to construct them even in the ostensibly unpropitious context of the American Liberal Market Economy.

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## Appendix

### Table A1. Descriptive statistics

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<td>Service fee:</td>
<td></td>
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<tr>
<td>Billed dollars for service</td>
<td>$12.5k</td>
<td>3.4k</td>
<td>40.2k</td>
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<tr>
<td>Expert interaction in prior years (dummy)</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer event participation in prior years (dummy)</td>
<td>14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAICS 33</td>
<td>65%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAICS 32</td>
<td>22%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAICS 31</td>
<td>9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
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</table>
Table A2. OLS models

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Intercept)</td>
<td>9.47*** (0.13)</td>
<td>9.55*** (0.13)</td>
</tr>
<tr>
<td>Repeat interactions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First year</td>
<td>0.29*** (0.04)</td>
<td>0.29*** (0.04)</td>
</tr>
<tr>
<td>Second year</td>
<td>0.37*** (0.06)</td>
<td>0.37*** (0.06)</td>
</tr>
<tr>
<td>Third (+) years</td>
<td>0.41*** (0.10)</td>
<td>0.41*** (0.10)</td>
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<tr>
<td>Expert interactions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1–2</td>
<td>0.24*** (0.05)</td>
<td>0.23*** (0.05)</td>
</tr>
<tr>
<td>&gt;2</td>
<td>0.42*** (0.15)</td>
<td>0.42*** (0.15)</td>
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<tr>
<td>Peer events:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1–2</td>
<td>−0.17*** (0.04)</td>
<td>−0.47*** (0.11)</td>
</tr>
<tr>
<td>&gt;2</td>
<td>−0.31*** (0.10)</td>
<td>−0.30 (0.39)</td>
</tr>
<tr>
<td>1–2 Peer events × center hours (log)</td>
<td>0.30*** (0.02)</td>
<td>0.28*** (0.02)</td>
</tr>
<tr>
<td>&gt; 2 Peer events × center hours (log)</td>
<td>0.00 (0.09)</td>
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</tr>
<tr>
<td>Center hours (log)</td>
<td>0.25*** (0.01)</td>
<td>0.25*** (0.01)</td>
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<tr>
<td>Billed dollars (log)</td>
<td>0.03*** (0.00)</td>
<td>0.03*** (0.00)</td>
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<tr>
<td>Prior yr expert</td>
<td>0.21*** (0.06)</td>
<td>0.21*** (0.06)</td>
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<tr>
<td>Prior yr event</td>
<td>−0.11** (0.05)</td>
<td>−0.11** (0.05)</td>
</tr>
<tr>
<td>NAICS:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31xxxx</td>
<td>−0.29*** (0.06)</td>
<td>−0.29*** (0.06)</td>
</tr>
<tr>
<td>32xxxx</td>
<td>−0.17*** (0.04)</td>
<td>−0.16*** (0.04)</td>
</tr>
<tr>
<td>Others</td>
<td>−0.24*** (0.08)</td>
<td>−0.24*** (0.08)</td>
</tr>
<tr>
<td>FE (region-level)</td>
<td>–</td>
<td>–</td>
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<tr>
<td>R²</td>
<td>0.14</td>
<td>0.14</td>
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<tr>
<td>Adj. R²</td>
<td>0.14</td>
<td>0.14</td>
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<tr>
<td>Num. obs.</td>
<td>18,851</td>
<td>18,851</td>
</tr>
</tbody>
</table>

Notes: Standard errors in parentheses. 
***P < 0.01, **P < 0.05, *P < 0.1.