

Creating a Constituency for Liberalism: The Political Effects of the Tennessee Valley Authority*

Devin Caughey

MIT

Sara Chatfield

University of Denver

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Pappa got a job with the TVA.
He bought a washing machine and then a Chevrolet.

Bob McDill, “Song of the South” (1980)

There are a group of Southerners I call TVA
Southerners. Those in the TVA area don’t vote with
their Southern colleagues; they vote with the Northern
Democrats. They are pretty liberal all the way.

Anonymous U.S. representative (1963)

1 Introduction

Scholars have long argued that “new policies make new politics” (Schattschneider 1935, 288). That is, in addition to being products of the political process, government policies have effects that feed back into the political system itself. Public policies influence the structure of the economy, the distribution of political resources and capacities, and even citizens’ very beliefs and preferences (Pierson 1993; Thelen 1999, 392–6; Campbell 2012). These feedback effects in turn alter the prospects for future

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policy making, in some cases generating increasing returns that inhibit retrenchment (Pierson 2000) and in other cases triggering negative feedback in the form of the public’s “thermostatic” response (Wlezien 1995). Indeed, policy feedback is so pervasive that it hard to imagine any aspect of politics that is not in some way shaped by the legacy of past policies.

Yet the very pervasiveness of policy feedback raises barriers to studying it. Inferring the causal effects of a given policy requires comparing citizens or political units “exposed” to the policy to a “control group” that approximates the outcomes the exposed group would have exhibited had the policy not been implemented. This presents particular challenges for assessing policy effects that are national in scope (e.g., the “decommodifying” effects of a social-democratic welfare system; Esping-Andersen 1990), for it requires constructing a plausible counterfactual for an entire country. But even policies that target individuals rather than whole polities present barriers to causal inference. The citizens covered by a particular policy are often targeted precisely because of their distinctive attributes (e.g., employment status), which themselves are often correlated with other characteristics (e.g., work ethic) that cannot easily be measured and statistically controlled. The frequent use of cross-sectional or retrospective data exacerbate these difficulties, making it difficult to determine whether citizens are comparable *ex ante* or to trace feedback effects that unfold gradually over time (Campbell 2012, 343–4). Despite Campbell’s call for better research designs as the “best defense” against these inferential difficulties, studies that exploit random or quasi-experimental variation to estimate policy feedback effects remain rare (for exceptions, see Nall 2015; Clinton and Sances 2018; Zhang and Mildenberger 2020; Anzia, Jares, and Malhotra 2022).

We contribute to this nascent literature by examining the political effects of one of the most ambitious and innovative policies ever implemented by the federal government: the Tennessee Valley Authority (TVA). Authorized in 1933 in the first 100 days

of President Franklin Roosevelt's New Deal, the TVA was designed to modernize and develop the Tennessee River Valley, one of the poorest areas of the nation, through large-scale investments in infrastructure. The most important of the TVA's activities, at least in terms of federal expenditures, was its provision of low-cost electricity to municipalities and cooperatives across Tennessee as well as large swaths of Alabama, Mississippi, and Kentucky. The TVA's massive infusion of infrastructure spending, which continued for a quarter century, was widely credited with transforming its coverage region—electrifying the countryside, attracting industry, and spurring economic development (for recent assessments of the TVA's economic effects, see Kline and Moretti 2014; Kitchens 2014).

To many observers at the time and since, the TVA's political effects loomed just as large as its economic ones. "No government agency so strongly inspired southern demand for federal economic intervention as did the Tennessee Valley Authority," claims one historian (Schulman 1994, 35). As support for the New Deal and the national Democratic Party ebbed elsewhere in the South, the TVA region remained a bastion of Southern liberalism and of resistance to the Dixiecrat movement (e.g., Rogers et al. 1994, 536). The region spawned a cohort of self-described "TVA liberals," politicians who saw the sort of federally sponsored "infrastructure politics" exemplified by the TVA as an avenue of political advancement (Badger 2007). The distinctiveness of the region's politicians was noted in Congress as well, with members of Congress representing TVA districts being identified by their colleagues as notably more liberal (Mayhew 1966; Clapp 1963). These impressions suggest that the TVA had large feedback effects on politics of the area it covered, both at the mass and the elite levels. However, although the political distinctiveness of the TVA area has long been noted, it has not been documented quantitatively, let alone plausibly attributed to the causal impact of the TVA itself. Given that the Tennessee Valley already differed from the rest of the South economically and in other ways when the TVA was

implemented, we could easily be mistaking selection bias for policy feedback.

In this paper, we rigorously evaluate the political effects of the TVA. To create a suitable comparison group, we match congressional districts covered by the TVA with non-TVA districts that were demographically, economically, and politically similar before the TVA was created. We then estimate the causal effects of the TVA on two main outcomes: voters' support for Republican presidential candidates and House members conservatism on issues of social welfare and economic regulation. We find substantial negative effects on both outcomes, the magnitude of which peaked in the 1950s, at the same time as federal transfers to the region. We interpret these findings as indicating that the TVA did indeed counteract the conservative, pro-Republican trend among Southern whites in this period, and that this liberalizing effect on the electorate in turn changed the kind of congressional representation TVA-area residents received.

2 The Tennessee Valley Authority

The Tennessee Valley Authority was a project initially championed by progressives outside of the South, most notably Republican Senator George Norris of Nebraska. The idea for the project grew out of the debate over whether the half-built Wilson Dam at Muscle Shoals, Alabama, construction on which had been initiated during the First World War, should be turned over to private interests or managed by the government. In 1933, after years of stalemate on the issue, Norris's proposal that the dam be used for public purposes was taken up by Franklin Roosevelt, who pushed through the creation of the Tennessee Valley Authority (Kennedy 1999, 147–8). A government corporation, the TVA was to implement “an integrated programme of regional development” focused on dams to control flooding and generate power, but extending also to health and education initiatives, fertilizer production, navigation,

and resource management (Ekbladh 2010, 51). This ambitious effort at developing the Tennessee Valley, among the poorest areas in the nation, was among the most innovative manifestations of the New Deal's general emphasis on public works as means of state-sponsored economic development (Smith 2006).

Though spearheaded by Northern progressives, the TVA quickly gained the support of most Southerners (aside from private power interests, who opposed it bitterly). The Authority's enabling act was supported by such Southern conservatives as Sen. Carter Glass (D-VA), and the TVA was one of the few early New Deal agencies supported by Southern governors and state legislators (Patterson 1967, 18–21; Schulman 1994, 36). The disruptions caused by the early TVA and fears about local autonomy generated some skepticism among Valley residents, but by 1940 it had widespread support in the region (Wengert 1967, 71).¹ The political success of the TVA was due in large part to its success in convincing not only lower-class Southerners, who benefitted from jobs and higher wages in addition to the TVA's other benefits (Marshall 1967, 118), but also local elites to buy into the project. Selznick (1949) famously argued that the TVA's effort to coopt local elites led a perversion of its ideology of "grassroots democracy" in favor of elite interests. Others, however, have responded that the TVA influenced local elites as much as the other way around (e.g., Wengert 1967).

Although some economic studies (e.g., Kitchens 2014) dispute the long-run effects of the TVA, most observers at the time and since considered its impact on the lives and material status of Valley residents to be transformative. Ultimately, the actual economic effects of the TVA are less important for our research interests than the *perceived* effects by both residents and elites. On a basic level, per capita income

1. Some of the earliest legal clients of Carl Elliott, later a liberal congressman from Alabama and strong backer of the TVA, were "small farmers and landowners who stood to lose much or all of their land to the rerouted streams and lakes being formed by the dams" constructed by the TVA (Elliott and D'Orso 1992, 70). Local autonomy was also an initial concern: "Many of TVA's early opponents," asserts Ray (1949, 922), "expressed fear that a regional authority would before long undermine and destroy the state and local governments in the Valley."

shot up from under half the national average to about two-thirds of the national average, and over a million residents of the area were able to access subsidized electricity (Racuchway 2021, 61). Electricity use soared as prices dropped dramatically, raising the standard of living for beneficiaries (McCraw 1971, 74). The economic effects of the program were perceived to be substantial, which then led to important political effects. The TVA “inspired southern demand for federal economic intervention” more than any other New Deal program (Schulman 1994, 35). Residents in TVA areas directly experienced the benefits of government aid, which ranged from flood control to subsidized electricity.² Kline and Moretti estimate that “at the [TVA’s] peak in 1950, the annual federal subsidy to the region amounted to \$625 for the typical household (roughly 10% of household income)” (2014, 2). Not surprisingly, subsidies of such magnitude sparked opposition outside the TVA region, especially from Republicans, and especially as the TVA expanded into the construction of coal-powered plants (Wells 2008, 230). By the end of the 1950s these opponents had succeeded in eliminating nearly all transfers to the agency. In 1959, Congress passed a bill backed by President Eisenhower that strictly limited further geographical expansion of the TVA, shifted the funding structure from direct appropriations to bonds, and required the agency to gradually repay some portion of prior federal investments in the region (235).

While they lasted, the concrete material benefits of the TVA provided liberals with a powerful rhetorical weapon to counter conservatives’ warnings about the dangers of federal interference.³ The high-profile polarization between the public-power TVA and its private-power adversaries also helped sharpen ideological differences be-

2. FDR, asked about the political philosophy behind the TVA, responded, “It’s neither fish nor fowl, but whatever it is, it will taste awfully good to the people of the Tennessee Valley” (Kennedy 1999, 148).

3. In 1962, facing an unexpectedly strong challenge from a conservative Republican, liberal Alabama Senator Lister Hill argued that “the Republicans did not put TVA in Alabama,” conveniently overlooking the leading role of the Republican George Norris (Young 1978, 162).

tween candidates, which were otherwise hard to discern in the one-party system.⁴ In addition, notwithstanding the critique of Selznick (1949), the TVA's ideology of participatory democracy may have helped politically mobilize a previously apathetic citizenry (Ray 1949, 932).

The TVA region became an important geographic base of liberalism in the states it affected. Liberal candidates whose core of “friends-and-neighbors” support (Key 1949, 37–41) lay elsewhere added TVA areas to their existing political coalition (see, e.g., Hamilton 1987, p. 86, on Lister Hill’s 1938 election to the Senate). As the rest of the South became increasingly estranged from the national Democratic Party, the TVA region remained disproportionately loyal to the party (Frederickson 2001, 226; Rogers et al. 1994, 486). TVA areas also spawned a new generation self-described “TVA liberals” such as Alabama’s John Sparkman, Tennessee’s Estes Kefauver, and Kentucky’s Earle Clements.⁵

The political influence of the TVA took some time to filter up to Congress, in part because many conservative Southern MCs largely accommodated themselves to the TVA without changing their overall voting patterns.⁶ But over time, especially after 1940, TVA liberals began to make their way into Congress, sometimes by defeating opponents of the TVA (e.g., Albert Gore, Sr.’s unseating of Sen. Kenneth McKellar in 1952).⁷ The TVA’s liberalizing effect on congressional representation in its area came to be widely accepted (e.g., Ray 1949; Mayhew 1966; Badger 2007). One Republican

4. In 1944 and 1954, respectively, Alabama Senators Lister Hill and John Sparkman, both strong defenders of the TVA, received strong primary challenges from Birmingham-based conservatives whose opposition to the TVA helped clarify their ideological positions, making these contests an unusually clear ideological choice (Gilliam 1975, 75–6; Hamilton 1987, 113–28).

5. It was John Sparkman, a native of North Alabama, who described himself as a “TVA liberal” (Badger 2007, 64). Future Tennessee Senator Estes Kefauver first became involved in politics in the early 1930s when he was appointed to a planning commission in Chattanooga working mainly on TVA issues (Fontenay 1980, 61). On Earl Clements, who hailed from southwestern Kentucky, see Syvertsen (1982).

6. A good example is Rep. John Rankin, who represented TVA-affected northeastern Mississippi and was otherwise very conservative (Fontenay 1980, 107–08).

7. McKellar, an ally of Boss Crump of Memphis, did not so much oppose the TVA on principle as desire to control it for his own ends.

House member, commenting on fortunes of the conservative coalition, observed:

There are a group of Southerners I call TVA Southerners. Those in the TVA area don't vote with their Southern colleagues; they vote with the Northern Democrats. They are pretty liberal all the way (Clapp 1963, 363).

3 Policy Feedback and Theoretical Expectations

Scholars of policy feedback have recently become more concerned with the question of whether observed feedbacks are causal or are driven by selection or other alternate explanations (Campbell 2012). We can speak to this debate by offering a clear causal explanation for the interaction between TVA policies and constituent preferences. These preferences are exhibited directly through presidential voting and indirectly through congressional representative behavior. Below, we outline theoretical expectations from the policy feedback literature and explain how they relate to the TVA case.

Previous research has identified a number of conditions or factors that make it more likely that policy feedback will take place. These factors include visibility, traceability, high benefit levels, proximity, and the concentration of benefits. In examining whether these conditions are present in the TVA case, we rely in part on commercial polls conducted from 1936-1962.

Pierson (1993) notes that in order for policy feedback to function, voters will need be able to perceive that link between policy and action when policies are both visible and traceable. That is, policies must provide clear benefits to voters, and those benefits must be clearly attributable to governmental action. In the TVA case outlined here, voters were able to link public policy to very visible benefits, as well as to the Democratic party specifically. That link to the Democratic party is

not necessarily obvious since the program was initially bipartisan, but over time it became clearly linked to the Democrats through both voting and repeated campaign messaging.

In addition to visibility and traceability, Campbell (2012) outlines additional factors that may influence whether policy feedbacks will occur. She argues that larger benefits are likely to lead to greater feedback effects, especially around political participation, and that proximity and concentration of beneficiaries can also increase feedback effects. Similarly, Soss and Schram (2007) outline a framework in which high visibility and high proximity policies are most likely to lead to mass feedback effects. High proximity policies are those that create tangible, direct benefits for recipients. In our case, the TVA benefits have a substantial direct impact for recipients and those benefits are geographically concentrated, which would lead us to expect the potential for strong feedbacks to take place.

Historical polling data supports the presence of these conditions, indicating that voters in TVA coverage areas were more aware of and more supportive of the TVA than Southerners living outside coverage areas. We use commercial polls conducted between 1936 and 1962, mostly by Gallup, to descriptively explore public opinion of the TVA. The polls were conducted using a combination of quota and probability samples, both geographically clustered, and we use weights calibrated to population targets to analyze white Southern public opinion of both knowledge of and support for the TVA.⁸ We compare public opinion in the core TVA states of Tennessee, Alabama, Mississippi, and Kentucky to public opinion in the rest of the South.

First, we find that white Southerners were much more aware of the TVA if they lived in one of the core coverage area states. In 1938, twenty-nine percent “followed debates” over the TVA versus eighteen percent in the non-TVA South. By 1945,

8. For more details on historical polls in the U.S. as well as the methods used to analyze them, see Caughey et al. (2020), Chapter 5 and Berinsky and Schickler (2011). We analyze only white public opinion here because Southern black residents were severely undersampled in early polls and were largely disenfranchised in the Jim Crow South.

awareness had grown but the gap between TVA and non-TVA areas remained: eighty-three percent of white Southerners in TVA states had “heard of” the TVA versus only fifty-two percent in the non-TVA South. Relative to non-covered states, covered states were also more supportive of TVA and related projects, by between six to thirteen percentage points depending on the specific poll.⁹

Popularity among whites in the TVA area no doubt came in part because the Authority intentionally chose to cooperate with Jim Crow and not push on issues of racial equality, despite protests from groups like the NAACP. Black residents of the TVA area were either entirely excluded – as in the case of Black agricultural colleges, which were not permitted to be part of the TVA’s fertilizer program – or relegated to low-skilled jobs where they faced abuse from white foremen (McCraw 1971, 142).

Although available polling and other observational data does not allow us to make causal inferences, it does suggest that the conditions were right for policy feedbacks to occur. Because of the high visibility, traceability, proximity, benefit levels, and geographical concentration of the TVA program, we would expect that feedback effects are quite likely to emerge. Voters were clearly able to link the large, important benefits of the program to the Democratic party.

But, would those feedbacks last and become durable features of American welfare state politics? As Patashnik and Zelizer (2013) argue, feedbacks are often contingent and fragile, and may not lead to durable reform. Although the geographic concentration of TVA benefits made it easier for voters to identify program benefits and – from a research design perspective – makes it easier for us to make causal inferences, it also limits the reach of policy feedback at the national level. Because only voters in TVA counties were receiving direct benefits, this in turn limited the breadth of political support for the TVA at the national level, leaving it vulnerable to retrench-

9. Polls asking questions about awareness include: Gallup Organization (1938) #0120, Gallup Organization (1945b) #0345, Gallup Organization (1945a) #0353. Polls asking questions about support include: Gallup Organization (1937) #0066, Gallup Organization (1938) #0120, Gallup Organization (1945b) #0345, Gallup Organization (1945a) #0353.

ment. And, this is in fact what occurred. As Thomas McCraw writes, “Completely successful in its effort to sell itself to the Valley, TVA never realized its concurrent aim of capturing the allegiance of the nation as well” (McCraw 1971, 142). Over the course of the 1950s the federal government’s subsidization of the TVA slowed to a trickle. Soon after, apparently responding to this decline in government benefits, voters in TVA counties abandoned their disproportionate liberalism and converged with non-TVA areas of the South in their voting behavior.

4 Data and Descriptive Statistics

Before the 89th Congress nearly all congressional districts in the South consisted of whole counties.¹⁰ The exceptions are the counties that contain Miami (FL), New Orleans (LA), Baltimore (MD), Kansas City (MO), St. Louis (MO), and Houston (TX), all of which were divided between one or more districts in at least one congress during this period. As a result, census characteristics for all but a few districts can be constructed from county-level census data (Haines and ICPSR 2010). Data on other variables, such as phone ownership and TVA exposure, can also be constructed at the county level.

The key independent variables were constructed thusly. For each county, in each decennial census between 1930 and 1960, the following variables were recorded: total population, number of white inhabitants, and number of inhabitants living in urban places.¹¹ The county-level values for a given year were linearly interpolated based on the nearest decennial censuses, with the exception of 1962, which was based on the 1960 census alone. Certain variables, particularly those proxying the economic status of county, are only available in specific years. The 1930 census collected data

10. This practice was ended by the 1962 Supreme Court case *Baker v. Carr*, which mandated that legislative districts be approximately equal in population.

11. Beginning in 1910, the U.S. Census defined an urban place to include “cities and other incorporated places of 2,500 inhabitants or more” (Truesdell 1949, 6).

on the number of families in county that reported owning a radio. The number of residential telephones in each county in 1940 is calculable based on reports published by the American Telephone and Telegraph Company (AT&T 1940). Data for 1950 on median family income, percent with yearly family income less than \$2,000, and percent with yearly family income greater than \$5,000 are available from the 1952 County Data Book (Haines and ICPSR 2010).

Counties were matched to districts based on the district descriptions in *Historical Atlas of United States Congressional Districts* (Martis et al. 1982) and checked against the county-level congressional electoral data compiled by Clubb, Flanigan, and Zingale (2006). District-level *White Percent* and *Urban Percent* were calculated by totaling the (interpolated) white and urban inhabitants in all counties in the district and dividing by the sum of (interpolated) county populations in the district. District *Percent with Radio in 1930* and *Phones Per Capita in 1940* were calculated analogously except no interpolation was done. District *Percent with Income Over \$2,000 in 1950* and *Percent with Income Over \$5,000 in 1950* were computed by taking the weighted average of county-level percentages, with weights proportional to 1950 county populations.

The calculation of *Median Income in 1950* was more complicated. Unlike variables expressed as totals or means, the (weighted) mean of county median incomes does not necessarily equal the district median income. To obtain a more accurate figure, the following formula was used for each district i with J counties:

$$\exp\left[\sum_{j=1}^J \log(MedianIncome_{ij}) \times Population_{ij}/Population_i\right] \quad (1)$$

Equation 1 basically amounts to exponentiating the weighted mean of logged household income. If the distribution of logged family income is symmetric, then Equation 1 exactly equals median income. The intuition behind this is that in a symmetric dis-

tribution, the mean and median are equal. Thus, under symmetry, $\log[\text{median}(x)] = \text{median}[\log(x)] = \text{mean}[\log(x)]$, so $\log(\text{Median Income in 1950})$ can be calculated for districts like any other county-level variable expressed as a mean. Exponentiating the results transforms *Median Income in 1950* back to its original unlogged scale. Even if the population distribution of $\log(\text{Median Income in 1950})$ is not exactly symmetric, it is almost certainly more symmetric than the unlogged distribution.

The final variable of importance is district exposure to the TVA, which is designed to test whether the TVA—and, by implication, other New Deal programs—created a constituency for liberalism in the South. A district was coded as being “exposed” to the TVA if any municipality or cooperative within its borders purchased electrical power from the TVA. Whether and when a district was exposed was determined by using various TVA publications to match power purchasers to counties and then matching counties to districts.¹² The analyses that follow employ a dichotomous coding of *TVA* indicating whether any county in the district was ever covered by the TVA service area.

The top-left panel of Figure 1 demarcates the TVA service area as of the 80th Congress (1947–48), with color indicating the first year that any part of the district started receiving TVA power. The first district to do so was Alabama’s 8th district, which contains Muscle Shoals, the site of the original TVA dam. The last district joined in 1945. The service area continued to expand (though not into new districts) until 1952, and in 1959 Congress forbade any future expansions (Kitchens 2014, 10).¹³

The remaining panels of Figure 1 plot the geographic distribution of three important attributes of congressional districts. District *White Percent* (top-right) ranges

12. The following sources were used to match determine the TVA service area: Tennessee Valley Authority (1940), Tennessee Valley Authority: Office of Power (1956), and Tennessee Valley Authority (2012). I also relied on the websites of various cooperative utilities and state cooperative associations. I am grateful for the assistance of Carl Kitchens in pointing me towards these sources.

13. The date that a county entered the TVA was coded as the earliest date that any municipality or cooperative *currently* providing power within the county first received TVA power. Since the service areas of individual cooperatives changed (usually expanded) over time, some districts might not have received TVA power until sometime after the date they are assigned.

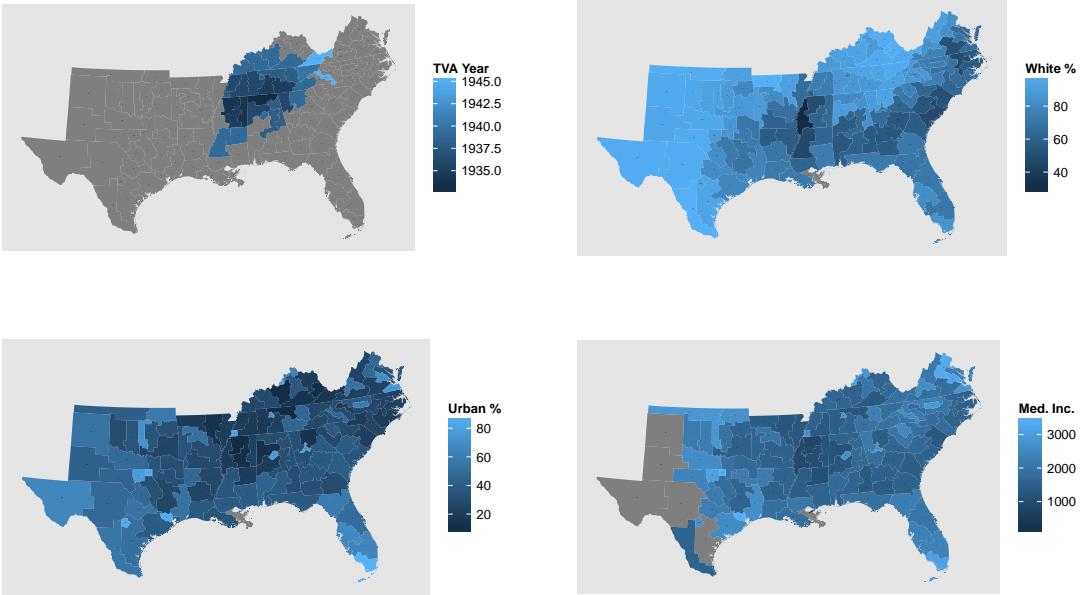


Figure 1: Characteristics of Southern U.S. House districts in the 80th Congress (1947–48): *Year Entered TVA* (top left), *White Percent* (top right), *Urban Percent* (bottom left), and *Median Household Income* (bottom right). Gray indicates districts for which data are missing or, in the case of *Year Entered TVA*, districts that were never a part of the TVA.

from a low of 25% to over 90%. By far the least-white district is MS-3, which covers the northern part of the Mississippi Delta and forms the “buckle” on the crescent-shaped Black Belt stretching from southern Virginia to eastern Texas. The bottom-left plot illustrates the variation in urbanization across the South. Most districts are less than a third urban, but such urban bright spots as Dallas, Memphis, Nashville, Birmingham, Atlanta, and Miami are clearly visible. Finally, household *Median Income in 1950* in each district is plotted in the bottom right. Data on this variable are missing from several districts in western Texas, presumably due to the very small populations of many counties in that area. Since district-level *Percent with Income Over \$2,000 in 1950* is very highly correlated (0.986) with *Median Income in 1950* and has more complete data, it is used in the analyses below instead of *Median Income in 1950*. As is visible from these graphs, districts covered by the TVA had poorer and whiter populations than non-TVA districts, differences that must be adjusted for

in order to infer the TVA’s effects.

5 Empirical Analysis of Policy Feedback

The core insight of the policy feedback literature boils down to the claim that public policies affect citizens’ political attitudes, resources, and behaviors and thus influence the character of the political system as a whole. Empirically assessing such causal claims is often difficult because a policy’s creation is often closely entwined with political factors, as are citizens’ exposure to and participation in that policy. Adding to the difficulty is the fact that data are often required at multiple points in time: both before policy implementation, so as to adjust for *ex ante* differences between citizens’ exposed and not exposed to the policy, and after implementation, so as to measure the policy’s effects. If it is possible to isolate a subset of citizens within which exposure to the policy was essentially random, then any political differences between those exposed and those not can plausibly be attributed to the feedback effects of the policy.

Geographically targeted policies such as the TVA are particularly useful for studying policy feedback because it is often possible to cleanly identify the areas exposed to the policy and to use data from censuses and other sources to construct a plausible geographic control group. In this application, we define a geographic unit as having been “treated” by the TVA if at any point in time it was part of the TVA power service area. We code this information at the county level, but focus our analysis on congressional districts, which in the South were almost entirely composed of whole counties until 1964.

The specific empirical strategy we employ is akin to a matched panel design (Heckman, Ichimura, and Todd 1997), which entails matching treated and control districts on pre-implementation attributes and comparing the matched groups after the policy

is implemented. We add several wrinkles to the standard design. The first is that while county lines remained almost entirely stable over this period, the counties that composed congressional districts changed at various points. As a consequence, the exact districts that existed when the TVA was created in 1933 cannot be compared over time. To address this, we create a different set of matched TVA and non-TVA districts for each biennium between 1930 and 1960. Crucially, each set is matched based on the pre-1933 attributes of the counties that compose districts at the time the outcome variable is measured. To estimate the TVA’s effect on 1952 presidential vote, for example, we match based on districts’ *Percent Urban in 1930*, *Percent White in 1930*, and so on. In essence, at each point in time we find the non-TVA districts that were most similar to TVA districts before the TVA was implemented.

In each year, we create multiple matched samples based on different sets of covariates. We do so for two reasons. The first is that some covariates, particularly those related to economics, exhibit widespread missingness. Thus when we match districts on pre-treatment economic attributes, we must drop about half of all TVA districts, mainly from Tennessee and Kentucky. To avoid this, we do not include economic variables in some of the matched sets. The second reason we vary matching covariates is to provide opportunities for what are sometimes called “placebo tests,” which are tests of hypotheses assumed to be true under the stipulated research design (Rosenbaum 2002). The critical assumption of our matched panel design is that matching on a given set of covariates eliminates systematic political differences between TVA and non-TVA districts.¹⁴ If we leave out political covariates from the matching set, we can conduct a placebo test of this assumption by estimating the “effect” of the TVA on political outcomes that occurred *before* the TVA was implemented (e.g., Republican vote share in 1932). Our confidence in the effect estimates is bolstered to the extent that the matched TVA and non-TVA districts are comparable in terms of

14. More technically, the assumption is that exposure to the TVA is independent of the districts’ potential outcomes (viz. the outcomes they would have exhibited under each treatment status).

their pre-1933 political attributes.

The specific matching procedure we use is 1-to-2 matching with replacement, as implemented by the R package **Matching** (Sekhon 2011).¹⁵ For inference we rely on the standard errors suggested by Abadie and Imbens (2006). Since matching is not generally sufficient to render TVA and non-TVA districts perfectly equivalent on all pre-treatment characteristics, we adjust for residual covariate imbalance using least-squares regression, including all matching covariates as control variables.

5.1 Feedback on Mass Behavior

We first discuss the TVA’s effects on mass political behavior, as measured by Republican presidential vote share. The logic of policy feedback suggests that if the benefits of a policy are substantial, tangible, and traceable to a particular political party, then citizens exposed to the policy will reward the party responsible for it at the voting booth. Notwithstanding the fact that the TVA was initially championed by a progressive Republican, Senator George Norris of Nebraska, once in place the TVA was closely associated with President Franklin Roosevelt and his Democratic Party (Wildavsky 1961). As the ardent TVA proponent Senator Lister Hill (D-AL) put it, “The Republicans did not put TVA in Alabama” (Young 1978, 162). The suspicions towards public power displayed by Republican presidential candidates from Hoover to Goldwater helped solidify their party’s image as an opponent of the TVA. Based on these considerations, we should expect the TVA to have decreased Republican vote share in its service area. One caveat to this expectation, however, is that the TVA’s negative effect on Republican vote might be counterbalanced by a positive Republican effect stemming from the TVA-induced increased economic status of TVA areas. That is, by making the Valley richer, the TVA might have prompted its residents to follow higher-income people elsewhere in voting Republican.

15. Results for 1-to-1 (i.e., pair) matching are qualitatively similar.

As Figure 2 indicates, this caveat appears to be unwarranted, for the TVA did in fact have a pronounced negative effect on Republican presidential vote share, especially after 1945 (see end of manuscript for figure). This effect is evident regardless of whether districts are matched on demographics only (top), demographic and economic covariates (middle), or demographic, economic, and political covariates (bottom). Importantly, matching on demographic and (especially) economic covariates is sufficient to pass placebo tests of the TVA’s “effect” on 1932 presidential vote. Though the uncertainty of the placebo estimates is fairly large, this pre-treatment equivalence provides reassuring evidence that the difference is indeed causal. As one would expect, the full effect of the TVA was not felt immediately, but rather grew over time as the TVA’s power provision expanded. At its peak influence, in 1952 and 1956, the TVA is estimated to have decreased Republican vote share in its coverage areas by an average of 15 percentage points. To put this estimate in perspective, the effect is about the same magnitude as the actual growth of Republican presidential vote share in the South between 1940 and 1952, which in the typical district increased from 25% to 40%. Put differently, the TVA’s estimated effect on Republican vote share in 1952 was large enough to have swung to the Democrat Stevenson almost every state won by Eisenhower in that year.

There are two plausible mechanisms by which the TVA could have decreased Republican vote share: by affecting the composition of the electorate (e.g., by mobilizing previously non-voting Democrats) or by affecting the political preferences of people who would have voted anyway. Regarding the first, grassroots participation was a core value of the TVA, especially early on, and it is plausible that the agency’s efforts to involve citizens in its decision making had a broader mobilization effect. Moreover, voter turnout in the South did increase substantially between the 1930s and 1950s as some suffrage barriers were dismantled and partisan competition revived in the region. Empirically, however, there is little evidence of systematic differences in

turnout between TVA and non-TVA areas, in either presidential or congressional general elections. Thus, while it possible that the TVA influenced the composition of the electorate without changing the overall number of voters, it seems more likely that the main mechanism for its effect on election returns was influencing the preferences of existing voters.

In short, the TVA seems to have decreased support for Republican presidential candidates in the areas it covered. This effect emerged gradually over time, in tandem with the TVA’s own expansion, and its peak in the 1950s, when it reached a remarkable 15 percentage points, roughly coincided with the high point of federal subsidies to the agency. Given the lack of evidence for turnout effects, the TVA appears to have influenced the choices of existing voters rather than changed the composition of the electorate. These results are important because they demonstrate the potential for policy to affect not only the self-reported attitudes and preferences of citizens—the focus of much quantitative research on policy feedback—but also their actual political behavior. In the following section we take the analysis one step further to examine whether the TVA affected not only mass behavior but the behavior of political elites as well.

5.2 Feedback on Elite Behavior

For policy feedback to exert meaningful influence on the political system as a whole, it must affect not only mass behavior but the actions of government officials as well. There are once again two main mechanisms by which feedback on elite behavior can occur: through the selection of different types of officials or through the adaptation of incumbents (perhaps in anticipation of electoral sanctions; see Stimson, MacKuen, and Erikson 1995). In the case of the TVA, there is reason to believe that both mechanisms were at work. The TVA was such a massive economic boon to the region that it was embraced by even otherwise very conservative politicians. The TVA’s 1933

enabling act, which was co-sponsored by the conservative and virulently racist Rep. John Rankin of Mississippi, received the support of even such staunch opponents of the New Deal as senators Carter Glass of Virginia and Ellison Smith of South Carolina (Patterson 1967, 18–21; Wengert 1967, 64). As these examples indicate, conservative politicians were perfectly capable of embracing the TVA, whose concrete benefits to the region were undeniable, while remaining conservative on other economic policies. Thus while the adaptation of incumbents may have been important for changing officials' positions on the TVA itself, it was probably less important for changing office-holders' overall ideological orientation.

A more effective mechanism, though one that took more time to play out, may have been the election into office of politicians who were more liberal across the board than their opponents. The opportunities offered by the New Deal fostered the careers of a “new generation” of liberal politicians across the South, many of whom first entered Congress in the mid-1940s (Badger 2007). The TVA offered similar opportunities in more concentrated form, providing a concrete example of the advantages of federal intervention and a geographic base for pro-New Deal politicians. Support from TVA areas benefited both liberal incumbents like Alabama senator Lister Hill, who turned back a strong conservative challenge in 1944 with the aid of firm support from the Tennessee Valley, as well as younger politicians like John Sparkman, a Valley native who joined Hill in the Senate in 1946.

It therefore seems natural to hypothesize that the TVA exerted a liberalizing effect on congressional representation on the areas it covered—perhaps through the adaptation of incumbents but primarily by boosting the electoral prospects of liberal politicians. Given the undemocratic features of Southern politics, however, empirical support for this hypothesis is hardly guaranteed. Suffrage barriers disenfranchised many citizens, white as well as black, and lack of partisan competition may have inhibited responsiveness even to those who could vote (Key 1949). Indeed, given

that Republican office-holders (unlike presidential victories) remained extremely rare in the South through the 1960s, any effect of the TVA on elite behavior must have operated not through partisan replacement but rather by influencing what *kind* of Democrat was elected.

To evaluate whether the TVA exerted a liberalizing effect on elite behavior, we focus on U.S. House members' votes on roll calls related to social welfare and economic regulation, the core of the New Deal issue complex. To summarize members' positions on these issues, we estimate a dynamic item-response (IRT) model using only roll calls in this domain, yielding estimates of members' economic conservatism in each congressional term.¹⁶

To estimate the TVA's effects on congressional representation, we use the same matched panel design we used for presidential elections. As Figure 3 shows, the results are broadly similar (see end of manuscript for figure).¹⁷ Starting from a position of rough ideological equivalence, TVA and non-TVA representatives gradually diverged over the 1930s and 1940s, with a clear difference emerging by the early 1950s. Some variation in statistical significance notwithstanding, the TVA's estimated effect on members' conservatism is fairly stable throughout the second half of the period, generally ranging between -0.15 and -0.45 . As a point of comparison, the standard deviation (SD) of economic conservatism among all House members was around 1 in the typical year, and among Southern Democrats it was around 0.3. Substantively, this effect corresponds to the difference between a conventional center-left Southern

16. We estimated the dynamic IRT model using the R package **MCMCpack** (Martin, Quinn, and Park 2011). The resulting estimates of economic conservatism are generally highly correlated with first-dimension DW-NOMINATE scores, but we prefer them because they are both more interpretable substantively and more flexible with regard to ideological change across terms. For a related discussion, see Caughey and Schickler (2016).

17. In interpreting this figure, it should be noted that the year on the horizontal axis refers to the *election* year; the roll calls on which the conservatism measure is based occurred in the two years following. Consequently, the only purely pre-treatment year is 1930, since the estimate for 1932 is based on roll calls from 1933–34. This may explain why in panels (b) and (c) members' conservatism is perfectly balanced in 1930 but not in 1932 (though the imbalance in 1932 goes in the opposite direction to the expected effect of the TVA).

Democrat, such as Rep. Edward deGraffenreid of Alabama’s 6th District (non-TVA), and a strong Southern liberal like Rep. Carl Elliott of the neighboring 7th District (TVA).

In summary, based on a comparison of congressional districts that had similar characteristics before the TVA was created, we can conclude that the Authority influenced both mass and elite behavior in its coverage region. At the mass level, the TVA appears to have inhibited its coverage region from following the rest of the South’s realignment towards the Republican Party in presidential elections. By the 1950s, congressional districts in the TVA were giving 15 percentage points less support to Republican presidential candidates than comparable non-TVA districts. Voters in TVA areas thus seem to have rewarded the national Democratic Party for the benefits provided by the Authority. The TVA’s effects are evident at the elite level as well. Being covered by the TVA seems to have caused citizens to receive more liberal representation in Congress. By the 1950s, the roll-call records of U.S. House members from TVA districts—all of whom were Democrats in the sample we analyze—were about a standard deviation less conservative on economic issues than those of Southern Democrats from otherwise similar non-TVA districts. Notably, since relatively few roll calls in a given congress concerned the TVA directly, these differences reflect the TVA’s effect on House members’ *general* economic conservatism. Thus, rather than affecting only a narrow policy area, the TVA seems to have had broader effects on the kind of representation citizens received.

6 Conclusion

Over the course of the 1930s through the 1950s, the South as a whole was becoming more Republican in presidential voting. Because the TVA led to a substantial increase in incomes in TVA counties, all else equal we might expect Republican support to

increase alongside earnings. However, because the Democratic party was so closely tied politically to the TVA and the large, tangible benefits this policy produced during these years, voters responded by rewarding Democratic presidential candidates at the ballot box. And, although members of Congress from the one-party South – in both TVA and non-TVA areas – were all Democrats, those who were elected in TVA districts did have distinctly more liberal voting records in Congress – not just on the TVA program, but more broadly on economic issues.

Ultimately, though, the changed voting patterns in TVA areas, among both constituents and representatives, were not enough to save the program's redistributive aspects. Although the TVA remains in operation today, it is self-sustaining and no longer includes a major resource-transfer component. Opposition to the TVA grew in the 1950s. While the TVA remained popular in the coverage area, Republicans outside the region, and especially President Eisenhower and his supporters, viewed the program as an unfair subsidy that was not provided to any other part of the nation (Wells 2008, 230). Even as the geographic concentration of the TVA program may have helped initial policy feedback effects get started, the limited reach of the program also made these effects fragile on a national scale.

On a visit to Tupelo, Mississippi, the first city to purchase TVA power, Franklin Roosevelt spoke of his vision to use the TVA proram as a model for the rest of the nation: “what you are doing here is going to be copied in every State of the Union before we get through” (McCraw 1971, 70). In the end, the TVA program was unable to create sustained policy feedbacks that would maintain longterm support within its geographic area, much less for an expanded vision to build regional development agencies around the nation. Once transfers ended, voting patterns in TVA areas quickly fell in line with similar non-TVA areas in the South. Changed voting patterns did not persist after voters stopped seeing the benefits of the program. This evidence suggests that policy feedback may not be durable when policy beneficiaries do not

constitute a sufficiently large voting bloc to protect those benefits when political tides turn. Geographical concentration of recipients – which might initially lead to feedbacks by making communication and coordination easier – may ultimately prove problematic for long-term policy change as voters from other areas may be reluctant to provide permanent subsidies to beneficiaries.

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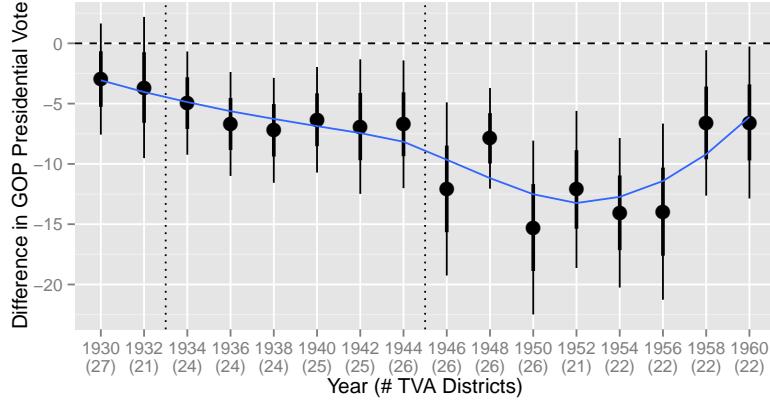
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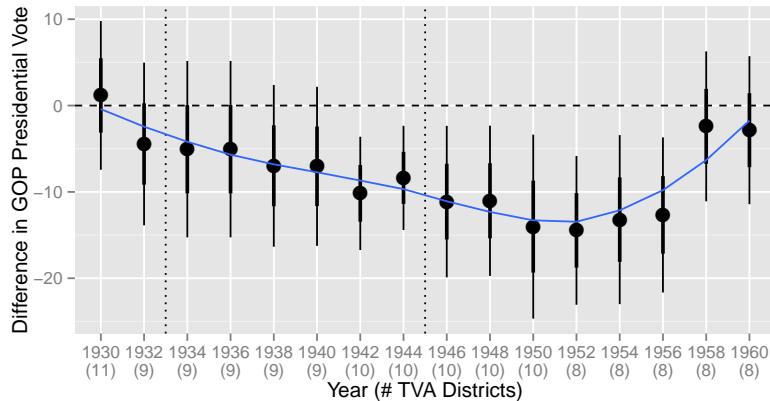
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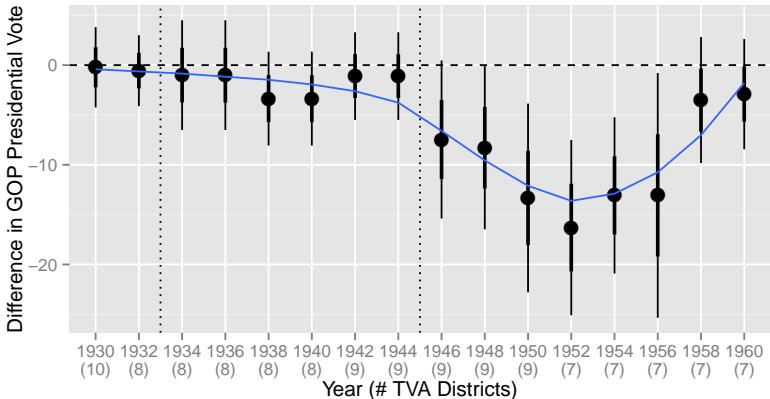
Figure 2: Estimates of the TVA's effect on Republican presidential vote share, for districts matched 1-to-2 on (a) demographic, (b) demographic and economic, and (c) demographic, economic, and political covariates. Midterm estimates are for the Republican share in the following election. All estimates except (c) use regression to adjust for residual covariate imbalance. Confidence intervals indicate ± 1 and ± 2 Abadie-Imbens standard errors. Vertical dotted lines indicate the TVA's roll-out period, 1933–45.



(a) Demographic covariates only

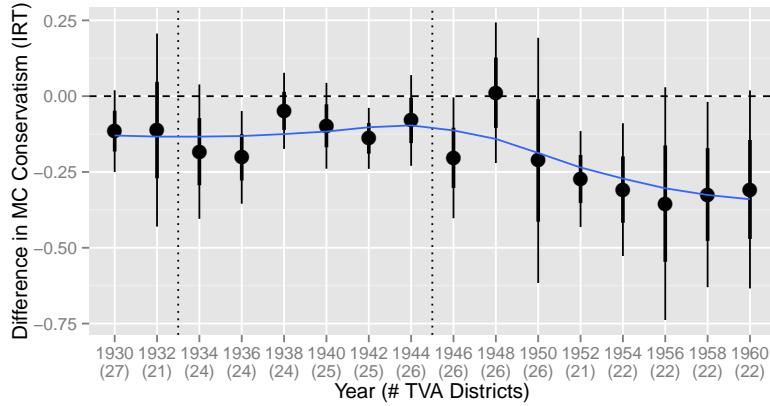


(b) Demographic and economic covariates

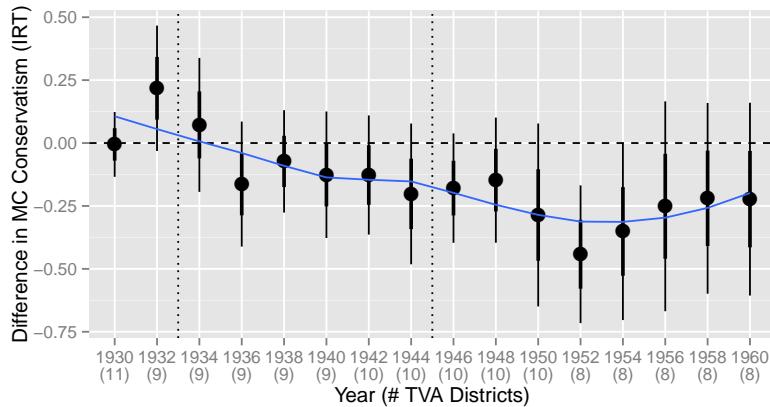


(c) Demographic, economic, and political covariates

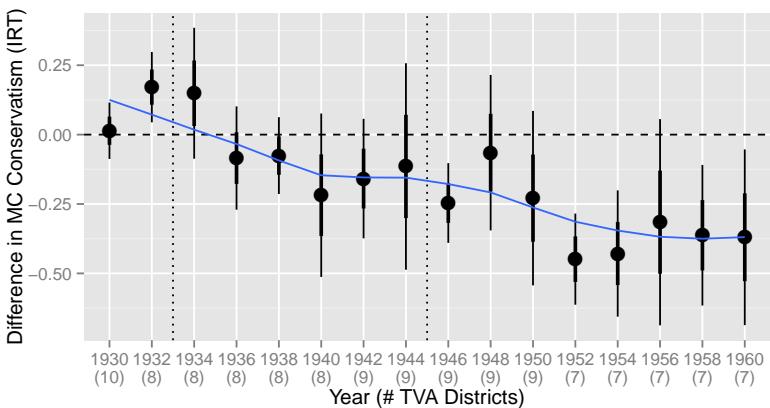
Figure 3: Estimates of the TVA’s effect on congressional conservatism, for districts matched 1-to-2 on (a) demographic, (b) demographic and economic, and (c) demographic, economic, and political covariates. The year on the horizontal axis refers to the *election* year; the actual roll calls from which conservatism was estimated took place in the two years following the election. All estimates except (c) use regression to adjust for residual covariate imbalance. Confidence intervals indicate ± 1 and ± 2 Abadie-Imbens SEs. Vertical dotted lines indicate the TVA’s roll-out period, 1933–45.



(a) Demographic covariates only



(b) Demographic and economic covariates



(c) Demographic, economic, and political covariates