Political Competition, Policy and Growth: Theory and Evidence from the United States[*]

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Abstract

This paper develops a simple model to analyze how lack of political competition may lead to policies that hinder economic growth. The rise and fall near monopoly of the Democratic party on political power in the U.S. south during the last century generates substantial variation in political competition to tests the predictions of the model on data going back to 1880. We find statistically robust evidence that changes in political competition have quantitatively important effects on state policies. Furthermore, we also find a robust reduced form link between political competition and income growth at the state level.

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1 Introduction

One of the most cherished propositions in economics is that, by and large, monopoly is bad and market competition between firms raises the welfare of consumers. Whether competition between political parties has similarly virtuous consequences is far less discussed,[1] despite the long-term monopoly on power by a dominant party observed in a number of existing democracies.[2] Moreover, almost no empirical studies speak to the question of whether political competition matters for economic outcomes.[3]

This paper exploits the substantial variation in political competition across U.S. states to explore the relationship between political competition, policy and economic performance. Its main point of comparison is between competition in the southern and non-southern states. The broad picture is illustrated in Figure 1 which displays ten year averages of our measure of political competition, detailed below, both for the 16 southern states as defined by the U.S. Census and the remaining continental states. Three forty-year periods of interest stand out. From 1880 until 1920, political competition declines in the southern states as the Democratic party acquires a virtual monopoly on power in most southern states. Once acquired, the Democratic dominance remains largely intact until 1960. However, from the 1960s and onwards, levels of competition in the south are rising rapidly, and by about 2000 they have converged to those in the rest of the U.S.

We use this variation to argue that political competition can have robust and quantitatively important effects on policy choices and, indirectly, on economic performance. To start, we develop a simple theoretical model that formalizes how political competition shapes policy incentives. Based on the predictions of the model, we empirically examine whether political competition changes state policies. In a second step, we also investigate whether there is a reduced form link between political competition and growth. A

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[1]The Chicago School of political economy makes a strong argument as to the efficiency of political competition (Stigler, 1972, and Wittman, 1989, 1995), but has not studied the detailed institutional underpinnings of this argument. Polo (1998) and Svensson (1998) provide early formal analyses of how lopsided political competition may lead to excessive rent-seeking or inefficient provision of government services.

[2]A large literature in political science discusses the dominant-party systems in countries such as Japan (the LDP), Malaysia (the UMNO), Mexico (the IRP), Paraguay (the Colorado Party), and South Africa (the ANC), focusing on their political effects (see e.g., the contributions in Pempel, 1990).

[3]Besley and Case (2003) discusses some evidence from studies using U.S. data.

consistent picture emerges. Increased political competition is associated with a more pro-business policy environment and higher economic growth. These findings are robust to a wide variety of empirical approaches and robustness checks.

In Section 2, we develop the simple model to organize our thinking. We consider a world where party attachments are formed on a non-economic issue (race, in the case of the south). These attachments may give one party an advantage, allowing narrow economic interests antithetical to growth to capture the political process. We take the model seriously in the empirical work, using it as a guide to measurement and as the source of a number of specific predictions linking policy and growth to the degree of political competition.

In Section 3, we discuss the historical background to the sharp changes in political competition in the US south over the 1880 to 2000 period and introduce our dataset. These changes in political competition were triggered by the introduction and removal of voting rights restrictions in the US south. In 1965-66, the remaining voting rights restrictions were removed by the 1965 Voting Rights Act, which eliminated poll taxes, literacy tests and other means of disenfranchising large parts of the black and poor population. This intervention, as well as the introduction of restricted voting rights around the turn of the last century, sharply changed the turnout of blacks and poor whites and, thereby, the composition of the electorate and the electoral advantage enjoyed by southern Democrats.

Section 4 presents our empirical results. These show that political competition has a statistically significant and quantitatively important effect on a variety of state economic policies. Our estimates for growth suggest that the stiffer political competition induced by the Voting Rights Act raised long-run income in the average affected state by at least 10%. We also find, in line with the theory, that the effect of political competition, both on policy and growth, is non-linear and that the effect is not due to policy differences across the two main parties. Moreover, the decline in southern competition in the forty years from 1880 to 1920 appears to have had a quantitatively very similar (negative) effect on state growth rates as the (positive) effect on growth following the increase in southern political competition after the 1960s.

Section 5 offers concluding comments. Two Appendixes include proofs of some theoretical results and descriptions of our data sources.

2 Theory

Our model illustrates how political competition can affect policy and economic growth. Two parties compete by picking electoral platforms. To fix ideas, we focus on a single policy which distorts economic decisions and lowers overall income, but transfers resources to one group of citizens. Lack of political competition is defined as an electoral advantage of one of two political parties. This advantage arises from a surplus of committed voters, due to the parties' non-pliable stance on a non-economic issue, which in the Southern example would be race. The electoral advantage gives a dominant party less incentive to appeal to swing voters, who are not committed to one party and are prepared to vote against candidates pursuing distorted policies.

At a first stage in the model, each of the parties picks a policy platform under uncertainty about a popularity shock. Second, this shock is realized as voters cast their ballot. Finally, private economic choices are made in the light of realized policy. The next subsections deal with these choices in reverse order.

2.1 The Economic Model

We use a reduced-form model of economic decisions.[4] There are two time periods and a (size one) continuum of citizens, each of whom invests one unit of capital. The first-period return is normalized at unity, while the second-period return is $q(\tau) \geq 1$ where $\tau \in [0, 1]$ is an economic policy. We assume that $q_\tau(\tau) < 0$, so an increase in τ reduces second period income. However, the policy also creates benefits to a fraction $\alpha < 1$ of the citizens, who receive a rent of $r(\tau)$, where $r(0) = 0$. Using the policy τ to redistribute income reduces overall surplus, but creates a net benefit for the recipients of the rent r, which implies that

$$\frac{r_\tau(\tau)}{\alpha} > -q_\tau(\tau) > r_\tau(\tau) > 0 \ .$$

This assumption creates a conflict of interest over policy in a very simple way: it is optimal for the group that benefits from the policy to set $\tau = 1$,

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[4]In a previous version of the paper (Besley, Persson and Sturm, 2006), the model was given micro-foundations, along the lines in Persson and Tabellini (2000, Section 14.3). This extended model has two sectors – one traditional, one new – and two time periods. It pivots around quasi-rents earned by owners of traditional factors, and their incentives to protect these rents at the expense of economic growth.

but average income per capita is higher when $\tau = 0$. The growth rate of the economy

$$G(\tau) = q(\tau) + r(\tau) - 1$$

is a decreasing function of τ, i.e., growth is higher when τ is closer to zero.

2.2 The Political Model

There are three types of voters: Democrats, Republicans and independents, denoted by $P \in \{D, R, 0\}$. Partisan voters (Democrats and Republicans) make up a fraction $1 - \sigma$ of the population. Only Democrats and Republicans are organized in parties, which are denoted by $p \in \{D, R\}$. Let $\delta(P, p)\Delta$ be the utility gain of a partisan voter P from having her preferred political party p in office. We assume that $\delta(D, R) = \delta(R, D) = 0$ and $\delta(R, R) = \delta(D, D) = 1$.

We assume that the partisan types D and R prefer their respective party due to non-economic issues, i.e., their utility gain Δ dominates any economic concern. Of these committed voters, a fraction $(1 + \lambda)/2$ prefers party D. In an application to the US south, Δ can be interpreted as capturing the salience of race as an electoral issue. The sign of λ can be positive or negative, but to fix ideas in the presentation we let the Democrats have the edge among committed voters ($\lambda > 0$).

Independent voters ($P = 0$) vote primarily on economic issues and become swing voters. Specifically, their economic payoff of having party p in office depends on the policy choice τ_p of this party and is $v_p = q(\tau_p)$. Independents also care about the sheer identity of parties, but less so than partisans. Their political payoff is ω for or against party D's stance on non-economic issues, with $\omega \lesseqgtr 0$ distributed among the voters. Thus, a swing voter casts her ballot for party D whenever:

$$\eta + \omega + v_D - v_R > 0 \ ,$$

where η is an aggregate popularity shock in favor or the Democratic party. We assume that ω is uniform on $\left[-\frac{1}{2\phi}, \frac{1}{2\phi}\right]$, with $\frac{1}{2\phi} < \Delta$.

Under this parametrization, the condition for Democratic electoral victory is

$$\sigma\phi[v_D - v_R + \eta] + (1 - \sigma)\lambda/2 > 0 \ .$$

This condition can be rewritten as $\eta > \kappa - (v_D - v_R)$ where

$$\kappa = -\frac{1 - \sigma}{\sigma} \cdot \frac{\lambda}{\phi 2}$$

is our indicator of the state of political competition, measurement of which we return to below.

We assume that parties compete by committing themselves to policy platforms $\{\tau_D, \tau_R\}$. Moreover, when parties pick their platforms, they know the distributions of ω and η, but not the realization of η. To further simplify the algebra, let η be uniform on $\left[-\frac{1}{2\xi}, \frac{1}{2\xi}\right]$. In this case the probability of a Democratic win simplifies to:

$$P_D (v_D - v_R - \kappa) = \begin{cases} 1 & \text{if } \xi [v_D - v_R - \kappa] \geq \frac{1}{2} \\ \frac{1}{2} + \xi [v_D - v_R - \kappa] \\ 0 & \text{if } \xi [v_D - v_R - \kappa] \leq -\frac{1}{2} \,. \end{cases} \quad (1)$$

Evidently, the model predicts the Democrats' electoral success to depend on two factors, namely the (endogenous) utility difference $v_D - v_R$, and the (exogenous) electoral advantage parameter κ.

The model gives insight into the factors that make political competition stiffer, which corresponds to values of κ closer to zero. Political competition increases as λ approaches zero, i.e., when the advantage of either the Democratic or Republican party among partisan voters declines. Political competition is also stiffer when σ is large – swing voters make up a larger fraction of the voting population. Lower salience of non-economic issues among the swing voters – a higher ϕ – also raises political competition, as does a more ideologically neutral set of swing voters.[5]

For simplicity we assume that all policy rents $r(\tau)$ accrue to the winning party, which makes up a share α of the population. While extreme, this assumption clearly illustrates why parties may wish to implement anti-growth policies.[6] Average utility of a party member is $r(\tau)/\alpha + q(\tau)$. To map

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[5] Our assumption that ω is uniformly distributed is made for analytical convenience. If instead ω had a smooth unimodal distribution, a shift of the mass in this distribution towards the middle would raise the p.d.f. g_ω in that range. An increase in the density ϕ of our assumed uniform can be thought of as approximating such a shift towards a more ideologically neutral electorate.

[6] In Besley, Persson and Sturm (2006), we showed how such a motive may arise indirectly, due to lobbying of the incumbent party by a group of vested interests in the population.

the rents into swing-voter utility, define $T\left(v\right) = \left[r\left(q^{-1}\left(v\right)\right)\right]/\alpha$ as the rents enjoyed by the party when the swing voters' utility is v. (T is a decreasing function). Let $\bar{v}$ be the swing voters' preferred utility level (with $T\left(\bar{v}\right) = 0$) and let $1 + T_v\left(\underline{v}\right) = 0$ define the level of swing-voter utility that maximizes party utility with $q^{-1}\left(\underline{v}\right) \in (0,1)$.

Electoral competition can now be modeled as parties choosing $\{v_D, v_R\}$ rather than the underlying policy choices $\{\tau_D, \tau_R\}$. The expected payoff of the Democratic party is:

$$v_R + P_D\left(v_D - v_R - \kappa\right)\left[\Delta + T\left(v_D\right) + v_D - v_R\right] \ , \tag{2}$$

while the Republican party payoff is:

$$\Delta + T\left(v_R\right) + v_R - P_D\left(v_D - v_R - \kappa\right)\left[\Delta + T\left(v_R\right) + v_R - v_D\right] \ . \tag{3}$$

The interesting difference between these payoffs is captured by κ, our measures of political competition. As we will see, because $\kappa < 0$ the Democrats (more generally, the party with an electoral advantage) are less pro-growth. The trade-off facing parties is quite simple: offering a higher utility to swing voters increases a party's chance of winning, but reduces the rents (T) captured if winning.

2.3 Political Equilibrium

What does our model predict about the effects of political competition, as measured by κ? Formally, we can represent an equilibrium of the model by a pair of utility levels $\{v_D, v_R\} \in [\underline{v}, \overline{v}]$, which forms a Nash equilibrium in the pre-election game between the two parties, given the equilibrium behavior of voters. As above, we focus on the case where $\kappa < 0$, i.e., the electorate is biased towards the Democrats.

We study an equilibrium where two assumptions hold:

Assumption 1
$$2 + T_v\left(\bar{v}\right) < 0 \ ,$$

the party reaction functions slope upwards in a neighborhood of $\overline{v}$, and

Assumption 2
$$\frac{\left(1 + T_v\left(\bar{v}\right)\right)}{2} + \xi\Delta < 0 \ ,$$

the party's marginal cost of foregone rents exceeds the marginal benefit of ideological stance, at the point of undistorted policy. Under these conditions, dominant parties will tend to pick an outcome where $v_p < \overline{v}$. Note that Assumptions 1 and 2 hold if α is close enough to zero.

The key result linking policy and political competition (proof in the Appendix) is:

Proposition 1 *If Assumptions 1 and 2 hold, an equilibrium exists and the effect of political competition on economic outcomes has three ranges:*

1. *For κ below a lower threshold (κ_L) the Democrats pursue their own preferred (anti-growth) policy and win for sure.*

2. *For κ in an intermediate range below a higher threshold (κ_H), the Republicans pick more pro-growth policies than the Democrats. As competition increases, the probability that the Republicans win increases and the Democrats move towards pro-growth policies.*

3. *For κ close enough to zero, the party ranking and the effect of political competition on policy and economic growth are ambiguous.*

The results in this section form the basis for our empirical analysis. While we do not estimate a structural model, the theoretical structure guides our measurement (e.g., of the key parameter κ gauging the degree of political competition). We test directly the main prediction in Proposition 1 – that greater political competition improves economic policy. But we also test the auxiliary predictions regarding the effects on economic growth, the non-linearity in the effect of political competition, and the effects arising from political competition rather than the party in power.

3 Historical Background and Data

3.1 Historical Background

Here is not the place to summarize the voluminous literature on the southern economy, polity and society in the wake of the civil war.[7] However, it is useful to highlight some of the salient issues as background to our empirical analysis.

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[7]See, *inter alia*, Wright (1987, 1999), Key (1950) and Davidson and Grofman (1994).

After the end of the civil war in 1865 blacks for the first time enjoyed civil and voting rights. The 14th amendments to the constitution (ratified in 1868) formalized civil rights irrespective or race and the 15th amendment (ratified in 1870) stipulated

> "the right of citizens of the United States to vote shall not be denied or abridged by the United States or by any State on account of race, color, or previous condition of servitude".

With the withdrawal of the last northern troops in 1877, however, the southern states quickly eroded the newly gained civil rights of blacks. The passage of Jim Crow laws imposed racial segregation on many aspects of public life ranging from schools, over parks and public libraries, to burial grounds.

Kousser (1974) documents how the vigorous political competition in the US south in the 1870s started to decline during the 1880s and 1990s. While the Democratic party had gained control of all state governments in the south by the 1880s, effective opposition to the Democratic party only ends with the introduction of various voting restrictions, notably literacy tests and poll taxes, during the second half of the 1890s and early 1900s. These restrictions resulted in immediate and sharp reductions in election turnout of black and poor white voters – which constituted the power base of southern Republicans all the way up to the 1960s – and effectively eliminated any serious opposition the Democratic party in the south. The sharp downturn in political competition in the US south around this time is clearly visible in our specific measure of political competition in Figure 1.

The Democratic party maintained its monopoly on power in the US south essentially unchallenged until the 1960s. The civil rights movement of the 1950s and 1960s, which culminated in the Civil Rights Act of 1964 and the 1965 Voting Rights Act re-introduced political competition in the US south.[8] The 1965 Voting Rights Act gave the Attorney General authority to appoint federal examiners to oversee voter registration in states, or counties, using literacy or qualification tests and where less than 50% of the voting age population had voted in the 1964 presidential election. He could also seek legal action against poll taxes as a prerequisite for voting in state elections, and the Supreme Court ruled such usage illegal in a 1966 decision, which

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[8]See Mackaman (2005) for a concise historical account of the political events that led to the passing of the 1965 Voting Rights Act.

became directly binding on Alabama, Mississippi, Texas and Virginia.[9] The elimination of voting rights restrictions induced a sharp increase in turnout and triggers a step increase in political competition, which is clearly visible in Figure 1.[10]

The set of political changes that took place in the south over our period are quite complex. Our simple model channels these through the parameter κ, which is determined by voter preferences and the composition of the electorate into partisans and swing voters.[11] It is a non-trivial task to validate such changes from independent sources. The best source is probably the data in the biannual National Election Studies (NES), available from 1952 to 2002.[12] The number of respondents in each NES cross-section is quite small, at most 1500 in total, so it does not allow us to reliably single out voters in individual southern states, let alone subdivide by race. With this caveat, Figure 2 graphs an estimate of political competition κ for the south and non-south over the 50 years of available surveys.[13] The change of κ in

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[9] *Harper v. Virginia State Board of Elections* (1966). South and North Carolina, Louisiana, Georgia, Florida, Arkansas, and Tennessee had abolished their poll taxes at an earlier date.

[10] Davidson and Grofman (1994), Black and Black (2003), and Vallely (2004) give detailed accounts of how the Voting Rights Act changed southern politics with regards to minority representation and the Democratic stronghold on power.

[11] This contrasts with a view that sees changes in party preferences as the prime driving force of political change over the period.

[12] See http://www.umich.edu/~nes/

[13] The parameter κ is estimated as follows. Respondents in the NES are classified as Republican if variable VCF0301 ("Generally speaking, do you usually think of yourself as a Republican, a Democrat, an Independent, or what?") is 6 (weak Republican) or 7 (strong Republican), as Democrat if 1 (strong Democrat) or 2 (weak Democrat), or as swing voters if 3 (independent closer to the Democratic Party), 4 (independent closer to neither party), or 5 (independent closer to the Republican Party). We calculate the proportion of each type in every state and year as the ratio of the number of Republicans/Democrats/swing voters to the total number of respondents (excluding those with a missing value) each year. (The sum of the three percentage points is not equal to a hundred as some respondents are categorized as apolitical (their variable VCF0301 is 9)). Our estimate of $\kappa = -\frac{(1-\sigma)\lambda}{2\sigma\phi}$ is then computed as follows. We take the proportion of Democrats less the proportion of Republicans, i.e., $(1-\sigma)\lambda$, and divide by the proportion of swing voters, i.e., σ. We then calibrate ϕ to a constant which implies a 1952 winning probability of 90% for the Democrats in the South, i.e.,

$$\frac{1}{2} - \kappa = 0.9 \ .$$

which implicitly normalizes $\xi = 1$.

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the south is particularly pronounced during and after the 1960s. This change is, in part, due to a rise in the share of swing voters (σ in the model), as well as a fall in the share of partisan Democrats less partisan Republicans (λ in the model). The value of κ estimated from the NES is thus fully consistent with the claim that southern competition increased drastically from the 1960s. Its time path over the last 50 years is also very similar to the specific measure of political competition that we graph in Figure 1 and define in the next section.

The post-war convergence of southern per-capita incomes to the rest of the U.S. is undisputable, and surely – in part – reflects the economic forces emphasized in the growth literature (see Barro and Sala-i-Martin, 2004, for an overview, including applications to U.S. States). Migration, both of businesses and people, probably played a key role in the catch up. The long-standing differences in (average) living standards between Southern states and the remainder of the United States were rooted in an economy dominated by a single form of production, in particular the plantation for cotton or tobacco. As Naylor and Clotfelter (1975, p.190) note

> "Through most of its history, the South's political structure has been dominated by a conservative rural minority that sought to advance its self-interests through policies such as the perpetuation of a ready supply of cheap labor. Because of the South's rigid social structure, the rural middle class was abnormally subordinated to the planter class."

The planter class in the quote represents the elite from a traditional sector, which wanted to protect its quasi-rents, and worked to suppress public infrastructure and reduce educational attainment, slowing down rural diversification. Bringing modern industry to the south became more important and by the 1930s a number of states were waking up to the possibility of promoting economic growth. For example, Governor White of Mississippi was elected in 1935 on a pro-industrialization ticket (Cobb, 1993). After the second world war, southern states began to adopt policies aimed at attracting industry: business-friendly labor regulations discouraging unionization, a relatively regressive tax base, provision of infrastructure and subsidies, especially in urban areas. A 1975 business friendliness ranking (compiled by Fantus consulting) had three southern states – Texas, Alabama and Virginia – at the top, and eight southern states in the top twelve (Cobb, 1993, Table 15).

3.2 Data

Our key explanatory variable is a measure of political competition in each of the continental U.S. states over time. To construct that measure, we use a dataset originating in the work of Ansolabehere and Snyder (2002), who collected election results for a broad set of directly elected state executive offices, ranging from U.S. representatives, over the governorship, to down-ballot officers, such as Lieutenant Governor, Secretary of State, Attorney General, etc.[14] The dataset reports the average vote share of the Democrats in all-state wide races in state s at time t, which we denote d_{st}. We then define κ_{st} in analogy with the theory by

$$\kappa_{st} = -|d_{st} - 0.5| \, , \tag{4}$$

which is a party-neutral measure of the dominance of either the Democratic or Republican party in state-wide elections. Larger values of this variable correspond to states and periods with more political competition. The variable κ_{st} has a distribution heavily skewed to the right: while we have about 160 state-year observations with political competition lower than -0.4, we have about 2400 observations with competition between -0.1 and 0.

To measure the policy stance of the state government we use three main variables: the share of total state tax revenue in personal income, the share of capital spending in total state spending, and an indicator variable whether or not a state has a right-to-work law. Reductions in the tax burden and the share of capital expenditure (a proxy for infrastructure spending) are policies which are widely believed to be conducive to promoting economic development. Right-to-work laws make it illegal to demand that employees join a union, or to automatically deduct union fees from wages. Holmes (1998) documents that Right-to-Work laws appear to have strong effects on the location choices of business across state borders.

To explore whether political competition not only affects policy choices, but also state economic performance, we use the growth rate of state personal income as an alternative dependent variable. Closely related is the share of non-farm income in total personal income of the state, as a measure of structural change. To investigate whether our results are indeed due to changes in political competition rather than policy differences between the Democratic

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[14]We are very grateful to Jim Snyder for sharing an updated and expanded version of this dataset with us.

and Republican party, we use an indicator variable of the governor's party affiliation and the party composition of the state upper and lower houses to create indicator variables whether any one party controls both chambers of the state legislature.[15]

As discussed further below, our measure of political competition is not necessarily exogenous to the outcome variables. We therefore use the federal intervention in the US south via the 1965 Voting Rights Act as an additional source of exogenous variation. For this purpose we construct a variable, which is equal to the share of the state population subject to either a literacy test or a poll tax (or both) that attracted the attention of the 1965 Voting Rights Act. Prior to 1965 this variable is equal to one in Alabama, Georgia, Louisiana, Mississippi, South Carolina, Texas, Virginia and equal to 0.4 and 0.034 in North Carolina and Arizona respectively.[16] As mentioned above, these voting rights restrictions were introduced around the turn of the last century. The data appendix provides detailed sources for each of our variables.

4   Empirical Strategy and Results

We discuss the results in two parts. First, we look for the predicted effect of political competition on policy. In a second step, we investigate whether there is also a reduced form link between political competition and growth.

4.1   Policy

The crucial mechanism highlighted by our model is that political competition changes the incentives of politicians to implement growth-promoting policies. In particular our theoretical model suggests that increases in political competition should make policy choices more pro-business. To examine this link empirically we estimate regressions of the form

$$\tau_{st} = \theta_s + \upsilon_t + \delta\kappa_{st} + \varepsilon_{st} \ , \tag{5}$$

where τ_{st} is a measure of the policy stance in state s at time t and θ_s and υ_t are state and year fixed effects, respectively. We estimate robust standard

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[15]These data were previously used in Dal Bó et al. (2007) and we are grateful to Ernesto Dal Bó for sharing the data with us.

[16]A very similar strategy has previously been used by Husted and Kenny (1997).

errors adjusted for clustering at the state level. As mentioned in the data section, we consider three different measures for τ_{st}: total state tax revenue as a share of personal income, the share of capital outlays in total state expenditure, and whether a state has a Right-to-Work law.

Columns (1), (4) and (7) of Table 1 contain estimates of our basic specification (5) for our three policy measures. We find that strong political competition is indeed associated with pro-business policy choices. In particular, increases in political competition reduces state tax revenue as a share of personal income, increase the share of capital spending in total state spending and also increase the probability that a state has a right-to-work law.

The remaining columns of Table 1 consider two alternative econometric specifications. The large-scale changes in political competition in the US south have obviously been associated with other important changes in the southern economy and society. Two potentially important technological changes were the spread of air conditioning from the early 1920s until the 1960s and rapid technical progress in the agricultural sector, which is disproportionately important in the U.S. south.[17] Furthermore, in the wake of the civil rights movement there has been a general improvement in race relations.

While it is unlikely that there is a relationship with our policy variables, we nonetheless try to capture these wider changes in a non-parametric way by including interactions between the time dummies and an indicator variable for the 16 southern states as defined by the U.S. Census. Columns (2), (5) and (8) show that our estimates of the impact of changes in political competition are very similar in this alternative specification.

The final set of regressions in Table 1 address the possibility of reverse causation from policy to the degree of political competition. To address such endogeneity, which would plausibly bias our estimates downwards, we instrument political competition with the exogenous intervention of the federal government in southern politics through the 1965 Voting Rights Act. In particular, we use as our instrument the variable described at the end of the data section, which prior to 1965 is equal to the share of the state population subject to either a literacy test or a poll tax (or both) that attracted the

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[17]See, for example, Arsenault (1984) for an historical account of the spread of air conditioning and Mitchener and McLean (2004) for an assessment of the importance of air conditioning for southern productivity relative to other factors. Caselli and Coleman (2001) document the importance of technological progress in the agricultural sector for the convergence of the US south.

attention of the 1965 Voting Rights Act.[18] Columns (3), (6) and (9) of Table 1 show that the IV estimates are indeed somewhat larger than our OLS estimates and also highly statistically significant.

Our estimates are not only statistically significant, but also economically important. The OLS estimate of the impact of political competition on the share of state tax revenue in personal income, e.g., suggests that an increase in political competition by about 0.3 – the relevant order of magnitude for most of the southern states – reduced the share of state tax revenue in income by about 1 percentage point relative to a sample mean of 5.7 percent.

Table 2 investigates three additional implications of our theoretical model. Our model predicts that policy choices are shaped by the degree of political competition. While our results so far are consistent with this view, an obvious alternative explanation of our findings could be different policy preferences between Democrats and Republicans. The period of increasing political competition in the US south has also been a period of increased Republican representation among state governors and legislators in the south. Hence, we need to check whether our results do not simply reflect a move to a more Republican policy mix.

Columns (1), (4) and (7) of Table 2 include our measures of the party affiliation of the governor and indicators for which party controls both houses of the state legislators. While these control variables have point estimates which are consistent with commonly held views about the Democratic and Republican party, our estimates of the impact of political competition are quantitatively very similar to our previous estimates and remain statistically significant.

The second and related additional implication of our model concerns the symmetry of the impact of political competition. In the theoretical model both parties change their policy stance in the same way if they are the dominant party. To examine this property of the model we therefore create separate variables for the impact of political competition on Democratic and Republican governors, which are included in columns (2), (5) and (8) of Ta-

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[18]The IV-strategy also addresses another possible bias in the estimate of δ. Our empirical measure of political competition fluctuates substantially from one election to the next and these short-run fluctuations will poorly approximate the underlying degree of political competition, which our model emphasizes. The IV strategy relying on once-and-for-all removals of voting restrictions would remove the downward bias associated with such measurement error.

ble 2.[19] While we cannot reject that the impact of political competition is the same for Democratic and Republican governors, we find that the impact on Democratic governors is estimated substantially more precisely and also tends to be quantitatively more important. These results are consistent with most of the variation in political competition being due to the breakdown of the Democratic monopoly in the U.S. south.

Finally, we take seriously the prediction that political competition has a non-linear effect. According to Proposition 1, we should see small effects on policy both at very low and very high levels of competition. Instead, the main impact should occur at intermediate levels of political competition, when the dominant party starts improving its policy stance. Columns (3), (6) and (9) of Table 2 explore this issue. Specifically, we create binary indicators for values of political competition larger than $-0.10, -0.25$, and -0.4, respectively, and include these, rather than the continuous measure of political competition in our standard specification. Thus, the estimated effect of a change in political completion from below -0.4 into the range -0.10 to -0.25, for example, is the *sum* of the coefficients on the last two indicator variables. The results show that the effect of political competition indeed appears to be non-linear. Quantitatively, the largest improvements in policy due to greater competition typically come about when competition exceeds -0.25.

Taken together, these results support our theory that increased political competition has substantial effects on policy choices and promotes pro-business policies.

4.2 Growth

We now turn to the question whether the effects of political competition on state policies extend to measurable changes in economic performance. In the absence a fully structural model, which would allow us to identify the impact of a range of policies on economic performance, we take the more modest approach of exploring whether there is a reduced-form relationship between economic growth and political competition.

In particular, we estimate the relationship between political competition and economic growth with a standard growth regression of the form

$$g_{st} = \theta_s + \upsilon_t + \beta y_{st-1} + \delta \kappa_{st} + \varepsilon_{st} , \qquad (6)$$

---

[19]We drop the small number of observations with independent governors from these regressions.

where g_{st} is the annual growth rate in state s at time t, θ_s and υ_t are state and year fixed effects, and where y_{st-1} is the usual convergence term allowing for Solow-style convergence of per capita income with $\beta < 0$ indicating income convergence.[20] Our key regressor of interest is again our measure of political competition κ_{st} and we want to test whether $\delta > 0$, i.e. stiffer political competition raises the growth rate of state income.

Table 3 shows results for growth for specifications similar to those that we have already estimated for policy. Column (1) reports the results of OLS estimates of (6) on our basic data set which runs from 1929, the first year for which Census estimates of state personal income are available, to 2001. Consistent with the model predictions, we find a positive association between political competition and growth, which is statistically significant at conventional levels. These results hold up when include south-year interactions and when we instrument political competition with the federal interventions to eliminate voting restrictions. Again, the effect we find is not only statistically significant, but quantitatively important. The IV estimate in column (4) implies that an increase in political competition from -0.3 to zero, which would be typical for many southern US states over the last century, raised long-run personal income per capita by about 15 percent.[21]

Table 4 collects a number of additional results on the link between political competition and growth. Columns (1) through (3), look at the same auxiliary predictions for growth as in the Table 2 policy regressions. The findings are broadly similar: competition, rather than party representation, appears to be the main driver of growth. Equally, we find evidence for the non-linear effect of political competition predicted by the theory. It is striking that growth and policy have so similar determinants. This adds support to the view that the mechanism at work is associated with pro-growth policy.

The theory is based on the idea that greater political competition changes policy so as to allocate resources away from the traditional sector. A reasonable interpretation of the identity of the traditional sector, particularly in the US south, is agriculture. To test this prediction, we thus use the share of non-farm income in state income as the left hand side variable. Column (4) in Table 4 shows that political competition is indeed strongly positively

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[20]There are well-known econometric issues with dynamic panels that include state fixed effects, but the large number of time periods (in most specifications 72) makes us confident that any such bias is of small order. We return to this issue below.

[21]Note that the long-run effect of political competition on income implied by the estimates obtained from (6), is given by: $-\delta/\beta$.

associated with the share of non-farm income in total income.

In column (5), we look at five-year averages of growth, which allows us to smooth out some of the short-term volatility in income. The results are broadly robust with higher growth again being associated with greater political competition. Finally, column (6) investigates the possible bias of estimating with state fixed effects in the presence of a lagged dependent variable. Here, we use the Arellano and Bond GMM 1st difference estimator, as recommended by Caselli, Esquivel and Lefort (1996). The specification uses one additional lag of income as an instrument for the lagged dependent variable. We again find very similar results.

While 1929 is the first year for which Census estimates of state personal income are available, there are widely used estimates of state personal income by Easterlin (1960) for the years 1880, 1900 and 1920.[22] As discussed in the history section and illustrated in Figure 1, this was a period in which political competition in the US south declined sharply after the introduction of voting rights restrictions. The key attraction of the 1880-1920 period is that potentially important omitted variables that may confound our growth estimates for the 1929-2001 period are unlikely to be relevant during this period. For example, between 1880 and 1920 rapid technological change in southern agriculture is absent and air conditioning is still in its infancy. Moreover, race relations are likely relatively unchanged over much of this period.[23]

Table 5 displays our estimation results from this early period. We regress average annual growth over the two 20-year periods against the same covariates as in Tables 3 and 4 (measured as averages over each period). In this extremely short panel, we are unable to include state fixed effects, as this would substantially bias the results in the presence of a lagged dependent variable. Column (1) shows that the correlation between political competition and economic growth reported in Table 3 holds up in the early sample. In column (2), we find that the same is true when we include a dummy for the southern states and south-year interactions. Columns (3) and (4) show that the estimated effect in this period as well, is a competition effect and

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[22]The methodology and data sources behind these estimates differs from the modern estimates and it is therefore not sensible to pool these early income estimates with the later Census estimates.

[23]Logan (1954) analyses the rise in open racism in the US south after the end of the reconstruction and argues that the turn of the last century was probably the low point of race relations in the US south.

not a party effect. Despite a much smaller sample, the estimated results are quantitatively similar to our estimates for the 1929 to 2001 period. The results imply that a decline in political competition of about 0.2, typical of the south over the period 1880 to 1920, would reduce income per capita in the long-run by about 20%.

Taken together, these results suggest that changes in political competition not only change state policy, but also have a quantitatively important impact on economic growth.

5   Concluding Comments

The economic convergence of the U.S. south is a striking feature of 20th century U.S. economic history. This paper emphasizes political convergence, which is linked to economic convergence by convergence in policy. Many of the explanatory factors that could conflate our predicted link from political competition to growth – such as air conditioning, technological progress in the agricultural sector and improved race relations – cannot easily explain a policy change to a more pro-business environment.

We are certainly not claiming that convergence in political competition is the only – or even the main – story explaining southern economic convergence. But it is a striking aspect of U.S. political history that does not seem to have received the attention it deserves, alongside other hypotheses that explain policy and economic outcomes. The evidence presented in our paper suggests that it should be taken seriously. Our theory and empirics explain why southern economic policy appears to have moved in a pro-business direction. Moreover, it is striking that southern growth slowed during the period when political competition diminished between 1880 and 1920, a period that predates many of the structural factors that are often invoked to explain subsequent convergence.

While our evidence is specific to a couple of historical episodes in a single country, it supports a common theme in recent political economics. Even though the U.S. south had institutional arrangements similar to those in the non-south in most relevant dimensions, its lopsided competition supported by various voting restrictions meant that its policies could be tailored to vested interests. That a break-down of monopoly power in politics may have significant consequences for policy and growth is a lesson that should have wider significance.

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6 Theory Appendix

6.1 Proof of Proposition 1

We begin by proving:

Lemma A1: *An equilibrium exists.*

Proof: If $-\kappa \geq \frac{1}{2\xi} + \overline{v} - \underline{v}$, then $1 + T_v(v_D^*) = 0$ or $v_D^* = \underline{v}$ and existence is trivial. Hence, suppose that $-\kappa < \frac{1}{2\xi} + \overline{v} - \underline{v}$. Define $f(x)$ for $x \in [\underline{v}, \overline{v}]$ from:

$$-\left[\frac{1}{2} - \xi\left[-\kappa + x - f(x)\right]\right](1 + T_x(f(x)))$$
$$+\xi\left[\Delta + (f(x) + T(f(x))) - x\right] = 0.$$

Observe that $f(x) > \underline{v}$ for all $x \in [\underline{v}, \overline{v}]$ since $1 + T_v(\underline{v}) = 0$. Now, let:

$$v_R(x) = \begin{cases} \overline{v} & \text{if } f(x) > \overline{v} \\ f(x) & \text{for } f(x) \in (\underline{v}, \overline{v}] \end{cases}.$$

As $v_R(x)$ is everywhere continuous on $[\underline{v}, \overline{v}]$, so is:

$$H(x) = \left[\frac{1}{2} + \xi\left[-\kappa + x - v_R(x)\right]\right](1 + T_x(x)) + \xi\left[\Delta + (x + T(x)) - v_R(x)\right].$$

It is straightforward to check that $H(\underline{v}) > 0$. Now, consider:

$$\begin{aligned} H(\overline{v}) &= \left[\frac{1}{2} + \xi\left[-\kappa + \overline{v} - v_R(\overline{v})\right]\right](1 + T_v(\overline{v})) + \xi\left[\Delta + \overline{v} - v_R(\overline{v})\right] \\ &\leq \left[\frac{1}{2} - \xi\kappa\right](1 + T_v(\overline{v})) + \xi\Delta \qquad \text{by Assumption 1} \\ &< 0 \qquad \text{by Assumption 2 if } -\kappa > 0. \end{aligned}$$

Since $H(\cdot)$ is continuous, there exists (by the intermediate value theorem) a v_D^* such that $H(v_D^*) = 0$.■

Define

$$-\kappa_L = \frac{1}{2\xi} + \overline{v} - \underline{v}$$

as the level of κ which guarantees victory to the Democrats in this circumstance.

Lemma A2: *If $\kappa \leq \kappa_L$ the Democratic party wins for sure and picks $\tau = 1$ and $v_D^* = \underline{v}$.*

Proof: This follows by observing that for $\kappa \leq \kappa_L$, the Democrats win for sure and hence pick their ideal policy.∎

Now define:

$$-\kappa_H = -\kappa_L + \frac{\Delta}{(1 + T_v(\bar{v}))} .$$

Lemma A.3: *For $\kappa \in (\kappa_L, \kappa_H)$, $\underline{v} < v_D^* < \bar{v} = v_R^*$.*

Proof: First, we show for all $\kappa < \kappa_H$, the Republicans will pick $v_R = \bar{v}$. To see this, observe that at $v_R = \bar{v}$ and $v_D = \underline{v}$, the change in the payoff of the Republican party from a small increase in v is:

$$\left[\frac{1}{2} - \xi\left[-\kappa + \underline{v} - \bar{v}\right]\right](1 + T_v(\bar{v})) + \xi\left[\Delta + \bar{v} - \underline{v}\right] >$$

$$\left[\frac{1}{2} - \xi\left[-\kappa_H + \underline{v} - \bar{v}\right]\right](1 + T_v(\bar{v})) + \xi\Delta = 0$$

from the definition of κ_L. Moreover, Assumption 1 implies that this inequality holds for all $v_D > \underline{v}$.

Second, we show that it is optimal for the Democrats to pick $v_D^* < \bar{v}$. Suppose not, such that $v_D = \bar{v}$. Then, a small increase in v_D alters the Democratic payoff by:

$$\left[\frac{1}{2} - \xi\kappa\right](1 + T_v(\bar{v})) + \xi\Delta < \frac{(1 + T_v(\bar{v}))}{2} + \xi\Delta < 0 ,$$

where the last inequality follows from Assumption 2. Thus, the best response for the Democrats must be $v_D < \bar{v}$. To see that $v_D > \underline{v}$, observe that $1 + T_v(\underline{v}) = 0$. To prove the last statement, observe that $v_D(\bar{v})$ is defined from:

$$-\left[\frac{1}{2} + \xi\left[\kappa + v_D(\bar{v}, \kappa) - \bar{v}\right]\right]((1 + T_v(v_D(\bar{v}, \kappa)))) \qquad (7)$$

$$= \xi\left[\Delta + v_D(\bar{v}, \kappa) + T(v_D(\bar{v}, \kappa)) - \bar{v}\right] . \qquad (8)$$

At any point where this equality holds, $((1 + T_v(v_D(\bar{v}, \kappa)))) < 0$. Moreover, a maximum exists on $[\underline{v}, \bar{v}]$. Elementary arguments now show that, at any point satisfying (7), $v_D(\bar{v}, \kappa)$ is increasing in κ.∎

Lemma A.4: *There exists $\kappa > \kappa_H$, for which we have an interior equilibrium with $v_p^* \in (\underline{v}, \bar{v})$ for $p \in \{D, R\}$.*

Proof: For $\kappa = 0$, Assumption 2 implies that both parties will pick $v_p^* < \overline{v}$ for $p \in \{D, R\}$. Moreover, since strategies are continuous in κ, this holds for some $\kappa < 0$. ∎

Collecting the results in Lemmas A.1 through A.4 above, we obtain the comparative statics as stated in Proposition 1.∎

7 Data Appendix

Taxation and capital spending as a share of total spending: These variables were supplied by the Bureau of the Census in electronic format and were originally published in the annual publication *State Government Finances.* The classification of state government revenue and spending was substantially revised in 1950 and we use the data for the period 1950 to 2001.

Right-to-Work Laws: The spread of right-to-work laws is documented by the National Right to Work Legal Defence Foundation at http://www.nrtw.org/.

Total personal income and the share of non-farm income: Estimates of state personal income and its components are available from the Bureau of Economic Analysis for the period after 1929. For the period before 1929 we use the state personal income data for 1880, 1900 and 1920 from Easterlin (1960).

Party affiliation of the governor: This information was obtained from the National Governors Association at www.nga.org. Our indicator variable for the party affiliation of the governor is equal to one if the governor is a Democrat, equal to zero if he is a Republican and missing in the case of independents.

Composition of state legislatures: Information on the composition of the state upper and lower house was taken from Dal Bó et al. (2007) and was provided by Ernesto Dal Bo in electronic form. The data cover the period from 1880 to 1996 for most states.

Voting Rights Act: Information on the history of the voting rights act, the timing of the introduction and removal of literacy tests and poll taxes was obtained from Davidson and Grofman (1994) and Ogden (1958).

Table 1 -- Political Competition and Policy: Basic Results

	Total tax revenue as a % of state income	Total tax revenue as a % of state income	Total tax revenue as a % of state income	Capital outlays as a % of total state expenditure	Capital outlays as a % of total state expenditure	Capital outlays as a % of total state expenditure	Right-to-Work laws	Right-to-Work laws	Right-to-Work laws
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Political competition	-3.011***	-2.331***	-4.737***	5.010***	5.100**	8.494**	0.972***	0.814***	1.510***
	(0.575)	(0.651)	(1.389)	(1.671)	(2.467)	(3.798)	(0.222)	(0.242)	(0.318)
South × year interactions	No	Yes	No	No	Yes	No	No	Yes	No
Method	OLS	OLS	IV	OLS	OLS	IV	OLS	OLS	IV
Sample	1950-2001	1950-2001	1950-2001	1950-2001	1950-2001	1950-2001	1929-2001	1929-2001	1929-2001
Observations	2496	2496	2496	2496	2496	2496	3504	3504	3504
R-squared	0.827	0.837	0.821	0.836	0.844	0.835	0.722	0.730	0.714

Notes: All regressions include state and year fixed effects as additional control variables. In parenthesis are standard errors which are robust against heterskedasticity and adjustered for clustering at the state level. * indicates significance at the 10 percent level, ** significance at the 5 percent level and *** significance at the 1 percent level.

Table 2 -- Political Competition and Policy: Additional Results

	Total tax revenue as a % of state income	Total tax revenue as a % of state income	Total tax revenue as a % of state income	Capital outlays as a % of total state expenditure	Capital outlays as a % of total state expenditure	Capital outlays as a % of total state expenditure	Right-to-Work laws	Right-to-Work laws	Right-to-Work laws
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Political competition	-2.340***			5.309**			0.788***		
	(0.661)			(2.615)			(0.241)		
Democrats control state house and senate	0.151*			-0.689**			-0.076**		
	(0.088)			(0.337)			(0.030)		
Republicans control state house and senate	-0.137			0.095			0.090**		
	(0.104)			(0.502)			(0.036)		
Democratic Governor	0.034	-0.122*		-0.217	0.050		-0.010	0.052**	
	(0.054)	(0.063)		(0.232)	(0.333)		(0.017)	(0.023)	
Political competition × Democratic Governor		-2.837***			6.003**			1.124***	
		(0.810)			(2.821)			(0.248)	
Political competition × Republican Governor		-0.467			1.618			-0.243	
		(0.600)			(2.989)			(0.307)	
Political Competiton > -0.10			-0.172***			0.445*			0.033
			(0.058)			(0.237)			(0.029)
Political Competiton > -0.25			-0.546**			1.071			0.255***
			(0.223)			(0.909)			(0.078)
Political Competiton > -0.40			-0.420			1.016			0.136
			(0.275)			(0.752)			(0.102)
South × year interactions	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Method	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Sample	1950-2001	1950-2001	1950-2001	1950-2001	1950-2001	1950-2001	1929-2001	1929-2001	1929-2001
Observations	2243	2478	2496	2243	2478	2496	3232	3467	3504
R-squared	0.842	0.839	0.837	0.836	0.843	0.844	0.730	0.740	0.734

Notes: All regressions include state and year fixed effects as additional control variables. In parenthesis are standard errors which are robust against heterskedasticity and adjustered for clustering at the state level. * indicates significance at the 10 percent level, ** significance at the 5 percent level and *** significance at the 1 percent level.

Table 3 -- Political Competition and Economic Growth: Basic Results

	Growth of peronal income (1)	Growth of peronal income (2)	Growth of peronal income (3)	Growth of peronal income (4)
Political comptition	0.045***	0.028**	0.083***	0.051**
	(0.013)	(0.013)	(0.021)	(0.023)
Lagged personal income	-0.095***	-0.104***	-0.105***	-0.108***
	(0.014)	(0.015)	(0.015)	(0.014)
South × year interactions	No	Yes	No	Yes
First stage F-statistic			50.12	24.81
Method	OLS	OLS	IV	IV
Sample	1929-2001	1929-2001	1929-2001	1929-2001
Observations	3456	3456	3456	3456
R-squared	0.782	0.799	0.781	0.798

Notes: All regressions include state and year fixed effects as additional explanatory variables. In parenthesis are standard errors which are robust against heterskedasticity and adjustered for clustering at the state level. * indicates significance at the 10 percent level, ** significance at the 5 percent level and *** significance at the 1 percent level.

Table 4 -- Political Competition and Growth: Additional Results

|	Growth of personal income (1)	Growth of personal income (2)	Growth of personal income (3)	Share of non-farm income (4)	Growth of personal income (5)	Growth of personal income (6)
Political competition	0.045***	0.028**	0.083***	0.051**	0.077**	0.169**
	(0.013)	(0.013)	(0.021)	(0.023)	(0.036)	(0.079)
Democrats control state house and senate	0.002				0.022***	0.012*
	(0.002)				(0.007)	(0.006)
Republicans control state house and senate	0.004				0.005	0.009
	(0.003)				(0.008)	(0.008)
Democratic Governor	0.002	0.002			0.014***	0.006
	(0.002)	(0.002)			(0.005)	(0.005)
Political competition × Democratic Governor		0.029**				
		(0.014)				
Political competition × Republican Governor		0.023				
		(0.035)				
Political Competiton > -0.10			-0.000			
			(0.002)			
Political Competiton > -0.25			0.008*			
			(0.004)			
Political Competiton > -0.40			0.007			
			(0.006)			
Lagged Personal Income	-0.106***	-0.101***	-0.104***		-0.343***	-0.889
	(0.015)	(0.015)	(0.015)		(0.039)	(0.043)
South × year interactions	Yes	Yes	Yes	Yes	Yes	Yes
Method	OLS	OLS	OLS	OLS	Five-year averages	Five-year averages & GMM
Sample	1929-2001	1929-2001	1929-1996	1929-2001	1930-1999	1930-1999
Observations	3185	3420	3456	3456	623	527
R-squared	0.798	0.797	0.799	0.768	0.915	

Notes: All regressions include state and year fixed effects as additional control variables. In parenthesis are standard errors which are robust against heterskedasticity and adjustered for clustering at the state level. * indicates significance at the 10 percent level, ** significance at the 5 percent level and *** significance at the 1 percent level.

Table 5 -- Political Competition and Economic Growth between 1880 and 1920

	Growth of peronal income (1)	Growth of peronal income (2)	Growth of peronal income (3)	Growth of peronal income (4)
Political comptition	0.016** (0.007)	0.020*** (0.007)	0.021*** (0.007)	
Democrats control state house and senate			0.005 (0.008)	
Republicans control state house and senate			0.008 (0.006)	
Governor is a Democrat			-0.002 (0.002)	-0.004* (0.002)
Political competition × Democratic Governor				0.018** (0.008)
Political competition × Republican Governor				0.032 (0.020)
Lagged personal income	-0.015*** (0.002)	-0.017*** (0.002)	-0.016*** (0.002)	-0.016*** (0.002)
South × year interactions	No	Yes	Yes	Yes
Method	OLS	OLS	OLS	OLS
Sample	1880, 1900, 1920	1880, 1900, 1920	1880, 1900, 1920	1880, 1900, 1920
Observations	93	93	93	93
R-squared	0.480	0.613	0.642	0.626

Notes: All regressions include time fixed effects as additional explanatory variables. The regressions in Columns (2) to (4) also include an indicator for the US south and an interaction between this indicator and the time dummies as additional regressors. In parenthesis are standard errors which are robust against heterskedasticity and adjustered for clustering at the state level. * indicates significance at the 10 percent level, ** significance at the 5 percent level and *** significance at the 1 percent level.

Figure 1: Political Competition by Decades
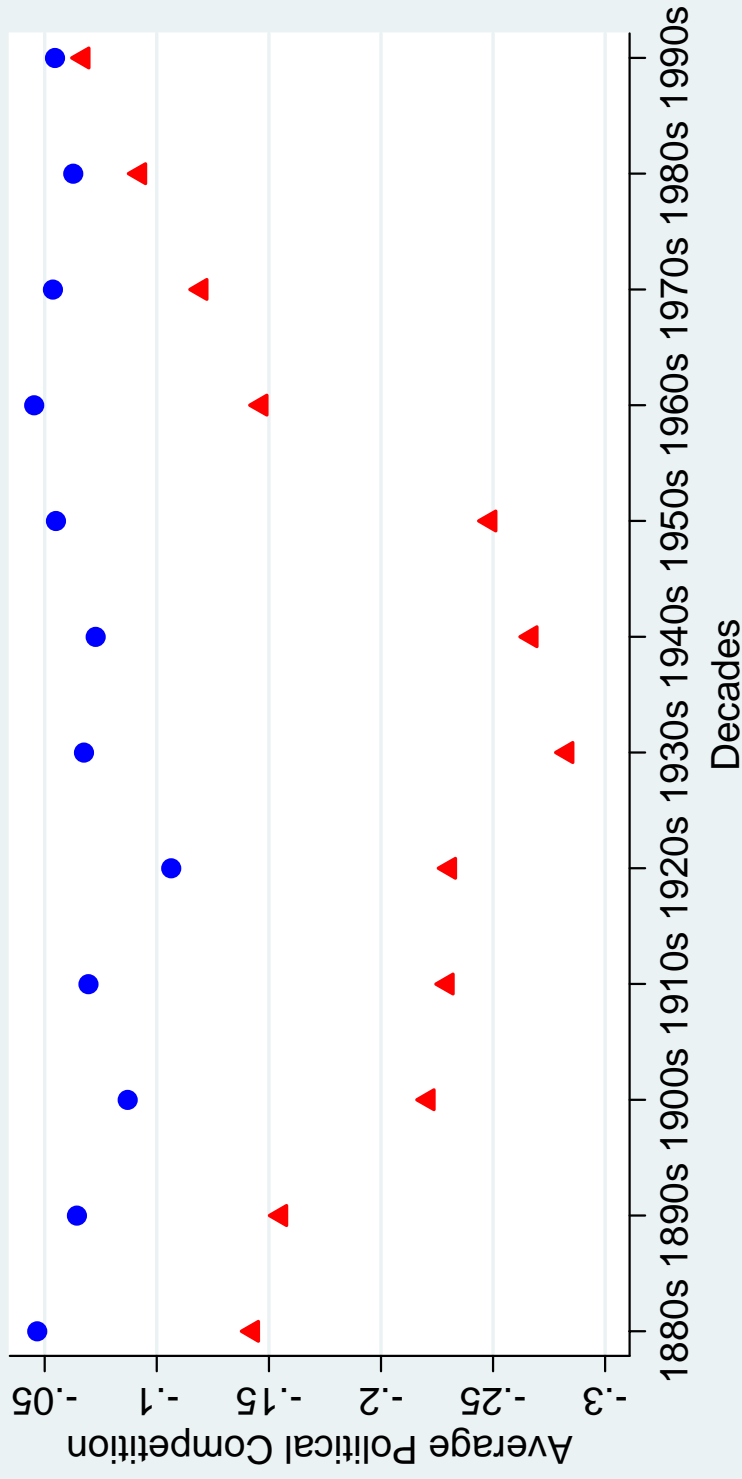
Note: Each observation is a ten year average of our main measure of political competition. See the main text for further details.

Figure 2: Political Competition Calibrated from NES Surveys