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Political Dominance and Economic Performance:The Case of the American States

Rita Ray
University of Miami, ritaecon@gmail.com

UNIVERSITY OF MIAMI

POLITICAL DOMINANCE AND ECONOMIC PERFORMANCE:
THE CASE OF THE AMERICAN STATES

By

Rita Ray

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POLITICAL DOMINANCE AND ECONOMIC PERFORMANCE:
THE CASE OF THE AMERICAN STATES

Rita Ray

Approved:

_____   _____
Luis Locay, Ph.D.   Terri A. Scandura, Ph.D.
Associate Professor of Economics   Dean of the Graduate School

_____   _____
Luca Bossi, Ph.D.   Christopher Cotton, Ph.D.
Assistant Professor of Economics   Assistant Professor of Economics

_____
Carlos Seiglie, Ph.D.
Professor of Economics
Rutgers University - Newark

RAY, RITA   (Ph.D., Economics)

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This dissertation contributes the literature by developing a new method of measuring political dominance combining the legislative and executive branches in bi-party political system and by investigating the effect of political dominance on economic performance using panel data for forty-six states of United States for the period 1937-1996. Economic performance is measured by the relative level of per-capita personal income and growth of per-capita personal income. This dissertation finds that political dominance has significant negative effects on the level of relative per-capita personal income and on the growth of per-capita personal income. Additionally, this paper modifies the two existing measures of political dominance using exclusively seat share of legislative branches or governor's vote share and examines the short run effect of political dominance on economic performance using these modified measures. It finds that political dominance using exclusively seat share of legislative branches or governor's vote share either overestimates or underestimates the effect of political dominance on economic performance.

DEDICATION

To My Parents

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Chapter 1

Introduction

This dissertation explores the connection between political competition and economic performance. More explicitly, I investigate whether a lack of political competition - or its equivalent, increased dominance by one political party - has adverse consequences for voters. This is a topic that has been studied much less than its market counterpart – the effect of competition on consumer welfare. Until recently, the extensive empirical literature on the relationship between political variables and economic performance looked mostly at the connection between economic growth and (1) measures of democracy, (2) measures of government stability, (3) indicators of political violence, (4) indicators of policy volatility, and (5) subjective perceptions of the political environment. This situation changed with two recent attempts to estimate the effect of political dominance in a bi-party system on fiscal policy and economic performance. Besley and Case (2003) find that the degree of dominance of state legislatures by a political party directly affects state tax rates and levels of government spending. Besley, Persson and Sturm (2005) find that greater dominance of state executive offices adversely affect economic performance.

This dissertation investigates the effect of political dominance on economic performance, where performance is measured by the relative level of real per-capita personal income and by the growth of real per-capita personal income for forty-six states of United States form 1937-1997. In doing so, I extend the pioneering work of Besley and Case (2003) and Besley et al (2005) in various ways. First, I construct a new measure of political dominance that includes both the executive and legislative branches.

Second, among the econometric procedures used I include recently developed techniques for dealing with panel data. Third, I allow for the effects of dominance to vary by political party. Finally, I employ a broader, and I believe superior, set of explanatory variables, including instruments, than previously used.

This dissertation is organized as follows. Chapter 2 provides a brief review of the literature. The measure of political dominance used in this work is introduced in Chapter 3. It is used in the following chapter to provide some stylized facts concerning political dominance and economic performance. Chapter 5 estimates the relationship between political dominance and relative personal income. The first part of that chapter treats political dominance as exogenous, while in the second part it is made endogenous. Chapter 6 estimates the relationship between political dominance and growth of real per-capita personal income. I then explore the extent to which convergence of income among the states is due to declining and converging levels of political dominance. In Chapter 7 I repeat some of the estimation of the previous chapter using political dominance in only one branch of government. I conclude in Chapter 8 with a summary of my results.

Chapter 2

Review of the Literature

The relationship between electoral competition and voters' welfare is an old topic in political economy and public choice. There are two distinct schools of thought regarding this issue. The Virginia School of public choice considers government as a rent-seeking, revenue maximizing political institution, and develops models on the conflict of interest between political representatives and voters. The Chicago School of public choice, on the other hand, argues that electoral competition between political parties generates efficient outcomes in political markets and promotes wealth maximizing outcomes.

The Virginia School's view on political competition is most clearly developed in Brennan and Buchanan (1980). They view political parties as agents and voters as principals. They assume voters are either uninformed or less informed regarding the objectives and the economic platforms of the political parties. Moreover, voters consider both economic and ideological factors while casting their votes. Ideological bias, in addition to less than fully informed voters, generates inefficient outcomes and the potential for opportunistic behavior on the part of politicians.

The Chicago School disagrees with this inefficient outcome in the political competition. They believe that political competition, reputation, monitoring and optimal contract design are effective measures to reduce opportunistic behavior in the political marketplace and produce efficient and wealth maximizing outcomes. Stigler (1972) argues that political competition and economic competition are similar in many respects.

If the objective of political market is to maximize wealth, then political parties will be rewarded for efficient behaviors. In other words, if political representatives do not keep their past promises, it destroys their reputations, making it less likely for them to be reelected. Stigler's argument has been strengthened by Becker (1983, 1985), who shows that competition among pressure groups raises efficiency.

The empirical works of Besley and Case (2003) and Besley, Persson and Strum (2005) examine the effect of political competition (dominance) on policy outcomes and economic performance. Besley and Case (2003) investigate the relationship across states between political competition (dominance) in state legislatures and various government policies that may have affect economic performance, while Besley, Persson and Strum (2005) study the effect of political competition on state economic policy and economic growth. Since my work expands on these two papers, it will be useful to discuss them a greater length.

Besley and Case (2003) examine how political competition in state legislatures affects tax policy, government spending and other government policies that may affect the economic performance for forty eight states for the time period 1950-1998. To do this they construct a measure of political competition that is the product of minus one and the absolute value of the difference between 0.5 and the Democratic Party's share of seats in each house of the state legislatures. Removing the minus one converts the Besley and case (2003) political competition into one of political dominance. Let DU_{it} and DL_{it} be the Democratic Party's share of seats in the upper and lower houses, respectively, in state i and period t, where t represents one year. The measure of political dominance in state

legislatures in state i and period t, pd_{it}, corresponding to Besley and case (2003) measure of political competition is

$$pd_{it} = |DU_{it} - 0.5||DL_{it} - 0.5|$$

Controlling for year and state effects, as well as state income and demographic factors Besley and Case (2003) find that greater political dominance in the state legislature results in higher taxes and workers compensation but lower total spending and family assistance (all in per-capita terms).

One problem with the Besley and Case (2003) measure of political dominance is that any level of political dominance is consistent with one party controlling the lower house and the other party the upper house, or one party controlling both houses. We would expect, however, that when one party controls both houses that political dominance would be higher. When each party controls one house, it is not clear that larger values of this measure even represent increases in political dominance. To account for this, the authors include and indicator variable for whether or not both houses are controlled by the Democratic Party. Unfortunately, this variable confounds party with political dominance effects. In any case, they find that the effects of political dominance when the Democratic Party does not control both houses to be quite small for all policy variables. Increasing the share of the dominant party in each house from 50% to 60%, for example, would raise taxes in 1982 dollars by only $1.01 per person, or about 0.62% of per capita state taxes in 1950 and 0.14% in 1990.

Besley et al (2008) investigates the effect of political dominance on economic policy and growth. Their paper has two parts. The first part develops a two period model of an economy where redistribution can reduce efficiency. The second part estimates the effect of political dominance on economic policy and growth using data for forty-eight states over the time-period 1950-2001.

In the model investment takes place in the first period, and the return to that investment in the second period depends on redistributive government policy, such as income taxes. The revenue from such a policy is distributed to members of the ruling party. The redistributive policy reduces overall surplus, but generates a net benefit to the citizens who receive the rent, creating a conflict of interest between recipients and non-recipients.

On the political side of the model there two parties (Democratic and Republican) and three types of voters: Democrats, Republicans and independents. The Democrats and Republicans are assumed to be committed voters who prefer their respective party for non-economic reasons. Committed voters of the winning party are the beneficiaries of the government's redistributive policies. Independent voters are swing voters who can be swayed by the two parties proposed policies. Since they are not beneficiaries of redistribution, all else the same they prefer less redistribution. The political parties play a simultaneous move game where they maximize their expected payoffs, taking each others platforms as given. The Nash equilibrium determines the party platforms, and along with a random shock to the political preferences of independents that is revealed after all decisions have been made, the election outcome, and consequently the economic results.

Over a certain range a more intensive redistribution policy will benefit a party if it wins, but reduces it chances of winning by reducing its support among independents.

The second part of their paper examines the effect of state political dominance on state economic policy and growth. Their measure of political dominance is the absolute value of the difference between 0.5 and the fraction of a broad set of directly elected state executive offices held my members of the Democratic Party. As measures of state economic policy they use 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. First, they treat political dominance as exogenous and use OLS estimation to find the effect of political dominance on state economic policy. They find that political dominance encourages anti-growth policy choices. That is, the higher the value of their political dominance measure the greater is state tax revenue as a share of personal income, the smaller is the share of capital spending in total state spending, and the more likely a state is to have a right-to-work law. Second, they treat political dominance as endogenous, using the presence of a literacy test and poll taxes as instruments for political dominance. Treating political dominance as endogenous yields similar results, though the coefficients of the instrumental variable estimates are larger than for OLS.

Besley et al (2005) also investigate the effect of political dominance directly on state economic growth. Here they also first treat political dominance as exogenous and use OLS. They find that a one percent increase in political dominance reduces growth by 0.04 percent. Treating political dominance as endogenous, and using literacy tests and poll taxes as instruments, they find that a one percent increase in political dominance reduces growth by 0.08 percent and this result is statistically significant.

Third, they do not examine the effect of political dominance on the level of income. I examine the effect of political dominance on the level of income. Real per capita personal income is not stationary over time. When considering income levels, as opposed to growth, I use relative income levels to avoid this problem. Another econometric problem with the existing literature is that the period of time used is a single year. Since elections do not take place every year, using a single year as the period of analysis introduces a specific form of serial correlation which is not addressed. To mitigate this problem I define a period as the four year average of annual data starting 1937. Therefore, a period may take one or two gubernatorial election cycles depending on the state election year and time length of state election.[1] Fifth, neither of the two studies cited above allows for there to be a party effect directly. The Democratic Party, for example, had near monopoly power for a long time in US 'south' to a degree not matched by either party anywhere else in the country. Many of those southern states were also among the poorest in the nation with respect to per-capita income. Without including a measure of which party is in power, one may incorrectly attribute a party effect to political dominance. Finally, I use a broader set of explanatory variables, including instruments, than has been used in previous work. Besley et al (2005) for example, uses the existence of poll taxes and literacy tests as instruments. These two instruments are binary variables, and the measures they represent were never implemented in most states. Their value is probably limited to explaining the decline in political dominance in the South, and its higher level in that region compared to the rest of the country.

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[1] Some states have gubernatorial election every four year, some for every two year.

Chapter 3

A New Measure of Political Dominance

Existing measures of political dominance used in Besley and Case (2003) and Besley et al (2008) have several limitations. First, the focus on only one branch of government may give a misleading impression of the degree of political dominance if there is competition between the legislative and executive branches. Second, the measure used in Besley et al (2008) gives equal weight to all elected executive offices, while I believe the governorship is what really matters. Third, for empirical work a period should be greater than one year, since state-wide elections are not held on a yearly basis.

In this section I construct a measure of political dominance that includes both the legislative and executive branches, and that for the latter considers only the governorship. For the legislature I followed previous work and use a party's share of seats in state houses to measure how dominant it is. That measure is obviously not possible for the governorship, so instead I used the share of the popular vote from the last election received by a party's candidate. The more difficult issue is how to combine the different measures of dominance in the legislature and the executive into one single measure.

Let DU_{it} (RU_{it}) DL_{it} (RL_{it}), and DG_{it} (RG_{it}) represent the Democrats' (Republicans') share of seats in the upper and lower houses of the state legislature, and the share of votes in the last gubernatorial election, respectively, in state i over four-year period t. Consider the following potential measure of political:

$$pd_{it} = \left(\left[\beta \left(\alpha DU_{it}^{\rho} + (1-\alpha) DL_{it}^{\rho} \right)^{\frac{\gamma}{\rho}} + (1-\beta) DG_{it}^{\gamma} \right]^{\frac{1}{\gamma}} - 0.5 \right)^2$$

To obtain estimates of the parameters α, β, ρ and γ, I included pd_{it} as an explanatory variable, along with others described in chapter 5, in a non-linear pooled least squares regression with real personal per capita income as the dependent variable. The program did not converge, the elasticities of substitution between DU_{it}, DL_{it}, and DG_{it} tending to infinity. This is probably due to (1) there being considerable substitution of political dominance across the two state houses and the governorship, and (2) a high degree of correlation between DU_{it}, DL_{it}, and DG_{it}. In fact the correlation between DU_{it} and DL_{it} is 0.95, and between $(DU_{it} + DL_{it})$ and DG_{it} it is 062.

Consequently I settled on a simple measure that combines the share of seats in both houses of state legislatures with the vote share in the gubernatorial election, and that assumes that political dominance is perfectly substitutable across the two houses of the legislature and the executive branch. Explicitly, the measure of political dominance that I use is defined as follows:

(1) $$pd_{it} = \left(\frac{DU_{it} + DL_{it} + DG_{it}}{DU_{it} + DL_{it} + DG_{it} + RU_{it} + RL_{it} + RG_{it}} - 0.5\right)^2$$

As mentioned above, a period is defined as four years, so that the seat and vote shares are four year averages of annual data. Note that pd_{it} lies between zero and 0.25 and is party-neutral. Higher values of pd_{it} represent more political dominance.[2] In this measure of political dominance I put equal weight on house of the legislature and the governorship. The gubernatorial vote share has, therefore, a weight of one third. In the empirical work of Chapter 7 I consider different measures of political dominance. In one

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[2] I have taken the quadratic form to measure the political dominance instead of the customary absolute value because it is differentiable at zero, and thus may be easier to instrument when it is treated as endogenous.

I place equal weight on the combined houses of the legislature and the executive branch. I also separate political dominance in the legislature from that of the executive, and estimate their effects on growth, separately and jointly as two distinct measures.

Chapter 4

Stylized Facts

In this section I provide an overview of political dominance and economic performance across the states and over time. I use the U.S. for my study for three reasons. First, the U.S. has a federal system where state governments have real power in setting public policies. Second, U.S. data are of good quality and available for a long period of time. Third, in the U.S. third parties are not very significant, making the measurement of political dominance more straightforward than in a country with multiple parties. I use the panel data for forty six states of United States between 1937 and 1996. The description and sources of data has been explained in data appendix.

4.1 Political Dominance Over Time

I begin by looking at the average level of state political dominance over time. The new measure of political dominance given in (1) is used everywhere in this section. Column 1 of Table 1 presents the average level of state political dominance for the entire country by twelve year periods.[3] As can be seen, political dominance fell from a high of 0.08 in 1937-1946 to a low of 0.02 in 1985 -1996. Most of this drop is due to the decline in the dominant position of the Democratic Party in the South[4]. This can be seen in columns 2 and 3 of Table 1, where using Census definitions the sample has been divided into South and non-South. Political dominance in the South fell sharply over time, from 0.15 to 0.04, whereas for the non-South it went from 0.04 to 0.01, staying almost constant

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[3] A twelve year interval was chosen because it includes three four-year periods.
[4] Table 23 of Chapter 11 reports the result of the effect political dominance on the growth of per-capita personal income for non-South.

from the mid 1950s on. At its lowest point in the study period, 1985-1996, political dominance in the South was about as high as it had been in the non-South at its highest point in 1937-48.[5]

4.2 Political Dominance and Relative Income

Let us next turn to the relationship between political dominance and economic performance. Table 2 shows the difference in the average level of political dominance between the South and the non-South, and the relative personal income[6] for the South by twelve year periods. As can be seen from column 4 of Table 2, over the entire period political dominance in the South fell relative to the non-South. The difference in political dominance between the two regions fell from 0.12 in 1937-1960 to 0.03 in 1985-1996. This fall in political dominance was accompanied by an increase of relative income in the South from 0.75 in 1937-1948 to 0.93 in 1985-1996. Figure 1 plots the average relative state personal income against the average level of state political dominance over the entire period for each state. It shows a strong negative relationship (correlation coefficient is equal to -0.67) between political dominance and relative income over the entire period.

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[5] The average level of state political dominance in South is higher compare to non-South for each twelve year period. For example the average level of state political dominance in South for the time period 1949-1960 is 0.142. The average democratic share in lower house, upper house and governor are 0.931, 0.921 and 0.780 respectively in the South between 1949-1960. Therefore, average level of political dominance is

$$\left(\left(\frac{(0.931 + 0.921 + 0.78)}{3}\right) - 0.5\right)^2 \approx 0.142$$

Let me provide some examples of democratic share in lower house, upper house and governor in the South. Mississippi and South Carolina's average democratic share in upper house and lower house are 100% between 1949 and 1960. Democratic governor's vote share is 99% and 100% respectively for these states in this time interval.

[6] Relative personal income is calculated here as the ratio of per capita personal income in a state divided by the national average of per capita personal income.

Figure 2 plots the average level of political dominance for each twelve year period. Figure 3 plots the average level of political dominance, average level of political dominance for south and non-south for the each twelve year period. Figure 4 and Figure 5 depict the average relative personal income against the average level of political dominance for south and non-south respectively.

4.3 Political Dominance and Growth

Table 3 shows the relationship between political dominance and growth of personal income over the entire period for the country as whole. As can be seen, the previously documented decline in political dominance is accompanied by declining growth rates. During each of the first three periods, 1937-72, growth rates were equal to or exceeded 2%, while after 1972 they remained below 1%.. The pattern of declining growth rates occurred both in the South and the non-South as can be seen in columns 3 and 4 of Table 4. Figures 6- 8 show the relationship between political dominance and growth for each twelve year period for the entire forty-six states, south and non-south respectively.

4.4   Tables

Table 1: Political Dominance Over Time			
Period	Political Dominance (All)	Political Dominance (South)	Political Dominance (Non-South)
1937-1948	0.078	0.154	0.038
1949-1960	0.066	0.142	0.025
1961-1972	0.041	0.097	0.010
1973-1984	0.034	0.074	0.013
1985-1996	0.018	0.036	0.009

Table 2: Political Dominance and Relative Income over Time: South and Non-South				
Period	Political Dominance (South)	Political Dominance (Non-South)	Difference in Political Dominance Between South and non-South	Relative Income (South)
1937-1948	0.154	0.038	0.116	0.747
1949-1960	0.142	0.025	0.117	0.815
1961-1972	0.097	0.010	0.087	0.864
1973-1984	0.074	0.013	0.061	0.910
1985-1996	0.036	0.009	0.027	0.927

Table 3: Political Dominance and Growth Over Time

Period	Political Dominance (All)	Growth (All)
1937-1948	0.078	0.025
1949-1960	0.066	0.020
1961-1972	0.041	0.026
1973-1984	0.034	0.006
1985-1996	0.018	0.008

Table 4: Political Dominance and Growth Over Time: South and Non-South

Period	Political Dominance (South)	Growth (South)	Political Dominance (Non-South)	Growth (Non-South)
1937-1948	0.154	0.029	0.029	0.022
1949-1960	0.142	0.022	0.031	0.019
1961-1972	0.097	0.030	0.009	0.023
1973-1984	0.074	0.009	0.008	0.004
1985-1996	0.036	0.009	0.009	0.008

4.5 Figures
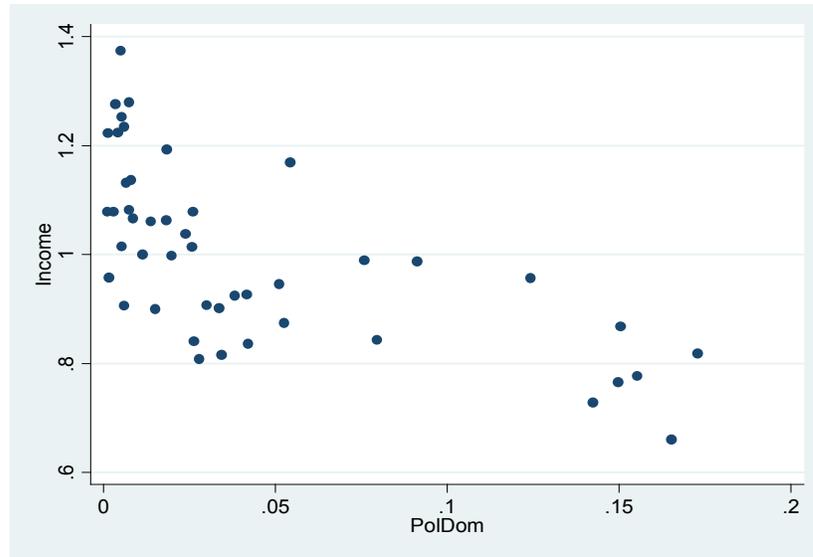
Figure 1: Political Dominance and Relative Income
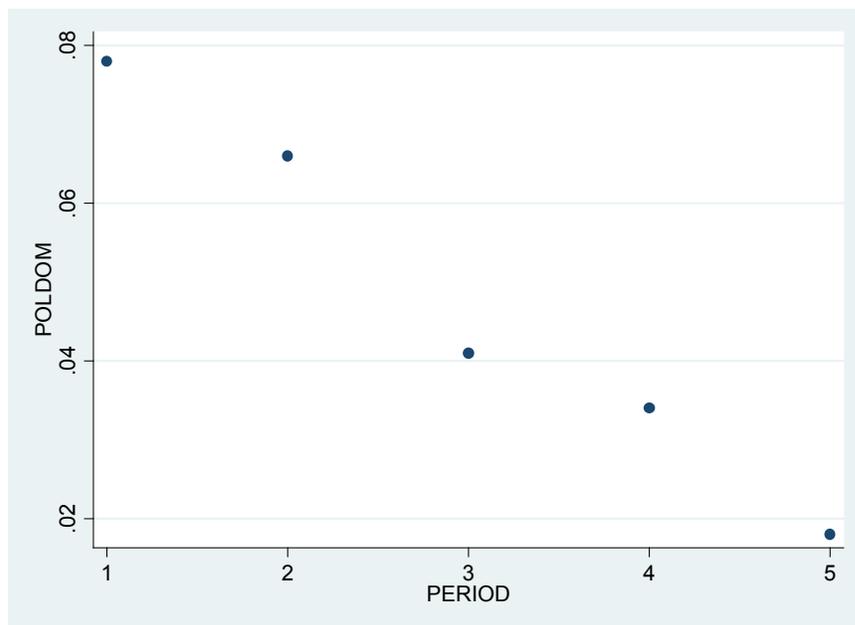
Figure 2: Political Dominance Overtime
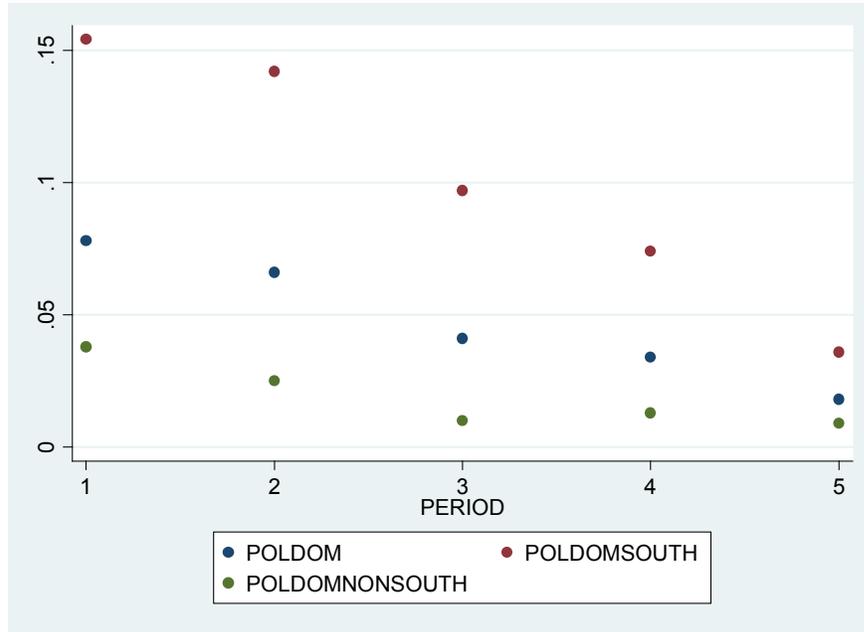
Figure 3: Political Dominance, Political Dominance South, Political Dominance Non-South
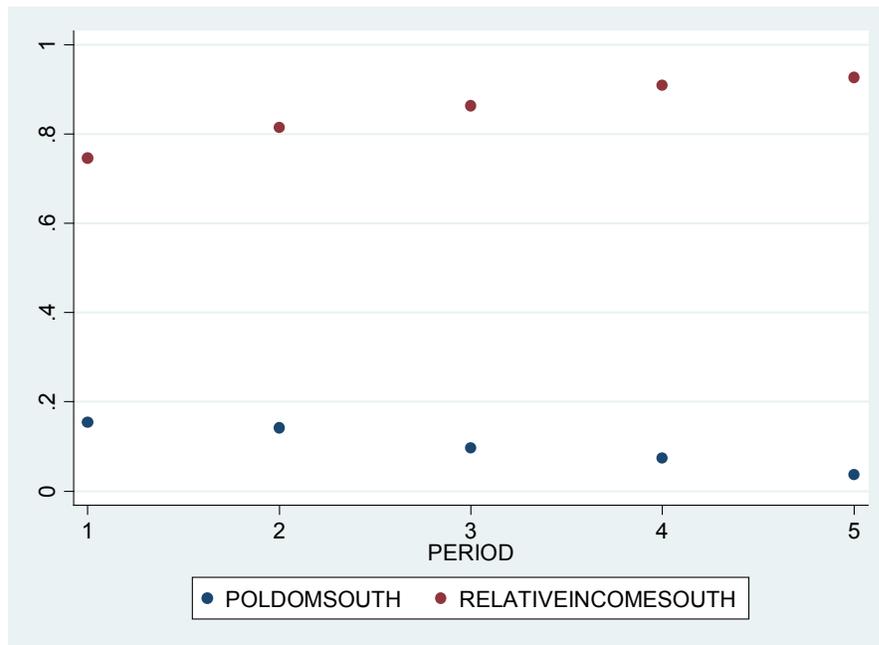
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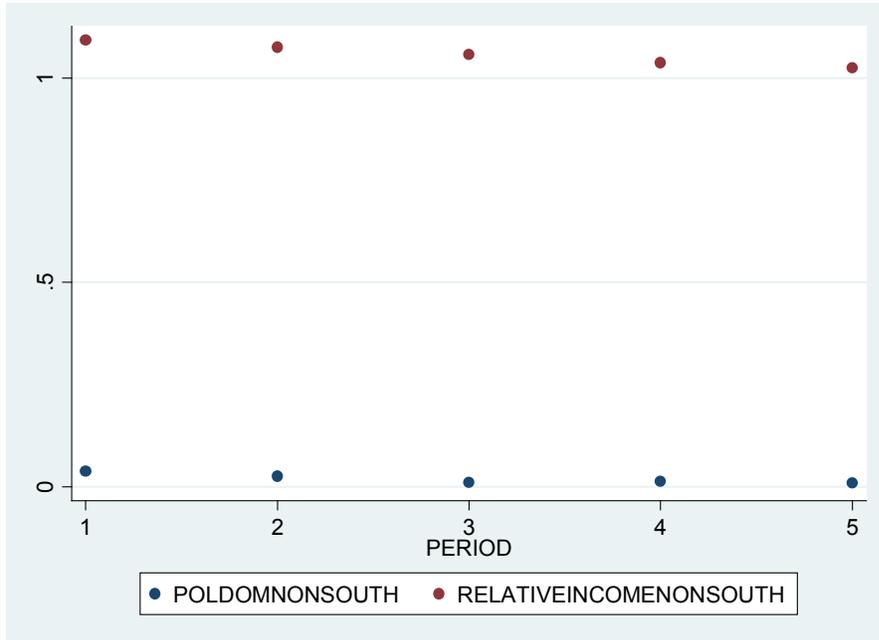
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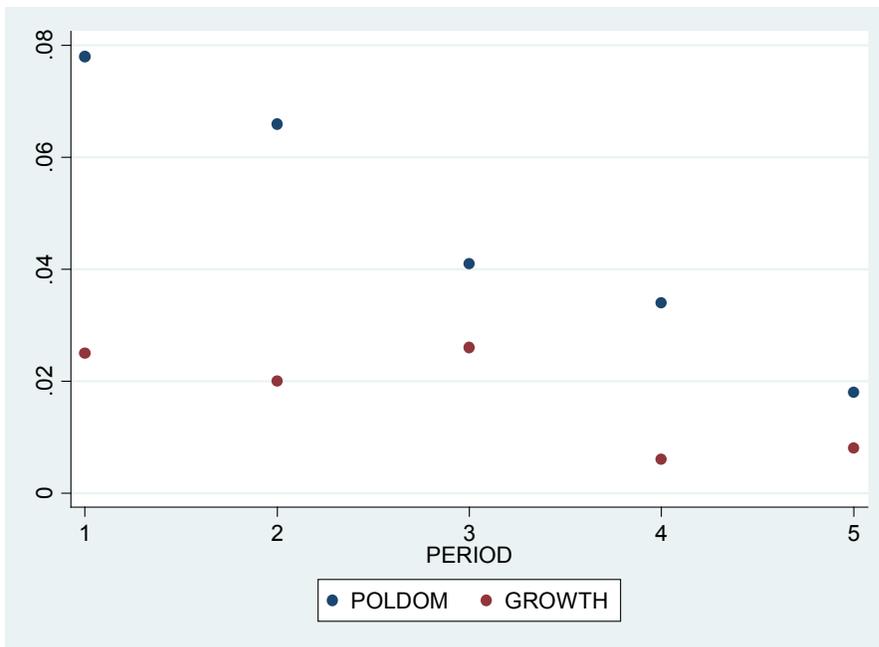
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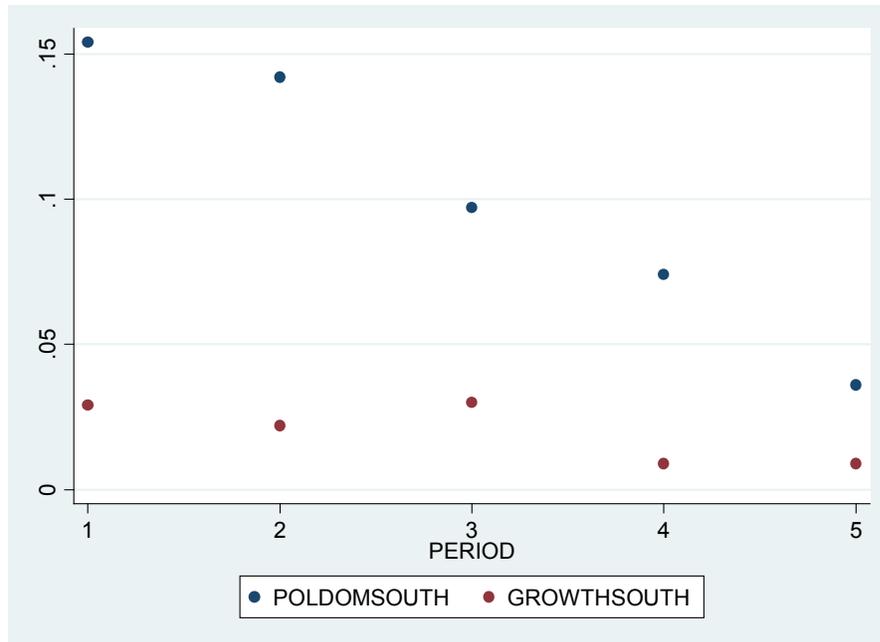
Figure7: Political Dominance and Growth – South
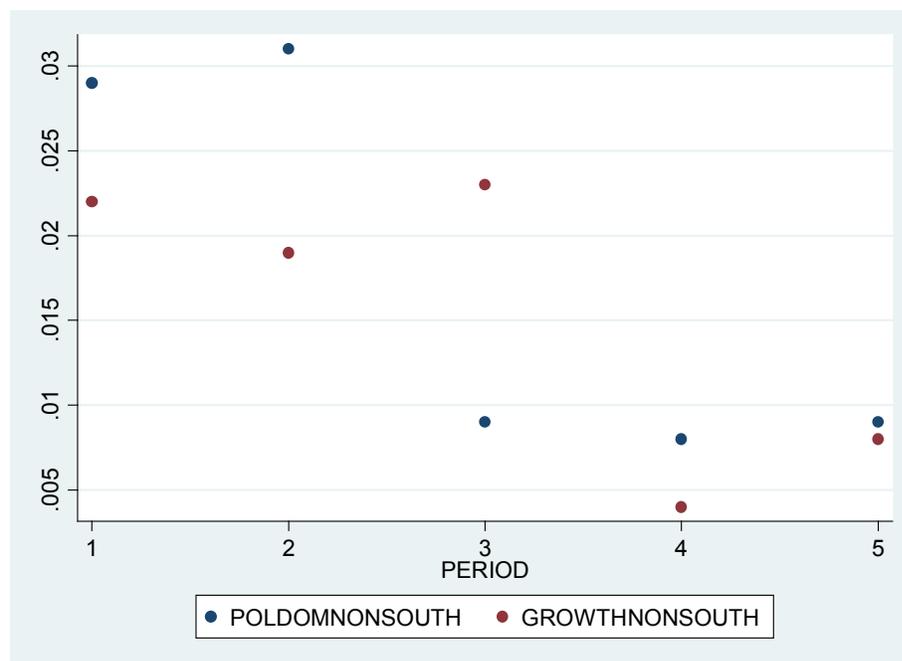
Figure 8: Political Dominance and Growth – Non-South

Chapter 5

Political Dominance and Relative Income

This chapter investigates the effect of political dominance over one election cycle (four years) on the relative level of real per-capita personal income for forty-six states of United States form 1937-1997. In sections 5.1 and 5.2 I model and carry out the estimation procedures treating political dominance as exogenous. In sections 5.3 and 5.4 I treat it as endogenous.

5.1 Exogenous Political Dominance: Econometric Specification and Methods

Suppose that each state is on its balanced growth path at each point in time, so that income differences across the states reflect differences in steady state income. Consider then an empirical model where the log of real per-capita personal income in state i at time t, y_{it}, is the dependent variable, and it is determined by political dominance, pd_{it}, the Democratic Party's share, $D_{it} = DU_{it} + DL_{it} + DG_{it}$, and other exogenous observable variables, x_{it}, according to the following:

(2) $$y_{it} = \alpha_i + \beta pd_{it} + \gamma D_{it} + \theta x_{it} + \varepsilon_{it}$$

where α_{it} is a fixed individual state effect, and ε_{it} is an i.i.d. random variable with $E(\varepsilon_{it}) = 0$. Equation (2) is likely to be non-stationary. To avoid this problem, as well as problems associated with economy wide effects that may influence the level of income in all states, I use deviations from the national average for all variables. Let a bar over a variable represent the mean value across all states in a given period. From equation (2) we thus obtain:

(3) $\Delta y_{it} = y_{it} - \overline{y_t}$
$$= \alpha_i - \overline{\alpha} + \beta(pd_{it} - \overline{pd_t}) + \gamma(D_{it} - \overline{D_t}) + \theta(x_{it} - \overline{x_{it}}) + \varepsilon_{it}$$
$$= \Delta\alpha_i + \Delta pd_{it} + \Delta D_{it} + \Delta x_{it} + \varepsilon_{it}$$

For a long time the Democratic Party had near monopoly power over much of the South. This power has declined significantly over time, and is the main reason for the decline in political dominance in the country as a whole. At the same time personal income levels in the South have been converging to that of the U.S. as a whole. It is possible that the increase in relative income in the U.S. South is not the result of lower political dominance there, but from the shift of political power towards the Republican Party. To separate the effect of political dominance from a possible party effect, I have incorporated the Democratic Party's share in equation (3).

Personal income is dependent on demographic and economic factors other than just political factors. To capture some of these effects, I have included among the explanatory variables in equation (3), represented by the vector x_{it}, farming's share of state income and the fraction of the population that is black. For descriptive statistics on these variables and others used in this dissertation see Table 5. For a description of data sources see the Data Appendix, Chapter 9.

In this section I treat political dominance as exogenous and use two econometric techniques to estimate equation (3). The first one is pooled OLS, which assumes no individual fixed effects, so that $a_i = \overline{a}$ for all states in equation (3). The second method used is the fixed effect method (FE), which allows the a_i to vary by state.

5.2 Results

Results obtained from treating political dominance as exogenous are presented in Table 6. For simplicity of exposition I will refer to the difference variables Dps, DD and Dx in equation (3) by the name of the variable. The difference between the log of personal income and the average log of income for all 46 states, Dy, will be referred to simply as the log of relative income.

Political dominance has a statistically significant negative effect on the relative level of real per-capita personal income using both pooled OLS and FE, though the size of the coefficient is appreciably smaller in magnitude for the latter. The Democratic Party's share also has a significant negative effect, though both the magnitude and the significance level are much lower when the FE method is used. The coefficient of the fraction of the population that is black has the anticipated sign in both regressions, but it is only significant, and much greater in magnitude when FE is used. The share of income from farming is also of the expected sign and comparable in magnitude in both methods, but is statistically significant only in pooled OLS. The drop in significance may be due to the fact that the relative share of farm income does not change much for most states, so that it acts somewhat like a fixed effect, lowering its significance when FE is used.

To get a better idea of the importance of political dominance, Table 7 shows the impact on relative income of five hypothetical declines in political dominance. In declining magnitude these drops in political dominance are:

1. From the highest possible value (0.25) to the lowest possible value (zero).

2. From the largest difference in political dominance between the South and the non-South (0.117, 1949-60) in Table 2, to the lowest (0.027, 1985-96).

3. Of one standard deviation (0.049) of political dominance.

4. From a situation where one party controls 2/3 of the seats in both state houses and received 2/3 of the vote for governor (0.028) to one of complete parity (0).

5. A more modest change from a situation where one party has 55% of the seats in the state legislature and received 55% of the gubernatorial vote (0.0025), to one where it loses the governorship, receiving 45% of the vote, but retains its legislative majority intact (0.00028).

As can be seen from Table 7, changes in relative income are large only for very large drops in political dominance. For routine, small declines in political dominance such as the fifth case in Table 7, the resulting declines in relative income are quite low.

5.3 Endogenous Political Dominance: Econometric Specification and Methods

Political dominance and Democratic Party's share can be endogenous for at least three reasons. First, there may be omitted factors that affect both political variables and economic performance. Second, economic performance may well affect the support given to the incumbent party, and thereby affect political dominance. Third, the level of personal income may directly affect voters' party affiliation or the demand for competent government. As incomes rise, the latter would tend to reduce political dominance if competence is divided similarly among the two political parties. If political dominance is endogenous, the coefficients of equation (3) would be biased and inconsistent.

In this section I use instrumental variable (IV) techniques to handle the possible endogeneity of political dominance and the Democratic Party's share. I begin by postulating the following reduced form models for the two political variables:

(4)
$$\Delta pd_{it} = \alpha_0 + \alpha_1 \Delta x_{it} + \alpha_2 \Delta z_{it} + u_{it}$$
$$\Delta D_{it} = \mu_0 + \mu_1 \Delta x_{it} + \mu_2 \Delta z_{it} + v_{it}$$

where Δz_{it} is a vector of difference variables to serve as instruments.

The first instrument I will refer to as the Democratic Party's share in the presidential election. Let DP_{it} and RP_{it} be the number of votes received from state i by the Democratic and Republican candidates in the most recent presidential election preceding period t. Define

(5)
$$D_{it}^P = \left(\frac{DP_{it}}{DP_{it} + RP_{it}} - 0.5 \right)$$

D_{it}^P is the Democratic candidate's share of the total vote for the Democratic and Republican candidates minus 0.5. Since the dependent variables are deviations from the national averages, the actual instrument is defined as $(D_{it}^P - \bar{D}_{it}^P)$, where $\bar{D}_{it}^P$ is the average value of D_{it}^P. This variable is intended to capture a state's preference of political party.

The second instrument can be thought as political dominance in the presidential election. It is simply the squared value D_{it}^P as given in equation (5), minus the national average, i.e. $\left[(D_{it}^P)^2 - \overline{(D_{it}^P)^2} \right]$. This variable is designed to capture extreme preference for either party, and consequently the state's propensity for political dominance.

The third instrument is the difference between the relative share of women in a state – the difference between the share of the population that is female in a given state

and the nationwide average. This variable is designed for capturing a possible gender gap at the state level.[7]

I also included among instruments the two used by Besley et al (2005). These are the presence of a poll tax and the requirement of a literacy test to vote. I use poll tax and literacy test as instruments for two reasons. First, they capture the discriminatory action against black in election. Second, the abolition of poll tax and literacy test capture the achievement of civil rights movements.

5.4 Results

The system consisting of equations (3) and (4) were estimated using the techniques of pooled instrumental variables (pooled IV) and fixed effect instrumental variables (FEIV). The first stage estimates of equation (4) are shown in Table 8. Columns (1) and (2) show the pooled IV results, and columns (3) and (4) the FEIV results. Though not the focus of this dissertation, these first stage estimates are nevertheless interesting.

With respect to political dominance the estimated coefficients are similar for both methods for all variables except literacy tests. The coefficient for that variable is positive and marginally significant with pooled IV, but it becomes negative and significant at the 5% when FEIV is used. The negative and significant coefficient on poll taxes for both methods, and the negative and significant coefficient for literacy tests when FEIV is used, is somewhat surprising as these were practices presumably employed by southern Democrats to retain power. Inspection of columns (2) and (4) of Table 8 shows that these practices do indeed have positive effects on Democratic Party's share, though only poll

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[7] Edlind and Pande ( ) examine the rise of a political gender gap in U.S. at the national level.

taxes are statistically significant (at the 10% level for pooled IV and at the 1% level for FEIV).[8]

The second stage estimates are provided in Table 9. Comparison of the results in Table 9 with those of Table 6 reveals that treating political dominance and Democratic Party's share as endogenous increases the magnitude of the coefficient for political dominance, but lowers the magnitude and significance levels for the coefficient for Democratic Party's share. In fact, when FEIV is used the Democratic Party's share coefficient is insignificant.

For the fraction of the population that is black the share of income from farming for the instrumental variables estimates are very similar to what they were when political dominance and Democratic Party's share were treated as exogenous. The coefficient for the fraction of the population that is black is insignificant in pooled IV, but larger in magnitude and statistically significant at the 1% level when FEIV is used. For the coefficient for the share of income from farming the opposite it is case. It is significant at the 1% level with pooled IV, but insignificant and smaller in magnitude with FEIV.

Repeating the exercise carried out for the exogenous estimates, Table 10 shows the change in relative income resulting from five different declines in political dominance. Though the declines in relative income in Table 10 are larger in magnitude than the corresponding ones in Table 7, they are still fairly small for modest drops in political dominance. Over long periods of time, however, large declines in political dominance can occur, and these could result in significant changes in relative income.

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[8] Perhaps Southern Democrats held on to these policies longer in states where their control was slipping, though they were still dominant.

5.5. *Political Dominance, Relative Income and Convergence*

A key assumption made at the beginning of this chapter was that all states are on their balanced growth paths. In this case observed income in each period is the steady state income, and the estimations performed in this chapter can be viewed as attempts to identify the determinants of the steady state income differences across the states. Concerning the determinant of interest for this work, political dominance, I find that regardless of the estimation method used, higher political dominance leads to lower relative personal income.

Suppose instead that not all states are on their balanced growth paths. Then according to the neoclassical growth model poorer states, which are more likely to be further below their balanced growth paths, will tend to experience faster growth. There should be convergence in incomes. Such convergence did in fact take place. Of the 23 states with the lowest income in 1937, 20 were among the 23 with the highest growth rate over the entire period 1937-1996. Additional evidence for convergence can be found in Table 11, which shows the standard deviation of relative income by 12 year periods.[9] Between 1937-48 and 1973-1984 the standard deviation of relative income fell by about 50%.

In the earlier periods poor states were concentrated in the South, which was the region with the highest levels of political dominance. These were also the states that experienced the biggest declines in political dominance. If these states tended to grow more rapidly simply because they were further below their balanced growth paths, the negative effect of political dominance on could be exaggerated.

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[9] See Friedman (1992) for why measures of dispersion of income are the proper way to look for evidence of convergence.

5.6 Tables

Table 5: Descriptive Statistics		
Variable	Mean	Standard Deviation
Real Per Capita Personal Income	91.69	14.97
Political Dominance	0.036	0.049
Democratic Party's Share	0.578	0.175
Democratic Party's Share of Seats in Legislature	0.594	0.215
Democratic Party's Share of Gubernatorial Vote	0.541	0.101
Fraction Black	0.096	0.104
Farm Income Share	0.037	0.032
Fraction Female	0.503	0.010
Political Dominance in Presidential Election	0.0021	0.0026
Democratic Party's Share in Presidential Election	0.495	0.046

Table 6: Relative Income and Political Dominance Exogenous Case		
Dependent Variable: log of relative personal income		
Variable	Pooled OLS	Fixed Effects
Political Dominance	-0.889*** (0.142)	-0.310*** (0.075)
Democratic Party's Share	-0.318*** (0.052)	-0.065* (0.037)
Fraction Black	-0.001 (0.001)	-0.020*** (0.001)
Farm Income Share	-1.403*** (0.135)	-1.134 (0.119)
R-squared	0.530	0.410

Table Continues:

Nobs.	690	690
Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.		

Table 7: Impact on Relative Income of Changes in Political Dominance
(Exogenous case)

	Change in Relative Income	
Change in Political Dominance	Pooled OLS*	Fixed Effects*
From Maximum (0.25) to Minimum (0) Possible Political Dominance	0.25	0.08
From Maximum (0.117) to Minimum (0.027) South/Non-South Difference in Political Dominance in Table 2	0.083	0.028
Decline in Political Dominance of One Standard Deviation (0.049)	0.045	0.015
From 2/3 Majority in Legislature and 2/3 of Vote for Governor (0.028) to Minimum (0)	0.025	0.009
From 55% Majority in Legislature and 55% of Vote for Governor (0.0025) to 55% Majority in Legislature and 45% of Vote for Governor (0.00028)	0.0020	0.0007
* Based on coefficient estimates from these methods.		

Table 8: First Stage Instrumental Variables Regressions

Dependent Variables: Political Dominance and Democratic Party's share

	Pooled IV		FEIV	
Variable	Political Dominance	Democratic Party's Share	Political Dominance	Democratic Party's Share
Political Dominance in	0.546***	-0.062	0.5701***	0.167*
Presidential Election	(0.030)	(0.114)	(0.032)	(0.092)
Democratic Party's	0.144***	0.616***	0.114***	0.394***
Share in Presidential	(0.010)	(0.038)	(0.010)	(0.028)
Election				
Fraction Female	0.111	0.025	-0.047	-0.322
	(0.075)	(0.280)	(0.087)	(0.248)
Fraction Black	0.001***	0.009***	0.002***	0.011***
	(0.000)	(0.001)	(0.001)	(0.002)
Farm Income Share	0.142***	-0.302***	0.116***	-0.194**
	(0.019)	(0.072)	(0.034)	(0.098)
Literacy Tests	0.008*	0.010	-0.013**	0.015
	(0.005)	(0.0182)	(0.006)	(0.018)
Poll Taxes	-0.026***	0.014*	-0.024***	0.037***
	(0.002)	(0.009)	(0.002)	(0.007)
R-squared	0.810	0.698	0.649	0.463
Nobs.	690	690	690	690

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.

Table 9: Relative Income and Political Dominance
Endogenous Case

Dependent Variable: log of relative personal income

Variable	Pooled IV	FEIV
Political Dominance	-1.078***	-0.511***
	(0.230)	(0.111)
Democratic Party's Share	-0.234**	-0.054
	(0.100)	(0.069)
Fraction Black	-0.001	-0.018***
	(0.001)	(0.002)
Farm Income Share	-1.342***	-0.123
	(0.149)	(0.089)
R-squared	0.528	0.406
Nobs.	690	690

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% level, respectively.

Table 10: Impact on Relative Income of Changes in Political Dominance
(Endogenous case)

	Change in Relative Income	
Change in Political Dominance	Pooled IV*	FEIV*
From Maximum (0.25) to Minimum (0) Possible Political Dominance	0.31	0.14
From Maximum (0.117) to Minimum (0.027) South/Non-South Difference in Political Dominance in Table 2	0.101	0.047
Decline in Political Dominance of One Standard Deviation (0.049)	0.054	0.025
From 2/3 Majority in Legislature and 2/3 of Vote for Governor (0.028) to Minimum (0)	0.030	0.014
From 55% Majority in Legislature and 55% of Vote for Governor (0.0025) to 55% Majority in Legislature and 45% of Vote for Governor (0.00028)	0.0024	0.0011

* Based on coefficient estimates from these methods.

Table 11: Standard Deviation of Relative Income Over Time	
Period	Standard Deviation of Relative Income
1937-1948	0.293
1949-1960	0.218
1961-1972	0.173
1973-1984	0.131
1985-1996	0.146

Chapter 6

Political Dominance and Growth

This chapter explores how political dominance over one election cycle affects the growth of real per-capita personal income, using data for the same forty-six states, and the same time period, 1937-1996, as in Chapter 5. A potential problem with the estimation presented in the previous chapter arises from states being off of their balanced growth paths. In this chapter I estimate a dynamic system that allows us to account for initial conditions.

6.1 Econometric Specification and Econometric Methods

To investigate the effect of political dominance on the growth of income, I use the following empirical specification:

$$
\begin{aligned}
(6) \qquad g_{it} &= y_{it} - y_{i,t-1} \\
&= \tilde{\alpha} + \mu y_{i,t-1} + \widetilde{\beta_1} pd_{it} + \widetilde{\beta_2} \delta pd_{it} + \widetilde{\gamma_1} D_{it} + \widetilde{\gamma_2} \delta D_{it} + \widetilde{\theta_1} x_{it} + \widetilde{\theta_2} \delta x_{it} \\
&\quad + \tilde{\varepsilon}_{it}
\end{aligned}
$$

$$
\tilde{\varepsilon}_{it} = \emptyset_i + \omega_{it}
$$

where, $\delta pd_{it} = pd_{it} - pd_{i,t-1}$, $\delta D_{it} = D_{it} - D_{i,t-1}$, $\delta x_{it} = x_{it} - x_{i,t-1}$, $\emptyset_{it}$ is i.i.d. across all states, ω_{it} is i.i.d. across all states and periods, and $E(\emptyset_i) = E(\omega_{it}) = 0$. The dependent variable is now the first difference of the log of real per-capita personal income, i.e., the four year growth rate of real per-capita personal income, g_{it}. The explanatory variables are of three types. First, there is the previous period's income, $y_{i,t-1}$. Second, there are the same explanatory variables which were used and defined in Chapter 5. The third group are the first differences of these variables.

The one period lagged income variable is present to capture initial conditions - the possibility that states may not be on their balanced growth paths, and that some states may be further away than others. The other variables appear in two forms – as levels and as first differences – to capture two distinct potential effects on growth. One is a level effect. If a variable only affects the level of income along the balanced growth path, but not the growth rate, then only changes in such a variable matter. This effect is captured by the first differences. A second possibility is that a variable affects the growth rate along the balanced growth path. To capture this possibility I've included the level of the variables.

To estimate equation (6) I use the GMM first difference estimator for dynamic panel data model proposed by Holtz-Eakin, Newey and Rosen (1988) and Arellano and Bond (1991). There are two reasons of using the GMM first difference estimator. First, the lagged dependent variable on the right hand side makes the regressors endogenous (since y_{it} is a function of , $\emptyset_i$ so $y_{i,t-1}$ is also correlated with $\emptyset_i$). Secondly, state-specific omitted variables also make the regressors endogenous. Taking first differences in (6) eliminates state-specific omitted variables. The GMM first difference estimator takes the regressors as endogenous and generates additional instruments by utilizing the orthogonality condition between the lagged values of the regressors and the disturbance term $\tilde{\varepsilon}_{it}$. A modification of this method is to include additional variables (beyond the lagged values of the regressors) as instruments. This method will be referred to as GMMIV, where the additional instruments are the same variables used as instruments in Chapter 5.

6.2 Results

The GMM estimates of equation (6) are presented in Table 12. For the primary variables of interest, political dominance and its first difference, we can see that the coefficients are both negative and significant at the 1% level for both estimation methods. The other political variable, Democratic Party's share, is not statistically significant in either levels or first differences, or using either GMM or GMMIV estimation methods.

The negative and significant coefficient for initial income using either estimation supports the idea mentioned above that poorer states tend to be further below their balanced growth paths, and therefore tend to grow more rapidly. The fraction of the population that is black is significant only as a first difference. Though significant at the 1% level the magnitude is small. A very large increase of one standard deviation in the fraction of the population that is black (10.4 percentage points) will decrease the four year growth rate for one period by only 0.1 percent (0.03% per year). For farm income share the coefficients for both levels and first differences are surprisingly positive, significant at the 1%, and quite large in magnitude. An increase of one standard deviation in the farm income share (3.2 percentage points) results in the four year growth rate increase of 3.7% (0.9% annually) the first period, and of 2.5% (0.6% annually) in subsequent periods.

Once again, to get a better idea of the importance of political dominance, Table 13 shows the impact on annual rates of growth of the same five changes in political dominance discussed in Chapter 5. The first column shows the impact in the first period that political dominance changes. This involves both a change in level and in the first difference. Column 2 shows the change in growth in subsequent years when only the

level has changed. Table 13 uses the GMMIV coefficients, and growth rates have been annualized. A maximum possible reduction in political dominance, from 0.25 to zero, would increase growth by 1.9% per year for the first period and 1.4% per year in subsequent periods. A more modest, but still large reduction in political dominance from the largest to the lowest difference between the South and the non-South in Table 2, would result in increases of 0.68% and 0.57% per year during the first and subsequent periods, respectively. As can be seen from Table 13, the corresponding increases from a decline of one standard deviation (0.049) in political dominance would be 0.37% and 0.28% per year. The fourth example in Table 13 considers a change from a situation where one party control 2/3 of the seats in both state houses and received 2/3 of the vote for governor to one of complete parity. Such a change would cause political dominance to fall from 0.028 to zero, and the resulting increases in annual growth rates would be 0.21% and 0.16% in the first and subsequent periods, respectively. Even in this last example the drop in political dominance is quite substantial and not likely to occur frequently in just one election cycle.[10] A more typical change would be one like the last example in Table 13. There a party that has 55% of the seats in the state legislature and received 55% of the gubernatorial vote, loses the governorship, receiving 45% of the vote, but retains its legislative majority intact. In this case political dominance falls from 0.0025 to 0.00028, and growths rates increase by 0.017% and 0.013%.

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[10] Large changes in political dominance , however, have taken place over longer periods of time.

6.3 What Has Been the Contribution of the Decline of Political Dominance to the Convergence of State Incomes?

An answer can now be given to the question posed in the title of this section. In broad terms the procedure I use to answer this question is to construct a sequence of the log of real per capita personal income for all the states and all the periods under the assumption that political dominance remains at its 1937-1940 levels. I then compare the coefficient of variation of the series of actual income with that the constructed, or synthetic series. The additional decline in the coefficient of variation of the actual series beyond the synthetic one is due to declining political dominance. In greater detail the procedure is as follows:

1. Taking the GMMIV coefficient estimates $\{\hat{\alpha}, \hat{\mu}, \widehat{\beta_1}, \widehat{\beta_2}, \widehat{\gamma_1}, \widehat{\gamma_2}, \widehat{\theta_1}, \widehat{\theta_2}\}$, I used equation (6) to construct a sequence of error terms for all 46 states and for 14 periods (from period 2 for 1941-1944 through period 15 for 1993-1996),

$$\{\widehat{\varepsilon_{it}}\}_{i=1,46}^{t=2,15}$$

$$\hat{\varepsilon}_{it} = y_{it} - \left(\hat{\alpha} + (1+\hat{\mu})y_{i,t-1} + \hat{\beta}_1 pd_{it} + \hat{\beta}_2 \delta pd_{it} + \hat{\gamma}_1 D_{it} + \hat{\gamma}_2 \delta D_{it} + \hat{\theta}_1 x_{it} + \hat{\theta}_2 \delta x_{it}\right)$$

I then constructed a sequence of synthetic incomes. The initial period incomes were set equal to their actual values, $y_{i1} = \hat{y}_{i1}$ for all $i = 1,46$. The rest, $\{\hat{y}_{it}\}_{i=1,46}^{t=2,15}$, were constructed by iteratively applying the following version of equation (6):

$$\hat{y}_{it} = \hat{\alpha} + (1+\hat{\mu})y_{i,t-1} + \hat{\beta}_1 pd_{it} + \hat{\beta}_2 \delta pd_{it} + \hat{\gamma}_1 D_{it} + \hat{\gamma}_2 \delta D_{it} + \hat{\theta}_1 x_{it} + \hat{\theta}_2 \delta x_{it} + \hat{\varepsilon}_{it}$$

Note that political dominance is kept at its period one level and that therefore its first difference is zero.

3. The final step was to compute the coefficient of variation of the two sequences, $\{y_{it}\}_{i=1,46}^{t=1,15}$ and $\{\hat{y}_{it}\}_{i=1,46}^{t=1,15}$, and compare them.

The two sequences of coefficients of variation are shown in Table 14. As can be seen, the coefficient of variation of actual income declines steadily from a high of 0.367 during the initial period of 1937-1940, to a low a low of 0.131 in 1977-1980, evidence of converging income across the states. After that it shows no tendency to decline. The coefficient of variation of the synthetic sequence shows less decline, because it was constructed under the assumption that political dominance remained at the levels of 1937-1940 for every state. Between 1937-1940 and 1993-1996 the coefficient of variation declined 63%, while that of the synthetic sequence declined 51%. The additional 12 percentage points can be attributed to the decline of political dominance. The decline in political dominance can therefore account for about 18% of the decline in the coefficient of variation in the log of real per capita personal income.

6.4 Tables

Table 12: Growth Rate of Real per Capita Personal Income		
Dependent Variable: growth rate of real per capita personal income.		
Variable	(1) GMM	(2) GMMIV
Initial Income	-0.518***	-0.521***
	(0.006)	(0.006)
Political Dominance - Level	-0.232***	-0.229***
	(0.026)	(0.023)
Democratic Party's Share - Level	0.010	0.011
	(0.008)	(0.008)
Fraction Black - Level	0.001	0.000
	(0.001)	(0.001)
Farm Income Share - Level	0.367***	0.376***
	(0.021)	(0.059)
Political Dominance - First Difference	-0.073***	-0.076***
	(0.019)	(0.028)
Democratic Party's Share - First Difference	-0.001	0.001
	(0.006)	(0.006)
Fraction Black - First Difference	-0.012***	-0.011***
	(0.002)	(0.001)
Farm Income Share - First Difference	0.777***	0.777***
	(0.019)	(0.019)
Wald Chi Square	37678.96	32018.90
Nobs.	552	552
Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.		

Table 13: Impact on Growth Rates of Changes in Political Dominance		
	Change in Annual Growth Rates*	
Change in Political Dominance	First Period	Subsequent Periods
From Maximum (0.25) to Minimum (0) Possible Political Dominance	0.019	0.014
From Maximum (0.117) to Minimum (0.027) South/Non-South Difference in Political Dominance in Table 2	0.0068	0.0051
Decline in Political Dominance of One Standard Deviation (0.049)	0.0037	0.0028
From 2/3 Majority in Legislature and 2/3 of Vote for Governor (0.028) to Minimum (0)	0.0021	0.0016
From 55% Majority in Legislature and 55% of Vote for Governor (0.0025) to 55% Majority in Legislature and 45% of Vote for Governor (0.00028)	0.00017	0.00013
* Based on GMMIV estimates.		

Table 14: Actual and Synthetic Coefficient of Variation of the Log of Real per Capita Personal Income		
Period	Coefficient of Variation (Actual Income)	Coefficient of Variation (Synthetic Income)
1937-1940	0.367	0.367
1941-1944	0.291	0.293
1945-1948	0.233	0.243
1949-1952	0.231	0.236
1953-1956	0.222	0.226
1957-1960	0.203	0.208
1961-1964	0.192	0.203
1965-1968	0.174	0.201
1969-1972	0.156	0.182
1973-1976	0.134	0.167
1977-1980	0.131	0.163
1981-1984	0.135	0.167
1985-1988	0.153	0.189
1989-1992	0.151	0.192
1993-1996	0.136	0.179

Chapter 7

Economic Performance and Political Dominance by Branch of Government

In this chapter I explore the effect on economic growth of political dominance in each branch of government. The next two sections looks at political dominance in the legislature and executive separately. In section 7.3 I consider political dominance in both branches jointly, but allow for them to have different effects.

7.1 Political Dominance in the Legislative Branch

As in Besley-Case (2003), this section considers only political dominance in state legislatures. In order to do this, the measure of political dominance has to be modified. The most straightforward way to this is simply to remove variables dealing with votes in the gubernatorial elections from the measure given in equation (1). The corresponding measure of political dominance in the legislature would be as follows:

$$(7) \qquad pd_{it}^l = \left(\frac{DU_{it} + DL_{it}}{DU_{it} + DL_{it} + RU_{it} + RL_{it}} - 0.5 \right)^2$$

where pd_{it}^l is political dominance in the legislature, and $DU_{it}(RU_{it})$ and $DL_{it}(RL_{it})$ are the Democratic (Republican) seat shares in the upper and lower houses of state legislatures, respectively.[11]

Table 15 shows the results of GMM and GMMIV estimation of equation (6), where the measure of political dominance in the legislature given in (7) has been substituted for pd_{it}, and its first difference has been substituted for dpd_{it}. A comparison

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[11] This measure is very similar to that in Besley-Case (2003). They take the absolute value of the difference between the Democrats' seat share and 0.5.

of Tables 12 and 15 shows that, with the exception of the political dominance variables, all the other coefficients are extremely similar. Among the non-political dominance variables the only difference worthy of note is that when GMMIV estimation is used the Democratic Party's share of seats is marginally significant, while previously the Democratic Party's share was not. Turning to political dominance, we see that while the magnitude of the coefficients for both the level and the first difference of political dominance are now somewhat smaller in magnitude, they are both still negative and significant at the 1% level.

Table 16 shows the impact on annual rates of growth of the same changes in political dominance in state legislatures considered in Table 13 using the previous overall measure of political dominance (equation [1]). As in Table 13, the first column of Table 16 shows the impact in the first period that political dominance changes, and column 2 shows the change in growth in subsequent years. Table 16 uses the GMMIV coefficients from Table 15, and growth rates have been annualized. A comparison of Tables 13 and 16 shows that the impact on growth rates in all the examples is now smaller in keeping with the finding discussed above that the magnitude of the coefficients for both the level and the first difference of political dominance are now somewhat smaller.

7.2 Political Dominance in the Executive Branch

This section repeats the previous exercise using a measure of political dominance in the executive branch instead of the legislature. In the spirit of the previous section the measure of political dominance in the executive branch to be used is defined as follows:

$$(8) \qquad pd_{it}^{G} = \left(\frac{DG_{it}}{DG_{it} + RG_{it}} - 0.5 \right)^{2}$$

where p_{it}^e is the measure of political dominance in the executive branch, and DG_{it} and RG_{it} are the Democratic and Republican shares of the gubernatorial vote, respectively.

The GMM and GMMIV estimates of equation (6) using p_{it}^e as the measure of political dominance are shown in Table 17. As before, both the level of political dominance and its first difference have a negative and significant effect on growth, though the former is substantially smaller than its counterparts in Tables 12 and 15. For the other variables the most notable difference between these results and those in Tables 12 and 15 involve the Democratic Party's share variable, which now is the Democratic Party's share of the gubernatorial vote. The coefficient for this variable is negative and significant at the 1% level for both the level and the first difference, and for both types of estimation methods. The highest level of significance obtained for the Democratic Party's share variable was just marginal significance for the level of the Democratic Party's share of seats in the legislature using GMMIV in Table 15.

Table 18 shows the impact on annual rates of growth of the same changes in political dominance in the executive branch (equation [8]) as were considered in Table 16 for political dominance in state legislatures (equation [7]), and in Table 13 for the overall measure of political dominance (equation [1]). As can be seen, the effect on growth rates of the proposed declines in political dominance are smaller than in either of the previous two cases.

7.3 Political Dominance in Both Branches of Government

Though the magnitudes differ, in terms of sign and significance the effect on growth of the various measures of political dominance are similar. Part of the reason for this is that the measure of political dominance based on the share of seats in the legislature is highly correlated with the measure using the share of the vote in the gubernatorial election. The correlation coefficient between the two is 0.93. Table 19 shows the results of including both the legislative and executive measures of political dominance in growth equation (6). As before, the coefficients for both the level and first difference for the measure of political dominance in the legislature are negative and significant at the 1% level. Both coefficients are also negative for the measure of political dominance in the executive, but now only the coefficient for the first difference is statistically significant (at the 5% level). The effect of the various Democratic Party's share variables also tend to be more significant than in previous results. The level of the Democratic Party's share of seats in the legislature is positive and significant (at the 1% level) for the first time, but the coefficients for both the level and first difference of the Democratic Party's share of gubernatorial vote are negative and significant (1% and 5% levels, respectively).

A possible problem arising from the estimation shown in Table 19 is that it does not allow for interaction between the two branches of government. Consider, for example, a state in which a political party controlled two thirds of the seats in the legislature and also controlled the governorship, having received two-thirds of the vote in the last election. The level of political dominance would be 0.028 for both measures. Consider a second state which was just like the first, except that a different party

controlled the governorship. The second state would have the same measures of political dominance, but it is reasonable to assume that there was more political competition in the second state.

Consider the following measure:

$$(9) \qquad pd_{it}^{lG} = \left(\frac{DU_{it} + DL_{it}}{DU_{it} + DL_{it} + RU_{it} + RL_{it}} - 0.5 \right) \left(\frac{DG_{it}}{DG_{it} + RG_{it}} - 0.5 \right)$$

This measure is party neutral, and it takes on positive values when the same party controls both the legislature and the governorship, and negative values otherwise. I have included pd_{it}^{lG} and its first difference as explanatory variables in growth equation (6). The results of GMM and GMMIV estimation are shown in Table 20. The coefficient of the level of the new variable, pd_{it}^{lG}, is negative and significant at the 1% level. This implies that control of both branches of government by the same party reduces growth, thus supporting the hypothesis that political dominance reduces economic performance.

Assessing the full effect of political dominance in general is more difficult now, not only because there is no single measure of political dominance, but also because the effect of changing dominance in one branch of government depends on the conditions in the other branch. In the following simplified case, however, measuring the effect of changes in political dominance is more straightforward. Define the Democratic Party's share of seats in the legislature, S_{it}^{l}, and the share of the gubernatorial vote its candidate received in the last election, S_{it}^{e}, follows:

$$(10) \qquad S_{it}^{l} = \left(\frac{DU_{it} + DL_{it}}{DU_{it} + DL_{it} + RU_{it} + RL_{it}} - 0.5 \right)$$

$$S_{it}^g = \left(\frac{DG_{it}}{DG_{it} + RG_{it}} - 0.5\right)$$

The combined effect on growth of the level of dominance in the two branches in equation (6) is then given by the following term:

(11) $\qquad \check{\beta}_1^l \left(S_{it}^l - 0.5\right)^2 + \check{\beta}_1^g \left(S_{it}^g - 0.5\right)^2 + \check{\beta}_1^{lg} \left(S_{it}^l - 0.5\right)\left(S_{it}^g - 0.5\right)$

Consider the case now where, $S_{it}^l = S_{it}^g = S.$ Making this substitution in (11), that expression reduces to:

(12) $\qquad \left(\check{\beta}_1^l + \check{\beta}_1^g + \check{\beta}_1^{lg}\right)(S - 0.5)^2$

The sum of the coefficients $\left(\check{\beta}_1^l + \check{\beta}_1^g + \check{\beta}_1^{lg}\right)$ is therefore a measure of the combined effect on growth of the level of political dominance. From Table 20 this sum is -0.169 for GMMIV and it is statistically significant at the 1% level (the standard error is 0.039). Repeating this exercise using the corresponding first differences, one obtains a sum of coefficients of -0.088, and it is statistically significant at the 5% level (the standard error is 0.043). Table 21 uses these coefficients to calculate the effect on growth of the standard five changes in political dominance used before. As usual column one shows the first period effects on annual growth rates, and column two the effects for subsequent periods.

Let us consider now changes in political dominance in only branch. For Democratic Party's shares greater than or equal to 0.5 for each branch of government, expression (11) can be re-written as follows:

$$(13) \qquad \check{\beta}_1^l pd_{it}^l + \check{\beta}_1^g pd_{it}^g + \check{\beta}_1^{lg}\sqrt{pd_{it}^l pd_{it}^g}$$

Differentiating (13) with respect to political dominance in the legislature, one obtains the following:

$$(14) \qquad \check{\beta}_1^l + \frac{\check{\beta}_1^{lg}\sqrt{pd_{it}^g}}{2\sqrt{pd_{it}^l}} = \check{\beta}_1^l + \frac{\check{\beta}_1^{lg}\left(S_{it}^g - 0.5\right)}{2\left(S_{it}^l - 0.5\right)}$$

Expression (13) gives the marginal change in the growth rate of personal income beyond the first period resulting from changing the level of political dominance in the legislature, while holding constant the level of political dominance in the executive branch. Using the coefficients from Table 20 for GMMIV estimation, and setting the Democratic Party's shares equal to their sample averages, expression (14) equals -0.122 and is significant at the 1% level (standard error is 0.030). The same calculation for a change in the level of political dominance in the executive branch holding constant the level of political dominance in the legislature, yields an estimate of -0.118 for the equivalent of expression (14), which is statistically significant at the 10% level (standard error is 0.69).[12]

7.4 Giving More Weight to the Governorship in the Measure of Political Dominance

The measure of political dominance introduced in Chapter 3 and used thereafter can be viewed as a special case of a broader set of measures that have perfect substitution

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[12] The level of significance depends on the values used for the Democratic Party's shares. As these rise so does the significance level.

of political dominance across the legislature and the executive. To see this, define the weighted Democratic share, $D(I)$, as follows:

$$(15) \qquad D(I) = I \left(\frac{DU + DL}{DU + DL + RU + RL} \right) + (1 - I) \left(\frac{DG}{DG + RG} \right)$$

where I is the weight given to the legislative branch (the state and period subscripts have been dropped for simplicity). In the measure of political dominance defined in equation (1) and used in the analysis of Chapters 5 and 6, each house of the legislature and the governorship were given approximately equal weight. To see this, let us simplify the presentation by assuming that all seats in the legislature are held by either Democrats or Republicans, $DU + RU = DL + RL = 1$, and that all votes for governor go to candidates from the two major parties, $DG + RG = 1$. Under these assumptions equation (14) simplifies to:

$$(16) \qquad\qquad D(I) = I(DU + DL) + (1 - I)DG$$

Equation (1) defining political dominance can now be written as:

$$(17) \qquad\qquad pd = (DU + DL + DG - 0.5)^2 = (D(2/3) - 0.5)^2$$

In this section I will consider a different weighting scheme that gives approximately equal weight to both branches of government in the measure of political dominance. Explicitly, let

$$(18) \qquad\qquad I = \frac{DU + RU + DL + RL}{DU + RU + DL + RL + 2(DG + RG)}$$

Note that in the special case where all legislative seats and gubernatorial votes go to Democrats and Republicans, (17) reduces to $I = 1/2$. The new measure of political dominance implied by (17) is as follows:

$$(19) \qquad pd_{it} = \left(\frac{DU_{it} + DL_{it} + 2DG_{it}}{DU_{it} + DL_{it} + RU_{it} + RL_{it} + 2(DG_{it} + RG_{it})} - 0.5 \right)^2$$

Tables 22 shows the results from GMM and GMMIV estimation using the measure of political dominance given in equation (18). Table 23 uses the coefficients from GMMIV estimation in Table 22 to calculate the predicted changes in growth rates resulting from hypothetical declines in political dominance in the five scenarios discussed previously. As can be seen from both tables, the effect of political dominance on income growth continues to be negative and significant at the 1%, but the magnitude of the effect is considerably smaller. This is especially so for the level of political dominance, so that a given decline in political dominance increases growth by considerably less in periods beyond the first one when the decline takes place. The result that giving greater weight to gubernatorial vote in measuring political dominance reduces its effect on growth is not surprising given the results of the previous section. There I found that political dominance in the gubernatorial vote had a much smaller effect on growth than did dominance in the legislature.

In this work, as in others in this literature, political dominance refers to a persistent advantage that allows a party to be consistently successful at the polls and simultaneously engage in policies that are not welfare maximizing (here welfare is synonymous with wealth). This is the concept of political dominance embodied in the model in Besley et al (2008). In practice the measures of dominance used involve the deviations from 0.5 in seats, positions or votes. These measures, however, reflect current success at the polls at not necessarily persistent advantage. Transitory success could be reflection of factors other a persistent advantage, such as high growth in the past. A

possible explanation for why political dominance in the governorship appears to exert a smaller negative effect on income growth than political dominance in the legislature may be that the measure I am using for the former does not capture persistent advantage as well as the seat share measure for legislatures. There is evidence that this is in fact the case.

In my data set of 46 states over 15 four-year periods, the dominant party – defined as the party with a majority of seats or votes during a period – could potentially change between periods a total of 644 times. The majority party in upper houses changed between four-year periods 26% of the time (a total of 165 changes). For lower houses it was lower at 19% of the time (121 changes). The governorship, however, changed parties 52% of the time.

7.4 Tables

	(1) GMM	(2) GMMIV
Table 15: Growth Rate of Real per Capita Personal Income and Political Dominance in State Legislatures		
Dependent Variable: growth rate of real per capita personal income.		
Initial Income	-0.516*** (0.006)	-0.518*** (0.005)
Political Dominance in Legislature - Level	-0.145*** (0.024)	-0.146*** (0.022)
Democratic Party's Share of Seats in Legislature - Level	0.010 (0.007)	0.009* (0.005)
Fraction Black - Level	-0.000 (0.001)	-0.000 (0.001)
Farm Income Share - Level	0.373*** (0.021)	0.381*** (0.020)
Political Dominance in Legislature - First Difference	-0.058*** (0.014)	-0.065*** (0.016)
Democratic Party's Share of Seats in Legislature - First Difference	-0.003 (0.004)	-0.003 (0.004)
Fraction Black - First Difference	-0.012*** (0.002)	-0.011*** (0.001)
Farm Income Share - First Difference	0.778*** (0.018)	0.780*** (0.019)
Wald Chi Square	35015.00	54534.38
Nobs.	552	552

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.

Table 16: Impact on Growth Rates of Changes in Political Dominance in Legislature		
	Change in Annual Growth Rates*	
Change in Political Dominance	First Period	Subsequent Periods
From Maximum (0.25) to Minimum (0) Possible Political Dominance	0.013	0.009
From Maximum (0.117) to Minimum (0.027) South/Non-South Difference in Political Dominance in Table 2	0.0047	0.0033
Decline in Political Dominance of One Standard Deviation (0.049)	0.0026	0.0018
From 2/3 Majority in Legislature and 2/3 of Vote for Governor (0.028) to Minimum (0)	0.0015	0.0010
From 55% Majority in Legislature and 55% of Vote for Governor (0.0025) to 55% Majority in Legislature and 45% of Vote for Governor (0.00028)	0.00012	0.00008
* Based on GMMIV estimates from Table 15.		

	(1)	(2)
Table 17: Growth Rate of Real per Capita Personal Income and Political Dominance in Executive Branch		
Dependent Variable: growth rate of real per capita personal income.		
Variable	GMM	GMMIV
Initial Income	-0.515***	-0.517***
	(0.005)	(0.005)
Political Dominance in Executive - Level	-0.088***	-0.074***
	(0.020)	(0.029)
Democratic Party's Share of Gubernatorial Vote - Level	-0.040***	-0.039***
	(0.008)	(0.010)
Fraction Black - Level	0.001*	-0.001
	(0.001)	(0.001)
Farm Income Share - Level	0.337***	0.340***
	(0.013)	(0.015)
Political Dominance in Executive - First Difference	-0.080***	-0.077***
	(0.024)	(0.025)
Democratic Party's Share of Gubernatorial Vote - First Difference	-0.014***	-0.012**
	(0.005)	(0.006)
Fraction Black - First Difference	-0.009***	-0.009***
	(0.002)	(0.001)
Farm Income Share - First Difference	0.781***	0.773***
	(0.024)	(0.017)
Wald Chi Square	26129.26	52475.09
Nobs.	552	552

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.

Table 18: Impact on Growth Rates of Changes in Political Dominance in Executive Branch		
	Change in Annual Growth Rates*	
Change in Political Dominance	First Period	Subsequent Periods
From Maximum (0.25) to Minimum (0) Possible Political Dominance	0.0093	0.0046
From Maximum (0.117) to Minimum (0.027) South/Non-South Difference in Political Dominance in Table 2	0.0034	0.0017
Decline in Political Dominance of One Standard Deviation (0.049)	0.0018	0.0009
From 2/3 Majority in Legislature and 2/3 of Vote for Governor (0.028) to Minimum (0)	0.0011	0.0005
From 55% Majority in Legislature and 55% of Vote for Governor (0.0025) to 55% Majority in Legislature and 45% of Vote for Governor (0.00028)	0.00008	0.00004
* Based on GMMIV estimates from Table 17.		

	(1)	(2)
Table 19: Growth Rate of Real per Capita Personal Income and Political Dominance in Legislative and Executive Branch (With No Interaction)		
Dependent Variable: growth rate of real per capita personal income.		
Variable	GMM	GMMIV
Initial Income	-0.518***	-0.524***
	(0.005)	(0.008)
Political Dominance in Legislature - Level	-0.140***	-0.145***
	(0.022)	(0.024)
Political Dominance in Executive - Level	-0.037	-0.037
	(0.040)	(0.032)
Democratic Party's Share of Seats in Legislature - Level	0.023***	0.022***
	(0.008)	(0.008)
Democratic Party's Share of Gubernatorial Vote - Level	-0.045***	-0.042***
	(0.009)	(0.010)
Fraction Black - Level	0.001	-0.001
	(0.001)	(0.001)
Farm Income Share - Level	0.377***	0.376***
	(0.017)	(0.019)
Political Dominance in Legislature - First Difference	-0.051***	-0.049***
	(0.018)	(0.019)
Political Dominance in Executive - First Difference	-0.073**	-0.063**
	(0.031)	(0.027)
Democratic Party's Share of Seats in Legislature - First Difference	0.005	0.007
	(0.006)	(0.005)
Democratic Party's Share of Gubernatorial Vote - First Difference	-0.012**	-0.011**
	(0.005)	(0.005)
Fraction Black - First Difference	-0.011***	-0.011***
	(0.002)	(0.001)
Farm Income Share - First Difference	0.763***	0.767***
	(0.021)	(0.023)
Wald Chi Square	83202.42	17797.79
Nobs.	552	552

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.

Variable	(1) GMM	(2) GMMIV

Table 20: Growth Rate of Real per Capita Personal Income and Political Dominance in Legislative and Executive Branch
(With Interaction)

Dependent Variable: growth rate of real per capita personal income.

Variable	(1) GMM	(2) GMMIV
Initial Income	-0.520*** (0.005)	-0.522*** (0.009)
Political Dominance in Legislature - Level	-0.068* (0.022)	-0.079** (0.038)
Political Dominance in Executive - Level	0.131* (0.040)	0.106** (0.046)
Democratic Party's Share of Seats in Legislature X Democratic Party's Share of Gubernatorial Vote - Level	-0.223*** (0.069)	-0.196*** (0.073)
Democratic Party's Share of Seats in Legislature - Level	0.020*** (0.008)	0.020** (0.009)
Democratic Party's Share of Gubernatorial Vote - Level	-0.037*** (0.009)	-0.035*** (0.013)
Fraction Black - Level	0.001 (0.001)	-0.001 (0.001)
Farm Income Share - Level	0.364*** (0.0272)	0.366*** (0.021)
Political Dominance in Legislature - First Difference	-0.025 (0.027)	-0.029 (0.028)
Political Dominance in Executive - First Difference	-0.022 (0.048)	-0.029 (0.038)
Democratic Party's Share of Seats in Legislature X Democratic Party's Share of Gubernatorial Vote - First Difference	-0.0423 (0.043)	-0.029 (0.047)
Democratic Party's Share of Seats in Legislature - First Difference	0.003 (0.005)	0.004 (0.006)
Democratic Party's Share of Gubernatorial Vote - First Difference	-0.015** (0.006)	-0.014* (0.007)
Fraction Black - First Difference	-0.010*** (0.002)	-0.009*** (0.002)
Farm Income Share - First Difference	0.765*** (0.024)	0.769*** (0.028)
Wald Chi Square	28306.75	24005.90
Nobs.	552	552

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.

Table 21: Impact on Growth Rates of a Joint Change in Political Dominance in Legislative and Executive Branches		
	Change in Annual Growth Rates*	
Change in Political Dominance	First Period	Subsequent Periods
From Maximum (0.25) to Minimum (0) Possible Political Dominance	0.0156	0.0104
From Maximum (0.117) to Minimum (0.027) South/Non-South Difference in Political Dominance in Table 2	0.0057	0.0038
Decline in Political Dominance of One Standard Deviation (0.049)	0.0031	0.0021
From 2/3 Majority in Legislature and 2/3 of Vote for Governor (0.028) to Minimum (0)	0.0018	0.0012
From 55% Majority in Legislature and 55% of Vote for Governor (0.0025) to 55% Majority in Legislature and 45% of Vote for Governor (0.00028)	0.00014	0.00009
* Based on GMMIV estimates from Table 20, and assuming the Democratic Party's share of seats in the legislature equals its share of the gubernatorial vote.		

Table 22: Growth Rate of Real per Capita Personal Income
(Different Measure of Political Dominance)

Dependent Variable: growth rate of real per capita personal income.

Variable	(1) GMM	(2) GMMIV
Initial Income	-.517*** (0.005)	-0.521*** (0.006)
Political Dominance - Level	-0.090*** (0.013)	-0.083*** (0.014)
Democratic Party's Share - Level	-0.066*** (0.005)	0.068*** (0.005)
Fraction Black - Level	0.002*** (0.001)	0.002*** (0.001)
Farm Income Share - Level	0.360*** (0.011)	0.370*** (0.012)
Political Dominance - First Difference	-0.060*** (0.011)	-0.058*** (0.011)
Democratic Party's Share - First Difference	-0.031*** (0.007)	-0.035*** (0.005)
Fraction Black - First Difference	-0.009*** (0.001)	0.009*** (0.001)
Farm Income Share - First Difference	0.773*** (0.017)	0.776*** (0.022)
Wald Chi Square	26318.27	15947.23
Nobs.	552	552

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.

Table 23: Growth Rate of Real per Capita Personal Income (Non-South)

Dependent Variable: growth rate of real per capita personal income.

Variable	(1) GMM	(2) GMMIV
Initial Income	-.506***	-0.508***
	(0.013)	(0.016)
Political Dominance - Level	-0.061	-0.074
	(0.059)	(0.061)
Democratic Party's Share - Level	0.017	0.019
	(0.018)	(0.018)
Fraction Black - Level	-0.002***	0.002***
	(0.001)	(0.001)
Farm Income Share - Level	0.375***	0.374***
	(0.021)	(0.021)
Political Dominance - First Difference	0.147***	0.130***
	(0.034)	(0.039)
Democratic Party's Share - First Difference	0.023**	0.024***
	(0.009)	(0.008)
Fraction Black - First Difference	0.005	0.006
	(0.006)	(0.007)
Farm Income Share - First Difference	0.620***	0.625***
	(0.031)	(0.027)
Wald Chi Square	15403.80	9878.14
Nobs.	360	360

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.

Table 24: Growth Rate of Per-Capita Personal Income

Dependent Variable: growth rate of real per capita personal income.

Variable	(1) GMMIV
Initial Income	-.470***
	(0.005)
Political Dominance - Level	-0.163***
	(0.027)
Democratic Party's Share - Level	0.029***
	(0.004)
Fraction Black - Level	0.000
	(0.000)
Farm Income Share - Level	0.214***
	(0.024)
Political Dominance - First Difference	-0.073***
	(0.019)
Democratic Party's Share - First Difference	0.055***
	(0.005)
Fraction Black - First Difference	-0.015***
	(0.001)
Farm Income Share - First Difference	0.290***
	(0.018)
Wald Chi Square	45206.31
Nobs.	552

Heteroskedastic robust standard errors are in parenthesis. ***, **, * represent significance at 1%, 5% and 10% levels, respectively.

Chapter 8

Conclusion

This dissertation expands the work Besley and Case (2003) and Besley et al (2008) on the connection between political dominance and economic performance. I began by constructing a new measure of political dominance that, unlike previous measures, includes both legislative and executive branches. The components of the new measure consists of the Democratic Party's share of seats in the upper and lower state houses, and the share of the vote in the gubernatorial election. This measure allows for political parties to compete across branches, and does not force political dominance to be equal to zero when it is zero in just one component of the overall measure. Two drawbacks to the new measure are that it assumes perfect competition across the three component part and that it gives them equal weight.

The new measure was used to investigate the effect of political dominance on relative personal income across 46 states from 1937-1996. I first estimated relative income equations treating political dominance as exogenous, using pooled OLS and fixed effects (FE) methods. In both cases political dominance had a significant negative effect (at the 1% level) on relative income. Treating political dominance as endogenous, I estimated the relative income regressions using a border set of instruments than Besley et al (2008). In both pooled IV and FEIV regressions the coefficients of political dominance are negative and significant at the 1% level.

The relative income equations assume that all states are on their balanced growth paths. If this is not the case, then states that are farther below their balanced growth path

would be expected to grow faster in those that are closer. We would see poorer states "catching up". Since the South was the poorest region of the country and it had the highest level of political dominance, it is possible that the relative income regressions incorrectly attribute the income gains to lower dominance that were really the result of poor states catching up to richer states as the neoclassical growth model predicts. To investigate this I estimated equations of growth of real per-capita personal income that included the initial (one period lagged) income as an explanatory variable. Also included as explanatory variables were political dominance and the change in political dominance. Inclusion of lagged income as an explanatory variable makes the regressors endogenous and results in biased and inefficient estimates of the coefficients. To overcome this problem, I used the GMM first difference estimator for dynamic panel data model proposed by Holtz-Eakin, Newey and Rosen (1988) and Arellano and Bond (1991). This method considers regressors as endogenous and generates additional instruments by utilizing the orthogonality condition between the lagged values of the regressors and the error term. Additionally, I use the GMMIV method that considers the first difference of the explanatory variables as well as additional variables as instruments. I found political dominance and its first difference to have significant negative effects on the growth of per-capita personal income at 1% level, using both in GMM and GMMIV methods.

Next, I used the coefficients from GMMIV estimation to investigate the extent to which the decline in political dominance could explain the convergence that took place state incomes over the period of study. I constructed a sequence of what the log of real per capita personal income for all the states would have been if political dominance had remained at its 1937-1940 levels. I then compare the coefficient of variation of the series

of actual income with that of the constructed sequence. The coefficient of variation of the actual income sequence declined 63% between 1937-1940 and 1993-1996. The coefficient of variation of the constructed sequence decline 51%. The additional 12 percentage points, or 19%, can be attributed to the decline in political dominance.

To investigate the effects of political dominance in legislative and executive branches on growth, I constructed individual measures of political dominance for each branch, and examined their effects on growth using GMM and GMMIV methods. The first measure considered only the Democratic Party's seat share in the upper and lower houses of state legislatures, while the second measure considered only the Democratic candidate's share of the vote in the gubernatorial election. I estimated separate regressions for each measure of political dominance, and \ I found that political dominance in both branches had significant negative effects on growth at 1% level. The coefficient of political dominance in the legislative branch-, however, was much higher magnitude than the coefficient of political dominance in the executive branch.

I also estimated the effect of political dominance in both branches jointly in one equation. The coefficients for both the level and first difference of the measure of political dominance in the legislature are negative and significant at the 1% level. Both coefficients are also negative for the measure of political dominance in the executive branch, but now only the coefficient for the first difference is statistically significant (at the 5% level). A problem with this estimation is that it does not distinguish between situation where the same party controls both the executive and legislative branches, and one where different parties control each branch. In other words, this estimation assumes that all political competition takes place within a branch of government, and none

between branches. To correct for this, I included a variable that was the product of the Democratic Party's dominance of the legislature and its dominance of the governorship. This variable takes on a positive value when the same party is dominant in both branches, and it takes on negative values otherwise. Not only does the coefficient of this interaction term turn out to be negative and significant, implying that lack of competition across branches reduces growth, it also dominates in magnitude and statistical significance all the other political dominance variables. This result has two major implications. First, it implies that competition across branches is an important determinant of growth. Second, it strongly suggests that the main reason why political competition within a single branch is negatively associated with growth is that the same party is more likely than not to dominate both branches. Political dominance in one branch is not a bad proxy for dominance over the entire state government.

One weakness of my basic measure of political dominance is that it gives equal weight to each of the three component parts. I also consider a measure that gives equal weight to the legislative and executive branches. Once again I find that the effects of political dominance on income growth are negative and significant at the 1%, but the magnitudes are smaller compared to the case where I gave equal weight to each state house and the governorship.

In general I find that the greater weight given to the gubernatorial vote in measuring political dominance, the lower in magnitude of its effects on growth.. The concept of political dominance that I have in mind, and that is captured in the model of Besley et al (2008), is that of a persistent advantage that allows a party to be consistently successful at the polls and simultaneously engage in policies that are not wealth

maximizing. Measures of political dominance are ultimately measures of success at the polls, and such success can be due to transitory effects. It is quite possible that transitory, idiosyncratic effects are more important in the gubernatorial vote. For example, the attributes of a single individual may overcome a Party's advantage and substantially affect the gubernatorial vote. That would not be the case for a party's share of seats in the legislature. In my data set of 46 states over 15 four-year periods, the dominant party could potentially change between periods a total of 644 times. The majority party in the upper houses changed 26% of the time (a total of 165 changes) between four year periods. For lower houses it was even lower at 19% of the time (121 changes). The governorship, however, changed parties 52% of the time.

This may also explain why excluding the sixteen southern states eliminates the negative effect of political dominance on growth. The South is the region with by far the highest levels of political dominance. The type of persistent political dominance that I am trying to measure is most likely to have been present in that region. The low levels measured elsewhere are more likely to be measuring something else. Following this line of reasoning, , I add the growth rate of income from the previous four-year period as an instrument in my econometric model (including the the South). Adding this instrument does in fact reduce the magnitude of the effects of political dominance on the growth of per-capita personal income, though they remain negative and significant at the 1% level. This result suggests that current measures of political dominance, including of type used in this dissertation are measuring both transitory and persistent advantages. I believe that disentangling the two, at both the theoretical and empirical level, should be a promising area for future research.

The measure of political dominance has been used in this dissertation considers current success at the polls (transitory advantage) and may not necessarily represent persistent advantage of one party for long period of time. This work can be extended by providing a measure of political dominance which captures the persistent advantage and examine the effects of transitory and persistent advantage on economic performance.

Chapter 9

Data Appendix

Data on the political affiliation of members of state legislatures were collected from *The Book of the States*. Data on gubernatorial elections were taken from *Gubernatorial Elections: 1787 – 1997*. I use the annual fraction of democratic and republican seat shares in legislative branches and the democratic and republican vote shares in gubernatorial elections to calculate the annual level of political dominance. I then calculate the four year average of annual level of political dominance to obtain p_{dit}. I ignore the share of any third parties in the calculation of political dominance, because such parties have been insignificant in the U.S..

Data on state nominal farm income and population were collected from the website of the Bureau of Economic Analysis State nominal farm income was deflated by the Consumer Price Index (CPI) for all urban consumers using the base year 1982-84. The CPI was taken from the website of the Bureau of Labor Statistics.

Census data on the number of blacks for each state were collected from the website of the Bureau of the Census (www.census.gov). For non census years I interpolate from the census years.

In addition to the instruments for political dominance used by Besley et al (2005) I used political dominance (PD) and the Democratic party's share of the vote (DS) in the previous presidential elections, and the relative share of females in the population.

Data on the first two instruments was collected from *America at the Polls 1920-1964: A Handbook of American Presidential Election Statistics* and *America at the Polls*

1960-2000 John F. Kennedy to George W. Bush: A Handbook of American Presidential Election Statistics. The female share of the population was obtained from the website of the Bureau of Census. I interpolated the census data for non-census years.

Data on poll taxes and literacy tests have been collected from Davidson and Grofman(1994).

Data on state personal income was collected from the website of the Bureau of Economic Analysis. Nominal per-capita personal income was deflated by CPI for all urban consumers for the base year 1982-84.

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