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Who Voted?: Social Class and Participation in United States Presidential Elections

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WHO VOTED?: SOCIAL CLASS AND PARTICIPATION IN UNITED STATES PRESIDENTIAL ELECTIONS

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Low turnout remains a persistent problem in American politics. The decline in turnout has been studied in various ways. In some cases scholars analyze aggregate turnout data and compare turnout in election districts with high and low concentrations of particular social groups (Neimi and Weisberg, 1993). In other cases, surveys provide an opportunity to examine the causes and correlates of turnout at the individual level. Various researchers find that socio-economic factors are related to turnout. People with more education vote at much higher rates than those with less education, higher income and middle class people are more likely to vote than lower income people.

Based on various surveys, it has been widely accepted that lower class poople turnout out at low rates and contribute disproportionately to the decline in overall turnout in American presidential elections. However, other scholars argue that the class differences between voters and nonvoters in presidential elections remain the same from 1964 through 1988. This research examines whether lower class turnout at lower rates than non lower class. This research question starts from the problem of accuracy of survey research. As Neimi and Weisberg (1993) argue, surveys always obtain a higher turnout rate than official statistics reveal. They argue that misreporting

turnout is related to demographics, with more highly educated people most likely to claim they voted when they did not. To determine how accurate individual-level surveys are, I will use the method of ecological inference to examine voting behavior.

This study is expected to contribute to the study of voting behavior in several ways. First, using ecological inference, we do not have to rely solely on the survey data to study individual voting behavior. Secondly, as we are able to use aggregate-level data, we can locate behavior within its economic context.

The results confirm that the level of the participation of the lower class was lower in presidential elections than that of non lower class, and the lower class contributed to the decline of turnout more than non lower class did (contrary to claims of Leighley and Nagler). The estimates also indicate that non lower class turnout was stimulated by economic context to a greater degree than was the lower class turnout. Specifically, in most states and years, as the unemployment rate increases, the probability of the turnout by non lower class decreases at greater degree than the probability of the turnout by the lower class.

NOTE TO USERS

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Uisoon Kwon

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CHAPTER I

INTRODUCTION

American citizens have fought to gain voting rights starting from the extension of suffrage to propertyless white males in 1840. Women did not secure the vote until the ratification of the Nineteenth Amendment in 1920 and African Americans did not have the full right to vote until Voting Rights Act of 1965. Despite the historical struggle for universal suffrage low voting turnout in presidential elections remains a persistent problem in American politics.

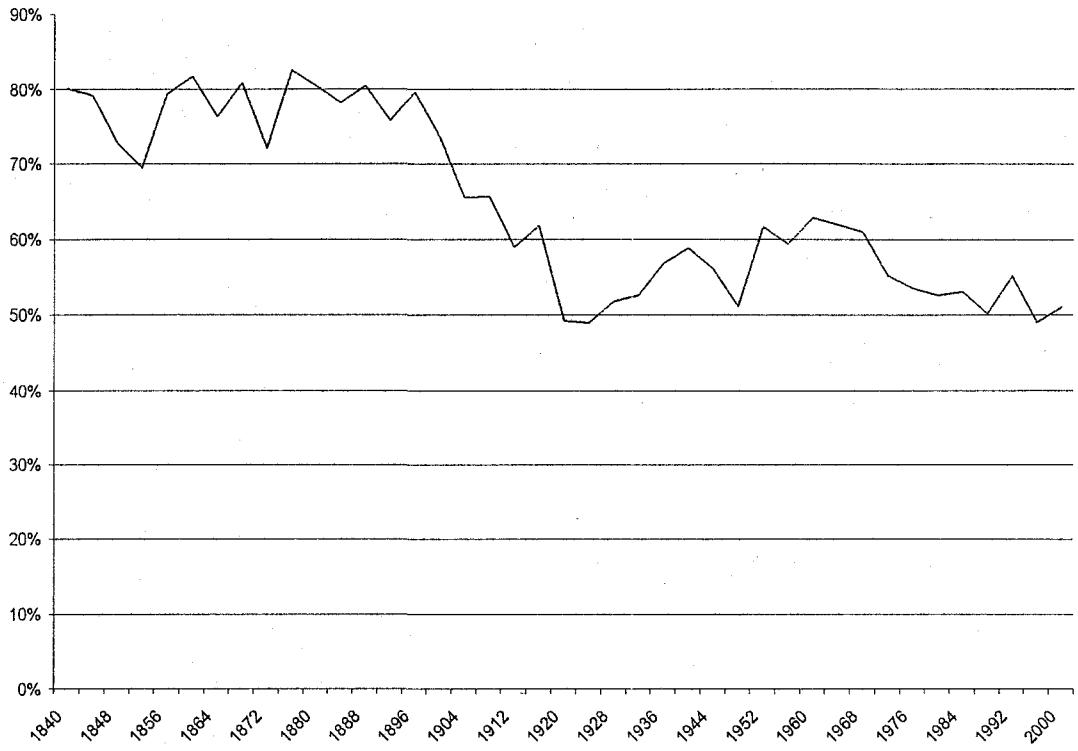
This research concerns a set of questions: (1) how has the lower class[1] voted overtime, (2) how much have they contributed to the decline of the turnout?, and (3) to what degree has their turnout been influenced by contextual factors? This research is important for two primary reasons. First, this study contributes to our theoretical understanding of socio-economic factors that are associated with turnout (Campbell, Converse, Miller, & Stokes, 1960; Milbrath & Goel, 1977; Wolfinger & Rosenstone, 1980; Boyd, 1981; Cassel & Hill, 1981; Shaffer, 1981; Teixeira, 1987). Second, this study advances our empirical understanding of the relationship between individual socio-economic status and turnout by asking how individual level relationships can be inferred from aggregate data (King, 1997; Wakefield, 2001; Corder and Wolbrecht, 2004).

[1] Lower class is defined in this research as a person who lives under the poverty line which is defined by US Bureau of Census.

The Turnout Decline in American Politics

When Bill Clinton was reelected president in 1996, only 49 percent of the eligible electorate cast ballots. Since the Clinton-Dole race in 1996 was one-sided from the start, many expected turnout would rise in 2000. However, despite being the tightest contest since the 1960 presidential election between Kennedy and Nixon, a mere 51 percent voted in 2000. This was a large difference from the Kennedy-Nixon race when 63 percent of voting age people voted. With the slight exception of the 1992 election when an economic recession and Ross Perot's race as a third party candidate increased turnout by 5 percent, the 1988 and 1984 elections were consistent with lower turnout over time. Neither can today's turnout rate even reach that of 19th century, nor can it sustain the rate observed in 1960. The average turnout rate in presidential elections between 1880 and 1896 was 79.2% and 84.1% among the Northern states. The average turnout rate among the Southern states was 60.3% (Kornbluh, 2000). The turnout rate dropped sharply after 1896. The average 79.2% turnout rate in presidential elections between 1880 and 1896 dropped to 65.0% between 1900 and 1916. Figure 1-1 shows the turnout trend in presidential elections from 1840 to 2000. The graph details the sharp decline of turnout after 1896. The turnout rate slightly rose during economic crises in the 1930s and began to drop since the 1960s to the present levels.

<Figure 1-1>
National Election Turnouts in America 1840 - 2000



Source: Years 1840 – 1920, (Burnham, 2002).
Years 1924 – 2000, (Committee for the Study of the American Electorate, 2000.)

Based on Figure 1-1, we can identify four different eras in the history of voting turnout: the apex era before 1900, first decline era between 1900 and 1920s, an era of increase between 1930 and the early 1960s, and another decline era after the 1960s. During the late 19th century, voting turnout remained very high. Kornbluh (2000:21) once noted that "late-nineteenth century voter turnouts were virtually complete." As observed above, the average voting turnout during this period was 79.2% nationwide and 84.1% among Northern states (Kornbluh, 2000). "Given that personal illness, changes of residence, and the difficulty of voting in rural areas would inevitably keep turnout below 100 percent," (Schier, 2003: 58) what explains this high turnout at this period? The

possible answers have been laid in the strong party system in American politics. Political parties played a significant role in American politics not only for politicians but also for voters as well (Schier, 2003). According to Silbey (1991: 211) "political parties dominated. They shaped everything that went on, and gave life, depth and intensity to the system." Politicians used strong parties to pursue their goals and parties proved to be useful instruments for politicians to employ in achieving their goals (Schier, 2003). Voters found parties useful as well. According to Kornbluh (2000) during this period the electorate grew by 50 percent from 1880 to 1896. Since new immigrants to America were not well informed and educated about complex American elections, political parties provided them with guidance. Schier (2003: 58) clearly states that "[E]xplaining the high turnout requires understanding how parties reached such a pinnacle of power in the 1870s and 1880s."

The first decline in American voting turnout was observed during 1900 and 1920s. During this period the average rate of turnout dropped to 61% compared to 79.2% in the previous period. During this period women got the right to vote after the Nineteenth Amendment was ratified. Although women's suffrage and registration barriers toward African American contributed to decline, those effects are marginal compared to other two major factors (Kornbluh, 2000; Schier, 2003). Two major reasons have been discussed to explain this first major decline of the turnout: progressive reform and party realignment after 1896 election (Schier, 2003). Significant changes occurred in elections during the progressive reform period. Among them the reform of voter registration and direct primary nomination of party candidates for office were the most significant factors affecting the decline of voting turnout (Schier, 2003). Until the 1890s voter registration

effect in turnout was not as significant as now since voting registration was local party officials' responsibility instead of individual responsibility and once voters registered, they were registered to vote for life (Schier 2003). Throughout the reform the registration responsibility moved from party officials to the individual citizens in 36 states and most of those states also required citizens to register again if they had not voted in recent elections (Schier, 2003). Stricter voter registration affected the lower class, minority voters, and new immigrants badly (Kornbluh, 2000). Stringent registration requirements were often applied to large cities, where most immigrants lived and the registration process was often limited to only few days a year, usually working days, so that the working class found it very difficult to register (Kornbluh, 2000).

During progressive reform period, poll taxes and literacy tests were employed and they played a significant role reducing participation as well. Particularly in Southern states, the use of both the poll tax and the literacy test significantly lowered the African American voters' participation systematically. Although these two legal barriers were designed to deprive African Americans, some whites who were poor and illiterate were also excluded (Kornbluh, 2000). Although the poll tax was not a popular device in northern states, literacy tests were widely accepted by many northern states. As Kornbluh (2000) addresses, by 1916 nine northern states limited the franchise to literate citizens and the tests seem to have been purposefully designed to disfranchise new immigrants.

The direct primary method adopted during progressive reform period in choosing party candidates significantly weakened the domination of the parties. Party organization lost the power to select their own candidates and consequently lost their influence in

electoral politics. Along with voting registration reform, primary reform made difficult parties to mobilize politicians and voters as well.

The major party realignment occurred after the 1896 election. The South became a Democratic Party region and Republicans preeminent in the Midwest and Northeast (Schier, 2003). During this period Republicans were not only dominant in those particular regions, but also they maintained dominant presidency. During this Republican dominant period, the parties lost interest in mobilizing voters. "It is simply more efficient to win cheaply by avoiding full-scale mobilization when your party is likely to prevail anyway" (Schier, 2003: 67). Kleppner's empirical analysis of the turnout decline after 1896 found that one quarter to one third of the turnout decline was accounted for by electoral competition (Kleppner, 1982, quoted in Schier, 2003).

During the third era in voting turnout history, turnout increased to 57 percent in 1936 compared to 52 percent in 1928 and 53 percent in 1932 as well (Figure 1-1). The turnout increase for the 1930s can be accounted by the fact that economically suffering voters during the Great Depression sought governmental solutions. The upward trend in voting turnout during this period continued until 1960 with one exception of 1948 when the turnout recorded only 51 percent. After the 1960 election, the turnout rate maintained its 60s until 1968.

Since the 1960s, the second long-term downturn in turnout is eminent in the turnout history in American politics. From 1972 to 2000 the average turnout is only slightly above 50 percent, compared to 59 percent during the first turnout decline era from 1896 and 1928 (Committee for the Study of American Electorate, 2000). The low turnout and its decline since 1960s is initially "puzzling" (Schier, 2003) or "mysterious"

(Patterson, 2002). What makes the low turnout since 1960s "puzzling" or "mysterious?" Two factors are often discussed: education and registration. In 1960, when the turnout rate was relatively higher, Campbell et al predicted in *The American Voter* that as the level of voters' education would increase, the level of the voting turnout would also increase. This prediction was based on their research finding that in 1960, college-educated voters were 50 percent more likely to vote than those who had not finished high school (Campbell et al, 1960). In 1960, half of the adult population did not have the high school diploma and fewer than 10 percent had graduated from college (Patterson, 2002). Today, 1 out of 4 adults hold a college degree and another 25 percent have attended college. According to *The American Voter*, the current turnout rate should have been higher than 1960s. More than thirty years after *The American Voter*, Miller and Shanks (1996) published *The New American Voter* and provided the tangible answer for the question of the education effects on the turnout. According to them, education played less of a role in shaping turnout. Rather, it is a generational influence. Table 1-1 shows the different educational attainment from different generations and it is fairly evident that the level of education increased as the generation changes. Observing this unexpected low voting turnout despite the significant increase in the level of education, Miller and Shanks (1996: 52-3) notes that "declining turnout can be attributed in large part to the replacement of the pre-New Deal generations by the post-New Deal cohorts."

<Table 1-1>
Educational Attainment* of Political Generations

Political Generations	Years of Formal Education 0-11	12	13+	Total	N
Pre-New Deal					
1. Pre-1920	62%	28	10	100%	386
2. Republican Normalcy, 1920-1928	50%	35	15	100%	338
New Deal					
3. Roosevelt Era 1932-1944	24%	54	22	100%	866
4. New Deal Consolidated, 1948-1964	8%	58	34	100%	488
Post-New Deal					
5. Years of Turmoil, 1968-1976	3%	41	56	100%	613
6. Reagan Era, 1980-1988	1%	59	40	100%	364

* Measured for the third, fourth, and fifth generations in 1952, 1968, and 1988, respectively, when youngest member of generation was at least 30 years of age. The distribution for the Reagan Era generation reflects the fact that the generation was captured in the earliest phases of their political life cycle. The oldest was 26 years old in 1988; some of the youngest were still in high school. Given the continuing increase in the proportions of high school graduates who go on to college (for at least one year), the ultimate figures for the Reagan-Bush generation will doubtless surpass those for the generation of turmoil.
Source: (Miller & Shanks, 1996: 53)

The first mysterious trend in the decline of voting turnout now can be accounted by the generational effect: replacing more politically involved pre-New Deal generation with less involved post-New Deal generation. However, the persistent low turnout after 1960s is puzzling for another reason. The registration requirements had been eased significantly during this period. The Twenty-Fourth Amendment in 1964 and Voting Rights Act in 1965 finally removed barriers for African American's voting registration. In 1960, only 29 percent of southern African Americans were registered to vote due to

various barriers, such as poll taxes, literacy tests, and white only primaries (Patterson, 2004). African American registration rose to 43 percent in 1964 and to more than 60 percent by 1970 (Patterson, 2002). Although the turnout rate of southern states had been consistently lower than that of non southern states, the gap between the two regions significantly got smaller. The difference between the turnout rate of southern states and non southern states were nearly 30 percentage points in 1960 and in 1996 the difference was only 5 percentage points (Burnham, 2002). According to Patterson (2002), the voting turnout rate of African Americans is now nearly the same as that of whites. The remaining puzzle is that despite nearly perfect universal suffrage the overall turnout declined.

Registration laws again have been relaxed. In 1993 the National Voter Registration Act (NVRA) or so called the Motor Voter Act was passed. This law made it possible for voting age population to register at the same time they renew their motor vehicle's registration, apply for Medicare, or food stamps. The impact of the NVRA on each state was different from each other. For instance, among four states examined in this research, Minnesota was not influenced by the NVRA because Minnesota was exempted from the NVRA due to its state law which allows every voter to register on election day. New York was not influenced much by the NVRA as well. New York had motor voter registration, mail registration and the registration through other state agencies before the NVRA was implemented by its state law. State of Michigan already allowed voters to register when they renew the driver's license by its state law. However, after the NVRA, Michigan had to implement mail registration and the registration through other state agencies. Among four states examined in this research, the lower class in

Michigan had the most benefits out of the NVRA since they could register to vote at the same time they apply for state welfare benefits. Throughout the nation, overall, it was expected to increase registration rate and consequently would lead to a higher turnout after that.

According to Federal Election Commission (1997) the number of registered voters increased by at least 10 million after the law was passed in 1993. However, the first presidential election after the National Voter Registration Act only recorded 49%, the lowest turnout rate since World War II compared to 55% of turnout rate recorded from the previous presidential election in 1992 (Burnham, 2002).

Significance of the Research

Voting is considered a lowest common denominator political act. Voting is surely one particular form of political participation. Other political participation includes joining political parties and interest groups, writing to elected officials, demonstrating for political causes, and giving money to political candidates or parties. In fact, however, despite its variety in political participation, Campbell, Converse, Miller, and Stokes (1960) say that for most Americans voting is the sole act of participation in politics. People who do not vote tend not to participate in any other kinds of political activities which require significantly higher attention and efforts. This suggests that as voting turnout declines, other volunteer participations in any kinds of political tasks also decline.

Key once indicated the importance of elections in preserving democracy;

> "Perhaps the basic differentiating characteristic of democratic orders consists in the expression of effective choice by the mass of the people in the election. The

> electorate occupies, at least in the mystique of such orders, the position of the principal organ of governance; it acts through election"(Key, 1955:3).

In that sense, the low turnout in elections, especially in presidential elections, may indicate problems with the concept of self government that is related heavily with representative democracy and the idea of majority rule. As voting turnout shrinks, outcomes the election produces cannot be an accurate representation of the true will of the public. The rule of self government indicates that ordinary people have a right to participate and through the general participation the majority would be determined and it prevails not only in vote counts but in the determination of public policy. When the voting turnout is low, the majority produced by the election would not be a true majority and it would create an ultimate question of self government. Furthermore when the turnout is low, it would generate another question of whether participation is evenly spread across society. If the participation is not evenly spread across the society, and this usually is the case when the turnout is low, then policies might become dominated by the intensely interested at the expense of the general interest. For instance, Verba, Schlozman, and Brady (1995) suggest that voters' and nonvoters' personal needs and interests differ and thus those who participate matter.

According to Hill, Leighley, and Hinton-Andersson (1995), recent literature show that the class composition of the electorate influences public policy. Recent literature tend to conclude that lower class mobilization is related to state policies, especially welfare policies and tax policies (Hill, Leighley, and Hinton-Andersson, 1995; Martinez, 1997; Verba, Schlozman, & Brady, 1995). Those literatures conclude that states where lower class voting turnout is higher tend to have more progressive policies toward lower class such as higher tax progressivity and generous state welfare policy. If this

conclusion holds true throughout the states and time, as turnout shrinks so does nonvoters' effects on policies.

Theoretical Framework

In this research mainly two schools of thought in individual voting behavior will be discussed: socio-economic oriented approach and rational choice approach. Although the Columbia school appeared in the early post World War II period and pioneered by Lazarsfeld, Berelson, and Gaudet (1948) focusing on individual socio-economic status, religion, and residential area in their voting analysis, their analytic tool quickly incorporated with a new emerging school, the Michigan school. The socio-economic oriented approach pioneered by the University of Michigan scholars, (Campbell, Converse, Miller, & Stokes, 1960) emphasizes not only individual demographic characteristics but also individual psychological attitude as well. The rational approach pioneered by Downs (1957) focuses on the benefits that individual may receive after they decide whether or not to vote.

Although the significance of the Columbia school lies at opening the new door for the individual level of analysis in the study of voting, their analysis tended to focus on the voting choice rather than turnout. The systematic voting turnout analysis at the individual level had not truly begun until the Michigan school conducted National Election Studies (NES) survey and reported their results in *The American Voter* (Campbell, Converse, Miller, & Stokes, 1960). Throughout the schools of thought in the study of turnout, demographic differences between individuals have been a favorable

answer for causes and correlates of turnout at the individual level. Based on survey data, various researchers find that socio-economic factors are related to turnout (Campbell, Converse, Miller, & Stokes, 1960; Milbrath & Goel, 1977; Wolfinger & Rosenstone, 1980; Boyd, 1981; Cassel & Hill, 1981; Shaffer, 1981; Teixeira, 1987). They agree that people with more education vote at much higher rates than those with less education and higher income and middle class people are more likely to vote than lower income people.

The decline of turnout has also been studied in terms of voters' perception on benefits from voting and participation, mainly inspired by rational choice approach. Texeira's study (1992) reveals that the turnout decline is very much associated with loosened "social connectedness" and consequently leading public withdrawal from the political world as response for turnout decline. Further, he argues, as "social connectedness" declines, the public came to view government as less responsive. Nye, Zeliow, and King (1997) also provide a similar observation in their study of political trust among the public that government is less responsive and does not satisfy the public's needs. It seems fairly evident that the cost of voting became decreased with various legal and institutional changes (Constitutional Amendment and national laws on voting and registration), but at the same time, public's perception of the benefits in the voting equation decreased as well.

The contextual factors focusing on either political institutions or economic conditions also have been another favorable answer for the question of turnout. The most favorable factors among other contextual elements are the registration and associated residency requirements. According to Flanigan and Zingale (1994), they remain the most important legal restriction of voting today. Turnout patterns among states provided by

U.S. Census Bureau clearly show that states where people are allowed to register at their polling place on election day have a higher turnout than other states. National, group and individual economic well being is also considered a significant factor to explain public support for political authorities and turnout as well (Shattschneider, 1960; Burnham, 1967; MacKuen, Erikson, & Stimson, 1992; Fair, 1988; Kinder, Adams, & Gronke, 1989).

Data and Methodology

Two major classes of hypotheses will be addressed: individual level and contextual level. At the individual level two basic questions will be answered: Is the proportion of the lower class voting turnout lower than that of upper class? Did the lower class contribute to the decline of turnout more than upper class did? Two questions are being answered at the contextual level as well. Is the proportion of the voting turnout among the lower class in states where registration requirements are moderate higher than the rate of the lower class in other states where registration process is more difficult? Is the turnout rate among the lower class lower in areas where economic conditions are poor.

The primary method employed in this research is ecological inference. Ecological inference is a method of inferring individual behavior from aggregate data. Making inference of individual behavior from the aggregate data has been controversy over decades. Robinson (1950) argues that making inference about individual behavior from the aggregate data could always be fallacy and there is no way to confirm that there is no fallacy or aggregation bias. This argument is well illustrated in the example of

relationship between ethnicity and literacy. He argues that although there is a high ecological correlation between proportion of African American and illiteracy, there is no way to confirm that a particular African American who lives in that area has a same amount of chance to be a illiterate man as ecological correlation estimates. Since the ecological fallacy problem was advocated by Robinson (1950), scholars either simply avoided ecological inference or more heavily relied on survey research data to study individual behavior. However, recently ecological inference method has been more developed and sophisticated by various scholars (King, 1997; Wakefield, 2004; Corder & Wolbrecht, 2004). The basic structure of ecological inference is that each observation (MCD, sub county, or precinct) is treated as a separate 2 X 2 table with known marginals (number of lower class voting age popoulation/non lower class voting age population and number of voters/non voters) and unknown inner cells (number of the lower class voters). Table 1-2 shows the basic 2X2 structure of ecological inference used in this research.

<Table 1-2>
2X2 Ecological Inference Table

	$Y = 0$ (non vote)	$Y = 1$ (vote)	
$X = 0$ (lower class)		Y_{0i}	N_{0i}
$X = 1$ (non lower class)		Y_{1i}	N_{1i}
	$N_i - Y_i$	Y_i	N_i

Two different sets of data used in this research include demographic data from the Census bureau and the voting turnout data from each state's office where the election results are posted. In order to examine the sets of hypotheses, four different presidential

elections will be analyzed, 1984, 1988, 1992, and 2000, in four different states, California, Michigan, Minnesota, and New York.

The rationale of the selection cases is solely based on data availability. First, in most states, the geographical unit in census data is different from the voting result, which will make merging process virtually impossible. Secondly, most of states do not provide the turnout results at the low level of aggregation such as precinct or even MCD (Minor Civil Division). Four states selected in this research satisfy those two conditions. First their geographical units in Census data are very well corresponding to voting results reported by state office, and they provide the voting turnout data at the low level of aggregation, precinct level for California, MCD level for Michigan and Minnesota, and County subdivision level for state of New York. Although case selection method was limited to the data availability, four states selected in this research will be expected to deliver some significant information. First, voters in Minnesota chose Democratic presidential candidates throughout the all elections examined in this research. California also chose Democratic presidential candidates in 1992 and 2000 elections. In the 1984 election, however, Michigan and New York chose Republican candidate, Reagan, and later switched to Democratic candidate Dukakis in 1988. In 2000 election, all states chose Democratic candidate Gore. This would yield us to study the lower class voting behavior under the relatively strong Democratic background states.

Secondly, these four states differ from each other in the way that people in each state choose to register to vote after the National Voter Registration Act in 1993. More than 60 percent of eligible voters in New York and 40 percent of voters in California used mail to register to vote while only 4.3% of voters in Michigan chose same way from 1995

to 1996 (Federal Election Commission, ND). While 81.1% of voters in Michigan registered through motor vehicle offices, only 14.2% in California and 21.4% in New York chose the same way (FEC, ND). These differences between states would give us a chance to study to what degree the lower class turnout responded to the political institutional change.

Plan of this Research

The following chapters provide an analysis of how individual economic status influences the voting turnout in the presidential elections. Chapter two introduces previous literature dealing with voting turnout and class. Various schools of thought in voting behavior will be discussed. Chapter three addresses the research design including data, hypotheses, research methodology, and statistical techniques used in this research. Chapter four presents the statistical results of a basic estimation strategy. Chapter five presents statistical results of a covariate model estimated with the constrained Bayesian hierarchical ecological inference. Chapter six summarizes this research and provides some guidance concerning contributions of this research and prospective research as well as its limitations.

CHAPTER II

LITERATURE REVIEW

Since this research empirically analyzes lower class voting turnout in presidential elections, a viable theoretical guideline in the study of turnout is necessary. Voting turnout has been affected by two sets of factors, individual factors and contextual factors. The study of turnout focusing on individual factors has been led by two major schools of thought, the socio-economic approach and the rational choice approach. Pioneered by the Michigan School (Campbell et al 1960), the social base approach has given much attention various socio economic attributes as determinants in voting turnout. On the other hand, the rational choice approach pioneered by Downs (1957) started the turnout study with the very strong mathematical assumption about individual utility maximization.

Political and economic contextual factors have also been favorable explanations for the question of voting turnout. Among the political contextual factors, registration law has received significant attention among scholars as possibly the most important factor affecting voting turnout. (Flanigan & Zingale, 1994). Macro economic conditions are also significant contextual factors that can affect voting turnout. Radcliff (1992) and Hill, Leighley, and Hinton-Andersson (1995) clearly state that the aggregate economic conditions matter in turnout.

This chapter describes how using social bases approach and rational choice approach assist in the analysis of the lower class voting turnout at the individual level and also how the changes in registration law and variation in economic conditions explain the

voting turnout at the contextual level. The conceptualization of class also needs to be elaborated as well. The class has been defined in many different ways. Occupation, education, and income are the favorable answers for the conceptualization of class. This chapter describes how to define class in various ways and will answer why income is the appropriate way to define class.

Individual Factors Affects Voting Turnout

Socio-Economic Base Approach

In their book, *The People's Choice*, Lazarsfeld, Berelson, and Gaudet (1948) using a panel study of voters in Erie County, Ohio, conducted by Columbia University's Bureau of Applied Social Research, investigated how voters chose a preferred candidate during presidential elections and whether they changed their minds during the campaign. They developed an "[I]ndex of Political Predisposition" to account for voter preference including socioeconomic status, religion, and residential area. They found that among the people with high socioeconomic status, Protestants, and rural residents, 74% reported an intention to vote Republican, while 83% of low socioeconomic status, Catholic, and urban residents intended to vote Democratic. Survey data from only one single county, however, had to yield the room for the study of voting behavior to an emerging new school of thought, Michigan school's socio-psychological approach. Besides, their attention was focused on the voting choice rather than voting turnout, which is not quite in this research's interest. Despite the limitation, their idea of socio-economic status, religion, and residential area influenced significantly the study of voting behavior.

As indicated above, *The American Voter* (1960), by Campbell, Converse, Miller, and Stokes is truly a starting point to discuss the systematic study of voting turnout at individual level. Not only was this an important book beginning of the consideration of political variables, but also it was a beginning of focusing on individuals' psychological affiliations as major factors related to the voting behavior.

The study of individual characteristics as determining factors in voting turnout emerged widely with the advent of voting surveys. The National Election Study (NES) and other surveys such Census Population Survey, made possible for scholars to find empirical correlates of voting (Boyd, 1981; Cassel & Hill, 1981; Campbell, Converse, Miller, & Stokes, 1960; Milbrath & Goel, 1977; Shaffer, 1981; Teixeira, 1987; Wolfinger & Rosenstone, 1980). Based on the result of surveys, they generally find that individual socio-economic status is correlated to voting turnout. People with more education and higher income vote at higher rates than those with less education and lower income. According to Leighley and Nagler (1992a), lower class people vote at roughly 60% of the rate of upper class people. It seems to be obvious that individual socio-economic status matters.

If there is a significant relationship between turnout and socio-economic status, then what social group or class contributed to the decline of voting turnout in American politics more? How and to what extent does individual socio-economic status matter? Early research focused more on the extent that the lower class people voted comparing to higher class people's voting (Burnham, 1987; Reiter, 1979; Bennett, 1991; Leighley & Nagler, 1992a; Patterson, 2002). On the other hand, more recent literature focus more on the question of why (Hill, Leighley, & Hinton-Andersson 1995; Verba, Schlozman, &

Brady, 1995; Hill & Leighley, 1996; Ringquist, Hill, Leighley & Hinton-Andersson, 1997; Winders, 1999, Leighley, 2001).

In his study of voting turnout of presidential election from 1964 through 1984 in Boston, Burnham (1987) also argues that there is a class difference in the decline of voting turnout in presidential elections. According to him, voting turnout of blue collar dropped from 66.1% in 1964 to 48% in 1980 while turnout of white collar dropped from 83.2% to 73.0% at the same time. Reiter (1979) also argues that the class bias in voting turnout has increased. Based on the NES from 1960 to 1976, he uses income as a measure of class and finds that the difference between the voting turnout of the top and bottom income quartiles has increased from 18.2% in 1960 to 28.7% in 1976. Using education as a measure of class, Bennett (1991) also argues that lower class people not only show lower rate of voting turnout but also they contribute decline of overall voting turnout. His finding shows that the voting turnout of whites who had college education dropped from 71% in 1964 to 59% in 1988. On the other hand, non college education turnout dropped from 63% to 31%. Although many works reviewed above clearly find the relationship between socio-economic class and voting turnout, none of them managed to answer why. Piven and Cloward (2000), however, shed some light on this question of why. Not only do they find that the lower class showed the greatest turnout decline from 1964 to 1980, they also find why the lower class decline is greater than other groups. Emphasizing the lower class as potential strong Democratic partisans, they find the mechanism that keeps turnout of lower socio-economic status low from the Democratic Party mobilization (Piven and Cloward, 2000). According to them, Democratic Party's failure to mobilize new voters was responsible for turnout decline among the lower class

(Piven and Cloward, 2000). They argue that registration fell among the lower class more than others due to less mobilization by Democratic Party and consequently led the lower turnout among the lower class (Piven and Cloward, 2000).

However, Leighley and Nagler (1992a) indicate that Bennett's measurement of education did not capture accurately class since the meaning of college education in 1964 is quite different from in 1988. Also non college education was more common in 1964 than in 1988.

On the other hand, however, some scholars challenge the conclusion of the class difference in the decline of voting turnout in the American politics. Leighley and Nagler (1992a) using various demographic data from the NES and CPS, find that the class differences between voters and nonvoters in presidential elections remain the same from 1964 to 1988. They argue that although there is a wide range in turnout across income groups, this fact does not imply a significant change in relative turnout rates over time. Rather, they find that, focusing on income as a measure of class, the turnout of lowest income groups dropped 6% while that of highest income groups dropped 9.1%. This class indifference is also found in Shields and Goidel (1997). In their study on congressional election and class biases in voting turnout, they find that the declining rates of turnout since the early 1960s have occurred among all segments of society, not just among the lower classes.

The New American Voter (Miller and Shanks 1996), directly inspired by *The American Voter* (Campbell et al 1960), gives us thoughtful information on voting turnout. Admitting its puzzling situation about voting turnout, where the turnout rate is low and declining while the level of education increased and registration law became moderated,

Miller and Shanks (1996) argued that the lower turnout rate can be accounted by generational differences. Dividing voters into two separate groups, pre-New Deal and post-New Deal, they argued that the turnout variation had been explained not by socio-economic base, rather psychological political involvement in different areas, where pre-New deal group showed very high interest in politics and on the other hand, post-New Deal generation did not involved in politics as much as their predecessors.

Rational Voting Approach

Downs pioneered the concept of rational voting in his book, *An Economic Theory of Democracy* (1957). He discusses the possibility that voters decide to vote in the same way economic decisions are made. The factors involved in his analysis are the possibility that a voter will affect the outcome by voting, the belief that one candidate will be better for them than another, and what it costs to vote. According to him, then, when the costs of voting outweigh the benefits derived from it, it would be irrational for people to vote. Tullock (1967) first formalized Down's notion of rational voting as C, the cost of voting, P, the probability that citizens will affect the election outcome by voting, and B, the expected benefit. People vote when PB, the probability that their vote will make a difference times the expected benefit, is greater than the costs, C. If someone's voting decision is solely based on this formula, nonvoting is totally rational since each individual has only one cast and will have very little probability of affecting the total outcome. P is very small, so PB will be very small. People nevertheless vote. Why?

Riker and Ordeshook (1968) introduced a different interpretation of the probability term P to answer why people vote even if PB is smaller than C. According to them, what matters is that the individual's perception of his or her chance of affecting the outcome of the election depends on how close the election is perceived to be. No matter how close the election objectively is, some individuals perceive elections to be very close. Using data from the Survey Research Center 1952-1960 election studies, they found that closeness had an effect on turnout. They also added the concept of a citizen's sense of duty to vote, D into the Tullock's formula, which is considering that their vote may help the long-term condition of democracy even if their short-term calculations indicated voting would not be the rational choice. Thus, the complete formula is that the gains from voting are the expected benefit plus the sense of duty minus the costs: $PB + D - C$.

This mathematical way of explaining voting behavior was challenged by Ferejohn and Fiorina (1974: 535) arguing that P, the probability of affecting the election outcome is irrelevant. They argue that people do not ask themselves to what extent they have an influence the election outcome. Instead, people might ask, "[M]y god, what if I didn't vote and my preferred candidate lost by one vote? I'd feel like killing myself." In that sense, the benefits are greater than the costs for some individuals, and for these people voting is rational. People in Florida in great extent, Wisconsin, Oregon, New Mexico, and some extent Iowa may have this kind of feeling after 2000 presidential election.

Although the formal rational choice approach in the study of voting turnout was challenged, the concepts of benefits and costs were widely accepted by the social base approach in the study of voting turnout. While the early trend in the social base approach

tried to explain the simple association between individual's socio-economic characteristics and turnout, Wolfinger and Rosenstone (1980) pioneered to seek further by asking how different individual socio-economic characteristics perceive benefits and costs in voting differently and how different perceptions on benefits and costs affects individuals' turnout decisions. They found that "[R]ich people have a bigger 'stake in the system' and thus are more highly motivated both to make the appropriate choice on election day and to support the political system by participating in it" (Wolfinger and Rosenstone 1980, 22). Rich people's perception on benefits is greater than perception on costs in this case and thus rich people vote more than poor people. The notion of the different classes and different voting behavior based on their economic perception appeared earlier work by Lipset, Lazarsfeld, Barton, and Linz (1954: 1136). They once asserted that,

> The most impressive single fact is that in virtually every economically developed country the lower-income groups vote mainly for parties of the left, while higher-income groups vote mainly for parties of the right. Our explanation for this is simple economic self-interest. The leftist parties represent themselves as instruments of social change in the direction of equality; the lower-income groups will support them in order to become economically better-off, while the higher-income groups will oppose them in order to maintain their economic advantages. (1136)

In their research in 1978 by comparing seven democratic nations, Verba, Nie, and Kim also revealed that political systems with specifically working-class parties are most able to mobilize working class citizens. Under the two party system, where one party is not unlike another, it is fairly rational that the lower class in the U.S. does not have a positive perception on benefits in the turnout equation and rather their perception on costs would be greater than benefits and sense of civic duty.

Teixeira's study (1992) reveals that turnout decline is very much associated with loosened "social connectedness" and consequently public withdrawal from the political world as a response to turnout decline. Further, he argues, as "social connectedness" declines, the public comes to view government as less responsive. Nye, Zeliow, & King (1997) also provide a similar observation in their study of political trust among the public that government is less responsive and does not satisfy the public's needs. It seems fairly evident that the cost of voting became decreased with various legal and institutional changes (Constitutional Amendment and national laws on voting and registration), but at the same time, public's perception of benefit in the voting equation decreased as well.

The relationship between the public's perception of benefits and government responsiveness can also be found at state level as well. Hill, Leighley, and Hinton-Andersson (1995) argue that political participation by lower class voters should create pressures for government to respond with supportive policies. They tested the following hypotheses: the higher the turnout of the lower class, the more liberal is state welfare policy; the higher economic and fiscal stress, the lower the association between lower class turnout and welfare policy; and party competition is the linkage mechanism that relates lower class mobilization to policy. They use the U.S. Bureau of the Census' Current Population Survey data for their measure for lower class voter turnout and the mean Aid to Families with Dependent Children (AFDC) welfare grant which states provide clients of that program in a given year for welfare policy benefits. With pooled time series regression analysis they find that there is an enduring relationship between the degree of mobilization of lower class voters and the generosity of welfare benefits provided by state governments. They also note that this relationship becomes weaker

when there are remarkable political and economic events such as the "new federalism" or economic recession. Their finding implies that lower class voting turnout can be increased when the economic condition of each state is stable and economic recession demobilizes lower class people.

Hill and Leighley (1996) further examine the relationship between political parties and class mobilization in elections. Using the U.S. Bureau of the Census' Current Population Survey data and the relative number of seats in the state legislature held by each of the two major parties, they find that the more liberal and competitive the Democratic party is in a state, the greater the mobilization of lower class voters. Thus, liberal and competitive Democratic parties will enhance turnout of the lower class by increasing its perception on the benefits more than that of the upper class.

Conceptual Definition of Class

As a matter of fact, conceptualization of class has not been easy. As reviewed before, there are many ways to define different classes, varying from education level, occupational location, income, and collar types. Manza and Brooks (1999) well summarize various types of definition of the class. According to them, literatures in the study of voting behavior have defined class typically in one of three distinct ways. The most common approach is to distinguish blue-collar from white-collar. The assumption of this model in the conceptualizing of class is "between the middle class as a whole and the lower or working class" (Manza & Brooks, 1999:55). Despite its popularity, defining class based on collar types has some problems. Manza and Brooks (1999: 55)) say,

> It is relatively easy to see the limitations of such an assumption. First, there are important sources of class divisions within both the middle class(es) and the working class(es) that cannot be identified with a two-class mode. For example, it is very difficult to place routine white-collar employees working in service industries. While such workers do not have manual employment, they hardly enjoy the benefits of the employment relations typical of professional or managerial occupations. Further, important changes in the class structures of capitalist societies since World War II are difficult to identify with such a model.

The second approach, according to Manza and Brooks (1999), is the one that most contemporary sociologists use, but not is common in voting studies though. This approach defines class in terms of occupational location and/or employment situation. Manza and Brooks argue that there are two different conceptions of class in this approach, gradational and relational. While gradational is less common in less clear in the study of voting behavior, relational conception is more widely accepted in the study of voting behavior. They (1999: 56) argue that

> In relational approaches, different clusters of occupations are viewed as having similar – though not identical – employment situations and/or life chances. Rather than generating a scale of all occupations, relational approaches define classes in terms of either market or production relations. The result is a set of categorical distinctions among actors based on their employment situation.

The third approach is to distinguish classes on the basis of people's income. Basic logic, as Manza and Brooks argue, is straightforward. "Higher-income people have different material interests than lower-income people. They are better able to fend for themselves in the market, and thus should have much less use for government-provided social provision or progressive taxation. Conversely, lower-income people should be expected to have the opposite interests" (Manza & Brooks, 1999: 56). However, Manza and Brooks (1993) argue that there is a problem with this approach. They argue that

people with the same level of income might have different long-term economic interests. For example, semi-skilled factory worker and the college student part-time worker as a computer programmer might report same income but their expectation in long term interests might be different.

Despite its reported problem, there is enough justification to conceptualize class with income. Leighley and Nagler (1992a) argue that income is more preferable to occupation as the relevant measure of socioeconomic status because of three reasons. First, income is the more relevant measure with regard to government policy. Secondly, some occupations are difficult to specify whether they are white-collar or blue-collar. Finally, occupational rankings may not be stable over time.

Non Individual Factors

Not only individual characteristics, but also political institutions and economic conditions have affected voting turnout in the United States. Among the various political institutions, voter registration has been considered the most important political factor that can affect voting turnout. When other factors are controlled, according to Flanigan and Zingale (1994), registration and associated residency requirements remain the most important legal restriction on voting.

Economic conditions receive attention as theoretically relevant explanatory contextual factors for election outcomes. Since the political institutional barriers to registration especially the poll tax had been removed by various legal changes in 1960s,

variation in lower class turnout can be explained in part by the lower class' responsiveness to changes in the economic context.

Registration

Among other differences such as number of parties, frequency of elections, and number of legislative bodies (unicameralism or bicameralism), the registration requirement is considered a very plausible explanation for a great discrepancy between the level of turnout in the United States and other Western industrialized democracies (Boyd, 1981; Glass, Squire & Wolfinger, 1984; Jackman & Miller, 1995; Powell, 1986; Wolfinger & Rosenstone, 1980; Teixeira, 1992, Katz, 1994). For instance, among the Western democratic countries, only the United State and France have the personal registration requirement (Patterson, 2004). Table 2-1 shows the differences in voting turnout and personal registration among the Western democratic countries.

Many other Western democratic countries have nonpersonal systems of voter registration, which means that registering voters is the responsibility of the government or political parties (Burnham, 1982; Glass, Squire & Wolfinger, 1984; Piven & Cloward, 1988; Teixeira, 1992; Winders, 1999). On the other hand, the United States has a personal system of registration, which means that the responsibility of registering to vote

<Table 2-1>
Voting Turnout and Personal Registration Requirement in Western Democracies

Country	Voting Turnout	Personal Registration
Belgium	92%	No
Italy	86%	No
France	85%	Yes
Denmark	83%	No
Austria	82%	No
Germany	78%	No
Great Britain	78%	No
Canada	69%	No
Japan	67%	No
United States	50%	Yes

Source: (Patterson, 2004: 207)

lies at individual rather than the government. There is a broad consensus that a personal system of registration hinders voting turnout (Burnham, 1982; Glass, Squire & Wolfinger, 1984; Piven & Cloward, 1988; Powell, 1986; Wolfinger & Rosenstone, 1980; Teixeira, 1992).

Voting registration, however, is significantly moderated since the 1960s with the ratification of the Twenty-Fourth Amendment in 1964 and the passage of Voting Rights Act in 1965 and by National Voter Registration Act in 1993 also known as the Motor Voter Act. The Twenty-Fourth Amendment prohibits the imposition of a poll tax in any federal election, primary or general.

The Voting Rights Act also removed literacy tests and the attorney general is authorized to dispatch federal examiners to southern states for the purpose of enrolling African Americans and observing registration practices (DiClerico, 2004). In 1970

Congress extended the Voting Right Act for another five years. It lowered voting age in all federal elections from twenty-one to eighteen and prohibited states from imposing a residency requirement greater than thirty days in presidential elections (DiClerico, 2004). Although extended Voting Right Act in 1970 lowered voting age to eighteen from twenty-one in federal elections, the legal voting age of 18 in all elections, including state elections, was not fully adopted until the ratification of the Twenty-Sixth Amendment to Constitution.

Congress passed the National Voter Registration Act (NVRA) in 1993 allowing voters to register when they apply for their driver's license renewal. It also allowed voters to register when they apply for their welfare and disabled assistance (DiClerico, 2004). It is fairly evident that before the various legal changes in elections, registration requirement presented more obstacles to voting. Many states in the United States had numerous laws and regulations that complicated the process of registration, including a lack of absentee registration, irregular weekday registration hours, a lack of weekend registration, and so on (Winders, 1999). For example, the state of Michigan neither allowed the mail registration until the passage of the NVRA nor the registration through the other state agencies although they had the motor voter registration. On the other hand, state of New York was not influenced much by this national law since New York election law already allowed voters to do things that the NVRA mandated, such as the motor voter registration, mail registration and the registration through other state agencies (Federal Election Commission, no date). The National Voter Registration Act of 1993 has had some success since its passage. In 1996, 72.77% of the voting age population was registered (Federal Election Commission, 1997). There are still other obstacles, though,

such as closing dates by which voters must register in many states. Various registration laws by states are listed in Table 2-3.

Was lowering registration requirements by various legal changes really successful in terms of voting turnout? Wolfinger and Rosenstone (1980) said that the highest voting turnout in modern times occurred in 1960, where legal barriers to registration were common such as poll taxes and literacy tests. Turnout reached its lowest point in 1996 after the passage of the National Voter Registration Act in 1993. Registration itself does not significantly explain the lower turnout in the United States. Table 2-2 shows the percentage of persons registered who actually voted from 1960 to 2000 elections. While 88.1% turned out among registered voters in 1960, the turnout rate dropped to 82.5% in 1968 after the Twenty-Fourth Amendment and the Voting Rights Act. Turnout rate among the registered voters dropped even more after the National Voter Registration Act in 1993 showing only 64.3% in 1996 and 65.6% in 2000. The second column of the table also shows the overall turnout rate among all voters during the same time. The decline of the rate is fairly consistent with the turnout rate among the registered voters. This suggests that as a matter of fact, the number of registered voters increased during this time but did not lead to higher turnout. However, if we take a look at only southern states, removing legal barriers did influence southern electorate significantly. According to Wattenberg (2004) during years from 1960 to 1996, most of southern states showed fairly large amount of turnout increase. For example, Mississippi gained 20.8 percentage points increase in turnout rate from 1960 to 1996, the largest gain among states, and the state of Alabama also gained 17.5 percentage points during the same time. A significant part of this increase was due to more African American participation. The turnout

decline in non southern states and increase in southern states makes the gap between two regions in turnout rate narrower (Burnham, 2002). The difference was nearly 30 percentage points in 1960 and it became only 5 percentage points in 1996 (Burnham, 2002). According to Patterson (2002), the difference in turnout rate between African Americans and Whites does not exist anymore.

<Table 2-2>
Percentage of Persons Registered Who Actually Voted, 1960-2000

Year	Turnout Rate Among Registered Voters*	Turnout Rate Among All Voters**
1960	88.1	63
1964	83.4	62
1968	82.5	61
1972	74.5	55
1976	75.4	54
1980	74.3	53
1984	72.6	53
1988	70.5	50
1992	75.8	55
1996	64.3	49
2000	65.6	51

Source: * (Wattenberg, 2004)
** Figure <1 - 1>

One remaining legal barrier for registration requirements is now the closing date for registration. As seen in Table 2-3, six states allow citizens to register on election day and North Dakota does not even have registration requirement at all. The federal law mandates that closing date should not be longer than thirty days prior to the election. According to Wattenberg (2002), states with election day registration or no registration showed relatively higher turnout than other states where registration prior to the election is mandatory. In 1996 election, 15 percent of Minnesota's voters registered on election day, and in Idaho the figure was 13 percent. Without the voters who registered at the polls, these states would have had just slightly better than average turnout rates. Despite

no closing date for registration, the turnout decline is not unlike other states. North Dakota, New Hampshire, and Idaho are among those where turnout has dropped significantly from 1960 to 1996 (Wattenberg, 2004). Maine and Minnesota, on the other hand, show relatively little turnout decline.

It is also noticeable that some scholars (Glass, Squire & Wolfinger, 1984; Piven & Cloward, 2000; Wolfinger & Rosenstone, 1980; Teixeira, 1992) pointed out the registration laws affect individuals among the lower class or with little education more than they affect other groups in the electorate. Before removing various legal barriers, specially the poll tax during 1960s, it is obvious that the lower class was kept from registration and consequently out of the opportunity to vote. According to Teixeira (1992), the association between socio-economic status and registration is fairly strong. It seems that the registration requirement has something to do with individual's socio-economic status.

<Table 2-3>
Voter Registration Laws by State

State	Mail Registration	Closing Date	Absentee Registration	Automatic Cancellation
Alabama	N	10	*	~
Alaska	Y	30	+	6 yrs
Arizona	Y	29	+	4 yrs
Arkansas	Y	30	+	4 yrs
California	Y	15*	+	~
Colorado	Y	29	+	2 General Elections
Connecticut	Y	14	+	~
Delaware	Y	20	+	4 yrs
Florida	N	29	+	2 General Elections
Georgia	Y	30	+	~
Hawaii	Y	30	+	2 Election Cycles
Idaho	Y	0	+	4 yrs
Illinois	Y	29	*	~
Indiana	Y	29	*	~

Iowa	Y	10	+	2 General Elections
Kansas	Y	14	+	2 General Elections
Kentucky	Y	28	+	~
Louisiana	Y	24	*	~
Maine	Y	0	+	~
Maryland	Y	29	+	~
Massachusetts	Y	20	+	~
Michigan	Y	30	+	~
Minnesota	Y	0	+	4 yrs
Mississippi	Y	30	+	4 yrs
Missouri	Y	28	+	2 General Elections
Montana	Y	30	+	1 Presidential Election
Nebraska	Y	11	+	~
Nevada	Y	30	*	4 yrs
New Hampshire	N	0*	*	2 Elections
New Jersey	Y	29	+	~
New Mexico	Y	28	*	2 General Elections
New York	Y	25	+	5 yrs
North Carolina	Y	25	+	~
Ohio	Y	30	+	4 yrs
Oklahoma	Y	24	*	~
Oregon	Y	20	+	2 General Elections
Pennsylvania	Y	30	*	~
Rhode Island	Y	30	*	2 Federal Elections
South Carolina	Y	30	+	2 General Elections
South Dakota	N	15	+	~
Tennessee	Y	30	+	~
Texas	Y	30	+	~
Utah	Y	5	*	4 yrs
Vermont	Y	17	*	~
Virginia	Y	28	*	4 yrs
Washington	Y	30	*	~
West Virginia	Y	30	+	~
Wisconsin	Y	0	+	4 yrs
Wyoming	N	0	+	1 General Election

+ All voters eligible for absentee registration

*Absentee registration only allowed for special circumstances such as military/overseas citizens, religious reasons, etc.

~ No automatic cancellation from voter lists

North Dakota is excluded from this table due to lack of voter registration

Source: The Book of States 1996 1997. V31. The Council of State Governments, Lexington, KY)

Economic Contextual Factors

During 1960s, political and legal barriers to registration had been removed by the Twenty-Fourth Amendment in 1964 and the Voting Rights Act in 1965. The poll tax and literacy test had gone into history. The variation in lower class turnout before these election reforms could be explained in part by political context, those politically imposed legal barriers, especially the poll tax. Since political context had changed in favor of the lower class, however, it would be reasonable to assume that economic context would help to explain the variation of the lower class turnout.

As NES and CPS survey data became relatively abundant, according to Bartels (2001), longitudinal data can be used more systematically to capture the contextual factors in election studies. The effects of macroeconomic condition on turnout have been focused more on voting choice rather than voting turnout (Radcliff, 1992). Markus (1988) examined the effects of the economic contextual factor in voting using the eight election years of NES survey data. The pooled time series analysis using eight election years and the fairly large number of cases varying from 679 cases in the 1972 election to 1,357 cases in the 1984 election, made it possible to capture the effects of the national economic condition on the individual voting choice. Although his study was limited to the voting choice instead of the voting turnout, his approach shed light on the importance of the contextual factor in the study of voting behavior. He states that "first, the pooling strategy took into account variation in individual's attitudes both within and across elections; second, pooling permitted an examination of the effects on the vote of factors (such as incumbency or national economic conditions) that are constants in a cross-

sectional design" (Markus, 1988: 151). He concluded that national economic conditions had played a significant role in voting choice rather than did personal economic perceptions (Markus, 1988).

On the other hand, Radcliff (1992) claimed that if the economy matters in turnout, without understanding the relationship between voting turnout and economy, the study of turnout is incomplete. Employing pooled time series analysis covering national elections for 29 countries from 1960 to 1987, he found that there is a difference between the industrialized and developing world in response to the economic fluctuation (Radcliff, 1992). Poor economic conditions lower turnout in industrialized world while they mobilize turnout in developing world (Radcliff, 1992). According to him (1995), when economic conditions are poor, people tend to skew their attention to personal concerns and consequently they withdraw from the political process. He also argues that under poor economic conditions, people who described themselves as worse-off, tend to be affected by macroeconomic condition at higher degree than other people. However, on the other hand, people in countries where the economic security programs are well funded, are not affected by poor economic conditions as much as people in countries where the economic security programs are poor (Raddcliff, 1995).

Hill, Leighley, and Hinton-Andersson (1995) found similar results from their study on the relationship between the lower class participation and the welfare policies in states. Once they found the relationship between the lower class participation and the more liberal welfare policies in states, this relationship became weaker when the national economic condition was bad.

CHAPTER III

RESEARCH DESIGN AND METHOD

This research will examine turnout of the lower class in the presidential elections of 1984, 1988, 1992, and 2000. I will pursue two major classes of hypotheses: individual factors and contextual factors. First, I will test the socio-economic status hypothesis. Is the probability of the lower class turnout lower than that of the non lower class? Did the lower class contribute to the decline of turnout more than the non lower class did? Estimates of the probability of the lower class' turnout from 1984 and 1988, 1992, and 2000 presidential elections will allow us to confirm or disconfirm this expectation.

Second, I examine contextual factors as determinants of lower class turnout in presidential elections. Two factors are considered important to explain lower class turnout: registration laws and economic conditions. Registration is considered one of the most important factors affecting voting turnout. It is widely accepted that the more the registration law is moderate, the more people tend to turn out (Wonfinger & Rosenstone, 1980; Burnham, 1982; Teixeira, 1992; Flanigan & Zingale, 1994). Scholars also find that the probability of registration is associated with individual socio-economic status (Glass, Squire & Wolfinger, 1984; Piven & Cloward 2000; Wolfinger & Rosenstone, 1980; Teixeira, 1992). Where registration laws are strict, individuals among the lower class or with little education are less likely to register than others. Based on these previously examined propositions, I will test the hypotheses: Is the turnout rate of the lower class in

states where registration requirements are moderate higher than the turnout rate of the lower class in states where registration law is strict?

Secondly, Radcliff (1995) found that economic conditions affect turnout. According to him, in industrialized world when macro economy goes bad, turnout drops. This effect may be different for lower class and other voters. He also argues that when economic security programs are in effect, the negative effects of poor economic conditions on turnout became smaller. Radcliff (1995) claims that poorly educated and low income earning persons are less likely to vote than others. However, since lower class is defined in terms of the poverty line in this research, it can be assumed that most of the lower class are covered by aid programs. The lower class is affected by macroeconomic conditions but at the same time their minimum economic security is guaranteed by aid programs. This suggests following hypothesis: the lower class would respond to macroeconomic conditions to a lesser degree than non lower class would respond.

Methods

Ecological Inference

The basic structure of ecological inference is that each observation (MCD, sub county, or precinct) is treated as a separate 2 X 2 table with known marginals (number of lower class voting age popoulation/non lower class voting age population and number of voters/non voters and unknown inner cells (number of lower class voters. Table 3-1 shows the basic 2X2 structure of ecological inference used in this research.

<Table 3-1>
2X2 Ecological Inference Table

	$Y = 0$ (non vote)	$Y = 1$ (vote)	
$X = 0$ (lower class)		Y_{0i}	N_{0i}
$X = 1$ (non lower class)		Y_{1i}	N_{1i}
	$N_i - Y_i$	Y_i	N_i

N_{0i}, N_{1i}, Y_i, and $N_i - Y_i$ are non-negative integers that are observed representing the number of the lower class voting age population, number of non lower class voting age population, number of voters, and number of non voters in MCD i. The inner cell entries Y_{0i} and Y_{1i} are not observed. Y_{0i} represents the number of the votes by the lower class and Y_{1t} represents the number of the votes by the non lower class. It is assumed that $Y_{oi}|N_{0i} \sim Binomial(N_{0i}, p_{0i})$ and $Y_{1i}|N_{1i} \sim Binomial(N_{1i}, p_{1i})$, where p_{0i}, and p_{1i} are ultimate quantities of interests representing the probability of a vote by the lower class and the probability of a vote by the non lower class respectively. Since the probability that an individual votes, q_i, is the weighted sum of two independent probabilities: the probability of a vote by the lower class, p_{0i}, and the probability of a vote by non lower class, p_{1i}, we can express the marginal probability that an individual votes as follow;

$$q_i = p_{0i}x_i + p_{1i}(1 - x_i),$$

where, $x_i = N_{0i} / N_i$ and $1 - x_i = N_{1i} / N_i$, are respectively the observed proportions of the lower class and non lower class. This basic structure of ecological inference and its notations will be revisited often as I discuss the Bayesian approach below.

Brief History of Ecological Inference

Various previous methods of ecological inference have been introduced including Goodman's regression (1959) and Duncan and Davis's method of bounds (1953). Although there were some problems and limitations with these methods, they have contributed to recent advances in ecological inference. Goodman's regression was first introduced in 1953 and had been the most frequently used method of ecological inference (King, 1997). Goodman's regression method is based on the accounting identity. The accounting identity can be drawn from the marginal probability of the voting turnout as indicated above, where $q_i = p_{0i}x_i + p_{1i}(1-x_i)$. This accounting identity can be rearranged in terms of x_i as follow,

$$q_i = p_{1i} + (p_{0i} - p_{1i})x_i .$$

As seen from the above equation, the proportion of voting turnout, q_i is a function of the proportion of the lower class, x_i. It is also easily seen from the equation that this cannot be solved at MCD level since we have two unknown quantities, p_{0i}, and p_{1i}. Instead, Goodman's regression is based on the assumption that p_{0i}, and p_{1i}, where the probability of a vote by the lower class and the probability of a vote by the non lower class constant for all MCDs. With this constant assumption for p_0, and p_1 for all MCDs, we can rewrite the equation by dropping *i*s from the equation for the state level accounting identity.

$$q = p_1 + (p_0 - p_1)x$$

Now, p_0, and p_1, the proportion of the lower class voting turnout and the proportion of non lower class voting turnout at the state level can be obtained by regressing the probability that individual votes on the proportion of the lower class. Goodman's

regression, however, suffers from this unrealistic constant assumption that the parameters of interest do not vary across units that are being estimated. While the core problem of ecological inference is identifying and using information outside of the sample data to inform estimates of parameters of interest, the constant assumption of parameters of interest is problematic and unrealistic.

In order to exploit the information in the data better, some efforts have been made. Duncan and Davis's methods of bounds (1963) helped to narrow logical bounds. Since the ultimate quantities of interest, p_{0i}, and p_{1i}, are not observable, it appears that there is no information concerning those ultimate quantities of interest in Table 3-1. However, when there are extreme cases, the ultimate quantities of interest are obtainable. For instance, if the number of the lower class in certain MCD is zero, which is not unusual from the dataset in this research, then we can obtain individual level information on p_{1i}, the probability of a vote by non lower class. As this extreme case suggests, once the number of non lower class is significantly large in relation to the number of the lower class in certain MCD, logical bounds of p_{1i} gets narrower. Duncan and Davis (1953)'s method of bounds is based on this logical boundary of each quantity of interest.

The Bayesian Hierarchical Ecological Inference

Basic Structure of the Bayesian Approach

The primary difference between Bayesian statistical conclusions and conventional frequenist statistical conclusions is that Bayesian statistical conclusions about an

unknown parameter are made in terms of probability statements (Gelman, Carlin, Stern & Rubin, 2004). The probability statements used in Bayesian inference and Bayesian statistical approaches are based on updating information using what is called Bayes' law (Gill, 2002). Bayes' law is basically derived from the conditional probability. Suppose there are two evens of interest A and B, and two events A and B are not independent. The conditional probability of A given that B has occurred is given by:

$$p(A \mid B) = \frac{p(A,B)}{p(B)},$$

where $p(A,B)$ is the probability that both A and B occur and $p(B)$ is just the unconditional probability that B occurs. Another definition is also possible where the event A occurs first;

$$p(B \mid A) = \frac{p(B,A)}{p(A)}.$$

Since the probability that A and B occur is the same as the probability that B and A occur, above two equations can be arranged following way;

$$p(A,B) = p(A \mid B)p(B)$$

$$p(B,A) = p(B \mid A)p(A)$$

$$p(A \mid B)p(B) = p(B \mid A)p(A)$$

$$p(A \mid B) = \frac{p(A)}{p(B)} p(B \mid A)$$

where the last equation is the Bayes' law. An equivalent form of the Bayes' law omits the factor $p(B)$, which does not depend on A and , with fixed B, can thus be considered a constant, yielding the unnormalized posterior density, which is the right side of the below equation.

$$p(A \mid B) \propto p(A)p(B \mid A)$$ (Gelman, Calin, Stern, & Rubin, 2004: 8)

According to Gelman and others, using Bayes' law with a chosen probability model means that the data *B,* at the above example, affect the posterior inference only through the function *p(B|A)* , which when regarded as a function of *A*, for fixed *B*, is called the likelihood function. In this sense, the unnormalized posterior distribution of the parameter of interest (*p(A|B)*)is proportional to the prior distribution (*p(A)*) times the likelihood function (Gill, 2002).

The Bayesian approach generally includes three basic steps. First, we need to set up a full probability model. This process requires specification of a joint probability distribution for all observable and unobservable quantities. Secondly, we update knowledge about the unknown parameters by conditioning this full probability model on observed data. During this process the appropriate posterior distribution would be calculated and interpreted, which means the conditional probability distribution of the unobserved quantities of ultimate interest given the observed data would be estimated. Finally, evaluating the fit of the model and the implications of the resulting posterior distribution is involved in this process (Gill, 2002; Gelman, Calin, Stern, & Rubin, 2004).

Bayesian Hierarchical Approach

King (1997) and Achen and Shively (1995) further developed the efforts to narrow logical bounds by adding information. Recently, a Bayesian modeling approach that relies on a hierarchical structure has been introduced to introduce information from

the aggregate to the estimates of quantities at lower levels of aggregation (King, Rosen, & Tanner, 1999).

I use three different Bayesian hierarchical ecological inference models to estimate the probability of a vote by the lower class. First I estimate a basic model, the probability of a vote by class with no prior information. I introduce no information or assumptions about the probability of a vote by the lower class or non lower class in the election. Second, I estimate a basic model with prior information based on estimated registration. This requires two steps. First, I estimate a probability of a registration by class and then estimate the probability of a vote by class given upper bounds implied by registration. This is a simple logic that the number of observed voters should logically be smaller than or equal to the number of registered voters. I introduce registration to see if registration information changes the turnout estimates. Finally, I estimate an extended model of turnout introducing information about expected variation across states, sub-counties, precincts, and MCDs based on the contextual information described in the previous chapter. Although I make no assumption about the probability of a vote by the lower class in the basic model, in the extended model I make an assumption that the probability of a vote by the lower class is expected to be lower than the probability of a vote by the non lower class. This assumption is supported by much of the literature introduced in the previous chapter. I constrain the model by restricting candidate values for p_0, the probability of a vote by the lower class to be below p_1, the probability of a vote by the non lower class.

Basic Model

The basic model elaborated in Table 3-1, describes the observed total number of vote in the MCD as a draw from a binomial distribution with parameters x_i and N_i. As indicated in Table 3-1, the probability that an individual votes, x_i, is the weighed sum of two independent probabilities: the probability of a vote by the lower class, p_{0i}, and the probability of a vote by non lower class, p_{1i}. As indicated before this step introduces an accounting identity, the logical boundaries that are implied by the data. Three pieces of information from the MCD data enters the likelihood: the number of vote, V, the number of the lower class, L, and the number of non lower class, U. The probabilities of a vote by the lower class and non lower class, p_{0i}, and p_{1i} are normalized through transformation to the logistic. The formal representation of this process is strait forward;

$$V_i \sim bin(x_i, N_i)$$

$$q_i = p_{0i}x_i + p_{1i}(1 - x_i)$$

$$N_i = U_i + L_i$$

$$x_i = L_i / (U_i + L_i)$$

$$p_{0i} = \exp(\theta_{0i})/(1 + \exp(\theta_{0i}))$$

$$p_{1i} = \exp(\theta_{1i})/(1 + \exp(\theta_{1i}))$$

The primary assumptions of the modeling process are that the logit of the lower class turnout in each MCD observation is drawn from a single underlying normal distribution and that the logit of non lower class turnout in each MCD is drawn from a separate underlying normal distribution. Although there are a number of alternative distributional assumptions to this binomial-normal model, scholars more used this

strategy to estimate voter turnout in ecological inference applications (Corder & Wolbrecht, 2004).

The hierarchical model can be used when information is available on several different levels of observational units. In this research, mainly MCD level and state level observations are available. The hierarchical structure of the model is introduced by specifying the normal distribution that describes the MCD logits. At the second stage, each MCD level probability, the prior distribution, is treated as a draw from a normal distribution with mean μ and variance σ^2 where $\theta_{0i} \sim N(\mu_0, \sigma_0^2)$, $\theta_{1i} \sim N(\mu_1, \sigma_1^2)$. θ_{0i} is assumed to be a priori independent of θ_{1i} for all *i*s. In addition, we assume the following hyper-priors: $\mu_0 \sim N(m_0, M_0)$, $\mu_1 \sim N(m_1, M_1)$, $\sigma_0^2 \sim \text{IG}(\nu_0/2, \sigma_0/2)$, $\sigma_1^2 \sim \text{IG}(\nu_1/2, \sigma_1/2)$. This hyper prior state-level mean and variance are specified in a way that adds no information to the model. A uniform distribution or relatively flat normal distribution centered around zero would be appropriate for the mean. A similarly flat prior would be introduced for the variance. For the estimation of the second model, turnout model with prior information, I introduce prior information about the mean and the variance of the state-level distribution. This includes the information about both the normal distribution of the state-level mean and the inverse gamma distribution for the state-level variance to improve model estimates.

Extended Model

According to Corder and Wolbrecht (2004b), the Bayesian strategy both incorporates information about and permits a test of the impact of contextual factors. The

probability of a vote by the lower class and non lower class and the regression coefficients for the contextual effects are simultaneously estimated for the entire set of available data at each election year.

The logic of the extended model estimation is fairly similar to the basic model described in the previous section. It is assumed that the number of the lower class voters given the number of the lower class has the binomial distribution with parameters of the number of the lower class and the proportion of the lower class voters. It is also assumed that the prior distributions are normally distributed with mean μ and variance δ^2 when the binomial proportion is transformed to the logit scale (Wakefield, 2001; Martin & Quinn, 2003; Corder & Wolbrecht, 2004b). Additionally in this extended model, it is assumed that the probability of a vote by the lower class is conditional on contextual variable, which allows the probability of a vote by lower class and non lower class vary over MCDs according to the unemployment rate, covariate employed in this research (King 1997).

After a vector of acceptable candidate values for the probability of a vote by the lower class and the probability of a vote by the non lower class are selected, the binomial probability of a vote by lower class and non lower class are transformed via the logistic. The logits are independently regressed on the contextual factor. Once we obtain the vector of population-weighted linear regression coefficients, the vectors are retained and used in the calculation of the likelihood in the subsequent iteration of the model (Corder & Wolbrecht 2004b). Once they enter the likelihood, new candidate values are selected, regression coefficients are updated, and this process is repeated. Candidate values and

regression parameters are updated via Markov Chain Monte Carlo (Coder & Wolbrecht, 2004b).

Markov Chain Monte Carlo methods are implemented in the MCMCpack, an R package authored by Martin and Quinn (2003). I also used a modified MCMCpack R package authored by Corder and Wolbrecht (2004b) to implement constrained models (the probability of a vote by the lower class would not exceed the probability of a vote by non lower class).

Starting from an uninformed prior, an MCMC simulation iterates a number of times to converge on model solutions. For this research each simulation was 70,000 iterations with the first 15,000 iterations discarded as the burn-in. The median from each monitored chain is treated as a point estimate for each quantities of interest. The point estimates will be reported in the next chapter and tables also will include the region of 95% highest posterior density, also known as the Bayesian Credible Interval (BCI).

Data

In this research, I estimate individual lower class voting turnout in the presidential elections of 1984, 1988, 1992 (California only), and 2000 in four states: California, Michigan, Minnesota, and New York. Fortunately, for 1984, 1988, and 1992 data, the ROAD (Record of American Democracy) data sets (King et al, 1997) provide MCD level of aggregation data for electoral information and census information together. For 2000 election returns, either MCD level or precinct level, or Subcounty division level of returns are electronically archived in either each state Secretary of State office website or

in the major university website in the particular state. California is useful since its geographical aggregation is quite low at the precinct level and Minnesota is added to the sample to compare with other states since its registration requirement is fairly moderate comparing to other states.

I make no claim that this small number of states selection can be generalized for the entire American electorate. However given the characteristics of states examined in this research, the estimated results can be applied to Midwest and probably to Northeastern states.

Variables and Data Collection

Variables used in this research are voting age population, unemployment rate, number of below poverty thresholds, total votes for presidential candidate in the general elections, and total registration.

Voting age population [2]

Voting age population is the number of people who are 18 years or more. For the 1984, 1988, and 1992 election years, this data is obtained from the ROAD data set.

[2] Recently some scholars raised a question of using the voting age population to calculate the turnout rate (McDonald and Popkin, 2001; Martinez, 2003). According to them, Voting Eligible Population should be used to calculate turnout rate instead of Voting Age Population because the VAP includes non citizens and felons who are not eligible to vote. Due intrinsically to data availability, the VAP is used in this research. Given the fact that the VAP is used, ecological inference models might underestimate lower class turnout since the VEP is almost identical with VAP for non lower class while the VEP tends to be smaller than the VAP for lower class.

Voting age population for 2000 is obtained from 2000 census from the Bureau of the Census. Census 2000 Summary File 3 provides sex by age at P8. For voting age population, both the male and female 18 years and over population are extracted and calculated.

Lower class

The operational definition of class is based on the amount of income a particular family makes a year. Since poverty status is used by federal agencies in their statistical work to implement aid programs, currently the most suitable way to define a class is to look at the poverty status. Using the poverty status for the lower class is fairly reasonable. In their study of Lower-Class Mobilization and Policy Linkage in the U.S. States, Hill, Leighley, Hinton-Andersson (1995) conducted a number of indicators to produce an index of class status, Jackman and Jackman's (1983) occupations, income levels, and Duncan's Socioeconomic Index scores. Combining all data together, they found that their index was quite close to federal estimates of individuals living in poverty and they claimed that their "measure of lower class turnout is valid" (Hill, Leighley, Hinton-Andersson, 1995:78). Using poverty status to define lower class therefore seem reasonable.

The official measure of poverty reported by the U.S. Bureau of Census was established by the Office of Management and Budget in *Statistical Policy Directive 14* (OMB, 1978). The Bureau of Census uses income to compute poverty and income

<Table 3-2>
Poverty Thresholds in 1990, by Size of Family and Number of Related Children Under 18 Years (Dollars)

Size of family unit	Weighted Average Thresholds	Related children under 18 years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person	6,652									
Under 65 years	6,800	6,800								
65 years and over	6,268	6,268								
Two persons	8,509									
Householder under 65 years	8,794	8,752	9,009							
Householder 65 years and over	7,905	7,900	8,975							
Three persons	10,419	10,223	10,520	10,530						
Four persons	13,359	13,481	13,701	13,254	13,301					
Five persons	15,792	16,257	16,494	15,989	15,598	12,359				
Six persons	17,839	18,693	18,773	18,386	18,015	17,464	17,137			
Seven persons	20,241	21,515	21,650	21,187	20,864	20,262	19,561	18,791		
Eight persons	22,582	24,063	24,276	23,839	23,456	22,913	22,223	21,505	21,323	
Nine persons or more	26,848	28,946	29,087	28,700	28,375	27,842	27,108	26,445	26,280	25,268

Source: U.S. Bureau of the Census, Current Population Survey.

includes earnings, unemployment compensation, worker's compensation, Social Security, Supplemental Security Income, public assistance, veterans' payments, survivor benefits, pension or retirement income, interest, dividends, rents, royalties, income from estates, trusts, educational assistance, alimony, child support, assistance from outside the household, and other miscellaneous sources (Bureau of Census, 2004). This does not include noncash benefits and capital gains or losses. Based on income level, poverty status is determined by poverty thresholds. If total family income is less than the threshold appropriate for that family, the family is in poverty and all family members have the same poverty status. According to Census Bureau, for individuals who do not live with family members, their own income is compared with the appropriate threshold.

Table 3-2 and 3-3 describe the poverty thresholds for 1990 and 2000 provided by the U.S. Bureau of Census.

<Table 3-3>
Poverty Thresholds in 2000, by Size of Family and Number of Related Children Under 18 Years (Dollars)

Size of family unit	Weighted Average Thresholds	Related children under 18 years								
		None	One	Two	Three	Four	Five	Six	Seven	Eight or more
One person	8,794									
Under 65 years	8,959	8,959								
65 years and over	8,259	8,259								
Two persons	11,239									
Householder under 65 years	11,590	11,531	11,869							
Householder 65 years and over	10,419	10,409	11,824							
Three persons	13,738	13,470	13,861	13,874						
Four persons	17,603	17,761	18,052	17,463	17,524					
Five persons	20,819	21,419	21,731	21,065	20,550	20,236				
Six persons	23,528	24,636	24,734	24,224	23,736	23,009	22,579			
Seven persons	26,754	28,347	28,524	27,914	27,489	26,696	25,772	24,758		
Eight persons	29,701	31,704	31,984	31,408	30,904	30,188	29,279	28,334	28,093	
Nine persons or more	35,060	38,138	38,322	37,813	37,385	36,682	35,716	34,841	34,625	33,291

Source: U.S. Bureau of the Census, Current Population Survey.

The Bureau of Census provides the previous year's poverty status by age at P117 for 1990 census and P87 for 2000 census. The number of persons who are 18 years or more and below the poverty level is calculated based on these census variables for each year. Given the above method, the size of the lower class in states and years is provided in Table 3-4. Throughout the states and years, the size of the lower class is fairly small consisting of around 10% of entire population. The size of the lower class in 1984 and 1988 are same for all states examined in this research since the 1990 Census data are applied to both years. It is also noticeable that the size of the lower class became smaller

in 2000 comparing to previous years. Minnesota has the smallest lower class 7.3% of the population compared 12% in California and 12.4% in New York.

<Table 3-4>
Size of the Lower Class by State and Year

	California		Michigan		Minnesota		New York	
	Lower Class	Non Lower Class	Lower Class	Non Lower Class	Lower Class	Non Lower Class	Lower Class	Non Lower Class
1984			0.118	0.882	0.090	0.910	0.117	0.883
1988			0.118	0.882	0.090	0.910	0.117	0.883
1992	0.119	0.881						
2000	0.120	0.880	0.091	0.909	0.073	0.927	0.124	0.876

Total Registration

The total number of people who registered for the elections of 1984, 1988, and 1992 is from the ROAD data set. The total registration for the 2000 election is obtained from the each state's election board.

Voting Turnout

Total votes for presidential candidate in the general elections of 1984, 1988, and 1992 are obtained from the ROAD data set. The number of total votes for presidential candidates in the 2000 election is obtained from each state's election result table.

Unemployment Rate

According to the Bureau of Labor Statistics and the Bureau of Census, unemployed persons can be defined as all persons who had no employment during the reference week, were available for work, except for temporary illness, and had made specific efforts to find employment some time during the 4-week-period ending with the reference week (Joint Project between the Bureau of Labor Statistics and the Bureau of the Census, 1996). The Bureau of Census provides the employment status for the population 16 years and over by gender. P70 for 1990 Census and P43 for 2000 Census Summary File 3 provide the number of people in labor force, employed, and unemployed for both gender. The Unemployment rates for states and years are provided in Table 3-5.

<Table 3-5>
Unemployment Rate by State and Year*

	California	Michigan	Minnesota	New York
1984	NA	10.7%	6.6%	7.5%
1988**	NA	10.7%	6.6%	7.5%
1992	7.4%	NA	NA	NA
2000	7.5%	6.2%	4.9%	3.6%

* The unemployment rates for 1984, 1988, and 1992 are calculated from the ROAD and 2000 unemployment rate was calculated from the U.S. Census Summary File 3.
** The unemployment rates for 1984 and 1988 are same due to the same source of U.S. Census.

The unemployment rates in 2000 are lower than those in 1980s across all states and New York has the lowest unemployment rate of 3.6% in 2000 compared to 7.5% in California and 6.2% in Michigan. Since the U.S. Census provides only average unemployment rates

for the previous year, it is not possible to observe the amount of change in the unemployment rate which may better capture the economic fluctuations relevant to voters.

Merging Data

Electoral variables such as total registration and election returns should be merged with available demographic data published by the U.S. Bureau of Census. As described above, fortunately electoral data and census information for 1984, 1988, and 1992 elections are already merged in the ROAD data sets (King et al, 1997).

Merging the electoral data with census information for 2000 requires several steps. First the electoral information including election returns and total registration was saved with the geographical identification. Secondly, the census information with the geographical identification was saved at the corresponding level of aggregation with the electoral information. The census information includes voting age population, unemployment rate, and poverty status. Third, both census information and electoral information were merged together based on their geographical identification. At this stage, some geographical units had to be aggregated due to the characteristics of the geographic units. Some geographical units are removed from the model due to the unrealistic results of the matching, which will be discussed in the measurement error section below. The geographic units used in this research are described in Table 3-6.

Measurement Errors

When electoral data are merged with the census information, measurement errors are inevitable. After extracting data from ROAD data sets for 1984, 1988, and 1992 elections and merging census and election returns for 2000, some precincts, MCDs, and County Subdivisions had to be excluded where the number of total votes exceeded the total voting age population. This happened because the census was not conducted at the same year as the election occurred. This measurement error is more persistent for

<Table 3-6>
Geographic Units of Sample States and Years

State	Year	Aggregation Type	Number of Observations
California	1992	Precinct	18,522
	2000	Precinct	7003
		County	2
Michigan	1984	Minor Civil Division	1410
	1988	Minor Civil Division	1421
	2000	Minor Civil Division	1493
		County	1
Minnesota	1984	Minor Civil Division	2634
	1988	Minor Civil Division	2655
	2000	Minor Civil Division	2617
		Minor Civil Division with Multi County	43
		County	2
New York	1984	County Subdivision	956
	1988	County Subdivision	986
	2000	County Subdivision	989
		County	5

1984 and 1988 data due to a long gap between election date and census date while there are relatively small errors exist for 2000 data due to the short gap between election date and census date. Table 3-7 shows the existing measurement errors in each state and year.

<Table 3-7 >
Difference between Federal Election Commission and Merged Data

States	Year	Voting Age Population		Voting Turnout Rate		
		FEC Report	Merged Data	FEC Report	Merged Data	Difference
California	1992	22,511,000	20,127,733	49.43%	40.12%	- 9.31%
	2000	24,873,000	24,558,105	44.10%	45.30%	1.20%
Michigan	1984	6,566,000	6,774,609	57.90%	51.00%	- 6.90%
	1988	6,791,000	6,833,574	54.03%	48.70%	- 5.33%
	2000	7,358,000	7,329,016	57.50%	57.66%	0.16%
Minnesota	1984	3,058,000	3,205,259	68.16%	64.43%	- 3.73%
	1988	3,161,000	3,207,190	66.33%	64.55%	- 1.78%
	2000	3,547,000	3,857,460	68.80%	63.75%	- 5.05%
New York	1984	13,301,000	10,731,011	51.18%	51.59%	0.41%
	1988	13,480,000	12,992,482	48.11%	46.46%	- 1.65%
	2000	13,805,000	14,279,854	50.40%	48.82%	- 1.58%

CHAPTER IV

BASIC MODEL

Is the lower class less likely to vote in presidential elections? Does the lower class contribute to the overall decline of turnout more than the non lower class? Does the lower class turn out more in states where registration laws are moderate? A test of hypotheses related to these questions is necessary to evaluate whether the voting turnout of the lower class is different from that of the non lower class in the 1984, 1988, 1992, and 2000 presidential elections. As discussed in chapter three, hypotheses are tested using a Bayesian hierarchical ecological inference method. Therefore this chapter presents the results of the Bayesian hierarchical ecological inference models that test the proposed hypotheses and provide substantive overviews of the empirical results.

This chapter consists of three sections. First, the empirical results of a registration model will be reported. Second, a basic model of turnout will be tested and reported. Finally, based on the results, lower class turnout will be compared with non lower class turnout.

A Model of Registration

The proportion of the registered lower class voters was estimated for the state of Minnesota where the registration data is available. The purpose of this procedure is to see how much introducing non-sample information into the ecological inference model

could increase the efficiency of the turnout model. The introduction of prior information to the model is often used when the logical boundaries are not highly informative or the logical boundaries for most geographic units are wide. For instance, if the ultimate quantity of interest is the proportion of women's votes in a certain election, the variation of the proportion of women in certain geography is quite narrowly limited around 0.5 and there is virtually no single geographic unit which only has women in the population, which yield the very low information in the logical boundaries (Corder & Wolbrecht, 2004). In my research, however, this is not the case. In most states, the variation of the proportion of the lower class among MCDs is fairly wide and in most MCDs the logical boundaries are highly informative and quite narrow. The question is why the prior information is still being introduced in this research. First, as King (1997) and Achen and Shively (1995) describe, ecological inference can be improved through an effort to narrow logical bounds by adding information. Although the raw data set looks suitable to the ecological inference, if we could narrow the logical bounds by adding information, it still would be better than doing it without prior information. In this case, the fact that overall registration should be higher than turnout implies narrower logical bounds. Second, by estimating quantities of interests using prior information, I can compare those point estimates with those from estimators that are not dependent upon prior information. If there is no difference in the point estimates between the models, then we know that the point estimates derived from ecological inference would not be improved with prior information.

Various scholars suggest that the registration is the most single important institutional factor that affects voting turnout and the registration laws are more likely to

<Table 4-1>
Proportion of Registered Voters in Minnesota

Year	Observed Registration Rate*	Lower Class Posterior Median	Lower Class 95% BCI	Non Lower Class Posterior Median	Non Lower Class 95% BCI
1984	0.889	0.838	[0.820-0.858]	0.892	[0.890-0.894]
1988	0.901	0.755	[0.704-0.798]	0.914	[0.910-0.919]
2000	0.841	0.587	[0.506-0.662]	0.860	[0.853-0.866]

* Observed registration rate can be different from the reported registration from the Secretary of State Office due to measurement error as already discussed in the previous chapter.

affect individuals among the lower class or with little education than other groups in the electorate (Flanigan & Zingale, 1994; Glass, Squire & Wolfinger, 1984; Piven & Cloward, 2000; Wolfinger & Rosenstone, 1980; Teixeira, 1992).

In order to add prior information to the turnout model, first the proportion of both lower class registration and non lower class registration should be estimated. This registration model looks exactly the same as the turnout model without prior information. Each MCD observation is treated as a separate 2 x 2 table with known marginals (number of the lower class/non lower class and number of registered voters/non registered voters) and unknown interior cells (number of the lower class registered voters).

Table 4-1 shows the result of the registration model. Each of the three presidential elections in Minnesota are selected for the purpose of the comparison. The posterior median of each class would be a point estimate for the proportion of the registered voters in each class in the selected presidential elections. The Bayesian Credible Intervals (BCI) indicate the values of the highest posterior density regions covering the 95% of the posterior distribution with the highest probability (Gill, 2002). It

is clear that the registration rate of the lower class is lower than that of non lower class. The point estimate of each class now will be introduced into the turnout model as a prior information and since the registration rate should be either higher than or equal to the turnout rate, this could significantly lower the logical bounds of the ultimate quantities of interests, the turnout rate for each class.

A Model of Turnout

Comparison between the Model with the Prior and without the Prior

With estimates of the registration rate in hand, I then introduce the point estimate for the proportion registration by class to the turnout model as prior information. It is assumed that the number of the lower class registered voters given the number of the lower class has a binomial distribution with parameters of the number of the lower class and the proportion of the lower class registered voters. It is also assumed that the prior distributions are normally distributed with mean μ and variance δ^2 when the binomial proportion is transformed to the logit scale. In addition, the hyperprior of μ is assumed to be a normal distribution with parameters of m (prior mean of the μ parameter) and M (prior variance of the μ parameter) (Wakefield, 2001; Martin & Quinn, 2003). The log transformed point estimates of the proportion of each registered voters by class become the prior mean of the μ parameter, m. The variance of M, is set at 0.1. This choice for the variance introduces some information from the prior, but does not overwhelm the data.

<Table 4-2>
Estimated Turnout without Prior Information in Minnesota

Year	Observed Turnout Rate*	Lower Class Posterior Median	Lower Class 95% BCI	Non lower class Posterior Median	Non lower class 95% BCI
1984	0.644	0.584	[0.515 - 0.652]	0.649	[0.643 - 0.657]
1988	0.645	0.545	[0.482 - 0.608]	0.654	[0.648 - 0.661]
2000	0.637	0.461	[0.408 - 0.516]	0.651	[0.646 - 0.655]

* Observed turnout rate could be different from the actual turnout rate reported from Secretary of State Office due to measure error as discussed in the previous chapter.

<Table 4-3>
Estimated Turnout with Prior Information in Minnesota

Year	Observed Turnout Rate*	Lower Class Posterior Median	Lower Class 95% BCI	Posterior Median	Non lower class 95% BCI
1984	0.644	0.585	[0.511 - 0.647]	0.649	[0.643 - 0.656]
1988	0.645	0.546	[0.481 - 0.608]	0.654	[0.648 - 0.661]
2000	0.637	0.462	[0.407 - 0.516]	0.651	[0.646 - 0.655]

* Observed turnout rate could be different from the actual turnout rate reported from Secretary of State Office due to measure error as discussed in the previous chapter.

Table 4-2 and 4-3 show the results of ecological inference for the turnout model, without prior information and with prior information respectively. As the table 4-2 and 4-3 indicate, differences between the estimates of the model with prior information and those without prior information are minimal in the values of posterior median and the Bayesian Credible Intervals as well given the choice of M, which is low precision. This result informs that since there is virtually no difference

<Table 4-4>
Proportion of Voting Turnout by Class

Year	Observed Total Turnout Rate*	Lower Class Posterior Median	Lower Class 95% BCI	Non Lower Class Posterior Median	Non Lower Class 95% BCI
Michigan					
1984	0.510	0.345	[0.290 - 0.395]	0.532	[0.525 - 0.539]
1988	0.487	0.314	[0.268 - 0.356]	0.529	[0.527 - 0.532]
2000	0.577	0.481	[0.443 - 0.515]	0.586	[0.583 - 0.590]
Minnesota					
1984	0.644	0.584	[0.515 - 0.652]	0.649	[0.643 - 0.657]
1988	0.645	0.545	[0.482 - 0.608]	0.654	[0.648 - 0.661]
2000	0.637	0.461	[0.408 - 0.516]	0.651	[0.646 - 0.655]
New York					
1984	0.563	0.520	[0.478 - 0.558]	0.567	[0.563 - 0.570]
1988	0.465	0.528	[0.507 - 0.550]	0.566	[0.563 - 0.568]
2000	0.564	0.522	[0.484 - 0.557]	0.568	[0.565 - 0.571]
California					
1992	0.401	0.198	[0.196 – 0.200]	0.429	[0.4288 – 0.4294]
2000	0.453	0.215	[0.213 – 0.217]	0.486	[0.4859 – 0.4865]

* Observed turnout rate could be different from the actual turnout rate reported from Secretary of State Office due to measurement errors as discussed in the previous chapter.

between the two models, so it would be safe to conclude that the prior information does not make the posterior density narrower with the chosen precision of M. Since the MCD level registration data is not available in the state of Michigan, it would be safe to estimate the turnout model without prior information.

Findings of Turnout Model

An examination of the turnout model results in Table 4-4 provides a number of findings. The estimates suggest that there is a significant difference between lower class participation and non lower class participation.

In most years and states, the voting turnout of the lower class is lower than that of the non lower class. One exception, however, is noticeable. In 1984, the voting turnout of the lower class in Minnesota is not statistically different from that of non lower class. If we carefully look the values of the Bayesian Credible Intervals in 1984 , the BCI for the proportion of the lower class in Minnesota overlaps with the BCI for non lower class at the same year. This exception can be explained by former Senator Mondale's successful mobilization in his home state when he ran for the presidency in 1984. When he ran for the presidency in 1984, he was a former Senator from Minnesota. Although the ultimate result of the presidential election in 1984 was an incumbent President Reagan's landslide victory, it would be fair to say that people in Minnesota, both the lower class and non lower class, were mobilized to go to the poll and support their own Senator Mondale. With only this exception, as scholars agreed widely, the lower class stayed away from the polls more than non lower class did.

Diagnosis of Turnout Model

According to Gill (2003), the empirical results from a given MCMC analysis may not be reliable until the chain has reached its stationary distribution. In other words, it is very critical to see if the model has converged. Gill (2003: 389) advocated clearly the importance of the convergence by saying that "the single greatest risk in applied MCMC work is that the user will assert convergence before the Markov chain has actually reached its stationary distribution." A possible way to see the model's performance is to observe convergence properties. In the use of MCMC methods, however, the

performance of the simulation in recovering a stationary distribution of interest is highly subjective. Each model requires the estimation of over 2000 parameters, which makes diagnostics of convergence fairly cumbersome. A possible alternative is to observe

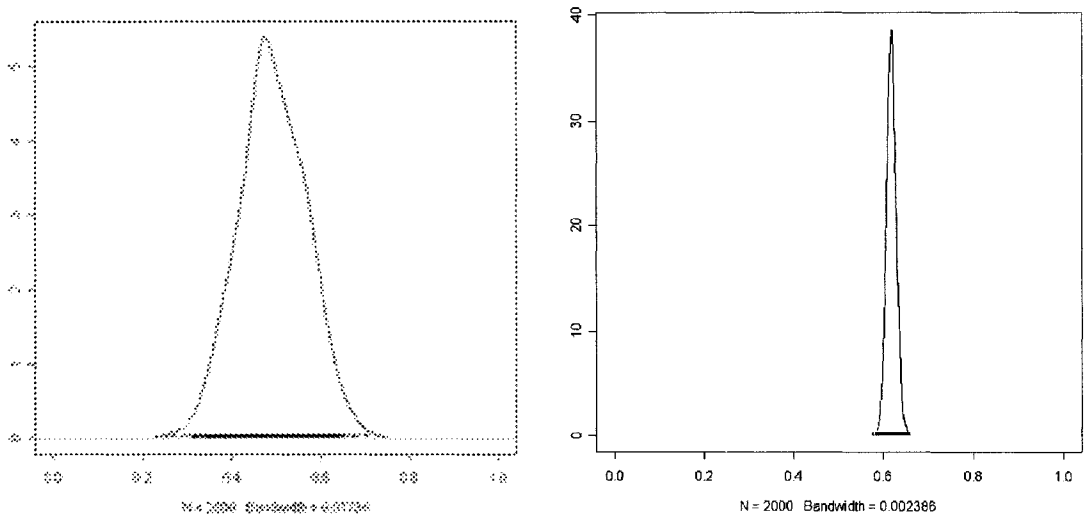
<Table 4-5>
Proportion of Voting Turnout by Class:
Clinton Township, Lenawee County, Michigan 2000

Year	Observed Total Turnout Rate*	Lower Class Posterior Median	Lower Class 95% BCI	Non Lower Class Posterior Median	Non Lower Class 95% BCI
2000 Michigan Clinton Township	0.612	0.488	[0.340 - 0.622]	0.617	[0.597 - 0.637]

convergence properties and diagnostic information for a single representative parameter. Clinton Township is selected to observe convergence properties for the 2000 presidential election in Michigan. The MCD level results of the estimation for Clinton Township in Lenawee County is reported in Table 4-5. Although the results reveal a difference between lower class turnout and non lower class turnout, the BCIs indicate that the turnout rates of both groups are statistically the same. For the purpose of the diagnosis of the model, however, this particular township, Clinton Township, is selected arbitrarily to observe how well the model's estimates are converged[3]. First, Figure 4-1 shows the posterior distribution.

[3] There are 1494 MCDs in Michigan in 2000 and 1988 posterior distributions contain total of 2988 parameters of interest, 1494 for the lower class and another 1494 for non lower class. It is virtually impossible to test and report all 2988 posteriors.

Figure 4-1
Posterior Distribution of the Fraction of Lower Class and Non Lower Class Turnout: Clinton Township, Lenawee County, Michigan 2000



If the posterior distribution is not converged, multimodality of the density estimate would be shown and it is a classic sign of nonconvergence (Gill 2002). As both columns of Figure 4-1 indicate, the lower class posterior distribution for the left column and non lower class posterior distribution for the right column, this is not apparent here. It is also evident that the posterior distribution of non lower class turnout estimation is fairly narrowly focused around the point estimates while the distribution of the lower class turnout estimation is a bit wider. This represents that the logical boundary of the non lower class in fairly informative even before the MCMC process. This informative logical boundary of non lower class also helps to reach its stationary distribution at MCMC process. The accounting identity shows how the logical bounds for each class is determined. Based on the basic ecological inference table as listed in the previous table, I can specify the accounting identity equation as follow.

$$q_{1i} = p_{0i}x_i + p_{1i}(1-x_i),$$

where q_{1i} represents the probability that individuals vote in MCD i

p_{0i} represents the probability of a vote by lower class in MCD i

x_i represents the proportion of the lower class in MCD i

and p_{1i} represents the probability of a vote by non lower class in MCD i

This equation can be rearranged to show the logical boundary with one unknown expressed as a function of the other. The basic accounting identity can be rearranged as follows with actual numbers from Clinton Township,

$$p_{1i} = (\frac{q_i}{1-x_i}) - (\frac{x_i}{1-x_i})p_{0i} = p_{1i} = (\frac{0.612}{1-0.046}) - (\frac{0.046}{1-0.046})p_{0i} = 0.642 - 0.048\, p_{0i}$$

With this rearranged accounting identity equation, we can draw a line for a fraction of the lower class vote and fraction of non lower class vote defining the admissible ranges of theses quantities from the marginal data only.

As we see from the graph, while non lower class range is very narrow, the range of the lower class is fairly wide. Figure 4-2 shows the line of the possible admissible ranges of lower class turnout and non lower class turnout in Clinton Township, Michigan. As Figure 4-2 shows, the fairly horizontal flat line indicates that the range of the possible value of the probability of a vote by non lower class is narrow while the range of the possible value of the probability of a vote by the lower class is quite wide. While the probability of a vote by non lower class varies only between 0.594 and 0.642, the variation of the probability of a vote by the lower class is much larger.

Figure 4-2
Fractions of the Lower Class Voters and Non Lower Class Voters:
Clinton Township, Michigan 2000

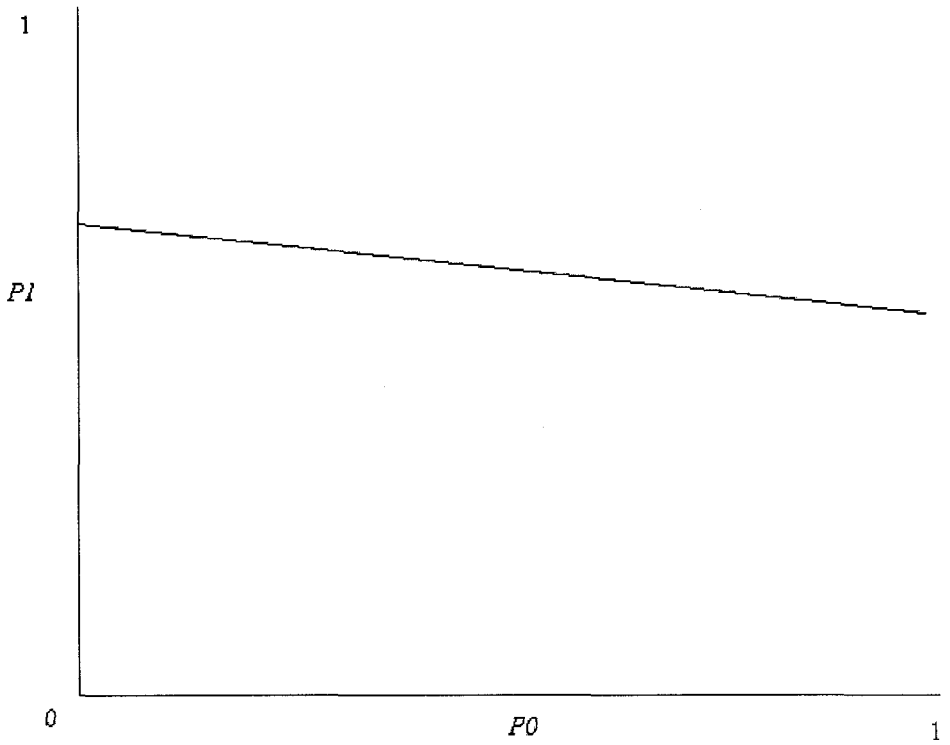


Figure 4-3
Trace of Simulated Values of Non Lower Class and Lower Class Turnout:
Clinton Township, Michigan 2000

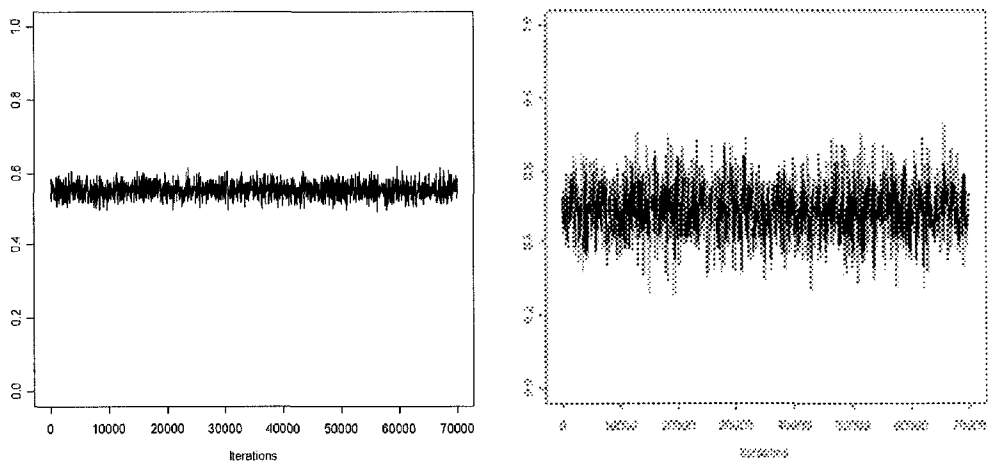
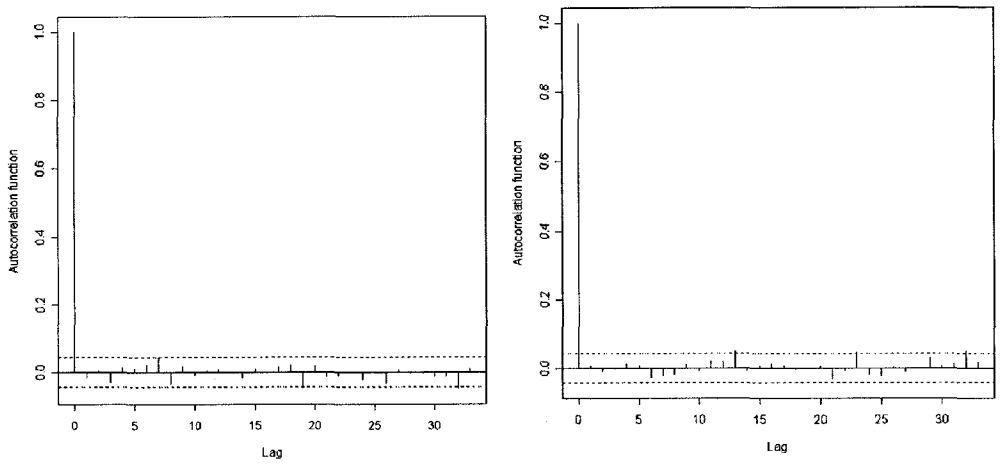


Figure 4-4
Posterior Autocorrelation, Non Lower and Lower Class Turnout:
Clinton Township, Michigan 2000



Another way to see the convergence is to observe the trend line for the simulation. When we take a look at the presence of a trend, Figure 4-3 shows the flat trend line in the middle of the graph and no evidence of any upward or downward trend in the simulation. Since the posterior estimate should be drawn from a stationary distribution, the presence of a flat line would indicate model's convergence. The lower values of autocorrelation within chain autocorrelation figure in Figure 4-4, which all indicate convergence of the model.

Finally the Heidelberger and Welch diagnostic has been used to see if the estimates are estimated from a chain that has converged. As the figures above already demonstrated, I am fairly confident that estimates are from a converged chain and I expect the Heidelberger and Welch will confirm it. This convergence test uses the Cramer-von-Mises statistic to test the null hypothesis that the chain is currently in the stationary distribution (Gill, 2002). The test starts with a full set of iterations and

<Table 4-6>
Heidelberger and Welch Test for Selected MCDs in States

		Stationarity test	Halfwidth Test	Mean	Halfwidth
Michigan	Michigan				
1984	Lower Class	Passed	Passed	0.343	0.00477
	Upper Class	Passed	Passed	0.728	0.00279
1988	Lower Class	Passed	Passed	0.270	0.00352
	Upper Class	Passed	Passed	0.605	0.000173
2000	Lower Class	Passed	Passed	0.495	0.00344
	Upper Class	Passed	Passed	0.591	0.00072
Minnesota					
1984	Lower Class	Passed	Passed	0.581	0.00781
	Upper Class	Passed	Passed	0.768	0.00175
1988	Lower Class	Passed	Passed	0.601	0.00738
	Upper Class	Passed	Passed	0.625	0.00204
2000	Lower Class	Passed	Passed	0.493	0.00682
	Upper Class	Passed	Passed	0.799	0.00109
New York					
1984	Lower Class	Passed	Passed	0.509	0.00564
	Upper Class	Passed	Passed	0.624	0.000924
1988	Lower Class	Passed	Passed	0.324	0.00376
	Upper Class	Passed	Passed	0.489	0.00078
2000	Lower Class	Passed	Passed	0.535	0.0055
	Upper Class	Passed	Passed	0.642	0.0011
California					
1992	Lower Class	Passed	Passed	0.282	0.00219
	Upper Class	Passed	Passed	0.569	0.00226
2000	Lower Class	Passed	Passed	0.222	0.00211
	Upper Class	Passed	Passed	0.584	0.0027

as the test rejects the null hypothesis, the first 10% of the iterations are discarded and the test is run until either the null hypothesis is accepted or 50% of the iterations are discarded (Gill, 2002). If the test rejects null hypothesis after discarding 50% of the iterations, it is considered that the test failed the stationary test and it requires longer MCMC run. Table 4-6 reports the output of the Heidelberger and Welch diagnostic for the turnout model. It is fairly obvious that the models show the successful convergence

properties according to this Heidelberger and Welch test. All states and years passed both the stationary test and halfwidth test indicating no evidence of not converging. Based on the graphical diagnosis of the convergence and the Heidelberger and Welch test, I can conclude that the turnout model here has converged and the point estimates are reliable.

Comparison between the Lower Class Turnout and Non Lower Class Turnout

Point Estimates

Not only do the point estimates from the Bayesian hierarchical ecological inference confirm the first hypothesis that the lower class is less likely to turnout in the presidential elections than non lower class, but also these results yield some information to us. First despite Reagan's landslide victory in the 1984 election, the proportion of the lower class turnout in every state is higher in 1984 than in 1988. For the case of Minnesota, it is also evident that former Senator Mondale from Minnesota could mobilize both classes, and it became the only one of two places (Minnesota and Washington, D.C.) where Democratic candidate former Senator Mondale won the electoral college vote. Due mainly to the Mondale factor, the turnout estimation in Minnesota shows no difference between the lower class and non lower class in 1984 election.

The fairly high turnout rate among the lower class in Minnesota is not surprising. Not only were the lower class mobilized by their own presidential candidate, Senator Mondale, in 1984, but also its registration law, which enables voters to register at the

election day, yielded significantly higher participation among the lower class than other states in both years.

Second noticeable aspect of the result is that the proportion of lower class turnout in Michigan is significantly lower in the 1984 and 1988 elections than other states. Michigan's lower class turnout rate in 1984 election is 0.345 compared to 0.584 in Minnesota and 0.520 in New York. The lower class turnout rate in New York lies between that of Michigan and Minnesota in 1984 and 1988 elections. Lower class and non lower class turnout vary by states and election years.

Who Contributed to the Turnout Decline More?

The decline in voting turnout since the 1960s is an important trend in American politics. One of questions addressed in the previous chapter was: who contributed to the decline? Due to the limitation of this research in terms of number of presidential election years employed, I can only observe the turnout decline from the 1984 presidential election to the 1988 presidential election. Table 4-7 provides differences between the turnout rate in 1984 election and in 1988 election.

Table 4-7 shows that, throughout all states, the magnitude of the voting turnout decline among the lower class is higher than among non lower class. Two unexpected results are noticeable. First, non lower class turnout rate in Minnesota increased from 0.649 in 1984 election to 0.654 in 1988 election. Given the fact that in 1984 Senator Mondale from Minnesota ran for the presidency, voters in Minnesota would have been

more mobilized in 1984 presidential election than in any other presidential elections. However, the estimated turnout rate for non lower class in 1988 election is higher than in

<Table 4-7>
Turnout Decline in Presidential Elections: 1984 and 1988

State	Class	1984 Election	1988 Election	Differential
Michigan				
	Lower Class	0.345	0.314	-0.031
	Non Lower Class	0.532	0.529	-0.003
Minnesota				
	Lower Class	0.584	0.545	-0.039
	Non Lower Class	0.649	0.654	0.005
New York				
	Lower Class	0.520	0.528	0.008
	Non Lower Class	0.567	0.566	-0.001

Source: Table 4-4

1984 election while the estimated turnout rate for the lower class in 1988 is lower than in 1984 as consistent with expectation. This would yield interesting conclusion. The lower class was more mobilized for their own presidential candidate than was non lower class. Being a Democratic candidate, former Senator Mondale was not able to fully mobilize the non lower class in 1984 election although he managed to win the state. I expect that had Mondale come from Republican party, the estimated turnout rate of non lower class would have decreased as well.

Another noticeable result came from New York. The lower class turnout rate increased from 1984 election to 1988 election when the overall turnout rate declined. The fact that New Yorkers chose Republican presidential candidate Reagan in 1984 election and later switched to Democratic presidential candidate Dukakis in 1988 election

might explain this unexpected result. The lower class was less mobilized by the Republican candidate Reagan and more mobilized by the Democratic candidate Dukakis in 1988. Although this is consistent with our conventional knowledge that the lower class tend to be Democratic, the results remain unrealistic: the estimates suggest more than half of the lower class voted both in 1984 and 1988 elections are questionable.

Registration and the Probability of a Vote by the Lower Class

As discussed in the chapter two, since registering to vote is an individual responsibility, registration is one of the important systematic factors affecting voting turnout. Throughout the historical efforts, various legal barriers have been removed, such as a poll tax and a literacy test. There is a wide consensus that the only remaining legal barrier for registration requirements is now the closing date for registration. Many states still require voters to register in advance while only six states do not require early registration. It is evident that states with election day registration or no registration showed relatively higher turnout than other states where registration prior to the election is mandatory. Table below reveals how the different registration closing date requirement affects the probability of a vote by the lower class. Among four states examined in this research, Minnesota has the most lenient voting registration requirement, where there is no closing date for registration. While California requires 15 days advance and New York requires 25 days advance and Michigan requires 30 days advance registration before the election date. Closing date for registration and turnout rate for each class is listed in Table 4-8. It is quite evident that the estimated

<Table 4-8>
Registration and Turnout Rate

State	Year	Closing Date	Lower Class	Non Lower Class
Minnesota				
	1984	0	0.584	0.649
	1988	0	0.545	0.654
	2000	0	0.461	0.651
California				
	1992	29	0.198	0.429
	2000	15	0.215	0.486
New York				
	1984	25	0.520	0.567
	1988	25	0.528	0.566
	2000	25	0.522	0.568
Michigan				
	1984	30	0.345	0.532
	1988	30	0.314	0.529
	2000	30	0.481	0.586

Source: Table 2-3 and Table 4-4

turnout rate in Minnesota in 1984 and 1988 is significantly higher than other states for both the lower class and the non lower class. Table 4-8 does not provide the direct evidence of the relationship between the registration closing date requirement and the probability of a vote only by the lower class. In other words, there is no way to make a clear distinction between the influence of the registration closing date requirement on the lower class and the influence of the registration closing date requirement on non lower class. However, as we see from the estimated lower class turnout rate in 2000, the effects of the registration closing date requirement tend to disappear among the lower class. Estimated lower class turnout rates in New York and Michigan are even higher than the estimated lower class turnout rate in Minnesota while the estimated turnout rate of non

lower class still remains higher in Minnesota than other states. Two explanations are possible.

First, it may be the case that the National Voter Registration Act enacted in 1993 helped the lower class to register more and eventually to turnout more although there still are closing date requirements. For the lower class, in other words, the fact that they could register to vote at the same time they apply for their driver's license renewal and other state aid programs increases registration and eventually turnout at the presidential elections. Should this explanation be plausible, two conditions should be met. First, if the NVRA helped lower class' registration, we may expect to see increased turnout in 2000 among the lower class. Table 4-8 clearly shows that this is not the case. The lower class turnout did not significantly increase in 2000 except in Michigan. Second, since the purpose of the NVRA was to give more chance to voters to register with various methods and this was specially designated toward the lower class so that they could register at the same time they applied for state aid programs. Table 4-9 provides the various registration methods each individual chose in each state after the passage of the National Voter Registration Act in 1993. As table 4-9 shows the majority of voters registered

<Table 4-9>
Sources of Voter Registration Applications 1995-1996

Source	California	Michigan	New York
Motor Vehicle Offices	14.21%	81.10%	21.36%
By mail	41.18%	4.33%	61.68%
Public Assistance Offices	2.24%	5.33%	10.93%
Disability services	0.07%	0.56%	0.98%
Armed Forces Offices	0.04%	0.28%	0.03%
State Designated Sites	0.44%	0.00%	2.76%
All other sources	41.82%	8.40%	2.26%

Source: Federal Election Commission, N.D.
Minnesota is excluded due to its exempted status from the NVRA

either at motor vehicle offices or through mail. Only small numbers of voters registered through public assistance offices. This suggests that the NVRA did not significantly influence the lower class registration. Neither did lower class turnout increase nor the lower class seem to get benefits from the NVRA. The difference in turnout among the lower class in states does not seem to be explained by the NVRA's successful mobilization of the lower class.

If the NVRA did not have impact on the lower class turnout, how can we explain the fact that the lower class turnout in Michigan and New York in 2000 is higher than the lower class turnout in Minnesota? Did registration matter at all? Piven and Cloward (2000) clearly addressed that the turnout decline among the lower class is strongly related with the low level of registration among the lower class. Also many scholars (Boyd, 1981; Glass, Squire & Wolfinger, 1984; Jackman & Miller, 1995; Powell, 1986; Wolfinger and Rosenstone, 1980; Teixeira, 1992; Katz, 1994) agree that the registration is cumbersome to turnout. This type of argument still remains useful when it explains the turnout among the lower class before 1960s, where the lower class was systematically disfranchised with poll taxes and literacy tests. According to the results in this research, however, this may not be applied to the lower class turnout in 2000. Since the political institution such as the registration requirement was already eased, it would be reasonable to conclude that individual's psychological attitude would be more plausible candidate to explain the lower class voting behavior.

Despite its convergence, the point estimates produced by the basic model yield some questions. Did more than half of the lower class really cast their ballots in some

states in some years? Previous research suggests this may not be a plausible answer. This question will be discussed more in the next chapter when I introduce a contextual variable into the model.

CHAPTER V

EXTENDED MODEL

In the previous chapter I estimated the probability of a vote by the lower class and non lower class in various presidential elections in various states. I confirmed that the probability that the lower class votes is lower than the probability that the non lower class votes. I also found that lower class participation in Michigan in the 1984 presidential election was much lower than any other state.

Although the diagnosis confirmed that the basic model has converged, the point estimates yield some questions about the plausibility of the estimates. More than half of the lower class in Minnesota, for example, cast ballots in 1984 presidential election. The lower class in New York did the same in 1984 election as well. The lower class in Minnesota again showed an extraordinarily high participation level in the 1988 election. Since those estimated turnout rates are extraordinarily high, it might be possible that there is an aggregation bias in the model. According to King (1997) one thing we can do to reduce the aggregation bias is to add information.

As described in earlier chapters, economic conditions are associated with turnout. Wolfinger and Rosenstone (1980) argued that rich people have a bigger stake in the system and thus are more highly motivated both to make the appropriate choice on election day and to support the political system by participating in it. Hill and Leighley (1996) note that the lower class turnout can be increased when the economic condition of the state is stable while the economic recession demobilizes the lower class. Radcliff (1992) also argues that when economic conditions are poor, voters would be demobilized. According to Radcliff (1992), when economic conditions are poor, people tend to skew

their attention to personal concerns and consequently they withdraw from the political process. He also argues that under poor economic conditions, uneducated and lower income people tend to be affected by macroeconomic conditions at higher degree than other people. However, on the other hand, people are not affected by poor economic conditions if economic security programs are well funded (Raddcliff, 1992).

In this research, the lower class is defined as below poverty line. Poor people are likely covered by either federal or state welfare programs. I expect that when macro economic conditions are poor, voting turnout will be low. In addition since the poor are covered by aid programs (and guaranteed minimum economic security), demobilization will be more likely to be observed among the non lower class.

In this chapter I estimate the probability of a vote using a Bayesian hierarchical ecological inference model with a covariate and I examine the contextual effects of economy on turnout by class. With the results in hand I would be able to test the hypothesis that lower class turnout was stimulated by macro economic conditions to a lesser degree than was non lower class turnout along with other hypotheses that are already examined in the previous chapter with a basic model.

This chapter consists of two major sections. First, the results from the extended model will be reported and compared with the basic model results. The hypotheses addressed in the chapter three will be tested based on new results. Secondly, the effects of the unemployment rate on the probability of a vote by the lower class will be examined. This will allow me to test the hypothesis: the lower class would be less responsive to the macro economic conditions.

Turnout Estimates from the Extended Model

An examination of the turnout model with a contextual factor results in Table 5-1 provides a number of findings. The overall findings are similar to the basic model results described in the last chapter. Lower class turnout is lower than non lower class turnout. However, by introducing the contextual factor to the turnout model, point estimates of the probability of a vote have changed.

<Table 5-1>
Proportion of Voting Turnout by Class with a Covariate

Year	Observed Total Turnout Rate*	Lower Class Posterior Median	Lower Class 95% BCI	Non Lower Class Posterior Median	Non Lower Class 95% BCI
Michigan					
1984	0.510	0.374	[0.352 - 0.392]	0.536	[0.531 - 0.543]
1988	0.487	0.339	[0.322 - 0.355]	0.519	[0.512 - 0.527]
2000	0.577	0.375	[0.358 - 0.395]	0.601	[0.595 - 0.606]
Minnesota					
1984	0.644	0.443	[0.425 - 0.461]	0.678	[0.673 - 0.682]
1988	0.645	0.406	[0.390 - 0.424]	0.665	[0.660 - 0.670]
2000	0.637	0.309	[0.294 - 0.324]	0.657	[0.652 - 0.662]
New York					
1984	0.563	0.401	[0.373 - 0.424]	0.574	[0.568 - 0.582]
1988	0.465	0.323	[0.300 - 0.344]	0.558	[0.552 - 0.564]
2000	0.564	0.333	[0.309 - 0.357]	0.589	[0.584 - 0.594]
California					
2000	0.453	0.248	[0.245 - 0.251]	0.478	[0.477 - 0.479]

* Observed turnout rate could be different from the actual turnout rate reported from Secretary of State Office due to measurement errors as discussed in the earlier chapter.

Point Estimates

The first noticeable difference is that the point estimates for lower class turnout seem more plausible. Table 5-2 shows the differences between the basic model results and the extended model results. In most states and years, the probability of a vote by the lower class was unrealistically high in the basic model while the estimation of the probability of a vote by non lower class is consistent. In the extended model, unrealistically higher or lower point estimates have been moderated to more plausible point estimates. For instance, in the basic turnout model, the probabilities of a vote by the lower class in New York were unlikely higher for 1984 and 2000 elections, which shows 0.520 and 0.522 respectively. On the other hand, the point estimate for the 1988 election's lower class participation in New York moved from 0.281 with a basic model to 0.323 for the extended model, which seem to be more reasonable.

Secondly, when the unemployment rate was taken account of as a covariate, Minnesota's lower class participation in 1984 was significantly lower than non lower class. From the basic model, there was no statistical difference between the point estimates of the lower class and non lower class of Minnesota in 1984 presidential election. That was explained by the fact that Democratic candidate Mondale was from Minnesota and he was able to mobilize both classes successfully. However, the extended model estimates reveal that although Mondale was able to mobilize the people in Minnesota showing the highest turnout rate in 1984 than any other year examined in this

research for both classes, the lower class participation still was not high enough to catch up with non lower class participation.

<Table 5-2>
Difference between the Basic Model and the Extended Model

Year	Lower Class			Non Lower Class		
	Basic Model	Extended Model	Differential	Basic Model	Extended Model	Differential
Michigan						
1984	0.345	0.374	0.029	0.532	0.536	0.004
1988	0.314	0.339	0.025	0.529	0.519	-0.010
2000	0.481	0.375	-0.106	0.586	0.601	0.015
Minnesota						
1984	0.584*	0.443	-0.141	0.649*	0.678	0.029
1988	0.545	0.406	-0.139	0.654	0.665	0.011
2000	0.461	0.309	-0.152	0.651	0.657	0.006
New York						
1984	0.520	0.401	-0.119	0.567	0.574	0.007
1988	0.281	0.323	0.042	0.489	0.558	0.069
2000	0.522	0.333	-0.189	0.568	0.589	0.021
California						
2000	0.215	0.248	0.033	0.486	0.478	-0.007

Source: <Table 4-4> and <Table 5-1>
* The point estimates of the lower class turnout rate and non lower class turnout rate is not statistically different.

Who Contributed to the Turnout Decline More?

Who contributed to the decline of the turnout? In the previous chapter, based on the basic model, I concluded that the lower class contributed to the decline more than non lower class did. The extended model confirms the conclusion. Table 5-3 shows the differences in point estimates of voting turnout between 1984 election and 1988 election for both lower class and non lower class.

<Table 5-3>
Turnout Decline in Presidential Elections: 1984 and 1988

State	Class	1984 Election	1988 Election	Differential
Michigan				
	Lower Class	0.374	0.339	-0.035
	Non Lower Class	0.536	0.519	-0.017
Minnesota				
	Lower Class	0.443	0.406	-0.037
	Non Lower Class	0.678	0.665	-0.013
New York				
	Lower Class	0.401	0.323	-0.078
	Non Lower Class	0.574	0.558	-0.016

Source: Table 5-1

Registration and the Probability of a Vote by the Lower Class

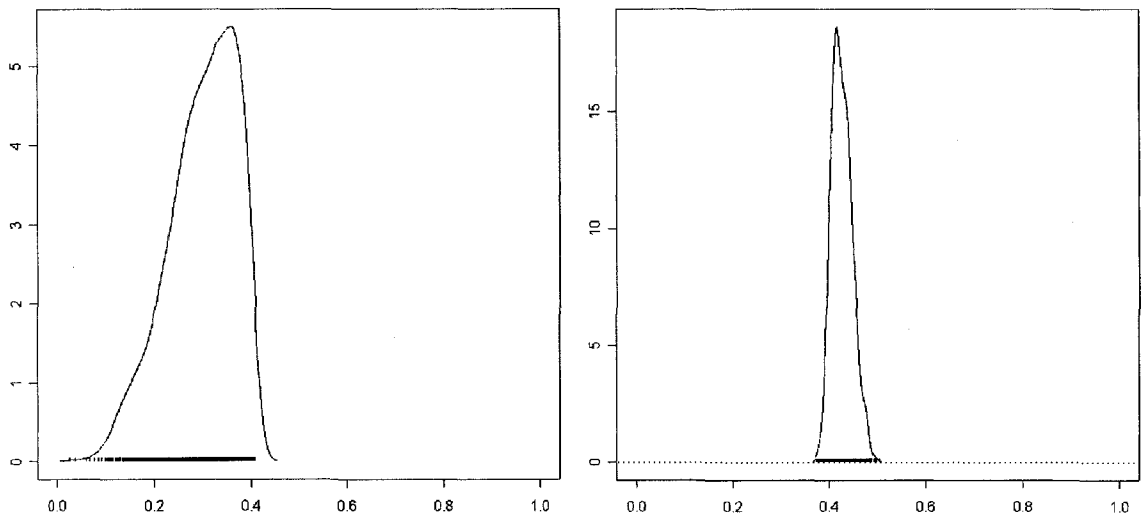
The effects of registration on the lower class turnout are trivial as we observed in the previous chapter. Among the lower class, turnout differences between Minnesota and other states disappeared in 2000 presidential election. As I discussed in detail in the previous chapter, political institutions do not have a significant impact on the lower class turnout. Other factors explain lower class turnout. Probably as Rosenstone (1982) claims lower class turnout is associated with its attitude toward the political system.

Diagnosis of the Turnout Model

As described in the previous chapter, the empirical results from a given MCMC analysis may not be reliable until the chain has reached its stationary distribution. A

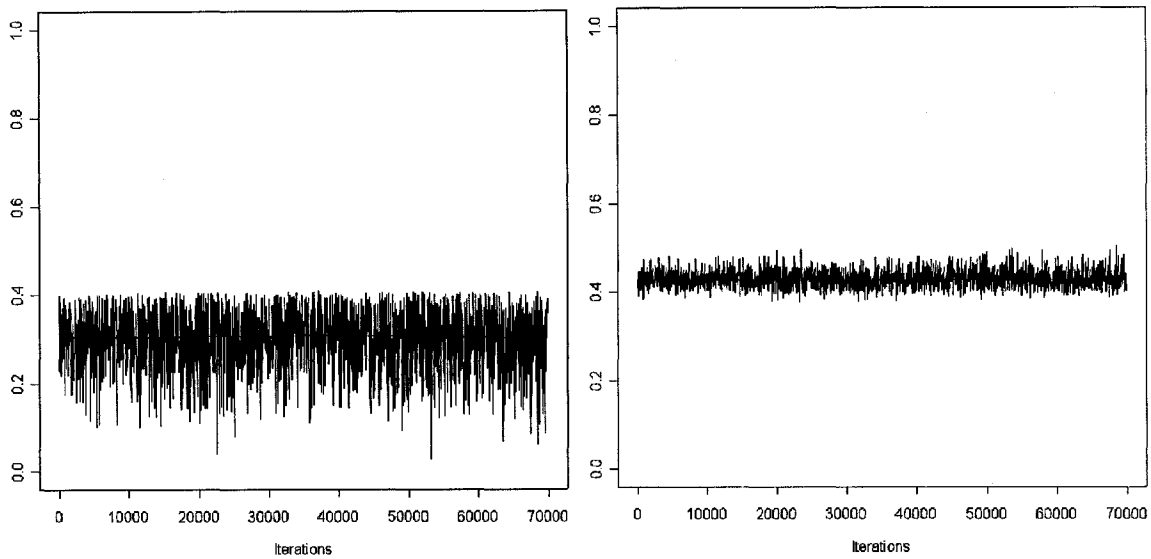
possible way to see the model's performance is to observe convergence properties. In this section, city of Kalamazoo is selected to observe convergence properties for the point estimate of the probability of a vote in 2000 presidential election.

<Figure 5-1>
Posterior Distribution of the Fraction of Lower Class and Non Lower Class Turnout: Kalamazoo City, Michigan 2000



If the posterior distribution is not converged, multimodality of the posterior density would be shown and it is a classic sign of nonvergence (Gill 2002). Figure 5-1 reveals no multimodality for either lower class or non lower class posterior distribution. It is also evident that the posterior distribution for non lower class turnout is narrowly focused around the point estimate while the posterior distribution for lower class turnout is a bit wider. As described in the previous chapter, this narrow posterior distribution is another indicator of the model's convergence.

<Figure 5-2>
Trace of Simulated Values of Lower Class and Non Lower Class Turnout:
Kalamazoo City, Michigan 2000



<Figure 5-3>
Posterior Autocorrelation, Non Lower Class and Lower Class Turnout:
Kalamazoo City, Michigan 2000

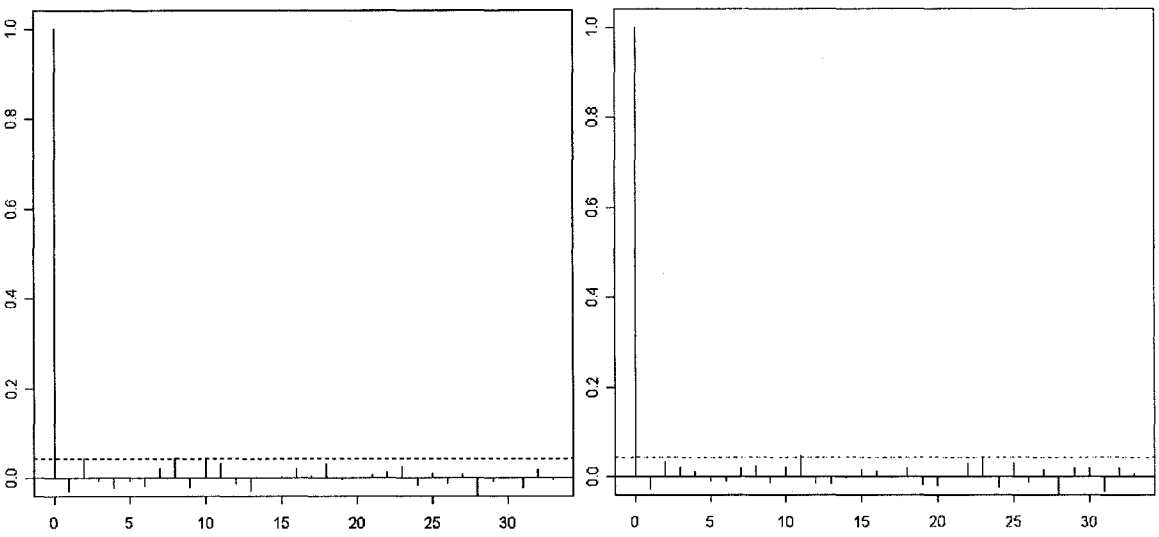


Figure 5-2 and 5-3 indicate the model has converged. Figure 5-2 shows the horizontally flat trend line indicating that there is no visible trend in the simulation. Figure 5-3 shows no sign of autocorrelation in the posterior distribution. All these

figures representing the properties of the convergence show that the simulated chain is stationary.

<Table 5-4>
Heidelberger and Welch Test for Selected MCDs in States

		Stationarity test	Halfwidth Test	Mean	Halfwidth
Michigan					
1984	Lower Class	Passed	Passed	0.378	0.00293
	Non Lower Class	Passed	Passed	0.574	0.00202
1988	Lower Class	Passed	Passed	0.337	0.00342
	Non Lower Class	Passed	Passed	0.546	0.00199
2000	Lower Class	Passed	Passed	0.300	0.00299
	Non Lower Class	Passed	Passed	0.427	0.00089
Minnesota					
1984	Lower Class	Passed	Passed	0.387	0.00514
	Non Lower Class	Passed	Passed	0.616	0.00300
1988	Lower Class	Passed	Passed	0.346	0.00709
	Non Lower Class	Passed	Passed	0.659	0.00323
2000	Lower Class	Passed	Passed	0.357	0.00526
	Non Lower Class	Passed	Passed	0.694	0.00391
New York					
1984	Lower Class	Passed	Passed	0.415	0.00247
	Non Lower Class	Passed	Passed	0.597	0.00238
1988	Lower Class	Passed	Passed	0.330	0.00387
	Non Lower Class	Passed	Passed	0.583	0.00289
2000	Lower Class	Passed	Passed	0.360	0.00309
	Non Lower Class	Passed	Passed	0.538	0.00141
California					
2000	Lower Class	Passed	Passed	0.281	0.0047
	Non Lower Class	Passed	Passed	0.36	0.0017

The Heidelberger and Welch diagnostic has been used to see if the estimates are drawn from a chain that has converged. MCDs from Michigan and Minnesota, a sub county division from New York, and a precinct from California were arbitrarily selected to test convergence. As described in the previous chapter, it is virtually impossible to test convergence for all units. Table 5-4 reports the results of the diagnostic. The reasoning

of the Heidelberger and Welch diagnostic has already been discussed in the previous chapter. According to Table 5-5, it is fairly obvious that the models pass the basic convergence diagnosis. Based on the graphical diagnosis of the convergence and the Heidelberger and Welch test, it can be concluded that the point estimates are drawn from a chain that has converged.

The Effects of the Unemployment Rate on the Probability of a Vote

One simple way to see if there is any difference between lower class and non lower class in responding to external stimuli is to observe how the lower class turnout varies with non lower class turnout. Table 5-5 shows the correlation coefficients between the lower class turnout and non lower class turnout in the various states and years. The highest correlation coefficient is observed among the Minnesota voters in the 2000 presidential election (r =0.71) and the lowest is also found among the Minnesota voters in the 1988 election (r =0.53). The correlation coefficients between the lower class turnout and non lower class turnout in Michigan are moderate, which suggests both classes response to contextual stimuli at some degree accordingly but also indicates that each class response at different degree. The lower class in New York for 1988 and 2000 elections and in Minnesota for 1988 election respond to contextual stimuli differently from non lower class with small degree of correlation coefficient (r=0.5). This simple observation casts confirmation on the initial assumption that each class responds to contextual stimuli differently.

<Table 5-5>
Correlation Coefficients between Lower Class and Non Lower Class*

State	Year	Correlation Coefficients
Michigan	1988	0.68
	2000	0.68
Minnesota	1988	0.53
	2000	0.71
New York	1988	0.56
	2000	0.56

* Correlation coefficients are calculated by STATA 7.0 for windows based on point estimates of the lower class turnout and non lower class turnout

The 1988 and 2000 elections were examined to test the effects of unemployment on both lower class and non lower class turnout. As described in the chapter three, data for 1984 and 1988 are collected from the Record of American Democracy (King et al, 1997). When voting data for 1984 and 1988 elections was merged with census data, same unemployment rate (1990) was used for both years. Since this introduces measurement error, I excluded 1984 election for all states.

The regression coefficients are obtained by the extended model for the 1988 and 2000 elections. Each table reports estimates from each state for each election by the class. The Bayesian Credible Intervals (BCI) indicate the values of the highest posterior density regions covering the 95% of the posterior distribution with the highest probability (Gill, 2002). If zero lies in the BCI, then the effect of the contextual effect is trivial. If zero is not in the BCI, then the unemployment rate provides information about MCD level variation in turnout.

1988 Election

Effects of Unemployment Rate

The point estimates and regions of highest posterior density are reported for the regression coefficients in Tables 5-6. As seen from Table 5-6 the effect of unemployment rate on the lower class turnout is trivial in Michigan and Minnesota in 1988. The BCI included 0.0. But the lower class turnout in New York was influenced by the unemployment rate. Since the regression coefficient is negative and both sides of BCI are below zero, it is evident that the lower class turnout decreases as the unemployment rate goes up.

Table 5-6 also reveals an expected result. I expected that the lower class would be less responsive to economic conditions thus they would not respond to the unemployment rate as they consider whether or not to vote. As I expected, the lower class in Michigan and Minnesota in 1988 were not influenced by the unemployment rate. Rather, the effects of unemployment rate on the probability of a vote are more evident among non lower class. With the exception of Michigan, the non lower class responded to the unemployment rate when they decided whether or not to vote.

<Table 5-6>
Explaining Variation in Lower Class and Non Lower Class Turnout by Unemployment Rate, 1988

	Michigan	Minnesota	New York
Lower Class			
Regression Coefficient	-0.419 [-4.199 1.784]	0.528 [-3.506 4.423]	-9.047 [-18.946 -2.059]
Constant	-0.672 [-0.890 -0.388]	-0.628 [-0.943 -0.347]	-0.229 [-0.760 0.325]
Non Lower Class			
Regression Coefficient	-1.025 [-1.748 0.139]	-1.568 [-2.274 -0.781]	-9.245 [-10.536 -7.873]
Constant	0.108 [0.030 0.160]	0.770 [0.739 0.803]	0.653 [0.580 0.728]

Notes: Dependent variable: logit of the proportion of age eligible population casting votes for President. Estimated via Markov Chain Monte Carlo. 95% Bayesian Credible Interval (BCI) in brackets.

We can see the effects of the unemployment rate on the probability of lower class and non lower class turnout in a graphical way by introducing regression coefficients and constants into the specification of the logit model as below.

$$E(Y) = \frac{1}{1 + e^{-\alpha - \beta X_i}}$$

where, $E(Y)$ is the probability of a vote by the lower class and α and β are constant and regression coefficient respectively, and X is the unemployment rate for each MCD.

Figure 5-4 shows the probability of a vote given the unemployment rate in New York in the 1988 presidential election.

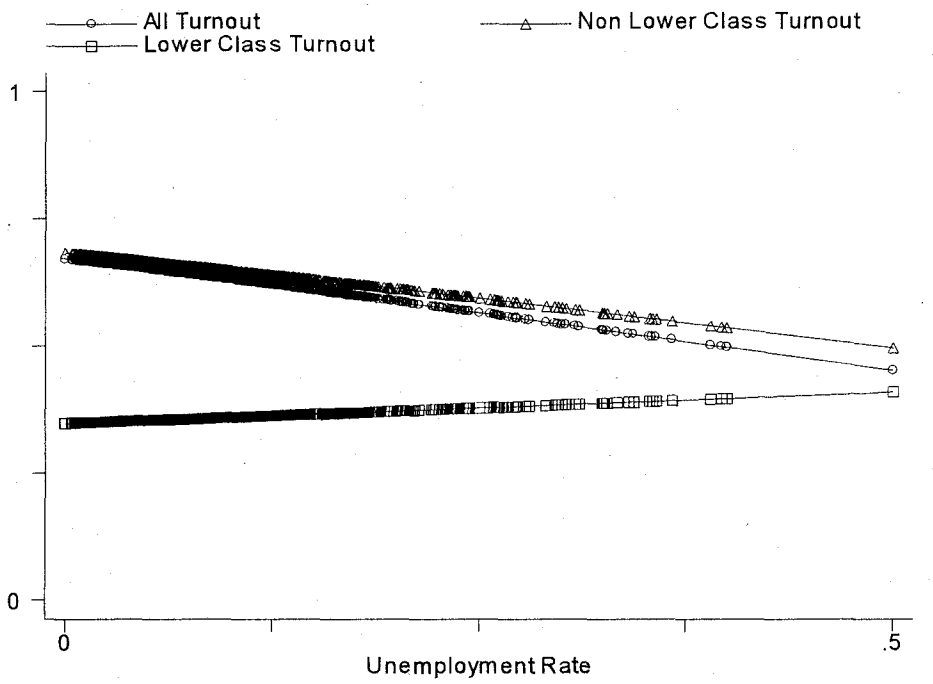
<Figure 5-4>
Probability of a Vote by the Unemployment Rate
New York 1988 Presidential Election

Figure 5-4 clearly shows that as the unemployment rate increases, the probability of a vote decreases. These overall results are consistent with Radcliff's (1992) finding. The unemployment rate has a very strong negative effect on the probability of a vote by the lower class when the unemployment rate is relatively low. As the unemployment rate goes up more than certain point, however, its effect on the probability of the lower class vote diminishes. The effects of the unemployment rate on the probability of a vote by non lower class are similar. In the 1988 presidential election, the turnout of non lower class in New York was influenced by the unemployment rate as well. The overall turnout rate of the non lower class is higher than the lower class but the figure shows that as the unemployment rate increases, non lower class turnout decreases more sharply than lower

class turnout. The effects of the unemployment rate on non lower class turnout are stronger. Although both lower class and non lower class tend not to participate as the unemployment rate increases, the non lower class begins to respond to economic fluctuations sooner than the lower class.

The extended model also reveals that the voting turnout of non lower class in Minnesota in the 1988 presidential election was influenced by the unemployment rate. Figure 5-5 shows the probability of the turnout as a function of the unemployment in Minnesota. As with the case of New York in 1988 election, the non lower class in Minnesota voted less as the unemployment rate increases. In addition, the effect on the lower class was smaller.

<Figure 5-5>
Probability of a Vote by the Unemployment Rate
Minnesota 1988 Presidential Election



Diagnosis

Since the regression coefficients are estimated via Markov Chain Monte Carlo, it is important to test if the model converged. The Heidelberger and Welch Test was employed to test its convergence and results are reported in Table 5-7. As Table 5-7 shows all regression coefficients are drawn from stationary which suggests that the interpretations and analyses based on these point estimates are reliable.

<Table 5-7>
Heidelberger and Welch Test for Coefficients in States in 1988

	Stationarity test	Halfwidth Test	Mean	Halfwidth
Michigan				
Lower Class	Passed	Passed	-0.821	0.0754
Non Lower Class	Passed	Passed	-0.926	0.0237
Minnesota				
Lower Class	Passed	Failed	0.498	0.0950
Non Lower Class	Passed	Passed	-1.550	0.0199
New York				
Lower Class	Passed	Passed	-9.630	0.1990
Non Lower Class	Passed	Passed	-9.200	0.0315

2000 Election

Effects of Unemployment

The effects of the unemployment rate on the probability of the turnout in the 2000 presidential election show somewhat different results than in the 1988 election. Table 5-

8 shows regression coefficients of the unemployment rate in each state. In 2000 the lower class in Minnesota and New York did respond to economic conditions. BCIs exclude zero. Once the unemployment rate increases, the probability of the lower class turnout decreases.

<Table 5-8>
Explaining Variation in Lower Class and Non Lower class Turnout by Unemployment Rate, 2000

	California	Michigan	Minnesota	New York
Lower Class				
Regression Coefficient	-6.044 [-6.476 -5.637	-2.811 [-9.596 1.364]	-6.746 [-10.591 - 2.295]	-7.011 [-15.233 - 0.206]
Constant	-0.784 [-0.819 - 0.748]	-0.340 [-0.608 - 0.024]	-0.712 [-0.929 - 0.512]	-0.359 [-0.779 0.130]
Non Lower Class				
Regression Coefficient	-7.477 [-7.677 - 7.291]	-6.341 [-7.244 - 4.826]	-11.139 [-11.978 - 10.331]	-9.064 [-10.162 - 7.19]
Constant	0.422 [0.408 0.436]	0.753 [0.684 0.796]	1.075 [1.041 1.108]	0.697 [0.631 0.760]

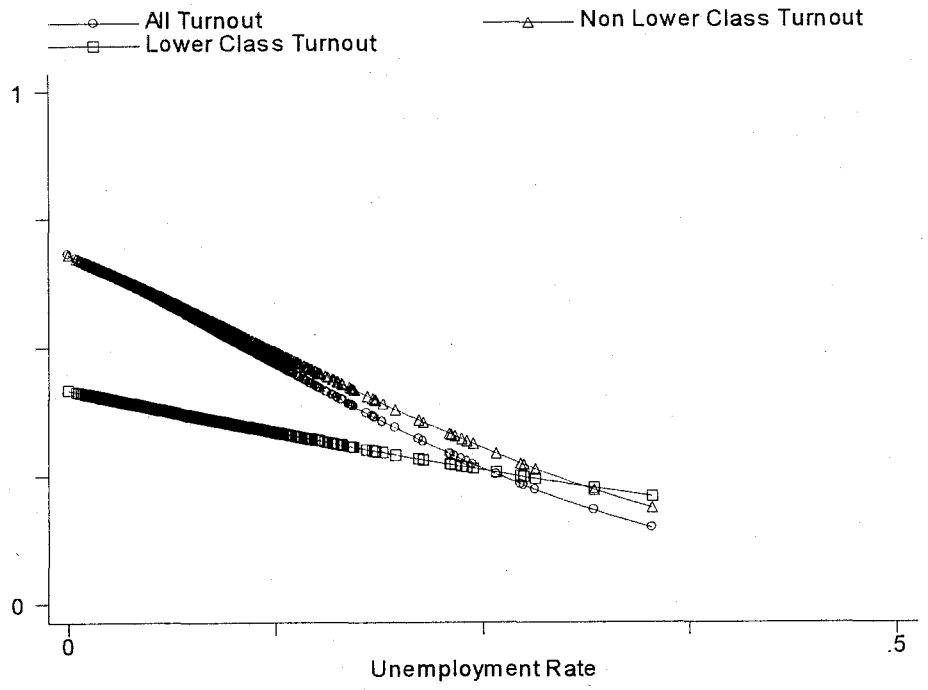
Notes: Dependent variable: logit of the proportion of age eligible population casting votes for President. Estimated via Markov Chain Monte Carlo. 95% Bayesian Credible Interval (BCI) in brackets.

The effects of macro economic conditions on the probability of non lower class turnout are stronger than the effect of macro economic conditions on the probability of the lower class turnout in 2000. Michigan, Minnesota, and New York all show that the unemployment rate is negatively related to the probability of non lower class turnout. The direction of the function is consistently downward, which indicates that the higher the unemployment rate, the lower the probability of non lower class votes.

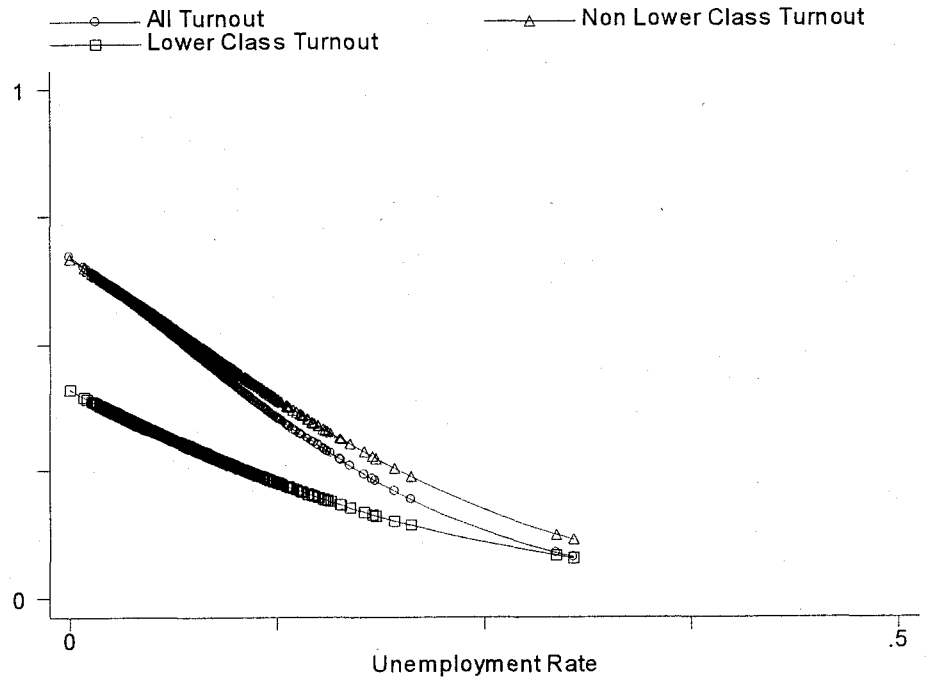
Figures from Figure 5-6 through Figure 5-9 show the same characteristics: the non lower class responded more sharply to the unemployment rate change than the lower class did. This also is an expected result. Overall, the estimates indicate non lower class voters respond strongly to macro economic conditions. Lower class voters do not.

<Figure 5-6>
Probability of a Vote by the Unemployment Rate
Minnesota 2000 Presidential Election

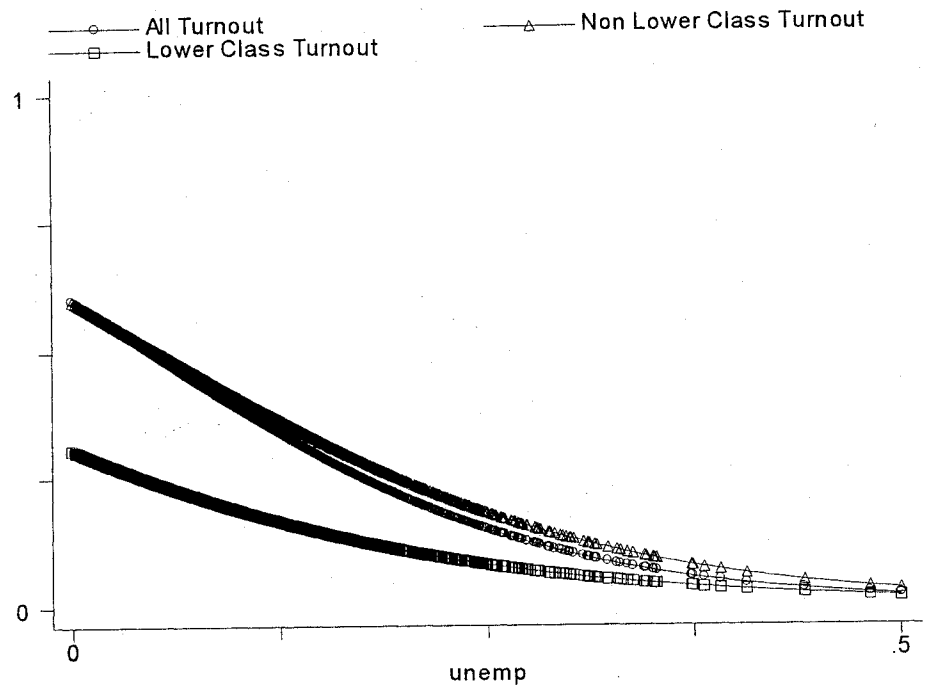
<Figure 5-7>
Probability of a Vote by the Unemployment Rate
Michigan 2000 Presidential Election



<Figure 5-8>
Probability of a Vote by the Unemployment Rate
New York 2000 Presidential Election



<Figure 5-9>
Probability of a Vote by the Unemployment Rate
California 2000 Presidential Election



Diagnosis

Table 5-9 report the results of the Heidelberger and Welch Test. As Table 5-9 shows all regression coefficients are drawn from stationary which suggests that the interpretations and analyses based on these point estimates are reliable.

Table 5-10 reports observed turnout rates among homogeneously non lower class MCDs and estimated turnout rates from basic model and extended model in state of Minnesota. The weighted average turnout rates among homogeneously non lower class MCDs are higher than estimated turnout rates. Two explanations are possible. First, voting behavior of non lower class in these MCDs are different from that of non lower class in non homogeneous MCDs. Second, although the extended model produced more

plausible estimates, there is a room that the extended model did not fully satisfy the distributional assumptions.

<Table 5-9>
Heidelberger and Welch Test for Coefficients in States in 2000

	Stationarity test	Halfwidth Test	Mean	Halfwidth
Michigan				
Lower Class	Passed	Passed	-3.550	0.1440
Non Lower Class	Passed	Passed	-6.200	0.0314
Minnesota				
Lower Class	Passed	Passed	-6.780	0.094
Non Lower Class	Passed	Passed	-11.100	0.0184
New York				
Lower Class	Passed	Passed	-7.530	0.1860
Non Lower Class	Passed	Passed	-9.030	0.0319
California				
Lower Class	Passed	Passed	-6.060	0.0111
Non Lower Class	Passed	Passed	-7.480	0.0048

<Table 5-10>
Observed Turnout and Estimated Turnout

Year	Number of only non lower class MCDs	Observed Turnout	Non lower class turnout Basic Model	Non lower class turnout Extended Model
1984	85	0.797	0.649	0.678
1988	89	0.769	0.654	0.665
2000	94	0.848	0.651	0.657

CHAPTER VI

CONCLUSION

When the National Voter Registration Act, the Motor Voter Act, was passed in 1993, higher registration and consequently higher voting turnout were naturally expected. The first goal seemed to be achieved when the Federal Election Commission reported at least 10 million people registered newly after the passage (FEC, 1997). Voting turnout, however, did not follow the same direction. The turnout rate in the first presidential election after the Motor Voter Act was only 49 percent, the lowest turnout rate since World War II. The National Voter Registration Act was just the most recent effort to make registration easier. Since the 1960s, registration has become significantly easier. However, while we observe these historical efforts to reduce legal barriers to registration and voting, there is a fundamental puzzle when observing the overall voting turnout in the American presidential elections. The puzzle is that despite various efforts to reduce barriers, people do not vote as much as they did before. Who votes and who does not then? Who contributed to the decline of turnout? These are enduring lasting questions in American politics. This research quantitatively tested hypotheses that provide answers to these central questions along with effects of contextual factors on the turnout.

Findings

A Bayesian hierarchical ecological inference method was used to analyze the relationship between economic class and voting turnout and the relationship between economic conditions and voting turnout in the U.S. presidential elections in 1984, 1988,

1992, and 2000. In order to analyze relationships, four hypotheses were tested. First, lower class voting turnout is lower than non lower class voting turnout. Second, the lower class contributed to the decline of voting turnout more than the non lower class did. Third, the lower class in states where the registration requirement is moderate will vote more than the lower class in states where the registration requirement is more strict. Finally, the lower class will be less responsive to economic condition than the non lower class. Two versions of a Bayesian hierarchical ecological inference method were employed to test hypotheses: basic model and extended model.

Basic Model

The results from the basic model confirm the first hypothesis. The probability of a vote by the lower class is lower than that of the non lower class. Except the lower class in Minnesota in 1984 election, the lower class in all states and years voted less than the non lower class. The probabilities of a vote by the lower class are statistically different from those by the non lower class. This result is consistent with the findings from previous research. The probability of a vote by the lower class in Minnesota in 1984, however, is not statistically different from the probability of a vote by the non lower class. The fact that Democratic presidential candidate former Senator Walter Mondale was from Minnesota would be a strong factor to mobilize the lower class in Minnesota.

The results from the basic model also confirm the second hypothesis. After the probabilities of a vote in 1984 and 1988 presidential elections were estimated, it was found that the lower class contributed to the decline of voting turnout more than the non

lower class did. The differences between the probability of a vote in 1984 and 1988 are bigger among the lower class than the non lower class for all states examined in this research. When Leighley and Nagler (1992a) examined the class difference in turnout, they found no difference between socio-economic classes in turnout decline. They argued that the voters remain the same. In this research, however, the results from the basic model of the Bayesian hierarchical ecological inference method indicate that the lower class withdrew more from the polls.

The basic model yielded interesting results in terms of the effects of registration requirements on voting turnout. It was expected that the lower class in a state where the registration requirement is moderate would vote more than the lower class in a state where the registration requirement is more strict. Among four states examined in this research, Minnesota is the only state where the early registration is not required. The observed total turnout reported by FEC clearly shows that the turnout rate in Minnesota is higher than any other states examined in this research. In order to confirm the hypothesis, the probability of a vote by the lower class in Minnesota should be higher than the probability of a vote by the lower class in any other states. While the estimated probabilities of a vote by the lower class for 1984 and 1988 elections confirm the hypothesis, the probability of a vote by the lower class for 2000 election does not. Rather, the estimated probability of a vote by the lower class in Minnesota in 2000 is even lower than the probability of a vote by the lower class in Michigan and New York. It is obvious that the effects of registration on the probability of a vote by the lower class disappeared in 2000. The National Voter Registration Act in 1993 did not have expected results among the lower class and overall the effects of political institutions on lower class

turnout were trivial. Rather, lower class turnout may have been influenced by attitudes toward the political system as suggested by Rosenstone (1982).

Extended Model

One form of external information was introduced into the model as a covariate. Some of the point estimates produced by the basic model were the extraordinarily high, which might indicate the presence of an aggregation bias. As King (1997) suggests, one way to reduce aggregation bias is to introduce external information to the model. Adding a covariate into the model ensures not only the possible low level of aggregation bias but it also permits us to capture the effects of a contextual factor on voting turnout.

The unemployment rate of each MCD was introduced into the model. The results from the extended model were compared with the results from the basic model for point estimates of the probability of a vote. The results of the extended model seem to give more plausible point estimates for a probability of a vote by the lower class. Unlike the basic model there is no state and year showing the more than half of the lower class voted in the election. Another noticeable difference from the basic model is that the probability of a vote by the lower class in Minnesota in 1984 presidential election is now different from the probability of a vote by the non lower class. The first hypothesis was confirmed throughout all states and all years examined in this research. The lower class in Minnesota in 1984 might not be mobilized as much as the basic model estimated. Extended model also confirms other two hypotheses as well. The lower class contributed to the overall decline of turnout and they took advantage of the Motor Voter Act.

The most valuable advantage of having a covariate in the model is that we can estimate the effects of a contextual factor on voting turnout. I tested the hypothesis: the responsiveness of the lower class turnout to the macro economic conditions would be less than that of the non lower class. In general, I find that the responsiveness of the lower class turnout overall was different from that of the non lower class. The non lower class turnout showed much lower rate as unemployment increased. The effect was much weaker for the lower class. This result confirms Radcliff's (1992) conclusion that the voters would be demobilized when macro economic conditions are poor. However, on the other hand, this result disconfirms Radcliff's conclusion that the lower class would be more demobilized when macro economic conditions are poor. This research finds that the non lower class was demobilized at greater degree than the lower class when macro economic conditions were poor. This may be explained by economic security program. Radcliff (1992) argues that when the economic security is provided, the degree of demobilization would be smaller although macro economic conditions are poor. Since the lower class, in this research, was defined based on the poverty status and the poverty people tend to receive welfare benefits, they would not be demobilized as much as non lower class.

Contributions and Conclusion

This research confirmed and strengthened previous study of American voting behavior using a relatively new method, Bayesian hierarchical ecological inference. This research increases our knowledge of how economic class is associated with voting

turnout. This research also increases our knowledge of how macro economic conditions affect voting turnout among people in different economic conditions. If, as I confirmed, the low turnout rate among the lower class is persistent, their voice would have less chance to be heard in policy. In the end, the primary accomplishment of this research has been to reveal how and extent economic class is associated with voting turnout and macro economic conditions influence the voting turnout.

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