To: Senator Smith
From: Chris Pecaut
Regarding: Effects of Minimum Wage on Employment

The percentage unemployment in a state does not have a statistically significant effect on that state's rate of unemployment. Unionization, on the contrary, is a better correlated with less unemployment. Our data does not support the thesis that by increasing the minimum wage from $6.50 to $7.25, we can reasonably expect the unemployment rate to decrease.

Weak, misleading connection between minimum wage and unemployment rate

A state's average rate of unemployment rate is not statistically associated with its minimum wage, when holding other factors constant. Without controlling for % union representation and high school graduate rate, there falsely appears to be a positive correlation between higher minimum wage rates and higher unemployment (see Figure 1). This figure, however, is not statistically significant with 95% confidence, offering only a p-value of 0.089. The confidence interval under these conditions varies from a decrease of 0.14% to an increase of 1.85% for every additional dollar in minimum wage. When we control for other variables, the p-value more than doubles, even further undermining the connection between unemployment rate and minimum wage.

Support for connection between unionization and high school graduation rate

On the other hand, both unionization and high school graduation rate are statistically associated with a higher unemployment rate. Since minimum wage and unionization are statistically associated, with almost a $.06 increase in minimum wage for each percentage point increase in unionization in that state, we only considered unionization in our analysis. Under these conditions, a 1% increase in unionization was statistically associated with a .12% **increase** in unemployment, holding all else constant. Also, a 1% increase in

high school graduation rate in a state is statistically associated with a **decrease** of .33% unemployment, holding all else constant (see Figure 2).

Weekly average unemployment benefits had a negligible effect on both unionization and high school graduate rate,that was not even statistically significant. When controlling for this weekly benefit rate, the coefficients for unionization and high school graduation were hardly affected. (see Figure 3)

Challenges in using this data

Three challenges exist when using this data to analyze the relationship between minimum wage and unemployment.

1. Geographic effects will affect unemployment levels and unionization
2. High school graduation rate is not broken down by race
3. Overall trends absent from data

Regional Differences: First of all, geographic variations of industries are not captured by this data. In the way that the statistical abstract gathers data, any regional variations in wage levels and unemployment are lost and each state is treated separately, on its own. Generally, wages in the south of the country have been behind those in the north, and this could be related to weaker history of unionization and lower education levels. In order to sort out these effects the 51 states would need to be clustered into groups and the effects discussed in this paper would need to be analyzed separately.

Similarly, because certain regions of the country favor certain industries, such as the shale drilling boom in North Dakota, which may have lowered unemployment, we must be careful in generalizing about overall effects of education or unionization across all the states without factoring in these regional differences.

Racial Differences in High School Graduate Rate: The racial composition of different states may be determining the variations in high school graduation rate, rather than the

other variables that are held constant. It may be, for instance, that unemployment is consistent for certain ethnic groups across different states, but the average level, which is measured by our data, will not capture this effect and therefore provide a misleading result. By creating an additional interacting variable representing this effect, and then re-running the regressions, we will be able to better evaluate the severity of this problem. A similar effect may take place within the unionization variable, where the ethnic composition of workers may determine their level of unionization. We would need to take additional steps here as well to guard against this omitted variable bias.

Overall Trends Absent from the Data: We are only using data from 2009, which leaves out the effect of overall changes in the state of the economy. The year we used for our measurements could be an especially good or bad year, thereby exaggerating certain effects that normally would not play such a prevalent role. A similar scenario could confront the level of unionization, if, for example, anti-union legislation were successfully passed at the federal or state level. There have also been major changes in educational policy that could have affected the number of students graduating, without similarly influencing the effect on the work force. Or, changes in education policy could be taking effect to increase graduation, but the effect in the work place will not be seen for a number of years from now. With more robust panel or time series data we could ameliorate some of these effects.

Conclusion

There is no reliable statistical association between the minimum wage of a state and its unemployment rate. We do find, however, statistically significant associations between the level of unionization along with the high school graduation rate and the percentage unemployment rate in a state. We cannot, therefore, reliably expect that we will reduce or raise unemployment by raising the minimum wage. By collecting and analyzing more accurate regional data about different industries, and then factoring this information into time-series trends, we could gain a more precise estimate of how to lower unemployment.

Unemployment Rate on Percentage of Unionized Workers

Figure 1: Unemployment on % Unionized Workers

Unemployment Rate on % High School Graduates

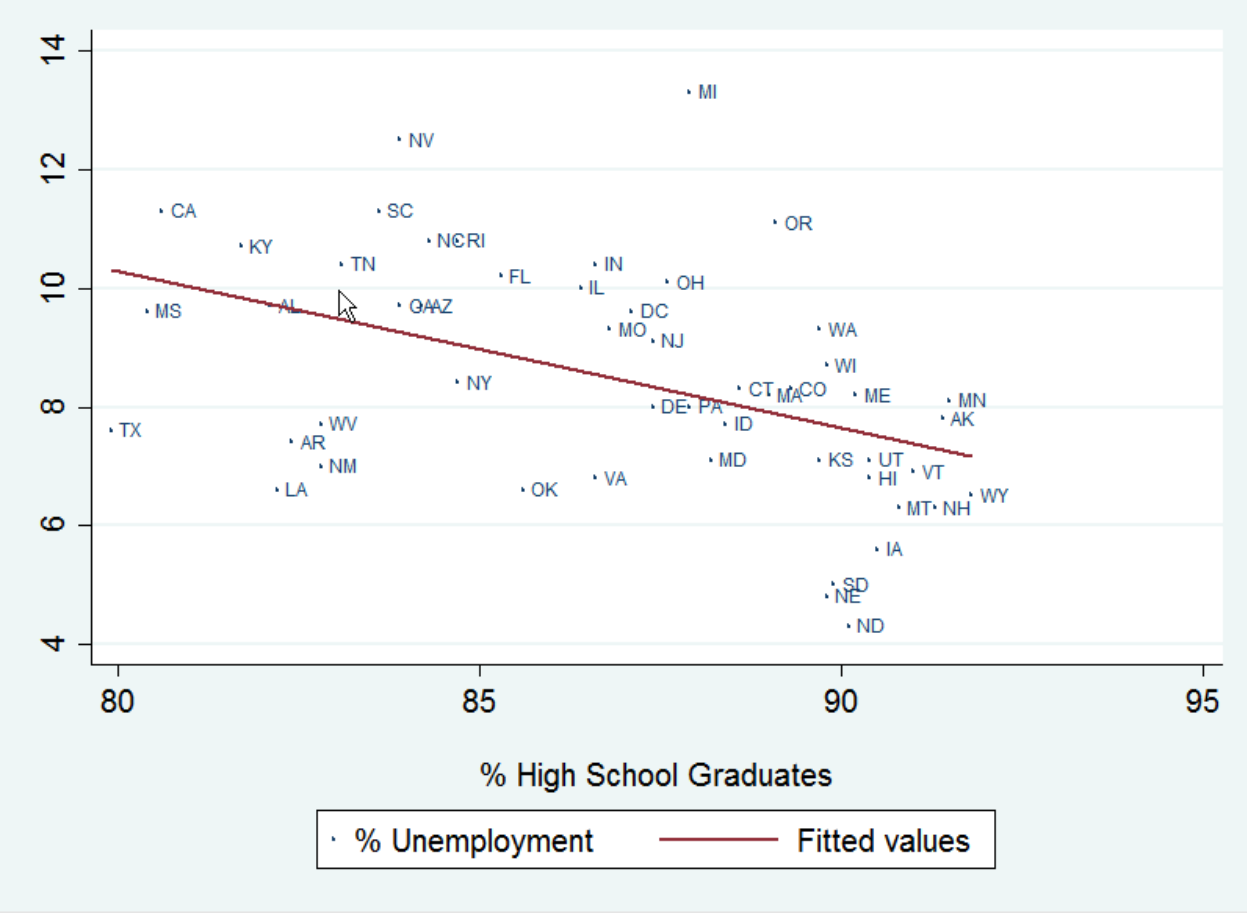

Figure 2: % Unemployment on % of High School Graduates (>25 years of age)

	Unemployment Rate (%) including weekly average unemployment compensation		Unemployment Rate (%) not including weekly average unemployment compensation	
	Effect on unemployment rate (slope coefficient)	Significance (t-statistic)	Effect on unemployment rate (slope coefficient)	Significance (t-statistic)
Weekly Average Unemployment Compensation			0.005	0.25
Unionization (%)	0.116	2.41	0.120	2.76
High School Graduation Rate (%)	-0.334	-4.34	-0.329	-4.46

Figure 3: Effect of Unionization and High School Graduation Rate on Unemployment Rate, controlling for Weekly Average Unemployment Compensation