

How Does Declining Unionism Affect the American Middle Class and Inter-generational Mobility?

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ABSTRACT

We use the PSID to examine the change in the share of workers in the middle class over time and to compare the intergenerational transfer of income between offspring and union and nonunion parents. We find that union workers are disproportionately middle class (or above) and middle class status is a result of the union wage premium for some. Offspring of union parents fall higher in the income distribution than the offspring of non-union parents, due in part to the higher incomes of union parents, in part due to better education and health outcomes associated with unionized parents, and in part from the generational transmission of union status. In addition, we find that offspring from communities with higher union density have higher average incomes relative to their parents than offspring from communities with lower union density even after controlling for parents' incomes. Thus, the decline in unionism contributes to the shrinking middle class and impairs the generational mobility of middle class workers.

This paper addresses three ways in which unionism potentially affects workers that the voluminous quantitative literature on “what do unions do” has largely ignored.

The first way relates to the impact of unionism on the size of the middle class. Since unions compress the structure of wages and incomes, and the middle class consists of persons near the middle of the income distribution, we would expect union workers to be primarily middle-class and for a decline in union density to contribute to the shrinking middle class. This issue has not been widely explored because the shrinking American middle class is a relatively recent phenomenon and most studies of unions and the distribution of wages and salaries use other metrics. Section One shows that union workers are indeed disproportionately middle class or higher, with some attaining middle class incomes as a result of union wage premium and that the decline of unionism contributes to the shrinking middle class.

The second relatively unexplored way in which unions affects workers is through inter-generational transmission of economic status. Unionism is related to economic mobility at the country level: countries with higher union density evince higher rates of inter-generational mobility (see Appendix A), but whether this is true within the US, and whether parents’ economic status affects the economic status of their children differently depending on whether the parent belonged to a union is not known. Section Two shows that having a union parent boosts the future economic well-being of children, due in part to the union wage premium raising parental income, in part to better education and health outcomes associated with having a unionized parent independent of income, and in part due to the generational transmission of union status.

The third issue we examine is whether the union density of the area in which a young person grows up affects their future economic performance. If unions raise upward mobility of individuals, we would expect that aggregating results along some area dimension would show a similar pattern across areas. But unionism may also affect other area factors, such as schooling, crime rate, or other social amenities, that would increase the wellbeing of all children in the area, producing a residence-based impact beyond unions. Section Three finds that offspring from communities with higher union density have higher average incomes relative to their parents than offspring from communities with lower union density.

The final section raises the question of whether the relation between unionism and the middle class in our study and comparable findings on unionism and inequality in other studies implies that the US will be unable to reduce income equality and rebuild a strong middle class without a vibrant trade union movement.

1. Unionism and Middle Class Status

To examine the relationship between unionism and middle class status, we use two bodies of data: the Current Population Survey (CPS), which is the predominant source of data on US income distribution, and the Panel Study of Income Dynamics (PSID), which contains information on the incomes and union status of parents and of their adult offspring. Following Krueger (2012), we define middle class as the population aged 25-64 that earns an income between 0.5 and 1.5 times the median income level—in other words, the portion of the population within 50 percent of the median income.

Figure 1 shows that the size of middle class have fallen by more than 10 percentage points from 56.5% in 1979 to 45.1% in 2012 in the CPS. During the same period, the unionization of American workers declined by 13 percentage points, from 24% to 11%.¹

Table 1 summarizes the pattern of unionization and the proportion of workers in the middle class for parents and their children in the PSID data set, which provides the data for our analysis of intergenerational transmission of economic status. In the PSID we contrast the status of parents in 1985 and the status of their adult offspring in 2011. The rate of unionization dropped seven percentage points from parents (1985) to their offspring (2011) while the proportion of workers in the middle class fell eight points between the parents (1985) and their adult children (2011).²

To what extent are these trends connected? One way to estimate the contribution of the drop in unionization to the drop in the proportion of persons in the middle class is a

¹ See <http://www.unionstats.com/> table for all wage and salary workers

² The union figures are comparable to the estimates for all workers in the CPS over the same 1985-2011 period, in which the percentage of workers fell by nine points, and to the figure 1 percentage middle class drop of seven points from 1985 to 2011.

shift-share decomposition, breaking the middle-class trend into two parts: i) the change in union density and ii) the change in the proportion of union workers who were in the middle class relative to the proportion of non-union workers in the middle class. Let MC_u be the share of the union workers who are in the middle class and MC_n be the share of nonunion workers in the middle class, and let U be the share of the workforce that is union. Then, if MC is the overall share of the workforce in the middle class, we have the following identify:

$$(1) \quad MC = (1 - U) MC_n + U MC_u = MC_n + (MC_u - MC_n) U$$

The statistics in Table 1 show that among parents in 1985 the share of union workers in the middle class was 11 points larger than the share of nonunion workers in the middle class. Given the 18% of the parents who were union in 1985, unionization contributed 2 percentage points ($.11 \times .18$) to the overall proportion of workers in the middle class among 1985 parents. Union impacts on the distribution of income of nonunion workers through labor market spillovers or union influence on public policies toward workers could produce a larger or smaller impact.³

Taking changes of equation (1) the change in the share of the workforce that is middle class can be decomposed as following:

$$(2) \quad \Delta MC = \Delta MC_n + \Delta(MC_u - MC_n) U + (MC_u - MC_n) \Delta U + \Delta(MC_u - MC_n) \Delta U$$

The first term measures how the change in the proportion of nonunion parents and children falling in the middle class affected the overall change: as noted above, this is eight percentage points. The second term measures the generational change in the share of union workers in the middle class compared to non-union workers, multiplied by the 18% parents' unionization rate. The statistics from Table 1 show a drop in the difference between union and non-union parents compared to their offspring from 11 percentage

³ It will be larger if union wage and benefits spillover to nonunion firms who mimic them to avoid union drives or if unions successfully lobby legislatures for laws favorable to all workers. It will be smaller if union wages and benefits reduce employment in the union sector, which increases the labor supply in non-union work (the "crowding" effect). Evidence suggests that the threat effect dominates the crowding effect and that unions raise wages for non-union workers (Farber 2005; Neumark and Wachter 1995).

points (63% – 52%) among the parents to 7 percentage points among their offspring (52% – 45%). To the extent that this reflects weakening unionism, it contributes about 0.007 percentage points ($= -.04 \times .18$) to the fall in the overall proportion middle class. The third term is the standard shift component in a shift-share decomposition. It measures the impact of the fall in union density on the proportion of the workforce in the middle class, with fixed base year levels of middle class attainment for both groups. It is .008 points ($= -.07 \times .11$). The final term is the interaction between the change in union density and change in the middle class proportions. It adds 0.003 points ($= -.07 \times -0.04$) to the middle class share of the work force.

In sum, the decline in union density contributes about 9 percent ($= .007/.08$) to the 8 percentage point drop in the middle class share of workers due to the pure shift effect. If we add in the decline in unions' ability to boost workers into the middle class, the decline of unions contributed nearly 20 percent ($= (.007 + .008) / .08$) to the decline of the middle class.

As noted, the reason union workers are disproportionately in the middle class is that collective bargaining tends to compress the distribution of wages for covered workers so that union workers have a narrower distribution than non-union workers (Western and Rosenfeld, 2011; Card, Lemieux and Riddell, 2004; Pontusson, Rueda, and Way, 2002; DiNardo, Fortin, and Lemieux, 1996; Freeman, 1980, 1993; Card, 1992). Figure 2 shows this phenomenon in the PSID separately for the parents sample in 1985 and for their offspring in 2011. From this perspective the Table 1 statistics on the fraction of people making less than 50% of median income deserves particular attention. In this case the difference between union and non-union workers increases from 16% among the parents in 1985 to 23% among the offspring in 2011, which suggests that the decline in unionization may have increased the fraction of young workers who fell short of middle class incomes. Modifying our equation (2) calculations to assess the role of the fall in unionism on the higher share of offspring than of parents below the middle class, we estimate that the pure “shift effect” due to the 7.3 percentage point difference between the union density of parents and the union density of their offspring would have reduced the 7.1 percentage point greater percentage of offspring with incomes less than 50% of

median income by about .008 points or 11% of the higher proportion of offspring below the median.⁴

In short, however we organize the data, the decline of unionism appears to have contributed to the shrinkage of the middle class, with a magnitude commensurate with unions' declining role in the US labor market – noticeable but not huge, barring spillover effects from union to nonunion workers or employers.

2. Unionism and Intergenerational Transmission of Economic Status

The Panel Study of Income Dynamics (PSID) provides detail on the characteristics of families, including the labor income and union status of the household head and of the head's wife⁵, and the comparable characteristics of their adult offspring 20-30 years later. To obtain a sample of parents and their adult offspring, we matched the 1985 and 2011 PSID files by individual and created a new file limited to individuals who were children/stepchildren of the head of a household in 1985 and were themselves heads of household or the wives of household heads in 2011. We also restrict our offspring sample to be younger than 38 years old in 2011 (younger than 13 years old in 1985) so that they are young enough to be directly influenced by parents' economic status. We created a new set of 2011 “offspring” variables to characterize this group — characteristics of the household heads if the individual was the head of household and characteristics of the wives if the individual was the married or unmarried partner of the male household head. These offspring variables are designed to focus on the relationships between parents and their children rather than between parents and the spouses of their children. Because we limit our analysis to heads of household and wives, our data exclude children who were not heads of household or wives, which consist primarily of those living with their parents in 2011. Appendix B gives the summary statistics of the main PSID variables in our analysis.

⁴ We obtain the .008 point estimate as the multiplicand of the 11.2 % (= 16.15% – 4.98%) difference in the rate below 50% of the median for union and nonunion parents in 1985 and the 7.3 point lower union density in the sample (= 10.92% – 18.20%).

⁵ The PSID defines head of household as someone over age 16 with the most financial responsibility, but if that person is female and married to a man, then he is the head and she is the wife. Therefore, a woman is only the head of household if the household has no adult male who is not incapacitated. The wife also does not necessarily need to be legally married to the household head to be considered a wife in the PSID.

Table 2 presents some of the major attributes of sons and daughters in our sample differentiated by their parents' union status. Line 1 shows that the union status of parents is strongly associated with the union status of the child. The probability that an adult male offspring will join a union is six percentage points higher if their parents were union workers than if their parents were non-union workers, while the comparable difference for female offspring are four percentage points. Given the low level of unionism among offspring these produce 40 to 63 percent differences in the probability of their offspring belonging to a union.

The median income of the union parents' offspring exceeds the median income of non-union parents' offspring. Among sons the medians are: \$40,000 (union parents) vs. \$37,200 (non-union parents) – about a 10 percent difference. Among daughters the medians are \$27,000 (union parents) vs. \$22,000 (nonunion parents) – for a 25 percent difference. Offspring education attainment measured by graduating high school or highest grade completed is also higher for persons with union parents. Finally, using a self-reported health status with 1 being poor and 5 being excellent, the offspring of union parents are moderately healthier than the offspring of nonunion parents.

In sum, the offspring of union parents do better than the offspring of non-union parents according to the metrics in the table. But the tabulations do not provide any insight into whether these differences reflect the impact of unionism per se on offspring outcomes nor the magnitude of any impact. On the one side, unionized parents may have observed and unobserved attributes that give their children an advantage independent of union status and of the higher incomes associated with union jobs. On the other side, parents in managerial or other primarily non-union jobs may have attributes that advantage them in transmitting socioeconomic advantage to their children. Since union workers tend to be in the middle of the income distribution, the net effect of such factors on the results is unclear.

To see whether the Table 2 differences remain in the presence of other measures of parental attributes, we regress the log of offspring income on the log income of their parents and other parental characteristics using the following form:

$$(3) \quad \text{Log}Y_{jk} = b_0 + b_1U_k^P + b_2\text{Log}Y_k^P + \hat{a}d_kX_k^P + e_{jk}$$

where j indexes offspring and k indexes their parents. Y is offspring's labor income; U^P is their parents' union status, where 1 means the parents are unionized and 0 that they are not union⁶; Y^P is parents' family income and X^P represents other parental attributes: parents' age, race and ethnicity, their full-time status, education, marital status, industry and occupations, and the urban status of the household. If U^P is significant positive, then on average the offspring of union parents earn higher income than the offspring of non-union parents.

Table 3 gives the results of the regressions of log (offspring income) on parents' attributes including parent's family income. The coefficient on log (family income) in column 1 is the inter-generational income elasticity (IGE) that measures the association between parents' income and offspring income.⁷ The estimated coefficient of 0.36 indicates that for all persons in the sample if parents' income increases by 10%, offspring income increases by 3.6%.⁸ The addition of the covariates for parental attributes reduces the coefficient to 0.30 in column 2.

Column 3 examines the effect of having union parents on offspring income absent family income but with inclusion of other parental covariates. The dummy variable for union status of the head of the household (union HH) is significant and robust with a magnitude of 0.13, which implies that the adult offspring of unionized household heads earn 13 % higher income than the adult offspring of non-unionized household heads. The dummy variable for the mother's union status, however, is positive but insignificant. Addition of parental family income in column 4 reduces the coefficient on the union status of parental household head to 0.10, which is still statistically significant. This implies that the effect of parents' unionism goes beyond their higher income due to the union premium. Finally, columns 5 and 6 show that addition of a dummy variable for

⁶ For parents' union status, we look at household head (most of them are fathers, but single mothers are also considered as households heads) and the their wives (mothers) separately.

⁷ It is commonly understood that the higher value of IGE the lower the intergenerational mobility is. In one extreme case, the IGE would equal to zero if there exists no relationship between family background and the adult offspring income. An offspring born into poor family would have the same likelihood of earning a high income as an offspring born into a rich family.

⁸ This estimate is consistent with literature (Chttey et al, 2014; Lee and Solon 2006). Mazumder (2005) stated that the estimated IGE could be subject to the attenuation bias if the data focus on short-term periods due to the long-lasting transitory shocks to income. He obtained IGE estimates as high as 0.6 when using 15-year average of parents' income.

whether the offspring is unionized has little impact on the estimated coefficients on union parental status and family income. The estimated coefficient on offspring union status shows that they earn a substantial union premium.

We disaggregate the analysis by gender of offspring and report the results in Table 4. The effects of log family income on log of offspring income are similar for sons and daughters but the result of parents' unionism on offspring income is greater and more significant for daughters than for sons. This is true for both the head of household dummy and for the dummy on wife's union status, which is positive and reasonably significant for daughters but insignificantly negative for sons. As in table 3, moreover, the offspring's union status shows a substantial union premium and has little impact on the effects of family income or parental union status.

To what extent does the effect of parent' unionism show up in other measures of socioeconomic well-being? We examine this question by estimating variants of equation (3) that replace offspring income with measures of educational progress – highest grade completed – and health, as reported by individuals on a 1 to 5 scale that we code so that 5 = best health and 1 = worst health.

Columns 1 through 4 of Table 5 give the results for the education measure. They show for sons that having a union head of household substantially increases highest grade completed even for persons with the same family income (columns 1 and 2) while for daughters the union status of the household head has no impact whereas the union status of the mother substantially raises the highest grade completed (columns 3 and 4).⁹

Columns 5 through 8 of Table 5 give the results for the health measure of offspring. For sons as well as for daughters, the health status of offspring is strongly associated with mother's union status. And, as in the calculations for the highest grade completed, the results hold with the addition of family income, implying that unionism improves offspring' health through mechanisms beyond the parents' income. This may reflect the better health care and childcare that unions provide members.

Given the many pathways that educated and skilled workers are likely to have to pass on their economic advantages to their children, it is important to determine whether

⁹ In regressions with high school graduation as the measure of schooling, parents' unionism raises the high school graduation rate by 6% for sons and 11% for daughters.

the union parents' effect on offspring income is stronger among less educated and skilled parents than among more educated and skilled workers. In the former case, the union effect would reduce the overall level of social mobility along the education and skill dimensions while in the latter case the union effect would increase mobility.

To examine this issue, we divided our sample by education – parents with less than a high school education and those with a high school education – and by nature of work – parents in blue-collar occupations compared to parents in white-collar occupations and estimated equation (3) for these groups. The results, summarized in Table 6, show that the union effect in raising the income of offspring is concentrated among parents with less education and among parents in blue-collar jobs. While one potential explanation is the large union wage premium for low-skilled workers (Hirsch and Schumacher, 1998), the inclusion of the parental household income variable, which should reflect the wage premium, still leaves a sizable independent union effect.

Thus far, we have treated the union effect as a dummy variable that shifts the income, education, and health outcomes for children from union households compared to those from nonunion households on the assumption that unionism does not affect the other factors in the equation. While this is a useful way to identify a first-order union impact, it is possible that unionism operates through changing the way other variables affect offspring outcomes – that is producing an inter-generational transfer of status that operates differently for union families than for non-union families

To see if this is the case, we estimate regressions of offspring income on parents' income for union and non-union households separately. To avoid comparisons between union and nonunion families with very different income levels we limit our sample to middle class families – those with incomes from 50% below median income to 50% above the median. The regressions in Table 7 show that indeed the inter-generational transmission equation for union families differs substantively from that for nonunion families. The estimated coefficients on family income in columns (1) through (3) middle class households whose head is union worker are much larger and statistically significant than the estimated coefficients on family income in columns (4) through (6) for middle class households headed by non-union workers. The average IGE for middle class union households is 0.5-0.6, which is twice as big as the IGE for all workers estimated in Table

3. For non-union middle class households, the IGE becomes insignificant once the regression controls for other family characteristics. As most union workers are in the middle class and union households have greater inter-generational transfer than non-union households, unionism strengthens the middle class.

3. Living in a Higher Union Density Community

We examine next the link between the rate of unionization in the geographic community in which young persons were raised and their future income, conditional on their parents' income and the average income in their community. We linked two area-level data sets for this analysis: the "Intergenerational Mobility Statistics and Selected Covariates by County" developed by Chetty et al. from which we obtain average 2011-2012 family incomes of a 1980-1982 birth cohort linked to the average 1996-2000 family incomes of their parents by county and commuting zone¹⁰; and union density data from Hirsch and McPherson's Unionstats CPS-based estimates for metropolitan statistical areas. Matching the two data sets involves technical complications that we describe in Appendix C, and we report the summary statistics of this matched data in Appendix D.¹¹

Unionization of an area can be related to future incomes of young persons raised in the area relative to their parents' income through the aggregation of the parent-offspring relation for individuals. If children from unionized families earn higher incomes than children from otherwise comparable non-union families, per our PSID calculations, aggregating the future incomes of children brought up in the area and of their parents

¹⁰ Available at www.Equality-of-Opportunity.org.

¹¹ Most covariates come from Chetty et al's publicly available folder on www.Equality-Of-Opportunity.org: population, percent of children with a single mother, commute time, high school dropout rates, college graduation rates, local tax and spending, the Gini coefficient, social capital, whether the state has an Earned Income Tax Credit and the progressivity of the state's tax code. Single mother rates, dropout rates, and commute times were four of the "five factors" Chetty et al. found significant in their analysis. We do not include the Gini coefficient of just the bottom 99%, because it is based on their non-public tax data and is not provided at the county level. We added other covariates: industry since some industries are more unionized than others, with data on industries in the Chetty et al raw data folder from the 2000 Census: "Sex by Industry for the Employed Civilian Population 16 Years and Over." We place the industries into five categories. Second, we create multiple race variables. Using race data from the 2000 Census in the National Historical Geographic Information System (NHGIS) in Chetty et al's public data folder, we created variables for the percentage of the MSA that is non-Hispanic black, non-Hispanic Asian, non-Hispanic "other," and Hispanic. Third, we added U.S. Census data from 2000 on the child poverty rate, average number of children per family, and median value of owner-occupied housing units.

during their formative years should yield higher incomes for children relative to parents in areas with higher union density. But an area's rate of unionization may also affect the incomes of children from the area through potential union impacts on area resources. Unions generally advocate for policies that benefit working people – such as minimum wages, expenditures on schools and public services – that may thus show up in higher income for all children from the area regardless of the union status of their parents.¹² The result will also be a positive relation between areas unionization and the adult incomes of the children regardless of their parents' union status or whether they remain in the area or move to some other area.

As our area data contains no information on the individuals within the area, we cannot distinguish the two possible routes of impact. We estimate the effect of union density in a commuting zone on the 2011-2012 income of persons in the 1980-82 birth cohort for children who had resided in that zone by the following model:

$$(4) \quad \text{Log}\bar{Y}_i^O = b_0 + b_1U_i^P + b_2\text{Log}\bar{Y}_i^P + \hat{\alpha}d_iX_i + e_i$$

where *i* indexes commuting zone (CZ), *o* indexes offspring, and *p* indexes their parents. \bar{Y}_i^P measures the average income of parents in the *i*th CZ over 1996-2000, while \bar{Y}_i^O measures the average income of offspring in the same CZ. The union density figure is for 1986, which is when the young persons would have been 6-8 years old. Because union density by area is a stable statistic results are similar for union density over other time periods. To reduce the potential that the effect of unionism will be confounded with that of other area variables, the X_i vector in the regression controls for a large set of covariates, including many that could be channels for unionism to increase mobility such as social capital, tax progressivity, the existence of a state EITC, and lower child poverty, as listed in the note to the Table 8.

Column 1 of Table 8 gives the estimated coefficient on log of the mean parental income in commuting zone on the log of the mean of their offspring income with inclusion of the various covariates. The coefficient shows that a 10 percent increase in a

¹² Cox and Oaxaca (1982) find that states with higher union density have higher minimum wages. Gilens (2014) shows that unions are advocates for policies supported by the middle class.

CZ's average parents' income increases the average income of children in that CZ by 6.2 percent¹³ – a larger IGE than we found in the regressions for individuals, due presumably to lower measurement error for area incomes. Column 2 adds the union density variable. It obtains a positive significant coefficient of comparable magnitude to the coefficient on the dummy variable for parents union status in table 3 and reduces the coefficient on parental income. Column 3 adds dummy variables for each state. The coefficient on union density falls but still remains substantial – a 10 percent increase in union density is associated with a two percent increase in child income.

In sum, the area data – derived from a different data source than the PSID – tell a similar story about the positive association of unionism to the income progress of young persons. While the data do not allow us to decompose the area effects into those due the young person being in a union home or being in an area with greater unionism, the similarity of the estimated union effects provides some assurance that the results are not the artifact of a particular kind of data or modeling exercise.

4. Conclusion

In this paper, we have shown that parents' unionism has a significant impact on their offspring's well-being. The adult offspring of unionized parents earn higher labor income compared to the offspring of non-unionized parents. They also attain higher levels of education and achieve a better health status, which can compel them to achieve better economic standing. The intergenerational transmission of unionism is stronger for less educated and less skilled parents than for more educated and more skilled parents. We also find that union households have greater intergenerational transfer than non-union households among the American middle class.

Stipulate that this papers' findings regarding the contribution of unions to building the US middle class and boosting the incomes of children from union homes or areas in their adult lives are valid; and that similar findings in the voluminous union

¹³ The coefficient on the parents' income is similar to an IGE—a typical measure of immobility—but has a different interpretation since an IGE based on individuals and this elasticity is based on areas. Instead of an individual IGE for each CZ, there is a single elasticity among commuting zones.

effects literature that shows unions compress earnings differentials within work places¹⁴ and countries are also correct.

The natural implication from these results is that the US will find it harder to address the problem of the diminishing middle class than if trade unions were as strong and viable as they were 30, 40, or 50 years ago. Unions are a powerful force against inequality and for improving the economic lives not just of organized workers but of their offspring as well. It is possible that a strong union movement is not simply sufficient to limit inequality but may be necessary. If that is the case, the US cannot rebuild the American middle class without also rebuilding unions or some comparable worker-based organizations.

¹⁴ This includes IMF finding that decline of unionization has in recent decades has fed the rise in incomes at the top. <https://www.imf.org/external/pubs/ft/fandd/2015/03/pdf/jaumotte.pdf>

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Figure 1: Shrinking Middle Class

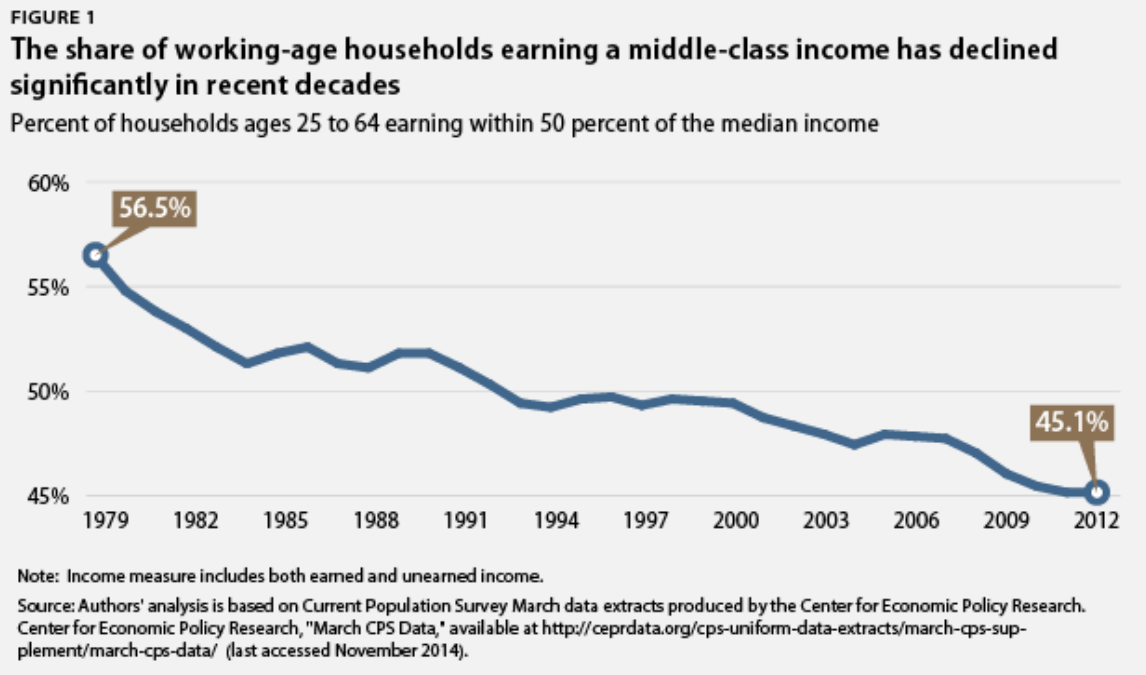
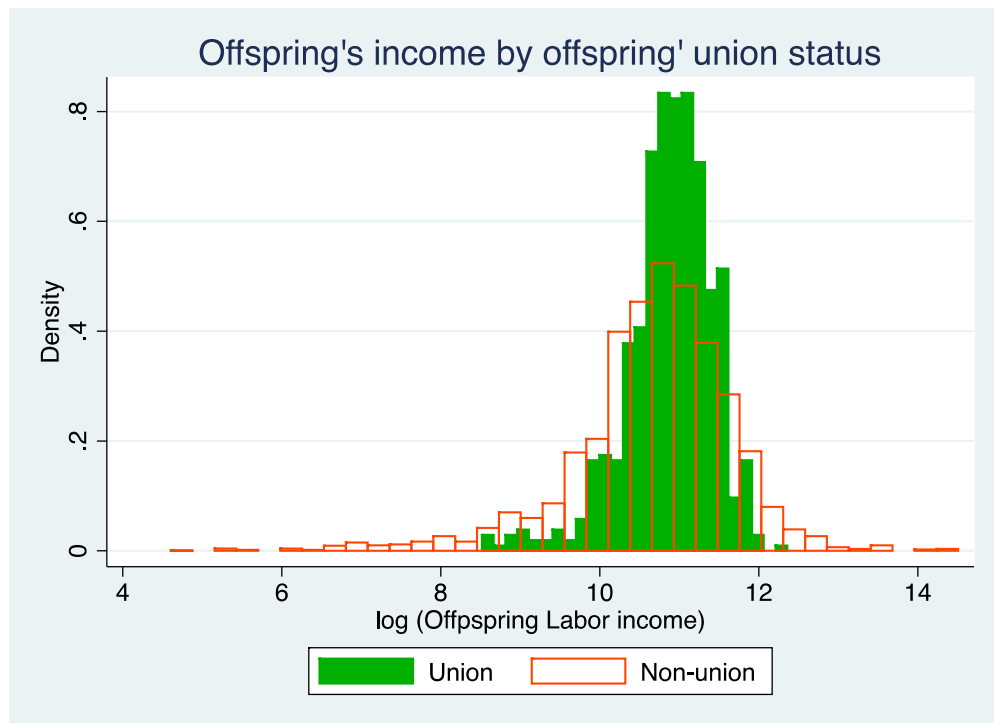
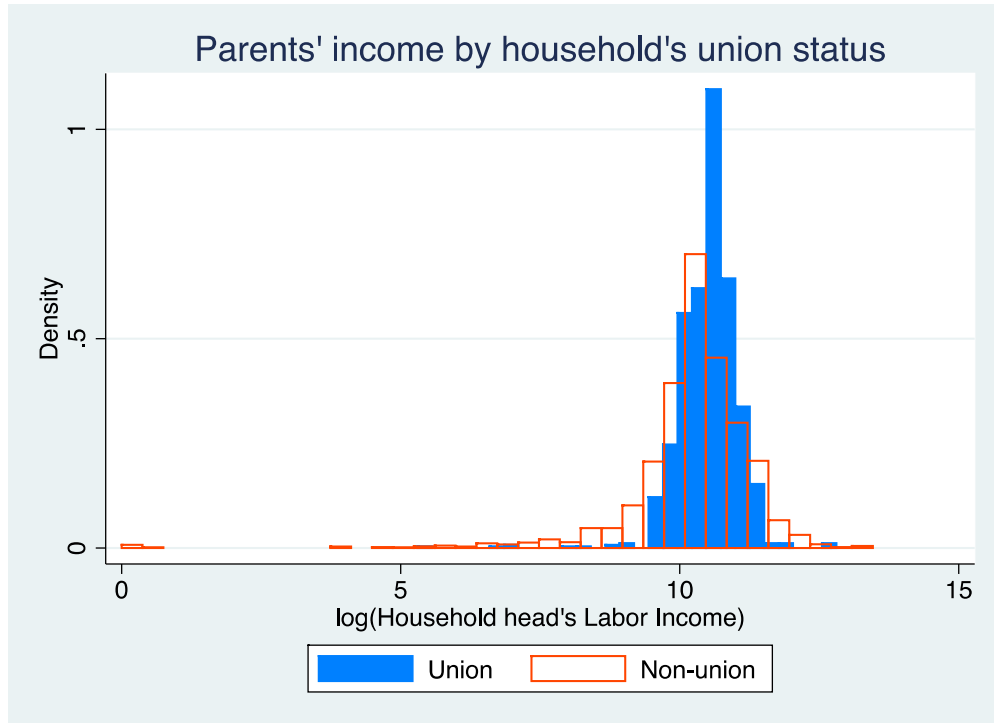


Figure 2: Income Distribution for Union Workers and Non-union Workers



Note: Income distribution is constructed from the labor income of working-age (ages 25-64) samples.

Source: PSID 1985 and 2011 files.

Table 1: The Proportion Unionized and Proportion of Workers by Position in the Income Distribution for Parents and Offspring, by Union Status

	<u>All</u>		<u>Unionized</u>		<u>Non-unionized</u>	
	Parents 1985	Offspring 2011	Parents 1985	Offspring 2011	Parents 1985	Offspring 2011
Proportion Unionized	18.20%	10.92%	100.00%	100.00%	0.00%	0.00%
<hr/>						
Income distribution						
>150% of median income	31.70%	32.89%	31.61%	37.90%	31.72%	32.21%
Middle Class	54.20%	45.98%	63.40%	52.73%	52.13%	45.06%
<50% of median income	14.06%	21.13%	4.98%	9.36%	16.15%	22.72%

Note: Median income is the median of household income for working-age (ages 25-64) samples.

Source: PSID 1985 and 2011 files.

Table 2: Offspring Attributes, by Parents Union Status

		<u>Union Parents</u> (18%)	<u>Non-union Parents</u> (82%)
Sons	Union member	15.10%	9.24%
	Median income	\$40,000	\$37,200
	High school graduation	92.11%	89.50%
	Highest grade completed	14.04	13.86
	Health (scale1-5)	3.86	3.69
Daughters	Union member	14.38%	10.32%
	Median income	\$27,000	\$22,000
	High school graduation	95.05%	93.11%
	Highest grade completed	14.46	14.31
	Health (scale1-5)	3.67	3.59

Source: PSID 1985 and 2011 files.

Table 3: Estimated Relation between Parents' Family Income and Union Status on Log Adult Offspring Income

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Log(family income)	0.359*** (0.071)	0.298*** (0.055)		0.288*** (0.059)		0.301*** (0.059)
Union HH			0.128** (0.058)	0.010* (0.055)	0.122** (0.058)	0.092* (0.055)
Union Wife			0.078 (0.084)	0.030 (0.091)	0.064 (0.081)	0.012 (0.086)
Union Offspring					0.174** (0.065)	0.199*** (0.064)
Other covariates	NO	YES	YES	YES	YES	YES
State clustered SE	YES	YES	YES	YES	YES	YES
Observations	1,014	1,005	1,005	1,005	1,005	1,005
R-squared	0.077	0.188	0.168	0.190	0.174	0.198

Note: Clustered standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The offspring income is the labor income of full-time offspring. The family income is the household income of parents of whom one is working full-time. Covariates include parents' age, race, ethnicity, full-time status, education, marital status, industry and occupations, and the urban status of the household.

Table 4: Estimated Relation between Parents' Family Income and Union Status on Log Adult Sons' and Daughters' Income

VARIABLES	Son's				Daughter's			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log(family income)		0.276*** (0.092)		0.279*** (0.090)		0.272*** (0.080)		0.275*** (0.079)
Union HH	0.144* (0.082)	0.109 (0.078)	0.136* (0.080)	0.101 (0.076)	0.195* (0.104)	0.167* (0.101)	0.193* (0.104)	0.165* (0.101)
Union mother	-0.099 (0.146)	-0.131 (0.160)	-0.098 (0.140)	-0.129 (0.153)	0.245** (0.110)	0.189* (0.103)	0.213* (0.115)	0.156 (0.110)
Offspring union			0.202** (0.079)	0.207** (0.081)			0.161 (0.104)	0.167* (0.097)
Observations	523	523	523	523	586	586	586	586
R-squared	0.180	0.202	0.189	0.211	0.203	0.227	0.209	0.233

Note: Clustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The offspring income is the labor income of full-time offspring. The family income is the household income of parents of whom one is working full-time. Covariates include parents' age, race, ethnicity, full-time status, education, marital status, industry and occupations, and the urban status of the household.

Table 5: The Effect of Parents' Unionism on Education Attainment and Health Status of Household Head Offspring, by Gender

VARIABLES	Offspring Highest Grade Completed				Offspring Health Status (1 lowest to 5 highest)			
	Sons		Daughters		Sons		Daughters	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Union HH	0.597** (0.229)	0.565** (0.218)	-0.203 (0.463)	-0.182 (0.479)	0.168 (0.145)	0.178 (0.140)	0.103 (0.180)	0.0890 (0.188)
Union mother	-0.485 (0.449)	-0.553 (0.416)	1.474** (0.605)	1.510** (0.622)	0.307* (0.184)	0.328* (0.198)	0.740** (0.317)	0.715** (0.321)
Ln(family income)		0.235 (0.253)		-0.117 (0.314)		-0.075 (0.113)		0.078 (0.153)
Constant	12.50*** (0.693)	10.35*** (2.525)	14.06*** (1.400)	15.08*** (3.486)	3.715*** (0.629)	4.399*** (1.179)	3.426*** (0.681)	2.738* (1.503)
Observations	556	556	255	255	556	556	255	255
R-squared	0.382	0.384	0.563	0.564	0.141	0.142	0.365	0.366

Note: Clustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The family income is the household income of parents of whom at least one is working full-time. Covariates include parents' age, race, ethnicity, full-time status, education, marital status, industry and occupations, and the urban status of the household.

**Table 6: Estimated Effect of Parents' Unionism and Income on Log (offspring income),
by Parents' Education or Occupational Group**

VARIABLES	< High school degree		High school degree		Blue collar		White collar	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Union HH	0.177** (0.074)	0.144* (0.076)	0.087 (0.084)	0.084 (0.084)	0.227*** (0.074)	0.190** (0.072)	0.130 (0.101)	0.121 (0.101)
Log (HH income)		0.221*** (0.060)		0.056 (0.084)		0.260*** (0.086)		0.087 (0.110)
Observations	423	423	461	460	375	373	502	502
R-squared	0.162	0.190	0.084	0.084	0.264	0.291	0.081	0.084

Note: Clustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The offspring income is the labor income of full-time offspring. The HH income is the labor income of household head who is working full-time. Covariates include parents' age, race, ethnicity, full-time status, marital status, industry, and the urban status of the household.

Table 7: The Effect of Parents' Income on Log (offspring income) for Parents in the Middle class, by the Union Status of Household Head

VARIABLES	Union Household head			Non-union Household head		
	(1)	(2)	(3)	(4)	(5)	(6)
Log(family income)	0.512*** (0.185)	0.637*** (0.158)	0.642*** (0.167)	0.368*** (0.091)	0.176 (0.117)	0.176 (0.117)
Union Offspring			0.096 (0.103)			0.006 (0.093)
Other covariates	NO	YES	YES	NO	YES	YES
State clustered SE	YES	YES	YES	YES	YES	YES
Observations	156	156	156	466	464	464
R-squared	0.049	0.380	0.382	0.034	0.143	0.143

Note: Clustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The offspring income is the labor income of full-time offspring. The family income is the household income of parents of whom at least one is working full-time. Covariates include parents' age, race, ethnicity, full-time status, education, marital status, industry and occupations, and the urban status of the household.

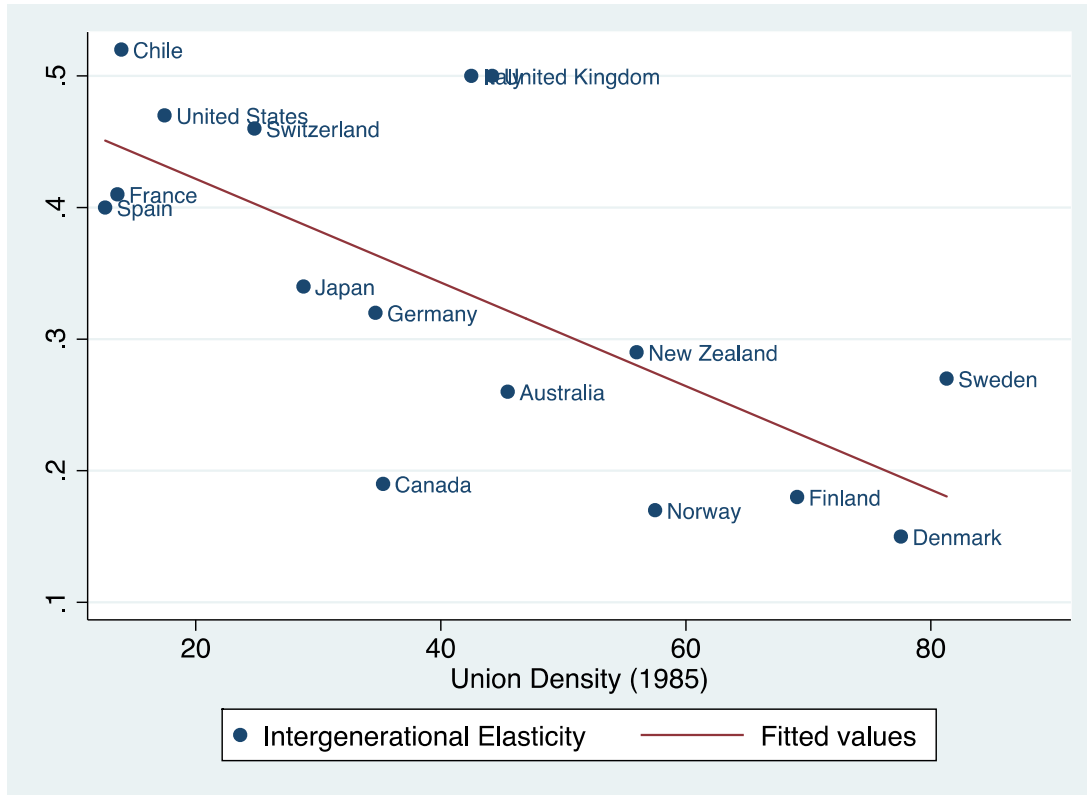
Table 8: The Effects of Area Unionism on Offspring Income

Dependent variable: Log (mean offspring income)

VARIABLES	(1)	(2)	(3)
Log(mean parents' income)	0.617*** (0.063)	0.538*** (0.077)	0.564*** (0.086)
Union density, 1986		0.306*** (0.113)	0.211*** (0.078)
Other covariates	YES	YES	YES
State dummies			YES
State clustered SE	YES	YES	YES
Observations	214	186	186
R-squared	0.857	0.865	0.960

Note: Clustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Covariates include population size, race, percent of children with a single mother, commute time, occupational sector, high school dropout rates, child poverty rate, average number of children per family, median value of owner-occupied housing units, per capita local tax and spending, the Gini coefficient, social capital, whether the state has an Earned Income Tax Credit, and the progressivity of the state's tax code.

Appendix A: Cross-Country Pattern for OECD Countries



Source: Corak (2013) and OECD (2012).

Note: Intergenerational economic mobility is measured by the intergenerational income elasticity (IGE) between paternal earnings and an adult son's earnings. The children are born during the early to mid 1960s and their income is measured in the mid to late 1990s. The union density is from 1985. In countries like Denmark, Finland, and Norway, the IGE is very low, which shows that the relation between parental economic status and their sons' economic status is weak. The low value of IGE suggests that the economic mobility in those countries is relatively high. The union density of these countries is quite high.

Appendix B: Summary Statistics from PSID 1985 and 2011 files

VARIABLES	N	Mean	SD	Min	Max
Wife Labor Income (Parent)	2,819	4,913	7,314	0	60,000
Family Income (Parent)	2,819	31,555	27,767	1	397,550
HH Labor Income (Parent)	2,819	20,608	21,072	0	300,000
Family Income (Child)	2,819	69,190	70,120	0	1.554e+06
White Household Head (Parent)	2,796	0.605	0.489	0	1
Black Household Head (Parent)	2,796	0.373	0.484	0	1
American Indian Household Head (Parent)	2,796	0.005	0.0680	0	1
Asian Household Head (Parent)	2,796	0.001	0.0378	0	1
Hispanic Household Head (Parent)	2,796	0.016	0.126	0	1
Married Household Head (Parent)	2,819	0.748	0.434	0	1
Never Married Household Head (Parent)	2,819	0.078	0.268	0	1
Widowed Household Head (Parent)	2,819	0.0334	0.180	0	1
Divorce Household Head (Parent)	2,819	0.078	0.268	0	1
Separated Household Head (Parent)	2,819	0.062	0.241	0	1
High School Graduate Household Head (Parent)	2,819	0.752	0.432	0	1
College Graduate Household Head (Parent)	2,819	0.195	0.397	0	1
High School Graduate Wife (Parent)	2,819	0.616	0.486	0	1
College Graduate Wife (Parent)	2,819	0.294	0.456	0	1
Household Head Works Full time (Parent)	2,819	0.743	0.437	0	1
Wife Works Full Time (Parent)	2,819	0.275	0.447	0	1
Offspring High School Graduate	2,819	0.889	0.314	0	1
Offspring Grades Completed	2,819	13.87	2.208	0	17
Offspring Years of Experience	2,819	16.00	7.907	2	60
Offspring Works Full time	2,819	0.720	0.449	0	1
Offspring Health (1-5, 1 is excellent)	2,819	3.657	0.951	1	5
White Offspring	2,819	0.594	0.491	0	1

Black Offspring	2,819	0.365	0.482	0	1
American Indian Offspring	2,819	0.004	0.065	0	1
Asian Offspring	2,819	0.001	0.038	0	1
Hispanic Offspring	2,819	0.031	0.174	0	1
Offspring Other Race	2,819	0.003	0.053	0	1
Married Offspring	2,819	0.725	0.447	0	1
Never Married Offspring	2,819	0.243	0.429	0	1
Divorced Offspring	2,819	0.032	0.175	0	1
Offspring Rural Upbringing	2,819	0.059	0.235	0	1
Offspring Suburban Upbringing	2,819	0.392	0.488	0	1
Offspring Urban Upbringing	2,819	0.436	0.496	0	1
Offspring Other Upbringing	2,819	0.108	0.310	0	1
Offspring Labor Income	2,819	37,007	44,343	0	800,000
Offspring Union Status	2,819	0.104	0.305	0	1
Offspring Age	2,819	35.86	7.357	25	78
Wife Union Status (Parent)	2,819	0.064	0.244	0	1
Household Head Union Status (Parent)	2,819	0.181	0.385	0	1
Blue Collar Household Head (Parent)	2,819	0.365	0.482	0	1
White Collar Household Head (Parent)	2,819	0.442	0.497	0	1

Appendix C. Issues in Linking Commuting Zone Data from “Intergenerational Mobility Statistics and Selected Covariates by County” and Unionization data from Unionstats.org

There are problems in linking the geographic area incomes from the tax data and the geographic union densities from the Unionstats.org data. The average parent and offspring income data relate to counties and commuting zones (CZ), which are themselves collections of counties. The union data are available on the MSA level, which are also collections of counties (except in New England, as described below). Our geographic analysis takes place on the CZ level. The primary advantage of CZs over MSAs is that Chetty et al’s CZ file comes with state IDs, which allows us to use standard errors clustered at the state level to control for geographic and state-specific correlations. Both CZs and MSAs often cross state boundaries (the Washington, D.C. MSA and CZ cover the District of Columbia, Maryland, and Virginia), but the MSAs do not have state IDs and thus we cannot use state clustered standard errors. We assign to each county the union density of the MSA to which it belongs and then combine these estimates into Czs, dropping counties that are not part of MSAs since we do not have union data for them. This creates a problem since it deletes rural counties from some commuting zones. But we do not believe this is a serious problem: the correlation between the mobility estimates of our limited CZs and the whole CZs is .94.

Another problem in forming our mobility/unionization area data set is that the unionization data for the New England states differs from that for the rest of the country. Instead of MSAs (which are collections of entire counties), they are New England City and Town Areas (NECTAs), which are collections of towns. Counties that can thus belong to multiple MSAs. Fairfield County, CT, for example, belongs to the Danbury, Stamford-Norwalk, and Bridgeport NECTAs. To deal with this problem, we take the average of the union densities of the NECTAs to which each county belongs from UnionStats.com, weighted by the portion of their 2000 population that lived in each NECTA. For Fairfield County, CT, for example we average the union densities of Danbury (17.5%), Stamford-Norwalk (10.7%), and Bridgeport (15.9%) weighted by each of their 2000 populations (183,303, 353,556, and 345,708 respectively). This produces an estimated union density of 14.15% for Fairfield County. We then merge these county-level union estimates with county-level income estimates and other covariates, and collapse them into CZs based on counties with a crosswalk from the U.S. Census that organizes New England CZs by county rather than by town.

Finally, because we do not have union data outside of MSAs, our analysis does not apply to rural areas. The total population of our CZs in 2000 was 215 million compared to a U.S. population in 2000 of 282 million). While it may make sense to treat rural areas differently than MSAs, there is no way to obtain unionization rates for rural areas to see whether our results do/not hold for them.

**Appendix D. Summary Statistics from the Regional Data from
Federal Income Tax Data**

VARIABLES	N	Mean	SD	Min	Max
Union density, 1986	186	15.41	7.733	2.500	40.70
Bargaining coverage, 1986	186	17.78	7.987	3.200	44.70
Primary Sector	214	0.017	0.019	0.001	0.123
Secondary Sector	214	0.216	0.064	0.084	0.462
Tertiary Sector	214	0.591	0.046	0.437	0.713
Quaternary Sector	214	0.076	0.027	0.027	0.200
Quinary Sector	214	0.052	0.027	0.021	0.194
Other Sector	214	0.049	0.005	0.038	0.073
Top 1% Income Share	214	0.128	0.037	0.044	0.288
Percent Black	214	0.115	0.105	0.000	0.468
Percent Hispanic	214	0.092	0.141	0.005	0.943
Percent Asian	214	0.022	0.038	0.002	0.453
Percent White	214	0.749	0.165	0.049	0.982
Percent Other Race	214	0.023	0.022	0.002	0.258
Gini Coefficient	214	0.442	0.071	0.243	0.656
Children per Family	214	2.055	0.119	1.813	2.600
Average Parents Income	214	83,614	17,968	41,711	154,950
Average Child Income	214	46,449	6,156	32,100	64,122
Percent with Commute <15 Minutes	214	0.314	0.070	0.151	0.526
Single Mother Families	214	0.223	0.041	0.0944	0.355
Social Capital	212	-0.294	1.046	-2.723	2.800
Dropout Rate	175	0.048	0.022	0.011	0.183
Per Capita Local Government Expenditure	214	2.320	0.599	1.196	4.573
Per Capita Local Government Taxes	214	0.745	0.249	0.229	1.705
Median House Value	214	113,882	47,428	52,622	411,589
Child Poverty Rate	214	15.59	5.414	4.600	41.24
EITC Exposure	214	1.296	3.671	0	21.33
Tax Progressivity	214	0.974	1.844	0	7.220