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Earnings inequality and subnational political economy in the United States, 1970–2000[☆]

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Abstract

Previous studies of rising inequality in the United States have overlooked the potential role of subnational political economic variation as an institution that shapes earnings restructuring. This paper uses hierarchical linear models to examine how state right-to-work laws contribute to growth in inequality in 80 metropolitan labor markets from 1970 to 2000. Contrary to conventional expectations, labor markets in states with right-to-work laws experience relatively mild growth in earnings inequality, and are less unequal by 2000 than non-RTW labor markets. The trend cannot be fully explained by union density, job growth, uneven development or variation in racial inequality. The findings contribute to a distinctly sociological perspective on rising inequality that considers how social, institutional and economic factors interact at the local and state levels to shape earnings.
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Keywords: Earnings; Inequality; Local labor markets; Economic development; Right-to-work laws

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Scholars of comparative stratification often point to the importance of employment regimes for explaining national differences in earnings[1] and inequality (i.e., Freeman, 1996; Kalleberg, 1988), but they pay less attention to the consequences of political economic variation within nations. Since at least the 1940s, states and localities in the United States have attempted to fashion distinctive business climates to attract investment and create jobs (Cobb, 1993). Local economic differentiation accelerated in the 1970s and 1980s in response to the devolution of responsibility for economic development to the states (Eisinger, 1988; Jenkins, Leicht, & Wendt, 2006). This paper asks whether state business climates

[1] I use the terms earnings and wages interchangeably to refer to individuals' wage and salary income from their primary job.

shaped the path of inequality growth in metropolitan labor markets from 1970 to 2000.

I focus on one of the oldest and most enduring elements of state business climates, right-to-work (RTW) laws. Right-to-work laws limit union security, or the requirement that workers covered by collective bargaining agreements pay union dues (Baird, 1998). Right-to-work laws are an important feature of American political economy because they shape labor relations, promote a competitive model of economic development, and are meaningful in the business community as signals of a neoliberal orientation to growth (Cobb, 1993). Using multi-level growth curve analysis I find that metropolitan labor markets in RTW states are more unequal than non-RTW labor markets in 1970, but RTW labor markets experience milder inequality growth over the 30-year period of earnings restructuring. I use the existing literature on RTW laws to derive hypotheses of why metropolitan labor markets' levels of inequality in 1970, and growth in inequality from 1970 to 2000, vary across RTW contexts. The literature suggests that RTW laws may shape earnings inequality directly via effects on union density and employment growth, and indirectly due to the laws' correlation with levels of economic development and racial inequality. These conventional expectations explain the greater levels of inequality observed in RTW labor markets in 1970, but they are insufficient for understanding variation in inequality growth across RTW and non-RTW contexts from 1970 to 2000.

The robust negative relationship between RTW laws and inequality growth is puzzling from the perspective of comparative research that associates higher levels of inequality and sharper inequality growth with weak labor market institutions (e.g., DiPrete, Maurin, Goux, & Amelie, 2006; Kenworthy & Pontusson, 2005; Pontusson, Rueda, & Way, 2002). I theorize that the relationship between labor market institutions such as unions and inequality is curvilinear, with the greatest levels of inequality found in systems with labor market institutions that are stronger than those in adjacent areas, but too weak to prevent capital flight and institutional weakening (see Calmfors & Driffill, 1988). From this perspective, capital mobility and related elements of competitive development decrease the bargaining power of unions net of union density (Moore, 1998) and increase employment insecurity (Bourdieu, 2003; Bronfenbrenner, 2000), therefore altering the dynamics of earnings determination within firms and producing sharp inequality growth in non-RTW labor markets. By considering the relationship between local earnings restructuring and subnational political economy, and

conceptualizing earnings determination as a multi-level phenomenon, this paper offers a fresh perspective on one of the most socially significant but sociologically understudied recent trends in the United States, the growth of economic inequality (Myles & Myers, 2007).

1. Sociological perspectives on rising inequality

It is well known that economic inequality in the United States increased dramatically in the final quarter of the twentieth century, with inequality in individual earnings driving the rise in personal and household income inequality (Kenworthy, 2007: 599). A large literature, primarily in the field of economics, documents this trend and debates the causes of increased earnings inequality (see Alderson & Nielsen, 2002; Levy & Murnane, 1992; Morris & Western, 1999 for reviews of this extensive literature). In this section I argue that understanding rising inequality in the United States requires integrating an understanding of shifting spatial inequalities—particularly the reasons why local labor markets vary in inequality levels and trajectories of growth from 1970 to 2000—with existing institutional, organizational and class-based perspectives.

The central debate in the literature on earnings inequality surrounds the relative importance of technological and institutional explanations, yet this literature's narrow focus on the declining value of the minimum wage (Card & DiNardo, 2002; Lee, 1999), unions (Card, 2001; DiNardo, Fortin, & Lemieux, 1996; Levy & Murnane, 1992; Morris & Western, 1999), and technology (Autor, Katz, & Kearney, 2008; Blau & Kahn, 1996; Card & DiNardo, 2002; DiPrete et al., 2006; Fernandez, 2001; Katz & Autor, 1999; Kenworthy & Pontusson, 2005) is insufficient for understanding recent trends. Existing research suggests that the exceptionally sharp increase in inequality observed in the United States over the last 30 years is due to a change in the dynamics of earnings determination, including the weakening of non-union labor market institutions (Blau & Kahn, 1996; DiPrete, 2007; Freeman, 1996; Kalleberg, 1988; Kenworthy, 2007; Kenworthy & Pontusson, 2005; Pontusson et al., 2002).

Although late to enter the debate, sociologists of stratification have recently developed class-based accounts of rising inequality that help clarify recent changes in earnings determination. Rents represent the gap between the earnings a worker would garner under perfect competition and the earnings actually received (Sørensen, 2000). Viewed through this lens earnings inequality has increased in the United States because the capacity to generate rents has declined among the working and lower

classes and increased among upper classes (Morgan & Cha, 2007; Morgan & Tang, 2007; Weeden, 2002).

While there is evidence that classes play a role in rising inequality—and classes appear to be strengthened by recent changes in the earnings distribution (Weeden, Kim, Carlo, & Grusky, 2007)— other inequality-generating labor market structures appear to play a significant role in recent trends. Inequality is increasing within industries (Kim & Sakamoto, 2008a; Morgan & Tang, 2007). Firm-level variation in the compensation of observably equivalent workers accounts for a large share of total earnings inequality (DiNardo et al., 1996; Groshen, 1991), and recent inequality growth is primarily generated within occupations (Kim & Sakamoto, 2008b). Yet few studies have brought organizational dynamics into the study of rising inequality (Sørensen, 2007). Fligstein's shareholder value theory provides an account of firm convergence based on the implementation of strategies to maximize share prices and minimize labor costs (Fligstein, 2001; Fligstein & Shin, 2003) which is consistent with rising inequality within occupations, but more work is necessary to demonstrate a relationship between firm-level strategies and aggregate earnings trends.

Sociological accounts of rising earnings inequality have thus brought comparative institutional, class, and organizational perspectives into a debate previously dominated by narrow economic models, but this growing literature has devoted little attention to spatial inequalities (cf. Myles & Myers, 2007). Massey (1984) reminds us that spatial inequalities both reflect and reproduce broader social inequalities. Firms' post-industrial restructuring strategies, including shareholder value strategies such as mergers, layoffs and outsourcing, "use the fact of spatial inequality *in order to* maximize profits" (Massey, 1979: 234; emphasis in original). Understanding rising inequality in the United States thus requires integrating an understanding of shifting spatial inequalities, including the sources of varying inequality levels and growth across local labor markets, with existing institutional, organizational and class-based perspectives. In the following section I argue that the states' authority to fashion distinctive political economies may help explain local labor market variation in inequality levels and growth.

2. State political economy and right-to-work laws

In comparative perspective the United States is characterized by weak labor market institutions and neoliberal approaches to economic governance, but there is also significant internal variation, as the states have a great deal of authority to regulate labor relations, taxation and other industrial policies (Eisinger, 1988, 1990).[2] In this paper I focus on the most enduring and, perhaps, effective state development policy, right-to-work laws. Right-to-work laws are an important element of American political economy because they shape labor relations, promote a competitive model of economic development, and are meaningful in the business community as signals of a neoliberal orientation to growth (Cobb, 1993). While most RTW laws were passed before 1960[3] extending the number of states covered by RTW laws has remained a priority for business lobbies and other pro-growth, anti-union organizations: Right-to-work laws were introduced as unsuccessful ballot measures or legislation in many states between 1944 and 2001, with recent flurries of RTW campaign activity in the late 1970s through early 1980s, and again in 1995 following the midterm Republican electoral victories (Baird, 1998). Businesses often vigorously support RTW initiatives because they are viewed as central to the implementation of anti-labor restructuring strategies (Canak & Miller, 1990).

Right-to-work laws limit union security, or the requirement that workers covered by collective bargaining agreements pay union dues (Baird, 1998: 471), but the effects of the laws appear to extend beyond their narrow legal implications (see Moore, 1998 for a detailed overview of the literature). There is some evidence that RTW laws affect states' average wages, but the direction of the effect has been debated and estimates are extremely sensitive to model specification (Carroll, 1983; Garofalo & Malhotra, 1992; Hansen, 2006; Reed,

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[2] State fiscal autonomy increased in the 1970s in response to Nixon's New Federalism initiatives, prompting a fourfold expansion of state spending on economic development (Eisinger, 1988). The location incentives and other firm-targeted measures that receive the bulk of state development spending are too dynamic, case-specific and increasingly ubiquitous to capture the 30-year inequality trends of interest in this paper. But as elements of state business climates that promote place-based development competition, these policies may be significant for understanding rising inequality nationally.

[3] The 22 states with RTW laws are: Alabama (passed in 1953), Arizona (1946), Arkansas (1944), Florida (1944), Georgia (1947), Idaho (1985), Iowa (1947), Kansas (1958), Louisiana (1976), Mississippi (1954), Nebraska (1946), Nevada (1951), North Carolina (1947), North Dakota (1947), Oklahoma (2001), South Carolina (1954), South Dakota (1947), Tennessee (1947), Texas (1947), Utah (1955), Virginia (1947) and Wyoming (1963). Louisiana's original right-to-work statute was passed in 1954 and repealed in 1956 (Baird, 1998; Cobb, 1993). Three additional states passed RTW laws and later repealed them: Delaware (adopted 1947, repealed 1949), Indiana (1957, 1965) and New Hampshire (1947, 1949).

2003). Evidence for a direct relationship between RTW laws and union density is mixed, as a high degree of covariance and questions about the direction of causality make it difficult to discern a clear relationship (Ellwood & Fine, 1987; Moore & Newman, 1985). Right-to-work laws have been shown to hamper union organizing efforts by reducing the incentive for employees to support existing unions financially (Schumacher, 1999) and diminish unions' effectiveness at the bargaining table when membership suffers (Moore, 1998).

Following the cross-national literature on labor market institutions (e.g., Kenworthy & Pontusson, 2005) and studies of state and local labor market inequality (e.g., Moller, Alderson, & Nielsen, 2009; Volscho, 2007; Volscho & Fullerton, 2005) we would expect to see greater levels of earnings inequality in RTW states in 1970 due to the negative relationship between RTW laws and union density. Union density should reduce inequality by improving the earnings of both union members and workers whose employers seek to prevent unionization by proactively increasing compensation (see Leicht, 1989 on union threat). Predicting the relationship between RTW laws, union density and inequality growth is more complex. Earnings inequality may grow more sharply in RTW states from 1970 to 2000 because lower union density and weaker union bargaining power fail to temper the structural adjustments and firm-level strategies that increase inequality. Alternatively, we may see a steeper rise in inequality in non-RTW states because these labor markets experience the most extreme institutional weakening. More formally stated, we might expect RTW laws to exert the following effects on (a) metropolitan inequality levels in 1970 and (b) metropolitan inequality growth from 1970 to 2000:

Hypothesis 1a. Labor markets in RTW states will have higher levels of inequality in 1970 due to lower union density.

Hypothesis 1bi. Labor markets in RTW states will have sharper inequality growth from 1970 to 2000 due to lower union density.

Hypothesis 1bii. Labor markets in RTW states will have milder inequality growth from 1970 to 2000 due to milder union decline.

The only existing study to directly examine the distributional effects of right-to-work laws finds, however, that RTW states are significantly more unequal than non-RTW states in 1970 even controlling for union density (Nieswaidomy, Slottje, & Hayes, 1991: 191).

Understanding the mechanisms behind any relationship between RTW laws and earnings inequality may require looking beyond unions and the strength of labor market institutions.

Many studies have shown that RTW laws promote economic development, which is alternately defined as changes in manufacturing employment, capital stock, average income or total employment (Holmes, 1998; Moore, 1998; Newman, 1983). Most RTW laws were passed by Southern and Western states in the 1940s and 1950s in the hopes that preventing further development of organized labor would speed their industrial growth. By keeping wages low and workers complaisant, supporters of right-to-work legislation hoped that these measures would attract industry from Northern states and bring their developing economies into line with the rest of the nation (Cobb, 1993). The evidence shows that RTW laws were successful in these development objectives, particularly in the 1960s and 1970s: postwar growth rates in right-to-work states exceeded non-RTW states (Moore, 1998) and in survey research business leaders often cite RTW laws as an important factor in location decisions (Cobb, 1993).

The main mechanisms linking RTW laws and economic development implicit in these studies are industrial relocation and the attraction of new branch plants, often measured simply in terms of employment growth rates. Right-to-work laws prompt existing firms, particularly in manufacturing, to relocate across RTW borders to take advantage of price differentials (Holmes, 1998; Kasarda & Irwin, 1991; Krugman, 1991; Newman, 1983)[4] and to weaken the influence of organized labor within the organization (Bronfenbrenner, 2000). Existing studies also imply that relocated manufacturing activity will stimulate the growth of new jobs, particularly in the service sector, following Keynes (1936)'s general theory (see Moore, 1998). The implication, then, is that jobs move to and/or are created in RTW state labor markets in response to lower labor costs, which presumably reduces earnings inequality in employment-receiving RTW labor markets but increases inequality in employment-sending non-RTW labor markets, suggesting the following formal hypotheses:

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[4] Both Holmes (1998) and Newman (1983) find that manufacturing is responsive to RTW state boundaries net of state union density. Holmes (1998) finds that there is an abrupt increase in manufacturing activity within RTW state boundaries that are adjacent to non-RTW states, as compared to the concentration of manufacturing in RTW areas that do not abut non-RTW states. It is, however, beyond the scope of this study to directly examine the responsiveness of manufacturing activity to RTW state boundaries.

Hypothesis 2a. Labor markets in RTW states will have lower levels of inequality in 1970 due to higher rates of employment growth.

Hypothesis 2b. Labor markets in RTW states will have milder inequality growth from 1970 to 2000 due to higher rates of employment growth.

The relationship between right-to-work laws and metropolitan earnings inequality may also be spurious, with the labor market's level of economic development or development-related path dependencies (Tigges & Green, 1986) actually being responsible for any observed association. Previous research on local labor markets in the United States has supported Kuznets' (1955/1965) famous work on the curvilinear relationship between economic development and inequality (e.g., Hirsch, 1978; Moller et al., 2009; Nielsen & Alderson, 1997; Sakamoto, 1988). According to this perspective we would expect the later-developing states that adopted RTW laws to lag non-RTW states in their movement along Kuznets' curve. Early in the period RTW labor markets will be more unequal, but as they converge with non-RTW states in terms of standard economic development indicators, inequality should decrease then begin to increase again. By 2000 we would expect RTW and non-RTW labor markets to converge in terms of inequality, just as they have converged in industrial employment and average standard of living (Pack, 2002). We would thus expect to see the following relationship between economic development and metropolitan inequality levels and growth:

Hypothesis 3a. Labor markets in RTW states will have higher levels of inequality in 1970 due to lower levels of economic development.

Hypothesis 3b. Labor markets in RTW states will have milder inequality growth from 1970 to 2000 due to convergence in economic development.

Patterns of racial inequality are closely intertwined with local variation in economic development and the strength of labor market institutions in the United States. Slavery and the racially charged system of industrial relations that replaced it is one of several factors that slowed the economic development of the South and contributed to persistently high economic inequality in that region. (See Tomaskovic-Devey & Roscigno, 1996, 1997 for a discussion of the literature on race and development in the South.) Racial tension also facilitated the passage of right-to-work laws by dividing labor across racial

lines (Jacobs & Dixon, 2006). Local variation in racial inequality may then contribute to any observed relationship between RTW laws and earnings inequality, with firms possibly leveraging local racial inequalities in the implementation of low-wage restructuring strategies. We may, then, see greater levels of inequality in RTW labor markets early in the 30-year period due to greater levels of racial inequality in the heavily right-to-work South. But inequality growth in RTW states from 1970 to 2000 may be tempered by the recent sharp reduction of racial inequalities in Southern labor markets (e.g., Browne & Tigges, 2000; Hewitt, 2000; Ihlanfeldt & Sjoquist, 2000), yielding the following formal hypotheses:

Hypothesis 4a. Labor markets in RTW states will have higher levels of inequality in 1970 due to greater levels of racial inequality.

Hypothesis 4b. Labor markets in RTW states will have milder inequality growth from 1970 to 2000 due to sharper reduction in racial inequality.

The analysis that follows examines variation in metropolitan inequality levels in 1970 and growth from 1970 to 2000, and seeks to explain variation in patterns of earnings restructuring across RTW and non-RTW contexts.

3. Methods and data

This analysis asks whether state right-to-work laws are associated with distinctive levels of metropolitan earnings inequality in 1970 and patterns of inequality growth from 1970 to 2000. To answer these questions I draw on a research design that leverages the variation in earnings and institutions over time and across places. Metropolitan area is the primary unit of analysis, with selected data measured at the state level.[5] I begin simply, by considering the observed variation in inequality levels and growth across RTW and non-RTW labor markets, and then build multivariate regression models using

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[5] Previous research has used cities, counties, metropolitan areas, states or even Census regions as proxies for local labor markets, but metropolitan areas are the most common proxy because they are functionally interrelated economic units whose limits are defined by commuter flows and other measures of economic interrelatedness. As such, metropolitan areas are the level of aggregation at which local forces of supply and demand operate, and thus the appropriate unit of analysis for examining earnings from an institutional perspective. See McCall (2001) for a good discussion of this literature; Nielsen and Alderson (1997) on the strengths and limits of counties as a unit of analysis; and Tomaskovic-Devey and Roscigno (1997) on the politics behind metropolitan area boundary designation.

growth curve analysis with hierarchical linear modeling (HLM) to consider possible mechanisms.

The data used in this analysis are drawn primarily from the U.S. Census Bureau's IPUMS 1% sample. Individual-level observations are aggregated to the metropolitan level, and each metropolitan labor market is measured at four points in time (1970, 1980, 1990, 2000). This long view of earnings restructuring allows me to evaluate the causes of earnings trends from a period of relative stability in 1970, through the supply, demand and institutional shifts of the 1980s and 1990s, and into a new post-industrial period that appears to have stabilized by 2000. Selected metropolitan labor market variables unavailable in the IPUMS are drawn from the Department of Housing and Urban Development's State of the Cities Dataset (SOCDS), which is a compilation of Census and other data aggregated to the metropolitan level. Metropolitan boundaries are measured contemporarily to reflect growing economic and social units, and are based on the Census metropolitan area definitions.[6] The resulting sample of 80 metropolitan areas ($N = 80$ MSAs × 4 years = 320) is limited to those metropolitan areas with a sufficient number of individual observations for each year studied, but is generalizable to the population of U.S. metropolitan areas (see Appendix A).[7] State-level data are gathered from the *Statistical Abstract of the United States* and a trade publication called the *Site Selection Handbook*. See Table 1 for variable descriptions and sources.

The key dependent variable in this analysis is metropolitan-level inequality in hourly earnings, measured with the ratio of 90th to 10th percentile hourly earnings. I examine individual earnings rather than more typical measures of economic wellbeing such as personal or household income because earnings capture the compensation individuals garner for their labor in the marketplace, and therefore shed light on workplace-based mechanisms shaping rising inequality. Previous research has shown that recent trends in income inequality are largely driven by trends in earnings inequality

(e.g., Kenworthy, 2007). Individuals' hourly earnings are the building block for calculating metropolitan earnings percentiles and inequality. Respondents included in the analysis are 18–64-year olds who reported nonzero earnings and worked between one and 99 h per week in the previous year. Both full- and part-time workers are included, and unincorporated self-employed earners are excluded. The resulting estimates of metropolitan wage percentiles were compared with national data from the Economic Policy Institute and are comparable to their earnings estimates (see Appendices B and C). I use the ratio of 90th to 10th percentile hourly earnings (90:10 ratio) as the inequality metric because it is easily partitioned into component parts, allowing direct investigation of whether inequality trends come from compensation changes at the top or bottom of the earnings distribution. Additional analysis using the 80:20 ratio yielded substantively similar results, suggesting that the relationship between RTW laws and earnings is not confined to the extreme tail of the earnings distribution (tables available upon request; see summary of results in Appendix D).

Select independent variables are measured at the state level, the most important of which are the presence of a right-to-work law and union density. I use annualized state job growth rates in the 1970s (Rosen, 1984) to examine the expected RTW effects of employment growth and capital mobility on observed inequality trends; I focus on job growth rates during the 1970s because the literature suggests RTW laws were particularly efficacious in stimulating location changes and related employment growth during this decade. Level of economic development is estimated using measures of gross state domestic product and metropolitan core sector industrial activity. State GDP is a direct measure of economic output, while core industries are associated with increased economic integration (Tomaskovic-Devey & Roscigno, 1997). Metropolitan 10th percentile levels in 1970 (ln) and state manufacturing and illiteracy rates in 1940 are intended to capture the economic path dependencies that unequal development starting points produce. Local variation in racial inequality is examined at the MSA-level using a measure of racial earnings dualism adapted from Nielsen and Alderson (1997).

State minimum wage levels are included as a control in multivariate models; labor markets in states with earnings floors higher than those set at the federal level should be less unequal than labor markets in states without these measures. MSA-level control variables include median rent, population size, labor force characteristics and employment composition. These variables are stan-

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[6] In this study 13 metropolitan areas cross state lines (see Appendix A). The Kansas City, MO metropolitan region crosses a RTW state boundary, but analyses conducted without the case suggest it does not exert undue leverage on the results. In each case I characterize the metropolitan area according to the business climate of its primary state.

[7] According to this standard a sample of 82 is possible, but Washington, DC and Honolulu, HI have been dropped. The District of Columbia lacks many of the development capabilities of the states, and the Washington metropolitan region spreads across several state boundaries, including a RTW boundary. Honolulu was dropped because its late date of statehood (1959) and remote location render Hawaii an outlier in terms of development trajectory.

Table 1
Variable sources and measurement.

Variable	Unit of analysis	Source	Notes
Dependent variable			
90:10 ratio	MSA	IPUMS 1% sample	All dollar amounts are $2002 CPI-U-RS
Control variables			
Median monthly rent (non-owner occupied units)	MSA	SOCDS	Proxy for metropolitan cost of living
Population (ln)	MSA	IPUMS 1% sample	Weighted sample observations, proxy for population size
Share labor force black	MSA	IPUMS 1% sample	
Share labor force female	MSA	IPUMS 1% sample	
Share labor force immigrant	MSA	IPUMS 1% sample	
Share working age population (25–64) less than high school education	MSA	IPUMS 1% sample	
Share working age population (25–64) college education	MSA	IPUMS 1% sample	
Share employment manufacturing	MSA	IPUMS 1% sample	
Share employment public administration	MSA	IPUMS 1% sample	
Unemployment rate	MSA	IPUMS 1% sample	
Minimum wage	State	U.S. Department of Labor	http://www.dol.gov/esa/programs/whd/state Prevailing minimum wage level in each state
Key independent variables			
Right-to-work law	State	Site Selection Handbook	Dummy (1 = RTW); Louisiana MSAs are coded as RTW in all years even though most recent RTW statue passed in 1976. Dropping LA MSAs from analysis does not change results.
H1: Union density	State	Statistical Abstracts of the U.S.	
H2: Annualized job growth rate 1970–1980	State	Rosen (1984)	
H3: Gross Domestic Product (ln)	State	Bureau of Economic Analysis	http://www.bea.gov/bea/regional/gsp/default.cfm?series=SIC Note 2000 value is actually from 1997
H3: Share employment core industries	MSA	IPUMS 1% sample	Durable manufacturing; transportation, communication and public utilities; wholesale trade
H3: Share employment manufacturing 1940	State	Statistical Abstracts of the U.S.	
H3: Illiteracy rate 1940	State	Statistical Abstracts of the U.S.	
H3: 10th earnings percentile (ln) 1970	MSA	IPUMS 1% sample	
H4: Racial inequality (racial earnings dualism)	MSA	IPUMS 1% sample	$R_1 = \lvert p - I \rvert$, where p is the black share all earners and I is the black share of aggregate hourly earnings (Nielsen & Alderson, 1997)

dard controls in sociological models of earnings and inequality, so I will not discuss them at length (see Nielsen & Alderson, 1997; Sakamoto, 1988; South & Xu, 1990 for an extended discussion of standard labor market controls). Metropolitan population and median rent (intended as a proxy for cost of living) are each expected to have an upward effect on earnings at all levels, but may cause heightened inequality via larger gains for high-wage workers. The labor force composi-

tion variables are each expected to increase inequality by depressing earnings at the tenth percentile. Measures of metropolitan educational disadvantage (share of adult population with less than high school education) and advantage (share of adult population with at least a college degree) are each expected increase inequality; while employment in manufacturing and public administration is expected to decrease inequality. Metropolitan areas with high unemployment rates should have a slower rate

of wage growth, particularly among low-wage workers, likely contributing to heightened inequality.

I develop a multi-level model of earnings inequality from 1970 to 2000 using hierarchical linear modeling (HLM).[8] Growth curve analysis with HLM allows me to examine the determinants of the metropolitan labor markets' inequality starting points in 1970 (the intercept of these models), and their growth in inequality (slopes). Equations one through four depict the multi-level model used to evaluate the effects of changing metropolitan labor market characteristics and state RTW[9] laws on inequality.

$$Y_{ij} = \beta_{0j} + \beta_{1j}t_{ij} + \beta_{2j}t_{ij}^2 + \Sigma\beta_{nj}X_{ij} + r_{ij} \qquad (1)$$

where $t_{ij} = \text{YEAR} - 1$ with $i = [1, 2, 3, 4]$ and $j = 1, 2, \ldots,$ 80 and

$$\beta_{0j} = \gamma_{00} + \gamma_{01}RTW_j + u_{0j} \qquad (2)$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}RTW_j + u_{1j} \qquad (3)$$

$$\beta_{2j} = \gamma_{20} \qquad (4)$$

Equation one reflects the metropolitan characteristics that vary over time (i) and across metropolitan areas (j). The time variable (t), YEAR, is centered at zero for the first observation in the series, 1970. Using deviance statistics to evaluate model fit, I determined that a quadratic function best characterizes the change in metropolitan earnings inequality over time, which is consistent with the rapid growth in inequality observed nationally in the early 1980s followed by more mild inequality growth through 2000. Equation two models the intercept or starting point of each metropolitan area's earnings growth curve as a function of right-to-work status (time-invariant). Equations three and four estimate the rate of change in the dependent variable for each

year studied, again as a function of time-constant RTW status. Equations two through four comprise the second level or 'between units' portion of the model. The intercept and YEAR slope coefficients vary significantly across metropolitan areas, and so are modeled as random effects; the second growth term, YEAR^2, does not vary significantly across metropolitan labor markets so it is treated as a fixed effect.[10]

In the multivariate analysis independent variables are centered at their grand means, which yields an interpretation of the intercept as the average level of inequality in 1970 for an average metropolitan labor market. Slope coefficients capture the yearly inequality growth for an average MSA. Level two coefficients can be interpreted as the effect of RTW context on inequality starting points and yearly growth for average metropolitan labor markets. Grand mean centering (GRM) is preferred to group mean centering (GPM) because it is more logically consistent with the time-within-MSA grouping structure of the data: With GPM centering intercept and growth coefficients would be interpreted as the average outcome within each group, reflecting only MSA-level effects, whereas GRM-centered parameter estimates reflect a combination of yearly and metropolitan effects. With the exception of the time variable, YEAR, independent variables are treated as fixed effects: reliability estimates suggest fairly uniform effects on inequality growth across metropolitan contexts.

4. Results

This paper aims to identify and explain variation in metropolitan inequality growth across right-to-work contexts. I begin by describing the metropolitan earnings variation to be explained. There is considerable variation in inequality levels and trends across metropolitan labor markets, with the coefficient of variation (CV) for the 90/10 ratio steady at about 0.1 from 1970 to 2000 (MSA-specific graphs of earnings and inequality growth available upon request). For comparison, the variation in earnings inequality (90/10 ratio) for the nations in

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[8] Ideally this analysis would be conducted with a three-tiered hierarchical model (year-MSA, state, RTW) rather than the two-tier model (year-MSA, RTW) I use here. The problem in using a three-tiered model would be that I have many states with only one or two metropolitan areas represented. On the other hand, with a two-tier model I violate the assumption of independence of errors. Since this violation inflates standard errors, but does not bias coefficients, I focus on coefficients significant at or above the $p < 0.01$ level.

[9] One constraint associated with HLM growth curves is that only time-invariant institutional conditions can serve as the level two context within which inequality intercepts and slopes may vary; all time-variant indicators must be conceptualized at level one. Key state-level institutional variables of interest including unionization and state GDP are therefore included as MSA-level variables. Incorporating annual observations of state-level characteristics does have the effect of artificially inflating my sample size and standard errors, but does not bias coefficients. Again, as a precaution I focus on coefficients significant at or above the $p < 0.01$ level.

[10] The diminishing variation in inequality growth across the 30-year period suggested by the random YEAR and fixed YEAR^2 terms is consistent with previous studies of local labor market restructuring: Kasarda and Irwin find that local competitive factors such as business climates primarily shape local employment (and, presumably, local inequality) at the beginning of an economic recovery period (1991: 747). After the initial stage of economic disequilibrium, during which firms shed excess capacity and are more responsive to local conditions in the evaluation of restructuring (and relocation) strategies, we would expect convergence in local inequality growth.
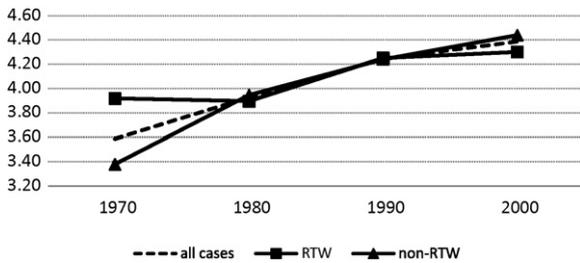
Fig. 1. Earnings inequality (90:10 ratio) for all MSAs and by RTW status, by year.

Fig. 2. 10th earnings percentile for all MSAs and by RTW status, by year.

Western Europe, Canada, the United States and Australia ranges from a CV of 0.275 in 1970 to 0.25 in 2000 (based on author calculation of Luxembourg Income Study Data, table available upon request). In other words, the 80 metropolitan areas in this sample vary in their inequality levels by about half as much as the Western industrialized nations.

Metropolitan labor markets resemble U.S. national trends in earnings levels and inequality on average, but vary considerably in the direction and timing of earnings restructuring. For example, from 1970 to 2000 earnings inequality actually decreased in eight metropolitan labor markets, and many more had declines in inequality during one of the three decades examined. The timing of metropolitan areas' shifting wage structures varied as well: some experienced a sharp burst in inequality in the 1980s, following the national trend, while others grew gradually more unequal over the 30-year period. There is also significant variation in whether inequality trends are driven primarily by high-wage dynamics, low-wage dynamics, or a combination of the two.

Fig. 1 summarizes earnings inequality, measured by the 90/10 ratio, for all metropolitan areas in the sample and by RTW status, by year. Right-to-work and non-RTW labor markets vary in the level of inequality and slope of change in inequality observed, with divergent trends particularly apparent in the 1970s and 1990s. In 1970 metropolitan areas in RTW states are, on average, more unequal than MSAs in non-RTW states, but by 2000 that pattern has reversed. Metropolitan areas in non-RTW states are, on average, more unequal than metropolitan in RTW states in 2000. Inequality growth during the 1970s is particularly distinctive, with sharp inequality growth in non-RTW labor markets but only mild inequality growth in RTW states. Following steady inequality growth in the 1980s, RTW and non-RTW labor markets again diverge in the 1990s with sharper inequality growth in non-RTW states.

Figs. 2 and 3 show the 10th and 90th hourly earnings percentiles by RTW status by year. Examining the
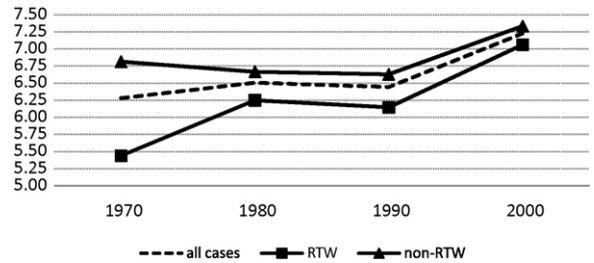
earnings components of inequality growth shows that the variation across RTW and non-RTW contexts is largely a function of low-wage earnings dynamics. Tenth percentile earnings decline nationally and in non-RTW labor markets from 1970 to 1990 before increasing in the 1990s, whereas the 10th earnings percentile in RTW areas increases sharply in the 1970s and declines slightly in the 1980s before growing sharply again in the 1990s (Fig. 2). Ninetieth percentile earnings levels increase steadily over the 30-year period everywhere, with lower high-wage earnings levels in RTW labor markets than elsewhere. From these descriptive statistics, we would expect social, institutional and political economic factors that shape low-wage earnings levels to explain variation in inequality levels and growth from 1970 to 2000.

Table 2 provides descriptive statistics for the independent variables used in this analysis, by right-to-work status. Variables with significantly different values across RTW and non-RTW labor markets are indicated with asterisks. Median rent, women's share of the labor force, the immigrant share of the labor force, the share of working age adults with at least a college degree, public administration share of employment, and state minimum wage levels do not vary significantly across RTW contexts in any of the years studied. Right-to-work labor markets have significantly smaller population size in 1970, significantly more adults without a high school education in 1970 and 1980, and higher rates of
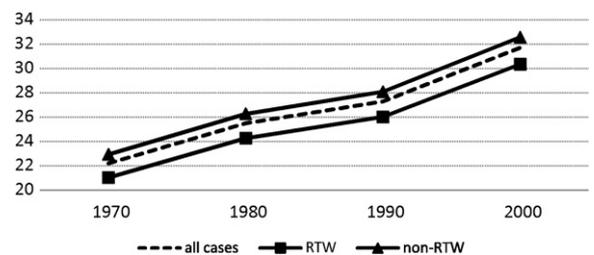

Fig. 3. 90th earnings percentile for all MSAs and by RTW status, by year.

Table 2
Independent variable descriptive statistics, by right-to-work law, by year.

		Mean			Mean difference significance
		All cases	RTW	Non-RTW	
Median rent ($2002)	1970	431.73	415.60	441.93	
	1980	503.28	505.47	501.90	
	1990	598.72	578.62	611.43	
	2000	630.75	629.03	631.84	
Population (ln)	1970	13.70	13.42	13.87	**
	1980	13.84	13.66	13.95	
	1990	13.97	13.84	14.04	
	2000	14.10	14.05	14.14	
Black share of labor force	1970	10.31	15.53	7.00	***
	1980	10.81	15.73	7.70	***
	1990	11.39	16.34	8.26	***
	2000	13.19	18.91	9.56	***
Female share of labor force	1970	37.99	38.58	37.62	
	1980	42.64	43.04	42.38	
	1990	46.12	46.29	46.02	
	2000	47.14	47.20	47.10	
Immigrant share labor force	1970	4.90	3.67	5.68	
	1980	6.57	5.84	7.02	
	1990	9.06	8.38	9.49	
	2000	13.44	13.61	13.33	
Less than h.s. share of age 18–64	1970	35.55	37.49	34.33	*
	1980	23.69	25.19	22.74	*
	1990	14.02	14.85	13.50	
	2000	11.28	11.66	11.03	
College share of age 18–64	1970	11.60	11.66	11.56	
	1980	16.64	16.74	16.58	
	1990	21.16	20.95	21.29	
	2000	25.28	25.47	25.16	
Manufacturing share of employment	1970	29.78	22.90	34.13	***
	1980	25.98	20.59	29.40	***
	1990	19.91	16.52	22.05	***
	2000	17.27	13.96	19.36	***
Public administration share of employment	1970	10.45	11.73	9.63	
	1980	9.35	10.46	8.65	
	1990	8.04	8.88	7.51	
	2000	7.39	7.97	7.02	
Share labor force unemployed	1970	3.89	3.24	4.30	**
	1980	5.80	4.71	6.49	***
	1990	5.73	5.53	5.85	
	2000	5.29	4.89	5.54	
Minimum wage (state) ($2002)	1970	6.72	6.72	6.72	
	1980	6.65	6.65	6.65	
	1990	4.72	4.69	4.73	
	2000	5.57	5.56	5.58	
Share employed covered by union (state)	1970	29.47	19.06	36.05	***
	1980	23.95	14.89	29.69	***
	1990	15.82	9.08	20.08	***
	2000	13.07	7.10	16.86	***
State GDP (ln)	1970	10.27	9.73	10.61	***
	1980	11.29	10.88	11.54	***

Table 2 (*Continued*)

		Mean			Mean difference significance
		All cases	RTW	Non-RTW	
	1990	12.02	11.63	12.2	**
	2000	12.39	12.06	12.61	**
Share core industries	1970	36.27	30.43	39.96	***
	1980	33.28	28.69	36.18	***
	1990	27.96	25.34	29.62	***
	2000	25.55	22.79	27.30	***
Annualized job growth rate (state)	1970–1980	2.94	4.07	2.67	***
Illiteracy rate (state)	1940	4.93	8.09	2.93	***
Share employment manufacturing (state)	1940	22.56	14.89	27.42	***
Racial earnings dualism	1970	2.17	3.94	1.05	***
	1980	1.42	2.36	0.83	***
	1990	1.41	2.38	0.79	***
	2000	2.04	3.28	1.26	***

Source: Author calculation of PUMS, State Government Finances and Statistical Abstracts data.

Significance in mean variation based on unpaired *t*-test.

* $p \le 0.05$.
** $p \le 0.01$.
*** $p \le 0.001$.

unemployment in 1970 and 1980. Black share of the labor force, manufacturing employment, union density, racial dualism and measures of economic development each vary significantly across RTW contexts throughout the 30-year period studied. The existing literature and descriptive statistics predict that any variation in earnings inequality in 1970 and inequality growth from 1970 to 2000 observed across RTW contexts will be explained by these metropolitan labor market characteristics and state-level factors.

Growth curve analysis with HLM offers the best method of evaluating the determinants of metropolitan inequality levels in 1970 and growth from 1970 to 2000. Looking first at the unconditional model, on average 90th percentile earners made approximately 3.6 times more per hour than 10th percentile earners in 1970, and inequality in hourly earnings grew by approximately 0.4 in each decade, with inequality growth slowing toward the end of the period (Table 3, model 0). In other words, for every dollar earned by low-wage workers, high-wage workers make $3.58, with high-wage earners adding $0.42 to that value in each decade.

Table 4 shows the variance components for each model. The intra-class correlation coefficient (ρ) shows that close to 80% of the variation in earnings inequality across all 320 data points is explained by the year-within-MSA grouping structure of the data. The 90/10 ratio varies much more between metropolitan areas than it does within metropolitan areas over time: about 30% of the total variance observed occurs within places over time, leaving about 70% of the variance to between-place dynamics. The estimates of metropolitan earnings inequality in 1970 (intercept) and yearly growth in inequality (slope) are highly reliable, and the cases exhibit significant variation in both intercepts and slopes.

Looking first at the effect of RTW status on inequality levels and growth (model 1), we see that the 90/10 ratio was significantly higher in right-to-work state labor markets in 1970 and the slope of inequality growth from 1970 to 2000 is flatter, indicating that inequality grows more mildly in RTW labor markets. Right-to-work status alone explains about 17.15% of the unconditional variation in 1970 inequality levels and 43% of the unconditional variation in inequality growth. RTW intercept and inequality effects are robust to standard metropolitan labor market controls (model 2), which explain an additional 23% of the unconditional intercept variance and an additional 17% of the unconditional slope variance. Looking at the change in the RTW intercept and slope coefficients, about 6.74% of the intercept coefficient is explained by the inclusion of standard labor market controls, but the RTW slope coefficient increases by about 5% from model 1 to model 2. Labor markets with larger populations, more college-educated adults

Table 3
Right-to-work effect on metropolitan inequality growth, 1970–2000.

	0	1	2	3	4	5	6	7	8	9	10	11
Intercept (B_{00})	3.58***	3.43***	3.63***	3.62***	3.68***	3.65***	3.80***	3.69***	3.65***	3.75***	3.73***	3.75***
Right-to-work law		0.39**	0.36**	0.37**	0.32*	0.25	0.36*	0.32*	0.25	0.22	0.26*	0.37*
Job growth 1970s						0.06						
Mfg 1940									−0.01			
Illiteracy 1940										0.04		
Year (B_{10})	0.42***	0.50***	0.39***	0.38***	0.34**	0.39**	0.21	0.34**	0.39**	0.28*	0.32**	0.30*
Right-to-work law		−0.20***	−0.21***	−0.21***	−0.20***	−0.17***	−0.21***	−0.20***	−0.19***	−0.17***	−0.22***	−0.18***
Job growth 1970s						−0.02						
Mfg 1940									0.002			
Illiteracy 1940										−0.01		
Year-squared (FE)	−0.05***	−0.05***	−0.06**	−0.05*	−0.05*	−0.06**	−0.03	−0.05*	−0.05*	−0.04	−0.04*	−0.06**
Union density					−0.004	−0.002	−0.006	−0.004	−0.001	−0.001	−0.002	−0.005
Gross state product (ln)							0.08*					0.08*
Share employment core industries								−0.001				
10th percentile earnings in 1970 (ln)											−0.67	
Racial dualism (MSA)												0.10***
Median rent			−0.0005	−0.0007	−0.0007	−0.0007	−0.0008	−0.0007	−0.0007	−0.0006	−0.0006	−0.0006
Population (ln)			0.12*	0.12*	0.12*	0.13*	0.11*	0.12*	0.12*	0.13*	0.14*	0.13*
Share LF black			0.004	0.004	0.004	0.004	0.005	0.004	0.006	0.003	0.003	0.001
Share LF female			−0.004	−0.010	−0.010	−0.01	−0.009	−0.011	−0.009	−0.008	−0.013	−0.005
Share LF immigrant			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Share 18–64 < HS			0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Share 18–64 college +			0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***
Share employment manufacturing			−0.01	−0.01	−0.01	−0.003	−0.005	−0.01	−0.002	−0.005	−0.004	−0.004
Share employment public administration			−0.004	−0.003	−0.003	−0.002	−0.002	−0.003	−0.001	−0.003	−0.004	−0.0002
Share LF unemployed			0.03*	0.03**	0.04**	0.03*	0.04**	0.04*	0.03*	0.04**	0.04**	0.04**
Minimum wage				−0.07*	−0.07*	−0.07*	−0.06*	−0.07*	−0.08*	−0.07*	−0.07*	−0.06*

Models use robust standard errors for final estimation of variance components; full maximum likelihood estimation; and GRM centering.

  * $p \leq 0.05$.
  ** $p \leq 0.01$.
  *** $p \leq 0.001$.

Table 4
Multi-level model variance components.

	0	1	2	3	4	5	6	7	8	9	10	11
σ^2	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
ρ	0.79	0.75	0.73	0.74	0.73	0.74	0.73	0.73	0.73	0.73	0.70	0.76
U_0	0.21***	0.17***	0.15***	0.15***	0.14***	0.14***	0.14***	0.14***	0.14***	0.14***	0.12***	0.15***
U_1	0.02***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
Total variance	0.19	0.18	0.15	0.23	0.22	0.22	0.22	0.22	0.22	0.22	0.20	0.23
% Total variance within-place	29.57	30.95	37.05	23.02	23.51	23.45	23.68	23.51	23.56	23.98	26.09	20.93
% Total variance between-place	70.43	69.05	62.95	76.98	76.49	76.55	76.32	76.49	76.44	76.02	73.91	79.07
Share unconditional U_0 explained	n/a	17.15	29.13	28.99	30.88	30.23	31.29	30.87	31.83	32.25	40.66	27.05
Share unconditional U_1 explained	n/a	43.04	60.92	57.66	58.59	60.88	57.98	58.59	56.86	60.78	58.82	55.98
% Model 1 RTW intercept effect exp'd	n/a	n/a	6.74	2.78	16.77	35.89	7.47	17.69	34.69	43.92	32.12	4.70
% Model 1 RTW slope effect exp'd	n/a	n/a	−5.29	−7.18	−3.55	13.94	−5.54	−3.26	4.13	13.84	−11.16	6.21

*** $p \leq 0.001$.

and higher rates of unemployment are significantly more unequal.

It is important to ask what levels of inequality after 1970 are predicted by differential rates of inequality growth from different starting points in 1970. Fig. 4 shows the predicted inequality growth curves for RTW and non-RTW labor markets. The first graph reflects the bivariate model (model 1) and the second includes basic labor market controls (model 2). Average growth curves for metropolitan areas in RTW states are in bold, and YEAR ranges from 1970 (0) to 2000 (3). Controlling for labor market characteristics produces a higher average predicted level of inequality in 1970, but it barely changes the RTW effect on that intercept. More significantly, assuming the same labor market characteristics across RTW and non-RTW states produces a flatter inequality growth slope but, again, does not significantly alter the RTW effect on that slope. In each case the predicted level of metropolitan earnings inequality in 2000 is higher in non-RTW states, consistent with the descriptive statistics summarized in Fig. 1. Convergence in the 90/10 ratio is seen in the period 1970 to roughly 1990, but during the 1990s inequality growth diverges across RTW and non-RTW areas. These trends are driven by the convergence in low-wage earnings levels observed across RTW and non-RTW labor markets. Exploratory analysis shows that while low-wage earnings levels and growth vary significantly across RTW contexts, high-wage earnings levels and growth do not (see Appendix D). This inequality trend is not confined to the extreme tail of the earnings distribution; analyses of 20th and 80th earnings percentiles and the 80/20 ratio reveal the same pattern of convergence across RTW contexts driven by low-wage earnings trends (tables available upon request).

We now turn more fully to the task of explaining why local labor markets in RTW states have distinctive levels of inequality in 1970 and distinctive slopes of inequality growth from 1970 to 2000. One important control variable to consider is the prevailing wage floor in each state. As expected, earnings inequality is lower where the minimum wage is set above the federal level, but this variation contributes little to the explained variance or RTW intercept and slope effects (model 3).

Indicators for the hypothesized direct RTW effects on inequality (union density and employment growth) as well as the expected indirect relationships (economic development and racial inequality) are introduced next. Following the formal hypotheses, I consider the effects of these factors on two RTW coefficients: (a) the effect of RTW laws on inequality levels in 1970, and (b) the effect of RTW laws on inequality growth from 1970 to 2000.

Predicted earnings inequality

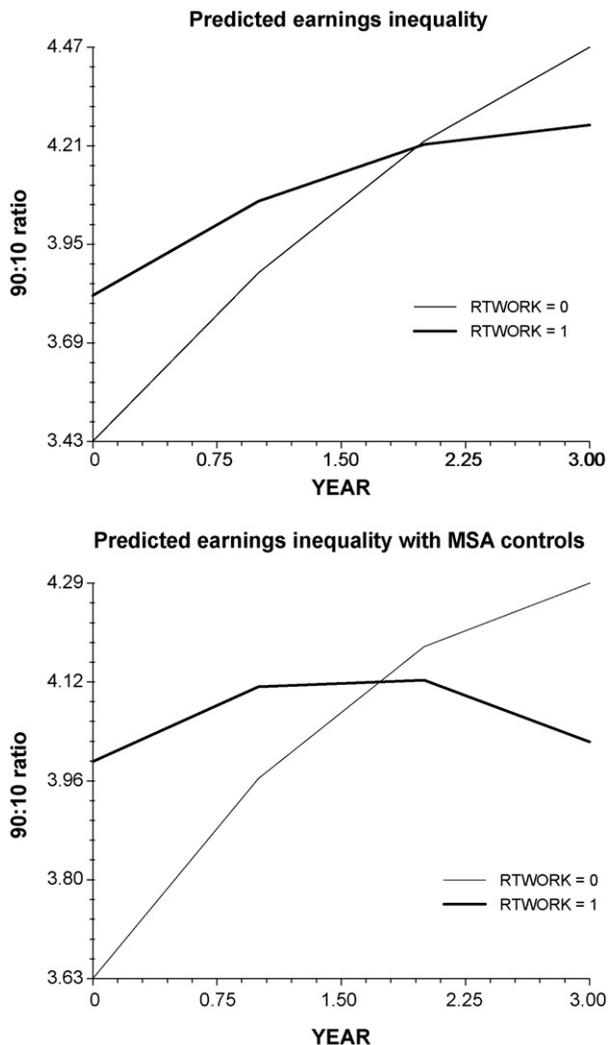

Predicted earnings inequality with MSA controls

Fig. 4. Predicted values of metropolitan earnings inequality by RTW.

I begin in model 4 with unionization. State union density has a negative but insignificant effect on inequality in this model (the latter likely due to the high correlation between RTW laws and unionization: $r = -0.8$ in each year of the study). Controlling for union density explains about 17% of the observed positive relationship between RTW laws and inequality in 1970 but does not affect the negative RTW slope effect. There is little to no significant difference between the level of inequality observed in RTW and non-RTW labor markets in 1970 after union density in the 1970s is taken into account.[11] The evidence thus appears to support

Hypothesis 1a, that low union density will contribute to higher inequality levels in RTW labor markets in 1970. Regarding the relationship between change in union density and change in inequality, neither growth hypothesis is fully supported as controlling for union density yields a very small increase in the RTW slope coefficient in model 1. The negative RTW slope coefficient in these models is, however, more consistent with Hypothesis 1bii than 1bi. We must stop short of concluding that greater institutional weakening in non-RTW labor markets is responsible for the sharper inequality growth observed there, since we observe similar average rates of change in union density across RTW and non-RTW states (-0.5 and -0.6, respectively; table available upon request). It appears that the negative RTW effect on inequality growth cannot be explained by levels of union density or rates of institutional weakening.

Following Hypothesis 2, RTW laws may shape local inequality levels and growth by facilitating capital mobility and employment growth. Rates of employment growth in the key decade of the 1970s explain an additional 19% of the insignificant RTW intercept effect, and an additional 14% of the negative RTW growth effect (model 5). The findings are inconsistent with Hypothesis 2a, which predicted a negative relationship between 1970s employment growth and inequality. The data are, however, consistent with Hypothesis 2b, which predicted milder inequality growth due to higher employment growth. This model suggests that part of the variation in inequality growth across RTW and non-RTW contexts stems from a spatial redistribution of economic activity across RTW boundaries in the 1970s. Patterns of capital mobility and employment growth cannot, however, completely explain the negative RTW effect on inequality growth, and do not exert an independent significant effect on metropolitan inequality.

I next consider uneven economic development and variation in racial inequality as possible indirect explanations for the observed relationship between RTW laws and inequality growth. Models 6–10 show that different dimensions of economic development—wealth creation (model 6), economic integration (model 7) and development-related path dependencies (models 8–10)—cannot fully explain the variation in inequality growth across RTW labor markets: Gross state domestic product (model 6) and core sector industrial activity (7) explain only about 7% and 17% of the model 1 RTW intercept effect, respectively, and do not contribute to the RTW slope effect. Manufacturing activity in 1940 explains about 35% of the model 1 RTW inter-

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[11] As discussed above, I focus on coefficients significant at or above the $p \leq 0.01$ level due to error introduced by measuring unionization at the state level.

cept effect and 4% of the RTW slope effect (model 8). A social, rather than economic, indicator of late development path dependencies, the state illiteracy rate in 1940, explains about 44% of the RTW intercept effect and nearly 14% of the RTW intercept effect (model 9). Each metropolitan area's tenth percentile earnings level in 1970 explains about one third of the RTW intercept effect, but does not contribute to the RTW intercept effect (model 10).

Overall models 6 through 10 suggest that the positive relationship between RTW laws and inequality in 1970 is due, in part, to late economic development, but the negative relationship between RTW laws and metropolitan inequality growth from 1970 to 2000 is largely robust to late economic development. Returning to the formal hypotheses, the analysis is consistent with Hypothesis 3a, which stated that labor markets in RTW states would have higher levels of inequality in 1970 due to lower levels of economic development. Hypothesis 3b, that labor markets in RTW states will have milder inequality growth from 1970 to 2000 due to convergence in economic development, receives some support, but late economic development is responsible for only a small portion of the RTW-inequality slope effect.

Finally, there is a significant positive relationship between metropolitan earnings inequality and racial earnings dualism (model 11), suggesting that high levels of earnings inequality are associated across places and time with high levels of racial inequality. But levels of racial earnings inequality contribute very little to the RTW intercept and slope effects of central interest in this paper: Local variation in racial inequality explains only about 5% of the positive relationship observed between RTW laws and inequality in 1970, and about 6% of the negative RTW-inequality growth relationship. While the direction of the relationship between RTW laws and metropolitan inequality levels and growth is consistent with Hypotheses 4a and 4b, then, the RTW-inequality effects are largely robust to racial earnings inequality, contrary to Hypotheses 4a and 4b.

To summarize, the positive RTW effect on inequality levels in 1970 is no longer significant after union density is taken into account, and union density, employment growth in the 1970s and late economic development each contribute to the effect. The negative RTW effect on inequality growth from 1970 to 2000 is largely robust to the direct and indirect effects considered here. The local rate of job growth in the 1970s, primarily an indicator of capital mobility, emerges as a mechanism of the RTW slope effect, and small portions

of the effect are explained by convergence in economic development and the reduction of racial earnings inequality. But most of the negative RTW effect on inequality growth remains unexplained. In the following section I theorize additional factors that may account for the robust RTW-inequality growth effect, and reflect on how these findings contribute to a distinctly sociological theory of earnings inequality in the United States.

5. Discussion and conclusion

This paper identifies distinctive paths of earnings restructuring for local labor markets in the United States based on a subnational political economy that has been overlooked in previous studies of earnings and inequality. Labor markets in RTW states were more unequal than their non-RTW counterparts in 1970, largely due to differences in union density, but RTW labor markets experienced milder growth in inequality from 1970 to 2000. Earnings inequality was greater in non-RTW labor markets by 2000 than in RTW areas. This trend is largely unaffected by either the theorized direct mechanisms—union density and employment growth—or the alternative hypotheses, economic development and racial inequality.

One question that emerges from this analysis is whether the shifting geography of high-wage work contributes to the remaining unexplained variation in inequality growth across RTW and non-RTW contexts. High-wage earnings growth drives national trends in rising inequality since the 1970s (Piketty & Saez, 2003) and high-wage workers have become more geographically concentrated during this period (Berry & Glaeser, 2005). But neither high-wage earnings levels nor the rate of growth in high-wage earnings vary across right-to-work contexts (see Appendix D). The large and growing concentration of high-wage work in cities like Miami, FL, Austin, TX and the North Carolina Research Triangle illustrates the point that that state right-to-work laws are not predictive of high-wage earnings concentration, which follows a different geographic political economy that is beyond the scope of this paper. The inequality trends examined in this paper are driven by the shifting dynamics of low-wage earnings growth across RTW and non-RTW states.

The negative relationship observed between state RTW laws and local inequality growth in the United States is surprising from the perspective of research on inequality and institutions. Cross-national and comparative studies of earnings trends (e.g., Kenworthy &

Pontusson, 2005; Volscho & Fullerton, 2005) have consistently affirmed that labor market institutions such as unions temper the inequality-producing effects of the market, but efforts to connect the decline of labor market institutions to rising inequality in the United States have found mixed results (DiPrete et al., 2006; Morris & Western, 1999).[12] This study finds that metropolitan labor markets in weak-institution RTW states experience milder inequality growth from 1970 to 2000 than their strong-institution counterparts, and are less unequal by 2000.

One possible interpretation of these results is the neoclassical economic view that labor market institutions such as unions heighten inequality because they stifle economic growth (e.g., Friedman, 1962). Proponents of measures such as RTW laws would recognize the slower inequality growth observed in those states from 1970 to 2000 as the intended consequence of those self-consciously pro-market, anti-union strategies. Some would go further, advocating right-to-work laws and similar measures that limit the strength of unions as a strategy for reducing inequality and promoting earnings growth. I do not interpret the results reported here as support for the neoclassical economic perspective on institutions and inequality for three reasons. First, neoclassical economics cannot account for the situation observed through 1970, when lower levels of inequality and higher earnings were observed in states where labor market institutions strengthened workers' interests. Second, the inequality-reducing earnings growth associated with weak labor market institutions from 1970 to 2000 is focused on the lowest fifth of the earnings distribution, with no net effect on median or high-wage earnings growth. If institutions truly stifle economic growth we would expect higher wages throughout the earnings distribution in labor markets where institutions favor the interests of capital. Finally, the slower inequality growth associated with weak labor market institutions that I have identified follows a quadratic function, suggesting diminishing benefits to neoliberal economic governance in the future.

Rather than challenging the conventional sociological wisdom on institutions and inequality, this analysis refines institutional analyses of rising inequality by placing them in a larger context of spatial inequalities and multi-level processes. The standard narrative in the inequality literature of (relatively) strong institutions weakening in the face of globalization and deindustrialization never accurately described labor markets in the American South and Southwest, where RTW laws limit the growth of labor unions. Sharp employment growth in RTW labor markets, which itself explains some of the negative RTW-inequality growth effect, may reduce remaining unions' power to influence earnings at the bargaining table. The threat and reality of industrial relocation may increase employment insecurity and thus reshape power dynamics within firms, particularly in the non-RTW states that have suffered the most extreme industrial job losses (Bronfenbrenner, 2000). We might in this way expect the competitive development dynamics initiated by RTW laws to facilitate the erosion of workers' rents across industries and occupations.

Bringing spatial inequality and multi-level processes to the study of inequality is also suggestive of the role of organizational change. Sharper inequality growth in non-RTW labor markets may have developed as firms leveraged spatial inequalities to implement shareholder value strategies to reduce labor costs by reorganizing production. Massey writes that "[r]elations between economic activity in different parts of the country are now a function rather less of market relations between firms and rather more of planned relations within them" (1984: 297). Building on Fligstein and Shin (2007) and Sørensen (2000), firm-level strategies such as mergers, layoffs and outsourcing may have targeted the proportionately larger rents captured by workers in non-RTW labor markets by moving operations to RTW states and, increasingly, overseas.

From a cross-national perspective the U.S. labor market is characterized not only by weak labor market institutions, but by internal political economic variation, both of which are important for understanding rising economic inequality. The trends identified here are consistent with research on globalization showing that dynamics of capital mobility accord short-term benefits to weak-institution labor markets at the expense of adjacent strong-institution labor markets in the form of rising wages and slower inequality growth (e.g., Hansen, 2006; Rodrik, 1997). The implication is that labor market institutions do not shape inequality from within a closed system. The relationship between insti-

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[12] In this literature institutions are often defined as non-market forces that mediate the impact of supply and demand. There is a tendency to characterize labor market institutions as strong or weak based on their degree of market "intervention," particularly on behalf of workers' interests. I use this language as shorthand while acknowledging that social relations necessarily undergird markets (Polanyi, 1944) and that "[u]nmediated market forces are a political outcome, not an inevitability" (Morris & Western, 1999: 650).

tutions and inequality within a particular labor market is determined as much by the institutional structure of competing labor markets as by that labor market's own properties and institutional propensities for reducing inequality. The potential for heightened inequality may be particularly acute in labor markets with institutions that are stronger than those in adjacent areas, but too weak to prevent painful employment restructuring and capital flight. The relationship between institutions and inequality may therefore be curvilinear, with the greatest wage penalties and levels of inequality found in intermediate systems (Calmfors & Driffill, 1988). Adopting a political economic perspective to examine within- and between-place inequality dynamics in the United States thus refines the conventional sociological wisdom on labor market institutions by placing it in the larger context of social, institutional and organizational dynamics that operate at the local and state levels.

Earnings determination is an inherently multi-level phenomenon, but too few studies have engaged simultaneously with the multiple layers of social structure that shape economic activity. By considering variation in earnings restructuring across local contexts, this analysis ultimately reaffirms the importance of politics for understanding labor market outcomes such as economic inequality. Global macroeconomic shifts and financial advisors' recommendations were the stimuli for firm-level earnings restructuring starting in the 1970s (Fligstein, 2001), but in the United States these pressures unfolded in a context of internal political economic variation and significant pre-existing spatial inequalities. Decentralized economic governance—the states' authority to fashion distinctive political economies—may facilitate rising inequality nationally by promoting competitive development dynamics that encourage firm-level restructuring strategies that leverage spatial inequalities to reorganize production, weaken workers' rents in strong-institution areas and increase employment insecurity. Detailed case studies of particular firms and labor markets are necessary to fully understand the between-place inequality dynamics identified here and to evaluate the theory suggested by this statistical analysis. But this paper contributes to the development of a distinctly sociological perspective on rising inequality by identifying a subnational political economy that shapes earnings restructuring in the United States, and by theorizing the interrelationship between social, institutional and organizational factors that shape earnings at multiple levels of social structure.

Appendix A

Metropolitan areas in sample (*n* = 80).

Northeast	Midwest
Albany-Schenectady-Troy, NY	Akron, OH
Allentown-Bethlehem-Easton, PA/NJ[a]	Canton, OH
Boston, MA	Chicago-Gary-Lake, IL
Buffalo-Niagara Falls, NY	Cincinnati-Hamilton, OH/KY/IN[a]
Harrisburg-Lebanon-Carlisle, PA	Cleveland, OH
Hartford-Bristol-Middleton-New Britain, CT	Columbus, OH
Lancaster, PA	Dayton-Springfield, OH
New York-Northeastern, NJ	Detroit, MI
Philadelphia, PA/NJ[a]	Fort Wayne, IN
Pittsburgh, PA	Grand Rapids, MI
Providence-Fall River-Pawtucket, MA/RI[a]	Indianapolis, IN
Rochester, NY	Kansas City, MO-KS[b]
Springfield-Holyoke-Chicopee, MA	Milwaukee, WI
Syracuse, NY	Minneapolis-St. Paul, MN
	Omaha, NE/IA[c,a]
	St. Louis, MO-IL[a]
	Toledo, OH/MI[a]
	Wichita, KS[c]
	Youngstown-Warren, OH-PA[a]
South	**West**
Atlanta, GA[c]	Albuquerque, NM
Austin, TX[c]	Bakersfield, CA
Baltimore, MD	Denver-Boulder, CO
Baton Rouge, LA[d]	Fresno, CA
Birmingham, AL[c]	Las Vegas, NV[c]
Charleston-N. Charleston, SC[c]	Los Angeles- Long Beach, CA
Charlotte-Gastonia-Rock Hill, NC-SC[c]	Phoenix, AZ[c]
Columbia, SC[c]	Portland, OR-WA[a]
Dallas-Fort Worth, TX[c]	Riverside-San Bernadino, CA
Fort Lauderdale-Hollywood-Pompano Beach, FL[c]	Sacramento, CA
Greensboro-Winston Salem-High Point, NC[c]	Salt Lake City-Ogden, UT[c]
Houston- Brazoria, TX[c]	San Diego, CA
Jackson, MS[c]	San Francisco-Oakland-Vallejo, CA
Knoxville, TN[c]	San Jose, CA
Little Rock–North Little Rock, AR[c]	Seattle-Everett, WA
Louisville, KY/IN[a]	Spokane, WA
Memphis, TN/AR/MS[c,a]	Stockton, CA
Miami-Hialeah, FL[c]	Tacoma, WA
Nashville, TN[c]	Tucson, AZ[c]
New Orleans, LA[d]	

Appendix A (*Continued*)
Metropolitan areas in sample (*n* = 80).

Norfolk-VA Beach-Newport
    News, VA[c]
Oklahoma City, OK
Orlando, FL[c]
Richmond-Petersburg, VA[c]
San Antonio, TX[c]
Tampa-St. Petersburg-Clearwater,
    FL[c]
Tulsa, OK
West Palm Beach-Boca
    Raton-Delray Beach, FL[c]

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[a] Indicates MSA crosses state lines.
[b] Indicates MSA crosses RTW state lines.
[c] Indicates right-to-work law from 1970 through 2000.
[d] Indicates right-to-work law after 1976.
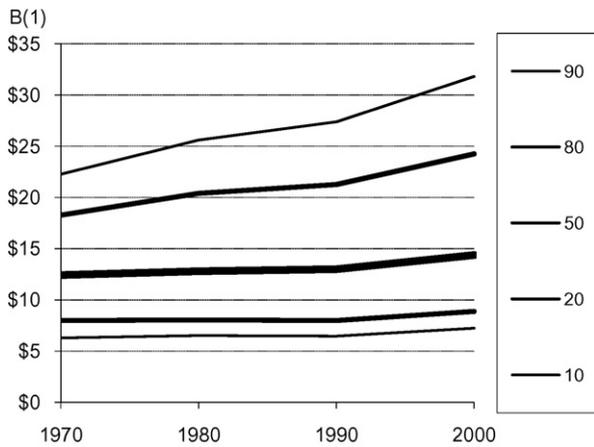
Appendix B

See Figs. B1–B4.

Fig. B1. Sample mean hourly earnings percentiles. *Source*: IPUMS and CPS-MORG; $2002 CPI-U-RS.
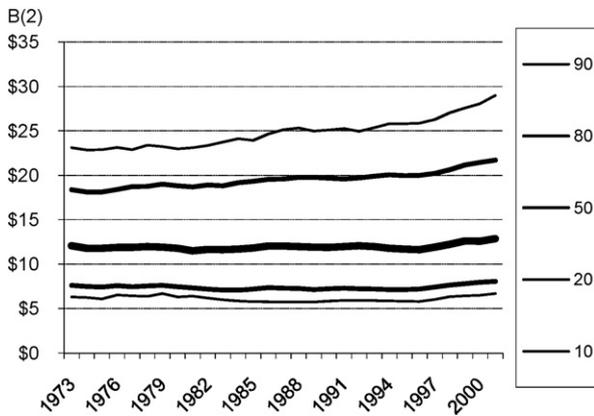

Fig. B2. National hourly earnings percentiles 1973–2001. *Source*: EPI calculation of CPS-MORG (May CPS 1973-8); $2001 CPI-U-X1.
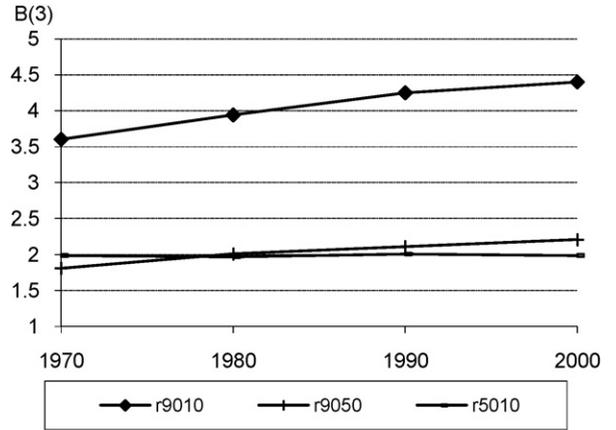

Fig. B3. Sample mean earnings inequality (90:10 ratio) in decomposed into 90:50 and 50:10 ratios. *Source*: author calculation of IPUMS and CPS-MORG.
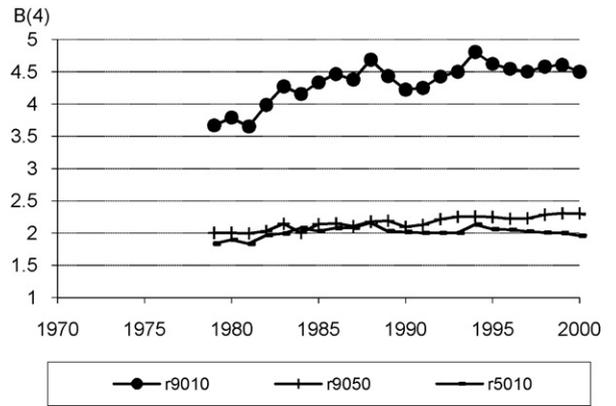

Fig. B4. National earnings inequality (90:10 ratio) decomposed into 90:50 and 50:10 ratios. *Source*: author calculation of CPS-MORG.

Appendix C Methodological notes

Respondents are not asked to estimate their hourly earnings in the Census, so I perform a series of calculations and adjustments to estimate compensation for an hour of each respondent's time: respondents are asked to estimate their total wage and/or salary income for the previous year as well as the number of weeks worked and usual number of hours worked per week. These variables were used to estimate hourly earnings, which are adjusted for inflation using the CPI-U-RS $2002. Outliers (i.e., those earning less than $0.50 or more than $100 per hour in 1989 dollars) were trimmed, following the procedures described in Mishel, Bernstein, and Schmitt (1999). One additional adjustment was made to correct for the measurement error in Census hourly earnings data and arrive at more precise estimates of metropolitan hourly earnings distributions. The Current Population Survey's Merged Outgoing Rotations (CPS-

MORG) provides the most accurate and widely used estimates of individual hourly earnings for the period 1979–2007, but the geographic and temporal coverage of this time series is more limited. Greater CPS-MORG precision comes from the survey's more detailed questions on actual hours worked for salaried workers. To borrow from the CPS-MORG's more precise earnings estimates, I generated a time series of metropolitan earnings distributions for each year and each MSA with a sufficient number of observations, 1989–2002. Hourly earnings estimates for salaried workers who report working more than 40 h per week in the CPS-MORG were calculated using 40 h rather than their actual reported hours in the denominator. The logic here is that the price of their labor (i.e., their wage) should not reflect the unpaid overtime that is expected of them, and that doing so biases estimates of their hourly wages downward. Calculating hourly earnings for salaried workers in this way also corrects for possible over-reporting of hours worked, which studies based on time diaries suggest is a problem. After aggregating hourly earnings estimates to determine metropolitan-level earnings deciles, I then constructed a 5-year moving average producing CPS wage observations for the years 1991–2000. I compared CPS and IPUMS inflation-adjusted (CPI-U-RS $2002) wage estimates in 1991/1990 and calculated a factor of difference particular to each metropolitan area and wage percentile. This factor of difference was used to adjust IPUMS wage estimates. Factors of difference were quite small, and mainly had the effect of edging IPUMS 90th percentile hourly earnings estimates upward. Metropolitan hourly earnings percentile estimates with and without the CPS-MORG adjustment are highly correlated ($r \sim 0.85$), with the lowest correlation for 90th percentile earnings estimates in 1970 ($r \sim 0.69$). Regression models reported below were calculated using both the adjusted and unadjusted earnings percentile estimates, with no significant effect seen on the relationships reported. Tables available upon request.

While neighborhoods, cities, counties, inter-county coalitions and states each fashion economic development policies that may shape local earnings growth and inequality, there are two good reasons to focus on state policies. The first is practical: data limitations and problems accounting for spatial autocorrelation complicate the task of evaluating the effects of political economic variation at the sub-state level. More importantly, sub-state policies are significantly constrained by economic and political forces beyond their control. Cities and counties require state money and coordination to implement lasting location advantages, and often compete with other municipalities for state development funds. Localities therefore depend on state policies such as RTW laws to set the terms for their investment competition. While state and national economic policies are similarly constrained by national and global conditions, U.S. states do have the ability to shape institutional and price conditions that matter to firms. Focusing only on state institutional variation as an explanation for metropolitan earnings outcomes does introduce omitted variable bias, a particular concern when, as in this case, the omitted (sub-state) variables are likely correlated with key (state-level) variables. This problem will inflate state-level coefficients. As the effects of sub-state institutional variables on metropolitan inequality growth are likely to be small in magnitude, however, the degree of bias introduced into the estimation of state policy effects is somewhat limited. Despite these limitations, this study's multi-level research design and emphasis on the states is theoretically driven, and improves on existing studies which tend to either ignore the effect of state political economy on metropolitan labor markets, or conceive of states themselves as labor markets.

Appendix D

Appendix A (*Continued*)
Unconditional, bivariate and control models of metropolitan earnings percentiles growth, 1970–2000.

	10th percentile (ln)			20th percentile (ln)			50th percentile (ln)			80th percentile (ln)			90th percentile (ln)		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Intercept (B_{00})	1.84***	1.91***	1.95***	2.07***	2.14***	2.19***	2.51***	2.58***	2.62***	2.90***	2.95***	2.99***	3.10***	3.14***	3.18***
RTW		−0.19***	−0.12***		−0.17***	−0.10***		−0.17***	−0.09***		−0.11***	−0.04		−0.09**	−0.04
YEAR (B_{10})	−0.01	−0.03***	−0.10***	−0.04***	−0.06***	−0.13***	−0.01	0.02*	−0.08***	0.07***	0.07***	0.01	0.10***	0.10***	0.06*
RTW		0.06***	0.05***		0.04***	0.03***		0.03***	0.01		0.01	−0.01		0.01	−0.01
$YEAR^2$	0.02***0	0.02***	0.03***	0.02***	0.02***	0.04**	0.02***	0.02***	0.03***	0.01**	0.01**	0.01**	0.00	0.003	0.01
σ^2	0.004	0.004	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
T_{00}	0.014	0.006	0.003	0.014	0.007	0.004	0.019	0.012	0.008	0.012	0.010	0.006	0.012	0.011	0.007
T_{01}	−0.003	−0.001	−0.001	−0.003	−0.001	−0.001	−0.004	−0.002	−0.002	−0.002	−0.001	−0.002	−0.001	−0.001	−0.002
ρ	0.765	0.574	0.497	0.803	0.681	0.604	0.893	0.842	0.822	0.852	0.817	0.790	0.836	0.813	0.789
B_{00} reliability	0.823	0.658	0.585	0.853	0.753	0.685	0.923	0.884	0.868	0.892	0.864	0.843	0.879	0.861	0.842
B_{10} reliability	0.498	0.125	0.247	0.511	0.308	0.290	0.716	0.673	0.635	0.627	0.623	0.567	0.611	0.607	0.549
U_0	0.014***	0.006***	0.057***	0.014***	0.007***	0.014***	0.019***	0.0123***	0.008***	0.012***	0.010***	0.006**	0.012***	0.011*	0.007***
U_1	0.001***0	0.001	0.015	0.001***	0.0003**	0.0002**	0.001**	0.001**	0.001***	0.001***	0.001***	0.0004***	0.001***	0.001***	0.0005***
E	0.004	0.004	0.057	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002

Models use robust standard errors for final estimation of variance components; full maximum likelihood estimation; GRM centering. For each dependent variable model C includes basic labor market control variables described in text.

* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.001$.

Appendix E

Appendix A (*Continued*)
States in sample by right-to-work law and southern region.[a]

	Right-to-work states			Non-right-to-work states			
South	AL	LA (1976)[b]	TN	KY			
	AR	MS	TX	MD			
	FL	NC	VA	OK (2001)[c]			
	GA	SC					
Non-South	AZ	NV		CA	MA	NM	RI
	KS	UT		CO	MI	NY	WA
	NE			CT	MN	OH	WI
				IL	MO	OR	
				IN	NJ	PA	

[a] All right-to-work laws passed by 1960 unless noted.

[b] HLM requires level two variables to be time-invariant so LA is considered a RTW state for 1970. LA had previously enacted RTW legislation in 1954 and repealed it in 1956.

[c] Because OK did not pass its RTW law until 2001 it is considered a non-RTW state in this analysis.

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