How Do Structural Change and Institutional Context Affect Income Inequality in Rich Democracies?[*]

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Exactly how do structural economic changes and institutional context impact the distribution of income? We develop a taxonomy of the micro-mechanisms by which these macro-processes drive income inequality and assess this taxonomy empirically. We propose that structural economic changes and egalitarian institutions drive income inequality by exacerbating/ ameliorating five distinct micro-level mechanisms we label income *penalties and premiums*. Some of these penalties/premiums operate in the labor market while others are unique to top income households. To scrutinize these micro-mechanisms empirically, we model the incomes of over one million households across 13-14 countries and 39 years. Our results yield five broad contributions. First, we provide "middle-range" evidence regarding the specific micro mechanisms through which particular macro-processes impact inequality. Second, both structural change and egalitarian institutions impact income *premiums* more than income *penalties*, which helps explain the greater preponderance of "upper-tail polarization" observed in the literature. Third, in the labor market, workplace authority is a more prominent mechanism than skill. Fourth, the most important micro-mechanisms operate outside the labor market among top income premiums. Fifth, structural change has larger impacts on top incomes, while egalitarian institutions have larger impacts in the labor market. We conclude by calling for greater attention to the *re*distributional efficacy of key post-war institutions given their muted impact on top income premiums observed here.

Key Words: Income Inequality, Structural Change, Institutional Context, Skills, Workplace Authority, Top Incomes.

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I. Introduction

Scholarly interest in income inequality coincided with the widely observed (but varied) rising inequality trend that began toward the end of the 20th century (Alderson and Nielsen 2002; Gustafsson and Johansson 1999; McCall and Percheski 2010; Neckerman and Torche 2007). Two key explanations for income inequality include structural changes occurring in the macro-economy and the erosion of egalitarian institutions (Alderson and Nielsen 2002; Gustafsson and Johansson 1999; McCall and Percheski 2010; Western, Bloome and Percheski 2008). The globalization of production, technological change, and financialization are the three main sources of structural change (Alderson and Nielsen 2002; Gustafsson and Johansson 1999; Mahutga, Roberts and Kwon 2017). The strength of organized labor, coordinated wage-setting institutions, and the welfare state are key institutional determinants of household income inequality (Alderson and Nielsen 2002; Gustafsson and Johansson 1999; McCall and Percheski 2010). This article analyzes the underlying micro-level mechanisms linking structural changes and institutions to rising income inequality at the macro level.

At present, the literature includes multiple mechanisms by which structural change and institutional context should impact inequality. Some focus on how structural change and institutional context impact the returns to differentially skilled workers, including those that focus on the "immiseration" of the low-skilled and those that focus on the "take off" of the high skilled (e.g. Alderson and Nielsen 2002; Autor, Levy and Murname 2003; Katz and Autor 1999; Mahutga et al. 2017; Wallerstein 1999; Wood 1994). Others focus instead on workplace authority or the returns to particular sectors (e.g. the FIRE sector) (Goldstein 2012; Mahutga et al. 2017; Tomaskovic-Devey and Lin 2011; Lin and Tomaskovic-Devey 2013). Still others focus upon mechanisms operating outside the labor market among households at the very top of the

income distribution (Kenworthy 2017; Volscho and Kelley 2012; Roine et al. 2009). To the best of our knowledge, however, little progress has occurred on adjudicating the relative contributions of these various mechanisms. So far, no one has examined empirically the precise degree to which macro-level structural changes and institutions impact income through the theorized micro-mechanisms.

We address these gaps in the field in two distinct ways. First, we develop a taxonomy of five distinct income penalties/premiums through which structural change and institutional context are thought to impact household incomes. Expanding upon recent research on the causes of poverty, *penalties* include particular labor market characteristics of household earners (low-skills) that reduce income on average (Brady, Finnigan, and Huebgen 2017). Conversely, income *premiums* include labor market characteristics of household earners (high skills, workplace authority, FIRE sector occupations) that increase income on average. We also distinguish between premiums operating in the labor market and those operating uniquely among top income households that derive a significant share of their total income from capital income (e.g. Kenworthy 2017; Kuhn, Schularick and Steins 2018; McCall and Percheski 2010; Rosenberg 2013). Structural change and institutional context thus impact inequality through different channels within the labor market, and between the labor market and the economies of the very rich.

Second, we subject these claims to empirical scrutiny by developing an empirical framework in which households are the unit of analysis. We analyze the income of over a million households across 14 countries and 39 years from the LIS Cross-National Data Center using two-way fixed effects regression. Analyzing households is important because they are the units at which economic behavior is fundamentally determined, and because household composition

determines "how individual earnings and other incomes are pooled (or not pooled)" in the realized economy (McCall and Percheski 2010: 330). Moreover, income penalties/premiums owing to labor market and other economic forces should correlate with those owing to household composition, but most previous research examines these two sources of distributional outcomes independently (Alderson, Beckfield and Nielsen 2005; McCall and Percheski 2010; Necherman and Torche 2007). Our empirical framework allows us to examine impact of structural change and institutional context on the former *net* of the latter. Thus, our results provide novel evidence about the specific mechanisms underlying the distributional effects of structural change and institutional context.

2. The Micro-Mechanisms of Structural Change and Institutional Context

Before a more detailed theoretical discussion, we summarize its general logic and the hypotheses that follow from it in Table 1. The first four columns summarize two types of mechanisms through which structural change and institutional context should impact inequality in the labor market. First, by impacting the penalty to low skills, the premium to high skills (or both) or the premium to specific sectors (e.g. FIRE), structural change and institutional context impact the degree of inequality *within the working classes*. Second, by impacting the relative bargaining power of labor and management, structural change and institutional context impact the degree of inequality *between management and labor*. The fifth column lists premiums that are unique to top-income households. As we describe below, this uniqueness is from the higher ratio of capital to total income among top income households.

[Table 1]

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Table 1 shows that globalization of production and skill-biased technological change are thought to exacerbate the penalty to low-skills and the premiums to high-skills, workplace authority and top incomes. Financialization is thought to impact the premiums to FIRE sector employment, workplace authority and top incomes. The three egalitarian institutions are thought to impact the penalty to low-skills and the premiums to high-skills, managerial authority and top incomes. In what follows, we explicate how structural change and institutional context are theorized to drive these five distinct kinds income penalties/premiums, giving somewhat greater attention to how structural change and institutional context impact the top income premium because this literature is less well known.

2.1. High-Skill Premiums and Low-Skill Penalties

Production globalization impacts the demand (and thus price) for labor segments differentially, depending on their relative supply in a focal country (Alderson and Nielsen 2002; Wood 1994). In developed countries, the rise in North/South trade from globalization (i.e. import of manufactured goods from the South to the North) reduces the demand for low-skilled labor and increases the demand for high-skilled labor. Holding the relative supply of low and high-skill labor fixed, this reduces the relative wage of low-skilled labor and increases the relative wage of high-skilled labor. Through offshoring, the production globalization also expands the size of the labor market, which reduces the bargaining power of labor as a whole vis-à-vis management (Freeman 2007; Mahutga, Roberts and Kwon 2017).

Whether formulated in its earlier (e.g. Katz and Autor 1999) or more recent variants (e.g. Autor, Levy and Murnane 2003; see also Mahutga, Curran and Roberts 2018), the core distributional mechanism of technological change (TC) is that it is skill (or routine) biased. TC

allows for the automation of lower-skill (or higher routine) tasks, such as simple assembly or secretarial activities (see Katz and Autor 1999; Autor, Levy and Murnane 2003). TC should reduce the demand for low-skilled workers by automating low-skill occupations/tasks. Holding the supply of low-skill workers fixed, this would tend to increase the ratio of low-skill job seekers to low-skill jobs, and thereby increase the income penalty of low-skills. Simultaneously, TC increases the relative demand for highly skilled labor. Holding the supply of high-skill workers fixed, a growing share of high-skill jobs would reduce competition for high-skill occupations and thereby increase the wage-premium to high-skill workers. Moreover, TC is thought to assist higher skill labor, and thus increase its marginal productivity. That is, high-skill workers are more productive when aided with better technology, which further boosts their relative labor income.

Most egalitarian institutions are thought to reduce income inequality between low and high-skill workers. Unions promote a strong egalitarian ethos among organized workers and raise wages for both unionized and non-unionized workers (e.g. Alderson and Nielsen 2002; Western and Rosenfeld 2011). Countries with strong labor movements tend to have strong left parties in government, and thus stronger tendencies toward redistribution (e.g. Huber and Stephens 2001; Moller, Alderson and Nielsen 2009; Western 1997). Wage-coordination, or the extra-market socio-political processes whereby wage-rates are negotiated by labor, is also thought to limit skill penalties/premiums within the working class (Traxler 1999; Alderson and Nielsen 2002; Bradley et al. 2003; Pontusson et al. 2002; Wallerstein 1999). The primary mechanism is that it "decouples" changes in the variance of labor demand across skill gradients from changes in realized wages. That is, wages that are set through institutional negotiations cannot respond instantaneously to changes in demand for particular segments of labor.

Moreover, some research suggests that wage coordination improves the position of low-skill workers in particular (Wallerstein 1999).

Welfare states should also matter for the skill dynamics outlined above (Bradley et al. 2003; Kenworthy and Pontusson 2005). Strong welfare states should boost the disposable incomes of households with low-skill earners. Eligibility requirements underlying transfer payments are progressive (to varying degrees); they disproportionately target the post-tax and transfer incomes of low-skill (and thus low-wage) workers. Conversely, high-skill workers do not experience many of the economic risks that those with low-skills experience do, and thus receiver fewer transfer payments (particularly means-tested transfers and unemployment insurance).

2.2 Managerial Premiums

Production globalization is thought to increase the demand for talented managers capable of identifying capable suppliers and managing the far-flung contracting relations in the global South (Dencker 2009; Streek 1983). TC is thought to increase the managerial premium through different channels. It is theorized to increase both the range of responsibilities of (and thus demand for) managers, as well as the technical skills required to carry these responsibilities out (Acemoglu 2002; Autor, Levy and Murnane 2003).

Financialization refers to the growing share of economic output from finance-related activity. Some of this stems from the growth of the financial (and related) sector (e.g. Krippner 2012). Financialization is theorized to increase the bargaining power of management among non-financial firms that develop finance related divisions (Lin and Tomaskovic-Devey 2013). Financialization decouples surplus and production and enhances the perceived relative status of

finance *vis-a-vis* production. In tandem, these boost the bargaining power of management "in compensation-setting and surplus distribution processes" (Lin and Tomaskovic-Devey 2013: 1294).

Egalitarian institutions are theorized to reduce managerial premiums. Unions erode managerial prerogatives (to varying degrees) directly in contract language, which increases labor's bargaining power (Stepan-Norris and Zeitlin 2002). Thus, collectively bargained contracts secure a greater relative share of output for workers *vis-à-vis* management. Strong wage-coordinating institutions shift the locus of control over remuneration from firms to labor, and foster collective identity among differentiated workers. This represents an institutional source of bargaining power that weakens the power of management to set remuneration schedules in their favor (Wallerstein 1999). Finally, welfare states should reduce the managerial premiums through the same mechanisms as it reduces premiums to skill (e.g. redistribution away from managers).

2.3 FIRE Sector Premiums

Scholars link financialization to the end of the post-war golden age of rapid growth circa the 1970s, to deregulation that increased the scope of finance-related activities along with consumer debt, and to a parallel cultural shift in corporate governance that prioritized short-term stock valuations over longer-term corporate strategy (see Krippner 2012; Fligstein and Shin 2007; Tomaskovic-Devey and Lin 2011). Combined, these processes increase the rate of return to finance and related industries (insurance and real estate) relative to others (Lin and Tomaskovic-Devey 2013) and thereby increase the income of FIRE sector employees relative to those in other sectors.

2.4 Top Income Premiums

To the extent that top income households include workers with high skills or managerial positions or FIRE sector occupations, the labor market mechanisms discussed above extend rather readily. However, many note that a significant share of income among top income households comes from business and investment income rather than labor income (Kenworthy 2017; Kuhn, Schularick and Steins 2018; McCall and Percheski 2010; Rosenberg 2013). Indeed, we find in unreported analyses that the capital share (interest & dividends + rent + capital gains) of total income among households in the top 1% of their respective national income distributions is ~201% [95% ci 117%, 322%] greater than that of households in the bottom 99% on average. As such, some of the distributional mechanisms impacting top incomes are unique. At the most general level of abstraction, we argue that structural change increases top income premiums by (1) facilitating a disproportionate increase in business and investment income and (2) non-market channels that decrease the regulatory and fiscal burden of top incomes *vis-à-vis* the 99% (e.g. Piketty and Saez 2013). Conversely, we argue that egalitarian institutions impact the incomes of top incomes by (1) facilitating the capture of a greater share of output by the 99% and (2) redistribution. In what follows, we explicate these four abstractions in the context of the three types of structural change and egalitarian institutions discussed above.

2.5 Globalization of Production

Historically speaking, the globalization of production replaces (higher wage) labor in the global North with (lower wage) labor in the global South (Kollmeyer 2009; Mahutga et al. 2017). Holding consumer prices fixed, greater profitability for offshoring firms is a rather mechanical consequence. Owners of capital in top income households are in a key position to

capture this increased profitability of offshoring firms through rising share prices, either in the form of stock option packages for executives or through larger investment portfolios. More recent theory also suggests that the globalization of production reduces the marginal tax rate of top income households, and increases the marginal tax rate of the middle classes (Egger, Nigal and Strecker 2019; Piketty and Saez 2013). Here, corporations and the super-rich are both sensitive to high marginal tax rates and have the mobility to avoid them. As a consequence, governments rely on less mobile tax bases, including sales taxes and income taxes among relatively immobile workers outside top income households. One recent estimate suggests "the top 1 percent of income earners in the average OECD country faced a globalization-induced reduction in their relative labor income tax burden of 0.59–1.45 percentage points, whereas the tax burden *increased* by 0.03–0.05 percentage points for the median earner" (Egger et al. 2019: 355).

2.6 Technological Change

Skill-biased technological change, and automation in particular, substitutes human labor for machine labor. It also increases the productivity of the remaining labor. Both outcomes reduce the overall costs of production, and thereby increase profitability among firms that engage in TC. Their greater relative share of capital income allows top income households capture a larger share of this increased profitability than the rest. Moreover, recent literature suggests that technological change alters the way that some markets function, particularly those in technology-innovation intensive sectors. Building on Joseph Schumpeter's creative destruction, these scholars argue that high-tech sectors are more concentrated and produce more economic rent than others. The existence of large firms in these sectors leads to more pay for top executives, while the competitive pressure to innovate in these sectors further increases executive

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compensation sector-wide as firms compete for "talented" executives (McCall and Percheski 2010). Shareholders of the "winner take all" firms in these sectors (e.g. Apple, Microsoft, Facebook) also reap a disproportionate share of the rewards relative to average workers (see Guellec and Paunov 2017).

2.7 Financialization

The link from financialization to a growing share of income among top income earners has already been well described in the sociological literature. On one hand, investments in finance-related activities come at the expense of investments in production (Krippner 2001; Lin and Tomaskovic-Devey 2013; Tomaskovic-Devey and Lin 2011). This, combined with the higher profitability of finance-related activities, rewards executives and shareholders. The extra market story has also been told. Lin and Tomaskovic-Devey (2013) suggest that the ascendance of finance increased the rhetorical power that shareholders and executives bring to bear in their claims on firm-level resources. That is, apart from the market forces associated with disinvestment in production and hyper-investment in finance, financialization gave shareholders and executives—as the chief architects of financialization—a greater ability to extract economic rents from financializing firms.

2.8 Unions and Wage-Coordination

Just as with the globalization of production, TC and financialization boost (in theory) the bargaining power (and thus incomes) of top executives and shareholders at the expense of workers, unions and wage-coordination should, in theory, have the opposite effect (Volscho and Kelly 2012). The most obvious channel is the greater control of workers over the remuneration process, which increases their share income *vis-a-vis* shareholders and executives in top income

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households. But other research suggests that high rates of unionization also boost the incomes of non-union members (Western and Rosenfeld 2011). That is, by securing greater control of the remuneration process among unionized firms, unions also increase the labor share of revenue among non-unionized firms. Wage-coordination is a clear example of how this works, where the wage increases of non-represented workers get pegged to those of represented workers laboring under bargained contracts. Thus, unions and wage-coordination should reduce the top income premium.

2.9 Welfare States

Welfare states should reduce the top income premium through both market and non-market channels. The most straightforward non-market channel is the redistributive one outlined above. While in theory many welfare benefits (e.g. unemployment and pensions) are proportional to what beneficiaries pay over their lifetimes, the probability of receiving other benefits is lower among top income households. Such households experience smaller relative economic shocks (e.g. Pfeffer, Danziger and Schoeni 2014) and can better protect themselves from the shocks they do experience (e.g. Link and Phelen 1995). Thus, 99% households in countries with generous welfare states receive a greater share of cash and non-cash transfers and should therefore have larger relative post tax and transfer incomes than those in countries with less generous welfare states. This channel is outside the market because welfare state programs are the outcome of complex political processes with very long histories (e.g. Hicks and Swank 1992; Huber and Stephens 2001). Welfare states should also increase the labor share of income in the market (e.g. Morgan and Kelly 2013; Volscho and Kelly 2012). In a simplified bargaining game, unemployed workers can either accept a given employment package or remain unemployed. However, the income penalty to unemployment is smaller in countries with

generous welfare states, which mitigates perceptions of economic insecurity (Anderson and Pontusson 2007; Mughan 2007). Thus, labor market participants have more bargaining power *vis-à-vis* their employers.

3. Households and Income

The theoretical task of quantifying the effects of structural change and institutional context on income inequality is difficult. Disposable (e.g. post-tax and transfer) income is a fundamentally household level resource (Gottschalk and Smeeding 1997). Economically, larger families enjoy greater economies of scale (i.e. lower per-capita reproduction costs) than smaller families. Sociologically, employment and spending decisions are made through a variably dense overlay of social expectations and obligations arising from the family (McCall and Percheski 2010; Gerstel and Clawson 2014). Household income distributions are a function of additional processes not discussed above.

For example, the rise of single-headed households and female labor force participation create income gaps between single and dual-earner families (Burtless 1999; Daly and Valletta 2006; Jantti 1997; Peichl et al 2010; Lu et al 2011). Single-headed households with female heads may experience additional penalties associated with gender sorting and discrimination in the labor market (Cohen and Huffman 2003; Ridgeway 2011). Mothers may experience additional penalties owing to slower human capital accumulation over the life-course (Becker 1985; Kahn, Garcia-Manglano and Bianchi 2014) and forms of explicit and implicit bias unique to mothers (Budig and England 2001). Critically, income penalties to single-earner, single-female and single mother households are correlated with penalties owing to low-skills because divorce is more prevalent, and marriage is less prevalent, among individuals with lower socio-economic status

(Lundberg, Pollack and Stearns 2016). Similarly, positive assortative mating concentrates individuals with high socio-economic status in dual-earning households (Cancian and Reed 1999; Schwartz 2010), which makes it difficult to disentangle income premiums owing to dual-earner households from those owing to processes discussed above.

In short, "…it is already a difficult task to estimate the relative importance of factors affecting the distribution of earnings…it is even harder to assess the relative impact on overall inequality of mechanisms that may affect – largely independently – the distribution of earnings, on the one hand, and the distributions of income of households or families, on the other" (Alderson, Beckfield and Nielsen 2005: 410). Thus, most previous research considers these factors in isolation, which makes it difficult to assess their relative importance.

By contrast, we develop an empirical framework to analyze household composition and labor market processes in a single empirical framework. In this framework, households are the unit of analysis and disposable household income is the dependent variable. We regress household income in covariates capturing the composition of the household, the theoretically motivated labor market characteristics of household earners described above, and the interaction of the latter with structural change and institutional context. This framework allows us to identify the impact of structural change and institutional context on household income penalties/ premiums *net* of the effects of household composition without ignoring the centrality of households to the generation and distribution of income.

4. Data/Methods

Sample

[Table 2]

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Our data come from the LIS Cross-National Data Center in Luxembourg, which is the most comprehensive source of cross-nationally representative and harmonized micro-data in the world. Our sample consists of the entire population of LIS country-years for which occupational and macro-level data are available. In fact, our sample is larger than that reported directly by the LIS because we include additional country-years for which country-specific occupational schemes were recently converted into ISCO-88 (LIS 2018; also see Mahutga, Curran and Roberts 2018). In total, we analyze 1,084,009 to 1,003,078 households in 74-81 country-years among 13-14 countries from 1974 to 2013.[1] A list of countries and years appears in Table 2.

Household Income

Our dependent variable is disposable household income, which is the post-tax and transfer income contributed by all income-earning members of the household. We normalize for household size by dividing household income by the square root of household size (e.g. Brady, Finnigan, and Huebgen 2017). Household income will also vary across countries and over time because of differences in market exchange rates, prices and inflation. To account for this, we converted all household incomes into 2011 international dollars. We also logged these incomes for skew.

Household Level Variables

> *Skill, Workplace Authority and FIRE Sector Earners*

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[1] Technological Change is missing for Switzerland (2010, 2013), Ireland (2010), Luxembourg (2013) the UK (2010, 2013) and USA (2013), yielding 74 country-years. FIRE sector employment is missing for Switzerland (2013), the UK (2013) and USA (2013), yielding 78 country years. Welfare State Generosity is missing for Luxembourg (all years), yielding 75 country-years.

We coded households according to the occupation and skill of household head and partner earners. Give our discussion above, we identified head and partner earners that were *high-skill*, *low-skill*, *managers* and *FIRE sector workers*. The detailed LIS variables, coding procedures and excluded categories appear in Table 3.

Top Incomes

We define top-income households as those with post-tax and transfer income at or above the top 1% of the national-year income distribution as reported by the LIS. This 1% threshold is almost certainly *lower* than the actual 1% threshold, which makes our estimates somewhat conservative. See Table 3 for a more detailed discussion.

Household Composition

Consistent with our explication of the distributional effects of household composition, we created three categories of households. *Dual-earner households* have earning heads and partners. *Single female households* are headed by females without children. *Single mother households* are headed by females with children. The detailed LIS variables, effective excluded categories and coding procedures used appear in Table 3.

Baseline Household Controls

Household income will also vary systematically by the age of household earners and according to random shocks not captured by our household composition and labor market covariates. Thus, we measure *household earner age* and include a squared term because incomes generally increase from young to middle age, and then decrease again as household earners enter retirement. We also measure *unemployed households* as those in which neither the head nor

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partner are employed. This variable captures unobservable processes not captured by the education, skill or occupational status of household members. Finally, there are a multitude of various household compositions untheorized here. Some households may contain earning children, other relatives or multiple families. Such household formations are beyond of the scope of the present article, and we control for them with *other household income*, which is equal to the personal incomes of household members that are neither head earners nor their partners. The detailed LIS variables and coding procedures used appear in Table 3.

Structural Change and Institutional Context

We measure three processes of structural change. We measure the *globalization of production* with the ratio of Southern manufacturing imports to total imports (Mahutga, Roberts and Kwon 2017). We measure technological change with the ratio of value added in information and communication technology to GDP (Michaels, Natraj and Van Reenen 2011). We measure Financialization with the size of the Finance, Insurance and Real Estate (FIRE) sector (Lee et al. 2011).

We also measure the three egalitarian institutions that form the pillars of the post-WWII class compromise in rich democracies discussed above. First, we measure *Union Density* with the percent of the labor force that is unionized (Visser 2015; OECD 2016b). Second, we measure *wage coordination* with Kenworthy's (2001) coordination index (Brady, Huber and Stephens 2014). Finally, we measure the welfare state with the updated generosity index (Scruggs, Jahn and Kuitto 2014). Detailed discussions of these variables appear in Table 3.

[Table 3]

Regression Models

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Our full empirical models are depicted in equation 1.

(1) $Y_{ijt} = a + \beta x_{ijt} + \beta \delta_{jt} + \beta \theta_{jt} + \beta \gamma 1_{ijt} + \beta \gamma 2_{ijt} + \beta \gamma 1_{ijt} \delta_{ijt} + \beta \gamma 2_{ijt} \delta_{jt} + \beta \emptyset_{ijt} + \beta z_j + \beta \tau_t + \varepsilon_{ijt}$

In equation (1), i indexes households, j indexes countries and t indexes time. Y is household income. x is an n by k matrix of household compositional covariates that vary across households, countries and time. γ is an n by k matrix of the labor market characteristics of household earners that vary across households, countries and time. δ is a j by t matrix of socio-economic processes and institutional configurations that vary across countries and time. $\beta \gamma 1_{ijt}$ and $\beta \gamma 2_{ijt}$ are the head and partner's labor market penalties/premiums, respectively. $\beta \gamma 1_{ijt} \delta_{ijt}$ and $\beta \gamma 2_{ijt} \delta_{jt}$ are the moderating effects of macro context on these penalties/premiums. $\emptyset_{ijt}$ is the i by j by t matrix of baseline controls discussed above. We estimate these models with OLS, but z (N-1 country dummies) and τ (T-1 time dummies) yield two-way fixed effects models; they eliminate unobserved processes that are both country-specific but time-invariant, and time-specific but country-invariant. We adjust our coefficients and standard errors with the LIS' selection probability weights. Because we observe heterogeneous households nested in countries that we observe multiple times, we also employ variance/covariance matrices that are robust to heteroscedasticity and arbitrary serial correlation within countries (Rogers 1994). Because of the directional nature of our hypothesis in Table 1 and the conservatism of our testing procedures (see below), we conduct one-tailed tests.

Given the hypotheses depicted in Table 1, our key *null* hypothesis tests relate to $\beta \gamma 1_{ijt} \delta_{ijt}$ and $\beta \gamma 2_{ijt} \delta_{jt}$. We estimate the cross-level interactions between macro-context and micro-penalties/premiums separately for two reasons. The first and primary reason is

substantive: our goal is not to adjudicate the degree to which any one process of structural change or type of egalitarian institutions is more important than another. Rather, our goal is to identify the micro-mechanisms by which each process affects income. That is, our goal is to compare the efficacy of the micro-mechanisms across processes of structural change and types of egalitarian institutions. Second, with 74-81 country-years, we lack sufficient degrees of freedom (*df*) at the country-year level to estimate simultaneously cross-level interactions between all six macro-contextual factors and the household level penalties/premiums they are theorized to effect.[2]

5. Results

[Table 4]

Table 4 reports our baseline penalties/premiums. Coefficients on dummy-coded covariates represent the conditional mean difference in logged household income between households in the focal and excluded categories (see Table 3 for excluded categories). These are thus easy to interpret as percentage differences. For example, unemployed households experience a ~28.2 percent (model 1) income penalty *vis-a-vis* employed households, on average.[3] The covariates on household age and its square capture the logged percentage increase in household income per unit increase in each covariate. Thus, household incomes increase by

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[2] Our large number of level 1 observations (households) do not impact our degrees of freedom at level 2 (country-years) (e.g.West, Welch and Galecki 2006). Our fixed country and time effects eat up 32 *df*, leaving 42-49 to work with. As can be seen in Table 1, each macro-contextual factor is hypothesized to interact with three to four penalties/premiums. Because we consider the labor market characteristics of head earners and their employed partners, this creates a total of 40 two-way cross-level interactions to estimate (five to seven per macro-contextual factor). Combining these together in a single model would also require us to estimate a large number of "tacit" interactions up to and including a six-way interaction between the six macro-factors (Braumoeller 2004). Not only would this push our *df* below zero, it would produce coefficients that were almost impossible to interpret in any case.

[3] Using the base-10 log, these percentages are equal to $(10^b-1)*100$, where b is the reported coefficient.

4.47 percent per year in age, on average, and decrease two-tenths of one percent per unit increase in age squared. The apex of this parabola—the age at which incomes begin to decline with age—is roughly 64. Finally, the covariate on (logged) other household income (OHI) is an elasticity; its coefficient reflects the percentage change in household income per one percent increase in OHI. On average, household incomes increase by seven-tenths of one percent for every one percent increase in OHI.

The top three rows of model 1 report the income penalties for single female and single mother households, as well as the premium to dual-earner households. The inclusion of all three renders households with single male heads (with and without children) the excluded category. On average, single mother households experience a roughly 25.2 percent income penalty relative to single male-headed households. Dual earner households experience a ~29.1 percent income premium relative to single male-headed households. Somewhat surprisingly, single-female headed households without children do not experience a significant income penalty *vis-à-vis* single male-headed households, perhaps reflecting the positive association between socio-economic status, delayed marriage and child-birth and labor force participation among women.

Model 2 includes the entire set of covariates capturing the labor market status of household earners. Consistent with our claim that the income penalties/premiums to household composition are correlated with those from the labor market status of household earners, the estimated penalties/premiums to the former change considerably when controlling for the latter. The income penalty to households with single mother heads drops to 20.2 percent, while the dual earner premium drops to 18.3 percent. Thus, as much as twenty percent of the single mother penalty estimated in model 1 can be attributed to the labor market status of single mothers. Similarly, as much as thirty-seven percent of the income premium to dual earner households can

be explained by the labor market status of household earners. These penalties/premiums change little when we control for top income households in model 3; the dual-earning premium increases by 1 percentage point.

Figure 1 depicts the income premiums and penalties from models 2 and 3 in percentage terms. According to model 2, households headed by high-ed workers enjoy a ~34 percent income premium relative to those headed by medium and low-ed earners. Households headed by low-skill workers experience a ~21 percent income penalty relative to those headed by medium and high-skill workers. Households headed by managers experience a ~19 percent income premium relative to those headed by non-managers, and those headed by fire sector workers experience a ~14 percent income premium relative to those headed by workers in other sectors. The income penalty for households with low-skilled earning partners is ~13 percent relative to medium and high-skilled earning partners. The income premium to households with earning partners that are highly educated, managers or FIRE sector workers is 18, 16 and 13 percent respectively.

Consistent with our argument that mechanisms operating outside the labor market play an important role in boosting the share of income among top income households, most of the covariates change very little when the top income premium is controlled. However, there are five premiums that change by two percentage points or greater that are theoretically interesting. The premiums to high education and workplace authority decrease by 3 and 2 percentage points for heads and partners, respectively. The premium to FIRE sector heads decreases by 2 percentage points. These changes are consistent with literature on top income households, which suggests they tend to include earners with high education, managerial and FIRE sector occupations (e.g. Kenworthy 2017; Kuhn, Schularick and Steins 2018; McCall and Percheski 2010; Rosenberg 2013). Nevertheless, these changes are rather small. Thus, while some of the income captured by

top-income households owes to their status in the labor market, a significant share must also reflect their disproportionate share of non-wage/salary income (also see our supplementary analysis discussed on page 9 above). That is, this 1% covariate captures a multiplicity of mechanisms outside the labor market that benefit top-income households.

[Figure 1]

The penalties/premiums in the bottom pane of Figure 1 represent our baseline. With Table 5, we examine how these penalties/premiums vary with structural change and institutional context. To proceed, we report interaction terms between type of structural change/institutional context and the penalties/premiums they are theorized to influence in the literature described above and summarized in Table 1. These interaction terms represent the slope of the focal macro-contextual factor on the focal micro-level penalty/premium The base effects appear in Table A2 in the appendix.

[Table 5]

In the labor market, the globalization of production is the most *prolific* process of structural change, insofar it exacerbates the greatest number of penalties/premiums. It boosts the income premium to households with high-ed and managerial heads and partners, and exacerbates the income penalty to those with low-skill heads. Technological change increases the income premium to households with highly educated and managerial head earners, as well as managerial partner earnings. Somewhat surprisingly, much of the distributional effect of *financialization* owes to the greater bargaining power it transmits to managers rather than boosts to FIRE sector worker incomes, per se. Financialization increases the income premium to households with

managerial heads and partners but has no significant effect on the premium to households with FIRE sector workers.

Union density reduces the income premium to high education (heads and partners) and managerial status (partner), as well as the income penalty to low-skills (heads). Wage coordination reduces the income premium to households with highly educated heads and managerial heads and partners. Welfare state generosity reduces the premium to households with highly educated and managerial heads and partners as well as the penalty to those with low skills heads. Finally, structural change significantly increases the premium of top incomes, while egalitarian institutions significantly reduce this premium.

[Figure 2]

The substantive importance of these moderating effects is difficult to discern from the coefficients reported above because the macro-processes vary widely in their distribution. Thus, Figure 2 reports in percentage terms the *maximum* impact of macro-context on the five penalties/premiums under examination. The maximum impact is given by the exponentiated difference between the coefficient on the focal penalty/premium at the maximum and minimum observed level of structural change and institutional context. Focusing on the labor market, globalization's maximum effects range in size from -6 to 13 percent. The maximum impacts of technological change vary from 14 to 28 percent, while those of financialization vary from 13 to 16 percent. Turning to the maximum impact of egalitarian institutions, unionization is the most prolific institution, and its maximum impacts vary from -25 to 15 percent. The maximum impacts of wage coordination and welfare state generosity vary from -8 to -13 and -13 to 7 percent, respectively. The maximum impact of structural change on the income share of top

incomes varies from a 65 (globalization of production) to a 167 (financialization) percent

increase. The maximum impact of egalitarian institutions on the top income premium varies from

-25% (welfare state) to -56% (unionization).

[Figure 3]

To assess the relative importance of these micro-level mechanisms overall, Figure 3

reports the share of theorized micro-mechanisms of macro-context that are significantly different

from zero (left) and the sum of the increase of these micro-mechanisms across observed levels of

macro-context (right). Structural change (16.7) and institutional context (33.3) only moderate a

small share of theoretically possible income *penalties*, all of which involve the low-skill penalty

to household heads. Conversely, structural change and institutional context moderate at least half

of the theoretically possible income *premiums*. They moderate 50 (structural change) and 66.7

(institutional context) percent of the high-skill premiums, 100 (structural change) and 83.3

percent of the managerial premiums and 100 (both) percent of the top income premiums. By this

criteria, income premiums are more important micro-mechanisms of structural change and

institutional context than income penalties. Among premiums in the labor market, managerial

premiums are more important than high-skill premiums.

[Figure 4]

What do the moderated micro-level penalties/premiums tell us about the relative

importance of labor market mechanisms vs. those among top incomes that are independent of the

labor market? To answer this question, Figure 4 compares the sum of the maximum impact of

labor market penalties/premiums to that for the top income premium for each process of

structural change and institutional context. First, the disequalzing effect of structural change on

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labor market penalties/premiums is smaller than its disequalzing effect on top incomes. Second, and conversely, the equalizing effect of egalitarian institutions on top income premiums is smaller than their equalizing effects in the labor market. That is, the most important distributional mechanisms of structural change operate outside the labor market while the most important distributional mechanisms of egalitarian institutions operate inside the labor market.

6. Conclusion

How do structural change and institutional context impact income inequality in rich democracies? Our analysis focuses upon the micro-mechanisms theorized in macro level research. In particular, we examine the impact of structural change and institutional context on labor market and top-income penalties/premiums. We considered three processes of structural change—economic globalization, technological change and financialization—and three types of egalitarian institutions—unionization, wage coordination, and welfare states—that dominate the sociological literature. Our results suggest that these processes either exacerbate or ameliorate the penalties/premiums to skill and workplace authority in the labor market, as well as the top income premium and yield five broad contributions.

First, our analysis sheds new empirical light on the micro-mechanisms by which each process of structural change and type of egalitarian institution impact income inequality. The impacts of technological change work through both skill and workplace authority in the labor market, and through top incomes outside the labor market (c.f. Leicht 2008). Financialization's effects are limited to income premiums, but in ways that are somewhat surprising. Financialization increases managerial premiums rather than FIRE sector premiums, per se. Most of its impact can be attributed to the rising premium of top incomes. While the absence of

moderating effects for FIRE sector premiums is somewhat surprising, these results are broadly consistent with sociological accounts of financialization outlined by Lin and Tomaskovic-Devey (2013) and Tomaskovic-Devey and Lin (2011). Globalization's effect is diffused among several channels inside and outside the labor market. It exacerbates low-skill penalties (heads) and premium to high-skills and management (heads and partners). These effects are entirely consistent with more recent work on the distributional effects of globalization (e.g. Alderson and Nielsen 2002; Mahutga, Roberts and Kwon 2017). However, our analysis is the first to observe a positive effect of the globalization of production on top incomes (c.f. Egger, Nigal and Strecker 2019; Piketty and Saez 2013).

Among the egalitarian institutions examined here, unions reduce the low skill penalty (heads), as well as the income premiums to high skills (heads and partners) and management (heads). Unions also reduce top income premiums. Wage-coordination and welfare-state generosity reduce the income premiums to high skills (heads) and management (heads and partners), as well as the top income premium. However, welfare states also provide a modest boost to households headed by low-skill earners (e.g. Mahutga, Roberts and Kwon 2017). All three egalitarian institutions reduce the top-income premium, but these effects are more modest than the opposite effects of structural change.

Second, and consistent with the greater distributional weight of "upper-tail" inequality observed elsewhere (Alderson, Beckfield and Nielsen 2005), we observe that income *premiums* are much more important micro-mechanisms than income *penalties*. All told, the size of the moderating effect of structural change and institutional context on income premiums is just over 27 times larger than their moderating effects on income penalties. Thus, while arguments linking structural change to the immiseration of the working class are not without evidence, there is

much stronger evidence for arguments linking it to the rapid increase in high-skill, managerial and top-income premiums.

Third, some of the micro-mechanisms for structural change proposed in the literature are more important than others. In the labor market, workplace authority is the most important distributional micro-mechanism of structural change and institutional context (e.g. Wodtke 2016). They moderate eleven of twelve (91.7%) managerial status covariates. The second most important micro-mechanism in the labor market is the high-skill premium. Macro-context moderates seven of twelve (58.3%) possible high skill premiums.

Fourth, while labor market mechanisms are far from trivial, our analysis highlights the saliency of micro-mechanisms unique to top incomes (e.g. Kenworthy 2017). All of the processes of structural change and egalitarian institutions moderate the top income share, and these moderations are larger than any single labor market process (also see below). Moreover, top-income premiums are largely independent from penalties/premiums in the labor market (see Figure 1), and the moderating effects of structural change and institutional context we observe are *net of all the micro-mechanisms observed in the labor market*. Future sociological work on rising inequality would be well served by identifying additional drivers of managerial, high-skill and, in particular, top-income premiums (Goldstein 2012; Horowitz 2018; Piketty and Saez 2013; Volscho and Kelley 2012).

Fifth, structural change and institutional context are disproportionately countervailing in the labor market and among top incomes. Structural change has larger disequalizing effects on top incomes than it does on the labor market. Conversely, egalitarian institutions have larger equalizing effects in the labor markets than on top incomes. If it is true that processes effecting

top incomes are the bulk of the story of contemporary inequality trends (Alderson, Beckfield and Nielsen; Kenworthy 2017; Piketty 2013), the disproportionate focus of three key post-war egalitarian institutions on the labor market may undermine their *re*distributional efficacy. While our article provides an important first step toward unpacking the micro-mechanisms of macro-contextual drivers of inequality, additional research is needed.

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Table 1: Hypothesized Mechanisms of Structual Change and Institutional Context

	High-Skill Premium	Low-Skill Penalty	Managerial Premium	FIRE Sector Premium	Top Income Premium
Globalization of Production	+	-	+	NA	+
Technological Change	+	-	+	NA	+
Financialization	NA	NA	+	+	+
Unions	-	+	-	NA	-
Wage Coordination	-	+	-	NA	-
Welfare States	-	+	-	NA	-

Notes: "+" indicates a positive effect, "-" indicates a negative effect and "NA" inicates no theorized effect. Positive effects on income premiums and negative effects on income penalties are exacerbating. Positive effects on income penalties and negative effecs on income premiums are ameliorating.

Table 2: Countries and Years Included

Country	Years
Austria	2004, 2007, 2010, 2013
Belgium	1995, 2000
Denmark	1987, 1992, 2004, 2007, 2010, 2013
Finland	1987, 1991, 1995, 2000, 2004, 2007, 2010, 2013
France	1984, 1989, 2005, 2010
Germany	1984, 1989, 1994, 2000, 2004, 2007, 2010, 2013
Greece	2004, 2007, 2010, 2013
Ireland	1994, 1995, 1996, 2000, 2004, 2007, 2010
Luxembourg	1997, 2000, 2004, 2007, 2010, 2013
Netherlands	1990, 1999, 2004, 2007, 2010, 2013
Spain	1990, 1995, 2000, 2004, 2007, 2010, 2013
Switzerland	2007, 2010, 2013
United Kingdom	1999, 2004, 2007, 2010, 2013
United States	1974, 1979, 1986, 1991, 1994, 1997, 2000, 2004, 2007, 2010, 2013

Table 3: Independent Variables.

Variable	Concept	Excluded Category	Measurement and Source
Household Earners			
High Skill Earner	Equals 1 if household earner completed tertiary education, otherwise 0.	Less than a tertiary education.	LIS trichotomous education variable (educ). This is a harmonization of national education systems using ISCED. ISCED levels 0-2 correspond to less than a secondary education. ISCED levels 3 or 4 correspond to a secondary education. ISCED categories 5 and 6 correspond to a tertiary education.
Low Skill Earner	Equals 1 if earner's occupation is "labourers/elementary occupations," otherwise 0.	Other skill workers and professionals.	LIS trichotomous occupational variable (occa1) category 1. Categories 2 (ISCO-88 3-8, 10; other skilled workers) and 3 (ISCO-88 1 and 2; managers and professionals) would be the excluded category except that we control for managerial occupations.†
Managerial Earner	Equal to 1 where the earner's occupation is a manager, otherwise 0.	Other skill workers and professionals.	LIS variable occb1 category 1. This category corresponds to ISCO-88 category 1, which includes corporate managers and general managers. Our inclusion of low-skill and managerial earners renders other skill workers and professionals the excluded category.
FIRE Sector Earner	Equals 1 if earner occupation is in financial intermediation or real estate, renting and business activities and otherwise 0.	All other industries.	LIS harmonized indb1, which is a harmonization of national industrial classifications into nine industries representative of the International Standard Industrial Classification (ISIC) Rev. 3.1. Financial intermediation is indb1 category 6, and real estate, renting and business activities is indb category 7. These correspond to ISIC categories J and K
Top Incomes	Equals 1 if household is in the top 1% of national income distribution, otherwise 0.	All other households	We identified the 1% income thresholds in each country-year and flagged households with income at or above these thresholds. While the LIS is the world-standard source for harmonized micro-data, income surveys are notoriously incomplete with respect to very top incomes because (1) such households are less likely to appear with random sampling and (2) very wealthy individuals under-report their incomes.
Household Composition			
Dual Earner Household	Equals 1 if married or cohabitating partners are both employed, otherwise 0.	Single earner households.	LIS variables pi (personal income) and relation (relationship to household head). Dual earning households equal 1 if they have a member with relation of 2200 or less and pi > 0 but < than max pi of household.*

Variable	Concept	Excluded Category	Measurement and Source
Single Mother Household	Equals 1 if household head is a single mother, otherwise 0.	Male-headed households with and without children.+	LIS variables sex and hhtype. Sex = 2 (female) and hhtype = any of the one *parent* household types.
Single Female Household	Equals 2 if the household head is a single woman without children, otherwise 0.	Male-headed households with and without children.	LIS variables sex and hhtype. Sex = 2 (female) and hhtype = 100 (one person household).
Baseline Household Controls			
Earner Age	In single earner households, age of head. In dual-earner households, average age of head and partner. Also enters as a squared term.	NA	LIS variables age among household heads and partners.
Unemployed Household	Equals 1 if head (single earner) or head and partner (dual earner) are unemployed.	Employed households.	LIS variable emp. In single earner households, this equals 1 if the head is unemployed. In dual earner households, this equals 1 if both the head and partner are unemployed.
Other household income	Sum of labor income from earners who are neither household heads or partners.	NA	Sum of personal income of household members who are neither head nor partners.
Structural Change			
Globalization of Production	Penetration of manufacturing imports from poorer countries.	NA	Ratio of manufacturing imports from non-OECD and non-COMECON countries to total imports. See Mahutga, Roberts and Kwon (2017) on why this is preferable to Southern imports over GDP. These data come from the UN Statistics Division (2016).
Technological Change	Advance of automation technology.	NA	We measure technological change by dividing Information and Communication Technology (ICT) value-added in by GDP in current prices. We draw this measure from Michaels, Natraj, and Van Reenen (2011) who argue that much of TC emanates directly from the Information and Communication Technology (ICT) industry, and find that this ICT value-added measure polarizes the labor market based on skill and job tasks. These data come from the OECD's Structural Analysis database (OECD 2016a).
Financialization	The size of the Finance, Insurance and Real Estate (FIRE) sector.	NA	We follow Lee et al. (2011) by measuring financialization with the percentage of the labor force in the Finance, Insurance and Real Estate (FIRE) sectors. These data come from the OECD's Structural Analysis Database (OECD 2016a).

Table 3 Continued

Variable	Concept	Excluded Category	Measurement and Source
Institutional Context			
Unionization	Share of labor force that is unionized.	NA	We obtained Union Density information from Visser (2015) and supplemented it with additional data from the OECD (2016b). The density refers to the ratio of wage and salary earners that are union members divided by the total number of wage and salary earners.
Wage Coordination	The extra-market institutional capacity to set and coordinate wage rates across the economy.	NA	We measure wage-coordination with Kenworthy (2001), and updated by Brady, Huber, and Stephens (2014). Scores ranged from 1 to 5, with 1 indicating fragmented bargaining at the plant-level and 5 indicating centralized bargaining amongst large union and business confederations or government-imposed wage schedules.
Welfare States	The generosity of the welfare state	NA	We measure the welfare state with the updated generosity index (Scruggs, Jahn and Kuitto 2014) which expands on and updates the Esping-Anderson's (1990) decommodification index. As opposed to measuring transfer payments directly, the "generosity index" combines information on benefit replacement rates, qualifying conditions, and elements of the insurance coverage or take- up rates for unemployment, sickness and retirement programs. More generous welfare states are those that provide relatively large outlays for longer periods of time, and have minimal eligibility requirements.

Notes:

†There are more country waves listed in Table 2 than include the requisite ISCO-88 occupational codes in the LIS. We expanded the country/time coverage by employing recently recoded country-specific occupational schemes described in Mahutga, Curran and Roberts (2018).

*Our definition of household "head" is not the survey definition of household head, which varies across countries. Rather, the head is the highest earning cohabiting individual in the household regardless of how they identify (see Brady, Finnigan, and Huebgen 2017).

+We combine single male and single father households together because the proportion of single-father households is very low.

Table 4: Regression of HH Income on HH Composition and Labor-Market Processes

|	(1)	(2)	(3)
Top Incomes			
The 1%			0.646***
			(0.022)
Household Composition			
Single Female Head	0.007	-0.005	0.000
	(0.008)	(0.008)	(0.007)
Single Mother Head	-0.126***	-0.098***	-0.099***
	(0.010)	(0.006)	(0.007)
Dual Earner Household	0.111***	0.073***	0.076***
	(0.008)	(0.007)	(0.007)
Head Labor Market			
High Education Head		0.136***	0.127***
		(0.011)	(0.010)
Low Skill Head		-0.102***	-0.101***
		(0.005)	(0.005)
Manager Head		0.085***	0.076***
		(0.002)	(0.003)
FIRE Sector Worker Head		0.054***	0.046***
		(0.003)	(0.003)
Partner Labor Market			
High Ed Partner		0.071***	0.063***
		(0.002)	(0.002)
Low-Skill Partner		-0.058***	-0.056***
		(0.004)	(0.004)
Manager Partner		0.064***	0.058***
		(0.005)	(0.006)
FIRE Sector Partner		0.055***	0.051***
		(0.003)	(0.003)
Baseline			
Unemployed Household	-0.089*	-0.155***	-0.146***
	(0.036)	(0.032)	(0.031)
Household Age	0.016***	0.012***	0.012***
	(0.002)	(0.001)	(0.001)
Household Age Squared	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	0.000
Other Household Earner Income	0.012***	0.014***	0.014***
	(0.001)	(0.001)	(0.001)
Constant	3.971***	4.013***	4.017***
	(0.040)	(0.026)	(0.026)
N	1084009	1084009	1084009
R^2	0.188	0.310	0.362

Note: Unstandardized coefficients. Heteroskedastic and serial correlation consistent standard errors in parentheses. Unknown education, period and country fixed-effects not shown. *p<.05; **p<.01; ***p<.001 (one-tailed tests)

Table 5: Regression of HH Income on HH Composition, Skill, Workplace Authority, the 1% and Interactions with Macro-Context

|	(1) Southern Imports	(2) Technological Change	(3) Financialization	(4) Union Density	(5) Wage Coordination	(6) Welfare State Generosity
Macro Context (MACRO)	0.308	-0.014*	-0.005	-0.002	0.013	-0.001
	(0.404)	(0.008)	(0.003)	(0.003)	(0.009)	(0.004)
1% X MACRO	**1.177*****	**0.030****	**0.022***	**-0.005***	**-0.039*****	**-0.006***
	(0.177)	**(0.007)**	**(0.007)**	**(0.003)**	**(0.005)**	**(0.002)**
Labor Market X MACRO						
High-Ed Head X MACRO	**0.286****	**0.008***		**-0.002****	**-0.016*****	**-0.003****
	(0.070)	**(0.003)**		**(0.000)**	**(0.003)**	**(0.001)**
Low-Skill Head X MACRO	**-0.144****	-0.002		**0.001***	0.005	**0.001***
	(0.039)	(0.001)		**(0.000)**	(0.003)	**(0.001)**
Manager Head X MACRO	**0.140****	**0.004***	**0.003****	-0.000	**-0.009***	**-0.001***
	(0.031)	**(0.002)**	**(0.001)**	(0.000)	**(0.004)**	**(0.001)**
FIRE Head X MACRO			0.001			
			(0.002)			
High-Ed Partner X MACRO	**0.155***	0.002		**-0.001***	-0.003	-0.000
	(0.058)	(0.003)		**(0.000)**	(0.004)	(0.000)
Low-Skill Partner X MACRO	0.029	-0.001		-0.000	0.001	0.001
	(0.078)	(0.002)		(0.000)	(0.004)	(0.001)
Manager Partner X MACRO	**0.215***	**0.005***	**0.003***	**-0.001****	**-0.015****	**-0.003*****
	(0.065)	**(0.003)**	**(0.001)**	**(0.000)**	**(0.003)**	**(0.000)**
FIRE Partner X MACRO			-0.001			
			(0.001)			
Constant	4.010***	4.101***	4.079***	4.055***	3.996***	4.040***
	(0.034)	(0.056)	(0.039)	(0.062)	(0.028)	(0.102)
N	1084009	1003078	1028451	1084009	1084009	1068235
R^2	0.364	0.363	0.361	0.363	0.364	0.363

Note: Unstandardized coefficients. Heteroskedastic and serial correlation consistent standard errors in parentheses. Unknown education, period and country fixed-effects not shown. Base Effects appear in Appendix Table A1 *p<.05; **p<.01; ***p<.001 (one-tailed tests).

Figure 1: Unconditional Household Income Penalties and Premiums to Household Composition, Skill, Workplace Authority and the 1%.
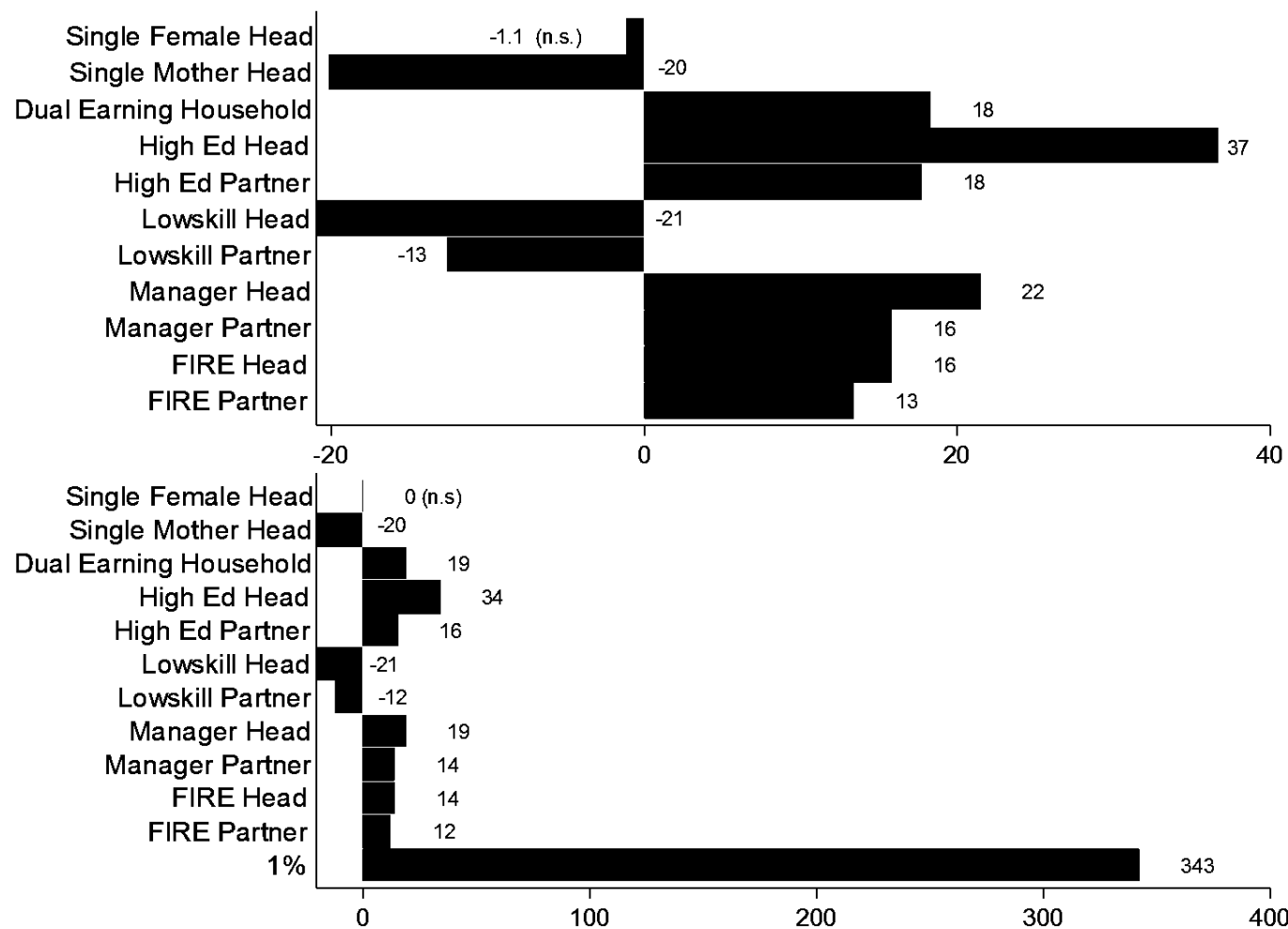

Notes: Top graphic is based on Model 2 of Table 4. Bottom Graphic is based on model 3 of Table 4.

Figure 2: Maximum Impact of Structural Change and Institutional Context on Penalties and Premiums.
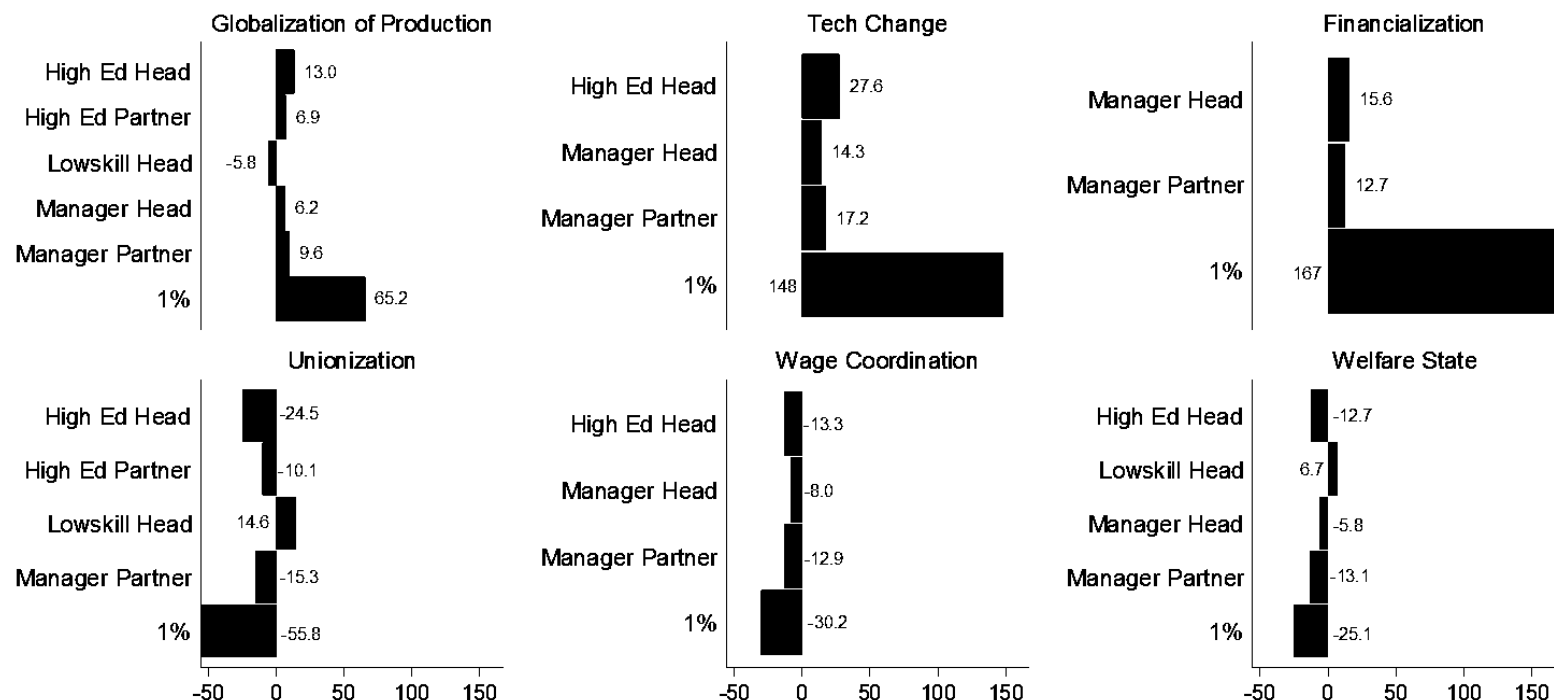

Notes: Bars represent the exponentiated difference between the estimated penalty/premium at the minimum and maximum observed maxro-context and are derived from Table 5. To put these maximim impacts into greater perspective, at maximum production globalization the low-skill penalty for heads is approximately -23 percent, the high-skill head premium is about 42 percent, and the top income premium is 465 percent. At maximum technological change, the managerial and highly educated head premium is 33 and 59 percent, respectively, while the top income premium is 730 percent. At maximum financialization, the managerial head and partner premiums are 29 and 21 percent, and the top income premium is 664%. At maximum unionization, the income high-skill head and partner premium drops to about 5 percent, and top income premium drops to just 119 percent. At maximum wage coordination, the high-skill and managerial head premiums drop to 19 and 10 percent, respectively, while top the top income premium falls to 229 percent. At maximum welfare state generosity, the high-skill head premium drops to about 22 percent, while the low-skill head penalty drops to about -17 percent. The income top income premium is just 262 percent.

Figure 3: Relative Importance of Micro-Mechanisms for the Distributional Effects of Structural Change and Institutional Context
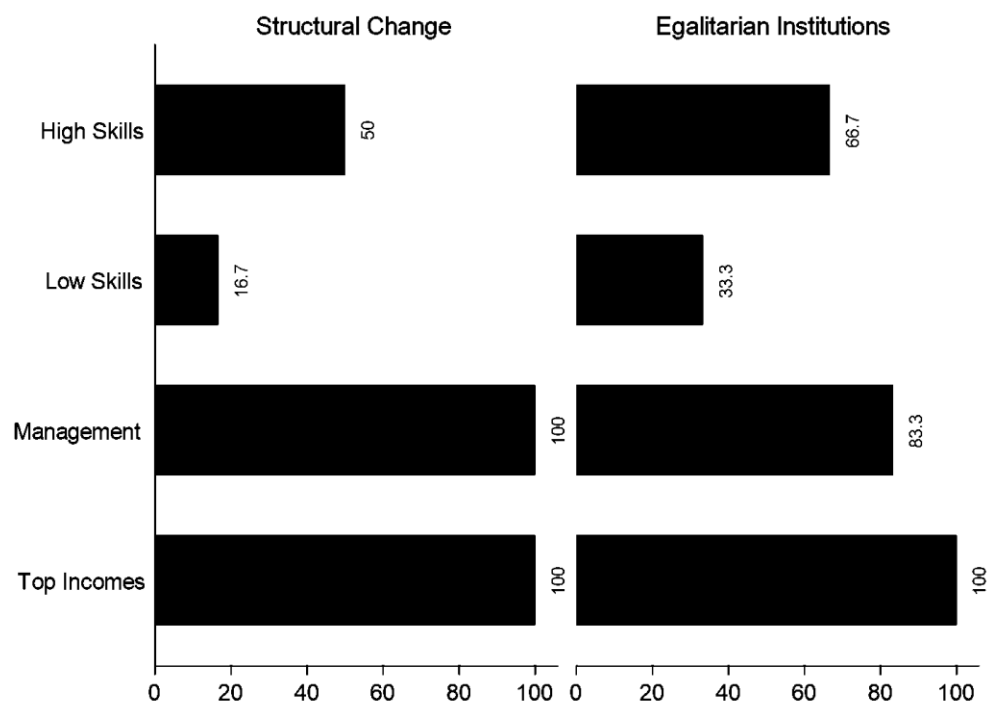
Notes: Bars represent the percent of theorized interactions involving focal penalty and premium significantly different from zero. Labor market penalties/premiums inclode both head and partners.

Figure 4: The Relative Importance of Labor Market Penalties/Premiums and Top Income Premiums.
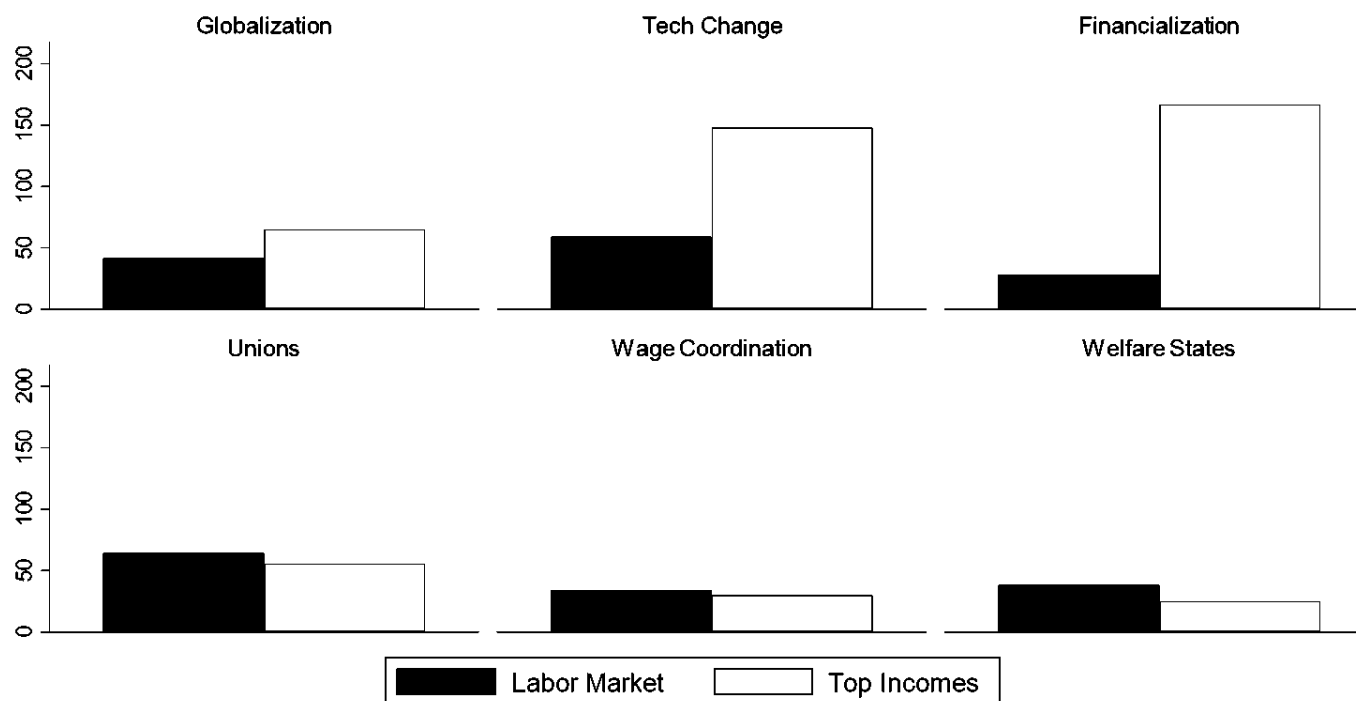
Notes: Left-hand bars are the sum of the maximum impacts across the significant labor market penalties and premiums in Figure 2. Right hand bars are the maximium impacts on the top income premiums. Labor market maximum impacts inclode both head and partners. Maximum impact involving penalties reverse coded for each of interpretation.

Appendix

Table A1: Base Effects from Interaction of Skill, Workplace Authority and the 1% with Macro-Context

	(1)	(2)	(3)	(4)	(5)	(6)
Top Incomes						
1%	0.525***	0.453***	0.284*	0.733***	0.711***	0.801***
	(0.030)	(0.041)	(0.103)	(0.047)	(0.009)	(0.055)
Household Composition						
Single Female Head	0.000	0.000	0.001	-0.000	-0.000	0.000
	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)
Single Mother Head	-0.099***	-0.099***	-0.099***	-0.099***	-0.098***	-0.099***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Dual Earner Household	0.076***	0.077***	0.076***	0.076***	0.076***	0.076***
	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)
Head Labor Market						
High Ed	0.097***	0.076**	0.126***	0.157***	0.154***	0.200***
	(0.013)	(0.022)	(0.011)	(0.011)	(0.004)	(0.015)
Low Skill	-0.088***	-0.089***	-0.100***	-0.116***	-0.110***	-0.135***
	(0.007)	(0.009)	(0.005)	(0.007)	(0.005)	(0.011)
Manager	0.060***	0.047**	0.021	0.084***	0.088***	0.106***
	(0.005)	(0.013)	(0.015)	(0.007)	(0.005)	(0.015)
FIRE Sector Worker	0.045***	0.045***	0.033	0.046***	0.045***	0.045***
	(0.002)	(0.003)	(0.031)	(0.002)	(0.002)	(0.002)
Partner Labor Market						
High Ed	0.043***	0.048*	0.060***	0.073***	0.065***	0.071**
	(0.009)	(0.019)	(0.002)	(0.004)	(0.005)	(0.019)
Low Skill	-0.060***	-0.054*	-0.057***	-0.055***	-0.061***	-0.081**
	(0.011)	(0.017)	(0.004)	(0.007)	(0.006)	(0.018)
Manager	0.030*	0.018	0.009	0.073***	0.076***	0.126***
	(0.011)	(0.020)	(0.020)	(0.008)	(0.004)	(0.010)
FIRE Sector Worker	0.051***	0.051***	0.072***	0.051***	0.051***	0.051***
	(0.003)	(0.003)	(0.011)	(0.003)	(0.003)	(0.003)
Baseline						
Unemployed Household	-0.155***	-0.145***	-0.147**	-0.150***	-0.157***	-0.153***
	(0.032)	(0.030)	(0.032)	(0.031)	(0.031)	(0.031)
Household Age	0.012***	0.012***	0.012***	0.012***	0.012***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household Age Squared	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Other Household Earner Income	0.014***	0.014***	0.014***	0.014***	0.014***	0.014***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

Note: Unstandardized coefficients. Heteroskedastic and serial correlation consistent standard errors in parentheses. Unknown education, period and country fixed-effects not shown. *p<.05; **p<.01; ***p<.001 (one-tailed tests).