The Embedded Economy and National Income Inequality: A Cross-National Analysis of Production Globalization and Labor Market Institutions

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The Embedded Economy and National Income Inequality: A Cross-National Analysis of Production Globalization and Labor Market Institutions

A Dissertation submitted in partial satisfaction of the requirements for the degree of

Doctor in Philosophy
in
Sociology
by
Anthony James Roberts

June 2015

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ABSTRACT OF THE DISSERTATION (THESIS FOR MASTER’S)

The Embedded Economy and National Income Inequality: A Cross-National Analysis of Production Globalization and Labor Market Institutions

by

Anthony James Roberts

Doctor of Philosophy, Graduate Program in Sociology
University of California, Riverside, June 2015
Dr. Matthew M. Mahutga, Co-Chairperson
Dr. Christopher Chase-Dunn, Co-Chairperson

The precipitous growth of income inequality in developed and developing countries over the last thirty years has raised concerns amongst the general public, policy-makers, and academic communities about issues of economic equity in contemporary society. As a result, a voluminous literature on the causes and consequences of income inequality has emerged across the social sciences. Despite this proliferation of research, the literature is mired in an ongoing debate over the proximate and distal drivers of inequality. One of the most contentious topics in this debate is the role of globalization. According to the globalization thesis, international trade and investment increases income inequality are primarily responsible for the recent growth of income inequality. Critics of this perspective show the effect of globalization on income inequality is inconsistent across studies and argue the reform of national labor market institutions is the main process behind the recent growth of income inequality.

The purpose of the dissertation is to resolve this debate by exploring the institutional process underlying the relationship between the globalization of production
and income inequality. The main argument of the dissertation is the globalization of production contributes higher levels of income inequality in developed and developing countries by inducing the liberal reform of collective labor institutions. This integrative perspective is empirically examined using a series of unbalanced panel datasets of developed and developing countries from 1980 to 2008 and generalized multilevel structural equation modeling to estimate the mediated effects of production globalization. The analysis shows international manufacturing trade between developed and developing countries exerts a direct and indirect effect on income inequality. Manufacturing exports to developed countries and inward foreign direct investment generates higher levels of income inequality in developing countries through reducing the collective labor practices. Manufacturing imports from developing countries produces higher levels of income inequality in developed countries through decreasing union density, decentralizing wage bargaining, and inducing the reform of employment protection legislation. Overall, the main findings of the dissertation shows the inconsistent and ambiguous effect of globalization on national income inequality is a product of overlooking the mediating role of collective labor institutions in this relationship.
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Chapter 1: Introduction

One of the most profound socioeconomic problems of the 21st century is the growing economic inequality of amongst domestic populations in the developed and developing world. While social scientists grapple with the underlying causes of economic stratification, a consensus among research has failed to emerge in the extant social science literature. As public concern over economic inequality grows, it's increasingly important to identify the proximate and distal causes of income inequality in order to develop more effective social and economic policies for greater social equity.

Over the last thirty years, a number of theories have been advanced to explain the growth of domestic income inequality in developed and developing countries (see Alderson and Nielsen 2002 and Ravallion 2014 for reviews). More generally, current theories of inequality identify a myriad of domestic and international factors that contribute to a greater disparity in the distribution of national income. One set of perspectives emphasize the role of domestic economic institutions and politics in regulating the distribution of national income (Wallerstein 1999; Calderon and Chong 2009; Mahler 2004) while another set either emphasizes the distributional impact of globalization (Wood 1994; Evans and Timberlake 1980; Dixon and Boswell 1996) or endogenous processes of economic development and industrialization (Nielsen 1994; Firebaugh 2003). Despite the volume of research on income inequality, few studies advance an integrative perspective based on the interactions of global, institutional, and developmental processes.
An emergent finding in the extant social science literature is the growth of income inequality among domestic populations in advanced capitalist countries is partially driven by the neoliberal reform of national labor policies and legislation (Kalleberg 2011; Western and Healy 1999; Checchi and Pensolsa 2010). Drawing on the seminal work of Karl Polanyi (1944), Arne Kalleberg (2009) contends the institutional dynamics of modern economies are characterized as a 'double movement' between periods of market flexibility and social protection. During periods when the contentious politics of markets favor the interests of investors, owners, and elite workers, principles of liberalism and laissez-faire economics inform the development of economic institutions. However, when the interests industrial working class are dominate, principles of social equity and welfare informs the development of economic institutions. Accordingly, the contention between economic actors over the formal and informal rules governing capitalist exchange defines the nature of markets in capitalist society (Fligstein 1996; 2001; Polanyi 1944). However, absent from the economic sociology of markets is an understanding of the structural mechanisms underlying the contentious market politics of markets. Additionally, few cross-national studies examine this institutional dynamic of inequality across developed and developing countries.

The paradigmatic concept of 'embeddedness' has dominated theoretical thinking in economic sociology and anthropology for most of the 20th and 21st century. However, few theorists explicitly apply this idea to understand the distribution of national income. One of the key aspects underlying this issue is the complexity of the concept in that it refers to two distinct ideas: institutional and structural embeddedness (Krippner and
The former concept refers to the social regulation of markets by non-economic institutions (Polanyi 1944) while the latter concept refers to how the relations between economies (or actors) determine economic activity (Grannovetter 1985). In the context of domestic income inequality, institutional embeddedness is the degree to which non-market institutions regulate the distribution of income while structural embeddedness refers to how economic relations among actors affects the distribution of income across firms, labor, and the state. I attempt to clarify this concept by investigating the interaction among institutional and structural embeddedness to better understand how global production integration impacts the development of collective labor institutions in developing countries. From this vantage, while global production integration may contribute to higher income inequality by preventing the development of unions, collective bargaining institutions, and a robust labor movement.

The paucity of comparative studies on the 'double movement' of labor market regulation and economic precarity is important because this process manifests in different ways across countries. In developed countries, inequality in the precariousness of work is determined by the differentiation of pay, security, and the duration of employment across occupations in the formal economy (Kalleberg 2011; Maurin and Postel-Vinay 2005). During the postwar period, the rapid expansion of the industrial sector and growth in industrial labor in the formal economy coincided with the emergence of protective labor market institutions in advanced capitalist countries. In developing countries, inequality in economic precariousness is quite common and directly tied to poverty wage rates in the formal economy and employment/entrepreneurial opportunities in the informal economy.
Starting in the early 1980s, the enactment of comprehensive labor codes and constitutional reforms expanded collective labor rights in developing countries, which provide workers in the formal economy the institutional capacity to campaign for unionization, collective bargaining, and the legality of collective dispute tactics. Therefore, in studying the institutional dynamics of modern economies, it's important to account for the developmental context since collective institutions are at different stages of development across countries. Based on this observation, it is critical to examine whether structural transformations associated with economic globalization exerts a common effect on the formation and reproduction of collective labor institutions in developed and developing countries.

\textit{Explaining the Growth of Domestic Income Inequality}

A common observation in the extant literature on global income inequality is the persistent growth of domestic income inequality and the decline of international income inequality (Firebaugh 2003; Hung and Kucksinkas 2011; Sala-i-Martin 2006; c.f. Milanovic 2012). Recent estimates show that within-country income inequality (i.e. domestic inequality) increased by an average of 31.1\% between 1990 and 2008 while between-country income inequality (i.e. international inequality) declined by 25.3\% during the same period (Clark 2010, Table 5). The diverging trajectory of domestic and international inequality suggests an endogenous process associated with economic development is playing a fundamental role in the changing levels of global income inequality. More importantly, the common trend across developed and developing countries may suggest global processes are driving these developmental changes.
One of the most seminal and earliest theories of income inequality contends economic development initially produces higher levels of income inequality by inducing a small portion of the labor force to migrate into sectors with higher productivity and growth (Kuznets 1955; Nielsen 1994). Furthermore, this theory predicts the level of income inequality should decline with subsequent development as a larger proportion of the labor force migrates into the higher wage modern sector. However, the persistence and recent growth of domestic income inequality in the most developed countries of the world raises doubts over the validity of this perspective and call attention to exogenous processes that may alter the demographic transition between economic sectors (Alderson and Nielsen 2002; Bluestone and Harrison 1982).

In response to the empirical inconsistencies of the early developmental perspective, researchers turned to examining the distributional impact of international trade and investment in advanced capitalist countries (Bluestone and Harrison 1982; Wood 1994; Alderson and Nielsen 2002; Cline 1997; Krugman 1995; Borjas, Freeman, and Katz 1997). According to the globalization perspective, the intensification of trade between developed and developing countries generated higher income inequality in former set of countries by suppressing the wages of unskilled labor (see Wood 1995 for a review). Surprisingly, while a sizeable literature in sociology identified foreign direct investment as a major driver of inequality in developing countries (Bornschier and Chase-Dunn 1985; Dixon and Boswell 1996; Evans and Timberlake; Mahutga and Bandelji 2008), few studies explore the impact of trade between developed and developing countries on income inequality in latter set of countries (Lee, Alderson, and
Nielsen 2007). Nonetheless, the empirical evidence on the association between economic globalization and income inequality remains highly contested in the literature due to inconsistent findings across a number of studies (e.g. Mahler 2004; Rueda and Pontusson 2000; Goldberg and Pavcnick 2007).

In addition to the empirical inconsistency of the globalization perspective, debate persists over whether globalization directly or indirectly contributed to the recent growth of domestic income inequality (Hung and Kucinskas 2011: 1482-1483). On one hand, researchers contend economic globalization directly increases income inequality by expanding the geographic mobility of capital and goods and reducing the effective bargaining power of labor over wage rates while limiting employment opportunities in globally competitive sectors (Kentor 2001; Silver 2003; Evans and Staveteig 2008). On the other hand, researchers contend economic globalization indirectly contributes to higher income inequality by inducing the retrenchment of the redistributive and regulatory state (Lee, Nielsen, and Alderson 2007; Rodrik 2012; Alderson and Nielsen 2002). Despite these contrasting theoretical arguments, few studies systematically analyze the direct and indirect roles of globalization. Moreover, even fewer studies attempt to observe the mechanisms underlying the indirect association between globalization and income inequality. Accordingly, given the deficiencies of the developmental and globalization perspectives of income inequality, I assess the structural and institutional pathways through which economic globalization contribute to higher income inequality.
Over the last ten years, several studies have found labor market institutions (e.g. collective wage bargaining, employment protection legislation, unionization, etc.) are important determinants of the level of income inequality in advanced capitalist countries (Blau and Kahn 2002; Checchi and Pensola 2010; Rueda and Pontusson 2000; Alderson and Nielsen 2002). While several of these studies find no association between economic globalization and income inequality, this research shows centralized collective bargaining (Western and Healy 1999; Wallerstein 1999; Pontusson, Rueda, and Way 2002), employment protection legislation (Checchi and Pensola 2008; Koeinger, Leonardi, and Nunziata 2007), unionization (Scheve and Stasavage 2009; Western and Rosenfeld 2011) and welfare generosity (Kenworthy and Pontusson 2005; Huber and Stephens 2014; Bradley et al. 2003) effectively reduce the level of income inequality. As a result, the empirical literature increasingly focuses on institutional reform as a key mechanism generating the growth in domestic income inequality.

According to this institutional perspective, the liberalization of labor market institutions may explain the recent rise of domestic income inequality among advanced capitalist countries. However, few empirical studies examines the role of labor market institutions in the recent growth of domestic income inequality in developing countries to determine whether this theory is generalizeable beyond advanced capitalist countries (Calderon and Chong 2009; Kerrissey forthcoming). Moreover, while this research finds institutional reform is the primary factor driving income inequality, some studies show globalization may play a secondary role (Alderson and Nielsen 2002).

An Integrative Theory of Income Inequality
Despite a lack of consensus in the empirical literature on income inequality, the polarization of national income in developed and developing countries suggests a common process may be affecting both sets of countries. In identifying this process, it is necessary to investigate the interaction amongst global, developmental, and institutional processes. Drawing on insights from each perspective, I contend the globalization of production is inducing a worldwide reform of labor market institutions, which in turn is causing higher levels of income inequality in developing and developed countries. Moreover, this shift toward liberalized economic institutions raises questions about the structural transformations associated with these institutional reforms. Here, I contend the globalization of production is driving this neoliberal reform by restructuring the industrial working classes in developed and developing countries.

In developing this integrative perspective, I utilize the global production network (GPN) framework to conceptualize the global re-organization of industrial production and its impact on labor (Coe, Dicken, and Hess 2008; Rainnie, Herod, and McGarth-Champ 2011; Barrientos et al 2011; Milberg and Winkler 2011). While the GPN perspective theorizes labor's agency in the structure and organization of global production networks, few studies consider how the globalization of production fundamentally reshapes the sociopolitical power of labor. More specifically, this literature ignores the role of labor bargaining power in the development of collective labor institutions and how the globalization of production may reduce the bargaining power of industrial labor. Drawing on the economic sociology of markets literature, I apply a contestation-based perspective on the development of labor markets, where firms, labor, and the state
actively negotiate the rules of legitimate market behaviors (Fligstein 2001; Polanyi 1944). From this perspective, the formation and consolidation of global production networks creates an asymmetry in bargaining power between economic actors (especially labor and capital) through reducing the demand for industrial labor in advanced capitalist countries and increasing internal labor market competition in developing countries. As a result of this decline in the bargaining power of bargaining power firms are able to successfully push for institutional reforms designed to enhance labor market flexibility.

In developed countries, the globalization of production relocated of labor-intensive manufacturing processes to more cost-effective areas in the developing which accelerated de-industrialization and the decline of the traditional working class behind the powerful labor movements of the late 19th and early 20th century. The shift toward a service-based economy and the declining demand for industrial labor effectively reduced the bargaining power of labor in advanced capitalist countries. With the decline of labor power, sociopolitical coalitions representing the interests of investors, owners, and elite service workers have begun to dismantle the institutional configurations of labor markets established during the postwar compromise between labor and capital (Thelen 2012; 2014). This the institutional shift toward labor market flexibility generated higher levels of income inequality as a greater proportion of income is returned to owners and capital in the form of economic rents as well as higher wages to elite workers in the service sector.

In developing countries, the growth of labor-intensive manufacturing expanded the low and unskilled industrial labor force which hindered the formation of labor
movements and the development of collective labor institutions. While previous studies contend globalization induces the formation of strong labor movements (Silver 2003; Flanagan 2006), I contend the nature of industrial production limits the effective bargaining power of industrial labor. In labor-intensive industries, the demand for unskilled labor ensures a high degree of competition amongst workers given the relative surplus of labor in these countries. The diminished bargaining position of labor ensures owners and states are able to advanced liberalized economic policies by not observing or enforcing the collective rights of labor. As a result, protective labor market institutions are not able to take hold which ensures higher levels of income inequality as a greater proportion of revenue flows to owners and investors while the formal wage rate approximates poverty-level compensation.

Contribution of Research

Drawing on these arguments, the dissertation initiates a new research program dedicated to studying the interaction between the globalization of production and the reform of national labor market institutions to explain the recent growth of domestic income inequality. This integrative perspective of inequality combines theoretical arguments from global, developmental, and institutional perspectives to explain the indirect role of production globalization in the growth of domestic inequality. While the main arguments of this integrative theory are not necessarily new, very few studies empirically scrutinize this model. Therefore, the key contribution of this new research program is the empirical assessment of contentious arguments about the role of production globalization in the upswing of domestic income inequality and the
advancement of more complex models to explain domestic income inequality in developed and developing countries.

Another key component of this research program is the application of new approaches for estimating complex models with panel data. More specifically, while macro-comparative theories of inequality often evoke specific causal process with specific mechanisms, very few studies directly observe these mechanisms. In context of my research program, macro-comparative researchers would need to observe how one variable confounds the effect of another to empirically assess the institutional and structural mechanisms linking production globalization to institutional reform and inequality. However, one of the main barriers to systematically analyzing the direct and indirect role of production globalization is the methodological difficulty in estimating 'mediated effects'.

Traditionally, researchers utilized a simple approach to mediation analysis, where the researcher estimated a series of unrelated regression models and tested for whether the coefficient of the independent variable significantly changed when controlling for the mediating variable (Baron and Kenny 1986; Sobel 1982). According to more recent research, this approach increases the likelihood of improper statistical inference since it assumes errors are not correlated across the regression models while having difficulty in detecting mediation under conditions where the unmediated effect is not statistically significant. (Iacobucci, Saldanha, and Deng 2007; Zhao, Lynch, and Chen 2010; Preacher, Zhang, and Zyphur 2011). Moreover, the traditional approach does not provide the means to assess improvements in the overall model by including mediating pathways (Bollen and Brand 2010). Alternatively, researchers utilize structural equation modeling (SEM) to estimate path models to address these issues with the traditional approach. However, in context of
cross-national panel data analysis, SEM may not be appropriate because non-normal and correlated error structure of panel data violates several key assumptions of SEM.

In the dissertation, I utilize multi-level structural equation modeling to observe and empirically assess the mechanisms underlying causal processes in the integrative macro-comparative theory of inequality. Multi-level SEM provides an adequate framework for generating consistent estimates for path models with mediation using an estimation method (i.e. pseudo-maximum likelihood) for non-normal data. Based on this method, I created several path models to estimate the direct and indirect effects of production globalization on indicators of labor market institutions and income inequality. Using these estimates, I decompose the total effect of production globalization to determine the degree of mediation in the model. Moreover, this approach allows for the general assessment of the overall model 'fit' of the data using the Bayesian information criterion to compare mediation to non-mediation models. Overall, this new methodological application of multi-level SEM demonstrates the utility of this approach for advancing the theoretical development of more complex macro-comparative theories of inequality.

Overview of Dissertation

The second chapter of the dissertation explores the institutional impact of production globalization on income inequality in advanced capitalist countries from 1980 to 2008. According to the results of the multi-level path models, manufacturing imports from developing countries induces a neoliberal shift in employment protection legislation, the structure of collective wage bargaining, and union representation among the labor force. As result, domestic income inequality precipitously increased in most advanced capitalist countries over the last thirty years. However, the international trade
and investment also generates countervailing institutional forces by expanding the generosity of the welfare state which, in turn, reduces income inequality through increasing the disposable income of the least affluent segments of the population. Overall, the empirical findings of the chapter suggests the globalization of production indirectly contributed to higher levels of income inequality by hinder the reproduction of protective labor market institutions established in the postwar period.

The third chapter of the dissertation examines this process in developing countries from 1985 to 2002. According to the results multi-level path models with simulated fixed-effects, manufacturing exports to advanced capitalist countries indirectly contributes to higher domestic inequality by inducing the de facto liberalization of labor markets through the non-enforcement of collective labor rights. Surprisingly, while governments in developing countries enacted legislation and constitutional reforms to expand collective labor rights, the practice of these rights are substantially reduced by the global integration of local manufacturing firms. As a result of this de facto liberalization, domestic income inequality increased in developing countries since the non-enforcement of these rights retarded the development of collective labor institutions. In conjunction with the findings in Chapter 2, the third chapter demonstrates that the globalization of production contributes to higher income inequality by hindering the formation and reproduction of labor market institutions.

In sum, the dissertation develops and empirically assesses an integrative model of domestic income inequality in developed and developing countries. While the extant sociological literature on income inequality contains the main theoretical arguments of
this integrative perspective, few studies systematically observe the distributional consequences of the relationship between the globalization of production and labor market institutions across developed and developing countries. The empirical results suggest macro-comparative researchers of domestic inequality need to account for the institutional impact of production globalization to better understand the distal and proximate drivers of inequality. Moreover, this researcher further shows production globalization induces the reform of labor market institutions through developmental processes that changes the symmetry of bargaining power between labor and capital. Therefore, subsequent research needs to be attentive of the complex processes behind the recent divergence in economic opportunities in the domestic populations of developed and developing countries.
References


CHAPTER 2:


Chapter Summary

The resurgence of income inequality in advanced capitalist countries since the 1980s produced an extensive literature across the social sciences on the distributional consequences of economic globalization and institutional change. Despite the proliferation of studies on this topic, debate persists over the impact of international investment and trade on inequality. The purpose of this study is to develop and empirically assess an integrative perspective of income inequality. According to this integrative perspective, economic globalization contributes to higher income inequality by inducing a market-oriented reform of labor market institutions. Utilizing varying samples of 22 OECD countries from 1980 to 2008, I assess whether employment protection legislation, the structure of wage bargaining systems, union density, and social welfare spending mediate the effects of international investment and trade. Based on a series of generalized multi-level structural equation models, manufacturing imports from less-developed countries are directly and indirectly associated with higher levels of income inequality. However, foreign direct investment shows a weak and inconsistent relationship with income inequality. The findings suggest comparative researchers need to be attentive to the complex relationships among economic globalization and institutional change to explain the recent resurgence of economic inequality in advanced capitalist countries.
Introduction

The persistent growth of income inequality in advanced capitalist democracies over the last thirty years has raised widespread concern among scholars, policy makers, and the general public. Despite a robust and extensive literature on the topic, a wide-ranging and longstanding debate over the proximate and fundamental causes of income inequality continues in the social sciences. A central theme in this debate is the role of economic globalization in the growth of income inequality across developed and less-developed countries (Hung and Kucinskas 2011: 1482). Since the 1980s, a sizeable literature in sociology has documented the distributional consequences of international capital mobility on developing countries (Evans and Timberlake 1980; Bornschier and Chase-Dunn 1985; Dixon and Boswell 1996; Firebaugh 1992; Lee, Alderson and Nielsen 2007; Bandejl and Mahutga 2010), while more recent studies focus on the distributional impact of capital mobility and manufacturing trade in more advanced countries (Alderson and Nielsen 2002; Lee, Kim, and Shim 2011).

Outside of sociology, a number of studies heavily scrutinized these claims and find economic globalization is weakly related to income inequality in advanced capitalist countries (Cline 1997; Krugman 1995; 2008; Rueda and Pontusson 2000; Mahler 2004). Given the contrasting findings in the literature, the role of globalization in the recent growth of income inequality among advanced capitalist countries remains unclear. The purpose of this article is to present and empirically assess an integrative perspective on the relationship between globalization and income inequality that may account for the divergent findings in the extant literature.
Among critics of the globalization thesis, some contend that a neoliberal shift in labor market institutions and national politics is more responsible for the growth of income inequality in advanced capitalist countries than is economic globalization. Researchers note a concerted political effort to reform labor market institutions to enhance labor market flexibility and the privatization of economic risk (Baccaro and Howell 2011; Thelen 2014; Roberts 2014). The institutional transition to flexible labor market institutions has allowed employers to fundamentally change employment relation systems by expanding the contingent and precarious labor force, resulting in the polarization of occupations between 'good' and 'bad' jobs and greater wage variation among workers (Kalleberg 2011). Studies in comparative political economy find the structure of wage bargaining systems (Wallerstein 1999; Checchi and Garcia-Penosla 2010; Blau and Khan 2002; Pontusson and Rueda 2002; Mahler 2004); social welfare spending (Huber and Stephens 2014; Bradley et al 2003), employment protection (Checchi and Garcia-Penolsa 2008), and unionization (Western and Rosenfeld 2011; Rueda and Pontuson 2000) reduce income inequality in advanced capitalist countries.

Despite the increasing emphasis on the role of labor market institutions in the growth of income inequality, few studies consider the impact of globalization on institutional change. An emerging literature shows economic globalization is partially responsible for the neoliberal shift in labor market institutions (Roberts 2014; Cao 2009; 2012; Simmons, Dobbins, and Garrett 2008; c.f. Campbell 2004). This research suggests that the causal linkages from economic globalization to income inequality are both direct and indirect.
Central to the debate over the role of economic globalization is whether international capital mobility and international trade directly or indirectly affects income inequality (Hung and Kucinskas 2011). On one hand, researchers contend globalization directly affects income inequality by reducing the bargaining power of labor to gain wage concession from firms (Alderson 1999; Alderson and Nielsen 2002). According to this position, increasing geographical mobility of capital relocates traditional blue-collar jobs abroad and increases unemployment and lower wages in the manufacturing sector (Kollmeyer 2009; Bluestone and Harrison 1982; Wood 1994). Others researchers hold the position that globalization indirectly affects income inequality through pressuring states to liberalize markets and reduce social spending (Lee, Nielsen and Alderson 2007; Bergh and Nilsson 2010; Rodrik 2012).

The question of whether economic globalization indirectly increases income inequality by inducing an institutional shift toward flexible labor markets and state retrenchment remains largely unanswered in the empirical literature because few studies systematically examine the direct and indirect effects of globalization on domestic income inequality. This chapter sets out to empirically assess this general issue by testing whether the reform labor market institutions account for the observed relationship between economic globalization and income inequality in advanced capitalist countries. The main contribution of this research is to offer evidence on the direct and indirect effect of globalization on income inequality with the intent of reconciling the ongoing debate over the role of globalization in the recent upswing of income inequality in advanced capitalist countries.
In the article, I combine insights from the globalization and institutional perspectives to develop a unified theory of income inequality. I contend globalization exerts both direct and indirect effects on the distribution of national income. First, globalization *directly* increases income inequality by reducing the effective wage of unskilled and semi-skilled occupations in manufacturing sectors (Wood 1994). Second, globalization *indirectly* increases income inequality through inducing a neoliberal reform of labor market institutions. The intensification of international competition and the relocation of production to emerging and less-developed countries incentivize the reform labor market rigidities for employers while also reducing the bargaining power of labor to resist reform. In turn, the enactment of neoliberal reform exacerbates income inequality as wages respond to demand shifts induced by deindustrialization and the polarization of occupations.

In this study, I employ a novel application of multi-level structural equation model to empirically assess this theory of inequality. I utilize data on varying country-year samples of 22 OECD Countries from 1980 to 2008 to estimate both the direct and indirect pathways linking economic globalization to income inequality. According to the multi-level SEM models, manufacturing imports from less-developed countries exert a direct *and* indirect effect on income inequality. Consistent with the arguments developed above, the indirect effect is explicable in terms of globalization’s positive effect on neoliberal reforms of employment protection legislation and its negative effect on wage-setting institutions and unionization. However, international capital mobility shows a relatively weak relationship with income inequality, where outward foreign direct
investment only indirectly affects income inequality by inducing reducing employment protection. Surprisingly, both processes of economic globalization offset inequality-producing effects by inducing national governments to expand welfare regimes. This latter finding elucidates the role of welfare regimes in alleviating inequality and provides empirical support for earlier findings on the positive association between state spending and economic openness (Rodrik 1998). Overall, the findings points to the need to account for the complex relationships among global and institutional processes to explain the recent growth of income inequality in advanced capitalist countries.

**The Great U-Turn of Income Inequality**

In a classic theoretical statement on inequality, Simon Kuznets (1955) hypothesized income inequality is the consequence of economic development and demographic transitions between economic sectors (Nielsen 1994; Alderson and Nielsen 1999). During the initial developmental phases of industrialization, a small portion of the low-wage agricultural labor force migrates into the higher wage industrial sector causing an increase in earnings inequality within the labor force. Further industrial development and maturation attracts a larger portion of the labor force to migrate into the industrial sector which eventually causes a reduction in between sector earnings inequality.

Accordingly, economic development and income inequality show a curvilinear relationship with each other. Indeed, a number of studies over the last forty years have documented this relationship between development and income inequality in varying panels of developed and developing countries (Papanek and Kyn 1986; Jha 1996; Bourguinon and Marrisson 1998; Barro 2000). However, the rapid growth of income
inequality and high level of development among advanced capitalist countries raise doubts over the relationship between economic development and income inequality.

In related work, Nielsen (1994) and Nielsen and Alderson (1995, 1997) extend on Kuznet's earlier formulation by examining the internal developmental process associated with demographic transitions across sectors. The purposes of these studies were to emphasize the role of 'sector dualism' - wage heterogeneity between economic sectors during transitional periods of development (Nielsen 1994: 655). Rather than examine the curvilinear relationship between economic development and income inequality, these studies explored how heterogeneity in the labor force affected levels of income inequality. Indeed, since this extension, a number of studies have provided support for the relationship internal development processes and inequality (Alderson and Nielsen 2002; Lee, Nielsen, Alderson 2007; Mahutga, Kwon, Grainger 2011; Lee, Kim, and Shim 2011).

**Figure 2.1** The 'Great U-Turn' of Income Inequality in OECD Countries
Figure 2.1 presents the locally-weighted least squares average of the Gini-coefficient of post-tax and transfer income for 18 OECD countries from 1970 to 2009. Locally-weighted least squares regression produces a systematic time trend of the average Gini-coefficient for these countries by using weighted least squares estimator to fit a non-parametric polynomial model to the data. Consistent with previous observations (Alderson and Nielsen 2002; Harrison and Bluestone 1988), income inequality initially declined during the 1970s only to rapidly increase over the next few decades. Characterized as the 'Great U-Turn' income inequality, this convex relationship between development and inequality calls into question the initial hypothesis offered by Kuznet. The high level of development among advanced capitalist countries should produce more equitable distributions of income as advanced development reduces heterogeneity between sectors. More importantly, the periodicity of this trend coincides with significant macrostructural change in national economies and the world economy. However, the initial model proposed by Kuznet and others assumes national economies are closed and not impacted by international trade and investment. Thus, structural changes associated with the expansion of the production globalization were not considered.

Harrison and Bluestone (1988) offered a contending perspective on the growth of income inequality in advanced capitalist countries. According to their view, the acceleration of deindustrialization induced by international capital mobility is primarily responsible for higher levels of inequality. In response to stagnating profit rates and poor macroeconomic conditions, foreign direct investment was utilized as a corporate strategy to reduce the costs of domestic production by relocating to more cost-effective countries.
and dismantling the social pact established during the postwar industrial boom. In addition to foreign direct investment, manufacturing firms headquartered in advanced capitalist countries offer competitive production contracts to firms in more cost-effective countries. Thus, international trade and investment reflect corporate strategies to reduce production cost by globally fragmenting the production process to increase international labor competition and reduce the wage bill.

Alderson and Nielsen (2002) systematically scrutinized Harrison and Bluestone's account of the 'Great U-Turn' by examining the impact of production globalization, labor market institutions, and internal development on income inequality in 16 OECD countries. According to their assessment, internal developmental processes (namely, the percentage of the labor force in the agriculture sector) and labor market institutions (e.g., union density and decommodification) are stronger determinants of the level of income inequality than international capital mobility and trade with less-developed countries. While they find support for the relationship between globalization and income inequality, the specification of their models assume these processes are unrelated to changes in labor market institutions. As a result, this approach may under-estimate the impact of production globalization on income inequality.

The Globalization of Production and Income Inequality

A major insight from contemporary research on the globalization of production is the emergence of dense and geographically-dispersed production networks that fragments the production process across firms in Northern and Southern countries. Northern firms occupy centralized role within these networks by coordinating production and
specializing in upstream activities, such as research, design, and branding (Mahutga 2014; Coe, Dicken, and Hess 2008). Southern firms are primarily contracted by lead firms in Northern countries to produce raw materials, semi-finished products, and to assemble final goods for export to Northern markets (Feenstra 1998; Gereffi 1994; Mahutga 2012). The relocation of production processes to less-developed and emerging countries has fundamentally reshaped the economic structures of Northern countries by intensifying global labor competition and reducing the effective bargaining power of unskilled and semi-skilled labor. As a result, the distribution of national income has become increasingly skewed toward owners, investors, and high skilled labor.

The globalization thesis of income inequality contends international capital mobility and manufacturing trade are the primary drivers of increasing wage and income heterogeneity between occupations and social classes in advanced capitalist countries. The role of capital outflow in the growth of income inequality among advanced capitalist countries was well-established in the early literature (Harrison and Bluestone 1988; Lorence and Nelson 1993; Nielsen and Alderson 1997). Here, foreign direct investment accelerates de-industrialization, weakens the bargaining power of labor and reduces the wages of unskilled labor (Alderson and Nielsen 2002: 1251-1253). In the context of globalized production, foreign direct investment from Northern firms induces the decline of industrial production and organized labor in their host countries by offshoring production abroad and building operations in more cost-effective countries. Indeed, Alderson (1999) shows foreign direct investment was responsible for the decline of industrial employment and the growth of the service labor force in advanced capitalist
countries. Moreover, foreign direct investment and the internationalization of production hinder labor organization by fragmenting the labor force across firms and geographies and expanding labor competition (Ietto-Gilles 1992; Alderson 2004).

One of the most scrutinized process of globalized production in the literature on inequality is the impact of manufacturing trade between Northern and Southern countries (see Cline 1997; Lawerence 1996; Borjas, Freeman, and Katz 1997; Krugman 1995; 2008). According to conventional trade theory, an increase in North-South manufacturing trade contributes to higher income inequality by reducing the effective demand for unskilled labor and increasing the demand for skilled labor (Wood 1994, 1995). Drawing on the Heckscher-Ohlin model of international trade, this perspective contends international trade with less-developed countries reduces the effective demand for unskilled labor in more-developed countries because less-developed and emerging economies have a comparative advantage in labor-intensive production due to a surplus of unskilled labor. This process of production specialization leads Northern firms to divert resources to their core competencies and more advanced production processes which raise the effective demand for skilled labor. As lead firms in Northern countries subcontract with producers in Southern countries for labor-intensive production processes, wage inequality between skilled and unskilled workers rises in Northern countries.

The evidence for the relationships between foreign direct investment, international trade, and income inequality in advanced capitalist countries is fairly mixed. Mahler (2004) finds global economic integration exerts an inconsistent and weak effect
on income inequality in advanced capitalist countries. Moreover, earlier economic studies show international trade has little impact on wage inequality in the United States (Cline 1997; Krugman 1995; Borjas, Freeman, and Katz 1997). On the other hand, a number of studies have found a positive association between globalization and income inequality (Alderson and Nielsen 2002; Wood 1994; Gustafsson and Johansson 1999). The mixed empirical support for the relationship between production globalization and income inequality warrants a more nuanced understanding of process underlying this relationship.

I contend the incongruence between the theoretical arguments and empirical findings on the relationship between globalization and income inequality is partially attributable to the failure to account for the role of domestic labor market institutions in this process. Most of the literature primarily focuses on the economic mechanisms of production globalization (e.g. increasing the skill premium or reducing the labor share of income) and ignores how this new form of industrial organization reshapes labor market institutions that dictate the distribution of income. To advance the comparative literature on income inequality, I develop an integrative perspective of income inequality and examine the institutional impact of production globalization on the national distribution of income.

**Labor Market Institutions and Income Inequality**

Labor market institutions encompass varying dimensions of formal and informal regulations that dictate the terms of capital-labor relations. In advanced capitalist countries, national labor markets are primarily governed by four key institutions: (1)
employment protection legislation; (2) wage bargaining systems; (3) unionization; and (4) welfare regimes. In general, these institutions establishes the legitimate rules for setting employment levels and contracts, wages, non-market income sources, and the capacity for workers to collectively engage employers. The importance of these institutions for the functioning of labor market make them sociopolitical sites of contestation between capital and labor, where the 'rules of the market' are actively negotiated by these interest groups (Knight 1992; Korpi 2001; Fligstein 2001; Polyani 1944). As a result of this contentious process, changes in labor market institutions are characterized by a 'pendulum-like' movement between flexible and regulated modes (Polanyi 1944; Kalleberg 2009). Flexible labor markets privilege employers and investors by ensuring wages, employment and social reproduction are derived from market-based mechanisms. However, regulated labor markets privileges labor by ensuring wage schedules are established through collective agreements, employment is protected by state legislation and non-market sources of income are available.

The 'double-movement' of institutional change is an important process for determining the distribution of resources within market transactions. In countries with flexible labor markets, where institutions are designed to utilize factor and product markets to organize labor relations, a greater proportion of income is transferred to capital owners, investors, and management which generate higher income and wage inequality. Conversely, in countries with regulated labor markets, where institutions are designed to promote non-market mechanisms for organizing labor relations, income is more equitably distributed across capital, labor, and management.
Employment protections

An under-studied institution in the sociological literature on income inequality is the set of laws and regulations governing the hiring and dismissal of workers. However, outside of sociology, research on the effect of employment protection legislation is fairly unclear. On one hand, researchers contend employment protection laws reduces income inequality by ensuring stability in workers income while imposing restrictions on hiring temporary and fixed-term workers. On the other hand, researchers contend restrictive employment protection may generate higher inequality by increasing the unemployment rate where firms are hesitant to expand the workforce due to the inflexibility of employment levels (Checchi and Pensola 2008: 608; Bertola et al. 2002). Therefore, it’s unclear how employment protections impact the distribution of income.

Generally, more restrictive employment protection laws reduce the risk of job loss among workers while shifting the financial burden of reallocating labor onto employers. Under these legislative conditions, employers are pressured into retaining labor during periods of economic down turn. Firms in countries with more restrictive employment laws engage in 'high-road' strategies of labor development where workers receive higher renumeration, benefits, and internal skill acquisition (Kalleberg 2011). Koeinger, Leonardi, and Nunziata (2007) show employment protection legislation effectively reduces wage inequality in eleven advanced capitalist countries during the latter half of the 20th century. However, Checchi and Pensolsa (2008) find restrictive employment protection may contribute to higher income inequality by increasing the unemployment.
Additionally, other studies show employment protection is statistically unrelated to the distribution of income (Nickell, Nunziata and Ochel 2005; Bassanini and Duval 2006).

**Wage corporatism**

One of the most studied aspects of labor market institutions is the degree to which wage schedules are established by collective bargaining agreements created from corporatist decision-making where between organized capital and labor. Wage corporatism, or institutional arrangements are designed to induce cooperation and consensus among capital, labor, and the state in setting collective agreements, remains one of the most important institutional determinants of income distributions (Cameron 1984; Wallerstein 1999; Alderson and Nielsen 2002). Wage bargaining systems range from decentralized and uncoordinated systems, where wages are determined at the individual or plant-level, to systems where industry-level wage agreements are created peak-level business organizations, state agencies, and union confederations and patterned throughout other economic sectors.

Income inequality tends to be lower in countries with strong corporatist institutions because centralized and patterned collective agreements reduce wage variation across sectors and industries. In countries with decentralized and uncoordinated systems, wages are relatively flexible and vary substantially across industries and sectors. Accordingly, the literature concentrates on the general hypothesis that negative centralized and coordinated wage-setting institutions reduce income inequality among advanced capitalist countries (e.g. Alderson and Nielsen 2002).
Wallerstein (1999) contends centralized and coordinated wage bargaining reduces income inequality through three channels: (1) economic; (2) political; and (3) ideological. Economically, in countries with de-centralized wage bargaining, inefficiencies in wage and employment allocation between unionized and non-unionized sectors are likely to occur due to the asymmetry in labor market power. In countries with centralized wage-setting, this misallocation is less likely because wage agreement might impose wage schedules that approximate the competitive allocation of employment and wages. Politically, centralized wage-setting alters the influence of different groups - namely low wage labor. Ideologically, centralized wage-setting promotes the egalitarian distribution of wages - as more workers are incorporated into the process, the more this norm of wage egalitarian will permeate.

*Welfare generosity*

Another major institutional restraint on the distribution of national income is the degree to which the social policy redistributes income through welfare transfers. Expansive redistribution policies reduce disposable income inequality by transferring income from affluent to disadvantaged households through progressive tax systems and social welfare transfers. Moreover, expansive redistribution policies allows for individuals to 'opt out' of the labor market while maintaining a 'socially acceptable' standard of living (Epsing-Andersen 1990; Alderson and Nielsen 2002). In essence, generous and expansive welfare policies "decommodify" labor by providing a non-market income to qualifying individuals.
Accordingly, generous welfare states are effective in reducing income inequality through two primary channels. First, welfare transfers redistribute income from the top of the distribution to the bottom (Bradley et al. 2003; Goni et al. 2011; Kenworthy and Pontusson 2005). Second, generous welfare transfers provide an alternative to low-wage work while also empowering labor in the bargaining process. In countries with less generous welfare transfers, individuals must seek out employment to maintain their standard of living. Recent studies on the social psychology of economic insecurity finds that individuals in countries with generous redistribution policies feel less insecure than their counterparts in countries with less generous policies (Anderson and Pontusson 2007; Mughan 2007). Thus, countries with more generous welfare programs should have lower income inequality because of income redistribution policies and the capacity for labor to effective bargaining for a greater share of income.

**Unionization**

The decline of unions in advanced capitalist countries is often cited as a one of the main contributing factors to the growth of income inequality (Rosenfeld and Western 2011; Freeman 1980; Card 2001; Checchi and Pensola 2010). First, unions tend to increase the wages of unskilled and semi-skilled industrial labor by providing a collective voice for labor during wage-setting processes and the associational power to advance collective bargaining and other restrictions on the allocation of income (Wright 2000). Second, unions instill institutionalized norms of equity within unionized and non-unionized sectors which induces more egalitarian bargaining agreements. For example, Western and Rosenfeld (2011) show the decline of unions in the United States is
associated with a substantial decrease in the wages of non-union workers. Third, since unions primarily represent low- and semi-skilled labor, the capacity for unions to bargaining for higher wages increases the incomes of the bottom of the wage distribution (Checchi and Pensola 2010; Acemoglu et al. 2001). Accordingly, unionization is viewed as one of the more important institutions for equitable distribution of income.

Globalization and the Neoliberal Reform of Labor Market Institutions

**Figure 2.2** The Decline of Labor Market Institutions in OECD Countries

Figure 2.2 shows the average trajectory of four labor market institutions from 1980 to 2010 for 18 advanced capitalist countries. Each indicator is standardized for comparability across time and countries. According to the Figure 2, union density, corporatist wage bargaining, and employment protection declined over the observed period while welfare generosity remained relatively stabled and slightly increased in the recent period. The periodicity of the decline of labor market institutions is consistent with
the "Great U-Turn" in income inequality, where inequality steadily grew in most advanced capitalist countries since the 1980s. The general decline of these institutions suggests the reform of labor market institutions may have contributed to higher income inequality. However, what remains unanswered is what structural forces are behind the reform of these institutions?

An emerging literature contends labor market institutions in advanced capitalist countries are undergoing a significant shift toward more liberalized form of market regulation (Baccaro and Howell 2011; Thelen 2014). At the center of this institutional change are the deregulation of labor markets and the retrenchment of social spending. The factors behind the liberalization of labor markets remains disputed as some identify globalization (Simmons et al 2008) while others argue shifts in political coalitions induced by advent of the post-industrial employment structure caused the reform of labor market institutions (Thelen 2014). The disagreement stems from ignoring the relationship between the globalization of production and the decline of industrial labor in advanced capitalist countries. In part, by combing insights from political economy and economic sociology, I develop a synthetic perspective that combines arguments from the globalization and political coalition theses.

Scholars argue the intensification of international competition pressures states into enacting market-based models for the allocation of labor and capital (Baccaro and Howell 2011; Simmons, Dobbin, and Garret 2008; Piore and Sabel 1984; Reich 1991). This liberalization perspective contends global economic integration and international competition encourage governments to enact neoliberal policy reform, and reduce the
The economy is the formation and reproduction of national institutions is driven by a bargaining process between interest groups. Knight (1992) contends "social institutions are . . . a product of the efforts of some to constrain the actions of others with whom they interact" (19). Put simply, institutions are simply instruments designed by interest groups occupying a superior bargaining position relative to other interest groups. This perspective is consistent with Polanyi (1944) early formulation of labor market embeddedness where market dynamics are articulated by social rules that either privilege labor or capital. Labor market institutions are designed either to protect worker interest in employment security, wages, benefits, and working conditions or to enhance employer capacity to dismiss workers, lower wages, and to change the cost of labor in accordance with market demand (see Fligstein 2001).

The globalization of production reshapes the bargaining asymmetry between capital and labor in advanced capitalist countries. During the first few decades following World War II, labor occupied an advantaged bargaining position in the marketplace due to the high demand for manufacturing labor. Declining trade barriers, advancement in telecommunication and transportation technologies, and the industrialization of emerging economies allowed firms to outsource and offshore production processes (Bluestone and...
Harrison 1988; Feenstra 1998; Alderson 1999). The integration of manufacturing firms from less-developed countries into expanding global production networks effectively reduce the bargaining power of labor by increasing international labor competition over unskilled and semi-skilled manufacturing jobs and reducing the demand for industrial labor (e.g. Wood 1994).

I argue the globalization of production induces firms and states to implement flexible labor market reforms designed to enhance the market position of capital and skilled labor. The neoliberal reform of labor market institutions increases income inequality by allowing capital to dictate wages and employment levels in accordance with market forces. Moreover, flexible labor market exacerbated the wage differential between skilled and unskilled labor while expanding the proportion of income received by capital. As a consequence, the distribution of income has steadily expanded with the neoliberal reform of labor market institutions induced by the globalization of production.

Figure 2.3 shows a formalized path model of the relationships among process of production globalization, labor market institutions, and income inequality. According to
the model, international capital mobility and manufacturing imports from less-developed
countries exert direct and indirect effects on income inequality. Both processes directly
induce higher income inequality by reducing the effective demand for unskilled and
semi-skilled industrial labor while increasing the returns to capital and high-skilled labor.
Moreover, these processes indirectly induce higher income inequality by eroding the
bargaining position of industrial labor which leads to the decline of labor market
institution designed to produce a more equitable income distribution.

Based on this theoretical path model, prior studies may have misinterpreted the
small and inconsistent effect of economic globalization when labor market institutions
are included in the model. Since prior research utilized multivariate regression analysis,
the inclusion of labor market institutions indicator in the regression model may have
attenuated the effect of globalization on domestic income inequality. Thus, the ongoing
debate in the empirical research on globalization and income inequality may be informed
by incomplete analyses on the impact of production globalization on the 'Great U-Turn' in
income inequality among advanced capitalist countries.

Data and Measurement

Sample

I utilize four unbalanced panel samples of advanced capitalist countries from 1980 to
2008 to examine the indirect effects of production globalization on income inequality.¹
The selection of country-years in the sample is determined by the availability of data for

¹ The following countries are included in the varying samples: Australia, Austria, Belgium, Canada,
Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway,
New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.
the mediating and dependent variables. The first sample includes 492 country-year observations for 22 OECD countries from 1985 to 2008 containing full information on employment protection legislation, income inequality, and other covariates. The second sample includes 496 country-year observations for 18 OECD countries from 1981 to 2008 containing full information on wage bargaining structure, income inequality, and other covariates. The third sample includes 466 country-year observations for 20 OECD countries 1980 to 2005 containing full information on unionization rates, income inequality, and other covariates. Finally, the fourth sample includes 591 country-year observations for 18 OECD countries from 1980 to 2010. A common sample is not utilized in the analysis due to the limited statistical power of small samples. Only 157 country-year observations were common across the four samples and limited the observed time period to 1985 to 2005.

**Income Inequality**

The most common measurement of income inequality in the sociological literature is the Gini-coefficient of national income. The Gini-coefficient is a metric of dispersion ranging from 0 to 100 with 0 indicating perfect income equality and 100 indicating perfect income inequality. I observe the distribution of post-tax and transfer income to approximate inequality after factoring in tax structure and other government programs.

A common criticism of inequality research is the cross-national and longitudinal variation in data quality, income definitions, and reference units of surveys used to collect income data. As a result, researchers contend estimates are not comparable across countries and over time (e.g. Anand and Segal 2008; Dowrick and Ackmal 2005). In
response to this criticism, Solt (2009) developed the *Standardized World Income Inequality Database* (SWIID) which provides the most cross-nationally and longitudinally comparable estimates of the Gini-coefficient of national income using a Monte Carlo multiple imputation procedure for harmonizing multiple estimates of the Gini-coefficient using information from the World Income Inequality Database, the Luxembourg Income Study, and other statistics from national governments, regional organizations, and the extant literature.

The main strength of the SWIID is the comparability of the estimates which accounts for differences in the unit of observation, income definitions, and the quality of surveys. More importantly, the estimates from SWIID include standard errors for measuring the degree of uncertainty in the estimates. Even though the data on OECD are highly reliable since they are benchmarked to the high quality estimates from the Luxembourg Income Study, the standard errors of the estimates ranged from .05 to 7.06. To determine whether the results are sensitive to the uncertainty of the Gini estimates, I re-estimated all of the models for samples where the Gini estimate is less than 1 standard error (see Appendix 1.5-1.8). The results are consistent with the main findings from the unrestricted sample. The only notable differences are the coefficient for the direct effect of southern import penetration is smaller in the employment protection models and the coefficient for pathway linking outward FDI-Union density is significant. However, the latter difference is unrelated to restricting the sample to country-year observations with more certain estimates, but is attributable to the exclusion of observations that may produce the null-effect in the unrestricted sample.
**Exogenous Variables: The Globalization of Production**

The most common approach to measuring the globalization of production among advanced capitalist countries is international trade with less-developed countries and outward foreign direct investment (Alderson and Nielsen 2002; Lee et al. 2011). The former measure, southern import penetration, captures the intensity of manufacturing competition between producers in advanced capitalist countries and less-developed countries. The latter measure, outward foreign direct investment, measures the degree to which firms in advanced capitalist countries relocate production abroad through investing in foreign producers. Southern import penetration is measured as the value of manufacturing imports (SITC Rev.1 5-8) from non-OECD countries as a percentage of gross domestic product. Data on imports is drawn from the United Nations COMTRADE database (UNCOMTRADE 2012). Foreign direct investment is measured as outward foreign direct investment stock as a percentage of GDP. Data on FDI is drawn from the UNCTAD database (2012).

**Mediating Variables: Labor Market Institutions in Advanced Capitalist Countries**

I examine four labor market institutions in advanced capitalist countries: (1) employment protection; (2) wage bargaining; (3) unionization; (4) and welfare generosity. The purpose of this multi-dimensional approach to measuring labor market institutions is to capture the formal and informal regulations dictating the employment, wage-setting, workplace control, and non-market income. Even though these institutions are related to each other ($\lambda=2.15$), the limited availability of country-year samples for all variables warrants a discrete examination of each in the analysis.
The OECD employment protection index measures the costs and procedures involved in the dismissal of individuals and groups of workers as well as the regulations of temporary and part-time employment contracts (OECD 2011). The index is composed of 21 items related to employment protections which are drawn from national legislation, collective bargaining agreements, and case law. The items are weighted based on the opinions of OECD and country experts and combined into an additive index ranging from .21 to 4.19.

The structure of wage bargaining index measures the degree to which wages across firms, industries, and sectors are determined by collective bargaining agreements established through active negotiation between employer associations, union confederations, and the state. The additive index based on three components of the bargaining structure: (1) the level of bargaining; (2) the coordination of bargaining agreements; and (3) government involvement in the bargaining process. The first indicator measures the mandated level of peak bargaining as stipulated by national labor policy. The second indicator captures the behavioral properties of corporatist institutions by measuring the degree to which bargaining agreements are patterned across industries. Finally, the third indicator measures the role national governments in the bargaining process. The level of wage bargaining is measured with a 5-point ordinal scale, where high values indicate the predominant level of bargaining occurs at the sectoral or national level. Wage bargaining coordination is measured with Kenworthy's (2001) 5-point ordinal scale, where higher values indicate centralized wage agreements in one industry or sector are patterned across different industries and sectors. The role of government in wage bargaining is measured with an updated version of Hassel's (2005) 5-category index, where higher values indicates the
government directly participates in wage-setting processes by imposing private sector wage settlements or placing ceiling on bargaining agreements. Data on each indicator is drawn from Visser's (2011) *ICTWSS* database.

Union density measures the degree to which the labor force is unionized. In particular, union density is the percentage of the wage and salaried labor force with full membership in a private union. Data on union density is drawn from the ICTWSS database (Visser 2011).

Welfare generosity is measured with the decommodification index from the Comparative Welfare Entitlements Dataset (Scruggs et al 2013). The index is an update of an earlier measure devised by Esping-Andersen (1990) which measures the replacement rate and coverage of sickness, unemployment, and pension benefits.

*Baseline Control Models*

The most prominent model of inequality across the early economics and sociological literature is the internal development model (Kuznets 1955; Nielsen 1994). According to this model, inequality is the consequence of the demographic transition between industrial and agricultural sectors as well as the expansion of the skilled labor force and population growth. Accordingly, I control for sector dualism, size of the agriculture labor force, secondary education enrollment, and annual changes in the size of the population (Nielsen 1994; Alderson and Nielsen 1999; 2002). Sector dualism proxies labor force transition between sectors by observing the sector productivity difference between agriculture and other economic sectors. This measure is based on the absolute difference between the proportion of the labor force in agriculture and value-added to GDP. In
addition to measuring sector dualism, I include the size of the agriculture sector to capture the within-sector wage differences of the traditional sector. Moreover, I also include secondary educational enrollment is to control for the skill intensity of the labor force and population growth to control for changes in the size of labor force. Data on each variable is drawn from the World Bank Development Indicators database.

The second control model is designed to control for differences in labor market characteristics. Here, I control for the unemployment rate, female labor force participation rate, and the size of the industrial labor force. The unemployment rate measures the percentage of the economically active population seeking employment. Female labor force participation rate measures differences in the gender composition of labor. Industrial employment measures the percentage of the labor force in industrial sectors. Data on each variable is drawn from the World Bank Development Indicators database.

**Analytical Strategy**

The main purpose of the analysis is to test whether labor market institutions mediate the effects of capital outflow and southern import penetration on income inequality. Traditionally, researchers have primarily theorized the mechanisms linking variables in a casual process without directly observing the purported mechanism in their analytical models. I extend on this traditional approach by conducting a mediation analysis designed to observe the institutional mechanisms linking production globalization to income inequality.
In mediation modeling, researchers are concerned with whether an intervening variable accounts for the relationship between two other variables. The basic approach for this type of analysis is drawn from the recommendations of Baron and Kenny (1986), who propose a three step process for observing mediation using a series of unrelated regression models. In the first step, the researcher regresses the dependent variable on the independent variable to estimate the direct and unconditional relationship between the two variables. In the second step, the researcher regresses the dependent variable on the mediating variable to determine whether a direct relationship exists between the two variables. Finally, in the third step, researchers regress the dependent variable on the mediating and independent variables. Drawing on the work of Sobel (1982), researchers can then estimate the degree to which the mediation variable accounts for the effect of the independent variable on the dependent variable by comparing the difference in the coefficients of the independent variable in first and third steps and using a t-test to determine whether the difference is statistically significant.

Baron and Kenny (1986) classify mediation into three general conditions: (1) full mediation; (2) partial mediation; and (3) no mediation. Others contend this classification is coarse and omits the possibility of competitive mediation: the condition whether the indirect and direct effects are significant, but oppositely signed (Zhao, Lynch and Chen 2010: 200-202). If the direct or indirect effect suppresses the total effect than this may lead to the researcher to reject mediation. Using the traditional approach, an insignificant total effect in the first step would be sufficient to assume the independent variable is not mediated (Baron and Kenny 1986: 1176). Theoretically, the relationship between
production globalization and income inequality contains multiple mechanisms which imply the possibility of competitive mediation. Thus, it may be necessary to utilize alternative methods for mediation analysis.

The most critical assumption of the traditional approach is the independence of the regression equations. In the present context, for example, the error terms from the model of Gini and the model of the moderating institution are likely correlated. Ignoring these correlations causes an upward bias in the standard errors of the Gini equation, which increases the likelihood of committing a Type 2 error in hypothesis testing. Recent research suggests structural equation modeling (SEM) is a preferable method for mediation analysis (Iacobucci, Saldanha, and Deng 2007; Zhao, Lynch, and Chen 2010; Preacher, Zhang, and Zyphur 2011). In SEM, a system of equations is specified based on the theoretical modeling of covariates. This approach produces more consistent standard errors by allowing correlated errors across equations in estimating the variance/covariance matrix.

The traditional approach does not allow a researcher to know how the mediation model fits the data while SEM is designed to assess how well the overall model explains variation among exogenous and endogenous variables (see Bollen and Brand 2010). In the analysis, I compare a model with mediation to another without mediation using the Bayesian Information Criterion. Comparing the BIC of a mediation model to the a BIC without mediation provide another criterion to evaluate whether the mediation model adequately describes the covariance structure of the overall data.
The application of standard structural equation modeling is limited by the nature of panel data. The hierarchical structure of panel data, where observations are correlated within and between panels, inherently violates the assumption of independence required for the unbiased and efficient estimation of traditional SEM (Preacher et al. 2010). Moreover, these approaches are highly susceptible to the influence of unobserved covariates and correlated errors between endogenous variables, which could potentially bias estimates (Halaby 2004).

I utilize generalized multi-level structural equation modeling to estimate variance component models that decomposes the error structure by including a latent random intercept for endogenous covariates (see Krull and McKinnon 2001 for a review of these models). Here, I estimate a series of models to assess the degree to which labor market institutions mediate the relationship between globalization and income inequality. Additionally, due to the non-spherical structure of the errors, I utilize standard errors that consistent under conditions of heteroskedasticity and serial-correlation for hypothesis testing of the path coefficients.

While this approach ensures the estimates of the standard errors are consistent, it makes a strong assumption about the independence of the random-intercept from the observed covariates and unobserved time-invariant heterogeneity (Halaby 2004: 520-522). Random-effect models (i.e. panel models with a latent random-intercept) produce inconsistent estimates when the random intercept is correlated with the observed covariates. Traditionally, researchers employ fixed-effect models to produce consistent estimates. However, in context of SEM and the limited temporal variation of labor
market institutions, a fixed-effect specification may introduce problems of under-identification because of the inefficiency of the fixed-effect specification (e.g. including N-1 fixed intercepts in the model). Moreover, a series of fixed-intercept may underestimate the effects of labor market institutions on income inequality since these variables may be collinear with the fixed-intercepts.

As a robustness check, I re-estimate the random-effect models using simulated fixed-effects. Here, I transform each variable by subtracting the country-specific mean from each country-year value. Appendix 1.9-1.12 reports the coefficients, standard errors, z-scores, and probabilities of each coefficients. The main results are substantively the same which shows the variables measuring production globalization and labor market institutions are not biased by time-invariant unobserved heterogeneity. However, I find the direct effect of outward foreign direct investment stock is statistically significant and negatively related to income inequality in two of the four models with simulated fixed-effects.

Below is a simple specification of the formal model:

(1) \( Y_{it} = \alpha_{it} + X_{it} + Z_{it} + W^*_{it} + U_i + \epsilon_{it} \)

(2) \( W_{it} = \alpha_{it} + X_{it} + Z_{it} + U_i + \epsilon_{it} \)

In Equation 1 \( Y \) is the level of inequality measured by the Gini coefficient of post-tax and transfer income; \( \alpha \) is the grand intercept; \( X \) is southern import penetration, \( Z \) is outward foreign direct investment, \( W \) is labor market institution and \( W^* \) is the endogenized version, \( U \) is the random-intercept, and \( \epsilon \) is the grand error term. Equation 2 shows the endogeneity of labor market institutions and directly models this process.
Results

Figure 2.4 shows the generalized SEM of employment protection and income inequality. As discussed above, the unobserved variance of the model are decomposed into a latent random variable for unobserved differences between countries ($U_i$) and a general random variable for unobserved heterogeneity between and within countries ($E_{ij}$). The model also reports the path coefficients and significance for the pathways between employment protection, and income inequality (see Appendix 1 for full information on coefficients and standard errors of the model). The indirect effects of southern import penetration and outward foreign direct investment are measured by the product between the path coefficient for the relationship between these indicators and labor market institutions and the coefficient for the relationship between labor market institutions and domestic income inequality. Standard errors for hypothesis testing were estimated using the nonlinear combination program in STATA 13 (nlcom).

**Figure 2.4** Generalized Structural Equation Model of Employment Protection & Income Inequality

![Diagram of the model](image-url)
Additionally, I control for two alternative models of income inequality: internal
development and changes in labor market characteristics. In the first model, I control for
changes in the size of the population, secondary enrollment, sector dualism, and the size
of the agricultural labor force. In the second model, I control for the national
unemployment rate, size of the female labor force, and size of the industrial labor force.
The coefficients, standard errors, and significance of these covariates are reported in
Appendix 1.1.

According to the model, southern import penetration exhibits a positive direct and
indirect association with income inequality while capital outflow only shows a positive
indirect association. Moreover, the employment protection legislation index shows a
significant and negative association with income inequality. Surprisingly, the direct
association between outward foreign direct investment and income inequality is signed in
the opposite direction than hypothesize and statistically insignificant.

Consistent with the expectations of the integrative model, both indicators of
production globalization indirectly increases income inequality by reducing the degree of
employment protection. Moreover, including a mediating pathway improves the fit of the
model compared to simplified model with only direct pathways (BIC=1005.07 v.s.
BIC=1226.71). Overall, the model shows the globalization of production contributes to
higher levels of domestic income inequality in advanced capitalist countries by
incentivizing the liberal reform of employment protection legislation.

Figure 2.5 shows the generalized SEM of wage bargaining structure and income
inequality. The model includes the variance components and the coefficients for the
pathways linking globalization, the structure of wage bargaining, and income inequality (see Appendix 1.2 for full information on coefficients and standard errors of the model). Additionally, the model also includes control models for internal development and labor market conditions.

**Figure 2.5** Generalized Structural Equation Model of Wage Corporatism and Income Inequality.

Consistent with the theoretical expectations of the integrative model, southern import penetration shows a direct and indirect positive association with income inequality. However, capital outflows shows no association with income inequality or wage bargaining. Moreover, the model greatly improves the model fit relative to simplified model with only direct pathways (BIC=1015.28 v.s. BIC=1203.34). According to the model, global manufacturing competition between less-developed countries and advanced capitalist countries cause higher income inequality in the latter by inducing a
neoliberal reform of wage bargaining. With more decentralized and localized wage-setting, the labor market produces higher wage variation among workers.

Figure 2.6 shows the generalized SEM of unionization and income inequality. The model includes the variance components and the coefficients for the pathways linking globalization, unionization, and income inequality (see Appendix 1.3 for full information on coefficients and standard errors of the model). Additionally, the model also includes control models for internal development and labor market conditions.

**Figure 2.6** Generalized Structural Equation Model of Union Density & Income Inequality

Consistent with theoretical expectation of the integrative model, southern import penetration shows a direct and indirect positive association with income inequality. Similar to the model in Figure 2.5, southern import penetration contributes to higher income inequality by inducing de-unionization which causes higher wage variation.
between skilled and unskilled workers in manufacturing industries. Moreover, the model adequately fits the data compared to simplified model with only direct pathways (BIC=817.35 vs. 1104.32).

**Figure 2.7** Generalized Structural Equation Model of Decommodification & Income Inequality.

![Diagram](image)

Figure 2.7 shows the generalized SEM of welfare generosity and income inequality. The model includes the variance components and the coefficients for the pathways linking globalization, unionization, and income inequality (see Appendix 1.4 for full information on coefficients and standard errors of the model). Additionally, the model also includes control models for internal development and labor market conditions. Overall, the model adequately fits the data compared to simplified model with only direct pathways (BIC=1127.10 vs. 1368.42).

Consistent with the previous models, southern import penetration directly contributes to higher income inequality while capital outflow shows no direct association.
Surprisingly, both capital outflow and southern import penetration show an indirect negative association with income inequality which runs counter to the expectation of the integrative model. According to the results, production globalization may reduce income inequality by pressuring states into expanding state welfare transfers in terms of higher replacement rates and coverage.

Rodrik (1998) contends this positive correlation between an economy's exposure to international trade and investment and the size of the government is attributable to the risk reducing role governments undertake when countries are exposed to a high degree of external risk. Under conditions of the instability and uncertainty of exposure to external shocks, societies demand (and potentially receive) expanded government transfers to provide disadvantaged classes with a social safety net. Therefore, while production globalization contributes to the flexibilization of wage and employment-setting, it may produce a countervailing force that decommodifies labor.

The results of the generalized SEMs suggest the relationship between global manufacturing competition and income inequality is far more complex than initially theorized and assessed by previous studies (e.g. Alderson and Nielsen 2002; Lee et al. 2011; c.f. Wood 1994). Returning to the main motivation of the analysis, it appears that the inconsistent findings on the impact of production globalization on income inequality may be explained by the mediating effects of labor market institutions.
Table 2. Standardized Direct, Indirect, and Total Effects of Production Globalization on Income Inequality

<table>
<thead>
<tr>
<th>Employment Protection</th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Import Penetration</td>
<td>.695***</td>
<td>.058+</td>
<td>.753***</td>
</tr>
<tr>
<td>Capital Outflow</td>
<td>-.082</td>
<td>.013+</td>
<td>-.095</td>
</tr>
<tr>
<td>Capital Outflow</td>
<td>(.103)</td>
<td>(.007)</td>
<td>(.096)</td>
</tr>
<tr>
<td>Corporatist Wage Bargaining</td>
<td>.715***</td>
<td>.051*</td>
<td>.766***</td>
</tr>
<tr>
<td>Southern Import Penetration</td>
<td>(.191)</td>
<td>(.020)</td>
<td>(.193)</td>
</tr>
<tr>
<td>Capital Outflow</td>
<td>-.069</td>
<td>-.017</td>
<td>-.086</td>
</tr>
<tr>
<td>Capital Outflow</td>
<td>(.103)</td>
<td>(.024)</td>
<td>(.112)</td>
</tr>
<tr>
<td>Union Density</td>
<td>1.086**</td>
<td>.536***</td>
<td>1.622***</td>
</tr>
<tr>
<td>Southern Import Penetration</td>
<td>(.420)</td>
<td>(.134)</td>
<td>(.427)</td>
</tr>
<tr>
<td>Capital Outflow</td>
<td>.058</td>
<td>.208*</td>
<td>.266</td>
</tr>
<tr>
<td>Capital Outflow</td>
<td>(.285)</td>
<td>(.103)</td>
<td>(.301)</td>
</tr>
<tr>
<td>Welfare Generosity</td>
<td>.961**</td>
<td>-.238***</td>
<td>.723***</td>
</tr>
<tr>
<td>Southern Import Penetration</td>
<td>(.363)</td>
<td>(.058)</td>
<td>(.204)</td>
</tr>
<tr>
<td>Capital Outflow</td>
<td>-.151</td>
<td>-.137**</td>
<td>-.288*</td>
</tr>
<tr>
<td>Capital Outflow</td>
<td>(.112)</td>
<td>(.045)</td>
<td>(.120)</td>
</tr>
</tbody>
</table>

Note: Mediating variables in italics. Estimates based on models in Figures 3-7. Robust-cluster standard errors in parentheses. + - p<.10; * - p<.05; ** - p<.01; *** - p<.001.

Table 2 shows the decomposed standardized effects of southern import penetration and capital outflow on income inequality. The indirect effects are estimated from the product of the standardized coefficient for the relationship between globalization and labor market institutions and the standardized coefficient for the relationship between labor market institutions and income inequality. The standard errors for each reported coefficient in Table 2 is estimated using the nlcom program in STATA 13 and information in the models from Figures 2.4-2.7 (see Appendixes 2.1-2.4).

Based on the standardized effects in Table 2, previous studies have may have under-reported the effects of southern import penetration on income inequality by
including labor market institutions in their models without specifying a mediating relationship. Combined with the institutional pathways (i.e. the indirect effects), the total effect of southern import penetration is about 10% to 50% greater when the model includes mediating pathways with labor market institutions. However, given the relative size of the indirect effect, it appears the direct effect accounts for the majority of the total effect. In contrast, capital outflow showed no consistent direct or indirect effect on income inequality. The decomposition of the effects show the utility of examining the mechanisms linking southern import penetration to inequality and the need to uncover additionally mechanisms that explain the strong direct effect of southern import penetration.

Discussion and Conclusion

The 'Great U-Turn' problematic remains an unresolved issue despite an extensive and robust literature on income inequality. While earlier studies identified globalization as the major factor driving the recent growth of income inequality (e.g. Alderson and Nielsen 2002; Bluestone and Harrison 1988; Wood 1994), subsequent research has challenged this argument (e.g. Mahler 2004; Rueda and Pontusson 2000; Lee et al 2011). Instead, these studies show the reform of labor market institutions occupies a more significant role in explaining the recent growth of income inequality (Wallerstein 1999; Checchi and Pensolsa 2010). Therefore, the purpose of this study is to resolve this issue by developing and evaluating a unified theory that combines insights from the globalization and institutional perspectives of income inequality in advanced capitalist countries.
According to this new perspective, the globalization of production contributes to higher income inequality by inducing a neoliberal reform of labor market institutions. Drawing on recent findings from the comparative political economy literature (Baccaro and Howell 2011; Thelen 2014), I contend the market reform of employment protection legislation and the structure of wage bargaining as well as the decline of unions and the welfare state are partially driven by the heightening of international manufacturing competition with less-developed countries and the relocation of production abroad. As a result of these institutional changes, income inequality expands with growing wage variation between unskilled and skilled workers and the decline of the labor share of income. Thus, to account for the 'Great U-Turn' in income inequality, comparative researchers need to observe the market and institutional pathways linking production globalization to the distribution of national income.

The results of the multi-level path analysis partially confirm the main argument of the integrative perspective. In three out four models, southern import penetration showed an indirect positive association with income inequality through its negative relationship employment protections, corporatist wage bargaining, and unionization. However, capital outflow showed a weak and inconsistent relationship with income inequality. According to the results, outward foreign direct investment only indirectly affected inequality through inducing the reform of employment protection laws. This finding on capital outflow calls into question the early sociological literature on globalization and income inequality which showed foreign direct investment was partially responsible for growing inequality (Alderson and Nielsen 2002; Lee et al 2007). One explanation of this null
finding is that the outflow of capital is not induced by a new labor-saving strategy aimed at relocating production to more cost-effective areas. Indeed, most foreign direct investment flows between advanced capitalist countries (Lipsey 2000). Thus, the outward flow of capital may have little impact on institutional change through disempowering labor and pressuring state and labor organizations into enacting labor market reforms.

According to the results, global manufacturing competition with less-developed countries seems to be the main process of production globalization that is inducing the reform of labor market institutions. Based on the multi-level path analysis, southern import penetration indirectly affected inequality by inducing a reform in labor market institution while directly generating higher inequality through shifts in the demand for unskilled labor. According to Wood (1994), international manufacturing trade causes countries to specialize in production that utilizes surplus factors of production. Since Northern countries possess a relative surplus in a skilled labor force and capital, firms are more likely to specialize in capital- and skill-intensive production under conditions of heightened international trade. On the other hand, firms in Southern countries are more likely to specialize in labor-intensive production since these economies possess a relative surplus in unskilled labor. As a result, international trade between Northern and Southern countries causes a decline in the demand for unskilled labor in Northern labor markets.

While this theory receive substantial attention in the economic (Krugman 1995; Cline 1997; Borjas, Freeman, and Katz 1997) and sociological (Alderson and Nielsen 2002; Lee et al 2011) literatures, few consider how manufacturing trade between Northern and Southern countries would impact the institutions embedding national labor
markets in Northern countries. This study extends on these literatures by observing the institutional mechanisms linking North-South trade to income inequality. Consistent with the theoretical expectations, southern import penetration indirectly contributed to higher income inequality by inducing a neoliberal reform of labor markets that facilitated greater market flexibility in wage- and employment-setting. Overall, this suggests southern import penetration contributed to the 'Great U-Turn' by inducing a demand shift for unskilled labor while reforming the institutions that could potentially mitigate this wage loss. Future research needs to further explore this recursive process to determine whether the observed institutional reforms are also amplifying the direct association between inequality and North-South trade in advanced capitalist countries.

One of the most surprising results of the analysis is the negative indirect association production globalization and income inequality though its relationship with welfare generosity. According to the results in Figure 2.7, both capital outflow and southern import penetration show a positive association with welfare generosity which is consistent with the 'compensation thesis' (Rodrik 1998). In countries with open economies government spending plays a 'risk-reducing' role by compensating groups disadvantaged by international risk from trade and investment. This institutional channel may explain why the growth rate of income inequality remains at moderate levels despite the intensification of global manufacturing trade and capital outflow.

While the results are consistent with the compensation thesis (c.f. Brady et al 2005), the expansion of the welfare state induced by production globalization only mitigates the overall effect. According to Table 2, the magnitude of the indirect effect
suppresses the direct effect by only 24.6 percent. Thus, the expanding welfare spending may only slightly suppress the distributional effect of production globalization. Subsequent research should unpack this process by examining the mechanisms underlying the direct association of production globalization and income inequality.

Overall, the analysis shows the utility of integrating global and institutional perspectives of income inequality to explain the 'Great U-Turn' in trajectory of inequality among advanced capitalist countries. While previous studies find weak support for the relationship between globalization and income inequality, many more find labor market institutions are important determinants of the distribution of income. In order to reconcile this issue in the literature, I show the null findings for the globalization-inequality link is due in part to the fact that labor market institutions mediates this relationship.

Future research should explore the impact of globalization and institutional reform on the behavior of firms and the occupational lives of individuals. Many of the purported mechanisms in comparative theories of income inequality operate at the meso- and micro-level of social life. Therefore, its imperative to empirically interrogate these processes by linking macro-level phenomenon to changes in the structure of organizations, new corporate strategies, and changes in the labor force composition of firms as well as the growth of non-standard and low-wage work amongst individuals.

Critics of the globalization thesis of the 'Great U-Turn' should reconsider the channels through which international trade and investment impacts income inequality. The transformations of industrializations in a globalizing economy warrant a new perspective of inequality that elucidates the relationships between globalization and
institutional reform. This study provides suggestive evidence to support this idea. Therefore, in trying to explain and solve the rapid growth of income inequality, it is increasingly important to understand the interaction between globalization and institutional change in advanced capitalist countries.
References


CHAPTER 3:
The Globalization of Production, Collective Labor Rights, and Income Inequality in Developing Countries, 1985-2002

Chapter Summary
The ongoing debate over the impact of production globalization on the recent growth in domestic income inequality remains one of the more important issues in the sociological literature on inequality. A central point of contention in this dispute is whether the internationalization of production indirectly affects inequality through inducing a neoliberal reform of national labor policy. Moreover, while most research focuses on the globalization-inequality relationship in more developed countries, few recent studies examine this process in developing countries. I investigate the direct and indirect impact of the globalization of production on income inequality in 63 developing countries from 1985 to 2002. Empirically, I estimate the direct and indirect effects of subcontracting and subsidiary-based integration on the Gini-coefficient of disposable national income using multi-level generalized structural equation modeling. According to these models, both subcontracting and foreign direct investment contribute to higher income inequality by incentivizing the non-enforcement of collective labor law. Subcontracting also exerts a direct effect of income inequality. Globalized production increases inequality indirectly in developing countries by liberalizing labor markets.
Introduction

One of the most persistent findings in the extant literature on global income inequality is the near ubiquitous growth of domestic income inequality in developed and developing countries over the last few decades (Clark 2011; Firebaugh 2003; Hung and Kucinskas 2011; Sala-i-Martin 2006; Korzeniwicz and Moran 1997; Milanovic 2012; Ravaillion 2014). According to recent estimates, domestic income inequality increased by an average of 31.1% in developed and developing countries from 1980 to 2008 while international income inequality decreased by 25.3% over the same period (Clark 2011, Table 5). Since the 1990s, a number of studies have theorized explored the impact of trade openness (Wood 1997; Lee, Alderson, and Nielsen 2007; Bensidoun, Jean, Sztulman 2011; Goldberg and Pavcnik 2007) and foreign investment (Lee, Alderson, and Nielsen 2007; Dixon and Boswell 1996; Mahutga and Bandelj 2008; Bandelj and Mahutga 2010) on income inequality in developing countries. Despite this extensive literature, the association between domestic income inequality in developing countries and economic globalization remains controversial due to empirical inconsistencies and the under-theorization of the mechanism linking globalization to income inequality (Reuveny and Li 2003).

The growth of domestic income inequality during a period of expanding international trade is fairly consistent with conventional trade theory which posits international trade between developed and developing countries should increase income inequality in developed countries by reducing the demand for unskilled workers (Wood 1994; 1995). As a result, the bulk of social science research on international trade and
domestic income inequality has focused on this relationship in developed countries
(Alderson and Nielsen 2002; Gustaffson and Johansson 1999; Lee, Shim, and Kim 2011; Mahler 2004; c.f. Lee, Alderson, and Nielsen 2007). Conversely, conventional trade theory also contends international trade between developed and developing countries decreases domestic income inequality in developing countries by increasing the demand for unskilled workers (Wood 1994; 1997). Despite the recent growth of domestic income inequality in developing countries, few contemporary studies re-examine the validity of conventional trade theory for explaining income inequality. Moreover, even though most developing countries experienced rapid trade liberalization, previous research on globalization and income inequality have produced divergent findings on the distributional impact of trade and investment (Goldberg and Pavcnick 2007).

This incongruence between theoretical expectations and recent evidence on trade and inequality stems from the continued application of a framework that conceptualizes globalization as the exchange between nation-states instead of the global re-organization of industrial production (Froebel et al 1981; Feenstra 1996). A more productive conceptual approach is to view international manufacturing trade and investment flows as the aggregation of inter-firm relations within global production networks. According to this view, the globalization production should affect domestic income inequality through altering the bargaining power of firms and labor that are integrated in the increasingly dense networks of globalized production (e.g. Mahutga 2014b; Silver 2003; Rudra 2005). In context of developing countries, the integration of local firms into global production networks may generate higher levels of income inequality by inducing competitive
pressures for low labor costs or generating higher wages in sectors composed of subsidiaries of multi-national corporations.

Another important issue in the debate over the distributional consequences of globalization is whether globalization is directly or indirectly linked to income inequality (Hung and Kucinskas 2011). Previous research contends foreign direct investment and trade with developed countries directly affects income inequality through facilitating uneven development and reducing wages to poverty levels in developing countries (Bornschier and Chase-Dunn 1985; Dixon and Boswell 1996; Gatlung 1974; Kentor 2001). Other research suggest globalization plays an indirect role in the growth of domestic income inequality through inducing the retrenchment of the redistributive and regulatory state (Alderson and Nielsen 2002; Cornia and Court 2001; Lee, Nielsen, and Alderson 2007; Rodrik 2012). While an extensive literature examines the direct role of globalization in developing countries, few studies examine the impact of globalization on the formation of redistributive and regulatory state in developing countries to explain growing income inequality (e.g. Rudra 2002; Mosley 2008; Calderon and Chong 2009).

A consistent finding in the comparative political economy literature on developed countries is the negative relationship between collective labor institutions and income inequality (Wallerstein 1999; Alderson and Nielsen 2002; Western and Rosenfeld 2011; Rueda and Pontusson 2000; Mahler 2004; Checchi and Pensolsa 2010). However, few comparative studies on this relationship in developing countries (Calderon and Chong 2009). While collective labor institutions are deeply entrenched and path dependent in developed countries (Hall and Soskice 2001; Campbell 2004; c.f. Baccaro and Howell
2011; Roberts 2014; Thelen 2014); these institutions have only recently emerged in developing countries (Flanagan 2006; Mosley 2011; Silver 2003). Since these institutions are in the formative stages of development, it is important to observe both the *de jure* and *de facto* institutionalization of collective labor. The lack of resources available to state actors and the geographic mobility of capital creates the possibility that countries will enact, but not enforce collective labor rights. This 'decoupling' of collective labor rights and practices may operate as an intermediate mechanism linking production globalization to income inequality in developing countries.

Absent in the literature is an understanding of how national economic institutions mediate the distributional effects of globalization in developing countries. In general, I contend the globalization of production exerts direct and mediated effects on the national distribution of income. The outsourcing of labor-intensive manufacturing processes to developing countries *directly* affects income inequality by lowering the wage rate of unskilled industrial labor in the formal and informal sectors (Anner 2011; Phillips 2011; Azmeh 2014). The high degree of competition over manufacturing contracts in labor-intensive industries pressures local firms to reduce the costs of production by maintaining low wages and employing a flexible labor force.

For example, in Latin America, between the mid-1980s and mid-1990s, a period characterized by rapid outsourcing to this region, real urban wages declined by more than 25 percent for low-skilled workers in the region (Anner 2008; Weeks 1999). In this context, the informal economy plays a critical role in suppressing wage rates and ensuring labor flexibility since informal workers are paid less than formal workers and
are not afforded the same labor protections (Roberts 2013; Phillips 2011). Accordingly, the integration of local firms into global production networks increases income inequality through depressing the wage rate of unskilled manufacturing labor and expanding the informal labor force.

In addition to this direct effect on wages, the globalization of production indirectly affects income inequality by undermining the enforcement of laws guaranteeing the right to unionize, collectively bargain, and strike (Anner 2008; 2011; Mosley 2011). The development of collective labor institutions produces higher labor costs for globally-integrated firms as unions are able to bargaining for higher wages and disrupt the production process during periods of disagreement over wages and working conditions. The competitive pressures of globalized production and the demand for a low-cost production induce firms to ignore collective labor laws and to pressure states into relaxing enforcement mechanisms in labor policy. Accordingly, the main purpose of the article is to assess the institutional mechanism linking economic globalization to income inequality in developing countries to explain the incongruence between international trade theory and the empirical evidence the growth of domestic income inequality. In sum, I contend that we need to understand how Southern countries are simultaneously embedded in labor market institutions and global production networks to account for cross-national variation in income inequality among them.

I employ a novel application of generalized multi-level structural equation modeling (SEM) to estimate the degree to which globalization is mediated by collective labor rights and practices in 63 developing countries from 1985 to 2002. According to the
generalized SEM, manufacturing exports to developed countries and foreign direct investment contribute to higher levels of income inequality by incentivizing the non-enforcement of collective labor rights.

While most of these countries enacted comprehensive labor codes and constitutional reforms to provide workers with the right to collectively associate, bargain, and strike against employers, the competitive pressures of globalized production induced local firms to ignore these rights to maintain competitiveness through low labor costs. As a result, a greater proportion of income is distributed to investors and owners while unskilled workers compete over poverty-level wages. Overall, this research shows the importance of examining the formation of collective labor institutions in developing countries to account for role of production globalization in the recent growth of domestic income inequality.

**Economic Globalization and Income Inequality in Developing Countries**

Figure 3.1 shows the locally-weighted time trend of domestic income inequality in low and low-middle income countries from 1985 to 2002. Consistent with previous studies on inequality in developing countries (e.g. Ravallion 2014; Firebaugh 2003), the level of income inequality increased by 24% over the observed period from a local average Gini-coefficient of 33 in 1985 to an average of 41 in 2002. The periodicity of this trend in income inequality coincides with a period of massive liberal reforms and the enactment of labor codes in the developing world. Whether these processes influenced the growth in domestic income inequality remains a controversial topic and requires more extensive empirical evidence to determine these relationships.
The world-systems and dependency traditions in sociology have long identified global economic integration as one of the fundamental causes of income inequality in developing countries (Amin 1974; Galtung 1974; Wallerstein 1974; Bornschier and Chase-Dunn 1985). A central claim of these perspectives is world economic relations between developed and developing countries fosters economic dependence and subordination among developing countries, which distorts the wage structure of these economies to favor local elites and foreign capital. While these perspectives are helpful for explaining the distributional consequences of economic globalization in developing countries during the early part of the 20th century, the rapid industrialization of these countries and the emergence of a 'new international division of labor' (Frobel et al. 1980) requires a new conceptual framework for understanding the relationship between globalization and income inequality in the 21st century.
According to Weede and Tiefenbach (1981), world economic relations between developed and developing countries produces three general types of dependence: (1) trade-dependence (see Galtung 1971) and (2) foreign capital dependence (see Rubinson 1976; Wallerstein 1974). Trade dependence is a condition where developing countries either specialize in the production of a limited number of primary commodities for export or exclusively trade with a few developed countries. Investment dependence refers to a condition where economic growth is limited to sectors dominated by foreign capital. As a result, the development of these economies becomes primarily driven by a small set of export-oriented sectors or the interests of capitalists in the developed core of the world economy.

Previous studies on trade dependence find that income inequality is higher in countries that specialize in the export of primary goods while importing manufactured goods from a few highly developed countries (Galtung 1971; Evans and Timberlake 1980; Sullivan 1983). According to this literature, vertical and 'feudal' trade patterns between developed and developing countries increase income inequality by restricting the manufacturing sector to the production of low-valued primary commodities (Galtung 1971). As a consequence, the rents received by local agricultural elites continually grow at the expense of labor. These agricultural societies are become heavily dependent on the informal sector to subsidize the cost of labor-intensive production, reproduce labor, and to maintain a low-wage labor regime (Roberts 2013; Evans and Timberlake 1980).

In contrast to the expectations of world-system and dependence theorists, Wood (1997) argues international manufacturing trade with developed countries should reduce...
income inequality in developing countries by increasing the relative demand for and wages of unskilled workers in export-oriented sectors. According to this model, international trade induces countries to specialize economic activities that make use of production factors that are abundant within them. In the case of developing countries, international trade causes a growth in labor-intensive production since these countries possess an abundance of unskilled labor. Conversely, developed countries experience a growth in capital-intensive and high-skill production, since these countries possess an abundance of capital and skill.

The impact of 'foreign capital penetration' is one the most prominent explanation income inequality in developing countries (Amin 1974; Bornschier and Ballmer-Cao 1979; Bornschier and Chase-Dunn 1985). According to this argument, sectors predominately owned by foreign multinational corporations tend to utilize more sophisticated and capital-intensive production processes while local sectors specialize in labor-intensive production (Evans and Timberlake 1980; Mahutga and Bandelj 2008; Sullivan 1983). The developmental gains generated in foreign-dominated sectors are unable to 'spill-over' into other local sectors, which leads to the rapid growth of between-sector wage inequality. Moreover, as foreign-dominated sectors develop while local sectors stagnate, the local class structure becomes distorted and fractionalized with the emergence of a highly paid cadre of workers and managers in foreign-dominated sectors and the rapid expansion of the informal labor force in local sectors (Evans and Timberlake 1980; Timberlake and Kentor 1983). Local labor movements are unable to form a cohesive and effective response to state policies designed to reduce labor
bargaining power and promote labor market flexibility (Beer and Boswell 2002; McMichael 1996; Kentor 2001). In sum, foreign investment dependence amplifies between-sector inequalities while eroding the collective capacity of organized labor to mitigate this general distributional effect.

A number of empirical studies find evidence for this argument, where foreign capital penetration, measured as the stock of foreign direct investment, is positively associated with income inequality (Beer and Boswell 2002; Dixon and Boswell 1996; Kentor 2001; Alderson and Nielsen 1999; Stokes and Anderson 1990; Mahutga and Bandelj 2008; Lee 2005). However, Firebaugh (1992) shows that previous studies incorrectly interpreted the evidence for the negative impact of foreign investment on development and instead argues foreign investment promotes economic growth albeit not as effectively as domestic investment. Subsequent studies account for this critique in explaining the impact of foreign investment on income inequality and find a positive association across varying samples of developing countries (Alderson and Nielsen 1999; Dixon and Boswell 1996; Mahutga and Bandelj 2008).

Despite the evidence showing the positive associations between foreign direct investment, international trade, and income inequality in developing countries, these studies utilize a conceptualization of globalization that may not describe the contemporary structure of the world economy. The rapid industrialization of developing countries and the simultaneous de-industrialization of developed countries suggest a new mode of global economic integration is driving development in both sets of countries. I adopt a new framework for conceptualizing international trade and investment as
indicators of the aggregated relations between firms in developing and developed countries that compose global production networks.

In context of developing countries, manufacturing exports to developed countries is increasingly driven by the subcontracting of firms to produce raw materials, intermediate goods, and assembling products for consumption in developed countries. Additionally, foreign direct investment may indicative of firms investing into local firms or building to fulfill similar roles of labor-intensive production (Mosley and Uno 2007: 925-927). Surprisingly, few contemporary studies utilize this conceptualization of globalization to explain the growth of domestic income inequality. As a consequence, the ambiguous effect of globalization on domestic income inequality in developing countries could be attributable to ignoring international manufacturing trade and investment as indicators of global production integration

*Global Production Integration and Income Inequality*

The intensification of global manufacturing over the last four decades has created dense global networks of manufacturing firms from developed and developing countries which are interconnected through formal and informal production relations (Gereffi 1994; Gereffi et al. 2005; Mahutga 2012). During the 1970s and 1980s, the global dispersion of industrial production established a new 'international division of labor' centered on the international exchange of intermediate production inputs and the formation of global production networks for producing final goods (Froebel et al. 1978; Feenstra 1996). The globalization of production suggests that international trade and investment are increasingly indicative of this integrative processes, where local firms are integrated into
dense networks through subsidiary or contractual relations with other firms (Mahutga 2012; 2014a).

This global re-organization of industrial production makes it more important to examine manufacturing trade relations between developing and developed countries to understand the developmental consequences of international trade since aggregate trade flows are driven by relations among globally integrated firms in developed and developing countries. The low barriers of entry to labor-intensive production and the continued outsourcing of these processes abroad induce firms in developing countries to perpetually lower labor costs to compete for international manufacturing contracts and to maintain profitability (Anner 2008; 2011; Phillips 2011). Moreover, the growth of subsidiaries in developing countries may exacerbate wage inequality between sectors as well as skilled and unskilled workers as these firms introduce more advanced technological production processes. As a result, despite the growth in demand for unskilled labor, the relative wages of unskilled laborers are stagnant or declining while the capital share of income expands with the liberalization of trade and investment.

The integration of firms from developing countries into dense global production networks is part of a general structural process of globalizing production in the world economy since the 1970s. Because there are many firms in developing with the requisite capabilities to internalize offshored economic activities, global production integration pressures subcontracted firms into maintaining low wage levels and flexible labor regimes to reduce production costs (Amzeh 2014; Heintz 2006; Roberts 2013; Phillips 2011; Wood 1997). Accordingly, a growth of manufacturing exports should be associated
with greater income inequality as the wage gap between skilled and unskilled expands as well as the capital share of income.

In industries with low to moderate barriers to entry, lead firms in developed countries are more likely to build or purchase subsidiaries in developing countries. Parent firms diffuse advanced production technologies to subsidiaries, which increases their productivity relative to domestic firms. Evidence from Mexico shows foreign direct investment flows increase the relative demand for skilled labor which lead to the growth of wage inequality between foreign-dominated and local sectors (Feenstra and Hanson 1997). Thus, the integration of local firms into global production networks via FDI should increase income inequality as the wage gap between highly productive foreign firms and their domestic counterparts should grow with the diffusion of more efficient and technology advanced production processes.

**Figure 3.2** Inward Foreign Direct Investment Stock and Northern-Bound Manufacturing Exports, 1985-2002
Figure 3.2 shows the average trends in the two indirect indicators of global firm integration: (1) the value of manufacturing exports to developed countries and (2) the value of inward foreign direct investment stock. Consistent with the emerging literature on the globalization of production, both indicators show an average increase in developing countries from 1985 to 2002. These upward trends suggest that local firms are increasingly integrating into global production networks through subcontracting and subsidiary-based relationships with Northern firms. Whether this integrative process explains the recent growth of domestic income inequality remains unknown, but the upward trends in manufacturing exports and inward foreign direct investment are parallel with the upward trend in income inequality.

**Collective Labor Rights and the Inequality Effects of Production Globalization**

Research outside of sociology shows global production integration producers divergent effects on the improvement labor standards in developing countries (Mosley and Uno 2007; Flannigan 2006). According to this perspective, multinational corporations with subsidiaries in developing countries may pressure governments into enforcing basic rights since firms are dependent on the quality of labor and the maintenance of harmonious industrial relations. However, subcontracting relations between multinational corporations and subcontracted firms in developing countries may pressure employers into violating collective labor rights to maintain low production costs. If international trade and investment induce firms and state agencies in developing countries to violate and not enforce collective labor rights to reduce labor costs than income inequality should expand with the intensification of globalized production.
The empirical ambiguity of the relationship between economic globalization and income inequality remains one of the most contentious issues in the extant literature on inequality. In particular, researchers continue to disagree over the role of globalization in the recent growth of domestic income inequality across countries (Hung and Kucinskas 2011). This debate has largely crystallized into two general perspective. Some researchers argue globalization directly affects income inequality by increasing international competition and relocating industrial production to more cost-effective areas (Alderson and Nielsen 2002; Kentor 2001; Silver 2003; Firebaugh 2003). However, other researchers argue that globalization indirectly impacts income inequality by pressuring states to adopt neoliberal reforms which lead to the decline of the welfare state and expose local producers and workers to the volatility and competition of the world economy (Cornia and Court 2001; Alderson and Nielsen 1999; Lee et al., 2007).

Despite these opposing viewpoints on the role of production globalization, few empirical studies examine whether domestic labor institutions mediate the inequality effects of globalization. Thus, this article sets out to resolve this longstanding debate by developing an integrative model on the direct and indirect effects of globalization on income inequality using key concepts from economic sociology and comparative political economy. The main contention of this article is globalization contributes to income inequality through inducing the neoliberal reform of labor market institutions.

Institutional economics, comparative political economy, and economic sociology emphasize the importance of domestic economic institutions in shaping the preferences and behavior of actors in markets (Levy and Temin 2007; Amendola, Easaw, and Savioa
Economic institutions refer to the formal and informal rules that set the parameters for legitimate economic behavior and exchange in markets (North 1990). Labor market institutions constitute the set of formalized and informal rules that dictate wages, working conditions, and dismissals. Perhaps the most important labor market institutions for determining the distribution of national income are institutions designed to permit labor to form associations, engage in coordinated strikes, and collectively bargain with employers over wages, working conditions, and dismissals.

A major claim in the recent literature on inequality in developing countries is the egalitarian effect of labor regulation on the distribution of national income (Kerrissey forthcoming; Calderon and Chong 2009). One of the main claims of these studies is that enactment and enforcement of collective labor rights reduces income inequality by facilitating the formation of unions and collective bargaining structures. This argument is consistent with the empirical research on the distributional effects of collective labor institutions in developed countries (Alderson and Nielsen 2002; Checchi and Garcia-Penalosa 2010; Freeman and Nickell 1988; Wallerstein 1999; Western and Rosenfeld 2011). Thus, nascent labor market institutions may play a significant role determining the degree of income inequality in developing countries.

Unions and wage bargaining institutions compress the wage distribution by establishing non-market wage schedules and restricting employer discretion in dismissals. Underlying these institutions is the formal and informal right to engage in collective organization, strike, and bargaining over employment contracts and working conditions.
While these rights are nearly ubiquitous across advanced capitalist countries, only recently have states in developing countries provided these rights through the enactment of comprehensive labor codes, constitutional reform, and other legislation (Mosley 2011; Mosley and Uno 2007). However, whether labor rights are lead to the development of collective labor institutions is highly contingent on employers observing and the state enforcing these rights. Given the recent enactment of collective labor rights in the developing world, it is important to determine whether collective labor rights and practices are consistent with each other under conditions of globalization.

The 'decoupling' of law and practice is more of a concern for developing countries because of state instability and a lack of governmental resources (Meyer et al. 1997: 154-156). This distinction between the legal rights of labor and the enforcement of those rights is important in developing countries. A common observation about labor regulation in developing countries is the incongruence between the labor law and the enforcement of those laws (Moran 2002; Bhagwati 2004; Cole 2013). For example, a previous report on labor laws in developing countries from the Fair Labor Association (2005), shows while most developing countries have enacted comprehensive labor regulations, these governments are more concerned with international competitiveness and often have lax enforcement of those laws. Therefore, it is essential to analyze both the legal enactment of collective labor rights and the enforcement of these rights to parse out the impact of collective labor institutions on income inequality in developing countries.
Figure 3.3 shows the average trend of collective labor rights and practices in developing countries from 1985 to 2002. During this period, the degree to which countries enacted collective labor legislation remained somewhat stable while the degree to which these laws were enforced has rapidly declined. Based on the observed trends in Figure 3.2, it would appear that the rapid integration of Southern firms into GPNs is associated with the non-enforcement of collective labor law in developing countries. Whether these associated trends explain variation in income inequality remains unanswered.

I adopting a bargaining perspective of institutional development to explain the decoupling of collective labor rights and practices in developing countries. This perspective identifies the marketplace bargaining position of labor as the key mechanisms linking globalization to institutional development. According to this perspective, the formation and persistence of labor regulations and norms are the outcome of political contestation between
organized capital and labor (Fligstein 2001; Knight 1992). Organized labor utilizes marketplace bargaining power to leverage firms and states to enforce collective labor policies and practices that promote the interests of organized labor (Wright 2000; Silver 2003). According to Rudra (2005), economic globalization reduces the effective bargaining power of labor in developing countries because of the intensification of international competition among globalized firms in the South and the demands of labor-intensive production. While this research illuminates the link between globalization and bargaining power, I extend on it by examining the institutional implications of the declining bargaining power of labor. Therefore, in order to explain the recent upswing in income inequality, it is imperative to examine whether global production integration affects the institutionalization of collective labor practice.

The rapid integration of firms in developing countries into GPNs significantly disadvantages labor since these firms are more concerned with the demands of lead firms and manufacturing contracts than local norms and laws. More importantly, given the increasing international competition for production contracts (see Mahutga 2014a), firms are more willing to systematically violate collective labor rights in order to maintain low-cost production and profitability (Anner 2008; 2011; Phillips 2011). In contrast, Mosley (2008; 2011) contends subsidiaries transfer better labor practices from parent firms which would lead to the observance and enforcement of collective labor rights. However, others find the inflow of foreign capital into a developing economy may incentivize the non-enforcement of collective labor rights by utilizing informal labor and fractionalizing the
local labor force (Evans and Timberlake 1980; Timberlake and Kentor 1983; Roberts 2013).

As a consequence of the rapid integration of local firms, labor relations in developing countries are fundamentally altered due to the asymmetry in bargaining power between employers and labor in global production networks. The skew in bargaining power should result in the de facto liberalization of collective labor institutions as employers utilize their power to ignore workers rights while pressuring the state into not enforcing collective labor law. The weak enforcement of collective labor rights in developing countries should cause income inequality to increase since labor is unable to establish unions, wage agreements, and collective dispute procedures. In turn, the variation in wages and levels between industries and sectors are allowed to grow causing a higher degree of income inequality. However, the growth of subsidiaries in developing countries may either suppress or amplify the de facto liberalization of collective labor institutions by either incorporating better labor practices from multi-national corporations or disempowering local labor.

**Figure 3.4.** Theoretical Model of Income Inequality and Embeddedness in Developing Countries
Figure 3.4 summarizes the general theoretical argument with simple path model illustrating the connection between global production integration and formative collective labor institutions. This theoretical path model serves as the main hypothesis for the analysis. According to the theoretical path model, the integration of firms from developing countries into global production networks via subcontracting and direct purchasing impacts income inequality by inducing a retrenchment of nascent collective labor institutions. As a consequence of this institutional reform, income inequality intensifies with a growth in wage variation and a decline in the unskilled labor share of income.

Observing the institutional mechanisms linking production globalization to income inequality may explain the empirical ambiguity in the literature over this relationship. The small effect of globalization in previous studies could be the consequence of the mediating role of formative labor market institutions. Accordingly, prior comparative research based on multivariate regression may under-estimate the effect of globalization by including indicators for collective labor institutions that are collinear with globalization. The integrative model accounts for this relationship between production globalization and collective labor rights by including direct and indirect pathways linking international trade and investment to the distribution of national income. As a result of this pathway specification, the total effect of globalization is decomposed into its direct and indirect components which may account for the mixed findings in the empirical literature on globalization and income inequality.
Data and Measurement

Sample

I utilize an unbalanced panel dataset on a sample of 63 low and low-middle income countries from 1985 to 2002\(^2\) to empirically assess the theoretical path model in Figure 3.4. Based on the 2010 World Bank Income Group Classification scheme, countries are defined as low income if gross national income (GNI) per capita is less than $1,005 while countries are classified as low-middle income if GNI per capita is greater than $1,005, but less than $3,975.\(^3\) The period of observation is limited to 1985 to 2002 due to the availability of the collective labor rights variables. The final sample includes 396 country-year observations after excluding missing data with an average of 7 observations per country.

Dependent Variable: Income Inequality

The most standard measure of income inequality is the Gini-coefficient of national income. The Gini-coefficient is an index measure of dispersion that ranges from 0 to 100 with higher values indicating greater inequality. Data on the Gini-coefficient of post-tax income is drawn from the *Standardized World Income Inequality Database (SWIID)* (Solt 2009). A major issue in the cross-national study of income inequality is the lack of comparable estimates arising from methodological differences between

\(^2\) The sample includes the following countries: Albania, Armenia, Azerbaijan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chile, China, Colombia, Republic of Congo, Costa Rica, Djibouti, Ecuador, Egypt, El Salvador, Ethiopia, Fiji, Gambia, Georgia, Ghana, Guatemala, Guinea, Honduras, India, Jordan, Kazakhstan, Kenya, Kyrgyz Republic, Lesotho, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mongolia, Morocco, Mozambique, Namibia, Nepal, Niger, Pakistan, Panama, Paraguay, Peru, Philippines, Rwanda, Senegal, Sri Lanka, Swaziland, Tajikistan, Thailand, Togo, Tunisia, Turkey, Uganda, Ukraine, Uruguay, and Vietnam.
countries (Anand and Segal 2008; Dowrick and Ackmal 2005). Countries vary in their use of reported income or expenditures, population coverage, area coverage, and income unit (e.g., household vs. individuals). Previous studies have utilized estimates from the *World Income Inequality Database* and controls for differences in survey quality and definitions to maximize comparability in cross-national analysis (e.g. Alderson and Nielsen 2002; Lee 2005; Lee et al. 2011; UNU-WIDER 2008). The limited availability of "high quality" estimates for developing countries requires the use of an alternative data source.

Estimates of the Gini-coefficient from the SWIID are derived from WIID data and benchmarked using the highly reliable data from the Luxembourg Income Study. Solt utilizes a custom missing-data algorithm to standardized estimates across countries with different reporting practices and data quality. In the first stage Solt paired estimates from the WIID to baseline estimates from the Luxembourg Income Study, which provides the most comparable estimates of national income. Next, Solt partitions the estimates across the different categories defined by reporting unit and income definitions to generate category-specific Gini ratios between the two estimates. Finally, he uses this information to generate estimates (see Solt 2009: 234-238). In the sample, the average Gini-coefficient is 42 for all country-years. The lowest level of inequality (27) is observed in Albania in 1997, while the highest level of inequality (64) is observed in Namibia in 2000.

The high degree of uncertainty over the estimates of income inequality in low- and low-middle income countries raises concerns about the robustness of the parameter
estimates in the model. In accordance to the recommendations of Solt (2009), I re-
estimated the models with a sample that excludes country-year observations with 
estimates exceeding 3 standard errors (a threshold that accounts for 10 percent of the 
sample). The estimates from the more restricted sample produced are consistent with the 
parameters of the model from the unrestricted sample (see Appendix 2.2).

**Main Independent Variables: Global Production Integration**

I utilize trade- and investment-based indicators to measure the aggregate rate of 
subcontracting and subsidiary integration. Specifically, by including trade- and 
investment-based variables in the same model, an international trade indicator would 
approximate the production of subcontracted firms while an investment indicator would 
measure the production of subsidiaries (Mosley 2011). In previous studies on highly-
developed countries, trade-based integration is measured as the total value of 
manufacturing imports from developing countries as a percentage of GDP (e.g. southern 
import penetration) (Alderson and Nielsen 2002). I use the inverse of this measure for 
less-development countries. Specifically, I measure subcontracted production with the 
relative value of manufacturing exports to Northern countries. Northern exports 
orientation is intended to measure the degree to which Southern firms are subcontracted 
into GPNs. Here, sub contractual integration is measured using the value of 
manufacturing exports to Northern countries which is measured as the total value of 
manufacturing exports (SITC Rev. 2: 5-8) to high and upper-middle income countries as 
a percentage of gross domestic product. Data for both measures are obtained from the
UNCOMTRADE database and World Bank's World Development Indicator database (WDI). This measure is logged because of a non-normal univariate distribution.

Subsidiary integration is measured by the total value of inward foreign direct investment (FDI) as a percentage of GDP. Based on the earlier critique of FDI penetration literature (e.g. Firebaugh 1992), I include two additional controls: the rate of foreign direct investment (the ratio of FDI flow to stock) and gross capital formation as a percentage of GDP. Data on inward FDI stock and flow is obtained from the UNCTAD World Investment Database and data on gross capital formation is drawn from the WDI. Inward FDI rate is logged because of a non-normal univariate distribution.

Mediating Mechanism: Collective Labor Rights & Practices

While numerous studies explore the negative effect of collective labor institutions on income inequality, there is little to no systematic and comparative analysis of this link in developing countries despite the growth of collective labor law in developing countries over the last twenty years (Flanagan 2006; Mosley 2011; Mosley and Uno 2007; Silver 2003). The paucity of research on the institution-inequality link in developing countries is primarily attributable to the nascent state of these institutions as well as the unavailability of internationally-comparable and reliable measures of collective labor institutions in developing countries. Recently, Layna Mosley (2011) addresses these issues by creating cross-nationally comparable measures of de jure and de facto collective labor rights in developed and developing countries. The former refers to the enactment of legal collective labor rights while the latter refers to the enforcement of those legal standards.
The Collective Labor Rights (CLR) database (Mosley 2011) provides the most comprehensive and internationally-comparable measures of the right to, and practice of, collective bargaining, collective strikes, and formation of worker associations for a cross-section of 198 countries observed over an 17 year period (1985-2002). Data on collective labor rights and practices are based on the coding of national legislation and a number of country-specific official reports from the US State Department, International Labor Organization, and the International Confederation of Free Trade Unions.

The key feature of this data is that it provides estimates for both the de jure and de facto collective labor institutions. De jure labor market institutionalization is measured by an additive scale based on 21 items covering whether countries possessed general prohibitions against the right to organize and form unions to whether rights are restricted in export-processing zones. Higher values of the scale indicate that countries have established laws that promote the organization of labor. De facto labor market institutionalization is measured with an additive scale based on 16 items covering whether there was a murder or disappearance of union organizers to whether the scope of collective bargaining agreements was limited by non-state employers. Similar to the other measures, higher values indicate that industrial relations promote the collective organization and action of labor.

Baseline Model of Income Inequality: Internal Development

Based on previous sociological research on economic development and income inequality (Nielsen 1994; Nielsen and Alderson 1997; Alderson and Nielsen 1999), I include the following internal development controls: (1) sector dualism; (2) gross
secondary enrollment; (3) population growth; and (4) size of the agriculture labor force. Sector dualism is the absolute difference between the percentage of the civilian labor force in agricultural sectors and the percentage share of GDP from the agricultural sector (see Nielsen 1994). Data on agricultural employment and value-added is obtained from the World Bank's World Development Indicator Database. Gross secondary enrollment is measured as the percentage of the population of official secondary education age enrolled in secondary education and programs. Data on secondary enrollment was obtained from the World Bank's World Development Indicator Database. Changes in population size are measured with the natural rate of population growth. The natural rate of population growth is measured as the difference between the crude birth rate and the crude death rate. Data on birth and death rates were obtained from the World Bank's World Development Indicator Database.

Baseline Model of Collective Labor Rights: Democracy and Leftist Regimes

I include two controls for collective labor rights and practices: (1) the strength of leftist parties and (2) democratization. Strength of leftist parties is measured as the percentage of representative seats and executive offices held by leftist parties. Data on the party composition of executive offices and legislative seats is drawn from the Database of Political Institutions (Keefer 2010). Democratization is measured using the Polity IV index. Data on democratization is drawn from the Polity IV database (Marshall et al. 2010).

Table 3.1 provides summary statistics for income inequality and other covariates.
Table 3.1. Summary Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gini-Coefficient of Post-Tax Income</td>
<td>43.05</td>
<td>8.30</td>
<td>27.50</td>
<td>66.64</td>
</tr>
<tr>
<td>Northern-Bound Exports (% GDP)</td>
<td>1.12</td>
<td>1.71</td>
<td>.00</td>
<td>1.72</td>
</tr>
<tr>
<td>Inward FDI Stock (% GDP)</td>
<td>14.44</td>
<td>14.63</td>
<td>.07</td>
<td>104.14</td>
</tr>
<tr>
<td>Domestic Investment</td>
<td>2.94</td>
<td>7.73</td>
<td>4.18</td>
<td>6.35</td>
</tr>
<tr>
<td>Inward FDI Rate</td>
<td>.13</td>
<td>.17</td>
<td>-.99</td>
<td>1.11</td>
</tr>
<tr>
<td>Collective Labor Law Index</td>
<td>-.07</td>
<td>.80</td>
<td>-3.24</td>
<td>.89</td>
</tr>
<tr>
<td>Collective Labor Practices Index</td>
<td>-.34</td>
<td>1.03</td>
<td>-3.39</td>
<td>1.04</td>
</tr>
<tr>
<td>Democratization Index</td>
<td>3.19</td>
<td>3.39</td>
<td>.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Share of Leftist Party Votes</td>
<td>13.23</td>
<td>29.32</td>
<td>.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Sector Dualism</td>
<td>22.32</td>
<td>13.90</td>
<td>.16</td>
<td>57.05</td>
</tr>
<tr>
<td>Population Growth</td>
<td>2.24</td>
<td>1.15</td>
<td>-2.52</td>
<td>11.18</td>
</tr>
<tr>
<td>Agriculture Employment</td>
<td>4.23</td>
<td>23.70</td>
<td>.00</td>
<td>89.30</td>
</tr>
<tr>
<td>Industrial Employment</td>
<td>18.57</td>
<td>8.03</td>
<td>2.30</td>
<td>36.40</td>
</tr>
<tr>
<td>Secondary Enrollment Rate</td>
<td>38.73</td>
<td>23.96</td>
<td>3.28</td>
<td>101.50</td>
</tr>
</tbody>
</table>

Note: n=396.

Analytical Strategy

The main purpose of the analysis is to test whether labor market institutions mediate the effects of capital outflow and southern import penetration on income inequality.

Traditionally, researchers have primarily theorized the mechanisms linking variables in a casual process without directly observing the purported mechanism in their analytical models. I extend on this traditional approach by conducting a mediation analysis designed to observe the institutional mechanisms linking production globalization to income inequality.

In mediation modeling, researchers are concerned with whether an intervening variable accounts for the relationship between two other variables. The basic approach for this type of analysis is drawn from the recommendations of Baron and Kenny (1986), who propose a three step process for observing mediation using a series of unrelated regression models. In the first step, the researcher regresses the dependent variable on the
independent variable to estimate the direct and unconditional relationship between the two variables. In the second step, the researcher regresses the dependent variable on the mediating variable to determine whether a direct relationship exists between the two variables. Finally, in the third step, researchers regress the dependent variable on the mediating and independent variables. Researchers can then estimate the degree to which the mediation variable accounts for the effect of the independent variable on the dependent variable by comparing the difference in the coefficients of the independent variable in first and third steps and using a t-test to determine whether the difference is statistically significant.

The traditional approach requires the total effect to be statistically significant from zero as a necessary condition (Baron and Kenny 1986: 1176), but when the indirect and direct effects are oppositely signed, it would be difficult to detect a significant total effect (Zhao, Lynch and Chen 2010: 200-202). Theoretically, production globalization could exhibit contrasting effects on inequality, where international trade and investment reduces income inequality by promoting collective labor rights (Mosley 2011; Flanagan 2006) while increasing inequality through increasing between-sector wage inequality and reducing the wage rates of unskilled labor (Feenstra and Hanson 1998; Anner 2008; 2011). The traditional approach for this analysis may lead of the research to improperly reject the presence of mediated effects.

The most critical assumption of the traditional approach is the independence of the regression equations. In the present context, for example, the error terms from the model of Gini and the model of the moderating institution are likely correlated. Ignoring
these correlations causes an upward bias in the standard errors of the Gini equation, which increases the likelihood of committing a Type 2 error in hypothesis testing. Recent research suggests structural equation modeling (SEM) is preferable method for mediation analysis (Iacobucci, Saldanha, and Deng 2007; Preacher, Zhang, and Zyphur 2011). Mediation analysis using SEM allows for the simultaneous estimation of interrelated linear equations. This adjusts for correlated errors across the models in estimating the variance/covariance matrix. As a result, SEM produces more consistent standard errors for statistical inference of mediation.

Additionally, the traditional approach does not allow a researcher to know how the mediation model fits the data while SEM is designed to assess how well the overall model explains variation among exogenous and endogenous variables (see Bollen and Brand 2010). In the analysis, I compare a model with mediation to another without mediation using the Bayesian Information Criterion. This comparison provides further evidence for whether the inclusion of a mediated pathway improves the fit of the model to the covariance structure of the variables.

The hierarchical structure of panel data, where observations are correlated within and between panels, inherently violates the assumption of independence required for the unbiased and efficient estimation of traditional SEM (Preacher et al. 2010). Moreover, traditional SEM is highly susceptible to the influence of unobserved covariates and correlated errors between endogenous variables, which could potentially bias estimates (Halaby 2004). In order to derive efficient, consistent, and unbiased estimates, I utilize multi-level generalized structural equation modeling to test whether collective labor
rights and practices mediate the effects of global economic integration (see Krull and McKinnon 2001 for a review of these models).

The most common approach to multi-level generalized SEM is to include a set of random intercepts for each intermediate (or mediating) variable in the path model. However, a critical assumption of this approach is that the random intercepts are orthogonal to all of the observed covariates in the model. Violation of this assumption suggests that estimates from random-effect models are inconsistent and unreliable. In traditional panel modeling, researchers utilize fixed-effect models over random-effect models when the assumption is violated (Halaby 2004; Wooldridge 2001). Fixed-effect models resolve this issue by utilizing a less efficient approach, where a vector of fixed intercepts is included in the regression model. To determine whether fixed-effect or random-effect models are more appropriate, I compared the estimates from each type of model using a Hausman specification test (Hausman 1978). Using this procedure, I found the random-effect models produced inconsistent estimates and fixed-effect models are preferable.

In the context of SEM, the choice between fixed- and random-effect models is even more complicated because the traditional fixed-effect approach causes the SEM model to be under-identified due to the inclusion of N-1 fixed intercepts. Under-identification is a severe problem because the solution set (e.g. the coefficients) of the model are indeterminable. To resolve this issue, I simulate fixed-effects in the data by group mean differencing the variables (Allison 2008). This approach is more conservative, but ensures the consistency of the estimates while controlling for time-
invariant country-specific heterogeneity. Additionally, due to the non-spherical structure of the errors, I utilize heteroskedasticity and serial-correlation consistent standard errors for hypothesis testing of the path coefficients.

1. \( Y_{it} - Y_i = \alpha_{it} + (X_{it} - X_i) + (W^*_{it} - W_i) + (V_{it} - V_i) + (Z^*_{it} - Z_i) + \varepsilon_{it} \)

2. \( W^*_{it} - W_i = \alpha_{it} + (X_{it} - X_i) + (V_{it} - V_i) + \varepsilon_{it} \)

3. \( Z^*_{it} - Z_i = \alpha_{it} + (X_{it} - X_i) + (V_{it} - V_i) + \varepsilon_{it} \)

Equations 1-3 show the system of equations for the mediating model of income inequality and production globalization. In equation 1, \( Y_{it} \) is the Gini-coefficient of post-tax and transfer income in country \( i \) at time \( t \) and \( Y_i \) is the average Gini-coefficient in country \( i \). \( X_{it} \) is the level of manufacturing exports to developed countries in country \( i \) in time \( t \) and \( X_i \) is the averages level of exports in country \( i \). \( V_{it} \) is the level of inward foreign direct investment in country \( i \) in time \( t \) and \( V_i \) is the averages level of inward FDI in country \( i \). \( W^*_{it} \) is the endogenized version of the collective labor law index in country \( i \) at time \( t \) and \( W_i \) is the average of the index in country \( i \). \( Z^*_{it} \) is the endogenized version of the collective labor practice index in country \( i \) at time \( t \) and \( Z_i \) is the average of the index in country \( i \). Equations 2 and 3 model the relationships between collective labor, collective labor practices, manufacturing exports, and inward FDI.

**Results**

Figure 3.5 shows the unstandardized path estimates of the generalized SEM for a simplified model with only direct pathways between the independent and dependent variables. This specification is equivalent to a generalized linear model with country-fixed effects that is relatively standard in the cross-national literature on income
inequality. According to the model estimates, both manufacturing exports to developed countries and collective labor practices are significantly related to income inequality while inward foreign direct investment and collective labor laws show no significant relationship with income inequality.

**Figure 3.5** Simplified Generalized Structural Equation Model of Global Production Integration, Collective Labor Rights, and Income Inequality

![Simplified Generalized Structural Equation Model](image)

In the simplified model, while inward FDI shows a positive, but insignificant association with income inequality, an increase in manufacturing exports to developed countries (equivalent to 1% gross domestic product) increases the Gini-coefficient of post-tax income increases by .62. Moreover, while collective labor laws shows a positive, but insignificant association with income inequality, a unit increase in the collective labor practices index is associated with a .46 reduction in the Gini-coefficient of post-tax and
transfer income. The model in Figure 3.5 suggests that improvements in the enforcement of collective labor rights reduces income inequality through the establishment of unions, collective bargaining institutions, and the capacity to resist management, but the integration of manufacturing firms into global production networks through subcontracting increases income inequality by re-orienting production toward exporting labor-intensive goods to developed countries.

However, this simplified model assumes global production integration and collective labor rights are unrelated to each other, which is a faulty assumption given recent evidence for this association (Mosley and Uno 2007; Mosley 2011; Flannigan 2006). Moreover, the coefficients of global production integration may be underestimated by restricting the model to only direct pathways. Therefore, the next step is to specify a more complex model that accounts for both the direct and indirect effects of global production integration.

Figure 3.6 shows the unstandardized path estimates of the generalized SEM for the theoretical path model presented in Figure 3.4. A major difference between the theoretical and empirical model is the inclusion of direct pathways linking inward foreign direct investment stock and manufacturing exports to income inequality as well as the inclusion of baseline controls for each endogenous variable in the model. Accordingly, the model estimates the direct and indirect effects of both indicators of global economic integration on three endogenous variables: (1) collective labor law; (2) collective labor practices; and (3) income inequality. In Figure 3.6, I only report the unstandardized path coefficients and significance level for each indicator of global economic integration (see
Appendix 2 for standard errors, z-scores, and probability values). The large negative value of the Bayesian Information Criterion (BIC) suggests this model better fits the data than the model in Figure 3.5 (BIC=1384.81 v.s.1557.75).

Figure 3.6  Generalized Structural Equation Model of Collective Labor Rights & Income Inequality

![Diagram](image)

According to the results in Figure 3.6, manufacturing exports to developed countries are directly and indirectly contribute to higher levels of income inequality in developing countries. For each additional increase in manufacturing exports to developed countries (equivalent to 1% GDP), the Gini-coefficient of post-tax and transfer income increases by .66. The direct positive association between exports and income inequality (p<.01) suggests subcontracted firms producing for export to developed countries may
expand between sector wage inequality by reducing the wages of unskilled labor in export sectors.

More importantly, the model in Figure 3.6 shows the effect manufacturing exports on income inequality is mediated by collective labor practices. For each increase in manufacturing exports (equivalent to 1% GDP), the collective labor practice index decreases by .07. This relationship indirectly contributes to higher income inequality since a unit increase in the collective labor practices index is associated with a .74 reduction in the Gini-coefficient of post-tax and transfer income. The negative association between manufacturing exports and collective labor practices (p<.05) and the negative association between collective labor practices and income inequality (p<.01) suggests that firms in developing countries producing for markets in developed countries may systematically violate collective labor rights to reduce labor costs by hindering the development of collective labor institutions. This de facto liberalization of labor markets ensures wages and employment levels are primarily set by market mechanisms which favor the interests by global capital and local owners.

In addition to the deleterious effect of manufacturing exports, Figure 3.6 also shows inward foreign direct investment (FDI) is associated with a decline in collective labor practices. According to the model in Figure 3.6, an increase in inward foreign direct investment stock (equivalent to 1% GDP) reduces the collective labor practice index by .27. The negative associations between inward FDI, collective labor practices, and income inequality (p<.01) suggests that subsidiaries in developing countries may engage in the same anti-union, bargaining, and strike practices of subcontracted firms to
maintain low labor costs and competitiveness. Overall, the path estimates in Figure 3.6 show how the institutionalization of collective labor institutions mediates the distributional impact of production globalization in developing countries.

<table>
<thead>
<tr>
<th></th>
<th>Direct</th>
<th>Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern-Bound Exports</td>
<td>.865***</td>
<td>.055*</td>
<td>.920***</td>
</tr>
<tr>
<td></td>
<td>(.249)</td>
<td>(.028)</td>
<td>(.250)</td>
</tr>
<tr>
<td>Inward FDI Stock</td>
<td>.340</td>
<td>.115+</td>
<td>.455+</td>
</tr>
<tr>
<td></td>
<td>(.298)</td>
<td>(.074)</td>
<td>(.267)</td>
</tr>
</tbody>
</table>

**Note:** n=396; N=63. Robust-Cluster standard errors in parentheses. + - p<.10; * - p<.05; ** - p<.01; *** - p<.001.

The path estimates and BIC comparison provides suggestive evidence for the partial mediation in the relationship between production globalization and domestic income inequality. However, it is important to assess the magnitude of mediation by comparing the relative size of the mediated effect to the direct effect for each indicator of production globalization. Table 3.2 shows standardized estimates for the direct, indirect, and total effects of inward FDI stock and manufacturing exports on income inequality. The coefficient of the indirect effects is calculated with the product of the standardized coefficient for the pathway linking the indicator of global production integration to collective labor practice and the coefficient for the pathway linking collective labor practices to income inequality. Standard errors for the indirect and total effects were estimated using the nonlinear combination program in STATA 13 (nlcom).

According to the estimates in Table 3.2, both FDI and manufacturing exports exert a positive total effect on income inequality through direct and indirect channels. In total, a standard deviation increase in the level of manufacturing exports to developed
countries is associated with a .920 standard deviation increase in the Gini-coefficient of post-tax and transfer income. Additionally, a standard deviation increase in the stock of inward FDI is associated with a .455 increase in the Gini-coefficient of income.

In both cases, the direct effects account for the greatest proportion of the total effects. The direct effect of manufacturing exports accounts of 94 percent of the total effect model. To a lesser degree, the direct effect of inward FDI stock accounts for 75 percent of the total effect in the model. The magnitudes of the direct effects suggests alternative mechanisms linking the globalization of production to income inequality play a larger role. Nonetheless, coupled with the evidence in Figure 3.6, the overall results suggest the relationship between production globalization and income inequality is partially explained by the de facto liberalization of nascent collective labor institutions.

**Discussion and Conclusion**

Returning to the question on whether production globalization directly or indirectly affects domestic income inequality in developing countries, the results from a multi-level generalized SEM suggest both subcontracted and subsidiary-based integration of firms into global production networks incentivizes the non-enforcement of collective labor rights to reduce labor costs and to maintain global competitiveness in labor-intensive production. Moreover, since labor in integrated firms occupies a weak position in the marketplace, they are unable to resist this de facto liberalization by pressuring the state and employers into enforcing and observing collective labor rights. As a result, the competitive pressures of international and labor-intensive production lead globally-integrated firms (both subcontracted and subsidiaries) to lower wages and to engage in
anti-union activities (Anner 2008; 2011) which leads to greater wage volatility and variation across sectors and a decline in the labor share of income.

The findings from the empirical path model in Figure 3.6 show that the mode of firm integration matters for these institutional and distributional processes. Contractual relations between firms in developed and developing countries in global production networks, measured as the partial effect of manufacturing exports to developed countries net of foreign direct investment, induces a direct and indirect increase in the level of income inequality. Subcontracted firms in developing countries are primarily concerned with competitiveness and cost-effectiveness of labor-intensive production which leads them to campaign against collective labor practices in order to maintain a flexible and low-cost labor regime (Amzeh 2014; Anner 2008; 2011). The labor-intensive niches occupied by these firms in global production networks requires poverty-level renumeration and the maintenance of large surpluses of formal and informal labor (Phillips 2011; Roberts 2013). Thus, until these firms are able to 'move up' up the value chain of global production networks, the social gains of integration will be severely limited (Barrientos, Gereffi, and Rossi 2011).

Previous explanations of the globalization-inequality link in developing countries have primarily focused on the effects of foreign direct investment (Bornschier and Chase-Dunn 1985; Dixon and Boswell 1996; Beer and Boswell 2002; Mahutga and Bandelj 2008). According to these studies, foreign capital dependence increases inequality by either disarticulating foreign-dominated sectors from the local economies in the South (Amin 1974; Bornschier and Chase-Dunn 1985) or by increasing wages in export-
oriented sectors through rapid industrialization and technological upgrading of production (Bhalla 2002; Bourguignon and Morrisson 1998; Firebaugh 2003). However, I find no direct association between foreign direct investment and income inequality net of an indirect association through collective labor practices.

According to the findings of the generalized SEM, foreign direct investment (e.g. inward FDI stock) increases income inequality by preventing the formation of collective labor institutions. This suggests subsidiaries in developing countries are primarily established to either provide access to local markets or lower production costs for intermediate or final goods. Nonetheless, both of these purposes necessitate flexible labor regimes in order to maintain low cost of production. More importantly, these findings offer a new mechanisms linking foreign capital to income inequality in developing countries that places a greater emphasis on the way labor markets are embedded in local institutions. Therefore, it would be productive for future research to examine how this institutional process is associated with between-sector inequality and the uneven development of economic sectors in developing countries.

Recent research has started to examine how the liberalization of labor market institutions contribute to the rapid growth of inequality in developed countries (Checchi and Garcia-Penalosa 2010; Freeman and Nickell 1988; Wallerstein 1999). This article extends on this research by showing how collective labor laws and practices affect income inequality in developing countries. In developing countries, the enforcement of collective labor rights is fairly effective for restricting the distribution of disposable income since these countries lack the informal mechanisms of powerful labor movements.
and organizations. As manufacturing firms in developing countries are increasingly incorporated into global production networks, collective labor institutions are becoming more important for preserving the wage levels and labor standards of workers.

According to the results, collective labor practices significantly reduce income inequality while collective labor law shows no association with income inequality. This finding warrants further investigation into the formation and effect of national labor market institutions in developing countries. Recent studies on the 'decoupling' between international commitments and national practices (Cole 2013) suggest that labor market institutionalization is an informal practice in developing countries, which may explain why the distributional effect of collective labor practice varies across countries. Future research needs to investigate whether the formal implementation of collective labor law and other types of labor market institutions are important for reducing inequality and whether this process is conditioned by global norms of labor regulation.

Future research should also explore how integration into global production networks alters the developmental trajectory of developed and developing countries and how these trajectories explain the distributional consequences of globalization. Recent research on global production networks (Mahutga 2014a, 2014b) suggests that positional power within global commodity chains are a significant determinant of economic development and labor regimes. In order to advance the 'globalization-inequality' link, future researchers need to investigate how the asymmetrical integration of firms from developing countries into GPNs affects industrialization and development in these countries.
The persistent observation of higher domestic income inequality in developed and developing countries warrants a dedicated research program aimed at developing a comprehensive explanation of this phenomenon. Given the importance of inequality to sociology (Kenworthy 2007), this article elucidates how the distributional effects of global production integration occur through the deleterious impact of globalization on collective labor institutions. Overall, this research suggests that the recent growth of domestic income inequality is a complex process due to the relationship between the global and institutional embeddedness of manufacturing firms in the developing world.
References


Cornia, Giovanni Andrea and Julius Court. 2001. "Inequality, Growth, and Poverty in the Era of Liberalization and Globalization." UN WIDER Policy Brief No. 4


Chapter 4: Conclusion

The Puzzle of Globalization and Domestic Income Inequality

The growth of domestic income inequality in developed and developing countries over the last thirty years remains one of the most important social problems in contemporary society. The increasing economic polarization of domestic populations suggests recent institutional and structural transformations of the modern economy are behind the growth in income stratification and the privileging of economic elites. However, while public concern over income inequality continues to grow, the extant social science literature struggles with identifying the proximate and distal mechanisms of income inequality and the interactions amongst them (Piketty 2014; Kenworthy 2007). Hence, the dissertation advances our understanding of the complex process generating higher levels of income inequality in developing and developed countries by empirically examining the interaction between the globalization of production and the neoliberal reform of national labor market institutions.

According to the empirical results, international manufacturing trade between developed and developing countries induces the liberalization of labor market institutions by restructuring the industrial working classes. As a result of greater labor market flexibility, the wages of unskilled workers are depressed relative to the rents of owners and investors as well as the wages of skilled workers. Overall, this research contributes to the extant literature on income inequality through elucidating the complex relationships amongst developmental, global, and institutional processes generating great economic stratification.
One of the most contentious issues in the social science literature on income inequality is the role of globalization in determining the distribution of national income. At its core, researchers are in contention over whether international trade and investment produce higher levels of income inequality in developed and developing countries (Krugman 2008; Goldberg and Pavcnick 2007). The empirical research on the relationship between globalization and income inequality remain fairly mixed with some studies finding a direct positive association (Alderson and Nielsen 2002; Lee, Alderson, and Nielsen 2007; Dixon and Boswell 1996; Wood 1994; Kentor 2001) while others finding little to no association (Mahler 2004; Rueda and Pontusson 2000; Lee, Kim, and Shim 2011; Cline 1997). As a result, researchers are increasingly skeptical about the distributional consequences of globalization in developed and developing countries.

Part of this disagreement concerns the exact mechanism linking globalization to the recent upswing of income inequality. The most prominent theory in the globalization perspective contends the intensification of international trade between developed and developing countries causes wage inequality to grow in developed countries as firms increasingly specialize in capital-intensive production while outsourcing labor-intensive production abroad (Wood 1994; 1995). Conversely, this theory also predicts inequality should decline in developing countries with rapid industrialization and a growth in the demand for unskilled labor (Wood 1997). While this theory provides some useful insights on the impact of international trade on income inequality, the growth of domestic inequality in developed and developing countries raises doubts about the predictive validity of this perspective.
Skeptics of the globalization perspective contend labor market institutions are one of the main determinants of the level of income inequality (Rueda and Pontusson 2000; Mahler 2004; Lee, Kim, and Shim 2001; Checchi and Pensola 2010). From this perspective, the recent growth of domestic income inequality is the consequence of institutional reforms that eroded the class compromise between capital and labor established during the postwar period. Indeed, according to the empirical literature, the decentralization of wage bargaining (Wallerstein 1999; Pontusson, Rueda, and Way 2002), de-unionization (Western and Rosenfeld 2011; Western and Healy 1999; Freeman 1993); the retrenchment of the welfare state (Kenworthy and Pontusson 2005; Huber and Stephens 2014; Bradley et al. 2003); and the deregulation of employment protections (Checchi and Pensola 2008; Koeinger, Leonardi, and Nunziata 2007) generated higher inequality by diminishing the disposable income of less-affluent households in advanced capitalist countries.

A major critique of the institutional perspective is its analytical focus on advanced capitalist countries. More recent studies apply this perspective to the context of developing countries, where labor market institutions are in the formative stages of development (Calderon and Chong 2009; Kerrissey forthcoming). This research shows the enactment and enforcement of collective labor rights are effectively in reducing the level of income inequality by providing labor the capacity to collectively organize, bargain, and engage in disputes with employers. However, while these findings support the general conclusion of the institutional perspective, researchers have ignored the
impact of globalization on labor market institutions in developed and developing countries.

One possible explanation for the incongruence between the theoretical expectations and empirical results is globalization may indirectly affect domestic income inequality through its impact on national economic institutions (Rodrik 1997; 2012; Lee, Alderson, and Nielsen 2007; Alderson and Nielsen 2002). More specifically, this perspective contends globalization increased income inequality by inducing the retrenchment of the redistributive and regulatory state (Hung and Kucinkas 2011). While this argument may account for the empirical ambiguity of the relationship between globalization and income inequality, very few studies empirically assesses whether the redistributive and regulatory state mediates this relationship.

Given the status of the empirical literature, I observe the direct and indirect pathways linking globalization to income inequality in developing and developed countries. According to the results, international manufacturing trade and foreign direct investment indirectly contributed to higher income inequality by inducing a worldwide liberalization of nascent and established labor market institution in developing and developed countries. Moreover, I find the globalization of production is driving this reform of labor market institutions by eroding the industrial working class in developed countries and expanding the unskilled industrial labor force in developing countries. Overall, these findings suggests the globalization of production plays a complex role in the growth of income inequality and researchers need to be more attentive of the
interactions among global, institutional, and developmental processes in developing comparative theories of inequality.

The findings of the dissertation confirm globalization and institutional reform are important for explaining the growth of domestic income inequality in developed and developing countries. In prior research global and institutional perspectives are treated as competitive theories rather than integrated into a general theory of income inequality. Given this approach, the inconsistent findings on the association between globalization and income inequality and the robust association between labor market institutions and income inequality may be related. Since both globalization and institutional variables are specified in these same models, the weak association between globalization and income inequality could be attributable to the mediating role of labor market institutions.

Indeed, based on the estimates from a series of generalized multi-level path models in Chapters 2 and 3, I show the effect of globalization on domestic income inequality is partially mediated by labor market institutions in developed and developing countries. More specifically, I find international manufacturing trade between developed and developing countries is associated with the non-enforcement of collective labor rights in developing countries and the retrenchment of centralized wage bargaining, unionization, and employment protection in developed countries. In turn, the liberalization of these institutions is associated with higher levels of income inequality. Therefore, the results provide supportive evidence for the assertion that the weak association between globalization and income inequality in prior research is partly explained by the mediating role of labor market institutions.
In addition to uncovering the institutional mechanism linking globalization to income inequality, the dissertation explores the structural mechanisms linking the globalization of production to the neoliberal reform of labor market institutions in developed and developing countries. A core contention in the comparative political economy literature is whether the competitive pressures of economic globalization is inducing the widespread adoption of liberal economic policies designed to enhance market flexibility and competitiveness (Campbell 2004; Simmons et al. 2008; Thelen 2014). A segment of the literature argues national economic institutions are resilient to the competitive pressures of economic globalization and institutional change is the product of endogenous political processes and local histories (Campbell 2004; Kristensen and Morgan 2012; Iversen and Soskice 2009; Hall and Gingerich 2009). This perspective emphasizes the path dependent nature of national institutions and the persistence of cross-national diversity in the institutional embeddedness of national capitalism. That is national labor markets are embedded in diverse institutional settings, which are resilient to the pressures of international competition over trade and investment since both employers and organized labor have a stake in these institutional arrangements (Berger and Dore 1996; Campbell 2004; Fligstein 2001; Hall and Soskice 2001).

Other researchers in this literature argue the intensification of international competition induced a global diffusion of neoliberal policy scripts to facilitate a transition toward market-based models for the allocating of labor and capital (Baccaro and Howell 2011; Simmons et al. 2008; Piore and Sabel 1984; Reich 1991). This liberalization
perspective contends global economic integration and international competition encourage governments to enact neoliberal policy reform, and reduce the capacity for organized labor to resist these neo-liberal turns to improve the competitiveness of local firms (Sassen 1996; Kapstein 1996; Katz and Darbishire 1999). Despite these contrasting perspectives of globalization and institutional change, few studies systematically examine the impact of international trade and investment on the formation and reproduction of labor market institutions (e.g. Traxler 2004; Traxler et al. 2001; Roberts 2014; Roberts and Mahutga 2015).

In explaining the relationship between the global re-organization of industrial production and the worldwide reform of labor market institutions, I extended on the theoretical framework of the 'global production network' perspective by elucidating the structural and institutional importance of globally-integrated labor (Coe, Dicken, and Hess 2008; Barrientos et al. 2011; Milberg and Winkler 2011). While this perspective re-oriented the global value chains (GVC) and global commodity chains (GCC) literature toward a more agent-centric understanding of globalized production, few empirical studies articulate and assess the role of labor bargaining power in the development of collective labor institutions that regulate capital-labor relations within global production networks (e.g. Wright 2000). Here, I draw on the economic sociology of markets to conceptualizing how globally integrated firms, labor, and the national agencies actively negotiate the rules for governing exchange in national labor markets (Fligstein 2001; Polanyi 1944).

A core insight from the economic sociology of markets is economic actors are continuously engaged in negotiation and conflict over the content of market institutions.
As a result, the bargaining position of actors is important for determining the distribution of resources within markets. In context of globalized production, the relocation of industrial production processes to developing countries effectively eroded the bargaining position of labor by accelerating de-industrialization in advanced capitalist countries (Alderson 1999; Kollmeyer 2009). Consequently, declining demand for industrial labor in advanced capitalist hamstrung the bargaining position of organized labor in reproducing protective labor market institutions (Ahlquist 2010; Roberts 2014).

The concentration of labor-intensive manufacturing in developing countries through the globalization of production reduced the bargaining power of this new emerging industrial class by expanding labor market competition. The large surplus of unskilled and informal workers in these countries ensures employers in labor-intensive industries are able to ignore demands of the formalized labor force by either shifting to informal production or hiring informal workers (Roberts 2013). While previous research contends the expansion of the industrial sector in developing countries should benefit labor (Silver 2003; Flanagan 2006; Mosley and Uno 2007), I show the growth of export-oriented industrialization is associated with greater income inequality.

A central process to the reform of national labor market institutions is the restructuring of industrial capitalism induced by the global re-organization of production. In developed countries, international manufacturing trade and foreign direct investment are associated with decline in the size of the industrial labor force, which, in turn, hindered the reproduction of protective labor market institutions. Similarly, in developing countries, international manufacturing trade expanded the unskilled portion of the
industrial labor force, which, in turn, incentivized the non-enforcement of collective labor rights and hindered the development of collective labor institutions.

Future research should explore the relationship between the globalization of production and industrial working class to account for the development and reproduction of collective labor institutions. This research would contribute to the extant literature by extending the GPN perspective through incorporating insights from economic sociology on the construction of labor markets and resolving a longstanding debate about the nature of institutional change in the comparative political economy literature.

Theoretically, the utility of integrating the path dependent and liberalization perspectives of institutional change would produce a new research agenda that aims to account for the institutional development within global production networks. In subsequent research, the impact of globalization on the restructuring of the industrial working class and the composition of political coalitions behind the design and implementation of economic policy need to be further explored. The decline of the industrial class in advanced capitalist countries and the shift toward unskilled industrial labor in developing countries may significantly alter the nature of social and economic policy in both sets of countries and is worth examining in future research.

Methodological and Data Limitations

The empirical basis of the dissertation is derived from a series of multi-level path models designed to observe the intermediate mechanisms linking production globalization to income inequality and the reform of labor market institutions. The deficiency of mediation analysis in macro-comparative research required a new approach
for this type of analysis. Traditionally, researchers estimated the degree of mediation by measuring the change in the coefficient of the exogenous variable between models that omitted and included the endogenous mediating variable (Baron and Kenny 1986; Sobel 1982). However, given the limitations of this approach and the hierarchical structure of the data, I utilized generalized multi-level structural equation modeling (SEM). This new application of generalized multi-level SEM provides macro-comparative researchers with the tools to empirically assess more complex theory. This contribution is important because as social science delves deeper into the problem of economic inequality, they are increasingly aware of the intricate nature of this issue.

While the empirical research of the dissertation provides suggestive evidence for several ongoing debates in the extant literature, it suffers from several limitations. A major issue in the application of generalized multi-level SEM to cross-national panel data is the capacity to control for unobserved time invariant heterogeneity. In traditional panel data analysis, researchers accounted for the influence of unobserved heterogeneity in panel data with the inclusion of temporal and unit fixed-effects in the model (Halaby 2004; Wooldridge 2003). While this approach is appropriate for single equation panel data analysis, it presents an identification problem in SEM. Since this method utilizes a system of equations, including fixed intercepts in each equation under-identifies the structural model and may produce inconsistent parameter estimates by expanding the number of parameters by (N-1) times the number of equations in the system.

In Chapter 3, I address this problem by simulating country-fixed effects with a simple data transformation. However, in Chapter 2, I utilize a random-effects
specification where unobserved heterogeneity is modeled as a latent random variable. The main problem with this approach is the estimator produces inconsistent results when observed covariates are correlated with the latent random variable (Wooldridge 2003; Halaby 2004). To test this assumption, I would need to compare the estimates from the random-effects model with estimates from a consistent model (i.e. fixed-effects) (Hausman 1978). Subsequent research needs to develop a new methodology for testing the consistency of SEMs with random-effects and alternative models that are over-identified.

In addition to the methodology, the empirical research of the dissertation is limited by the quality and validity of the panel data. While this is a persistent problem in secondary data analysis, researchers have attempted to address some of these issues. For example, Chapters 2 and 3 utilize Gini-coefficient estimates from the *Standardized World Income Inequality Database* (SWIID) (Solt 2009) which attempts to increase the comparability of estimates across countries by using Gini ratios from the *World Income Inequality Database* that share common reference unit code and income definition. In both chapters, I used the available estimates from each sample of country-years without excluding observations based on the quality of these estimates. Future research should incorporate the standard error of the Gini estimates from SWIID into a multiple imputation procedure to account for the variability of estimates.

Another data limitation of the empirical research in the dissertation is the relatively short temporal coverage in samples of low- and low-middle income countries. The temporal range of the sample was limited to 1985-2002 because of the availability of
data in the *Collective Labor Rights Database* (Mosley 2011). Compared to other data on labor market institutions in developing countries, the CLR database contains the most comprehensive and cross-nationally comparable data on the enactment and enforcement of collective labor rights. Nonetheless, the limited temporal coverage restricts the analysis to a less than desirable period of change in the level of income inequality and the degree of globalization. While the observed period captures the upward trajectory of domestic income inequality in most world regions, since 2003, some regions of the developing world have experienced declining inequality (Ravallion 2014; Clark 2013). Therefore, by limiting the sample to the 1985-2002 period, I am not observing the full change of domestic income inequality among developing countries over the last thirty years. In order to extend the temporal coverage of the sample, however, researchers need to develop a new database or extend on the CLR database.

The second data limitation of the project is the lack of a comparable measure of labor market institutionalization for developed and developing countries. While the results were fairly consistent across both samples of countries and the difference in measurement is justified on theoretical grounds, it is important to analyze comprehensive samples using comparable metrics of the same concept. As discussed throughout the dissertation, labor market institutions are in a formative stage in developing countries, but these institutions are fairly developed and complex in advanced capitalist countries. As a result, I utilized the collective labor law and collective labor practices indices from the CLR database to measure the institutionalization of labor markets in developing countries and a series of specific indicators for employment protection legislation, structure of
wage bargaining, welfare generosity, and unionization rates to measure labor market institutionalization in developed countries. In future research, I aim to develop cross-nationally and temporally comparable measures of labor market institutionalization that are valid for measuring both the formation and reproduction of labor market institutions. Accordingly, this will require an extensive data project designed to document the enactment of various employment and labor laws as well as the practice of these laws.

Contribution and Future Direction

Despite the methodological and data limitations of the dissertation, the research findings show the importance of developing and empirically assessing more complex theories of globalization to account for the recent growth of domestic income inequality and institutional reform. The main findings of the dissertation show the growth of domestic income inequality is partially the product of the neoliberal reform of labor market institutions that is induced by the restructuring of the industrial working class and the globalization of production. The tracing of this complex process required combining insights from institutional and global perspectives of inequality as well as insights on the institutional constructions of labor markets from economic sociology. Overall, the research demonstrates the utility of observing the purported mechanisms linking variables in macro-comparative research and how this approach can address longstanding debates in the literature.

Besides addressing methodological and data issues, future research needs to adopt this approach to improve our understanding of economic inequality. While support was found for the institutional mechanisms linking globalization to income inequality, the
direct and 'unobserved' pathways deserves more consideration. One promising line of research is to examine whether globalization of production induced processes of financialization (e.g. Arrighi 1994) and skill-biased technological change (Berman, Bound, and Machin 1997; c.f. Card and DiNardo 2002). Both processes have been shown to contribute to higher levels of income inequality in advanced capitalist countries, but little research shows whether globalization has contributed to the onset of these processes despite theoretical arguments for a distal effect. Moreover, future research needs to uncover the barriers to 'social upgrading' with the integration of local firms in developing countries into global production networks (Barrientos et al. 2011; Milberg and Winkler 2011). While the dissertation shows labor-intensive industrialization is associated with a decline in collective labor practices, its unclear what structural processes within global production network is driving this association. Future research needs to unpack whether the asymmetry in power within global production networks (e.g. Mahutga 2014) is a conditional factor in the negative association between labor-intensive industrialization and collective labor practices in developing countries.

In sum, the growth of domestic income inequality is one of the most important problems of contemporary society. The concern over the intensification of economic stratification amongst most domestic populations requires a renewed dedication to elucidating the factors driving this development. Even though stratification is a core area of sociology, most contend the discipline has contributed little to better understand domestic income inequality (Kenworthy 2007). Therefore, at a fundamental level, this research should show how sociologists can contribute to our general understand of
income inequality by advancing the field with new theoretical and methodological approaches.
References


### Appendix 1

**A 1.1 Generalized Structural Equation Model of Employment Protection and Income Inequality.**

<table>
<thead>
<tr>
<th>Employment Protection</th>
<th>β</th>
<th>SE</th>
<th>Z</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Import Penetration</td>
<td>-.096</td>
<td>.035</td>
<td>-2.66</td>
<td>.008</td>
</tr>
<tr>
<td>Outward FDI Stock (Log)</td>
<td>-.410</td>
<td>.133</td>
<td>-3.04</td>
<td>.002</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income Inequality</th>
<th>β</th>
<th>SE</th>
<th>Z</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment Protection</td>
<td>-.384</td>
<td>.183</td>
<td>-2.10</td>
<td>.018</td>
</tr>
<tr>
<td>Southern Import Penetration</td>
<td>.439</td>
<td>.195</td>
<td>2.24</td>
<td>.025</td>
</tr>
<tr>
<td>Outward FDI Stock (Log)</td>
<td>-.484</td>
<td>.506</td>
<td>-.96</td>
<td>.338</td>
</tr>
<tr>
<td>Female Labor Force</td>
<td>.414</td>
<td>.733</td>
<td>.56</td>
<td>.572</td>
</tr>
<tr>
<td>Industrial Labor Force</td>
<td>.016</td>
<td>.102</td>
<td>.15</td>
<td>.877</td>
</tr>
<tr>
<td>Unemployment Rate</td>
<td>.001</td>
<td>.058</td>
<td>.02</td>
<td>.982</td>
</tr>
<tr>
<td>Agricultural Labor Force</td>
<td>.055</td>
<td>.228</td>
<td>.24</td>
<td>.809</td>
</tr>
<tr>
<td>Sector Dualism</td>
<td>.416</td>
<td>.307</td>
<td>1.35</td>
<td>.176</td>
</tr>
<tr>
<td>Natural Population Growth</td>
<td>2.69</td>
<td>2.06</td>
<td>1.3</td>
<td>.193</td>
</tr>
<tr>
<td>Gross Secondary Enrollment</td>
<td>.009</td>
<td>.017</td>
<td>.53</td>
<td>.596</td>
</tr>
</tbody>
</table>

| n                              | 492  |     |      |         |
| N                              | 22   |     |      |         |
| Log Pseudolikelihood           | -859.36 |     |      |         |

*Note: Endogenous variables are italicized. SE = robust-cluster standard errors.*
### A 1.2 Generalized Structural Equation Model of Corporatism and Income Inequality

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>SE</th>
<th>Z</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Macro-Corporatism</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern Import Penetration</td>
<td>-.170</td>
<td>.080</td>
<td>-2.12</td>
<td>.017</td>
</tr>
<tr>
<td>Outward FDI Stock (Log)</td>
<td>.087</td>
<td>.204</td>
<td>.43</td>
<td>.669</td>
</tr>
<tr>
<td><strong>Income Inequality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macro-Corporatism</td>
<td>-1.16</td>
<td>.322</td>
<td>-3.47</td>
<td>.001</td>
</tr>
<tr>
<td>Southern Import Penetration</td>
<td>.451</td>
<td>.199</td>
<td>2.27</td>
<td>.023</td>
</tr>
<tr>
<td>Outward FDI Stock (Log)</td>
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| n | 498 |
| N | 18  |
| Log Psuedolikelihood | -912.32 |

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
### A 1.3 Generalized Structural Equation Model of Union Density and Income Inequality

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<td>.578</td>
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<td>.022</td>
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| n                      | 466     |
| N                      | 20      |
| Log Psuedolikelihood   | -255.42 |

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
### A 1.4 Generalized Structural Equation Model for Decommodification and Income Inequality

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| **Income Inequality**    |             |     |       |         |
| Decommodification         | -.326       | .072| -4.55 | .001    |
| Southern Import Penetration | .973       | .363| .268  | .007    |
| Outward FDI Stock (Log)  | -.898       | .741| -1.21 | .226    |
| Female Labor Force       | .67         | .798| .84   | .401    |
| Industrial Labor Force   | -.033       | .131| -.25  | .801    |
| Unemployment Rate        | -.029       | .067| -.43  | .668    |
| Agricultural Labor Force | .061        | .239| .25   | .799    |
| Sector Dualism           | .495        | .376| 1.32  | .187    |
| Natural Population Growth| .506        | 1.703| .3    | .767    |
| Gross Secondary Enrollment| .023       | .021| 1.12  | .262    |

|              |              |     |       |         |
| n            | 591          |     |       |         |
| N            | 18           |     |       |         |
| Log Psuedolikelihood | -2086.85          |     |       |         |

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
### Generalized Structural Equation Model of Employment Protection and Income Inequality with Restricted Sample

<table>
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n = 461  
N = 22  
Log Psuedolikelihood = -814.86

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
A 1.6 Generalized Structural Equation Model of Corporatism and Income Inequality with Restricted Sample

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n  463
N   18
Log Psuedolikelihood  -875.50

Note: Endogenous variables are italicized. SE = robust-cluster standard errors.
### Generalized Structural Equation Model of Union Density and Income Inequality with Restricted Sample

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| n                              | 378     |     |     |
| N                              | 20      |     |     |
| Log Psuedolikelihood           | 141.94  |     |     |

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
A 1.8 Generalized Structural Equation Model for Decommodification and Income Inequality with Restricted Sample

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n                  | 517     |
N                  | 18      |
Log Psuedolikelihood | -1829.67 |

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
### A 1.9 Generalized Structural Equation Model of Employment Protection and Income Inequality with Country-Mean Differenced Data

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n = 492  
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Log Psuedolikelihood = -1103.65

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
A 1.10 Generalized Structural Equation Model of Corporatism and Income Inequality with Country-Mean Differenced Data

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<td>0.171</td>
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<td>0.019</td>
<td>-0.010</td>
<td>0.989</td>
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n 498
N 18
Log Psuedolikelihood -1360.47

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
**A 1.11 Generalized Structural Equation Model of Union Density and Income Inequality with Country-Mean Differenced Data**

<table>
<thead>
<tr>
<th></th>
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<th>P-Value</th>
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<td>.070</td>
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<td>.242</td>
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<td>.117</td>
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<td>.000</td>
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<td>.090</td>
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| n                              | 466     |
| N                              | 20      |
| Log Psuedolikelihood           | 58.20   |

*Note:* Endogenous variables are italicized. SE = robust-cluster standard errors.
### Generalized Structural Equation Model for Decommodification and Income Inequality with Country-Mean Differenced Data

<table>
<thead>
<tr>
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<th>P-Value</th>
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<td>.137</td>
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<td>.019</td>
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</table>

| n                        | 591       |
| N                        | 18        |
| Log Psuedolikelihood     | -2291.51  |

**Note:** Endogenous variables are italicized. SE = robust-cluster standard errors.
## Appendix 2

### Appendix 2.1 Generalized Structural Equation Model of Income Inequality, Collective Labor Law, and Collective Labor Practices with Unrestricted Sample

<table>
<thead>
<tr>
<th>Model</th>
<th>Parameter</th>
<th>( \beta )</th>
<th>SE</th>
<th>z-score</th>
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<td>Northern-Bound Exports</td>
<td>-.074</td>
<td>.037</td>
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<td></td>
<td>Foreign Capital Penetration</td>
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<td>.01</td>
<td>-.21</td>
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<tr>
<td></td>
<td>FDI Rate</td>
<td>-.044</td>
<td>.034</td>
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<tr>
<td></td>
<td>Democratization</td>
<td>-.015</td>
<td>.027</td>
<td>-.57</td>
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<tr>
<td></td>
<td>Leftist Party Strength</td>
<td>.001</td>
<td>.003</td>
<td>.24</td>
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<tr>
<td><strong>Collective Labor Law</strong></td>
<td>Northern-Bound Exports</td>
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<td>.073</td>
<td>-.75</td>
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<td></td>
<td>Foreign Capital Penetration</td>
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<td>.096</td>
<td>.56</td>
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<tr>
<td></td>
<td>Domestic Investment</td>
<td>.002</td>
<td>.007</td>
<td>.21</td>
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<tr>
<td></td>
<td>FDI Rate</td>
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<td>.028</td>
<td>-2</td>
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<td>Democratization</td>
<td>.014</td>
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<td>.55</td>
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<tr>
<td></td>
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<td>.004</td>
<td>.183</td>
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<td><strong>Income Inequality</strong></td>
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<td></td>
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<td>Domestic Investment</td>
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<td>.71</td>
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<td></td>
<td>FDI Rate</td>
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<td>.256</td>
<td>-.01</td>
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<td></td>
<td>Collective Labor Law</td>
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<td>.78</td>
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<tr>
<td></td>
<td>Collective Labor Practices</td>
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*Note:* n=396; N=63. SE = Robust-Cluster Standard Error. BIC = -1348.81
**Appendix 2.2** Generalized Structural Equation Model of Income Inequality, Collective Labor Law, and Collective Labor Practices with Restricted Sample

<table>
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<td>.031</td>
<td>-1.32</td>
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<tr>
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**Note:** n=341; N=61. SE = Robust-Cluster Standard Error. BIC=-2733.19