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Submit only ONE copy of this form **for each PI/PD and co-PI/PD** identified on the proposal. The form(s) should be attached to the original proposal as specified in GPG Section II.C.a. Submission of this information is voluntary and is not a precondition of award. This information will not be disclosed to external peer reviewers. ***DO NOT INCLUDE THIS FORM WITH ANY OF THE OTHER COPIES OF YOUR PROPOSAL AS THIS MAY COMPROMISE THE CONFIDENTIALITY OF THE INFORMATION.***

PI/PD Name: Matthew C Mahutga

Gender: ☒ Male ☐ Female

Ethnicity: (Choose one response) ☐ Hispanic or Latino ☒ Not Hispanic or Latino

Race: (Select one or more)
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☒ White

Disability Status: (Select one or more)
- ☐ Hearing Impairment
- ☐ Visual Impairment
- ☐ Mobility/Orthopedic Impairment
- ☐ Other
- ☐ None

Citizenship: (Choose one) ☒ U.S. Citizen ☐ Permanent Resident ☐ Other non-U.S. Citizen

Check here if you do not wish to provide any or all of the above information (excluding PI/PD name): ☒

REQUIRED: Check here if you are currently serving (or have previously served) as a PI, co-PI or PD on any federally funded project ☐

Ethnicity Definition:
Hispanic or Latino. A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.
Race Definitions:
American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.
Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
Black or African American. A person having origins in any of the black racial groups of Africa.
Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

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The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify and address any inequities based on gender, race, ethnicity, or disability of its proposed PIs/PDs. To gather information needed for this important task, the proposer should submit a single copy of this form for each identified PI/PD with each proposal. Submission of the requested information is voluntary and will not affect the organization's eligibility for an award. However, information not submitted will seriously undermine the statistical validity, and therefore the usefulness, of information recieved from others. Any individual not wishing to submit some or all the information should check the box provided for this purpose. (The exceptions are the PI/PD name and the information about prior Federal support, the last question above.)

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List of Suggested Reviewers or Reviewers Not To Include (optional)

SUGGESTED REVIEWERS:

Arthur S. Alderson (Indiana), David Brady (Duke/Social Science Research Institute Berlin/WZB), Rob Clark (Oklahoma), Liam Downey(CU Boulder), Ho-Fung Hung (Johns Hopkins), Basak Kus (Wesleyan), Steve McDonald (NC State), Frederick Solt (Iowa), Donald Tomaskovic-Devey(UMASS), Matthew Sanderson (Kansas State), Jeffrey Kentor (Eastern Michigan).

REVIEWERS NOT TO INCLUDE:

Andrew Schrank (Brown): Knowledgeable about aspects of the proposal and a great guy but, for reasons I have yet to understand, has demonstrated a bias against some of these methodologies.
Ed Kick (NC State): Conflict of interest.

COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT/SOLICITATION NO./CLOSING DATE/if not in response to a program announcement/solicitation enter NSF 14-1

PD 98-1331 **01/15/15**

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FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.)

SES - SOCIOLOGY

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NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE

University of California-Riverside

AWARDEE ORGANIZATION CODE (IF KNOWN)

0013169000

ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE

Office of Research
200 University Office Building
RIVERSIDE, CA 92521-1000

NAME OF PRIMARY PLACE OF PERF

University of California-Riverside

ADDRESS OF PRIMARY PLACE OF PERF, INCLUDING 9 DIGIT ZIP CODE

University of California-Riverside

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IS AWARDEE ORGANIZATION (Check All That Apply) (See GPG II.C For Definitions)
☐ SMALL BUSINESS ☐ MINORITY BUSINESS ☐ FOR-PROFIT ORGANIZATION ☐ WOMAN-OWNED BUSINESS

☐ IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE

TITLE OF PROPOSED PROJECT **The Paradox of Economic Globalization: Organizational Isomorphism, Institutional Context & the Distributional Consequences of Globalized Production in Advanced Industrial Countries**

REQUESTED AMOUNT	PROPOSED DURATION (1-60 MONTHS)	REQUESTED STARTING DATE	SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE
$ **89,928**	**12** months	**08/01/15**	

THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW

☐ BEGINNING INVESTIGATOR (GPG I.G.2)
☐ DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.C.1.e)
☐ PROPRIETARY & PRIVILEGED INFORMATION (GPG I.D, II.C.1.d)
☐ HISTORIC PLACES (GPG II.C.2.j)
☐ VERTEBRATE ANIMALS (GPG II.D.6) IACUC App. Date _____
PHS Animal Welfare Assurance Number _____
☒ FUNDING MECHANISM **Research - other than RAPID or EAGER**

☐ HUMAN SUBJECTS (GPG II.D.7) Human Subjects Assurance Number _____
Exemption Subsection _____ or IRB App. Date _____
☐ INTERNATIONAL ACTIVITIES: COUNTRY/COUNTRIES INVOLVED (GPG II.C.2.j)

☒ COLLABORATIVE STATUS
Not a collaborative proposal

PI/PD DEPARTMENT

Sociology

PI/PD FAX NUMBER

951-827-3330

PI/PD POSTAL ADDRESS

Office of Research
200 University Office Building
RIVERSIDE, CA 925211000
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NAMES (TYPED)	High Degree	Yr of Degree	Telephone Number	Email Address
PI/PD NAME **Matthew C Mahutga**	**PhD**	**2008**	**951-827-5535**	**matthew.mahutga@ucr.edu**
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CO-PI/PD				
CO-PI/PD				
CO-PI/PD				

CERTIFICATION PAGE

Certification for Authorized Organizational Representative (or Equivalent) or Individual Applicant

By electronically signing and submitting this proposal, the Authorized Organizational Representative (AOR) or Individual Applicant is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding conflict of interest (when applicable), drug-free workplace, debarment and suspension, lobbying activities (see below), nondiscrimination, flood hazard insurance (when applicable), responsible conduct of research, organizational support, Federal tax obligations, unpaid Federal tax liability, and criminal convictions as set forth in the NSF Proposal & Award Policies & Procedures Guide,Part I: the Grant Proposal Guide (GPG). Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title 18, Section 1001).

Certification Regarding Conflict of Interest

The AOR is required to complete certifications stating that the organization has implemented and is enforcing a written policy on conflicts of interest (COI), consistent with the provisions of AAG Chapter IV.A.; that, to the best of his/her knowledge, all financial disclosures required by the conflict of interest policy were made; and that conflicts of interest, if any, were, or prior to the organization's expenditure of any funds under the award, will be, satisfactorily managed, reduced or eliminated in accordance with the organization's conflict of interest policy. Conflicts that cannot be satisfactorily managed, reduced or eliminated and research that proceeds without the imposition of conditions or restrictions when a conflict of interest exists, must be disclosed to NSF via use of the Notifications and Requests Module in FastLane.

Drug Free Work Place Certification

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent), is providing the Drug Free Work Place Certification contained in Exhibit II-3 of the Grant Proposal Guide.

Debarment and Suspension Certification

(If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency? Yes ☐ No ☒

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant is providing the Debarment and Suspension Certification contained in Exhibit II-4 of the Grant Proposal Guide.

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding $100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:
(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, ''Disclosure of Lobbying Activities,'' in accordance with its instructions.
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Two sections of the National Flood Insurance Act of 1968 (42 USC §4012a and §4106) bar Federal agencies from giving financial assistance for acquisition or construction purposes in any area identified by the Federal Emergency Management Agency (FEMA) as having special flood hazards unless the:
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By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant located in FEMA-designated special flood hazard areas is certifying that adequate flood insurance has been or will be obtained in the following situations:
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(2) for other NSF grants when more than $25,000 has been budgeted in the proposal for repair, alteration or improvement (construction) of a building or facility.

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CERTIFICATION PAGE - CONTINUED

Certification Regarding Organizational Support

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that there is organizational support for the proposal as required by Section 526 of the America COMPETES Reauthorization Act of 2010. This support extends to the portion of the proposal developed to satisfy the Broader Impacts Review Criterion as well as the Intellectual Merit Review Criterion, and any additional review criteria specified in the solicitation. Organizational support will be made available, as described in the proposal, in order to address the broader impacts and intellectual merit activities to be undertaken.

Certification Regarding Federal Tax Obligations

When the proposal exceeds $5,000,000, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal tax obligations. By electronically signing the Certification pages, the Authorized Organizational Representative is certifying that, to the best of their knowledge and belief, the proposing organization:
(1) has filed all Federal tax returns required during the three years preceding this certification;
(2) has not been convicted of a criminal offense under the Internal Revenue Code of 1986; and
(3) has not, more than 90 days prior to this certification, been notified of any unpaid Federal tax assessment for which the liability remains unsatisfied, unless the assessment is the subject of an installment agreement or offer in compromise that has been approved by the Internal Revenue Service and is not in default, or the assessment is the subject of a non-frivolous administrative or judicial proceeding.

Certification Regarding Unpaid Federal Tax Liability

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal Tax Liability:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

Certification Regarding Criminal Convictions

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Criminal Convictions:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has not been convicted of a felony criminal violation under any Federal law within the 24 months preceding the date on which the certification is signed.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	SIGNATURE	DATE
NAME		

TELEPHONE NUMBER	EMAIL ADDRESS	FAX NUMBER

PROJECT SUMMARY

Overview:

A resolution to the paradox of economic globalization--compelling theoretical expectations for strong effects of production globalization on inequality and inconclusive empirical support for these expectations--is proposed, both theoretically and empirically. First, production globalization should have an increasingly large effect on inequality as global production networks (GPN) become entrenched organizational logics worldwide. Second, cross-national variation in wage-setting coordination and redistribution policies should ameliorate the effect of production globalization on inequality. In short, the paradox can be resolved for accounting for the varied effects of production globalization by (A) the entrenchment of GPNs worldwide and (B) cross-national variation in labor market institutions.

An analysis of this resolution at the macro and micro levels is proposed. At the macro level, and analysis of post-tax and transfer income inequality among 18 advanced capitalist countries from 1975 to 2010 has already produced results consistent with this resolution. However, they raise a number of additional questions that are unanswerable with macro data. Thus, a multilevel analysis of the Luxembourg Income Study?s (LIS) individual wage data is proposed. Here, individuals are nested within countries, sectors and time, and the effect of production globalization on the relative wages of unskilled labor and management are the key dependent variables. The analytical plan will provide insight to the overall distributional consequences of production globalization, allow proposed mechanisms at the individual level to be tested directly, and answer additional questions raised by contemporary theories of globalization and institutional change. A substantial amount of coding and harmonization of country-specific occupational categories is required to measure skill more directly than is currently available. Due to logistical and analytical constraints posed by the LIS?s remote data analysis system, final stages of the project will require residence at the LIS center. Requested funding will support research assistance and travel necessary to complete the micro analysis over 12 months.

Intellectual Merit :

This project synthesizes literatures on the two most common researched causes of the increase in inequality experienced by advanced industrial countries since the 1980s: globalization and institutions. It advances both of these literatures by providing an explanation for the paradoxical findings on the distributional effects of economic globalization, and providing a set of mechanisms to understand how globalization and national institutions interact to produce distinct distributional outcomes across time and space. The triangulated design can also provide evidence on two important areas of focus: the overall distributional consequences of economic globalization in particular institutional settings, and the extent to which the proposed mechanisms operate at the individual level. Moreover, it also addresses a range of questions left unanswered in contemporary theories of institutional change.

Broader Impacts :

In addition to advancing basic research on the causes of rising income inequality among advanced industrial democracies, this project promises evidence-based predictions of future trajectories of inequality as production globalization proceeds. Moreover, it will provide evidence-based assessments of policy options at both the macro and micro levels. In tandem, these can help to ameliorate the impact of production globalization on low-skill labor, and labor more generally. The recoding of LIS micro-data will generate a much more fine grained cross-nationally and temporally comparable measure of the skill content of occupations, which will have broader impact when made available to the LIS and other researchers. Pedagogically, it provides opportunities for at least one graduate assistant to internalize a new set of methodological skills and body of literature, as well as known externalities accomplished from ?learning by doing.? These pedagogical contributions are particularly important in the context of UC Riverside, a Hispanic-serving institution among the top 5 most diverse ?Research 1? universities in the country. As of this writing, the most likely candidate for the assistantship is an underrepresented minority.

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For font size and page formatting specifications, see GPG section II.B.2.

*Proposers may select any numbering mechanism for the proposal. The entire proposal however, must be paginated. Complete both columns only if the proposal is numbered consecutively.

Project Description

This research attempts to resolve the paradox of economic globalization—the coincidence of compelling theoretical expectations for strong distributional effects of economic globalization and inconclusive empirical support for these expectations. Two arguments provide this resolution in theory: the distributional effects of production globalization vary by organizational processes operating at the world level, and by institutional processes operating at the national level. At the global level, production globalization should have an increasingly large effect on inequality as global production networks (GPN) become entrenched organizational logics worldwide (Mahutga 2014a; 2014b). At the national level, wage-setting coordination and redistribution policies should ameliorate the distributional consequences of production globalization. In short, the true distributional consequences of production globalization are knowable only if one accounts for the moderating effects of (A) the entrenchment of GPNs worldwide and (B) cross-national variation in labor market institutions.

Two empirical examinations of these arguments are proposed—a macro and a micro analysis. At the macro level, a previously conducted time-series cross-section regression analysis of post-tax and transfer income inequality among 18 advanced capitalist countries from 1975 to the present yields results that are consistent with the theoretical resolution. However, these results raise a number of questions that cannot be answered with macro level data. Thus, a multilevel model of individual wages is proposed. In this analysis, individuals are nested within countries, sectors and time, and the effects of production globalization on the relative wages of unskilled labor and management are key dependent variables. The analytical plan for this research will thus provide insight to the overall distributional consequences of production globalization, allow an assessment as to whether the mechanisms proposed actually operate at the individual level, and answer a number of additional empirical questions raised by contemporary theories of globalization and institutional change. The following description is fully responsive to an exceptionally thorough and helpful set of reviews from a previous proposal round.

Objectives

The three primary objectives to be accomplished during the funding term are the harmonization of occupation codes across countries with available data in the Luxemburg Income Study (LIS), the construction and analysis of a large, multi-level data set, and the delivery of two journal-length manuscripts. The first article will consistent of the macro analysis. The second article will follow up with a micro analysis. Through triangulation, the project will bring complimentary types of evidence to bear on the theorized conditional effects of economic globalization and thereby substantiate policy guidance that follows from them. Previous preliminary results of macro-comparative analysis support the theoretical intervention and point to the utility of the individual level analysis. To facilitate the micro-level analysis, the proposal is to analyze data from the Luxembourg Income Study (LIS). The database nests individuals in countries, sectors and time. However, it requires the development of programming language to interface with their proprietary electronic system, and contains only very crude information on the skill of an individual's occupation that is comparable across countries and time. Thus, further coding/harmonization of country-specific skill/occupational categories is required to adequately measure skill. Funding is requested for research assistance and travel necessary to complete these tasks over the course of 12 months. In the sections that follow, a theoretical overview and plan of work are presented at the macro and micro levels.

Theoretical Overview at the Macro Level

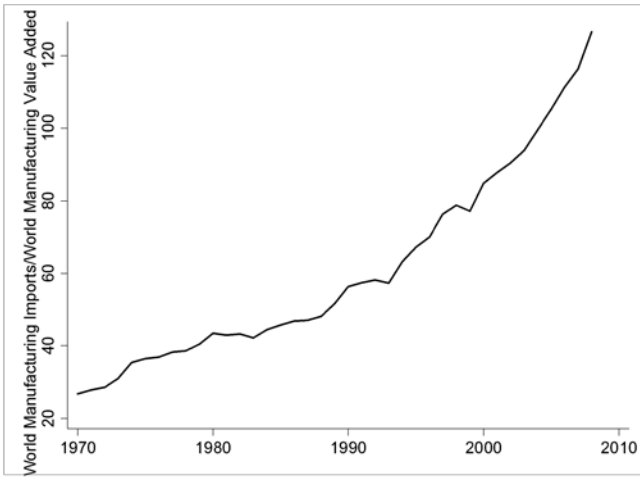
Two main theoretical narratives explain why production globalization should increase inequality in affluent democracies. The first draws largely from Heckscher–Ohlin (H-O) trade theory. International trade reduces the price of any factor of production, such as labor, to that which prevails in the countries for which it is most abundant. Because unskilled labor is relatively abundant in the global South and skilled labor is relatively abundant in the global North, North/South trade reduces price (wage) of low/unskilled labor and increase price (wage) of skilled labor in the North (Alderson and Nielsen 2002; Wood 1994). The second explanation is predicated on social relations involving labor, management and

capital. Global North/South trade effectively expands international labor competition between industrial workers in the Northern countries and an emerging industrial labor force in Southern countries. This reduces the aggregate bargaining power of labor in developed countries (Alderson 2004). Because reductions in the bargaining power of labor tend to correspond to reductions of the labor share of income *vis-à-vis* capital and/or management, they also correspond to rising inequality (Wallerstein 1999; Bental and Demougin 2010). In short, production globalization should increase inequality by impacting both the distribution of wages within the working class, as well as the distribution of income between labor and management/capital.

From the very beginning, however, empirical investigations of the relationship between production globalization and income inequality were less than conclusive. Some analyses found substantial effects from globalization, while others found non-significant effects or small effects relative to general processes of economic development, institutional behavior or other kinds of economic changes within developed countries (e.g. Alderson and Nielsen 2002; Krugman 1995; c.f. Krugman 2008; Lee et al. 2011; Wood 1994). Explanations for the inconsistent effects of production globalization vary. For example, while there has been a clear trend toward a rising skill-wage premium in developed countries, some believe that skill-biased technological change—i.e. the introduction of technological fixes that reduce the demand for unskilled labor—has been more important than production globalization (e.g. Katz and Autor 1999). Alternatively, the "unified theory" suggests that production globalization led either to rising inequality or to rising unemployment, the outcome depending upon the kinds of labor market institutions that prevailed in a given country. Countries with relatively inflexible labor markets and/or generous welfare states experienced rising unemployment, and those with flexible labor markets and small welfare states experienced rising inequality (Blau and Kahn 2002). However, neither of these two explanations seemed to provide a compelling or empirically consistent explanation for the inconclusive empirical findings.[1] Instead, this research will determine if the distributional effects of production globalization depend, at least in part, on contextual factors operating at the global and national levels.

First, the distributional effects of production globalization should increase with global processes of organizational isomorphism—i.e. as various kinds of GPNs become entrenched organizational models world-wide. GPNs have become increasingly central to the organizational strategies of leading firms in nearly all manufacturing industries (e.g. Bair 2009; Gereffi et al. 2005; Mahutga 2014b). Figure 1 graphs the trend in one metric of GPN entrenchment—the ratio of world manufacturing trade to world value added in manufacturing (Feenstra 1998; Mahutga 2012).[2] According to Figure 1, GPNs are increasingly entrenched and most of the increase occurred in the last thirty years. In 1970, displayed on the X axis of Figure 1, 26.74 % of world value added in manufacturing was traded. This ratio climbed to 43.5% by 1980, 56.33% by 1990, 84.79% by 2000 and 126.55 % by 2008.

Figure 1: Entrenchment of Globally Networked Models of Economic Organization.



Notes: World manufacturing trade/world manufacturing value added. Trade data are from UNCOMTRADE, Value-added data are from UNIDO (2013).

The world-wide entrenchment of GPNs should increase the distributional effect of North/South trade through qualitative changes to GPNs themselves, and through quantitative changes in the amount of economic activity embedded within global production networks (Bivens 2007; Mahutga 2014a; 2014b; Milberg and Winkler 2009). In terms of qualitative changes, the diffusion of GPNs has led to a migration of factories from higher to lower-wage Southern countries, and increased the number of capable Southern suppliers from whom leading firms can procure inputs. The migration of factories to increasingly lower wage Southern countries reduces the

average low-skill wage embodied in global production networks directly. The increase in the number of capable suppliers reduces the average wage indirectly: holding the number of leading-firms fixed, an increase in the supply of capable suppliers generates asymmetrical bargaining relations between leading and supplier firms. Leading firms use this bargaining position to secure price concessions from their suppliers, and these concessions get expressed as lower wages among workers employed by suppliers (Heintz 2006; Mahutga 2014a; Schrank 2004). Thus, holding constant the amount of globalized production at the country level, the world-wide entrenchment of GPNs promotes both *real* and *threatened* relocations of manufacturing across Southern countries, which in turn changes the wage content of GPNs. The declining wage content of GPNs increases the downward pressure on Northern low-skill wages of North/South trade and thus further skews the distribution of wages within the working class.

Second, nearly the full range of manufacturing firms now engage in some amount of offshoring behavior, and production networks are also increasingly visible in the service sector (Gereffi et al. 2005; Gereffi and Fernandez-Stark 2010). This *quantitative* increase in the degree of production globalization interacts with the second primary mechanism by which production globalization increases inequality—its negative effect on the bargaining power of labor—even among Northern workers who are not in direct competition with Southern workers. Standard theories of wage variation start with negotiations between workers and management over the terms of employment (Fernandez and Glazer 1991; Layard et al. 1991). Workers who possess skills that are relatively scarce, or who reside in occupations with high demand, possess more bargaining power, and therefore command higher remuneration, than workers who possess abundant skills or who reside in occupations with little demand (Wright 2000). However, the labor-market return to these resources depends on individual variation in bargaining behavior (Nash 1953). With the expansion of globalized production to an increasing array of economic activities, workers come to believe that jobs are increasingly vulnerable to offshoring, and therefore experience heightened perceptions of economic insecurity (Milberg and Winkler 2009; Scheve and Slaughter 2004). Heightened perceptions of economic insecurity cause workers to accept lower rates of remuneration on average, which reduces the labor share of income (Riedl 2013).

In short, GPN entrenchment should exacerbate the impact of North/South trade on both of the mechanisms by which it is theorized to increase inequality. This generates the following hypothesis:

> **H_1**: The distributional effect of North/South trade increases with the entrenchment of networked forms of economic organization at the global level.

Second, the distributional effects of production globalization should vary by the degree of wage-coordination and redistribution that prevail in a given country. However, this second argument departs sharply from the "unified theory" outlined above insofar as it does not require a trade-off between inequality and unemployment. It is well known that wage-coordination limits wage variation within units covered by collective bargaining agreements, as well as the income gap between labor and capital. Indeed, a negative association between wage-coordination and income inequality has been a persistent finding in the comparative political economy literature (Alderson and Nielsen 2002; Bradley et al. 2003; Checchi and Garcia-Pensola 2010; Pontusson et al. 2002; Wallerstein 1999). However, wage-coordination should also moderate the effect of production globalization. Here, the mechanisms proposed for the direct, egalitarian effect of wage-coordination would "interfere" with both of the mechanisms by which production globalization affects the distribution of income. In a purely economic formulation, the distributional effects of production globalization should depend critically on the extent to which wages respond freely to changes in labor demand. However, in countries where wage coordination is high, changes in output and productivity brought on by competition from southern imports are, to varying degrees, "decoupled" from wages: "…a wage agreement covering a work force of any size must specify a general rule by which relative wages are governed" (Wallerstein 1999: 673). Even in the hypothetical (and unobserved) scenario where wage-coordination is regressive, the fact that wages are set through collective bargaining means they cannot respond instantaneously to changes in demand for particular segments of labor. Thus, wage-coordination must weaken the link from production globalization to wage distribution within the working class. In a political/ideological formulation, strong wage-coordinating institutions shift the locus of control over remuneration structures from firms (and resource markets) to

labor, and thereby fosters collective identity among differentiated workers (Wallerstein 1999). Labor solidarity increases the bargaining position of labor as a whole, and may benefit low-skill workers disproportionately, both of which should weaken the link from production globalization to the distribution of income between labor and management/capital (Wallerstein 1999). This argument can be summarize by the following hypothesis:

H_2: The effect of North/South trade should decrease with higher wage-coordination.

Importantly, however, recent scholarship suggests that globalization threatens established wage-coordination systems. Here, the working-class solidarity underlying the moderating effect of wage-coordinating institutions breaks down between "core workers who have jobs and who are intent on preserving their relatively privileged position within the labor market, and labor market 'outsiders' who either do not have jobs or are in more precarious forms of employment and thus do not enjoy the same package of wages and benefits as insiders" (Thelen 2012: 149; Rueda 2007). As a result, historically strong wage-coordinating systems might produce labor market dualism, where the equalizing effect of wage-coordination is limited to the core segment of labor market "insiders," who may also enjoy higher average wages than labor market "outsiders." Dualism should push the moderating effect of wage-coordination toward zero and thus suggests a theoretically informed null hypothesis for the moderating effect of wage-coordination (also see Huber and Stephens 2014; Scheve and Stasavage 2009).

Redistributive social policies, including both transfer payments and progressive tax systems, reduce income inequality by transferring income from affluent to poor households (Bradley et al. 2003; Goni et al. 2011; Kenworthy and Pontusson 2005). While the direct, egalitarian effects of redistribution are rather clear, redistribution should also weaken the link from production globalization to both wage dispersion among skilled and unskilled workers, and the bargaining power (and thus income share) of labor. First, redistribution should have the largest impact on the incomes of those most harmed by production globalization—low skill workers. Progressive tax codes provide relative tax relief to those in the lowest tax brackets, and thus reduce post-tax disposable incomes among high-income earners more than those among low-income earners. Similarly, eligibility requirements underlying transfer payments in advanced industrial democracies are intrinsically progressive (to varying degrees), and thus disproportionately affect low-income households. Because skills are highly correlated with incomes, progressive tax systems and transfer payments increase the post-tax and transfer incomes of low-skill vis-à-vis high-skill workers and thereby reduce the income gap generated by production globalization.

Second, recall that, in theory, production globalization reduces the bargaining power of labor, and exacerbates perceptions of economic insecurity among Northern workers. In a simplified bargaining game, unemployed workers can either come to terms on a given employment package or remain unemployed. In countries with strong redistributive policies, the income penalty to unemployment is less pronounced than in countries with weak redistributive policies. Because unemployment comes with a weaker income penalty, workers should be more willing to bargain better—they have less to lose by asking for more. Indeed, micro level evidence suggests that strong redistributive policies mitigate perceptions of economic insecurity (Anderson and Pontusson 2007; Mughan 2007). If strong redistributive policies facilitate more strategic bargaining behavior among workers in the labor market, production globalization should have a smaller negative effect on the labor share of income (and therefore income inequality) in countries with strong redistributive policies. Thus, it is anticipated that

H_3: The effect of North/South trade should decrease with greater redistribution.

However, recent literature suggests redistribution may be endogenous in post-tax and transfer inequality equations insofar as prior levels of market (i.e. pre-tax and transfer) inequality increase redistribution (Kenworthy and Pontusson 2005). For example, micro level evidence finds high levels of earnings inequality cause individuals to prefer redistribution policies, particularly amongst low income households (Dion and Birchfield 2010; Iversen and Soskice 2001; Meltzer and Richard 1981). In a recent macro-comparative formulation, high market inequality facilitates redistribution through a political process whereby left-leaning political actors mobilize low-income workers to pursue redistribution through greater political participation (Kenworthy and Pontusson 2005; c.f. Solt 2008). If redistribution is endogenous, then coefficients measuring its direct and moderating effect on inequality would be biased.

As I discuss below, literatures on the redistribution-inequality link suggests a number of instrumental variables that allow us to both assess and remedy this potentially endogenous relationship between redistribution and post-tax and transfer inequality.

Statement of Work: Macro Level Data, Methods and Procedures

An analysis at the macro level is currently under review. A time-series cross section regression analysis of income inequality (Gini) among 18 advanced capitalist countries was employed, which includes most of Western Europe, Japan, the US, Canada, Australia and New Zealand (e.g. Alderson and Nielsen 2002; Brady 2009; Western 1997; Lee et al 2011). The unit of observation in time-series cross-section regression is the country-year. The hypotheses above were tested by regressing post-tax and transfer Gini coefficients on interaction terms between southern import penetration and covariates for GPN entrenchment, wage-setting and redistribution, along with relevant control variables (e.g. Birchfield 2008; Friedrich 1982; Lee et al. 2011).

A clear strength of the panel design is that it can control for unobservable covariates that vary across countries but not over time, those that vary over time but not across countries, as well as the potential for endogeneity. To control for the former, fixed country effects are included. To control for the latter, fixed decadal effects are included (Lee et al. 2011). A battery of control variables discussed below will aslo be included. However, such data typically yield heteroskedastic and/or serial and/or spatially contemporaneous autocorrelation in the disturbance terms. Serial correlation can be treated as a nuisance parameter, in which case variance/covariance matrices that are robust to its various forms, and/or various kinds of generalized least squares (GLS) regressions estimators, are called for (e.g. Woodridge 2002). The latter approach is followed by estimating and correcting for a first-order auto-regressive process and employing a variance/co-variance matrix that is robust to heteroskeasticity, but assess the robustness of my results to alternative treatments for misbehaved disturbances.

The problem of endogeneity is particularly acute with respect to redistribution because rising inequality is likely to increase demands for redistribution (Kenworthy and Pontusson 2005). Thus, the relationship between redistribution and inequality is treated as potentially endogenous by employing instrumental variables. Following the theoretical intervention of Kenworthy and Pontusson 2005, lagged pre-tax and transfer inequality (Solt 2009), voter turnout (Huber et al. 1997; 2004; 2014) and interactions between these and southern imports are used as excluded instruments in a two-stage limited information maximum likelihood instrumental variable regression. In the first stage, redistribution and its interaction with southern imports was regressed on the excluded instruments along with the rest of the exogenous variables in the model. The predicted values from the first-stage regressions are then entered in place of the observed redistribution and redistribution/southern imports interaction in the second-stage regression of Gini. Standard errors were corrected for heteroskedastic (via Huber-White) and serially correlated (via Newy-West) errors. The reliability of this approach for assessing the exogeneity assumption hinges critically on the extent to which the excluded instruments are (a) sufficiently correlated with redistribution and its interaction with southern imports (i.e. they are not weak) and (b) uncorrelated with the second stage error term (i.e. they are valid). Tests of the two null hypotheses associated with assumptions (a) and (b) lead us to reject the null hypothesis that the instruments are weak, and fail to reject the null hypothesis that the instruments are valid.

Gini coefficients of income inequality are available in various forms, but the most complete and cross-nationally/temporally comparable is Solt (2009). These data represent an improvement to alternative data sources because (1) they do not require the assumption that variation in Gini coefficients owning to unit of observation or income definition is constant across countries/time; (2) they are benchmarked to the industry standard Luxembourg Income Study Gini coefficients; (3) these data treat "quality" with continuous (rather than dichotomous) reliability estimates for each Gini coefficient that one can model as another source of error; and (4) there are many more cross-national and temporally comparable Gini coefficients available. To ensure that our Gini coefficients are of high quality, only those with standard errors less than 1 are employed, and the robustness of the results to this quality threshold is assessed.

Southern import penetration is measurable in several ways. The most common is the ratio of imports from low-income countries (i.e. the "South") to gross domestic product (GDP). The robustness of the results to the operationalization of southern import penetration with this covariate is assessed, but an alternative operationalization (the ratio of Southern to total imports) is preferred for methodological and substantive reasons. Southern import penetration should capture the *pattern of trade*—i.e. the extent to which imports are focused on Southern countries—rather than the amount of trade. However, southern imports/GDP is highly correlated with the amount of trade (overall trade openness), which is a function of, and thus conflated with, rather mundane characteristics like size and geography. Methodologically, recent empirical work finds that southern imports increase GDP, which means that countries with a relatively large share of imports from the global South will have systematically higher levels of GDP and thus lower levels of southern imports/GDP. Thus, southern imports/GDP is a biased measure of the relative importance of North/South trade (Kollmeyer 2009). Data on total imports and manufacturing imports from low- and middle-income countries are available from the United Nations Commodity Trade database (UNCOMTRADE). Data on GDP are available from the OECD.

To measure *wage-setting coordination*, the ordinal measure developed by Kenworthy (2001), and updated by Huber et al. (1997, 2004, forthcoming) is utilized.

To measure overall *redistribution*, Fred Solt's (2009) indicator of overall redistribution is used, which he measures as the difference between pre and post-tax income. This provides a reliable indicator of redistribution that disregards the various forms in which redistribution manifests itself cross-nationally.

To measure the entrenchment of global production networks among Northern firms, recent work by Mahutga (2012) is followed by employing the ratio of world manufacturing trade to world manufacturing value added as displayed in Figure 1 above. Data on world trade come from the UNCOMTRADE database. Data on value-added comes from the UNIDO's Industrial Statistics data base (UNIDO 2013). This covariate varies over time, but not across countries.

Control Variables: The harmonized *unemployment* rate (OECD 2011b) is included to control for a possible employment—inequality tradeoff hypothesized by the unified theory. Unemployment had an inconstant (and positive, where significant) effect, and its inclusion had no effect on the estimated moderating effects. Existing explanations for the inequality upswing in developed countries evoke changes in the age and gender composition of the labor force. Given the positive correlation between age and income, the aging of the labor force should expand the gap between older and younger citizens (Rubin, White-Means, and Daniel 2000). Alternatively, competing theoretical narratives argue that an increase in female labor force participation might either increase or decrease inequality (e.g. Alderson and Nielsen 2002). Thus, *the elderly population (% 65+)* and *female labor force participation* are controlled, and were obtained from the OECD (2011a). Financialization has been shown to contribute to income inequality in the United States (Lin and Tomaskovic-Devy 2013; Tomaskovic-Devey and Lin 2011) and other advanced industrial countries (Kus 2013). Thus, Lee et al. (2011) are followed by controlling for the *percentage of the labor force in the FIRE sector* (OECD 2011b). Similarly, advanced capitalist countries experienced varying rates of deindustrialization and union decline, both of which have been shown to matter for inequality elsewhere (Alderson and Nielsen 2002). Thus, the *percent of the labor force in industry* (OECD 2011b) and *union density* (Visser 2011) are controlled. A venerable tradition in sociology finds that inequality is a function of internal developmental processes, operationalized as the *percent of the labor force in agriculture, sector dualism, the natural rate of population increase*, and *secondary education* (Nielsen 1994; Alderson and Nielsen 2002). Data on these are drawn from the World Development Indicators database (World Bank 2012). Finally, institutional and political processes associated with the distribution of incomes are also controlled (see Bradley et al. 2003; Lee et al. 2011; Huber and Stephens 2014). The *size of the welfare* state is controlled with the updated welfare generosity index (Scruggs et al. 2013), which expands on and updates the Epsing-Anderson's (1990) decommodification index. Power resource theory suggests that partisan politics play a key role in distributional outcomes. Leftist governments, in particular, reduce post-tax and transfer income inequality by enacting legislation and policies to redistribute wealth (see Bradley et al. 2003: 195-196). Thus, the

relative strength of (*cumulative cabinet share*) leftist parties and *Christian Democrats* are controlled (Huber et al. 1997, 2004, 2014; Lee et al. 2011).

In the interest of space, only an abbreviated set of analytical results are presented in Table 1.

Table 1: Coefficients from Fixed Effects and IV regression of Income Inequality on Southern Imports, Moderators and Select Controls.

	(1)	(2)	(3)	(4) a
Southern Imports (SPEN)	-0.165**	0.189***	0.226***	0.627**
	(0.063)	(0.052)	(0.069)	(0.234)
SPEN*GPN Entrenchment	0.004***			
	(0.001)			
SPEN*Wage Coordination		-0.036**		
		(0.014)		
SPEN*Redistribution			-0.005*	-0.019*
			(0.002)	(0.009)
GPN Entrenchment	-0.054***			
	(0.017)			
Wage Coordination		0.119		
		(0.077)		
Redistribution			-0.072**	0.524**
			(0.026)	(0.202)
Unemployment	0.058	0.053	0.053	0.487**
	(0.040)	(0.039)	(0.039)	(0.158)
Union Density	-0.035	-0.034	-0.006	0.093
	(0.023)	(0.022)	(0.022)	(0.079)
Industrial Employment	0.064	0.079	0.023	0.683**
	(0.055)	(0.055)	(0.055)	(0.232)
Female Labor Force Participation	0.056***	0.051***	0.064***	0.157***
	(0.014)	(0.014)	(0.012)	(0.038)
Elderly Population	0.106	0.222*	0.233*	-0.446
	(0.119)	(0.107)	(0.111)	(0.343)
FIRE Sector Employment	0.207*	0.122	0.159*	0.809*
	(0.095)	(0.092)	(0.092)	(0.433)
Agricultural Employment	2.870	3.097	4.209*	-2.198
	(1.905)	(1.884)	(1.837)	(10.211)
Sector Dualism	-0.133	-0.113	-0.197*	0.205
	(0.103)	(0.102)	(0.104)	(0.449)
Secondary Education Enrollment	0.010	0.007	0.010	-0.023
	(0.008)	(0.008)	(0.007)	(0.024)
Natural Rate of Population Increase	-0.295	-0.236	0.698	-4.492
	(0.670)	(0.672)	(0.674)	(3.122)
Welfare State Generosity	-0.130***	-0.119***	-0.128***	-0.380**
	(0.032)	(0.032)	(0.032)	(0.148)
Cumulative Left Cabinet Share	0.030	-0.015	0.018	-0.002
	(0.055)	(0.051)	(0.051)	(0.211)
1980s	0.091	-0.082	-0.260	0.147
	(0.232)	(0.231)	(0.227)	(1.103)
1990s	0.354	0.050	-0.037	-1.115
	(0.309)	(0.299)	(0.299)	(1.232)
2000s	0.358	0.033	-0.047	-0.942
	(0.385)	(0.366)	(0.368)	(1.548)
Constant	23.415***	19.527***	20.246***	-1.966
	(5.389)	(5.255)	(5.227)	(13.705)
Instruments are weak b				6.042###
Instruments are valid c				2.089
Redistribution is exogenous d				8.198*
N	411	411	411	410
R2	0.959	0.958	0.962	0.993

Notes: Heteroskedasticity and serial correlation consistent standard errors in parentheses; * p<0.05, ** p<.01, *** p<.001 (one-tailed tests). a Instrumental variable regression, where the lagged values of market inequality, voter turnout and interactions between these and southern imports are used as instruments for redistribution (Kenworthy and Pontusson 2005). b Kleibergen-Paap F statistic: ### < 10% OLS bias; c Hanson J statistic (distributed $\chi 2$); d Pseudo C statistic, (* p<0.05, distributed $\chi 2$).

Model 1 reports the coefficient on the interaction between southern imports (SPEN) and GPN entrenchment. Model 2 reports the coefficient on the interaction between SPEN and wage coordination. Models 3 and 4 report the coefficient on the interaction between SPEN and redistribution. In each case, the coefficients are properly signed and significantly different from zero. The comparison of the coefficients on SPEN*redistribution across models 3 and 4, as well as the diagnostic tests reported in model 4, suggest that redistribution is endogenous (third from the bottom row), that the instrumental variables employed are valid and not weak (fourth and fifth from the bottom row) and that endogeneity attenuates the moderating effect of redistribution (the IV coefficient is nearly four times larger than the OLS coefficient). These results are robust to (1) additional controls not reported here, (2) alternative remedies for serial correlation, (3) alternative measures of SPEN and (4) more stringent Gini coefficient quality thresholds.

Moreover, these results are substantively important in two respects. First, variation in the increase in inequality per unit increase in SPEN across three moderators is substantial. The marginal effect of SPEN across the minimum and maximum observed value of each moderator increases by just over 800 percent in the case of GPN entrenchment, and decreases by 93.5 and 193.8 percent, respectively, in the cases of wage-coordination and redistribution.

Second, SPEN would have generated very different inequality trajectories under alternative prevailing levels of GPN entrenchment, wage coordination and redistribution.[3] If GPN entrenchment remained between its minimum and mean observed value, SPEN would have produced an average change in the Gini

coefficient been between 65.2 and 12.8 percent below the observed change, respectively. Alternatively, if GPN entrenchment equaled its maximum throughout the period, SPEN would have increased the average Gini coefficient by 80.35 more than the observed. The counterfactual changes in Gini attributable to SPEN when its effect is allowed to vary with wage-coordination and redistribution paint the opposite picture. If the prevailing institutional capacity for wage coordination were at the observed minimum, SPEN would have increased the average Gini by 32.5 percent more than the observed. If the prevailing institutional capacity for wage-coordination was between the average and maximum observed capacity, then SPEN would have increased the average Gini by between 7 and 41.5 percent *less* than the observed. If the prevailing degree of redistribution were equal to the minimum observed degree, SPEN would have increased inequality by 155.5 percent more than the observed increase. Conversely, if the prevailing degree of redistribution were between the mean and maximum observed value, then SPEN would have increased inequality between 35.2 and 253 percent *less* than the observed increase. Indeed, inequality would have fallen in absolute terms, on average, if the prevailing degree of redistribution were closer to the maximum observed because it would have more than offset the distributional consequences of North/South trade.

In short, the results above—and the larger set of analyses from which they are drawn—are consistent with the proposed resolution to the paradox of production globalization. Southern imports did not have a significantly positive effect on inequality until the ratio of global trade to global value added surpassed 60.55%, which didn't occur until 1995. It is not surprising, then, that early research (or research using older data) finds small or inconsistent effects for North/South trade, while more recent research suggests larger effects (e.g. Alderson and Nielsen 2002; Gustafsson and Johansson 1999; Mahler 2004; Elsby, Hobijn and Sahin 2013; Spence and Hlatshwayo 2011; Kollmeyer 2009; Lee et al. 2011). The marginal effects across wage-coordination and redistribution indicate southern imports only increase inequality when wage-coordination occurs at or below the industry level and is not patterned across different industries (i.e. is less than 4 on the five point scale), and when the percent difference between disposable and market income is less than 22.9. But, less than half the country-years analyzed here have non-patterned and decentralized wage-coordination (i.e. scores less than 4). An even smaller percentage—25.8—have levels of redistribution less than 22.9. It is not surprising, then, that analysts typically find a greater role for production globalization when studying liberal countries like the United States than when they engage in comparative work including European countries with more active labor market policies and larger welfare states (Elsby, Hobijn and Sahin 2013; Spence and Hlatshwayo 2011; Massey 2009; Lee et al. 2011; Mahler 2004). However, these results also raise a number of questions unanswerable with macro-level data.

Theoretical Overview at the Micro Level

While the macro-level analysis supports the theory of the conditional effects of production globalization, it also raises additional questions. First, the macro analysis alone makes it difficult to assess whether or not the proposed mechanisms operate at the individual level. To reiterate, the argument is that each of the three moderators interact with *both* of the primary mechanisms by which production globalization should increase inequality—wage dispersion between low and high skill workers, and between labor and management. However, observing how the impact of SPEN on the low-skill and managerial wage premium varies with GPN entrenchment, wage coordination and redistribution directly is impossible because these premiums are not observed. An analysis of these premiums directly would thus clarify greatly the precise mechanisms underlying the macro-level associations observed above.

Second, both contemporary scholarship on macro-corporatism in Western Europe, and the above arguments about the mechanisms underlying the moderating effects of GPN entrenchment and redistribution, suggest there are countervailing processes at work that cannot be adequately considered in the macro analysis. It was argued above that the entrenchment of GPNs *increases of perceptions of economic insecurity,* which encourages workers to bargain poorly. It was also argued that redistribution *reduces perceptions of economic insecurity*, which emboldens workers to bargain better. That is, there are countervailing arguments made above regarding the moderating effects of GPN entrenchment and

redistribution. Similarly, the significant moderating effect of wage coordination is in some sense inconsistent with recent scholarship on macro-corporatism in Western Europe, which suggests that economic globalization is creating dualization, where wage coordination (where it persists) increasingly benefits a privileged minority of the (manufacturing) labor force at the expense of a growing periphery outside of the manufacturing sector (Thelen 2012). That is, the dualization thesis suggests that the moderating effect of wage coordination is itself declining with the entrenchment of GPNs. These two countervailing scenarios were considered above by estimating three-way interaction effects (SPEN*wage coordination*GPN entrenchment and SPEN*redistribution*GPN entrenchment). None of these three-way interactions were significant, but the modest sample size and the level of saturation necessary to obviate omitted variable bias significantly reduce the statistical power of these tests. This problem is compounded in the case of redistribution because it is well known that IV regressions are inefficient. Moreover, it is possible that dualization manifests not in a declining moderating effect of wage coordination as globalization proceeds, but rather a constant moderating effect that is nevertheless *limited to the shrinking manufacturing sector*, which is unobservable in the macro-comparative analysis.

Fortunately, all of these countervailing possibilities can be assessed more directly, and with greater statistical power, by examining the effect of SPEN on the wage premium to unskilled labor and management as it varies across national contexts with different degrees of wage coordination/ redistribution, and how these relationships vary across historical periods characterized by varying degrees of GPN entrenchment. Thus, I propose a multi-level analysis in which individual wages are the unit of observation, but individuals are nested in countries, sectors (manufacturing and non-manufacturing) and periods of varying GPN entrenchment.

More specifically, an analysis of the effect of SPEN on the wage premium to unskilled labor and management is proposed. The classic understanding of the distributional consequences of production globalization outlined above thus yields the following baseline hypotheses:

H_4: SPEN reduces the relative wages of unskilled *vis-à-vis* skilled labor.

H_5: SPEN increases the relative wages of management *vis-à-vis* labor.

Below, arguments about how the effect of SPEN on these wage premiums varies across global and national level contexts, as well as the intersection of these contexts, are elaborated.

Global Production Networks

It was proposed above that the moderating effect of GPN entrenchment impacts both of relationships in **H_4** and **H_5**. If the proposed argument about the entrenchment of GPNs is correct, the interaction effects in **H_4** and **H_5** should become larger as GPNs become more entrenched.

H_6: The effect of SPEN on the relative wages of unskilled labor and management increases in size when GPNs become more entrenched worldwide.

The argument, however, also implies that perceptions of economic insecurity should extend beyond the particular sector engaged in direct competition with southern workers, which is consistent with a secondary hypothesis:

H_{6b}: The effect of SPEN on the relative wages of unskilled labor and management increases in size when GPNs become more entrenched worldwide in both the manufacturing and non-manufacturing sectors.

Wage–Setting Coordination

It was argued above that wage coordination weakens the link from production globalization to both the relative wages of unskilled labor (by decoupling changes in relative wages from changes in relative demand) and management (by increasing the bargaining power of labor through labor solidarity). Thus,

H_7: the effect of SPEN on the relative wages of unskilled labor and management should decrease in size as wage-coordination increases at the country level.

However, the dualization thesis suggests that the moderating effect of wage-coordination observed in the macro-comparative analysis above is smaller than it would be in the absence of dualism, because the benefits to wage coordination do not extend beyond a shrinking segment of privileged workers in the manufacturing sector. This is consistent with the following secondary hypothesis.

H_{7b}: The moderating effect of wage-coordination on SPEN's effect on the relative wages of unskilled labor and management is limited to the manufacturing sector.

Redistribution

The discussion of redistribution above included mechanisms related to both progressive tax codes and transfers. Because the former mechanism (that post-tax income gaps between low-skill and high-skill workers/management will be lower when tax codes are progressive because skills and incomes are correlated) is uncontroversial, I instead focus on the argument that redistribution reduces the income penalty to unemployment, and thus encourages better bargaining behavior. The baseline hypothesis is that

H_8: The effect of SPEN on the relative wages of unskilled labor and management decreases in size as the degree of redistribution increases.

To see if see if the moderating effect of redistribution on perceptions of economic insecurity extends beyond sectors in direct competition with Southern workers, I hypothesize that

H_{8b}: The effect of SPEN on the relative wages of unskilled labor and management decreases in size as the degree of redistribution increases in both manufacturing and non-manufacturing sectors.

The Intersection of Global and National Level Context

Part of my argument about the moderating effect of GPNs suggests an interaction between redistribution at the national level, and GPN entrenchment at the global level. It was argued that the entrenchment of GPNs increases perceptions of economic insecurity, which encourages workers to bargain poorly and thus could offset the psychological effects of redistribution. If this argument is correct, then the moderating effect of redistribution on SPEN should decrease with the entrenchment of GPNs.

H_9: The moderating effect of redistribution on the effect of SPEN on the relative wages of unskilled labor and management decreases in size as GPNs become more entrenched.

Finally, the dualization thesis also suggests that the moderating effect of wage coordination is declining with the entrenchment of GPNs. Here, the greater reliance of Northern manufacturing firms on the Southern labor force reduces their dependence on corporatist bargaining relations in the North. Northern firms thus sacrifice less within existing wage-setting institutions, and/or a shrinking proportion of the Northern labor force continues to benefit from persistent wage coordination. Both processes should push moderating effect of wage-coordination towards zero. This is consistent with a final hypothesis.

H_{10}: The moderating effect of wage-coordination on the effect of SPEN on the relative wages of unskilled labor and management decreases in size as GPNs become more entrenched.

Statement of Work: Micro-Level Data, Methods and Procedures

The proposal is to analyze the impact of production globalization on the wage premium to low-skilled workers and managers in advanced capitalist countries using nationally-representative survey data from the Luxembourg Income Study (LIS) Micro Database, which includes data from 15 of the 18 countries included in the macro-level analysis (Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, Ireland, Luxembourg, Netherlands, Norway, Spain, Sweden, United Kingdom, and the United States) from 1980 to 2010. Because of confidentiality requirements, access to the LIS micro data requires remote computing through the LISSY data system, where users submit analytical programs that include data selection, new data input, variable construction, and data analysis. More importantly, the size of the data (600K to 2+M) files may require further sampling or traveling to Luxembourg.

The LIS data contains harmonized occupational variables using the ISCO88's broadest 2 digit classification scheme, which classifies occupations into 10 major groups based on the *general* skill and task requirements of occupations. It then further aggregates these 10 categories into 3: managers/ professionals, skilled workers and low-skilled workers. While this classification scheme is useful, its level of aggregation misses important variation *within* occupational groups (Aedo et al. 2013). For example, ISC088 category 3 (technicians and associate professionals) includes occupations as varied as "Business services agents and trade brokers," and "Religious associate professionals." Thus, a more detailed occupational coding that accounts for skill differences across occupations is needed. The LIS data contains high resolution country-specific codes that vary across both countries and time, which will be harmonized by recoding them into the U.S. Bureau of Labor Statistics Standard Occupational Code 2010

(SOC 2010) system at the four-digit level. This will require a three step process. The first step is to generate time invariant country-specific occupational schemes for each country over the 1980-2010 period. This step is labor intensive because it requires research assistants to first document country-specific occupational codes as they vary over time, and then harmonize these codes across time within each country. The second step will require matching the harmonized country-specific codes with the four-digit occupational groups of the SOC 2010. In short, the 90+ country-year specific codes must be reduced to 15 country-specific codes and then recoded according to the SOC 2010 scheme. The graduate research assistants will work with the PI to develop a matching scheme, which will be post-tested for inter-rater reliability using a group of volunteer undergraduate research assistants.

The third step is to quantitatively code the skill composition of the SOC 2010 categories using information from the Occupational Information Network (O*NET) online system, following the method developed by David Autor for the U.S. Current Population Survey (see Autor *et al*. 2003; Acemoglu and Autor 2011; Aedo *et al.* 2013). This process will require a computationally-intensive program to input the raw data on work activity from O*NET, standardize the occupational coding to be consistent with SOC 2010, and compute the skill composition scores for each occupation code. Since this process must be accomplished remotely, it will require a significant amount of time to both program and compute in the LISSY system. After processing the occupational coding in the LISSY system, I will request the LIS store the data on their servers for subsequent analysis.

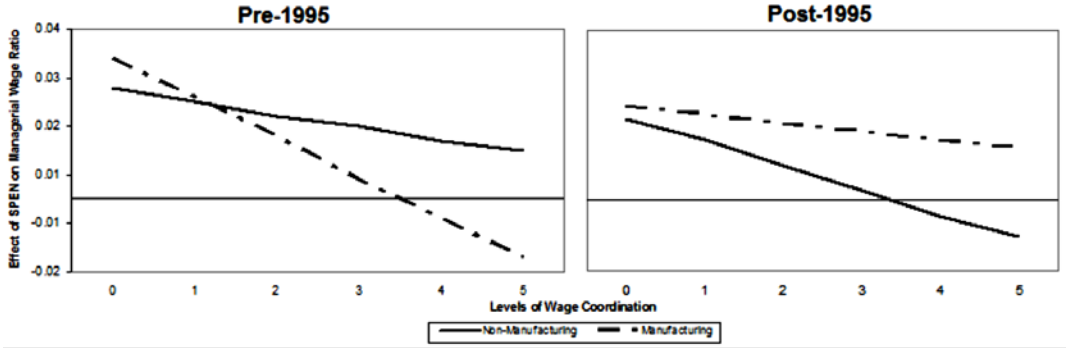
Five types of occupations will be coded: (1) routine manual, (2) non-routine manual, (3) routine cognitive, (4) non-routine analytical and (5) non-routine interpersonal. These task categories are based on the nature of work. Routine-manual refers to the performance of repetitive physical actions. Non-routine manual skills refer to work requiring various physical action according to changing circumstances. Routine cognitive skills refer to the conduct of repetitive non-physical work. Non-routine cognitive-analytical refers to processing abstract information and executing decisions based on this processing. Finally, non-routine cognitive-interpersonal refers to the management of groups of workers. Categories 1-4 capture increasing skill among workers. Category 5 captures management.

Analytically, a multi-level level regression analysis of wages among individuals in advanced capitalist countries from 1980 to 2010 is proposed (see Brady *et al.* 2013; Martin and Brady 2007). The nesting of individuals in countries, sectors and years requires a generalized linear model capable of accounting for hierarchical structure of the data (Rabe-Hesketch and Skrondal 2012). Hierarchical linear models (HLMs) adjust for the nesting of one level in another, and also allow lower-level coefficients and intercepts to vary across higher level covariates. In the present case, HLMs allow for the regression of the cross-level interaction between skill/managerial status and SPEN on additional second level covariates—wage coordination and redistribution.

To assess the potential of the proposed analysis, a preliminary analysis of the wage ratio of low-skill workers and management using individuals nested in the 47 country-years with data on redistribution and wage coordination was conducted. The sample was restricted to individuals with full time employment, which yielded a final individual sample of 666,702. The longer-term plan will be to expand this to examine the role of unemployment and precarious employment (e.g. Kenworthy and Pontusson 2005). The LIS's crude 3-category classification of occupations (low, high and managerial) is employed to measure skill and managerial status. Both random-intercept and random coefficient models were employed, in which individual labor income ratios (individual income divided by the median income of a given country-year) were regressed on low-skill and managerial status, as well as cross-level interactions between low-skill/managerial status and southern import penetration, wage coordination and redistribution. The coefficients on low-skill and managerial status are allowed to vary across countries, and this variation as modeled as a function of two-way and three-way interactions involving each occupational group, SPEN, wage coordination and redistribution. To examine whether or not the effects extend beyond the manufacturing sector, separate regressions for sub-samples in the manufacturing and non-manufacturing sector were conducted. To examine whether these effects change with the entrenchment of GPNs, separate models for each sub-sample before and after 1995 (the year after which GPN entrenchment generated a significantly positive effect of SPEN in the macro-analysis above) were

estimated. All of the results below are net of the following controls: education, age, age^2, sex, marital status, GDP per capita, and both industry and decadal fixed effects.

Figure 2. *The marginal effect of SPEN on the relative wages of management by wage coordination.*



Due to space constraints, only the marginal effects (coefficients) of SPEN on the wage ratio of low-skill workers and management as they vary across wage coordination and redistribution are shown, and separately for each sector and period. Figure 2 shows how the effect of southern import penetration on the managerial wage premium varies across levels of wage coordination both before and after 1995 in both the manufacturing (broken line) and non-manufacturing (solid line) sectors. To contextualize the graphs in Figure 2 and subsequent graphs, I provide a bit more information for the manufacturing sector in the pre-1995 period as displayed in Figure 2 (dashed line, left hand side of Figure 2). The average ratio of managerial wages to the median wage in the manufacturing sector prior to 1995 is 71% larger than the ratio of non-managerial wages to the median (.710; p<.001). SPEN increases this premium by 2.8 percentage points for every unit increase in SPEN (.028; p<.001). However, SPEN's effect on the managerial wage premium declines by 8 tenths of one percentage point for every one unit increase in wage coordination (-.008; p<.001). That is, a transition from 1 to 2 on Kenworthy's coordination scale reduces the impact of SPEN on the managerial wage premium by roughly 29 percent, and SPEN has no effect on the managerial wage premium in the manufacturing sector before 1995 in countries with the highest values of wage-coordination. This moderating effect of wage-coordination is observed in both sectors during both periods (**H_7,** c.f. **H_{7b}**). However, consistent with **H_{10}**, the shallower slope for manufacturing on the right hand side indicates that wage coordination has a declining moderating effect after 1995. Contrary to **H_{10}, H_{7b}** and the dualization thesis, however, wage coordination has a slightly stronger moderating effect (steeper slope) after 1995 outside of the manufacturing sector.

Figure 3. *The marginal effect of SPEN on relative wage of management across redistribution*

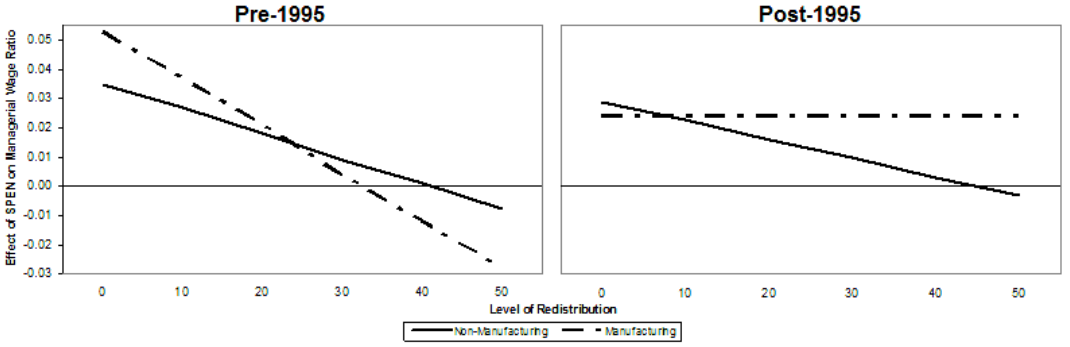
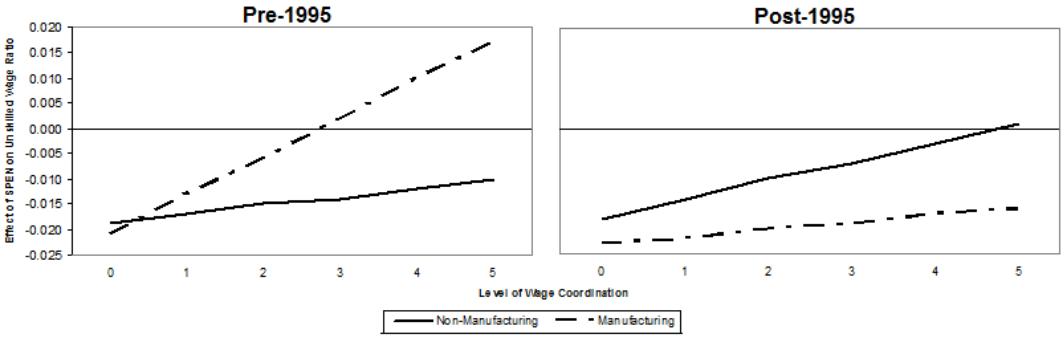


Figure 3 shows the marginal effect of southern import penetration on the managerial wage premium across levels of redistribution. Consistent with hypotheses **8** and **8b**, the effect of SPEN declines steeply with higher redistribution prior to 1995, although this moderation was much stronger in manufacturing. However, and consistent with hypothesis **9a**, the shallower slopes on the right hand side

indicate that the moderating effect of redistribution was substantially reduced after 1995 in both sectors. In manufacturing, redistribution exerted no impact on the marginal effect of southern import penetration on the managerial wage premium after 1995. In non-manufacturing industries, redistribution continued to reduce the impact of SPEN on managerial wages, but less than the pre-1995 period.

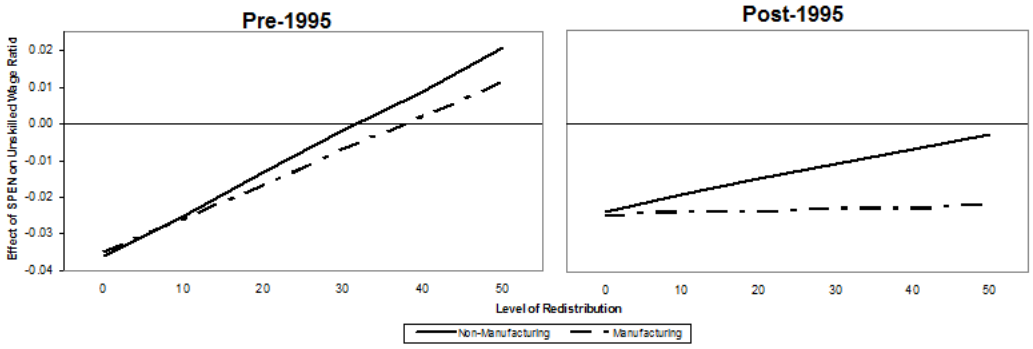
Figure 4 shows the marginal effect of southern import penetration on the wage ratio of low-skill workers as it varies across wage coordination. Similar to Figure 2, wage coordination reduces the negative effect of SPEN on the wages of low-skill workers in both sectors and periods (**H_7,** c.f. **H_{7b}**). In the early period, the moderating effect of wage coordination is stronger in the manufacturing sector. However, consistent with **H_{10}**, the moderating effect of wage coordination declines significantly in manufacturing after 1995. And, contrary to **H_{10}**, **H_{7b}** and the dualization thesis, the moderating effect of wage coordination actually increases after 1995 in the non-manufacturing sectors.

Figure 4. *The marginal effect of SPEN on relative wage of low-skilled workers by wage coordination.*



Finally, Figure 5 shows the marginal effect of SPEN on the relative wages of unskilled workers as it varies across redistribution. Prior to 1995, redistribution greatly reduced the effect of SPEN on the low-skill wage ratio. However, consistent with **H_{9a}**, this effect attenuates significantly after 1995. In manufacturing, the moderating effect of redistribution becomes non-significant. Outside of the manufacturing sector, the moderating effect of redistribution declines by 60 percent.

Figure 5. *The marginal effect of SPEN on relative wage of low-skill workers across redistribution.*



In short, the evidence is consistent with our hypotheses, even in the face of very crude measures of skill: SPEN increases the wage premium to management, decreases the wage premium to low-skilled labor, and its effect varies across both wage coordination and redistribution. The moderating effect of wage coordination and redistribution generally declines after 1995. The exception is wage coordination outside of the manufacturing sector. The declining moderating effect of wage coordination in manufacturing is consistent with the dualization thesis, but its increasing moderating effect outside of manufacturing is inconsistent with this thesis. This evidence points to the promise of the proposed individual analysis. Because measurement error is well known to produce attenuation bias, it is entirely likely that these results understate SPEN's effect on skill and managerial status, and the way in which

SPEN's effect varies with wage coordination and redistribution. Finer grained measurements of skill and managerial are well motivated.

Intellectual Merit

This project synthesizes literatures on the two most common researched causes of the increase in inequality experienced by advanced industrial countries since the 1980s: globalization and institutions. It advances both of these literatures by providing an explanation for the paradoxical findings on the distributional effects of economic globalization, and providing a set of mechanisms to understand how globalization and national institutions interact to produce distinct distributional outcomes across time and space. The triangulated design promises to advance basic research even further by providing evidence on the overall distributional consequences of economic globalization in particular institutional settings, the extent to which the proposed mechanisms operate at the individual level, and addressing a range of questions left unanswered in contemporary theories of globalization and institutional change.

Broader Impact of Proposed Work

In addition to advancing basic research on the causes of increase in income inequality among advanced industrial democracies, this project promises evidence-based predictions of future trajectories of inequality as production globalization proceeds. Moreover, it will provide evidence-based assessments of policy options at both the macro and micro levels. In tandem, these can help to ameliorate the impact of production globalization on low-skill labor, and labor more generally. Moreover, the proposed coding procedures for the LIS micro-data will generate a scheme for harmonizing country-specific occupational codes to generate a much more fine grained cross-nationally and temporally comparable measure of the skill content of occupations variable, which will be made available to the LIS for future researchers. Pedagogically, it provides opportunities for at least one graduate assistant to internalize a new set of methodological skills and body of literature, as well as known externalities accomplished from "learning by doing." These pedagogical contributions are particularly important in the context of my home institution, which is Hispanic-serving and among the top 5 most diverse "Research 1" universities in the country. As of this writing, the most likely candidate for the assistantship is an underrepresented minority.

Table 2: Timeline of Completion

Date	Activity	Participant(s)
Fall 2015	Harmonize occupational variables in LIS micro-data within countries	PI. 1 Graduate Assistant
Winter 2015	Harmonize country-specific occupational variables to SOC 2010 scheme.	PI. 1 Graduate Assistant
Winter and Spring 2016	Translate SOC 2010 codes to harmonized skill and managerial status variables following Autor et al. 2003 and Acemoglu and Autor 2011	PI. 1 Graduate Assistant
Spring 2016	Append new skill codes to LIS system and begin analysis of multi-level dataset	PI. 1 Graduate Assistant
Summer 2016	Attend LIS workshop and finalize analyses requiring residence	PI. 1 Graduate Assistant

Relationship to Previous Work and Future Goals

In my career thus far, I have published in two substantive areas relevant to this project—the globalization of production (Bair and Mahutga 2012; 2011; Mahutga 2014a; 2014b; 2014c; 2012) and income inequality (Bandelj and Mahutga 2010; Mahutga 2013; Mahutga et al. 2011; Mahutga and Bandelj 2008). This project synthesizes much of the insight I've gleaned from my work in both areas. In my work on the globalization of production, I find that (1) the entrenchment of global production networks as the predominant organizational logic of various industries has increased dramatically overtime (Mahutga 2012), (2) the effects of any country's connection to these globalized industries depends critically on how entrenched these organizational logics have become globally (Mahutga 2014a; 2014b, 2014c) and (3) the relative wages of workers in countries where supplier firms are located declines

with the entrenchment of GPNs (Mahutga 2014a; 2014c). In pursuing my own inequality research and in reviewing that of others, I discovered that aspects of production globalization often have small and/or inconsistent effects of inequality, despite compelling theoretical arguments for large effects. In my ongoing work on inequality during post-socialist transition, I discovered that labor markets in EU transition countries are much more liberalized than in other transition countries, and deduced that production globalization should have larger effects in EU transition countries because the mechanisms underlying its effect assume unfettered labor markets in a given national context. I found empirically that, indeed, both foreign direct investment and GPN integration have larger effects in EU transition countries than others (Mahutga 2013). In combination with my reading of the extant literature, these findings yielded the intuition that the inconsistent results of globalization in previous work may stem from similar types of moderating forces.

With respect to my future goals, I am increasingly interested in going beyond the establishment of *correlations* among the social processes I investigate. Because the questions I ask are less amenable to experimental contexts, I want to spend the rest of my career engaging in precisely the kind of triangulated research at the macro and micro levels that I propose here.

Results from Prior NSF Support

I have not received any NSF funding in the last five years.

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[1] For example, those who argued that rising skill-wage premiums were driven by skill-biased technological change pointed to a rising trend toward greater skilled-labor demand within industries as opposed to a reallocation of labor from low to high skill industries. But, the trend toward rising demand for skilled labor within industries is also explicable by the increasing fragmentation of production into low and high skill phases, and the offshoring of the former. Alternatively, others counter that skill-biased technological change can be a functional substitute to offshoring by Northern firms in competition with offshoring rivals so that production globalization is both a direct and proximate cause of rising skill-wage premiums (see Feenstra and Hansen 1996; Katz and Autor 1999; Wood 1998). The unified theory of a tradeoff between inequality and unemployment suggests a number of hypotheses, including a strongly inverse correlation between unemployment and inequality across countries, lower unskilled unemployment in countries with lower unskilled wages (and vice-versa) and a strong, positive correlation between interventionist labor market institutions/welfare state generosity and unemployment. However, these expectations either do not bear out empirically, or appear rather weak (e.g., Howell 2002; Howell and Huebler 2005; c.f. Kenworthy 2003).

[2] There are various ways in which social scientists attempt to measure the entrenchment of GPNs world-wide, but many of these are designed to capture industry-specific network models, whereas this measure captures all models (Feenstra 1998; Mahutga 2012; Milberg 2004; Yeats 2001). The intuition for this measure is straightforward: the ratio of global trade to global value added increases with the degree of production globalization because "intermediate inputs cross borders several times during the manufacturing process… [and] while the denominator is value-added, the numerator is not, and will 'double count' trade in components and the finished product" (Feenstra 1998: 34; also see Mahutga 2012). That is, the divergence of global trade from value added is proportional to the degree to which inputs cross national borders multiple times in the production process. The greater the divergence, the greater the entrenchment of GPNs.

[3] To quantify these counterfactuals, I estimate nine additional models in which I constrain the effect of southern imports to equal its marginal effect at the minimum, mean and maximum value of our three moderators. To isolate the consequences of changes in the effect of southern imports, I also constrain the coefficients on the controls to equal the values that obtain in an unreported model equivalent to Models 1-4 of Table 1, except that southern imports is not moderated (.077; $p<.05$). I then estimate Gini coefficients on the basis of these counterfactual equations.

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(i)

Mahutga, Matthew C. 2014. "Global Models of Networked Organization, the Positional Power of Nations and Economic Development." *Review of International Political Economy* 21(1): 157-194

Mahutga, Matthew C. 2014. "Production Networks and the Organization of the Global Manufacturing Economy." *Sociological Perspectives* 57(2): 229-255

Mahutga, Matthew C., Anthony Roberts and Ronald Kwon. "The Paradox of Economic Globalization: Organizational Isomorphism, Institutional Context and the Distributional Consequences of Globalized Production in Advanced Industrial Countries." Manuscript Under Review.

Mahutga, Matthew C. 2012. "When do Value Chains Go Global? A Theory of the Spatialization of Global Value Chains." *Global Networks*: 12(1): 1-21.

Bandelj, Nina and Matthew C. Mahutga. 2010. "How Socio-Economic Change Shapes Income Inequality in Central and Eastern Europe." *Social Forces* 88(5): 2133-2161.

(ii)

*Curwin, Kevin and Matthew C Mahutga. 2014. "Foreign Direct Investment and Economic Growth: New Evidence from Post-Socialist Transition Countries." *Social Forces* 92(3): 1159-1187

Mahutga, Matthew C. and Andrew K. Jorgenson. 2014. "Private Market Expansion, World-Economic Integration and Europeanization: The Conditional Effects of Structural Change on Post-Socialist Stratification." Manuscript Under Review

*Clark, Robert V. and Matthew C. Mahutga. 2013. "Explaining the Trade-Growth Link: Assessing Diffusion-Based and Structure-Based Models of Exchange." *Social Science Research* 42(2): 401-417

Mahutga, Matthew C. and David A. Smith. 2011. "Globalization, The Structure of the World Economy and Economic Development." *Social Science Research*: 40(1): 257-72

Mahutga, Matthew C. 2006. "The Persistence of Structural Inequality? A Network Analysis of International Trade, 1965-2000." *Social Forces* 84(4): 1863-89

D. **Synergistic Activities**

Innovative teaching: Co-Organizer, UC Riverside Political Economy Seminars (http://ucrpoliticaleconomy.ucr.edu)

Databases: Mahutga, Matthew C. 2013. "Multi-relational International Trade Networks, 1965-2000." Connections 33(1): 46-9

E. **Collaborators and Other Affiliations**

Collaborators past 48 months (8 total)
Jennifer Bair, CU Boulder
Nina Bandelj, UC Irvine
Katja Guenther, UC Riverside
Jana Grittersova, UC Riverside
Andrew K. Jorgensen, Utah
Ronald Kwon, UC Riverside
Rob Parker-Nash, UC Riverside
Anthony Roberts, UC Riverside

Graduate Advisors (2 total)
David A Smith, UC Irvine
Judith Stepan-Norris, UC Irvine

Thesis Advisees (14 total)
Curwin, Kevin Dissertation Chair.
Paul Peterson. Dissertation Co-Chair
Owen, Andrew. Thesis Co-Chair.
Apkarian, Jacob. Dissertation Committee Member
Curwin, Kevin. Thesis Chair
Roberts, Tony. Dissertation Co-chair
Kwon, Roy. Dissertation Co-Chair.
Lawrence, Kirk. Dissertation Committee Member.
Schwarz, Elizabeth. Thesis Committee Member.
Coyne, Gary. Dissertation Committee Member.
Roberts, Tony. Thesis Committee Member.
Grainger, Garrett. Faculty Mentor, Mentoring Summer Research Internship Program.
Anatram, Kadambari. Thesis Committee Member.
Hastings, Cameron. Outside Dissertation Committee Member.

SUMMARY PROPOSAL BUDGET

YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
University of California-Riverside

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Matthew Mahutga

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-months CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Matthew C Mahutga - Associate Professor**	0.00	0.00	1.00	**10,066**	
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.00	**10,066**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL SCHOLARS	0.00	0.00	0.00	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	**0**	
3. (**1**) GRADUATE STUDENTS				**22,641**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**32,707**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**17,148**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**49,855**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**0**	
2. FOREIGN				**10,850**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**0**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**3,650**	
TOTAL OTHER DIRECT COSTS				**3,650**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**64,355**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Total Direct Costs (MTDC) (Rate: 52.0000, Base: 49178)**					
TOTAL INDIRECT COSTS (F&A)				**25,573**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**89,928**	
K. RESIDUAL FUNDS				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				**89,928**	

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI/PD NAME
Matthew Mahutga

ORG. REP. NAME*

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

 ***ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET**

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
University of California-Riverside

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Matthew Mahutga

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-months CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Matthew C Mahutga - Associate Professor**	0.00	0.00	1.00	**10,066**	
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.00	**10,066**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL SCHOLARS	0.00	0.00	0.00	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	**0**	
3. (**1**) GRADUATE STUDENTS				**22,641**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**32,707**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**17,148**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**49,855**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**0**	
2. FOREIGN				**10,850**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**0**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**3,650**	
TOTAL OTHER DIRECT COSTS				**3,650**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**64,355**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				**25,573**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**89,928**	
K. RESIDUAL FUNDS				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				**89,928**	

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI/PD NAME
Matthew Mahutga

ORG. REP. NAME*

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

C ***ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET**

Budget Justification

A. Senior Personnel: In summer of 2016, the PI will work with 1 graduate research assistant in all aspects of the project, and attend the Luxembourg Income Study Workshop. The amount of one month of summer salary is requested.

B. Other Personnel: Graduate Student Researcher (1 student). The project requires a significant amount of data management for constructing a multi-level dataset containing individual- and country-level variables. I plan to employ 1 graduate student researcher (GSR) for three academic quarters @ 49% x $3775 for the academic year 2015-2016. Research assistant will, under the guidance of the PI, be primarily responsible for constructing and cleaning data for analysis. Additionally, the research assistant will help the PI with data analysis and drafting manuscripts for publication. In the academic year 2015-2016, the research assistant and PI will work collaboratively to harmonize the occupational variables in the LIS micro-data, code this harmonized variable into measures of skill and managerial status, write code to combine national and individual level data in the LISSY system and conduct analyses. The research assistant will work 15-20 hours per week, under close supervision of the PI. During the summer months, the project will employ 1 graduate researcher (GSR) @ 49% x $3775. In the summer of 2016, the GSR will assistant in the analysis and write up of the the multi-level dataset, and present these results with the PI at the ASA meeting. The research assistant will work 15-20 hours per week, under close supervision of the PI.

C. Fringe Benefits:

1. Fringe benefits for the GSR consists of 4.7% for Worker's Compensation, unemployment insurance and Medicare during the summer months and 2.3% for Worker's Compensation and unemployment insurance during the academic year.
2. Graduate Student Partial Tuition/fee remission and Health are requested for graduate student researchers appointed at 25% and above. These fees/remissions are considered by the UC system as fringe benefits because of the direct correlation between salary and these benefits. By policy, these fees/remissions are associated with any graduate student researcher position of 25% or greater. This is UC policy and non-negotiable. Graduate student tuition and fees are not included as part of the total direct and indirect cost calculations.

D. Equipment: No equipment requested.

E. Travel: In the summer of 2016, travel for the PI and one graduate assistant to the University of Luxembourg is required to participate in the Luxembourg Income Study Workshop, and to gain direct access to the LIS dataset without having to work through the LISSY system. Travel costs for all trips include air fare, lodging, meals and incidentals for three days/nights, taxi and parking fees. Attending the Luxembourg Income Study (LIS) Workshop in the summer of 2016 will provide the PI and 1 graduate research assistant (with expertise in necessary programming functions) with direct access to the LIS data so that we can upload the newly coded skill variable to their server, analyze the LIS data outside of the LISSY system and with alternative software, as well as provide direct assistance in developing a STATA program for the "LISSY" system to use from afar. The "LISSY" system is the remote-execution data access system for the LIS microdata proposed. The fee for the LIS workshop includes room and board.

F. Participant Support Costs: None

G. Other: The purchase of scholarly literature, proprietary data, and analytic software include:
UNCOMTRADE Data: Single User with sufficient cap. These trade data are necessary to measure southern import penetration and global production network entrenchment
UNIDO Industrial Statistics Data 2014 (INDSTAT2): These data are necessary to measure value added in manufacturing.
Literature: This is to cover incidental literature costs such as professional journals, articles, publications and books.
Software: *HLM Concurrent liscence, STATA-SE 13, StatTransfer Single User License*. HLM fills gaps left open by Stata, and vice-versa. StatTransfer facilitates the transfer of datasets between software packages.

I. Indirect Costs: Indirect costs (F&A) are calculated at 52% Modified Total Direct Cost. These F&A rates are a predetermined rate for the period of January 1, 2013 through December 31, 2014 and are provisional thereafter. MDTC excludes equipment, and graduate student researcher partial fee remissions and insurances.

Current and Pending Support

(See GPG Section II.C.2.h for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Matthew Mahutga

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: The Paradox of Economic Globalization: Organizational Isomorphism, Institutional Context & the Distributional Consequences of Globalized Production in Advanced Industrial

Source of Support: NSF

Total Award Amount: $ 89,928 Total Award Period Covered: 08/01/15 - 07/31/16

Location of Project: UCR

Person-Months Per Year Committed to the Project. Cal: 0.00 Acad: 0.00 Sumr: 1.00

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Facilities, Equipment and Other Resources

Laboratory: Not applicable

Clinical: Not applicable

Animal: Not applicable

Computer: The computers available to the PI and his graduate researcher are more than adequate to handle the estimation procedures we must follow. The individual level dataset will be quite large and might typically require a large server for model estimation. However, the Luxembourg Income Study's LISSY system requires that we send them executable files, which they use to estimate models on their end, and they are computationally equipped to model their own data.

We do request funds for software, however.

Office: Both the PI and graduate assistant enjoy dedicated office space in which to carry out this research.

MAJOR EQUIPMENT

Not Applicable

OTHER RESOURCES

Not applicable

Data Management Plan

1. Types of data produced

This project will produce two new datasets, and a coding scheme to harmonize occupational categories across countries. The first dataset will be a compilation of the cross-national data used to conduct the macro-level analyses. Some of this data is available elsewhere. However, the country (southern imports) and group level (Global Production Network entrenchment) covariates are new. There are several theoretically defensible (and in some cases, analytically distinct) ways to measure these concepts, and the project dataset will include measurements for each. This dataset is complete.

The second dataset will include individual level data nested in three higher levels—industry, country and time. Unfortunately, the proprietary restrictions of the Luxembourg Income Study (LIS) prohibit making these datasets available. However, the project will result in STATA files that allow subsequent researchers to replicate research procedures for combining individual level and country level data via the LIS system (see below).

The project will also produce a coding scheme for harmonizing occupational categories across advanced capitalist countries, and will make this scheme available for others. We will also make this available to the LIS for future users, as it represents a marked improvement upon their currently harmonized occupational skill categories.

2. Data and metadata standards

The country and world-level globalization statistics will be provided in an Excel file, and will be accompanied by a Word document that includes (1) the data sources combined to generate them, (2) explicit instructions allowing one to replicate project measurements beginning with the original source and (3) Stata ado files documenting the programs used to compile these statistics.

The project will provide a detailed description of the procedures by which country/time level data are combined with the individual level LIS data via Microsoft Word, as well as any code produced to facilitate data analysis. The project will also provide the occupational harmonization scheme in a word document.

3. Policies for access and sharing

Accessing the country-level data is straightforward, as these data are provided by the international organizations (the Organization for Economic Cooperation and Development, United Nations, World Bank, International Monetary Fund, etc.) discussed in the project description.

One of the major difficulties with using LIS data is the inability to take possession of the data. To access the LIS Micro data, researchers must use the LISSY remote execute system. This online interface requires researchers to directly execute STATA programs in the interface. After processing the program, the interface provides an embedded log of the program's output. Analysis with the LIS Micro data requires an extensive program designed to append micro data from each available country and year; input country-level data; recode variables; and analyze the multi-level data using Stata. This program will be designed.

4-5. Policies for re-use, redistribution, archiving and preservation

There are no prohibitions that would disallow sharing the country-level data, and they present no issues with respect to privacy.

All country and group-level measures, all documentation/code necessary to reproduce these measurements, and all documentation/code necessary to combine the national with individual level data via the LISSY system will be made available to the public via Michigan's Interuniversity Consortium for Political and Social Research (ICPSR), and via this website hosted at the University of California, Riverside: http://matthewcm.ucr.edu. The macro level dataset will also be made available. Prompt assistance to individuals requesting information about these data will also be provided.