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Authors

Mahutga, Matthew C
Jorgenson, Andrew K

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Production Networks and Varieties of Institutional Change: The Inequality Upswing in Post-Socialism Revisited.*

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Matthew C Mahutga
Department of Sociology
University of California, Riverside

Andrew K Jorgenson
Department of Sociology
Boston College

In this article, we elucidate two new mechanisms for the rise in earnings inequality during post-socialist transition. First, the integration of transition country firms into globalized production networks (GPNs) should increase inequality independently of foreign direct investment (FDI). Second, because EU integration hastened the transition from Soviet era labor market practices, the distributional effects of private markets and world-economic integration should be larger among acceding countries. A longitudinal analysis of Gini coefficients among 16 transition countries from 1991 to 2009 supports these interventions: GPN integration increases inequality independently of FDI, and both private markets and world-economic integration have stronger effects in EU transition countries. These results are robust to a host of alternative explanations, to varying operationalizations of the labor-market effects of EU integration, and to alternative estimators. Through counterfactual analysis, we show that inequality would have increased less dramatically in the absence of EU integration.

Key Words: Inequality, Post-Socialist Transition, Economic Sociology, Globalization, Comparative Political Economy

Running Head: The Inequality Upswing in Post-Socialism Revisited

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Introduction

When the Soviet Union collapsed, Eurasia and Central and Eastern Europe had lower levels of inequality than the West, with an average Gini coefficient in 1989 of .246 (ranging from .155 to .301 (TRANSMONEE 2012)). By comparison, the average Gini coefficient in 1989 among developed Western countries was .413 (ranging from .302 to .479 (Solt 2009)).¹ Subsequent to the collapse, these countries began transitioning away from centrally planned economies with few connections to the larger world economy. While the particular pathways varied (Stark and Bruszt 1998), each began building private markets and forging social relations with foreign actors in the global economy (Bandelj 2008; Drahokoupil 2008). All post-socialist countries experienced an inequality upswing along with these transitions, which increased the ratio of within to between country inequality overall (Clark 2011). However, the timing, pace and extent of the increase varied considerably across transition countries, and private markets and FDI have been shown to explain a significant amount of this variation (Bandelj and Mahutga 2010; Mahutga and Bandelj 2008).

In this article, we revisit the distributional consequences of private markets and economic globalization. First, we introduce global production networks (GPN) as a unique form of economic globalization distinct from FDI. The growing literature on GPNs documents various models of network relationships that embed production and exchange within inter-firm relations that do not include equity ties (Gereffi et al. 2005). While much research documents the emergence of these kinds of networks in post-socialist countries (Avdasheva 2007; Czaban and Henderson 2003; Pickles, Smith and Bucek 2006; Smith 2003; Winter 2007), none have considered their distributional consequences. We argue that these production network relations should increase inequality independently of FDI.

Second, we argue that external isomorphic pressures for institutional change emanating from the European Union (EU) hastened the transition away from Soviet era labor market practices among EU acceding transition countries, and that accession matters for the distributional consequences of both private markets and world-economic integration. Drawing from country case studies, we document that EU acceding countries transitioned away from Soviet-like labor market practices more quickly than their transition counterparts. Using secondary data on output and unemployment among transition countries, we show that this made unemployment more responsive to output among EU transition countries. Because the mechanisms underlying the distributional consequences of private markets and world-economic integration presuppose that wages and employment respond to market signals instead of administrative fiat, the distributional effects of each should be stronger in EU transition countries.

We then conduct a pooled cross-section time series regression analysis of 16 countries covering most of the transition period. Our methodology is strategic insofar as it allows us to control for all time-invariant factors known to matter for post-socialist transition, such as pre-existing economic, institutional, class and political structures (e.g. Fligstein 1996; Walder 1996; Szelenyi and Kostello 1996). Our findings support our interventions insofar as GPNs increase inequality independently of FDI, and the effects of both private markets and economic globalization are more pronounced in EU transition countries. These results remain when controlling for a host of additional sources of variation across EU and non-EU transition countries, when implementing alternative operationalizations of EU labor market effects, and across alternative estimators. We conclude our analysis with an exercise in counterfactual thinking, which shows that (*ceteris paribus*) inequality would have grown less steeply in the

absence of EU integration because private market expansion and world-economic integration would have had weaker effects.

Private Markets, Economic Globalization and the Inequality Upswing during Post-Socialism

One of the more immediate changes associated with transition was the expansion of private markets, which represents “... the conversion of a system where private ownership was absent to one where economic actors have property rights [and] was universally recognized as necessary for market transition” (Bandelj and Mahutga 2010: 2136). While the distributional effects of private markets have been somewhat controversial in the transition literature, many analysts argue their expansion increases inequality. Bandelj and Mahutga (2010) argue that private sector employees enjoy both higher incomes and greater employment precariousness, on average, than the state-owned sector. The former process increases inter-sector (private/state-owned) inequality, and the latter processes increases intra(private)-sector inequality.

Apart from the sectoral cleavages identified by Bandelj and Mahutga, private markets may also increase inequality by benefitting the pre-transition political elite. In one formulation, elites translate the expertise and human capital they accumulated in the old regime into competitive success in the private sector; a process of “technocratic continuity” (Rona-Tas 1994; Szalai 1990). In another, political elites parley their bureaucratic *positions* into entrepreneurship by virtue of their privileged access to credit and knowledge about privatizing state industries; or in other words engage in “power conversion” (Rona-Tas 1994; Staniszki 1991). Thus, as markets expand, the former cadre elite can either use the skills and human capital accumulated under the socialist regime to compete as entrepreneurs and/or exploit their social networks to

gain information about privatizing industries and access credit. Because pre-transition elites entered the transition period with higher average incomes, both theories predict that post-socialist transition should exacerbate inequality.

Post-socialist transition occurred simultaneously with the intensification of economic globalization (e.g. Bandelj 2009; Hanley et al. 2002). With few exceptions, examinations of the causal effect of globalization on transition outcomes focus exclusively on FDI. And for good reason—on a per GDP basis, transition countries absorbed significantly more FDI than the world as a whole (Bandelj 2009). The influx of FDI has been shown to matter for a range of outcomes, including the organizational form of formerly state-owned enterprises (Hanley et al. 2002), firm-level economic performance (King and Sznajder 2006), economic growth (Curwin and Mahutga 2014) and income inequality (Mahutga and Bandelj 2008). With respect to inequality, analysts of post-socialist transition suggest that FDI increases inequality by creating a wage gap *between* the foreign and domestic sector (wages tend to be higher in the former) and *within* the foreign sector (between labor and management) (Aitken et al. 1996; Mahutga and Bandelj 2008; Moran 2002).

However, investment is but one type of transnational social relation linking post-socialist countries with the larger world economy. Many forms of production globalization embed the former into networks of varying types of *informal* relationships between foreign and domestic firms (Gereffi et al. 2005; Yeung and Coe 2015). These networks are independent of FDI flows because domestic firms produce and export in relation with foreign firms, but do not share ownership ties with them. Post-socialist countries have been increasingly integrated into these networks across a number of industries, including electronics, autos and apparel, such that “a large share of exported goods from the post-communist states pass through [GPNs]...” (Cieřlik

2014: 25; also see Pickels, Smith and Bucek 2006; Smith 2003; Avdasheva 2007; Winter 2007; Czaban and Henderson 2003).

The integration of transition firms into GPNs should matter for inequality. In contrast to the higher wages among foreign firms discussed above, studies of GPNs across a range of industries find that network participation drives down wages among workers employed by contract suppliers. This occurs through a process whereby leading firms extract economic concessions from their suppliers by benchmarking them against cheaper competitors in alternative locations (e.g. Heintz 2006; Kaplinsky 2005; Mahutga 2014; Schrank 2004). Supplier firms make these concessions in part by reducing wages, which therefore exacerbates wage inequality between firms in the “GPN sector” and those in other sectors. That is, GPN integration depresses wages for workers in domestically owned GPN integrated manufacturing enterprises *vis-à-vis* those in foreign owned firms, domestically owned non-exporting firms and domestically owned exporting firms without relations to GPNs. We formalize this mechanism with our first hypothesis.

H₁: Production network integration increases inequality independently of FDI.

EU Integration and Varieties of Institutional Change

Another set of post-socialist transition scholars explain inequality and other forms of political-economic change by focusing on the behavior of political and economic institutions *internal* to transition countries (Bohle and Greskovits 2012; Crowley 2006; Gerber 2002; Keister and Borelli 2012; Walder 1996). As a point of departure, we argue that isomorphic pressures for institutional change emanating from a key *external* institution—the European Union (EU)—

matters for the effect of both private markets and world-economic integration on inequality during post-socialism.

To explicate the role of the EU, we begin by stylizing the Soviet era labor market practices that characterized (to varying degrees) transition economies at the onset of transition. A key labor market policy goal in the Soviet system was full employment, which was pursued by central planning in the areas of wages and capital investment. Wages were often pegged to a base wage, and then adjusted via fixed multiples that varied according to occupation and seniority (e.g. Kornai 1992; Pavlova and Rohozynsky 2005). Centrally planned capital investments allowed firms to maintain a fixed or growing level of employment even if it meant operating at a loss. In effect, these “soft-budget constraints” contributed to full employment by reducing the overall wage bill and inflating labor demand (Kornai 1992). In short, Soviet planning decoupled wages and employment from productivity and output to produce full employment so that “if ever labor markets anywhere could be termed ‘rigid,’ it was here” (Crowley 2006: 7).

These Soviet era labor market practices are incompatible with key aspects of the “Copenhagen criteria” to which prospective EU members must demonstrate conformity prior to membership. These criteria set accession conditions in three dimensions—political, legal and economic (Schimmelfennig and Sedelmaier 2005; Roland 2006). The economic dimension is two-fold: prospective members must demonstrate “the existence of a functioning market economy as well as the capacity to cope with competitive pressures and market forces within the Union” (European Commission 2014).² More specifically, prospective members must demonstrate that their economies allow “a free interplay of market forces” with “limited state influence on competitiveness” (European Commission 2014; also see Crowley 2006). The Copenhagen criteria are codified by the “acquis,” which is divided into 35 policy-domain

specific chapters. Chapters 5 and 8 limit administrative investments (subsidies) so that particular firms do not gain a competitive edge from their governments. Chapter 19 promotes the harmonization of wages and productivity, as well as European style employment flexibility (i.e. “flexicurity”), where employment contracts are tied to firm performance, but the state plays an active role in worker training and unemployment assistance.

EU pressure for institutional reform extends beyond legal proscriptions in the *acquis*. While the European Commission describes the accession process as an iterative “negotiation” between representatives of European and candidate countries, the negotiations are one-sided in practice. Historically, Europe Agreements commence formal accession negotiations. But prior to these agreements, the European Commission screens candidate countries to determine the extent of the gap between existing and EU practices. This initial screening often results in opening benchmarks that must be met *before formal negotiations* (i.e. Europe Agreements) *begin*. For example, the Balkan countries signaled a desire to join the EU in the early 1990s, but didn’t sign Europe agreements until 2001 (Croatia and Macedonia) or 2006 (Albania). Only one of these countries has achieved full membership (Croatia, 2013).

Similarly, negotiations over particular aspects of the *acquis* do not include *whether or not* a candidate will adopt EU practice. Instead, “candidates essentially agree on *how and when* to adopt and implement” each aspect of the *acquis* (European Commission 2014, emphasis added). Depending on the extent of variance from EU practice, candidates agree to transitional arrangements that phase particular rules in gradually, and may enjoy progressive economic incentives as they demonstrate compliance. The European Commission monitors each step in the process to ensure that new EU members meet intermediate and longer-term benchmarks. The

degree of monitoring is extensive, as the Commission delivers “Strategy and Progress Reports,” and “Strategy Papers” to the EU council and European Parliament throughout the process.³

In short, the EU facilitates institutional isomorphism through *monitored conditionality*. Prospective EU members must demonstrate sufficient compliance with the Copenhagen criteria even before they become official candidates, and full compliance before membership is granted. Monitored conditionality includes both coercive and incentive laden processes, where EU monitors demand that candidates “import their institutions,” but also offer increasing degrees of political and economic incentives along the way (Schweickert et al. 2011: 670). These incentives include progressively stronger diplomatic ties among governments, economic ties among firms, as well as flows of trade, capital and people between EU and prospective EU member states. Even in the absence of the coercive elements of monitored conditionality, these incentives “are sufficiently large as to induce far-reaching concessions on the part of prospective members...” (Way and Levitsky 2007: 55).

Cross-national analyses of several dimensions of post-socialist transition reveal that EU membership explains most of the “post-communist institutional divide” between transition countries (Way and Levitsky 2007; also see Pop-Eleches 2007; Schweickert et al. 2011). Much of the empirical literature examining EU accession effects on institutional change considers legal and political dimensions, including levels of democratization (Pop-Eleches 2007; Schweickert et al. 2011; Way and Levitsky 2007), voice and accountability, government effectiveness, rule of law, regulatory quality, corruption and political stability (Beck and Laeven 2006) and liberalization (Di Tommaso et al. 2007), all of which changed much more rapidly among EU member transition countries.

However, there was a parallel divergence in the pace of change in labor market practices between EU integrating and transition countries and their counterparts. Belarus, Moldova, Tajikistan, Turkmenistan and Uzbekistan featured centrally planned wage setting arrangements well into the first decade of the 20th century (IMF 2012; ILO 2006; Pavlova and Rohozynsky 2005). Ukraine vacillated between wage controls and labor market liberalization during the 1990s, and the reintroduction of controls was commonly discussed by policy makers in non-EU transition countries during this period (Cornelius and Lenain 1997).

Even extensive formal policy reforms often departed from actual practice. In the early stages of Russia's transition, for example, "reforms did not remove all obstacles to labor market flexibility..." A significant proportion of enterprises remained under the direction of pre-transition managers, which lead to a "throwback managerial culture among privatized firms" that undermined market incentives (Gerber 2002: 632; 634-5). In some contexts where centrally planned systems were no longer official policy, private sector enterprises pegged wages to those in the state-owned sector, or paid taxes on "excessive" wage gains. Early labor market reforms often took the form of piecemeal amendments to Soviet era labor codes rather than the full-scale adoption of new codes (Pavlova and Rohozynsky 2005).

In contrast, EU member countries have been "far more aggressive in their liberalization and restructuring" than non-EU transition countries (Orenstein and Wilkens 2001: 3). Many expected that EU integrating transition countries would adopt the corporatist labor market practices characterizing much of continental Europe, as language in chapter 19 of the *acquis* promotes tripartite social dialogue and social protection. However, relative to incumbents, EU member transition tend to have lower rates of unionization, lower coverage rates of collective bargaining agreements, less centralized bargaining systems, and weaker employer associations.

Thus, while there is widespread agreement that EU transition countries more thoroughly transitioned toward liberal labor market institutions than their non-EU transition counterparts, these countries are also “much closer to the liberal than the coordinated model” of labor market practices in Europe (Crowley 2006: 10).⁴

The resilience of labor market inflexibility among non-EU transition countries can also be demonstrated empirically. In a perfectly liberalized labor market, output and unemployment are inversely related—unemployment rises as GDP contracts, and vice-versa. The strength of this relationship captures the extent of labor market inflexibility (Prachowny 1993; Moosa 1997). Both EU and non-EU member transition countries experienced significant economic contractions at the initial stages of transition. On an average yearly basis between 1990 and 1995, eventual EU member transition countries contracted by 9.6 percent, and non-EU members contracted by 13.1 percent. Despite their more shallow economic contraction, however, unemployment grew much more dramatically among eventual EU member transition countries during the same period (see Figure 1). Thus, unemployment and output growth appear more tightly among EU member transition countries. The bottom row of Figure 1 shows a scatterplot of unemployment growth by output (GDP per capita) growth across the two groups. As expected, the association is negative among both groups. However, the negative relationship is significantly stronger among EU-member transition countries during the period.⁵ In the absence of monitored conditionality, the transition from planned to *actually* liberalized labor markets is *relatively* long and arduous, even in the context of rapid *de jure* changes (Gerber 2002).

[Figure 1 about here]

Varieties of Institutional Change and the Conditional Effects of Private Markets and Globalization

The more thorough erosion of soft-budget constraints and concomitant labor market rigidity in EU-member countries should matter for the distributional consequences private markets and economic globalization. Two of the primary mechanisms thought to underlie the link from private markets to rising inequality are (higher) wage variation *within* the private sector, and variation *between* the private and public sectors (see above). Yet, these two sources of variation depend on a strong link from productivity to wages; a link that is stronger in more flexible labor markets. Similarly, certain industries (e.g. heavy industry and defense) were vastly “overdeveloped” by state planners during socialism (Kornai 1992; Pomfret 2006; Szelenyi and Kostello 1996). To the extent that private markets lead to the imposition of hard budget constraints, managers in these industries had to “economize on labor costs and improve productivity,” which lead to massive unemployment and a dramatic loss in earnings among former employees (Gerber 2002: 634). If our argument is correct, privatization should have caused greater dislocations of workers in heavy industry among EU transition countries, which should also have strengthened the effect of private market expansion on inequality in these countries.

H₂: Private market expansion increases inequality more in EU integrator transition countries than in non-EU integrators.

Our review of the mechanisms linking both FDI and production network integration to inequality highlights wage inequality between sectors and enterprises. FDI creates a wage gap between the foreign and domestic sectors by increasing the productivity of the former (Mahutga

and Bandelj 2008; King 2000). Because wages and productivity are more-tightly coupled in EU labor markets, FDI should have a larger effect on inequality in these countries. Similarly, GPN integration increases wage gaps between integrated enterprises and their counterparts in other sectors (Schrack 2004). While the mechanism through which this occurs is less connected to productivity, per se, it does presuppose that firms can more easily adjust their wage scales to output demand, and we should therefore expect GPN integration to have a larger effect on inequality in EU countries. In short, both globalizing processes should have larger effects on inequality in countries making more thorough transitions away from Soviet style labor market institutions. We therefore propose two final hypotheses.

H₃: FDI penetration increases inequality more in EU integrating transition countries than in non-EU integrators.

H₄: GPN integration increases inequality more in EU integrating transition countries than in non-EU integrators.

Data and Methods

Sample

A complete population of post-socialist countries in Europe and Eurasia might include as many as 25 countries covering the years 1989 to the present. However, data availability prior to 1991 is scarce and some of these countries didn't exist during the entire period. Additional year-on-year variation in missing data restricts our sample to 16 countries between 1991 to 2009. Missing data also results in an unbalanced data set, where countries contribute a different number of observations over time. In total, we observe a maximum of 177 country-years. The countries included in the dataset appear in the map of Europe and Eurasia displayed in Figure 2.

Dependent Variable

Our dependent variable is the Gini coefficient, which measures the degree dispersion over a population, and varies from 0 (perfect equality) to 100 (perfect inequality). In order to maximize comparability of our results with previous work, we utilize Gini coefficients for earnings based on employer surveys, supplemented with Gini coefficients for income based on household surveys from TRANSMONEE (2012) (see Bandelj and Mahutga 2010; Jorgenson, Alekseyko, and Giedraitis 2014; Mahutga and Bandelj 2008). Because the earnings Gini coefficients were obtained from employer surveys, no adjustments for variation in household size were made (income Ginis are adjusted). Because the two types of Gini differ on both the underlying definition of remuneration (net income vs gross earnings) and the unit of analysis (workers vs. households), we conducted a number of robustness checks.⁶

Key Explanatory Variables

Private Market Expansion

The concept of private markets is unambiguous—it is the “*proportion* of transactions conducted on markets” (Walder 1996: 1065, original emphasis). Thus, we measure private markets with *Private Sector Size*: output from the private sector as a percent of GDP (EBRD 2012).

Foreign Direct Investment

We measure FDI Penetration with the accumulated stocks of FDI as a percentage of Gross Domestic Product (GDP) (UNCTAD 2012).

Production Network Integration

The varying modes by which GPNs are governed make it difficult to develop all-inclusive metrics to capture a country's position within GPNs. Our strategy is to employ the *percent of exports to a select group of Northern countries* known for housing the leading firms in GPNs (UNCOMTRADE 2015, SITC Total).⁷ First, production network dynamics are universally reflected in trade flows (e.g. Bair and Mahutga 2012; Mahutga 2012; 2014; 2014b). And, contract suppliers generally produce and export *to leading firms in Northern countries*. Thus, all of the possible modes of governance organizing GPNs will be captured by North-bound trade. To be clear, not all north-bound exports embody networked production; our claim is that countries with more supplier firms will direct a greater portion of their exports to the North.

To validate this measure empirically, we use the literature on GPN governance to predict the relative rates of North-bound trade across industries. We measure the ratio of north-bound exports to total exports into three specific industries known for network governance (garments, electronics and autos) and all others, as displayed in Figure 3. Mahutga (2012: 10) argues extant theories of GPNs suggest that global offshoring behavior should be “higher in prototypically buyer-driven chains [garments] than in producer driven ones [autos],” and that electronics should occupy an intermediate space between them. Bair and Mahutga (2012) add that offshoring should be higher in all three industries than in other industries, on average. If North-bound exports are a valid indicator of a country's incorporation into GPNs, we would therefore expect the ratio of North-bound total trade to be highest in garments, then electronics and then autos; and to be higher in all three industries networked industries relative to the rest. Consistent with these expectations, we find that garment exports are significantly more likely to flow North than electronics exports, which in turn are significantly more likely to flow north than auto exports.

Similarly, exports in all three industries are significantly more likely to flow North than all other industries. These tests are reported in Appendix Table A1.

[Figure 3 about here]

While our industry-specific analysis shows that north-bound trade disaggregates in a way predicted by theories of GPN governance, this metric will nevertheless include two alternative sources of north-bound trade. The first is north-bound exports originating from foreign-owned subsidiaries. We address this source of conflation by controlling for FDI. The second is north-bound exports originating from domestically owned *and organized* firms. We address this by controlling for the *extent* of export behavior, measured by total exports as a percentage of GDP (World Bank 2012), and by conducting two robustness checks described below.⁸

EU Integration

As we discuss above, Europe Agreements signal the *formal* opening of accession negotiations, but are typically preceded by a period of iterative bargaining where EU commission establishes benchmarks that must be met before formal negotiations begin. We measure the extent to which transition countries engage in the process of EU integration with a dummy variable equal to 1 if a Europe Agreement that also eventuated a Europe Agreement Additional Protocol (EAAP) and Stabilization and Association Agreement (SAA) was in effect the year after ($t+1$) the year of observation. Unlike other types of agreements between EU and non-EU members, these agreements together constitute legitimate candidacy for EU membership. This dummy variable varies both across countries and over time.

Denominator Effects and Baseline Controls

As has become standard, we address Firebaugh's (1992) criticism of investment penetration research by controlling for the rate of FDI and domestic investment (e.g. Alderson and Nielsen 1999; Jorgenson, Dick, and Mahutga 2007). The *FDI rate* is measured as FDI Flow/FDI Stock, both obtained from UNCTAD (2012). *Domestic investment* is measured as Gross Domestic Capital Formation as a percentage of GDP, which we obtained from the World Bank (2012).

Our baseline controls include covariates that are common in the general literature on income inequality, as well as additional controls that are particularly salient for transition countries. The following covariates were obtained from the World Bank (2014) unless otherwise noted. First, *oil production* captures the link between extensive oil reserves and inequality explicable in terms of corruption and stable autocracy. This is particularly acute among a subset of Central Asian non-EU transition countries, where domestic elites capture resource rents that are neither reinvested nor distributed among the larger population (Buccellato and Alessandrini 2009; Pomfret 2006). We measure this as the ratio of oil production to GDP. We also consider the *ratio of female to male secondary education enrollment*, which captures the impacts of socially constructed gender gaps in educational attainment, where higher educational attainment among males increases their wage premium *vis-à-vis* females (Gerber and Schafer 2004; Shu and Bian 2003).

We follow the venerable tradition in sociological analyses of inequality that focuses on three *internal* development processes (Alderson and Nielsen 1999; 2002; Nielsen 1994). The first is sectoral composition (agricultural and industrial sector), where inequality first rises and then declines over the course of development as the labor force shifts from the agricultural to the manufacturing sector. We follow previous work by controlling for the *percent of labor force in*

agriculture and *sector dualism*; the latter equal to the absolute value of the percent of the labor force in agriculture minus the proportion of GDP in agriculture. Part and parcel to the process of economic development is the demographic transition. Countries at low stages of development experience rapid population growth, which creates an influx of young, non-earning members of the population, and thereby exacerbates inequality. Thus, we control for the *natural rate of population increase* (birth rate – death rate). Finally, the spread of education tends to lower inequality by reducing the wage premium for skilled workers. Thus, we control for the *secondary enrollment rate*. We also control for *GDP per capita*, and *government spending/GDP* (e.g. Bandelj and Mahutga 2010). Finally, countries with smaller firms will have more firms per capita, which creates more opportunity for between-firm inequality. Thus, we control for *average firm size in the manufacturing sector* with ratio of the number of employees in manufacturing to the number of manufacturing firms (UNIDO 2013).⁹

Correlations, descriptive statistics and transformations made to all variables in the analysis are described in Appendix Table A2.

Pooled Cross-Section of Time Series Regression

The data used in this study require analytical techniques to account for the repeated observations of the same countries over time. Two common approaches included the fixed (FEM) and random (REM) effects models, which represent alternative ways of addressing time invariant unobserved country-specific covariates across countries. The FEM accounts for these by including country-specific intercepts, while the REM accounts for them with a country specific error term. The REM is more efficient than the FEM model, but yields biased parameter estimates when the country specific error term is correlated with the observed covariates (Halaby

2004; Wooldridge 2002). Hausman tests show that the REM orthogonality conditions are not met in these data, and we therefore report coefficients obtained from the FEM. The FEM parameter estimates employed here also provide an extra degree of substantive utility. Previous research suggests that cross-national variations in initial “structural conditions, political circumstances, and policies” had a significant effect on both the distributional and developmental consequences of post socialist transition (Gerber 2002: 630; also see Hamm et al. 2012; Rona-Tas’ 1994). Initial conditions are by definition time invariant. Thus, FEM effectively *controls for* (without modeling directly) this source of cross-national variation—both observable and unobservable—and thereby increases our confidence when drawing *ceteris paribus* comparisons across transition countries.

Repeated cross-section data often lead to serially correlated error terms that yield anti-conservative standard error estimates if left unaddressed. We tested the hypothesis that the error terms are serially uncorrelated, and rejected the hypothesis at conventionally modest levels of significance. There are competing schools of thought on how to proceed. Some treat the serial correlation as a nuisance parameter to be removed, and therefore recommend generalized least squares (GLS) approaches that remove the serial correlation prior to estimating the model, “controlling” for temporal processes by including linear time trends or T-1 dummy variables, or implementing a variance/covariance estimator that is “robust” to serial correlation. Others see serial correlation as substantively meaningful, and suggest modeling it with a lagged dependent variable (LDV) in a dynamic panel model context. Thus, there is not one clear way to proceed in the presence of serially correlated error terms, and different approaches have distinct drawbacks (e.g. Halaby 2004; Studenmund 1997; Wooldridge 2002).¹⁰ In the absence of definitive statistical or substantive guidance, we pursue the GLS approach by estimating and adjusting for a first-

order auto regressive process via a Prais-Winston transformation, and also include a linear time trend. However, we conduct a series of robustness checks across alternative estimators that we discuss below. All of these approaches assume homoscedastic error terms, and we therefore estimate our standard errors via a heteroskedasticity consistent covariance matrix.

Finally, hypotheses 2-4 require a test of the hypotheses that the three processes have larger effects among countries that initiate the formal EU accession process. To test these hypotheses, we interact private sector size, FDI and North-bound exports with the dummy variable for EU integration.

Results

[Table 1 about here]

[Figure 4 about here]

Model 1 in Table 1 reports the coefficient for private sector size. Consistent with our discussion and the panoply of previous research, the coefficient is positive and significant. The graphic displayed in Figure 4 plots the Gini coefficient against North-bound exports as a percent of merchandise exports, and suggests a positive association. To assess this relationship when controlling for baseline covariates, model 2 introduces North-bound exports, and includes exports/gdp as a control. Consistent with our argument that GPN integration increases inequality in transition countries, North-bound exports have a positive and significant association with inequality among post socialist countries independent of FDI. Model 3 includes all of the covariates from Models 1 and 2. Private market expansion, foreign investment penetration and North-bound exports each exert an independent effect on inequality during post-socialist transition.

However, the coefficients in models 1-3 quantify the unconditional effects of private sector size and world economic integration on inequality, but hypotheses 2-4 suggest these effects depend on variation in labor market practices. As we demonstrated in Figure 4, the transition away from inflexible Soviet era labor market institutions has been faster in EU integrating transition countries, leading to more flexible labor markets among EU integrating transition countries. Thus, models 4-6 of Table 1 introduce an interaction term between each process and the dummy variable for EU integration.

Model 4 tests the hypothesis that the effect of private sector size varies across the two types of countries, and suggests the effect is significantly larger in EU integrating countries. Models 5 and 6 extend this logic into the domain of transnational social relations. The positive effect of FDI penetration on inequality is larger in EU integrating countries (Model 5), as is the effect of North-bound exports (Model 6). In short, the more intensive process of institutional change associated with EU accession eroded inflexible Soviet era labor market institutions more extensively in integrating countries, which lead to larger inequality effects of private market expansion and world-economic integration.

Robustness Checks

Alternative Explanations?

The analysis thus far is consistent with our interventions. However, EU and non-EU integrating transition countries vary on additional dimensions to those controlled in Table 1. Even at the very onset of transition, eventual EU members from Central and Eastern Europe were more developed and had smaller firms (on average) than their non-EU counterparts. Moreover, EU integrators have been prone to accept the social partnership model of the welfare

state that characterizes most of continental Europe, and thus experienced less retrenchment in government spending. And, all of these factors correlate with inequality, either in post-socialist transition countries (firm size, government retrenchment) or elsewhere (development). Thus, we assess the extent to which the conditionality of structural change holds when controlling for additional explanations.

[Table 2 about here]

We estimate 15 additional models—5 for each process of structural change—that include varying combinations of the control variables identified above. For ease of presentation, Table 2 reports only the coefficients for the main effect, the interaction and the EU dummy for each process of structural change, and identifies which set of control variables were included in each replication (full results available upon request). As a basis for comparison, the first column reports the coefficients that obtain in Models 4-6 of Table 1. Subsequent columns introduce alternative explanations sequentially, and column 6 reports the coefficients that obtain when controlling for all of these alternative explanations. The interaction terms are positive and significant in each replication, which adds additional evidence in support of our argument that EU integration conditions the distributional consequences of structural change.

Labor Market Rigidity?

While our EU integrator dummy differentiates between countries that are and are not engaged in informal and formal accession negotiations, it does not measure the mechanism we believe is responsible for the conditional effect—labor market rigidity—directly. Labor market rigidity is notoriously difficult to measure, and is typically inferred by its effects (Prachowny 1993; Moosa 1997). Thus, to further subject our argument to empirical scrutiny, we consider a

key effect of soviet-style labor market rigidity—persistently low unemployment over the course of transition.

Because year-on-year variation in unemployment is subject to extra-institutional exogenous processes, we employ the mean unemployment rate for each country observed over the entire transition period (TRANSMONEE 2012). That is, while year-on-year change in unemployment reflects idiosyncratic economic shocks, cross-country differences in average unemployment over long periods of time reflect fundamental differences in labor market functionality (Gangl 2003). Mean employment is lower in non-EU integrating transition countries (see Figure 1), but has the added advantage that it captures cross-national variation in labor-market rigidity *within* the EU and non-EU integrating groups. Mean unemployment is necessarily time-invariant and thus perfectly correlated with the fixed country effects, so we need not include it to interpret the interaction terms correctly (Allison 2009; Halaby 2004). If high unemployment is a symptom of an institutional break from Soviet era labor market practices (and hence increasing labor market flexibility) during post-socialist transition, then we should expect each process of structural change to have a *larger* effect in countries with higher mean unemployment.

[Table 3 about here]

Table 3 reports the interaction terms between each of the three process of structural change and mean unemployment, as well as the constituent terms in a manner analogous to Table 2. Similar to Table 2, we include the baseline controls in Model 1, and then introduce alternative explanations sequentially until we estimate the saturated Model 6. The interaction terms represent the unit increase in the effect of structural change per unit increase in mean

unemployment. Consistent with our argument, the interaction terms in Model 1 are positive and significant for each process of structural change. And, the positive interaction effects persist through to the saturated Model 6. To put these conditional effects into context, the mean unemployment rate for EU integrators is 9.44, while that for non-EU integrators is 3.04. The effects of private sector size, FDI penetration and production network integration at the average mean unemployment among EU integrators are .228 ($p < .001$), .080 ($p < .001$) and .170 ($p < .001$), respectively. The same effects at the average mean unemployment of non-EU integrators are .095 ($p < .10$), .050 ($p < .001$) and .057 ($p < .05$), respectively. In other words, the effects of all three processes are between 38 and 66 percent larger at the average mean unemployment among EU transition countries than they are at the average mean unemployment among non-EU transition countries.

GPNs or Conventional Trade Theory?

The trade-disaggregation exercise carried out above increases confidence in the validity of our measure of GPN integration, and our additional controls (exports/GDP and FDI) increase confidence in our interpretation of its coefficient. Nevertheless, some of the effects we are attributing to GPN integration could be explicable in terms of conventional theories of trade following from the Heckscher-Ohlin-Samuelson (HOS) framework.¹¹ Classic HOS trade theory predicts that exports to the North reduce inequality in the South (e.g. Wood 1994). This would allay this concern because the positive sign on our coefficient is opposite from HOS expectations. More recent formulations complicate these expectations, however, by arguing that North-bound exports can increase inequality if they become more skill intensive, and thereby lead to the same wage gap between skilled and unskilled Southern labor in the South that Southern import penetration produces in the North (Zhu and Trefler 2005).

Thus, we conduct two additional robustness checks. In the first, we measure skill-intensive North-bound exports with the ratio of North-bound auto exports to North-bound garment exports, which occupy opposite ends of a continuum between low and high skill exports.¹² We then include this covariate in the models of inequality reported in Tables 2 and 3 above. The coefficient on our measure of production network integration is substantively and almost numerically identical to that reported above, while that on the skill-intensive North-bound export shifts is non-significant and generally negatively signed (see Table A3 in the online appendix). In the second, we calculate the difference between exports to all high-income countries identified by the World-Bank (countries with GDP per capita in the upper quartile) and our measure of network integration, which yields a measure of the percentage of exports destined for high-income countries *that do not contain leading firms in GPNs*.¹³ If the results above are attributable to HOS dynamics rather than GPN integration, we should observe the same results with this covariate. The coefficient was non-significant and variously signed (see Table A4 in the online appendix).

Estimator

In addition to the reported and unreported robustness checks discussed above, we checked our results against estimators utilizing that address serially correlated disturbances differently. We estimated (a) models that control for T-1 dummy variables, (b) LDV dynamic panel models (Arellano and Bover 1995; Blundell and Bond 1998), and (c) implement a variance/covariance matrix that is robust to serial correlation (Rogers 1993). These results were substantively identical to those above, and are available upon request.

Counterfactual Analysis

Our analysis suggests that the effects of private market expansion and world-economic integration vary by parallel processes of institutional transformation. But, *how important* is this variation for the inequality trajectory of transition countries? To answer this question, we quantify how inequality would have changed in the absence of EU integration. To proceed, we begin with the observed *levels* of private sector size, foreign investment penetration and north bound exports and the coefficients in Model 6 of Table 2. We then estimate predicted Gini coefficients using three counterfactual models in which we constrain the coefficient on each process of structural change to equal that among non-EU integrator countries.¹⁴

The average Gini coefficient would have risen by 86.1 percent less than the observed increase if the effect of private sector size equaled that among the non-EU integrating countries. Similarly, the average Gini coefficient that would have risen by 63.9 percent less if the effect of FDI equaled that among non-EU integrating countries. Finally, the average Gini coefficient would have risen by 27.8 percent less if the effect of North-bound exports would have equaled that among non-EU integrating countries. The distributional consequences of private market expansion and world economic integration would have been less severe among transition countries if structural change had transpired in the absence of EU regionalization, because labor market institutions would have changed more slowly (also see Beckfield 2006).¹⁵

Discussion and Conclusion

The confluence of Soviet collapse and globalizing circuits of capital accumulation allow for analytical circumstances that are unique in human history—the ability to observe distributional change as countries transition *from* centrally planned economies that were relatively isolated from world economic processes *to* private market economies with deepening relations to the global economy. Moreover, varying degrees of external pressure created differing

types and intensities of institutional transformation across cases, allowing for comparisons of the distributional consequences of the historic social forces across institutional regimes. Our findings highlight the independent distributional consequences of GPN integration, as well as the role of EU integration in moderating the distributional effects of both private markets and world-economic integration.

Our new evidence linking the establishment of *non-equity* production network relations between domestic and foreign firms to inequality reinforces the important role that new types of inter-firm inequalities play in the distributional consequences of actually existing post-socialist transitions. The observed positive effects of private markets, FDI penetration and production network integration direct our attention to four specific cleavages: (a) private vs. state-owned, (b) foreign vs. domestic, (c) GPN integrated vs. foreign-owned and domestically owned non-GPN integrated. While the cleavages represented by (a) and (b) are at least implied in the literature (De Loecker and Konings 2006), the net effect of production network integration suggests that the cleavage in (c) is an important driver of post-socialist inequality. In short, a more complete understanding of inequality in transition requires that we more fully specify the range of external social relations to which economic globalization subjects workers in transition countries.

Our analysis also demonstrates that the salience of these processes for the upswing in inequality varies considerably across EU and non-EU transition countries. Thus, “Markets per se are not the issue. What matters are the variable institutions and conditions that define markets...” (Walder 1996: 1060-1061; see also Szelenyi and Kostello 1996). In the present context, however, *external* isomorphic pressures to transition away from Soviet era labor-market institutions are the proximate cause of variation in institutional conditions defining transition markets. While a growing chorus of transition scholars argue that cross-national variation in *internal* initial

conditions—domestic politics, economic structure, class composition, etc.—create “varieties of post-socialist transition,” we find that EU integration is also important for understanding the full variety among transition countries. Not only does EU integration produce varying institutional transitions, but it also creates varying stratification mechanisms across transition countries even when holding constant *internal* (and any unobserved) time-invariant initial conditions with fixed country effects.

We would like to conclude by clarifying that our argument is *not* that EU transitions are *generally* less egalitarian than those in non-EU transition countries. The three processes under investigation here have larger effects in the EU because *wages and employment are more free to vary in response to them*, not because EU transition countries are generally less egalitarian. Gini coefficients are nearly 10 points higher, on average, among non-EU transition countries, and the peak measured Gini coefficient in the least egalitarian non-EU country (Russia) is nearly 12 points higher than the least egalitarian EU member transition country (Romania). Thus, while Soviet-style labor market practices limit the effect of private market expansion and world-economic integration, there are other processes that matter more in non-EU transition countries. For example, oil production has a consistently positive effect in all of our models, and represents over 11.4 percent of GDP in non-EU transition countries, but less than 1 percent in EU transition countries. Our results highlight that the *mechanisms* driving distributional change vary across EU and non-EU transition countries, but leave open a broad analytical space within which to assess degree of (in)egalitarianism characterizing EU and non-EU transitions in general.

Matthew C Mahutga is Associate Professor of Sociology at the University of California, Riverside. His research examines the global determinants of economic organization, and the consequences of these organizational processes for political and socio-economic outcomes including economic well-being, income inequality and development. His work appears across a range of interdisciplinary outlets including the *Review of International Political Economy*, *Social*

Forces, Social Networks, Social Problems, and Social Science Research and has been supported by the *National Science Foundation*.

Andrew K Jorgenson is Professor of Sociology and Environmental Studies at Boston College. His primary areas of research are the political economy of global environmental change, development and inequality. His published research appears in such journals as *American Journal of Sociology, Nature Climate Change, Social Forces, Social Problems, Climatic Change, Social Science Research, and Sustainability Science*. He is chair-elect of the Environment and Technology Section of the American Sociological Association, and coeditor of *Sociology of Development*.

Endnotes

¹ Western countries include Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxemburg, Netherlands, Norway, New Zealand, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.

² Official EU rhetoric does not privilege any of the three dimensions, but the EU's influence on candidate countries has been shown to be particularly strong "in economic aspects necessary to establish the single market," with some divergence of *de facto* from *de jure* practices on the political and legal dimensions (Schweickert et al. 2011: 669).

³ Ultimately, EU membership is attained only when the commission is satisfied with a candidates conformity on each chapter of the *acquis* (i.e. when all chapter-specific negotiations are closed), when membership is recommended by the EU Council, the European Parliament, representatives of all existing EU countries, and when a subsequent Accession treaty is ratified by the candidate country and every individual EU country.

⁴ "Cooperative" and "liberal" draw from the Varieties of Capitalism perspective, where "cooperative market economies" (CME) like Germany are contrasted with "liberal market economies" (LME) like the United Kingdom. CMEs typically have *less* liberal wage structures than their LME counterparts. Among EU integrating transition countries, Slovenia is much closer to the CME archetype (Bohle and Greskovits 2012; Crowley 2006).

⁵ To test the hypothesis of a difference in slope between the two groups, we regressed unemployment on output (GDP per capita), a linear time trend and an output by EU dummy variable interaction via two regression models that address unobserved country-specific heterogeneity—a first-difference model and a fixed-effects model. In both cases, we found that that the association between output and unemployment was significantly stronger among EU-member transition countries.

⁶ For country-years missing earnings based Ginis in which income based Ginis were present, we utilized income based Ginis (13.9 percent of cases). To assess the degree to which our results are robust to different definitions of income underlying our Ginis, we estimated all models controlling for a dummy variable equal to 1 if the dependent variable was an income based Gini coefficient (e.g. Alderson and Nielson 2002; 1999). This variable was generally insignificant, and the main results were substantively identical to those below. There were a few instances of

minor differences in the composition of employer surveys underlying these earnings Ginis. In all but one case, these differences do not vary within countries and are thus captured by the fixed country effects. Poland's series includes net earnings in 1991, and gross earnings thereafter. Results were identical when we exclude this case. These results are available upon request.

⁷ These countries are Australia, Austria, Belgium (1999-2009), Belgium-Luxembourg (1991-1998), Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg (1999-2009), Netherlands, New Zealand, Norway, Portugal, Sweden, Switzerland, the United Kingdom and the United States.

⁸ Countries containing domestically owned firms who export because of their relationships with leading firms rather than a comparative advantage will tend to concentrate their exports on northern countries, but not necessarily export more in general. Consistent with this intuition, exports/GDP provides little explanatory power for cross-national variation in Northbound exports/total exports across countries ($R^2 = .015$ in levels).

⁹ While it might be preferable to include data on firms outside of the manufacturing sector, these data are unavailable for long panels of transition countries.

¹⁰ For example, combining the LDV with the fixed effects estimator attenuates the coefficient on the LDV and the rest of the coefficients downward (Nickell 1981). An LDV can sweep away serial correlation, but does not do so necessarily and remaining serial correlation in the presence of an LDV can be particularly vexing. Similarly, including T-1 dummy variables yields extremely conservative parameter estimates, but the procedure "is rarely used in practice [because] the cost in terms of degrees of freedom is often not justified" (Green 2000: 565). Finally, the clustered version of the White variance/covariance estimator yields standard errors that are biased proportional to the extent to which panels are unbalanced.

¹¹ We are grateful to an anonymous Social Forces reviewer for alerting us to this issue.

¹² While crude, the variable has a fairly large, positive effect on economic growth in this sample, which is consistent with research linking alternative operationalizations of skill-intensive export shifts to economic development (Hausman et al. 2007).

¹³ For a list of the World Bank's "high income" countries, visit http://data.worldbank.org/about/country-and-lending-groups#High_income.

¹⁴ The coefficient constraints are equal to the coefficients on the uninteracted covariates in model 6 of Table 2. Neither private sector size nor North-bound exports were significantly different from zero in this model, so our counterfactual estimates are conservative. All other coefficients take on their observed values in an unreported version of Model 6 of Table 2 in which no interactions are included.

¹⁵ One anonymous reviewer wondered if "one could plausibly interpret the Copenhagen criteria as pushing states to privatize and globally integrate," such that "EU membership leads to privatization and globalization, which in turn raises inequality" (anonymous *Social Forces*

reviewer). We considered this possibility by conducting Sobel mediation tests (Sobel 1982). We found that EU integration does increase inequality by increasing the pace of privatization (but not FDI or GPN integration). Future research should consider additional mechanisms by which EU regionalization matters for post-socialist inequality.

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Tables

Table 1: Unstandardized Coefficients of Private Market Expansion and World Economic Integration.

	(1)	(2)	(3)	(4)	(5)	(6)
Private Sector Size * EU Integrator (t+1)				0.373*** (6.677)		
FDI Penetration * EU Integrator (t+1)					0.084*** (8.303)	
Network Integration (North-bound exports) * EU Integrator (t+1)						0.185*** (4.047)
EU Integrator (t+1)				-0.538*** (-6.407)	0.007 (0.412)	-0.310*** (-3.797)
Private Sector Size	0.182*** (4.719)		0.149*** (3.590)	-0.128* (-2.432)	0.015 (0.385)	0.108* (2.316)
FDI Penetration	0.017** (2.801)	0.025*** (4.124)	0.018** (2.837)	0.023*** (4.841)	0.016*** (3.630)	0.017** (3.053)
Network Integration (North-bound exports)		0.072*** (3.505)	0.038 (1.562)	0.100*** (4.648)	0.078*** (3.776)	0.021 (0.851)
Exports/GDP		0.015 (1.193)	0.007 (0.591)	0.011 (1.030)	0.012 (1.233)	0.018 (1.524)
FDI Rate	0.005 (0.755)	0.008 (1.197)	0.008 (1.183)	0.005 (0.824)	0.003 (0.581)	0.006 (0.971)
Domestic Investment	0.003 (0.148)	0.015 (0.655)	0.011 (0.453)	0.020 (0.980)	0.022 (1.081)	0.021 (0.926)
Oil Production/GDP	0.013** (2.717)	0.008 (1.538)	0.012* (2.505)	0.015*** (3.506)	0.015*** (3.688)	0.013** (2.803)
Female/Male Secondary Education	-0.017 (-0.763)	-0.050 (-1.955)	-0.034 (-1.354)	-0.028 (-1.251)	-0.018 (-0.847)	-0.028 (-1.146)
Year	-0.001 (-0.904)	0.001 (0.864)	-0.001 (-0.550)	-0.002* (-2.211)	-0.005*** (-4.491)	-0.001 (-0.859)
p	.378	.404	.378	.375	.358	.400
N	177	177	177	177	177	177
R2	0.915	0.913	0.917	0.932	0.938	0.925

Notes: Coefficients are unstandardized and net of fixed country effects; constant term suppressed; heteroskedasticity consistent t-statistics in parentheses; first-order autocorrelation coefficient denoted by ρ ; * $p < .05$; ** $p < .01$; *** $p < .001$ (one-tailed tests)

Table 2: Sensitivity Analysis of Conditional Effects of Structural Change with Alternative Explanations

	(1)	(2)	(3)	(4)	(5)	(6)
Private Sector Size * EU Integrator (t+1)	0.373*** (6.677)	0.380*** (6.075)	0.369*** (6.229)	0.403*** (6.317)	0.265*** (4.277)	0.293*** (4.218)
Private Sector Size	-0.128* (-2.432)	-0.114† (-1.847)	-0.125* (-2.203)	-0.142* (-2.492)	-0.046 (-0.765)	-0.052 (-0.744)
Europe Agreement (t+1)	-0.538*** (-6.407)	-0.546*** (-5.885)	-0.532*** (-5.979)	-0.582*** (-6.139)	-0.378*** (-4.111)	-0.408*** (-4.010)
FDI Penetration * EU Integrator (t+1)	0.084*** (8.303)	0.084*** (7.736)	0.086*** (7.867)	0.088*** (8.248)	0.070*** (6.204)	0.074*** (5.880)
FDI Penetration	0.016*** (3.630)	0.012* (2.323)	0.017*** (3.690)	0.018*** (3.813)	0.037*** (3.893)	0.039** (3.092)
Europe Agreement (t +1)	0.007 (0.412)	0.004 (0.231)	0.006 (0.394)	0.007 (0.403)	0.007 (0.408)	0.008 (0.459)
Network Integration (North-bound exports)* EU Integrator (t+1)	0.185*** (4.047)	0.166*** (3.594)	0.175*** (3.553)	0.182*** (3.806)	0.122** (2.923)	0.142** (3.022)
Network Integration (North-bound exports)	0.021 (0.851)	0.025 (0.921)	0.025 (0.994)	0.022 (0.884)	0.042† (1.704)	0.032 (1.147)
Europe Agreement (t+1)	-0.310*** (-3.797)	-0.278*** (-3.364)	-0.293*** (-3.334)	-0.305*** (-3.582)	-0.194** (-2.725)	-0.219** (-2.740)
Main Controls	Yes	Yes	Yes	Yes	Yes	Yes
+ Internal Development		Yes				Yes
+ Government Spending			Yes			Yes
+ GDP per capita				Yes		Yes
+ Average Firm Size (in manufacturing)					Yes	Yes
N	177	175	177	177	175	173

Notes: Coefficients are unstandardized and net of fixed country effects; heteroskedasticity consistent t-statistics in parentheses; Models 1-6 were estimated separately for each conditional relationship; internal development is % of the labor force in agriculture, % agricultural output in GDP, secondary education enrollment and the natural rate of population increase; Average firm size is total employees in manufacturing/total number of firms in manufacturing; †p< .10; *p<.05; **p<.01; ***p<.001 (one-tailed tests).

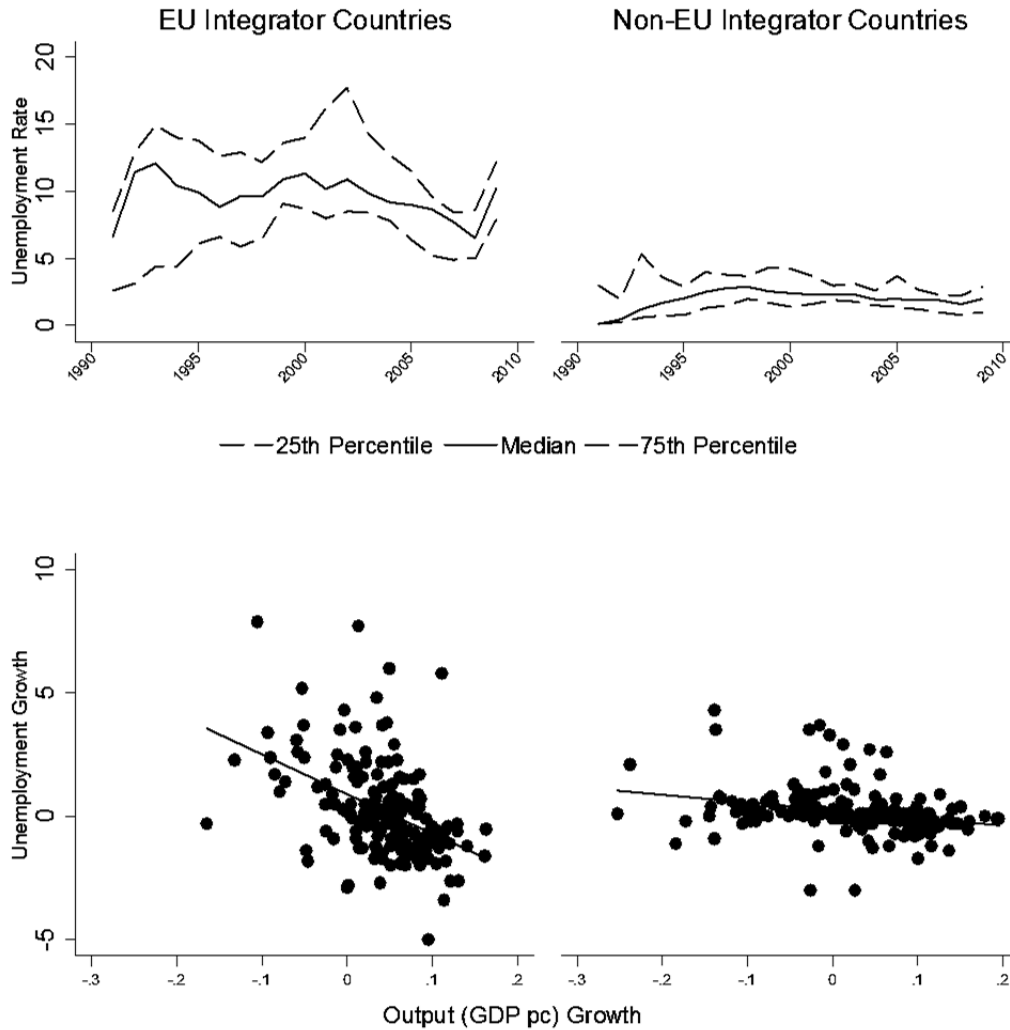
Table 3: Sensitivity Analysis of Conditional Effects of Structural Change with Alternative Operationalization and Explanations

	(1)	(2)	(3)	(4)	(5)	(6)
Private Sector Size * Mean Unemployment	0.020** (3.123)	0.017* (2.322)	0.019** (2.725)	0.020** (2.819)	0.016* (2.513)	0.021** (2.750)
Private Sector Size	-0.016 (-0.254)	0.045 (0.590)	0.003 (0.044)	-0.012 (-0.187)	0.033 (0.535)	0.032 (0.425)
FDI Penetration * Mean Unemployment	0.003* (2.380)	0.004** (3.095)	0.003* (2.052)	0.003* (2.560)	0.004** (3.285)	0.005*** (3.412)
FDI Penetration	-0.004 (-0.379)	-0.021† (-1.671)	-0.003 (-0.251)	-0.008 (-0.677)	0.040** (3.131)	0.035* (2.229)
Network Integration (North-bound exports) * Mean Unemployment	0.022*** (3.806)	0.021*** (3.583)	0.020*** (3.339)	0.021*** (3.601)	0.016** (2.956)	0.018** (2.931)
Network Integration (North-bound exports)	-0.013 (-0.435)	-0.006 (-0.191)	-0.006 (-0.199)	-0.007 (-0.233)	0.015 (0.540)	-0.002 (-0.048)
Main Controls	Yes	Yes	Yes	Yes	Yes	Yes
+ Internal Development		Yes				Yes
+ Government Spending			Yes			Yes
+ GDP per capita				Yes		Yes
+ Average Firm Size (in manufacturing)					Yes	Yes
N	177	175	177	177	175	173

Notes: Coefficients are unstandardized and net of fixed country effects; heteroskedasticity consistent t-statistics in parentheses; Models 1-6 were estimated separately for each conditional relationship. Mean unemployment is the country-specific temporal mean unemployment rate, and does not appear in the models because it is time invariant, which does not impact the interpretability of the interaction terms (Allison 2009; Halaby 2004); internal development is % of the labor force in agriculture, % agricultural output in GDP, secondary education enrollment and the natural rate of population increase; Average firm size is total employees in manufacturing/total number of firms in manufacturing; *p<.05; **p<.01; ***p<.001 (one-tailed tests).

Figures

Figure 1: Employment Flexibility in Post-Socialist Transition Countries, 1991-2009.



Notes: EU integrators are defined as country-year observations in which a Europe Agreement was in force the year after the year of observation ($t+1$). Unemployment and Output are first-differenced, and we obtain the former from TRANSMONEE (2012) and the latter from the World Bank (2014). Smoother fit with least-squares.

Figure 2: Post-Socialist Sample

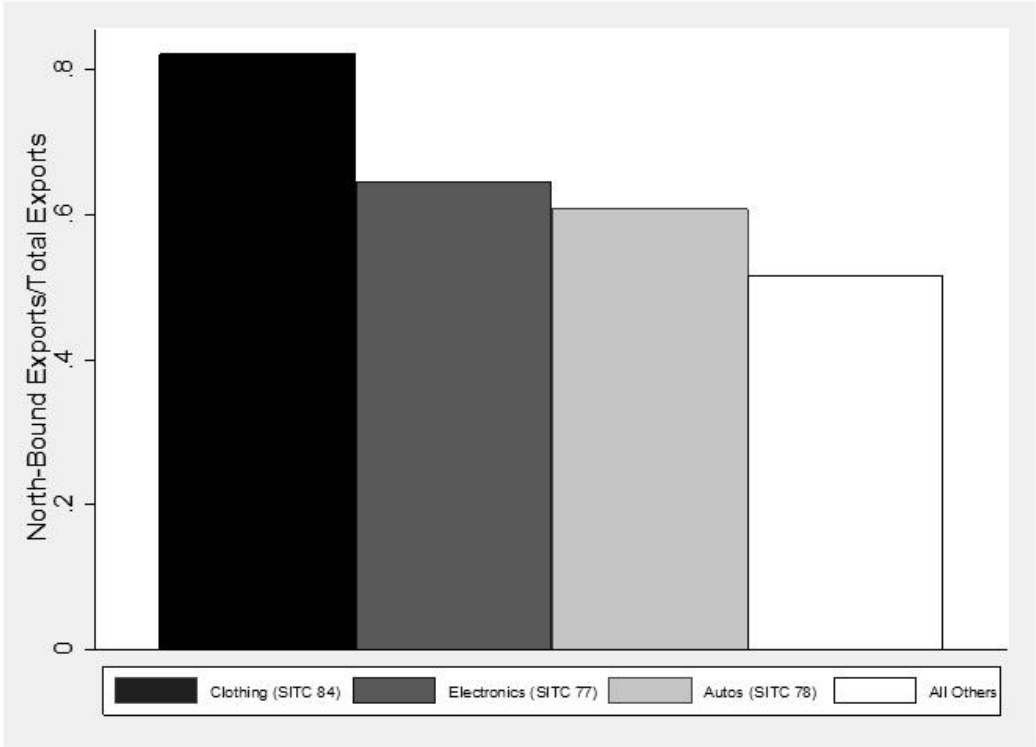


Notes: EU Integrating countries in black are signatories to Europe Agreement, Europe Agreement Additional Protocol and Stabilization and Association Agreement, Non-EU Integrating countries in grey, Incumbent EU countries in white.

*Signatories to European Neighborhood Policy Action Plan and For Common Spaces agreements, which facilitate bilateral trade, investment and diplomatic exchange but do not initiate accession negotiations.

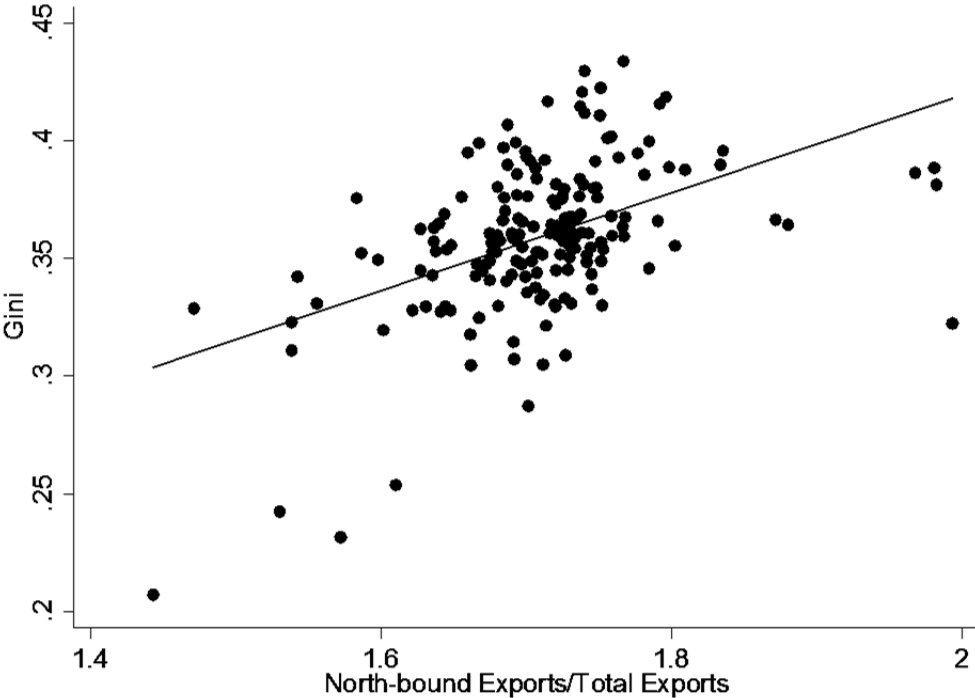
†Georgia signed an Association Agreement in 2013. In response to the Crimean crisis of 2014, the EU commission allowed Ukraine to apply for EU membership.

Figure 3: Comparison of ratio of exports destined for the North across four categories of exports.



Notes: Data come from UNCOMTRADE, and are categorized according to SITC Rev. 3. The numerator is north-bound exports for each category. The denominator is total exports for each category.

Figure 4: Bivariate Association between Exports to High Income Countries as a Percentage of Total Exports and Inequality



Notes: Variables are country-mean deviated. Smoother fit with least-squares.

Appendix

Table A1: T-Tests for mean difference in ratio of north-bound exports to total exports between archetypically networked industries and all others.

	Autos	Electronics	All Others
Clothing	-0.214*** (-8.493)	-.176*** (-13.778)	-.305*** (-14.51)
Electronics	-.038* (-2.343)		-.129*** (-6.34)
Autos			-.091*** (-3.19)

Notes: Mean differences are calculated “column – row,” such that negative values indicate the mean ratio (proportion) of the column industry is smaller than that of the row industry. T-statistics in parentheses. * p<.05; **p<.01; ***p<.001 (one-tailed tests).

Table A2: Correlations and Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Gini																
(2) Private sector size a	.666															
(3) FDI Penetration a	.614	.757														
(4) North-bound exports a	.365	.442	.259													
(5) FDI Rate a	-.370	-.430	-.530	-.350												
(6) Domestic Investment a	.039	.230	.250	-.050	-.010											
(7) Exports/GDP a	.394	.530	.547	.237	-.460	.049										
(8) Oil Production/GDP a	.079	-.070	.085	.067	-.160	-.010	.248									
(9) Female/Male Secondary Education a	.101	.363	.448	.476	-.350	.270	.300	.237								
(10) Agricultural Employment	-.130	-.190	-.450	.206	.192	-.510	-.130	-.100	-.240							
(11) Sector Dualism	.294	.384	.158	.603	-.170	-.100	.138	-.050	.147	.600						
(12) Natural Rate of Population Increase	-.290	-.270	-.200	-.140	.230	.307	-.300	-.050	.036	-.170	-.110					
(13) Secondary Education Enrollment	.178	.331	.188	.190	-.290	.205	.276	.052	.236	-.190	.092	-.130				
(14) Government Spending/GDP a	-.22	-.190	-.360	.034	.281	.107	-.470	-.010	-.070	.206	.264	.310	-.100			
(15) GDP per capita a	.262	.528	.693	.171	-.340	.546	.316	.067	.519	-.610	.028	.300	.224	-.090		
(16) Firm Size	-.400	-.530	-.650	-.260	.293	.063	-.380	.112	-.180	.097	-.260	.236	-.030	.410	-.410	
Mean	.358	1.81	1.33	1.70	-.73	1.39	3.78	-1.98	3.20	19.0	1.14	-1.35	9.98	1.58	3.55	44.6
Standard Deviation	.031	.076	.346	.103	.249	.086	.189	.33	.103	3.35	3.03	.918	3.74	.050	.220	33.7

Notes: Variables country-mean deviated. ^a base 10 logarithm.

Table A3: Coefficients from Regressions of Economic Growth and Income Inequality on Select Independent Variables.

	(1) a	(2) b	(3) b	(4) b	(5) b	(6) b	(7) b	(8) b
	Econ Growth		Inequality					
North-bound Exports c		0.071*** (3.50)	0.021 (0.848)	0.025 (0.921)	0.024 (0.987)	0.023 (0.884)	0.042† (1.668)	0.031 (1.128)
North-bound Exports c * EU Integrator (t+1)			0.186*** (4.050)	0.166*** (3.581)	0.177*** (3.554)	0.183*** (3.810)	0.125** (2.967)	0.144** (3.042)
EU Integrator (t+1)			-0.311*** (-3.798)	-0.278*** (-3.357)	-0.294*** (-3.334)	-0.306*** (-3.582)	-0.198** (-2.757)	-0.222** (-2.757)
Skill-Intensive Trade Shift ^d	0.333** (3.60)	0.005 (0.010)	-0.002 (-0.255)	-0.000 (-0.007)	-0.002 (-0.217)	-0.002 (-0.265)	-0.008 (-0.883)	-0.004 (-0.477)
N	166	177	177	175	177	177	175	173
R ²	0.111	0.913	0.925	0.923	0.926	0.926	0.928	0.929
			(1) b	(2) b	(3) b	(4) b	(5) b	(6) b
			Inequality					
North-bound Exports ^c			-0.013 (-0.439)	-0.006 (-0.186)	-0.006 (-0.203)	-0.007 (-0.236)	0.014 (0.503)	-0.002 (-0.056)
North-bound Exports ^c * Mean Unemployment			0.022*** (3.808)	0.020*** (3.571)	0.020*** (3.339)	0.021*** (3.606)	0.016** (2.963)	0.018** (2.936)
Skill-Intensive Trade Shift ^d			-0.001 (-0.129)	0.001 (0.09)	-0.001 (-0.082)	-0.002 (-0.166)	-0.007 (-0.741)	-0.002 (-0.268)
Main Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes
+ Internal Development				Yes				Yes
+ Government Spending					Yes			Yes
+ GDP per capita						Yes		Yes
+ Average Firm Size (in manufacturing)							Yes	Yes
N			177	175	177	177	175	173
R ²			0.926	0.922	0.925	0.926	0.927	0.927

Notes:

a. Standardized coefficients obtained from bivariate Difference of Logs Estimator. T statistics based on heteroscedasticity and serial-correlation consistent standard errors in parentheses.

b. Unstandardized coefficients obtained from Fixed-Effects estimator. T statistics based on heteroscedasticity and serial-correlation consistent standard errors in parentheses.

c. North-Bound Exports/Total Exports.

d. North-Bound Auto Exports/North-Bound Garment Exports.

†p < .10; *p < .05; **p < .01; ***p < .001. See notes to Tables 2 and 3 for further explanation of control variables.

Table A4: Regression of Income Inequality on Exports to OTHER^a HICs and select independent variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Exports to OTHER HICs * EU Integrator (t+1)		0.010	0.014	0.008	0.008	0.037	0.040
		(0.320)	(0.473)	(0.281)	(0.273)	(1.334)	(1.411)
EU Integrator (t+1)		-0.019	-0.020	-0.017	-0.018	-0.043	-0.033
		(-0.450)	(-0.501)	(-0.407)	(-0.439)	(-1.199)	(-0.907)
Exports to OTHER HICs	0.022	0.019	0.002	0.018	0.017	-0.009	-0.015
	(1.566)	(1.109)	(0.131)	(1.094)	(1.032)	(-0.505)	(-0.794)
N	172	172	171	172	172	171	170
R ²	0.920	0.918	0.921	0.919	0.920	0.935	0.934
Exports to OTHER HICs * Mean Unemployment		0.004	0.004	0.004	0.003	0.001	0.003
		(1.138)	(1.412)	(1.212)	(0.919)	(0.334)	(0.774)
Exports to OTHER HICs		0.002	-0.017	0.000	0.005	-0.003	-0.016
		(0.104)	(-0.730)	(0.021)	(0.235)	(-0.118)	(-0.645)
N		172	171	172	172	171	170
R ²		0.921	0.922	0.922	0.923	0.934	0.933
Main Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
+ Internal Development			Yes				Yes
+ Government Spending				Yes			Yes
+ GDP per capita					Yes		Yes
+ Average Firm Size (in manufacturing)						Yes	Yes

Notes:

^a High income countries as categorized by the World Bank **other than** Australia, Austria, Belgium (1999-2009), Belgium-Luxembourg (1991-1998), Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Luxembourg (1999-2009), Netherlands, New Zealand, Norway, Portugal, Sweden, Switzerland, the United Kingdom and the United States.

Coefficients are unstandardized and net of fixed country effects; heteroskedasticity and serial-correlation consistent t-statistics in parentheses.

See notes to Tables 2 and 3 for further explanation of control variables.