Theoretical Holism in the Sociology of Development: Foreign Investment, Private Markets and Earnings Inequality during Post-Socialism.

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Abstract:	In this article, I apply Alderson and Nielsen's (1999) holistic approach to the sociology of development by revisiting the distributional consequences of private markets and foreign direct investment (FDI) during post-socialist transition. I begin by arguing FDI increases the pace of private market expansion, and thereby affects inequality through an indirect causal pathway unrecognized in the literature. The total effect of FDI thus depends in part on how private markets drive distributional change. I then introduce a maturation thesis to reconcile debates over the distributional consequences of private markets, where private markets first reduce and then increase inequality. If FDI increases the pace of private market expansion and the distributional consequences of private markets increase as they expand, then FDI's total effect on inequality should grow with the expansion of private markets. Evidence drawn from a time-series cross-section regression analysis of earnings inequality among 18 transition countries supports this intervention. FDI increases the pace of private market expansion and the effect of private markets changes from negative to positive as private markets expand. Thus, the total effect of FDI increases with the size of the private market. I conclude by implicating these results in debates about post-socialist transition and the sociology of development more generally. COVER PAGE.docx

Introduction

A key dividing line among development sociologists separates those who focus on "internal" vs. "external" drivers of development (e.g. Evans 1979; Galtung 1971; Gunder Frank 1969; Smelser 1992). Examinations of the distributional implications of development illustrate this axis of variation clearly. Some focus on changes to the composition of the labor force, the spread of education, demographic transitions, government policy, the balance of power between left and right leaning segments of civil society, etc., to explain distributional outcomes (Huber et al. 2006; Nielsen 1995). Conversely, others focus on the external relations a developing country has with the larger world economy, and in particular on foreign direct investment (FDI) penetration (Bornschier and Ballmer-Cao 1979; Chase-Dunn 1975).

In one of the more influential statements on the distributional effect of FDI among less developed countries (LDCs), Alderson and Nielsen (1999) problematize this axis of variation. Rather than pursuing "internal" and "external" factors as separate modes of inquiry, they suggest research should explicate how "external" factors impact "internal" processes of development. While Alderson and Nielsen articulate this in mechanistic terms—"internal" processes are seen as the key mechanisms by which "external" factors cause distributional change—their theoretical contribution is more general. If we are to better understand the causes (and consequences) of development, we must not only recognize that *both* "internal" *and* "external" factors matter, but also do a better job "drawing out the causal links between external factors and internal outcomes in a more systematic fashion" (Alderson and Nielsen 1999: 627).

In this article, I employ Alderson and Nielsen's holistic approach to inequality and economic development by reconsidering the role of FDI and private markets in distributional

change during post-socialist transition. Consistent with the long standing divide in comparative sociology, this research has focused on both internal and external factors—the expansion of private markets, and the integration of these markets with the larger world economy—but has paid little attention to the way these factors intersect. I advance this literature by arguing that research on FDI has failed to consider the way in which it affects the pace of private market expansion among countries that privileged FDI as a strategy of privatization (Bandelj 2008), and by harmonizing disparate accounts of the distributional consequences of private markets.

Most transition countries had very little in the way of a native bourgeoisie at the beginning of the transition period, and little in the way of accumulated private domestic capital (Bandelj 2008; Eyal, Szelenyi and Townsley 1998; Hanley 2002; Staniszkis 1991). Thus, some chose a path to private market expansion by "building capitalism without capitalists." Rather than attracting capital externally, these countries sold public assets through manager employee buyouts or various direct voucher schemes, where citizens purchased small shares in newly privatized companies. Others sold public assets to foreign investors, which purportedly led to larger overall private sectors (Bandelj 2008). I posit that private markets expanded more quickly in countries that relied on FDI as a privatization strategy. To the extent that private market expansion affects inequality, FDI should have a direct and an indirect effect on inequality, the latter owing to its positive effect on the pace of private market expansion.

Of course the holistic approach advocated by Alderson and Nielsen presupposes that the causal mechanisms underlying internal factors are themselves well-articulated. Even when private markets are considered in isolation from "external" factors in the literature on post-socialist transition, however, their distributional consequences are less than perfectly understood. Indeed, much controversy surrounds the now classic "market transition debate," which is

"synonymous with the debate about how market transition alters the nature of stratification and inequality in a country" (Keister and Borelli 2012: 277).[1] The debate hinges critically on the extent to which private markets either erode or reproduce the economic fortunes of pre-transition political elites. Paradoxically, empirical work drawing from different national contexts and time periods supports the two contradictory positions that private markets both increase and decrease inequality (e.g. Nee 1989; 1991; c.f. Gerber 2002; Rona-Tas 1994; Walder 2002; Xie and Hannum 1996; Bandelj and Mahutga 2010).

To resolve this paradox, I introduce a *maturation thesis*, which predicts that the effect of expanding private markets on inequality should vary with the size of private markets (Szelenyi and Kostello 1996). By subsidizing state-sanctioned incomes for individuals in the lower tail of the income distribution, private market expansion might reduce inequality when the private sector remains small. However, this equalizing effect abates as expanding markets entice a more talented pool of cadre elite into market participation. When private markets represent the majority of economic output, the pre-transition elite utilize their superior human capital, or exploit their existing social networks, to reap a disproportionate amount of competitive success in expanding private markets. These effects are sufficiently strong to offset any equalizing forces unleashed by private markets.

My argument thus implies that the distributional effects of FDI have been misspecified because of the tendency to treat it as an atomized "external" factor. If FDI increases private markets, and the effect of private markets changes as private markets expand, then the total

[1]As I discuss throughout, the theoretical mechanisms proposed to explain both sides of the "transition debate" are often posed at the level of individuals or groups, and much of the empirical work that follows examines individual outcomes (c.f. Bandelj and Mahutga 2010). However, macro-level patterns of inequality have been the key explanandum of the transition debate (see Nee 1989; Gerber 2002; Keister Borelli 2012; Szelenyi and Kostello 1996 for clear statements in this regard).

effect of FDI should also vary with the size of the private market. To assess these arguments, I conduct a pooled cross-section of time series regression analysis of 18 transition countries. My findings support these interventions. FDI contributes to differences in the size and scope of private markets cross-nationally and thereby has both a direct and an indirect effect on inequality. The association between inequality and private market expansion changes from negative, to null and then to positive as private markets become a larger share of the national economy. Thus, FDI affects inequality in part by increasing the size of the private market, and the total effect of FDI changes from effectively zero to increasingly positive as the private sector grows. I conclude by implicating these findings in ongoing debates about post-socialist transition and in the sociology of development more generally.

Alternative Paths to Private Markets, FDI and the Pace of Private Market Expansion

There is little doubt the integration of transition economies into larger circuits of global capital matters for the distributional consequences of post-socialist transition. Mahutga and Bandelj (2008) find that foreign capital penetration—measured as the ratio of foreign investment stocks to GDP—perhaps matters more for the upswing in post-socialist inequality than any other single factor. As a point of departure from the *dependistas* who first recognized a link between FDI and inequality, however, they argue that FDI penetration increases inequality in the short term via mechanisms that are unique to post-socialist transition countries (also see Curwin and Mahutga 2014; c.f. Beer and Boswell 2002; Bornschier and Ballmer-Cao 1979; Bornscheir et al. 1978). First, post-socialist countries had virtually zero foreign investment prior to transition so that a link between FDI and inequality could not have originated in the kinds of longer-term

disarticulations that explained the link in proto-typical developing countries.[2] Rather, FDI increases inequality in the short term in two ways. On average, foreign firms are more productive than domestic and state-owned firms (Aitken et al. 1996; ILO 1998; King 2000; Moran 2002). This higher productivity increases inequality by creating a wage gap *between* the foreign and domestic sector in which wages tend to be higher in the former. Moreover, FDI further increases inequality by increasing the wage gap between management and labor *within* the foreign sector (Mahutga and Bandelj 2008; Milanovic 1999).

However, I argue that we must consider the intersecting processes of private market expansion and FDI penetration if we are to fully understand the distributional consequences of FDI. Bandelj (2008) argues that the varying degree to which post-socialist countries allowed FDI to play a role in the process of privatization matters for the extent of private market expansion. In commenting upon the discrepancy between the "political capitalism" and "capitalism without capitalists" characterizations of post-socialist transition, Bandelj argues that in the absence of an organic capitalist class (and in the context of limited capital), post-socialist economies faced a choice between privatization paths oriented toward FDI, and those that made more extensive use of the pre-transition domestic elite (see Eyal, Szelenyi and Townsley 1998; Staniszkis 1991 for classic treatments of each). Post-socialist countries that were less willing to sell state-owned enterprises to foreign investors, including Bulgaria, Croatia, Romania and Slovenia, ended up with smaller private sectors (Bandelj 2008: 206-210).

[2] Some intra-regional investment activities did occur within the Council of Mutual Economic Assistance (CMEA), which formed "a handful of joint enterprises' and 'joint investment projects' (McMillan, 1987: 4). However, these projects did not involve direct equity investment of one state into another and therefore do not qualify as FDI. Hungary, Poland and former Yugoslavia allowed the formation of joint ventures with foreign firms after 1985. By 1988 these states, along with Estonia, Latvia and Lithuania, legalized full foreign ownership. As a percentage of GDP, however, FDI still approached zero in these countries, and the four year period from 1985 to 1989 is an insufficient time frame to generate the kinds of disarticulations hypothesized by *dependistas*.

The more rapid expansion of private markets in countries that prioritized FDI occurred in three distinct ways. The first was the direct sale of state-owned enterprises to foreign companies. The second was green-field investment, where FDI created new firms entirely. These two processes increased both the share of economic output, and the share of firms, accounted for by the foreign sector (Hanley et al. 2002). The third was the comparatively greater productivity of foreign firms, discussed above, which increases the share of economic output accounted by the foreign sector, but not the share of firms.

The positive effect of FDI on private market expansion should matter for inequality. If private market expansion affects inequality, and if FDI increases the size of the private sector, then FDI should have both a direct and an indirect effect on inequality, the latter varying in direction with the effect of private market expansion. That is, private market expansion should mediate the impact of FDI on inequality.

H_1: FDI affects inequality indirectly, by increasing the pace of private market expansion.

The Paradox of Private Market Expansion Revisited: The Maturation Thesis

However, the distributional consequences of private markets are much contested (e.g. Keister and Borelli 2012; Nee 1989; Rona-Tas 1994; Szelenyi 1978; Szelenyi and Kostello 1996). The theory of market transition postulates price setting markets should reduce inequality by altering the balance of power between the pre-transition bureaucratic elite and direct producers (Nee 1989; also see Szelenyi's 1978). Here, the expansion of price-setting markets should increase the returns to market participants, decrease the returns to the pre-transition elite, increase opportunities for social mobility and limit the utility of political capital. Because market transition erodes the earning potential of the bureaucratic elite, and the bureaucratic elite

occupied the right hand tail of the income distribution prior to transition, proponents of the theory suggest that private market expansion reduce inequality: "changes in distribution will flow from changes in power, incentives, and opportunities" (Nee 1989: 667). Evidence drawn from China, Hungary and Poland supports this expectation (e.g. Cao and Nee 2000; Domanski and Heyns 1995; Nee 1989; 1991; Szelenyi 1998; Wu 2006; Zhang 2002).

Others argue precisely the opposite—the introduction of market reform benefits the pre-transition political elite. Here, elites translate the *expertise and human capital* accumulated in the old regime into success in an expanding private sector through a process of "technocratic continuity" (Rona-Tas 1994; Szalai 1990). Or, political elites parlay 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; Staniszkis 1991). Thus, theories of technocratic continuity and power conversion predict that private markets should exacerbate inequality. As markets expand, the former cadre elite use the skills and human capital accumulated under the socialist regime to achieve success as entrepreneurs and/or exploit their social networks to access information about privatizing industries and credit. Individual- and household-level evidence from Hungary, Russia, Vietnam and China, and macro-level panel data from Central and Eastern Europe, suggest that private market expansion increases inequality during post socialist transition (Bandelj and Mahutga 2010; Gerber 2002; Gerber and Hout 1998; Rona-Tas 1994; Walder 2002; Walder and Nguyen 2008).

These conflicting accounts create a bit of a paradox: the expansion of private markets appears both to ameliorate and exacerbate inequality. This paradox undermines not only our understanding of the distributional consequences of private markets, but also FDI. If FDI

increases private markets, and private markets reduce inequality, then the total effect of FDI on inequality has been over stated. If private markets increase inequality, then the total effect of FDI has been under stated.

Fortunately, in varying explications, sociologists also imply a possible solution to this paradox; a solution I describe as the *maturation thesis*. I begin with Szelenyi and Kostello (1996), who articulate something of a stage theory of the distributional consequences of private market expansion. By distinguishing between three types of market transitions—one in which private markets are confined to local areas; one in which private markets are more expansive but less extensive than administrative resource allocation; and one in which private markets have come to replace the redistributive system—Szelenyi and Kostello (1996) argue that the impact of expanding private markets depends upon the relative size of private markets.

When private markets are small and confined to local areas, they provide a pathway for those outside the socialist bureaucracy to supplement their state sanctioned earnings. However, as private markets expand, they entice a more talented pool of cadres into market activity. When this happens, the pre-transition political elite can use their human capital and social networks to "build bridges into the new private economy" (Szelenyi and Kostello 1996: 1091). Compared to pure socialist economies or those with only local private markets, then, inequality in these socialist-mixed economies is now determined by a "dual-system of inequality," where the political elite extract economic gains from their position in the redistributive system *and* from their ability to parlay these positions into gains in emerging private markets. However, private market expansion has only moderate impacts on inequality during this stage, because "uneducated, low-skill groups can still benefit from the secondary markets" (Szelenyi and Kostello 1996: 1091).

Private markets should have the largest impact on inequality when they become the predominant allocative mechanism in a society. The important mechanisms here resonate with both the "technocratic continuity" and "power conversion" principles discussed above. Socialist era technocrats, the descendants of pre-communist petty bourgeoisie with knowledge of market systems and the small entrepreneurs who participated in local private markets under the socialist system are better positioned to take advantage of mature private markets than others. At the same time, the individuals occupying lower levels of the old bureaucracy, the poor and workers in what were heavily subsidized state-owned industries face deteriorating market prospects when private markets are mature. In short, private markets should have the largest, positive effect on inequality when they "are the *dominant* allocative mechanism" operating in a post-socialist economy (Szelenyi and Kostello 1996: 1087; original emphasis).

To summarize, the maturation thesis suggests that the distributional consequences of private market expansion vary with the size of the private sector. In the very early stages, private markets may reduce inequality as they remain an isolated means by which individuals in the bottom tail of the income distribution subsidize state sanctioned incomes. As private sectors expand, however, this effect should disappear as private markets begin to entice a talented pool of cadres into market activity. Finally, as the private sector comes to dominate a transition economy, power conversion and/or technocratic continuity combine with economic dislocation in the formerly state-owned sector to produce large positive effects on inequality. Because the pace and timing of private market expansion varies significantly across transition countries, the maturation thesis suggests the following hypothesis.

H_2: Private market expansion first constrains rising income inequality, but then promotes inequality as private markets constitute a larger share of the overall economy.

To the extent that FDI increases private markets and the maturation thesis is correct, the *total* effect of FDI—i.e. the sum of its direct and indirect effect—should increase with the expansion of private markets.

Data and Methods

Sample

My sample includes 18 transition countries covering the years 1990 to 2009: Armenia, Azerbaijan, Belarus, Bulgaria, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Poland, Romania, Russian Federation, Slovakia, Slovenia, Ukraine, and Uzbekistan. Missing data yields an unbalanced data set, where countries contribute a different number of observations over time. In total, the sample includes 199-201 country-year observations.

Dependent Variable

The dependent variable is the Gini coefficient, which varies from 0 to 1, where 0 corresponds to perfect equality and 1 corresponds to perfect inequality. In order to maximize comparability of these results with previous work, I utilize Gini coefficients for the dispersion of household earnings, supplemented with Gini coefficients for the dispersion of household income (Bandelj and Mahutga 2010). I obtain these from TRANSMONEE (2012).

Key Explanatory Variables

Previous authors measure private market expansion in diverse ways, many of which have been contested in the literature (Walder 1996). Particularly in the early transition stages, systematic data on private market expansion was not available, necessitating proxies such as economic growth or the passage of time (Nee 1989; 1996; Xie and Hannum 1996). Despite

diverse operationalizations, the concept of private market expansion is unambiguous—it reflects the extent to which the "*proportion* of transactions conducted on markets" is increasing over time (Walder 1996: 1065, original emphasis). Thus, I measure the expansion of private markets with *Private Sector Size*, which measures output from the private sector as a ratio of GDP (EBRD 2012). To assess the maturation thesis, I also include a quadratic term for private sector size.

Following the bulk of previous work investigating the relationship between *FDI penetration* and inequality, I measure the latter with the accumulated stock of FDI as a percentage of Gross Domestic Product (GDP), which I obtain from UNCTAD (2012).

Denominator Effects, Export Intensity and Baseline Correlates of Post-Socialist Inequality

In order to isolate the independent effects of private market expansion, foreign direct investment and exports to high-income countries, I include baseline controls that are common in the sociological literature on income inequality, as well as additional controls that should be particularly salient for inequality in transition countries. The first address Firebaugh's (1992) criticism of investment penetration research, which showed that (1) the negative coefficient of FDI penetration (on growth) was a function of denominator effects and implied a positive effect of the *rate* of foreign investment and (2) a negative coefficient of FDI penetration (on growth) that was robust to this issue might still only imply that FDI was simply *less productive* than domestic investment. In order to address Firebaugh's important methodological critique, I follow previous research by controlling for the rate of FDI and domestic investment (e.g., Alderson and Nielsen 1999; Dixon and Boswell 1996; Mahutga and Bandelj 2008). 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 I obtained from the World Bank (2012).

In addition to the FDI controls, I also consider two internal processes that should explain variation in inequality in the post-socialist context. First, *oil production* captures the link between extensive oil reserves and inequality, which may be particularly acute among Central Asian transition countries. The link is explicable in terms of corruption and stable autocracy, in which inequality increases as domestic elites capture resource rents that are neither reinvested nor distributed among the larger population (Buccellato and Allessandrini 2009; Pomfret 2006). I measure this as the ratio of oil production to GDP, which I obtain from the World Bank (2012). Second, the *ratio of female to male secondary education enrollment* captures the impacts of socially constructed gender gaps in educational attainment, in which higher educational attainment among males increases their wage premium *vis-à-vis* females (Gerber and Schafer 2004; Shu and Bian 2003). I obtain this measure from the World Bank (2012).

A venerable tradition in sociological analyses of inequality focuses on three additional internal development processes (Nielsen 1994). First, beginning with the seminal work of Kuznets (1955), inequality rises and then declines over the course of development as the labor force shifts from the agricultural to the manufacturing sector. In order to control for this process, I follow previous work by including the *percent of labor force in agriculture* and *sector dualism*; the latter equal to the difference in the absolute values of the percent of the labor force in agriculture and the proportion of GDP in agriculture (Alderson and Nielsen 1999; 2002; Nielsen 1994). Second, part and parcel to the process of economic development is the demographic transition. Here, 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, I control for the *natural rate of population increase* (birth rate – death rate), which I obtained from the World Bank (2012). Finally, the third developmental process is the spread of education, which tends to lower inequality by reducing the wage premium for skilled workers. Thus, I control for the *secondary enrollment* rate (World Bank 2012). Finally, to control for government retrenchment, I include government spending/GDP (e.g. Bandelj and Mahutga 2010; Lee 2005). Correlations, descriptive statistics and distributional transformations for all variables in the analysis are provided in Table A1 in the appendix.

Pooled Cross-Section of Time Series Regression

The data described above require analytical techniques to account for the repeated observations of the same units (countries) over time. Two common approaches included fixed (FEM) and random (REM) effects models. The FEM estimates country-specific intercepts, while the REM employs a country specific random error term. The REM is more efficient, but yields biased coefficients if the country-specific error term is correlated with the right hand side covariates (Halaby 2004; Woodridge 2002). Hausman tests suggest these correlations are present in this data, and I therefore report coefficients obtained from the FEM. The FEM parameter estimates also provide a degree of substantive utility because previous research suggests that cross-national variation in "initial structural conditions, political circumstances, and policies" have a significant effect on both the distributional and developmental consequences of post socialist transition (Gerber 2002: 630; also see Hamm et al. 2012; Ronas-Tas' 1994). Because these initial conditions are time invariant, the FEM controls for them completely.

In addition to the issue of country-specific heterogeneity, repeated cross-section data often lead to serially correlated error terms that bias standard errors if left unaddressed. I tested

the hypothesis that the error terms are serially uncorrelated, and rejected the hypothesis at conventionally modest levels of significance. I therefore estimate and adjust for a first-order auto regressive process via a Prais-Winston transformation, and include a linear time trend. In addition to correcting for serial correlation, I estimate standard errors via a heteroskedasticity consistent covariance matrix.

Mediation Analysis

The first hypothesis addresses mediation, and therefore requires a test of the null hypothesis that there is no indirect effect of FDI on inequality that works through private market expansion. An informal indicator of mediation is the attenuation of a focal covariate upon the introduction of a potential mediator to the model. In the present context, we would expect the coefficient on FDI to attenuate when private sector size is controlled. However, the following must also be true to conclude that mediation occurs :(1) FDI has a significant effect on inequality; (2) FDI has a significant effect on private sector size; (3) private sector size has a significant effect on inequality (Baron and Kenny 1986) and (4) the coefficient on the indirect path from FDI to inequality is significantly different from zero. To test the hypothesis in the fourth condition, I conduct the Sobel test. The Sobel test is equal to $\frac{a*b}{\sqrt{b^2S_a^2+a^2S_b^2}}$, where a is the effect of FDI on private sector size, b is the effect of private sector size on inequality, and S denotes the standard error (Sobel 1982). By employing the Sobel test in this way, I assume that the causal arrow runs in one direction from FDI to private sector size. As I elaborate below, I employ instrumental variables and two-stage least squares regression to assess the validity of this assumption.

Results

[Table 1 about here]

Models 1-4 in Table 1 address hypothesis 1, that FDI has both a direct and indirect effect on inequality. To proceed, model 1 regresses the Gini coefficient on FDI and the baseline controls. The positive and significant association between inequality and FDI penetration in model 1 is a necessary but insufficient condition for mediation, and is consistent with much previous work (e.g. Bandelj and Mahutga 2010; Mahutga and Bandelj 2008). Model 2 excludes FDI and introduces private sector size. The significant effect of private sector size is also a necessary but insufficient condition for the mediation hypothesis. Model 3 introduces both private sector size and FDI into the same equation. Consistent with the mediation hypothesis, the coefficient on FDI attenuates when private sector size is controlled. The coefficient on FDI in model 3 is 23 percent smaller than in model 1. The attenuation of FDI from model 1 to 3 is the third necessary, but insufficient, condition for mediation. To assess the fourth condition, I begin by regressing private sector size on FDI and the baseline controls in model 4, which yields the *a* and S_a^2 parameters in the Sobel test described above. The Sobel test is equal to the ratio of product of the coefficients on FDI in Model 4 and private sector size in Model 3 (the *b* parameter) to the standard error of that product as defined above. Given the coefficients and standard errors in Table 1, the product *ab* is .007 and the standard error of the product is .002 ($p<.001$). Thus, consistent with hypothesis 1, there is a significant indirect effect of FDI that works through increases in the private sector.

Finally, model 5 assesses the maturation thesis as formulated in hypothesis 2. To test this hypothesis, I introduce the squared term on private sector size. The positive and significant squared term indicates that the impact of private sector size on inequality does increase with the size of the private sector. Moreover, the significant negative coefficient for the linear

(constituent) term suggests that increases in private sector size may actually constrain inequality at low levels of private sector size, a point to which I return below. Because FDI appears to increase the pace of private market expansion (model 4) and private markets have a curvilinear effect on inequality (model 5), the results reported in models 4 and 5 suggest that the *total effect* of FDI should also change as private market expands. However, it is important to ensure these results are robust to additional considerations.

[Table 2 about here]

Table 2 replicates the models in Table 1 after controlling for a larger set of covariates. Following the standard internal development model, I control for agricultural employment, sector dualism, the natural rate of population increase and secondary education. To control for differences in state retrenchment across transition countries, I control for government spending. The coefficients in models 1-3 are substantively consistent with those in Table 1, but smaller in size. Similarly, FDI exerts a positive effect on private sector size in model 4, but the effect is less than half the size it was in model 4 of Table 1. The product of the requisite coefficients for the Sobel test in models 3 and 4 is also smaller than was the case in Table 1, and the standard error of this product is larger. Nevertheless, the indirect effect of FDI remains significantly different from zero (.003/.001; $p<.05$). The mediated relationship between FDI and inequality identified in Table 1 holds when controlling for the internal development model and government spending.

In testing the hypothesis that private sector size mediates the relationship between FDI and inequality via the Sobel test, I assume that FDI is an exogenous predictor of private sector size in that the causal arrow runs in one direction, from FDI to private sector size. In order to assess the validity of this assumption, I test the null hypothesis that FDI is exogenous in the

model of private sector size (Bollen 2012). In order to test this hypothesis, I employ a two stage least squares regression (2sls). In the first stage, I regress FDI on two excluded instruments—the one year lag of FDI and firm size in the manufacturing sector (measured as the ratio of firms to employees)—along with the rest of the covariates in Model 4. I obtain the firm and employee data from UNIDO (2013). The predicted values from this first stage become my instrumental variable for FDI. In the second stage, I replicate model 4 in Table 2 but replace FDI with the predicted values from the first stage. Testing the null hypothesis that FDI is an exogenous predictor of private sector size is equivalent to testing the hypothesis that FDI is uncorrelated with the second stage error term.

The results of this analysis suggest that the mediation analyses above are not biased by endogeneity because I failed to reject the null hypothesis that FDI is uncorrelated with the second stage error term. The power of this test hinges critically on the "strength" and "validity" of my excluded instruments. Instrument strength concerns the magnitude of the correlation between FDI and the two excluded instruments (they must be high). Instrument validity concerns the extent to which the excluded variables should actually be included in the second-stage model, or in other words the correlation between FDI and the second stage error term (it must be zero). Using auxiliary tests in Stata, I reject the null hypothesis of weak instruments, and fail to reject the null hypothesis of valid instruments (see rows 13-15 in the appendix Table A2). Thus, my assumption about the causal process linking FDI to private sector expansion is valid. These results are also consistent with those of Bandelj (2008: 95), who shows that a causal arrow running in the opposite direction—from private sector size to FDI—becomes nonsignificant in a model that addresses endogeneity via 2sls.

Finally, model 5 introduces the private sector size quadratic. Relative to the coefficients reported in model 5 of Table 1, both the coefficients and t-statistics on the linear and squared terms increase in magnitude. The significant coefficients on the linear and squared terms for private sector size warrant closer examination. First, the maturation thesis suggests that private market expansion first reduces inequality. The negative coefficient on the linear term for private sector size in Model 5 may be consistent with this reading in that it suggests that private sector size has a significant negative effect on inequality when the squared term (and therefore private sector size) equals zero. However, all of the cases examined here had private sector output greater than zero percent of GDP. Second, the maturation thesis predicts that private market expansion only increases inequality when private markets have become the "predominant allocative mechanism," but the squared term simply gives the unit increase in the effect of private markets per unit increase of the size private markets. In order to determine whether private market expansion constrains inequality when the private sector is small, and the point at which private markets begin increasing inequality, I must assess the direction and significance of the coefficient for private sector size *as it varies across the full observed range of private sector size*.

[Figure 1about here]

To accomplish this, Figure 1 displays the coefficients of private sector size on the Y axis conditional on the observed size of the private sector (logged) on the X axis, given the results in model 5. The coefficients and confidence intervals displayed in Figure 1 reveal the precise thresholds of private sector size within which it has negative, null or positive effect on inequality, and are consistent with a slightly modified form of the maturation thesis. According to Figure 1, the expansion of private markets may decrease inequality, but only at very low levels

of private sector size—the point estimate for the impact of private sector size at the minimum observed value of private sector size (10 % of GDP) is -.119 ($p<.05$). The impact of private sector size remains negative and at least marginally significant ($p<.10$) through 13.8% of GDP, after which the negative effect becomes non-significant. The coefficient turns positive at moderate levels of private sector size (19.1% of GDP) and becomes positive and marginally significant (.046; $p<.10$) at 24% of GDP. Private sector size has an increasingly large positive impact on inequality as the private sector grows, peaking at .271($p<.001$) for the maximum observed private sector size of 80% of GDP—a threshold achieved only by the Czech Republic, Estonia, Hungary and Slovakia. Thus, private sector size appears to decrease inequality at low levels, to have no effect at intermediate levels of private sector size, and then to increase inequality even before private markets become the "*dominant*" allocative mechanism (i.e., before more than 50% of economic output is created by the private sector). Even though private markets increase inequality well before they become the dominant allocative mechanism, the results are consistent with the general argument that first reduce and then increase inequality, and may explain the apparent paradox in previous work (e.g. Nee 1989; Rona-Tas 1994).

[Figure 2 about here]

The variation in the effect of private markets on inequality displayed in Figure 1 has implications for the total effect of FDI on inequality. If the effect of private sector size were linear rather than curvilinear, then the total effect of FDI would be equal to $\frac{\beta_1+\beta_2}{\sqrt{var(\beta_1)+var(\beta_2)}}$, where β_1 and β_2 are the direct and indirect effects, respectively. Given the coefficients in Models 3 and 4 of Table 2, this would amount to .018 ($p<.001$). However, because the indirect effect of FDI on inequality is a function of the direct effect of private sector size on inequality, and this

effect changes as the size of the private sector increases, the total effect of FDI must also change with the effect of private sector size. Thus, to examine how the total effect of FDI changes with the size of the private sector, I must (a) estimate multiple indirect Sobel coefficients by substituting the conditional coefficients on private sector size displayed in Figure 1 for the Sobel *b* parameter I originally obtained from Model 3 of Table 2 and (b) add each of these to the main effect of FDI in Model 5 of Table 2 as formulated above. The indirect effect of FDI varies from -.004 to .009 across the observed levels of private sector size, and Figure 2 displays the total effects of FDI that result from adding these to the main effect of FDI. When the private market is less than 11% of GDP, the total effect of FDI is not significantly different from zero because the positive direct effect is counterbalanced by the negative indirect effect. However, the total effect becomes significant when private markets are more than 11% of GDP, and grows in size and significance thereafter. The total effect of FDI increases from .011 ($p>.05$) to .023 ($p<.001$) across the observed range of private sector size.[3]

[Figure 3 about here]

[Figure 4 about here]

The preceding analysis shows that FDI has both a direct and an indirect effect on inequality, that private market expansion first reduces and then increases inequality, and

[3] To be clear, these results stem from the mediation of FDI by private market expansion, and should not be confused with those that might obtain from an interaction between the two processes. To rule out the latter, I estimated models that included interaction terms between FDI and private sector size. None of these interaction terms were significant. As a corollary to the mediation hypothesis, one anonymous reviewer posited that the effect of FDI should itself be curvilinear in models that do not control for the private sector size quadratic, and that, if mediation does occur, the quadratic effect should disappear once the private sector size quadratic was controlled. To examine this hypothesis, I re-estimated the Gini models in Tables 1 and 2 and included a squared term for FDI. In Table 1, the squared term on FDI was significantly positive, but this effect disappeared in model 5 (i.e. when the private sector size quadratic was included). In Table 2, the square term was positive, non-significant and attenuated in model 5. In both cases, the main effect of FDI was positive and significant (i.e. the effect was positive at all levels of FDI). These results are broadly consistent with the mediation hypothesis developed above, and with the reviewer's intervention.

therefore that the total effect of FDI also increases with the size of the private sector. But how important are these processes for observed changes in inequality among transition countries? To answer this question, I examine the maximum impact of both processes. To measure the maximum impact, I use model 5 of Table 2 to predict Gini coefficients using the observed levels of both covariates while holding the other covariates at their means, and examine the degree of change in these predicted Gini coefficients. Figure 3 shows the increase in inequality across the observed levels of FDI penetration. Figure 4 shows the predicted change in inequality across the observed levels of private sector size. Consistent with the preceding analysis, inequality increases sharply with rising FDI penetration, from a predicted Gini coefficient of .262 at the minimum observed value to .362 at the maximum. Similarly, inequality declines with modest increases in private sector size, after which it increases at a steeper rate than with FDI penetration. Over the course of the whole U-turn, inequality is predicted to increase from .311 to .380.

[Table 3 about here]

Table 3 reports the Gini coefficients predicted by the minimum and maximum observed values of FDI penetration and private sector size (i.e. the left and right most values in Figures 3 and 4), as well as the absolute and relative change in these Gini coefficients. The results in the first two columns of Table 3 suggest that, individually, both private markets and FDI play an important role in distributional change during transition. The Gini coefficient predicted by the maximum observed size of the private sector is 22.25% larger than that predicted by the minimum observed size. The Gini predicted by the largest level of FDI penetration is 37.87% larger than that predicted by the smallest observed level of FDI. However, column two does not account for the total effect of FDI because private sector size is held at its observed mean. The

degree of absolute and relative change reported in column three does account for the total effect of FDI.[4] When taking into account FDI's total effect, the Gini predicted by the largest level of FDI penetration is 59.66 percent larger than that predicted by the smallest observed value.

Conclusion

Development sociologists have been admonished not to reify the empirical, if not analytical, distinction between "internal" and "external" drivers of developmental outcomes. The confluence of Soviet collapse and intensification of globalized circuits of capital accumulation create an ideal analytical space within which to meet this challenge because it gives us the ability to observe distributional (and other developmental) changes as countries transition *from* states of centrally planned economies that were relatively isolated from world economic processes *to* states with expanding private markets and deepening relations to the global economy, simultaneously. My findings highlight *both* the independent *and* intersecting distributional consequences of each factor. Here I discuss how these findings advance the literatures on post-socialist transition and inequality before concluding with a more general discussion.

More complete explanations for the distributional consequences of external factors must account for the way in which they affect internal drivers of inequality. Post-socialist countries varied in (1) the size of the native bourgeoisie, (2) the availability of private capital and (3) their political orientations toward outsiders, and therefore took varying paths to private market expansion (Bandelj 2008; Eyal, Szelenyi and Townsley 1998; Staniszkis 1991). Countries that relied more heavily on FDI ended up with larger private sectors, creating an indirect effect of FDI that works through private market expansion.

[4]Rather than estimating Gini coefficients with FDI penetration and holding private sector size at its mean, I instead estimate Gini coefficients in two steps. In the first, I use model 4 of Table 2 to estimate the predicted value of private sector size with the minimum and maximum observed value of FDI penetration. In the second, use model 5 of Table 2 to estimate Gini coefficients with the minimum and maximum observed value of FDI penetration, the predicted values of private sector size from the first step, and hold all other covariates at their mean.

However, this more complete explanation of the distributional consequences of FDI also requires a more precise explanation of the mechanisms underlying "internal" drivers of inequality. Our understanding of the distributional consequences of private markets has been somewhat vexing since empirical work on varying nations and time periods provides evidence in support of conflicting perspectives (e.g. Cao and Nee 2000; Nee 1989; 1991; Szelanyi 1978; c.f. Gerber 2002; Ronas-Tas 1994; Walder 2002). On one hand, the short term negative impact of private market expansion highlights the shift from an award system based on position among the bureaucratic elite to a system based on entrepreneurialism and human capital (Cao and Nee 2000; Nee 1989; 1991). On the other hand, the longer term positive effect of private market expansion is consistent with scenarios in which former bureaucratic elites engage in power conversion and/or technocratic continuity to disproportionately reap the gains from private sector expansion (Ronas-Tas 1994; Stanzkis 1991; Szalai 1990; Szelenyi and Kostello 1996). Put differently, the maturity thesis harmonizes these apparently contradicting perspectives. The transition from distributive systems to private markets really does incentivize market based economic behavior, perhaps in proportion to concurrent increases in the protection of private property rights. But, these new incentives can also entice individuals with privileged access to credit and knowledge of privatizing enterprises and/or higher initial levels of human capital into market making behavior (Nee and Cao 2000).

Taken together, these findings underscore that we must theorize the distributional consequences of post-socialist transition in terms of independent and intersecting impacts of "internal" (private market expansion) and "external" (FDI) factors (Bandelj 2008; Hanley et al. 2002). Analyzing the distributional effects of FDI without paying attention to its effect on private markets not only obfuscates its total effect on inequality, but also undermines our theoretical

understanding of its role in distributional change during post socialist transition. Moreover, fully specifying the way in which private markets affect inequality is equally important to our understanding of both the distributional consequences of private markets and of FDI. While FDI originates "externally," and private markets expand "internally," this distinction confuses our understanding of the distributional consequences of each rather more than it illuminates. One cannot see clearly the one without attending to the other.

As a particularly insightful anonymous reviewer pointed out, the analysis illustrates the promise of the holistic approach advocated by Alderson and Nielsen (and others) in two distinct respects. The first is for our understanding of the post-socialist case. In the words of this astute reviewer, "this study serves as a cautionary tale for those seeking to apply generic models willy nilly" (anonymous *Sociology of Development* reviewer). It is impossible to specify correctly the distributional consequences of FDI and private markets without understanding the way they work together, and without getting the local story (i.e. the distributional consequences of private markets) right. In the absence of foreign direct investment, private markets would surely have produced a less egalitarian distribution of income than existed under socialism. However, this change would have happened much more slowly. Post-socialist countries would have experienced a longer period of time in the descending slope of the curvilinear effect of private markets because these markets would have expanded more slowly. Moreover, had FDI not hastened the transition to a market society, there may have been a greater political space in which civil society could have placed greater limits on the ability of pre-transition elites to parlay their social capital and expertise into economic and political advantage. One of the more thoroughly research transition countries—Hungary—is a case in point, where concerted efforts

to direct state-owned assets to average citizens were eventually undermined and reversed by foreign capital and the international institutions representing its interests (Hanley et al. 2002).

The second respect in which the holistic approach holds promise is for the sociology of development more generally. The holistic approach applied above—to a particular set of countries undergoing a particular set of simultaneous processes within a particular set of circumstances at a particular historical moment—not only presents a cautionary tale *vis-à-vis* the application of general models to circumscribed cases, but also generates a new perspective on FDI and private markets that very well might "be applied more broadly to other settings" (anonymous *Sociology of Development* reviewer). While the coincidence of privatization and foreign investment penetration was surely nowhere more dramatic than in post-socialist transition countries, these processes find parallels in other parts of the world, not the least of which is Latin America in the 1980s and 1990s (Rivera-Batiz 2000). The debt crisis and subsequent structural adjustment programs of the 1980s lead to a series of deep reforms in many Latin American countries. Privatizing state-owned enterprises and the lifting of controls on foreign capital figured prominently in all of these programs. Just like the post-socialist case, *FDI became a key strategy of privatization* in Latin America (more for some countries than others; see Ferraz, Mortimore and Tavares 2011), and income inequality grew precipitously during this period (Huber and Solt 2004; Portes and Hoffman 2003). Thus, particularly in the current period of "mature globalization," the holistic approach is also a more general call for development sociologists to remember that "some of the most interesting questions to be raised about ["internal" and "external"] forces are how they interact with each other and how the distinction sometimes breaks down as the two kinds of forces fuse to generate or block social change" (Smelser 1991: 370).

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Tables

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

	(1)	(2)	(3)	(4) a	(5)
Private Sector Size		0.130***	0.101***		-0.449**
		(0.021)	(0.020)		(0.171)
Private Sector Size Squared					0.187**
					(0.058)
FDI Penetration	0.022***		0.017**	0.069***	0.020***
	(0.005)		(0.005)	(0.011)	(0.005)
FDI Rate	0.013*	0.010*	0.011*	0.021	0.015**
	(0.005)	(0.005)	(0.005)	(0.019)	(0.005)
Domestic Investment	-0.003	0.006	0.014	-0.189*	0.005
	(0.018)	(0.019)	(0.019)	(0.076)	(0.019)
Oil Rents	0.008*	0.010*	0.010*	-0.035*	0.012**
	(0.004)	(0.004)	(0.004)	(0.015)	(0.004)
Female/Male Secondary Education	-0.009	-0.017	-0.011	-0.048	-0.016
	(0.019)	(0.021)	(0.019)	(0.066)	(0.019)
Year	0.002**	0.002*	0.000	0.019***	-0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Constant	-4.478**	-2.929	-0.537	-35.502***	2.480
	(1.662)	(1.635)	(1.704)	(4.682)	(1.831)
N	201	201	201	201	201
R^2	0.923	0.921	0.923	0.941	0.925

Notes: [a] Private sector size is the dependent variable. Coefficients are unstandardized and net of fixed country effects; heteroskedasticity consistent standard errors in parentheses; †p<.10; *p<.05; **p<.01; ***p<.001.

Table 3: Unstandardized Coefficients of Private Market Expansion and World Economic Integration.

	(1)	(2)	(3)	(4) [a]	(5)
Private Sector Size		0.099***	0.090***		-0.551**
		(0.025)	(0.024)		(0.176)
Private Sector Size Squared					0.216***
					(0.060)
FDI Penetration	0.015**		0.014*	0.032*	0.015**
	(0.006)		(0.006)	(0.013)	(0.005)
FDI Rate	0.011	0.004	0.007	0.045**	0.012*
	(0.006)	(0.006)	(0.006)	(0.017)	(0.006)
Domestic Investment	-0.008	-0.001	0.006	-0.146*	-0.006
	(0.020)	(0.021)	(0.021)	(0.063)	(0.020)
Oil Rents	0.009*	0.012**	0.011**	-0.037**	0.013**
	(0.004)	(0.004)	(0.004)	(0.013)	(0.004)
Female/Male Secondary Education	-0.025	-0.031	-0.025	-0.050	-0.030
	(0.020)	(0.021)	(0.020)	(0.051)	(0.020)
Agricultural Employment	-0.001	-0.001	-0.001	-0.006*	-0.001
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)
Sector Dualism	0.001	0.001	0.001	0.010***	0.001
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)
Natural Rate of Population Increase	-0.006**	-0.004*	-0.003	-0.033***	-0.002
	(0.002)	(0.002)	(0.002)	(0.005)	(0.002)
Secondary Education	0.000	-0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Government Spending	0.018	0.016	0.012	-0.036	-0.004
	(0.035)	(0.035)	(0.035)	(0.105)	(0.035)
Year	0.003**	0.002*	0.001	0.017***	-0.001
	(0.001)	(0.001)	(0.001)	(0.003)	(0.001)
Constant	-4.870*	-3.991*	-1.394	-32.585***	1.955
	(2.026)	(1.898)	(2.071)	(5.313)	(2.132)
N	199	199	199	199	199
R^2	0.920	0.918	0.918	0.942	0.922

Notes: [a]Private sector size is the dependent variable. Coefficients are unstandardized and net of fixed country effects; heteroskedasticity consistent standard errors in parentheses; *p<.05; **p<.01; ***p<.001.

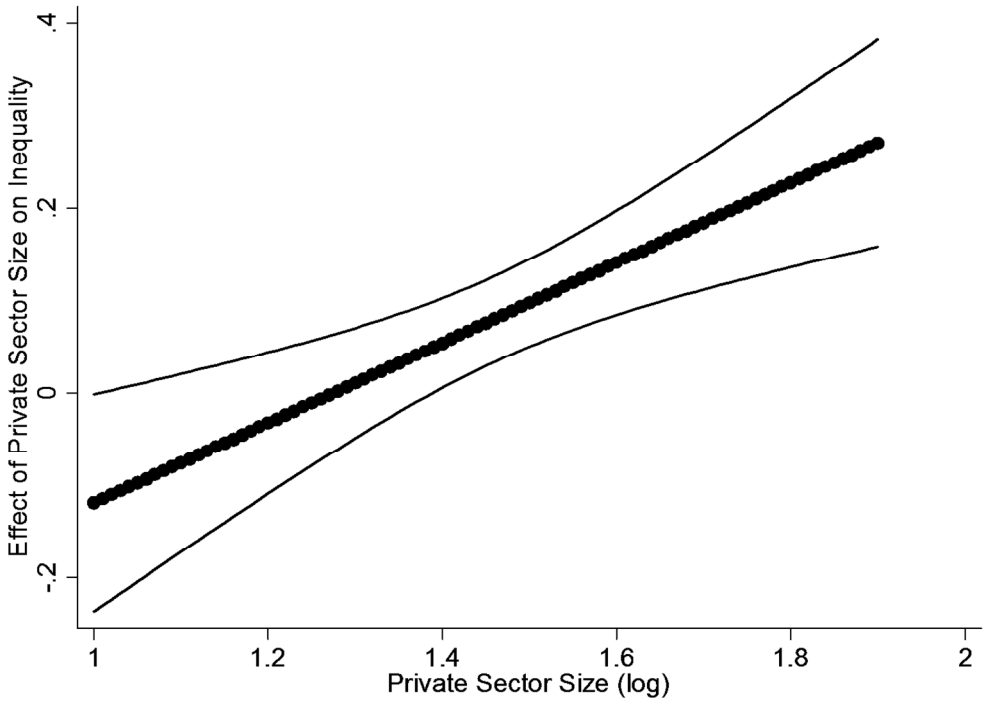
Table 3: Maximum Predicted Change in Gini by Private Market Expansion and Foreign Investment Penetration

	Private Market Expansion	Foreign Investment Penetration	
		Direct Effect	*Total Effect*
Level			
Min	0.311	0.262	0.231
Max	0.380	0.362	0.368
Change			
Absolute	0.069	0.099	0.138
Percent	22.25	37.87	59.66

Notes: Gini coefficients in first two rows were rounded to three decimal places after the absolute and percent changes were calculated.

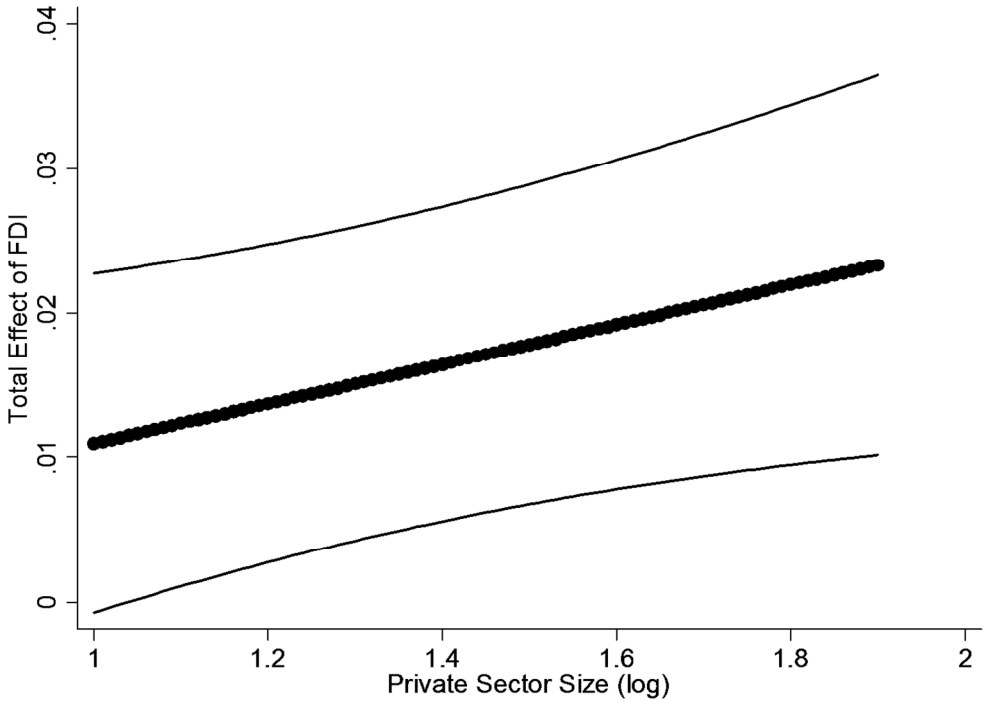
Figures

Figure 1: Coefficients and Confidence Intervals for Private Sector Size as Private Sector Size increases



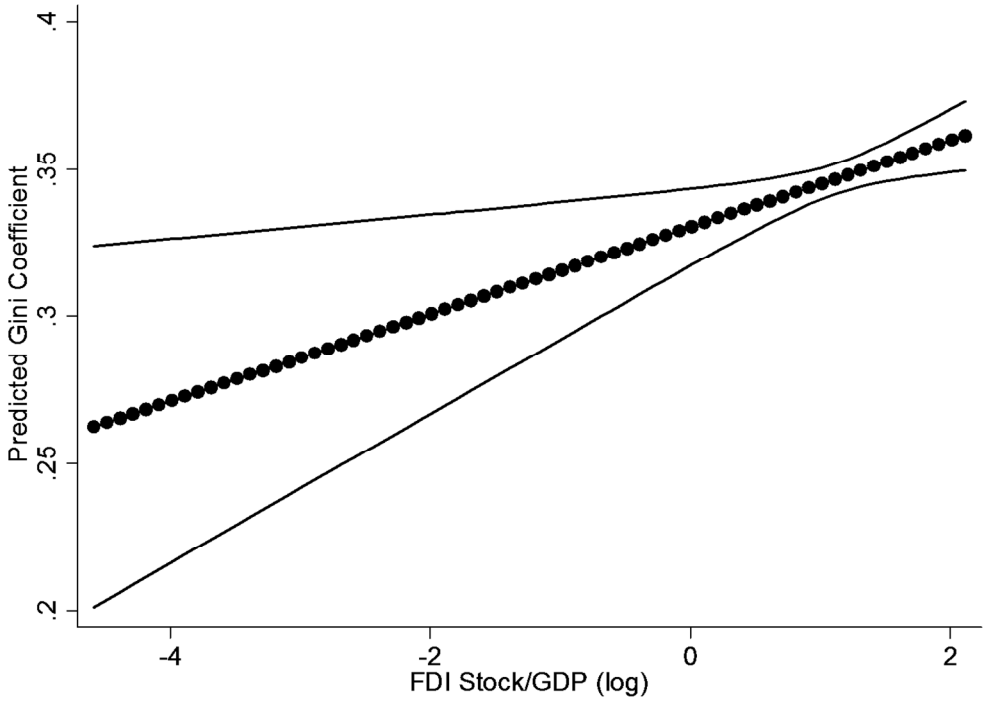
Notes: Upper and Lower bound based on 95% confidence interval. Coefficients and standard errors derived from model 4 in Table 2.

Figure 2: Total Effect of FDI by Private Sector Size



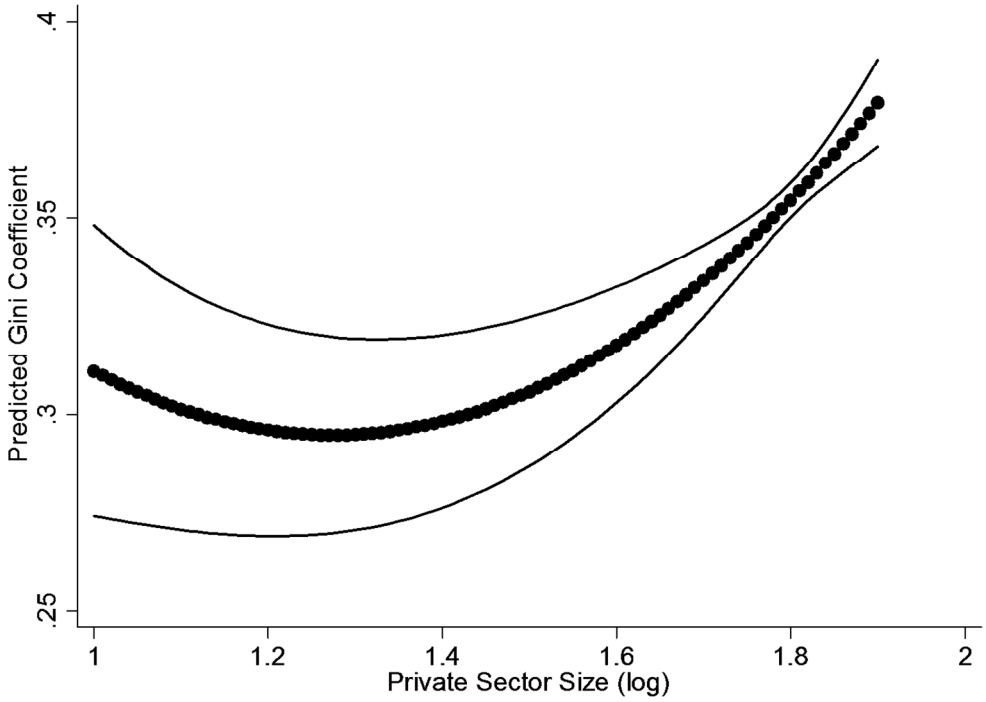
Notes: Total effect of FDI is equal to the sum of the main effect in Model 5 of Table 2 and the conditional indirect effects corresponding to the varying effects of private sector size displayed in Figure 1. The standard error of the total effect of FDI is equal to $\sqrt{var(\beta_1) + var(\beta_2)}$, where β_1 is the main effect of FDI and β_2 is the indirect effect. The variance of the indirect effect is given by the Sobel test as described above. Upper and Lower bound based on 95% confidence interval.

Figure 3: Predicted Gini Coefficient by FDI Penetration.



Notes: Gini coefficients predicted by Model 5 of Table 2.

Figure 4: Predicted Gini Coefficient by Private Sector Size.



Notes: Gini coefficients predicted by Model 5 of Table 2.

Appendix

Table A1: Correlations and Descriptive Statistics

		Gini	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	Private Sector Size (log)	0.180												
(2)	FDI Penetration (log)	0.285	0.732											
(3)	FDI Rate (log)	-0.143	-0.367	-0.516										
(4)	Domestic Investment (log)	0.059	-0.001	0.104	0.010									
(5)	Oil Rents (log)	0.562	-0.205	-0.108	0.119	-0.056								
(6)	Female/Male Education Enrollment	0.030	0.182	0.273	-0.261	-0.070	0.257							
(7)	Agricultural Employment	0.308	-0.242	-0.127	0.192	-0.006	0.381	0.158						
(8)	Sector Dualism	0.318	0.031	0.090	0.010	0.041	0.310	0.229	0.875					
(9)	Natural Rate of Population Increase	0.050	-0.163	0.074	0.012	0.293	0.259	0.203	0.479	0.482				
(10)	Secondary Education	-0.279	0.139	-0.030	-0.205	-0.068	-0.378	0.039	-0.475	-0.335	-0.282			
(11)	Government Spending	-0.574	-0.131	-0.304	0.100	-0.131	-0.338	-0.165	-0.641	-0.607	-0.428	0.403		
(12)	Average Firm Size	-0.147	-0.594	-0.581	0.225	0.030	0.147	-0.125	0.084	-0.036	0.117	-0.136	0.106	
	Mean	0.354	1.766	1.152	-0.69	1.391	-1.88	3.18	19.36	9.777	-1.22	91.01	1.590	57
	Standard Deviation	0.070	0.174	0.742	0.321	0.111	3.108	0.148	12.41	8.462	4.467	6.483	0.120	77

Table A2: Two-Stage Least Squares Instrumental Variable Regression of Private Sector Size on FDI and Select Independent Variables.

	(1)
FDI Penetration	0.157***
	(0.046)
FDI Rate	0.022
	(0.024)
Domestic Investment	-0.036
	(0.098)
Oil Rents	-0.061***
	(0.017)
Female/Male Education	-0.048
	(0.051)
Agricultural Employment	0.001
	(0.003)
Sector Dualism	0.003
	(0.004)
Population Increase	-0.030**
	(0.011)
Secondary Education	-0.000
	(0.002)
Government Spending	0.259
	(0.178)
Year	0.007
	(0.004)
Constant	-13.020
	(8.366)
Instruments are weak [a]	19.68###
Instruments are valid [b]	1.361
FDI is exogenous [c]	2.085
N	163
R2	0.819

Notes: Heteroskedasticity and serial correlation consistent standard errors in parentheses; * p<0.05, ** p<.01, *** p<.001. The lagged values of FDI and firm size are used as instruments for FDI. a) Kleibergen-Paap F statistic (### < 10% OLS bias); b) Hanson J statistic (distributed χ^2); c) Pseudo C statistic, distributed χ^2).