The Effect of Mergers & Acquisitions and Greenfield FDI on Income Inequality

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Abstract: This paper investigates the differential effects of cross-border mergers & acquisitions (M&As) and greenfield investment on income distribution within the host country. Using a sample of 93 countries from 1990-2009, our results show that M&As have an insignificant impact on income inequality, while greenfield investment exhibits a significantly positive effect on income disparity.

1. Introduction

Since the surge in foreign direct investment (FDI) across the world in the 1980s, FDI is considered as a conduit of transferring physical capital and intangible assets, such as technology, skills and human capital development. The greater mobility of factors of production stimulated by the presence of multinational corporations (MNCs) affects the income distribution within the host country and therefore generates interests in studying the effect of FDI on income inequality. Theories to explain the relationship between FDI and income inequality can be summarized as the modernization hypothesis and the dependency hypothesis. The modernization hypothesis treats foreign capital and domestic capital as homogeneous goods (Tsai, 1995). The inflow of foreign capital adds to gross domestic investment and fosters economic growth. The continued growth expands the middle class and increases employment and the savings rates among the poor, leading to reduction in income inequality (Adams, 2008). Therefore, the modernization hypothesis suggests a negative relationship between FDI and income inequality. However, the dependency hypothesis argues that FDI increases wages in international sectors where MNCs produce to a greater extent than those in traditional sectors (Girling, 1973; Rubinson, 1976; Bornschier and Chase-Dunn, 1985; Choi, 2006). Accordingly, the dependency hypothesis predicts that FDI is associated with rising income inequality.

Unlike the conflicting theoretical predictions, the existing empirical studies generally point to the detrimental effect of FDI on income distribution. Tsai (1995) shows that the increase in foreign capital gives rise to more unequal income distribution in East and Southeast Asian developing countries. Mah (2002) finds that FDI inflows increase the income inequality measured by the Gini index using Korean data. Based on 14 European country data over the period 1951-1995,

Lee (2006) presents that FDI raises income inequality. Choi (2006) suggests that the increase in FDI inflows deteriorates the income distribution using country-level data between 1993 and 2002. Adams (2008) finds a positive relationship between FDI and income inequality using panel data of 62 developing countries from 1985 to 2001. Based on a panel of 100 countries from 1980 to 2002, Figini and Görg (2011) show that FDI presents a nonlinear effect on wage inequality in developing countries such that wage inequality rises initially with the inflows of foreign investment, yet wage inequality declines as foreign investment continues to increase. Furthermore, Figini and Görg (2011) show that FDI reduces wage inequality in developed countries.

This paper attempts to distinguish two modes of FDI – cross-border mergers & acquisitions (M&As) and greenfield FDI and examine whether the two modes of FDI have differential effects on income inequality. MNCs can undertake FDI between building its own establishment (greenfield investment) or to acquire an existing firm (cross-border M&As) (Nocke and Yeaple, 2007). The two forms of investment are different in nature (Wang and Wong, 2009). Economic studies suggest that greenfield FDI and M&As may have different economic consequences in the host country. The United Nations Conference on Trade and Development (UNCTACD) in the World Investment Report (WIR) (2000) documents that „FDI entry through the takeover of domestic firms is less beneficial, if not positively harmful, for economic development than entry by setting up new facilities." Blonigen and Slaughter (2001) find that greenfield manufacturing FDI does not contribute to U.S. within industry skill-upgrading. Conyon et al (2002) present findings that M&As contribute to an increase in labor productivity in the United Kingdom. Liu and Zhou (2008) find that greenfield FDI in Chinese high-technology industries is associated with both intra-industry and inter-industry spillovers and M&As only exhibit inter-industry spillovers. Wang and Wong (2009) show that greenfield FDI improves economic growth while M&As have negative effects on the host country"s economic growth.

This paper contributes to the existing literature by distinguishing and comparing the effects of different types of multinational activities on income distribution within the host country. Using a sample of 93 countries from 1990 to 2009, we find that greenfield investment is positively associated with income inequality while M&As present an insignificant effect. However, in contrast to the positive effect of average greenfield investment, we find that greenfield investment in Latin America and Caribbean region decreases income inequality.

The remainder of the paper proceeds as follows. Section II lays out the econometric model. Section III discusses the data and section IV presents the analysis of empirical results. Section V concludes.

2.   Econometric Model

The following model is utilized to explore potentially different effects of M&As and greenfield FDI in host country *i* on domestic income inequality at time *t*.

$GINI_{it} = \beta_0 + \beta_1 MA_{it} + \beta_2 GREEN_{it} + \beta_3 GDP\_PCAP_{it} + \beta_4 GDP\_PCAPSQ_{it} + \beta_5 GROWTH_{it} + \beta_6 TRADE_{it} + \beta_7 GOVT_{it} + \beta_8 H_{it} + \beta_9 AGRIL_{it} + \delta_i + \gamma_t + \varepsilon_{it}$

where the Gini index is used to measure the extent of income inequality within a country. MA and GREEN represent cross-border M&As and greenfield investment as a percentage of gross domestic fixed investment respectively.

GDP_PCAP is real per capita GDP and GDP_PCAPSQ is the squared real per capita GDP. These variables are included to reflect the Kuznets hypothesis such that income inequality may increase in the early stages of economic development and decline once a certain threshold level of development is reached (Lee, 2006). Therefore, GDP_PCAP is expected to have a positive coefficient, while the coefficient of GDP_PCAPSQ is anticipated to be negative. GROWTH stands for real per capita GDP growth rates. A higher short-term growth rates tends to exacerbate inequality (Tsai, 1995). Yet, most studies do not provide any evidence for this detrimental effect of higher short-term growth (Ahluwalia, 1976; Ram, 1984; Papanek and Kyn, 1987; Tsai, 1995). Therefore, the sign of the coefficient of GROWTH is ambiguous. TRADE is the share of trade, measured as the sum of exports and imports, in a country"s GDP. The share of trade volume in GDP indicates openness and affects the income distribution by altering the relative demand for skilled and unskilled labor (Lee, 2006). The sign of this coefficient is undetermined, depending on factor abundance relative to the major trading partners, suggested by the Stolper-Samuelson theorem. If the country is relatively labor abundant, openness will promote more equal income distribution. However, if the country is relatively capital abundant, openness will deteriorate income distribution. GOVT denotes the share of government expenditures in a country"s GDP and is expected to have a negative coefficient. As a major role of government is to improve distribution inequality, a stronger government would favor more equal income distribution (Tsai, 1995). H is human capital, measured as the gross secondary school enrollment. AGRIL represents the share of agricultural employment in total employment. As suggested by the development literature, an improvement in human capital would foster more equal income distribution; however, a higher proportion of agricultural employment is likely to decrease income equality.

δ_i and γ_t are country and time fixed-effect variables to capture the unobserved effects across country and time respectively. ε_{it} is the classical random error.

3.   Data Description

Data are compiled from two sources: cross-border M&As are collected from the FDI database at the UNCTAD website and the other variables are obtained from the World Bank‟s World Development Indicators (WDI).

Cross-border M&As measure sales of companies in the host country to foreign transnational corporations (TNCs) less sales of foreign affiliates in the host country (WIR, 2009). The data cover only those deals that involve an acquisition of an equity stake of more than 10%. While the original M&As data are denominated in millions of US dollars, we transform them into the variable MA as a share of gross domestic fixed investment. There are no existing greenfield investment data available for this study. We follow the practice of UNCTAD (2000) and Wang and Wong (2009) by taking the difference between total FDI and M&As to create a proxy for greenfield FDI. Specifically, greenfield investment in this study is net FDI inflows less M&As and converted into a share in gross domestic fixed investment.

The Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of zero represents perfect equality, while an index of 100 implies perfect inequality.[1] Per capita GDP is measured in constant 2000 US dollars and the growth rate of per capita GDP is based on constant local currency.

The data are transformed into five-year averages for the following periods: 1990-1994, 1995-1999, 2000-2004, and 2005-2009. 93 countries are included in the analysis. Due to missing observations, the data used in the estimation are an unbalanced panel. Descriptive statistics for the variables are listed in Table 1.

4.   Empirical Results

The first column in Table 2 presents the fixed-effects estimation of the impact of aggregate inward FDI on the Gini coefficient based on the empirical specification described in Section II.[2] This baseline regression allows us to compare our results to those in the existing studies. In regression (1), total inward FDI exhibits a positive effect on the Gini coefficient. This is consistent with prior empirical results that FDI is associated with an increase in income inequality.

Regression (2) separates the distributional effects of greenfield investment and M&As. The estimated results show that M&As have an insignificant effect on income inequality while greenfield investment has a positive effect on income disparities and the effect is statistically significant at the 1 percent level. When comparing the coefficient of FDI in regression (1) with

those of the two modes of FDI in regression (2), it implies that the detrimental effect of FDI on income distribution found in prior studies may be attributed to greenfield investment.

Furthermore, we reconstruct the share of FDI in gross domestic fixed investment as well as the share of greenfield investment using the FDI inflows data from the WIR. The estimated results are reported in regressions (3) for the FDI share and regression (4) for the shares of M&As and greenfield investment. The estimated results are qualitatively similar to those of regressions (1) and (2).

In addition, we generate dummy variables for developed countries (DC), East and Southeast Asian countries (ASIA), and Latin American and Caribbean countries (LA). We multiply the regional dummy variables with M&As and greenfield investment and include the interactive variables in the empirical specification attempting to capture the potential regional difference in income inequality. Regression (5) reports the estimated results including the interactive variables of DC and different modes of FDI. Greenfield investment still exhibits a positive coefficient, yet the coefficients of MA x DC and GREEN x DC are statistically insignificant. This result implies that no significant difference in the distributional impact could be found between the two modes of FDI in developed countries and developing countries. When including the interaction of Asia and LA dummy variables with M&As and greenfield investment, regression (6) shows that the M&As and greenfield investment have insignificant effects on income disparity measured by the Gini index in East and Southeast Asia. However, the coefficient of GREEN x LA is negative and statistically significant at the 10 percent level, though the coefficient of MA x LA is insignificant. The results suggest that the increase in greenfield FDI might have more favorable distributional impact in Latin American and Caribbean countries than in the reference group. Overall, the coefficient of greenfield investment in regressions (5) and (6) remains positive and statistically significant at the 1 percent level.

5.   Conclusion

There has been a concern that the inflows of FDI may affect the income distribution within the host country. Although the theoretical studies have not reached a consensus, most of the empirical results imply a deleterious effect of FDI on income equality. The production of MNCs in host countries involves two forms: M&As and greenfield investment. The two modes of FDI may exhibit different economic consequences, though most of the empirical and theoretical literature has not distinguished between them (Nocke and Yeaple, 2007). Therefore, the purpose of this paper is to investigate whether these two forms of FDI have differential effects on income inequality.

Using a panel of 93 countries over the period of 1990-2009, this study finds that the distributional effect of greenfield investment on income equality is significantly negative, while that of M&As is insignificant. Furthermore, M&As and greenfield investment are not associated

with more equal income distribution in developed countries than in developing countries. In addition, our results show that greenfield investment contributes to a more equal income distribution in Latin American and Caribbean countries.

Our findings suggest a policy implication to policymakers in terms of evaluating the cost of greenfield investment. Traditionally, host countries often favor greenfield investment as it creates jobs and adds to local employment. However, it is a caution to host countries" government that the production of MNCs in the form of greenfield investment is associated greater income disparity. Furthermore, polices are necessary to alleviate the exacerbation of income inequality when receiving greenfield investment.

Endnotes

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1. The interpretation of the Gini index is cited from the website of World Development Indicators.

2. The fixed-effects estimator is used to estimate the econometric model. To justify the inclusion of country fixed effects, the Breush and Pagan LM test is conducted after the random-effects estimation. The test rejects the null hypothesis that the country-specific fixed effects are jointly equal to zero at the 1 percent significant level. Furthermore, the Hausman test indicates that fixed-effects estimates are preferred to random-effects estimates.

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Table 1 Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
GINI: the Gini coefficient (100)	347	41.435	9.946	0.000	74.330
FDI: Inward FDI flows as a percentage of gross domestic fixed investment (%)	334	22.246	93.312	-12.986	1680.255
MA: M&As as a percentage of gross domestic fixed investment (%)	269	4.341	6.048	-5.859	36.287
GREEN: Greenfield investment as a percentage of gross domestic fixed investment (%)	268	19.643	101.807	-20.016	1657.106
GDP_PCAP: Per capita GDP (in constant 2000 US dollars)	346	3618.155	6779.394	93.214	48142.260
GROWTH: Per Capita GDP growth rates (%)	347	2.061	3.720	-19.189	19.873
TRADE: Trade as a percentage of GDP (%)	341	80.304	40.353	15.564	269.405
GOVT: Government consumption as a percentage of GDP (%)	338	14.762	5.604	4.080	37.917
H: Secondary enrollment (%)	322	64.413	30.738	5.250	145.338
AGRIL: Agricultural employment as a percentage of total employment (%)	241	27.323	20.582	0.380	88.800

Table 2 Empirical Results

	(1)	(2)	(3)	(4)	(5)	(6)
GDP_PCAP	0.633	-0.318	0.506	-0.441	-0.436	0.551
	(0.00113)	(0.00110)	(0.00114)	(0.00111)	(0.00111)	(0.00119)
GDP_PCAP SQ	-0.0421	-0.00536	-0.0378	-0.00101	0.000103	-0.0380
	(0.0408)	(0.0394)	(0.0410)	(0.0398)	(0.0400)	(0.0427)
FDI	0.105***					
	(0.0327)					
MA		0.0759		0.0747	0.0894	0.130
		(0.0588)		(0.0587)	(0.0600)	(0.0820)
GREEN		0.105***			0.105***	0.142***
		(0.0383)			(0.0389)	(0.0452)
TRADE	0.00478	0.00311	0.00361	0.00196	-0.00493	-8.36e-05
	(0.0251)	(0.0227)	(0.0251)	(0.0227)	(0.0239)	(0.0230)
GOVT	0.302**	0.105	0.286**	0.0913	0.119	0.136
	(0.144)	(0.162)	(0.143)	(0.163)	(0.165)	(0.163)
H	0.0672	0.00630	0.0696	0.00862	0.0136	0.0271
	(0.0553)	(0.0545)	(0.0556)	(0.0550)	(0.0550)	(0.0554)
GROWTH	-0.215**	-0.188*	-0.229**	-0.198*	-0.177*	-0.199*
	(0.0959)	(0.104)	(0.0959)	(0.104)	(0.105)	(0.107)
AGRIL	0.0139	0.0378	0.0159	0.0399	0.0403	0.0445
	(0.0478)	(0.0497)	(0.0478)	(0.0497)	(0.0498)	(0.0502)
FDI_WIR			0.109***			
			(0.0325)			
GREEN_WIR				0.106***		
				(0.0376)		
MA x DC					-0.403	
					(0.327)	
GREEN x DC					0.0938	
					(0.189)	
MA x ASIA						-0.476
						(0.486)
GREEN x ASIA						-0.113
						(0.294)
MA x LA						-0.173
						(0.121)
GREEN x LA						-0.154*
						(0.0823)
Constant	29.62***	36.77***	30.99***	38.10***	36.11***	33.46***
	(5.157)	(4.998)	(5.013)	(4.895)	(5.098)	(5.210)
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Country Dummy	Yes	Yes	Yes	Yes	Yes	Yes
Observations	224	202	223	201	202	202
R-squared	0.245	0.234	0.252	0.239	0.246	0.273

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1
FDI_WIR: FDI inflows from the World Investment Report (WIR). GREEN_WIR: the difference between FDI_WIR and MA. DC: a binary dummy variable where 1 = if the country is a developed country and 0 = otherwise. ASIA: a binary dummy variable where 1 = if the country is an East and Southeast Asian country and 0 = otherwise. LA: a binary dummy variable where 1 = if the country is a Latin American and Caribbean country and 0 = otherwise.