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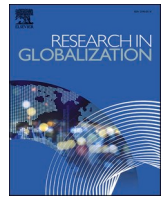
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US multinational enterprises: Effects on poverty in developing countries

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ABSTRACT

The aim of the paper is to determine the effect of the Multinational Enterprises of the United States (US-MNE) in the reduction of poverty in a group of 18 developing countries where they operate for the period 2009–2018. Furthermore, the determining factors of the attraction of US-MNE to these countries are estimated and it is tested whether they affect poverty. A dynamic panel data econometric methodology (sys-GMM) is followed. It is found that US-MNE positively influence poverty reduction, and that significant determinants for attracting these companies are at the same time poverty reducing factors. Consequently, the US-MNE can be considered as a central mechanism of the dynamics of poverty in developing countries. The document contributes to the limited literature that quantitatively analyses the role of MNE in reducing poverty.

Introduction

One of the most important challenges for the world is the reduction of poverty. Two-thirds of the world population lives on less than 10 dollars a day and 9.2 % live on 1.9 dollars or less a day (Lab, 2020). From a macroeconomic approach, poverty is related to countries economic growth. In particular, for the International Labor Organization (ILO, 2018), this phenomenon is linked to employment, where labor income allows workers and their dependents to obtain goods and services necessary to satisfy their needs. Thus, poverty would be explained by unemployment and underemployment, translated into low and unstable income as well as limited access to social benefits. Prior to the pandemic there were more than 200 million unemployed people worldwide (ILO, 2017).

Several studies have shown the correlation between employment and poverty (Islam, 2004; Karnani, 2011; Zizzamia, 2020) concluding that employment tends to reduce poverty. Employment leads to more sources of income, direct and indirect, more hours worked, and higher wages. In this context, the private sector is central to job creation. Private sector companies are estimated to generate the majority of global employment. In 2016, 2.8 billion people were employed in this sector (87 % of total employment) (ILO, 2017). As for multinational enterprises (MNE), there are no systematized data at the international level. However, considering the 500 largest companies in the world, it is observed that they employed almost 30 million people in 2018 (Fortune, 2018) contributing 30 % of world GDP.

This way, a link between poverty and MNE in the host economy can be drawn, which materializes mainly due to the effect of these companies on employment. Specifically, in the context of the Sustainable Development Goals (SDGs) of the 2030 Agenda, national governments recognize that MNE are a fundamental part of poverty reduction since they represent a private mechanism for economic growth with substantial economic power and resources. The contribution of MNE in reducing poverty, regardless of its definition at country level, is generated by two main reasons (Lodge & Wilson, 2006). First, the new and higher incomes depend on economic dynamism, and particularly on companies evolution. For this, new firms are required, which implies access to several aspects just like larger markets, financial system, new technologies and knowledge, and well-positioned value chains, among others; all these promoted by multinational companies. Second, reducing poverty requires government participation with specific policies and programs. The main source of public resources is taxes, and MNE are one source of these. Moreover, poverty reduction requires systemic change, and MNE are an efficient and sustainable driver of change. Related to this, Corporate Social Responsibility (CSR) approach has led MNE to establish programs about solution of social problems such as poverty (Duque, Quintero, & Cardona, 2012).

Likewise, qualitative studies have identified the central role of MNE in poverty reduction, for example, Barkemeyer (2011), Pimpa (2013), and Ghauri and Wang (2017). Particularly, it identifies that the subsidiaries of multinational companies pay on average higher wages than local companies (Van Tulder, 2008). Also, De Backer, Miroudot, and

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Rigo (2019) point out that MNE subsidiaries have strong links backwards and forwards with domestic companies, including small and medium-sized ones, which favors employment and poverty reduction.

The potential role of MNE in poverty reduction also depends on their own characteristics, which, compared to domestic companies, tend to be larger, more capital-intensive, more productive and invest more in research and development (R&D) (de Backer et al., 2019). In particular, the US-MNE play a central role in global poverty since US is the country with highest number of this kind of enterprises. During 2018, two out of three MNE among the 500 largest on the world were of US, gathering around 25 % of the GDP of this group of firms. In that year, the number of US-MNE exceeded 38 thousand with presence in 98 countries.

Specifically, according to BEA (2020), global employment of US-MNE grew by 1.4 % to reach 43 million workers in 2018, to which is added the 14 million workers employed by Majority-Owned Foreign Affiliates (MOFA) from the US. Likewise, the world added value of the US-MNE increased 6.8 % to 5.7 billion dollars; while the added value of the MOFA grew 4.1 % to 1.5 billion dollars. Additionally, the investments in plants, equipment and other assets of the MNE, including the MOFA, mean 1.1 billion dollars. Finally, worldwide R&D spending by all US-MNE reached \$439 billion.

At the same time, world poverty decreased slightly between 2009 and 2018. In the first year, 19.1 % of the population lived below the national poverty line, while in 2018 this percentage was 18.8 %. In this context, Fig. 1 shows the behavior of US-MNE added value and poverty levels in the countries where they operate. An opposite trend is observed in which value added grows and poverty decreases. This shows the potential of US-MNE for global economic activity and thus for poverty reduction.

However, Slaughter (2009) shows that the activities of the US-MNE are concentrated in their parent companies within the US, being responsible for a high percentage of the improvement in productivity in that country, due to their capital investments, the research and development and international trade, which lead to job creation and high remuneration in that economy, but which can limit the positive effect in terms of poverty in the rest of the world.

Thus, although US multinationals make investment, employment and production decisions from a global perspective, the benefits seem to be concentrated in the US headquarters, limiting spillover effects to other economies. This raises the question about the effect of MNE in alleviating global poverty. Direct or indirect job creation by US-MNE in host economies may not be enough to reduce it. In any case, these firms seem to play a role in fighting against poverty conditions.

The aim of the document is to determine the effect of the United States MNE on poverty reduction in developing economies during the period 2009–2018 for a group of 18 countries for which information is

available. The sys-GMM dynamic panel methodology is used, which robustly controls for heterogeneity between countries based on Windmeijer correction for the standard errors. The main contribution of the paper is about the role of US-MNE in reducing poverty in developing countries from a quantitative approach, differentiating itself from qualitative studies focused on case studies.

In what follows, the section “literature review” describes the effects of MNE in combating poverty, and the main determinants of the attraction of MNE and of poverty, then it is followed by the methodology and data section. The results and discussion are showed in Section 3. The conclusions and recommendations are in the final section.

Literature Review: MNE attraction and contribution to poverty reduction

This section describes the effects of MNE on poverty, as well as the main determinants of the attraction of this type of companies and of poverty.

MNE contribution to poverty reduction

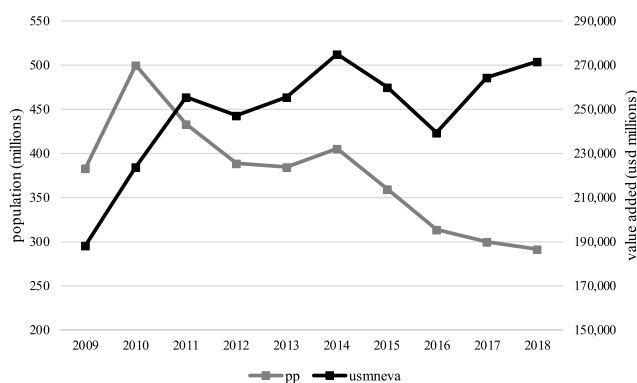
Every country in the world faces poverty problems. Different dimensions and actors influence this socioeconomic phenomenon. Despite of public resources and several strategies poverty persists. An alternative to combat it is through the creation of national companies or the attraction of foreign companies. According to Dunning and Lundan (2008), foreign firms invest in other countries searching new resources and opportunities not available in their origin countries. In this regard, Bair and Gereffi (2003) point out that the level of investment to increase productivity and income in a determined economy cannot be achieved with the national capital stock. Therefore, foreign investment of multinational companies is essential for poverty reduction (Topalli, Papavangelis, Ivanaj, & Ferra, 2021).

In this context, foreign direct investment and multinational companies are relevant dimensions for poverty reduction. FDI could impact on different sectors of the economy in function of investment amounts as well as its quality (Charaia, 2017; Narula & Pineli, 2017). MNE effects depend on its motivations and strategies (Charaia, 2017). Since MNE control value chains without necessarily have the ownership (Narula & Pineli, 2017), they can indirectly impact the poverty processes. Kok and Acikgoz (2009) argue that MNE and FDI are catalyst for socio-economic development of developing economies. However, Jindra, Giroud, and Scott (2009) states that the potential linkages and spillovers of MNE to recipient economy are a direct function of individual subsidiaries' objectives and activities.

In any case, Lodge and Wilson (2006) establish that resources and competencies necessary to reduce poverty are mainly incorporated in MNE. Particularly, London and Hart (2004) argue that MNE strategies oriented to the base of pyramid, focused on the local market and on local capacity building, facilitate the conditions for reduce domestic poverty. In this sense, Chelekis and Mudambi (2010) add that multinational companies can develop direct sales channels, integrating local micro-entrepreneurs into their value chains with positive economic and social results.

In addition, according to Barkemeyer (2011) MNE can contribute, through CSR strategies by expanding access to basic satisfiers and promoting the fulfillment of human and labor rights. Furthermore, for Utting (2007) CSR is a method of volunteerism as an option to the problem of poverty. Also, Williams, Frempong, Akuffo-Bea, and Onumah (2017) state that the social support of MNE through CSR contributes to economic and social objectives, including poverty, since most of these initiatives address issues of health, education, and employment.

Akwaowo and Swanson (2016) mention that MNE face the decision on how to act in accordance with the CSR guidelines to reduce poverty in recipient countries. Multinational enterprises CSR practices in the host country has been beneficial in reducing poverty (Pimpa, 2013). In this



Source: own elaboration

usmneva: US-MNE value added; pp: population living in poverty (below the national poverty line)

Fig. 1. Total US-MNE value added vis-a-vis poverty level in selected developing countries.

regard, [Onyeka and Ugochukwu \(2016\)](#) mention that legally propped CSR arrangements are a catalyst for economies and a powerful tool for poverty reduction, especially when investments are made in developing countries.

Additionally, [Visser \(2009\)](#) identifies that CSR in developing countries is directly linked to the socioeconomic environment in which firms operate. This is an opportunity to poverty reduction. In this context, [Ghauri and Wang \(2017\)](#) identify that MNE subsidiaries strategies, and domestic public policies, together, are central to materialize positive externalities of MNE in poverty mainly for developing economies. [Casanova and Dumas \(2010\)](#) mention that companies in emerging markets have to beyond law requirements and be a partner with the government and the civil society in reducing poverty. [Hoque, Khan, and Bhuiyan \(2017\)](#) comment that country can benefit under CSR in number of ways such as employment creation, hospital and school construction, contribution to GDP growth.

However, different authors discuss about the negative role of CSR in reducing poverty. [Fortanier and Van Wijk \(2010\)](#) argue that multinational companies in developing countries, could also have a perverse impact on the labor market through the hunting of employees of domestic firms. Additionally, [Jenkins \(2005\)](#) argues that although the proportion of people living on less than one dollar a day employed by MNE is low, employee training is concentrated at higher levels, containing the income of most employees and, in consequence. Also, he argues that products are not aimed at the lower class but at high-income consumers, so that the scale of production, by containing employment, does not reduce poverty. Furthermore, for him MNE have displaced local suppliers, reducing local employment and, in many cases, driving former workers into precarious employment. In brief, this suggests that MNE strategies are ineffective in terms of poverty reduction ([Yamin & Sinkovics, 2009](#)).

Lastly, literature identifies that FDI and MNE effects are conditional on a variety of factors, including characteristics of the recipient economy ([Charaia, 2017](#)). For example, [Yamin and Sinkovics \(2009\)](#) indicate that impacts of FDI depend both on human capital and infrastructure in host countries. Similarly, [Rugman \(2008\)](#) asserts that the impact of multinational corporations on development is understood by the interplay of “country-specific advantages” and “firm-specific advantages”. This is essential for combating poverty. A dynamic private sector seeking to maximize profits ([Lodge & Wilson, 2006](#)), generate employment and raise income (CEPAL, 2015), allows to offer better quality goods and services at a lower cost, and at the same time pays taxes.

US-MNE contribution to poverty reduction

As noted, US-MNE play a strategic role in reducing global poverty as they represent the world's greatest economic power and concentrate the largest companies on the planet. In this context, it seeks to show the effect of these global companies on poverty. The literature on the effect of US FDI or MNEs on poverty or economic development is extremely limited.

[Athukoralge \(2007\)](#) discusses positive evidence about the central role of MNE, including the American ones, in economic development. Following [Branstetter and Foley \(2010\)](#) US-MNE in China impact economic development, particularly poverty, via the labor market. However, they point out that the direction is indeterminate, since these corporations have similar probabilities to increase than to reduce employment at the national level. [Topple, Donovan, Masli, and Borgert \(2017\)](#) establishes that these companies could have an impact on economic development, measured by the SDGs, conditioned to international sustainability standards and guidelines in their global practices.

Likewise, [Ríos, Ferrer, and Sánchez \(2021\)](#) by a model of Social Responsibility in Mexico conclude that American MNE complement the actions of the government, acting together with it and with civil society in the face of common problems in developing countries, such as education, hunger, poverty and health, institutionalized issues positively in

the CSR of these companies. Confirming the argument of [Lodge and Wilson \(2006\)](#) about the need for cooperation between MNE and other actors as a mechanism to combat poverty. Specifically, [Yiu \(2014\)](#) argues that US multinational companies follow a code of conduct linked to poverty problems based on provisions on working conditions ([Van Tulder, 2008](#)).

Instead, according to [Kolk and Van Tulder \(2006\)](#), MNEs contribute to the creation of low-wage jobs, increasing inequality and poverty. They also drive local businesses out of the market, lead to abuse of power and lobbying of national governments and international institutions, and to the “Americanization” of lifestyles that affect savings and investment rates. Even more, US multinationals show a short-term orientation that prevents them from committing to community development; while tend not to respect human rights or destroy business networks ([Forstater, MacDonald, & Raynard, 2002](#)).

Determinants of MNE attraction

Macroeconomic factors appear as the main incentives for the localization of MNE. In the context of market-seeking investments, larger markets attract more MNE due to economies of scale ([Sharma & Yapa, 2010](#)). The literature finds a positive and significant effect between the market size (GDP) and MNE entry ([Khachoo & Khan, 2012](#); [Riedl, 2010](#)). It is just the growth in market size that stimulates attraction of this kind of foreign firms.

Likewise, another factor that stimulates MNE attraction is the market opening to international trade ([Kersan, 2013](#)). In line with this, [Hayakawa, Lee, and Park \(2013\)](#) suggest a negative relationship between tariffs and FDI. Also, economic freedom is associated with MNE attraction ([Jimenez, Duran, & de la Fuente, 2011](#); [UNCTAD, 2013](#)). [Pearson, Nyonna, and Kim \(2012\)](#) use the economic freedom index (of Fraser Institute), estimating a positive effect on MNE.

Similarly, the labor cost, reflected in the salary level, is determinant of MNE entry. Low salaries are interpreted as an advantage for localization, due to the lower production costs ([Hayakawa et al., 2013](#)). The development of industrial sector is translated into a MNE location determinant ([Du, Lu, & Tao, 2012](#)), because it offers economies of scale and agglomeration. Also, infrastructure, energy supply, communication facilities and transportation ([Dunning, 2000](#)), determine production and transaction costs, which influences the MNE localization. [Honglin \(2011\)](#) establishes that infrastructure improvements are an attractive factor for MNE.

The political environment influences the investment decision-making process by creating uncertainty. In particular, the institutional environment impacts the costs faced by investors and the protection of their interests. In this respect, among the most common factors considered is corruption. [Cole and Elliot \(2009\)](#) confirm that FDI is attracted to regions with high government efficiency and involved in the fight against corruption.

Determinants of poverty

The approaches of the poverty phenomenon are broad and multifactorial, which leads to a lack of consensus around a single definition. [Spicker \(1999\)](#) recognizes eleven possible ways to identify it based on: need, standard of living, insufficient resources, lack of basic security, lack of entitlements, multiple deprivation, exclusion, inequality, class, dependency and unacceptable suffering. Where there is an agreement is that poverty is linked to the lack or deprivation of well-being. Multidimensional views have become more relevant, despite this there is no consensus on the dimensions to be evaluated ([Cortes, 2014](#)).

In general, a well-being line is proposed for its measurement. This line identifies the population with insufficient income to acquire goods and services that cover feeding and non-feeding needs. Likewise, poverty depends on deficiencies such as educational lag, access to health services, social security, housing quality and spaces, access to basic

Table 1

Variables: Definition, source s and expected signs.

Dimension	Variable	Short name	Observations	Source	Expected sign
Poverty	Poverty	<i>pov</i>	Proportion of the population living below the national poverty line (%)	World Development Indicators (World Bank)	n.a.
	Lagged poverty	<i>pov_{t-1}</i>	Proportion of the population living below the national poverty line (%) lagged one period	World Development Indicators (World Bank)	(–)
USMNE	US Multinational enterprises	<i>usmne_{t-1}</i>	Value added of US companies abroad (US-majority-owned foreign affiliates) as a proportion of host country GDP (%), lagged one period	US Bureau of Economic Analysis	(+)
Public Expenditure	Public expenditure on education	<i>pee</i>	Value of public expenditure on education as a proportion of GDP (%). It includes current expenditure capital investments and transfers from all levels of government in each country (central, regional and local).	World Development Indicators (World Bank)	(–)
	Public expenditure on health	<i>peh</i>	Value of public expenditure on health as a proportion of GDP (%). It includes expenditures on health goods and services consumed, but excludes capital expenditures such as buildings, machinery, stock of vaccines, etc.	World Development Indicators (World Bank)	(–)
Governance	Government Effectiveness Index	<i>gei</i>	Perception of a country's citizens regarding the quality of public and civil services, and the degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to those policies. The index is normalized to range between 0 (lowest effectiveness) and 100 (highest effectiveness).	Worldwide Governance Indicators (World Bank)	(+)
Economic Factors	Unit Labor Cost	<i>ulc</i>	Sum of all monetary or in-kind payments received by employees for the provision of labor services, as well as government contributions to social security for the benefit of workers divided by the number of employees (dollars).	World Development Indicators (World Bank)	(–)
	Market size	<i>ms</i>	GDP per capita (GDP divided by mid-year population) (dollars)	World Development Indicators (World Bank)	(+)
Infrastructure	Productive specialization	<i>indgdp</i>	Ratio of industrial sector GDP to total GDP (%)	World Bank	(+)
	Telecommunications infrastructure	<i>celpho</i>	Number of cell phone lines. It includes active postpaid and prepaid subscriptions (used during the last three months). (subscriptions per 100 people).	World Bank	(+)
Political Factors	Democracy Index	<i>di</i>	It measures the quality of democracies considering the dimensions of electoral pluralism, government, political participation, political culture and civil liberty, which capture relevant aspects for democracy, universal suffrage, voter participation, perception of human rights protection and freedom to form organizations and parties. The range of values is between 0 and 100, with 100 being the highest quality of democracy.	The Economist Intelligence Unit	(+)

n.a.: not applicable

Source: own elaboration

services in housing and access to food.

Following Tsai (2011), there are four categories of theoretical-empirical aspects that explain poverty: economic development and openness, demographic and geographic aspects, political regime and social policy, and human capital. In this sense, the traditional models of economic growth identify that the processes of wealth creation, and an increase both in production and salary, are explained by processes of technological development and generation of capital, mainly through the increase of private investment (Acemoglu & Robinson, 2012). This must take place in a context in which investments flow freely to sectors where wealth is created and poverty conditions are improved (World Bank, 2019). In this regard, Miller, Anthoby, Roberts, and Tyrrel (2020) establish that countries with lower levels of poverty simultaneously have greater economic freedom.

In addition, other factors can directly affect poverty. First, social programs affect the dynamics of poverty, and particularly those focused on combating it (Kenworthy, 1999). Second, the minimum wage policy affects poverty when supplementary policies are implemented to reduce non-economic poverty (Jadoon, 2021). At the same time, Muhammad, Zahid, Sajjad, Amjad, and Amatul (2011) establish that inflation and financial markets affects poverty. Finally, Mehedintu, Soava, and Sterpu (2019) affirm that international remittances influence the resources available in households and, therefore in poverty.

Tariq and Nauman (2015) identify that, variables such as experience, age squared, and employment status in agriculture are negatively related to the probability of being poor. In contrast, the variables positively related to the probability of falling into a situation of poverty are the size of the household, the age and sex of the head of the household, and the urban or rural dimensions. Biyase and Zwane (2017) add that the race, level of education, marital status and employment status of the

head of the household determine the situation of poverty in households.

Tsai (2011) states that population growth and secondary education opportunities first level predictors of poverty reduction. While second level factors correspond to politics -democracy or military spending- and government social expenditure. Likewise, he establishes that trade liberalization does not significantly affect poverty. In contrast, Aleman (2021) finds that Trade liberalization and globalization contribute to a reduction in labor poverty.

Methodology and data

Methodology

The methodological procedure includes three estimation stages: i) the effects on poverty of previous poverty levels, US-MNE, public expenditure on education and health, and political aspects; ii) the determinants of US-MNE attraction to developing economies, including economic and political factors; and, iii) the effects on poverty of these determinants. Two hypotheses are tested following this three-stage procedure. First, US-MNE contributes to the reduction of poverty and, second, the US-MNE attracting factors also reduce poverty. In this way, considering the structure of the information, a dynamic panel data econometric methodology is used that includes 18 developing countries in which US-MNE operate (Table A of the Annex).

Due other factors not included in the poverty analysis just show small-unobservable variations across time, a dynamic model with specific effects to each country and invariable over time is used. Thus, the sys-GMM model (Blundell & Bond, 2000) is considered, which significantly improve precision and reduce small-sample bias (Blundell & Bond, 2000). The model includes both first difference -removes the

country-invariant effects- and level equations, and incorporates a set of instrumental variables as well as the lagged dependent variable (Bun & Windmeijer, 2007).

Three specification tests are used to evaluate the consistency of the estimator: i) Hansen Test of over-identification of restrictions to test the joint validity of the instruments; ii) difference-in-Hansen test, which is the difference between the Hansen statistics of the differential GMM and the sys-GMM; and, iii) Arellano-Bond autocorrelation test to determine the existence of first and second order autocorrelation. Also, in order to limit number of instruments, and avoid a specification error, the “collapse” option in STATA is used. Since the two-stage sys-GMM estimator may be biased, the Windmeijer correction to standard errors is applied. This methodology is asymptotically more efficient than the one-stage sys-GMM (Windmeijer, 2005).

Finally, the analysis considers the endogenous, exogenous or pre-determined nature of the variable set, which include economic and political factors characterized by their different processes. The equations to be estimated are:

$$pov_{it} = \alpha + \beta_1 pov_{it-1} + \beta_2 usmne_{it-1} + \beta_3 pee_{it} + \beta_4 peh_{it} + \beta_5 gei_{it} + \varepsilon_{it} \quad (1)$$

$$usmne_{it} = \alpha + \beta_1 usmne_{it-1} + \beta_2 eco_{it} + \beta_3 pol_{it} + \beta_4 infra_{it} + \varepsilon_{it} \quad (2)$$

$$pov_{it} = \alpha + \beta_1 pov_{it-1} + \beta_2 feco_{it} + \beta_3 pol_{it} + \beta_4 infra_{it} + \varepsilon_{it} \quad (3)$$

where α is the constant to be estimated, i the individual observation (country), t the year, pov poverty, $usmne$ the US-MNE operating in the i -th country, pee public expenditure on education, peh public expenditure on health, and gei the government effectiveness index. Likewise, eco are economic factors at macroeconomic level, pol political factors, $infra$ infrastructure aspects, ε the error term and the parameters β_1 to β_5 the coefficients to be estimated. Definition, data sources and expected signs of variables are shown in Table 1.

Data

The variables were selected after literature review. Poverty is

included in the model as a regressor with a lag to consider the persistence of poverty in the country (Fabrizi & Mussida, 2020). Similarly, the $usmne$ variable is incorporated with a lag since its direct effects, multipliers or spillovers take some period of time to be felt in the economy (Agosin & Machado, 2005; Mühlen & Escobar, 2020). Anderson, Jalles, d'Orey, and Esposito (2018) point out that public expenditure on education and health are widely considered in the literature to reduce poverty and have the greatest probability of reducing it. Jindra and Vaz (2019) and Aloui (2019) establish that, depending on development degree of each country, governance influences poverty reduction.

Riedl (2010) and Bayraktar and Sayek (2017) consider a negative effect of labor costs on FDI, as a proxy of MNE. Khoon and Nyen (2011) show that the market size influences investment decisions done by foreign companies. Riedl (2010) finds that foreign investments are attracted by host economies specialized in the industrial sector. Wahyu (2017) estimates that telecommunication infrastructures impact on FDI inflows. Lastly, Pinar and Stengos (2020) point out that democracy in the domestic economy tends to attract investment from abroad.

Results and discussion

Results

Following a dynamic panel methodology (sys-GMM) without and with Windmeijer correction, the consistency of the estimator is observed in all cases (Table 2). The tests do not reject the null hypotheses of the joint validity of the instruments (Hansen Test) nor of the validity of the additional instruments (Diff-in-Hansen Test) in any of the specifications. Likewise, the AR(2) test indicates that there is no evidence of second-order autocorrelation. Therefore, all specifications are considered to be well defined and adequately reflect the effects of US MNEs on poverty in the analyzed developing countries. Furthermore, the results are similar for the two procedures, maintaining the signs and significances. Specifically, in the estimates with Windmeijer correction (robust standard errors) the statistical significance decreases for all the coefficients because they face wider acceptance intervals of the null hypothesis,

Table 2
Results of sys-GMM estimates and two-stage sys-GMM with Windmeijer correction.

Explanatory variables	sys-GMM estimates			sys-GMM with Windmeijer correction estimates		
	[1] Effects of US-MNE on poverty in developing countries	[2] Determinants of the US-MNE attraction to developing countries	[3] Effects of the determinants of the attraction of US-MNE on poverty in developing countries	[4] Effects of US-MNE on poverty in developing countries	[5] Determinants of the US-MNE attraction to developing countries	[6] Effects of the determinants of the attraction of US-MNE on poverty in developing countries
<i>pov-1</i>	0.6305* (0.000)	–	–0.7432* (0.000)	0.6587* (0.015)	–	–0.6947* (0.015)
<i>usmne-1</i>	–0.0468** (0.055)	0.7580* (0.001)	–	–0.0803** (0.061)	0.8704* (0.014)	–
<i>pee</i>	–0.4398* (0.042)	–	–	–0.3926* (0.048)	–	–
<i>peh</i>	–0.7357** (0.064)	–	–	–0.5660** (0.069)	–	–
<i>gei</i>	–1.7277** (0.071)	–	–	–1.0914** (0.073)	–	–
<i>ulc</i>	–	0.3912 (0.187)	–0.0231* (0.000)	–	0.0521 (0.198)	–0.0736* (0.028)
<i>ms</i>	–	0.0169* (0.046)	–0.7356* (0.039)	–	0.1632** (0.063)	–0.4155* (0.047)
<i>indgdp</i>	–	0.0728* (0.038)	–0.5284** (0.058)	–	0.5286* (0.046)	–0.7421** (0.064)
<i>di</i>	–	0.3116* (0.040)	–0.8118** (0.059)	–	0.2339* (0.047)	–0.1975** (0.063)
<i>celpho</i>	–	0.0218** (0.064)	–0.0836 (0.199)	–	0.4871** (0.088)	–0.9238 (0.206)
<i>c</i>	7.2343* (0.000)	0.8820** (0.052)	8.0838* (0.042)	4.7621* (0.007)	1.9802** (0.066)	4.8319** (0.073)
Observations	162	162	162	162	162	162
Number of instruments	43	34	34	43	34	34
AR(1) [Pr > z]	0.06	0.25	0.06	0.08	0.27	0.09
AR(2) [Pr > z]	0.24	0.34	0.22	0.24	0.35	0.23
Sargan/Hansen Test	0.98	0.99	0.98	0.49	0.32	0.08
Diff-in-Hansen-Test	0.82	0.94	0.97	0.88	0.53	0.09

p-values in (). *, ** y *** significant at 1, 5 y 10 per cent.

Source: Own elaboration based on STATA estimates.

which allows a more adequate inference.¹

Effects of US-MNE on poverty in developing countries

Regarding the effects of the MNE-US (Table 2, columns 1 and 4), in general, positive and statistically significant coefficients are estimated. The value added by this type of company lagged one period, contributes to the reduction of this social problem in the developing countries in which they operate. This result is in line with Cabrera (2016) and Lodge and Wilson (2006).

Possible explanations are that, although companies seek to maximize benefits for their shareholders, their actions generate positive externalities such as greater competition in domestic markets or increases in public infrastructure. Likewise, they generate jobs directly and indirectly (ECLAC, 2015) and establish links with local companies, bringing them closer to global markets. Duque et al. (2012) establish that MNEs from developed countries work closely with stakeholders through specific programs related to microfinance, food, health, vulnerable groups, employment and productive development, which can contribute to reducing social deprivation. In any case, Ake (2002) points out that MNEs provide income flows necessary to achieve higher welfare standards. All this modifies the conditions in which poverty is generated, so these private actions possibly complement public actions to reduce poverty.

However, a significant and positive effect of the lagged poverty variable is estimated. This indicates that poverty tends to persist over time, despite the implementation of public policies or actions from the private or social sectors to combat it. Furthermore, this coefficient suggests the difficulty of eradicating poverty in this group of countries. Persistence can be explained by characteristics of people or poverty trap mechanisms in individual economies (Biewen, 2014).

In the case of public expenditure, there is a significant effect with a negative sign, which means that spending on education and health contributes to the reduction of poverty, presumably by redistributing income in a pro-poor direction. This is consistent with the idea that fiscal policy plays a distributive role in this group of countries. A similar argument is in Anderson et al. (2018).

In addition, a significant and negative coefficient for governance is estimated. This implies that the greater the effectiveness of the government, the lower the poverty. Thus, increasing the quality of public policies and the credibility of governments has positive returns in terms of poverty reduction. Similar results are found in Aloui (2019). Furthermore, the magnitude of the coefficient suggests pro-poor oriented governance that improves the scale and efficiency of service delivery to the poor (Dombia, 2018).

Determinants of US-MNE attraction to developing countries

Regarding the determinants of the attraction of US-MNE (Table 2, columns 2 and 5), significant coefficients and positive signs are observed for all the variables, except for labor cost. In particular, a larger economy, measured by GDP per capita, greater specialization in the industrial sector, a higher rate of democracy, and wider access to cell phones,

attract more US companies to operate in the domestic economy of developing countries. Employment compensations are not statistically significant factor in attracting US-MNE. In this way, countries with larger markets tend to have a greater endowment of economic resources and higher incomes that boost demand and increase the minimum scale of operation, which in the end translates into more foreign companies (Li & Yue, 2008).

Likewise, industrial production specialization tends to attract US-MNE, mainly because it allows taking advantage of economies of scale and agglomeration, particularly in the manufacturing sector (Pietrobelli, Rabellotti, & Sanfilippo, 2013). These factors help MNEs adapt more efficiently to the domestic economy. Political values such as democracy drive the attraction of US-MNE, probably because it represents less uncertainty regarding policies, reforms and guarantee of human and property rights (Arregle, Toyah, Hitt, & Beamish, 2015).

Also, a significant coefficient of $usmne_{t-1}$ is appreciated in the attraction of new US-MNE. That is, previous operation of this type of company tends to attract new companies from the US. One explanation is that established companies build a productive context that favors the operation of new companies, either because they are part of the production chain or because of externalities associated with the operation of the former (infrastructure, supplier development, new markets, economies of scale, scope and agglomeration, skilled labor, etc.) that can reduce transaction costs. For Petronela (2015), the existence of a business environment, which includes previously established foreign companies, is a magnet for new multinational enterprises.

Similarly, the infrastructure coefficient, measured by cell phone lines, is positive and significant, a result also found by Cuervo and Genc (2015), for whom multinational enterprises from developed countries seem to rely on well-established infrastructures in the developing countries in which they participate. Briefly, the estimated infrastructure coefficient is in line with the postulates of Dunning (2000) and Honglin (2011).

In contrast, the unit labor cost is not a statistically significant factor for the attraction of US-MNE. A similar result is pointed out by Konings and Murphy (2006), who find no relevance of wage differences as a determinant of employment in multinational enterprises. One plausible explanation is that the labor costs paid by US-MNE reflect higher levels of productivity. In this regard, although they are oriented towards the search for efficiency, the possible lower labor costs in other economies do not compensate for moving from one economy to another.

Effect of the determinants of US-MNE attraction on poverty in developing countries

Regarding the role of the US-MNE attraction factors in poverty (Table 2, columns 3 and 6), it can be seen that all variables have a significant and positive impact on poverty reduction (negative sign), except for telecommunications infrastructure (not significant). Thus, larger domestic markets, measured by GDP per capita, contribute to poverty reduction. Skare and Druzeta (2016) estimate a similar result. Skare and Druzeta (2016) add that this effect is generated regardless of the initial level of inequality. A higher per capita income means a virtuous circle of prosperity and opportunity for countries, through demand, employment, and economic growth, which favors the economic conditions of society.

Likewise, productive specialization in the manufacturing sector is a crucial factor for poverty reduction. Lavopa and Szirmai (2012) establish a similar idea. Poverty is intrinsically linked to the dynamics of the country's productive structure. A structure concentrated in manufacturing, which tends to show higher productivity, translates into value added and better paid employment. At the same time, it stimulates job creation in other sectors through backward and forward linkages, thus contributing to poverty reduction. Furthermore, as ECLAC (2015) points out, a dynamic manufacturing sector tends to generate employment, raise income and reduce poverty.

¹ Regarding the tests of the fixed effects model, it is observed that the BPLM test rejects the null hypothesis in all cases, therefore individual effects are accepted. Likewise, the Hausman specification test always rejects the null hypothesis (high p-values, greater than the conventional level of 0.05), so the estimates follow the form of fixed effects. Additionally, the Durbin-Watson (modified DW) and the Baltagi-Wu LBI tests reject the null hypothesis that there is no first-order serial correlation. Also, the tests indicate that the data do not show cross-sectional dependence (the Pesaran test does not reject the null hypothesis) or multicollinearity (VIF less than 10) in any of the specifications. However, there is evidence of heteroskedasticity (the tests reject the null hypothesis associated with homoscedasticity).

Furthermore, as the quality of democracy strengthens, as measured by the democracy index, poverty tends to decrease. Meléndez and Miguel (2016) establishes that individuals who live in democracies find better alternatives to satisfy basic needs. In particular, aspects of democracy such as the rule of law, control of corruption, government effectiveness, electoral pluralism, and civil liberties are variables that can contribute to poverty alleviation. Democracy represents a positive factor for good governance, impacting the conditions of poverty (Sebudubudu, 2010).

Finally, the unit labor cost influences the reduction of poverty. Therefore, the impact on poverty would be explained by a redistributive effect and to a lesser extent by income growth (Yusof, Affan, Azman, & Muzafar, 2016), which can be offset by an unemployment effect (Sotomayor, 2021). In any case, these effects tend to occur mainly in high-income economies, where the operating conditions of the US-MNE are more adequate and the risk comparatively reduced, favoring not only their profitability, but also the fight against poverty and their nature. Also, Du et al. (2012) and Hayakawa et al. (2013) point out that low wages, generally paid in developing economies, are interpreted as an advantage for attraction, due to the decrease in production costs.

Likewise, to check the robustness of results two different specifications were estimated following the sys-GMM methodology. First, the control variables were removed for equation. Second, equations (1–3) were estimated using lags of all the explanatory variables as instruments. Results are shown in Table 3. Briefly, almost all the variables maintained their significance and sign. Particularly, US multinational enterprises remain as a factor for poverty alleviation in the countries analysed. In consequence, it could be argued that in a developing nation with a specific combination of economic, political, and infrastructural issues, US-MNE contribute to poverty reduction.

Discussion

The results show that in a global way the presence of the US-MNE is favourable to the reduction of poverty in the developing recipient countries. All the variables studied, except labour cost, attract more US companies to operate in the domestic economy of developing countries. A similar finding is reported by UNCTAD (2013). Thus, variables such as GDP per capita, industrial sector specialization, government spending, the democracy index, and communications infrastructure imply activity

by multinational companies in the domestic economy.

The estimated contribution of US-MNE to poverty reduction in developing countries could be linked to refusal of child labour, minimum wage, and the supply of quality and safe products (Hoque et al., 2017). However, the cost could be measured in terms of employment precariousness (Jenkins, 2005).

Also, it is possible that countries with a trade agreement with the United States benefit, in terms of poverty reduction, from the presence of US-MNE. Nevertheless, this would favor the thesis according to which free trade agreements increase inequality by mainly benefiting the participating countries. In spite of this, the US-MNE with access to a free trade agreement positively affect the poverty conditions of the host country because they produce and export from it; while the effect on poverty of the US-MNE without access to a trade agreement is through serving the domestic market of the country in which they operate.

In any case, the estimates indicate that the presence of US-MNE favours the poverty reduction; benefit that can be achieved through employment creation. Even more, policy measures seeking to attract these companies, such as the promotion of the domestic market, industrialization and democracy, without reducing labour remuneration, simultaneously contribute to the fight against poverty.

Conclusions and recommendations

The paper provides robust evidence on the effect of US multinational enterprises on poverty reduction for a group of 18 developing countries during the period 2009–2018. Following a sys-GMM econometric methodology, it is confirmed that US multinational enterprises operating in developing countries contribute to poverty reduction in those economies.

In general, the results are consistent with the qualitative literature that analyses the effect of multinational companies on poverty, basically from the perspective of corporate social responsibility. Therefore, from this point of view, US-MNE can assume a central role in combating poverty, and in achieving the SDGs, to the extent that they implement CSR programs that include issues related to human and labour rights, local development, ethics and transparency, volunteering, and in general, a balance between economic, social and environmental aspects.

Furthermore, it is found that the empirical factors that determine the attraction of US-MNE to these countries positively influence the

Table 3
Determinants of poverty (sys-GMM). Alternative estimations.

Variables	[1] Effects of US-MNE on poverty in developing countries		[2] Determinants of the US-MNE attraction to developing countries		[3] Effects of the determinants of the attraction of US-MNE on poverty in developing countries	
	Removing control variables	Explanatory variables lagged	Removing control variables	Explanatory variables lagged	Removing control variables	Explanatory variables lagged
<i>pov-1</i>	0.8541* (0.000)	0.6363* (0.024)	-	-	0.8582* (0.000)	0.7336* (0.000)
<i>usmne-1</i>	-0.0632* (0.045)	-0.1040*** (0.101)	0.9155* (0.020)	0.6759* (0.000)	-	-
<i>pee</i>	-	-0.3515* (0.031)	-	-	-	-
<i>peh</i>	-	-0.5387*** (0.063)	-	-	-	-
<i>gei</i>	-	-1.2296** (0.084)	-	-	-	-
<i>ulc</i>	-	-	-	0.1195* (0.818)	-	-0.8310*** (0.095)
<i>ms</i>	-	-	-	0.1772** (0.066)	-	-0.2019*** (0.077)
<i>indgdp</i>	-	-	-	0.0971** (0.058)	-	-0.1157 (0.138)
<i>di</i>	-	-	-	0.6067*** (0.078)	-	-0.0126** (0.085)
<i>celpho</i>	-	-	-	0.0425 (0.169)	-	-0.3578*** (0.099)
<i>c</i>	0.3457* (0.044)	5.3423* (0.028)	0.4020* (0.021)	1.3887*** (0.054)	0.3943* (0.020)	9.3930* (0.047)
Observations	162	162	162	162	162	162
Number of instruments	34	43	25	34	25	34
AR(1) [Pr > z]	0.06	0.09	0.22	0.25	0.06	0.05
AR(2) [Pr > z]	0.23	0.25	0.33	0.39	0.23	0.24
Sargan/Hansen Test	0.98	0.49	0.81	0.99	0.77	0.92
Diff-in-Hansen-Test	0.79	0.66	0.63	0.91	0.69	0.82

p-values in (). *, ** y *** significant at 1, 5 y 10 per cent.

Source: Own elaboration based on STATA estimates.

reduction of poverty in these countries. That is, all those public policy measures linked to the promotion of the domestic market, productive specialization in the manufacturing sector or democracy, not only tend to attract new US companies, but also simultaneously combat poverty levels.

Since US-MNE play an active direct and indirect role in poverty reduction, they can be considered as a central mechanism of the poverty dynamics in developing countries. The total resources, monetary or not, that US-MNE employ in the economies in which they operate contribute to breaking or weakening cycles of poverty by complementing domestic investments. These investments influence the labour market directly and indirectly through positive externalities such as the development of suppliers, expansion of markets for local companies, economies of scale, scope, and agglomeration, among others.

Thus, by acting as an efficient engine of change, US-MNE alter the conditions in which poverty is created. US foreign companies are institutions that have the necessary resources and skills to complement markets in developing countries, and as a side effect reduce their poverty levels. In any case, coordinated and complementary efforts between public and social actors, other private sector agents, and international organizations are always required to design and implement strategies

that directly affect poverty reduction and legitimize efforts to combat it. It is recommended to establish public policies that strengthen the domestic market through the creation of social responsibility enterprises and particularly an industrial policy that promotes the manufacturing sector complemented with democratic practices such as respect for civil liberties.

CRedit authorship contribution statement

Omar Neme Castillo: Conceptualization, Data curation, Investigation, Methodology, Validation, Writing – original draft, Writing – review & editing. **Cesaire Chiatchoua:** Conceptualization, Data curation, Investigation, Methodology, Validation, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Annex

Table A. Countries in which US-MNE operate (data availability)

Argentina	Dominican Republic	Mexico
Brazil	Ecuador	Panama
Chile	Egypt	Peru
China	Honduras	Philippines
Colombia	Indonesia	South Africa
Costa Rica	Malaysia	Thailand

Source: Own elaboration based on US Bureau of Economic Analysis.

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