ISSN: 1839 - 0846

FOREIGN DIRECT INVESTMENTS AND MANUFACTURING SECTOR PERFORMANCE IN NIGERIA, (1970-2009)

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ABSTRACT

The study examined the relationship between foreign direct investment and the value added to the manufacturing industry in Nigeria, between the period 1970 and 2009. In view of the development and industrialising desires of Nigeria, as well as the foreign aid received in form of private investments, it is pertinent to examine the effect the presence of multinationals has had in shaping the Nigerian manufacturing industry. Using the autoregressive lag distribution technique to determine the relationship between foreign direct investment and manufacturing value added, it was discovered that in the long-run, foreign direct investments have had a negative effect on the manufacturing sub-sector in Nigeria.

Keywords: *Investments, Multinationals, Spillovers, Industrialization*

1. INTRODUCTION

One of the most remarkable trends in the world economy over the past three decades has been increasing global economic integration. This is significantly symbolized by the rising wave of foreign private investment, since the heyday of the "Washington Consensus", which tilted the stock of development literature in favour of globalization. As Structuralist thinking on development gave way to neo-liberal resurgence, conventional wisdom shifted towards the view that foreign investment was good for development. Consequently, developing countries had to depend less on the dwindling official resource flows to assist the process of economic development. Thus, many developing countries had to turn to foreign private resources in order to fill the resource gap in their quest for economic development.

With respect to economic development, the lessons of experience, offered by the British and later industrial revolutions, have made industrialization a chief strategy. The relationship between industrialization and development is surprisingly diverse and many reasons have been put forward to explain why developing economies are so committed to it. However, the international economic system, shaped and directed by orthodox economic doctrine of market determinism, strongly influences the industrial progress of developing countries in direct and indirect ways. In the light of this relationship, it is pertinent to note that, the international environment represents both constraints on and opportunities for the expansion of third world industrial production (Rajnesh Chandra, 1992). In particular, direct influences of the international environment on third world manufacturing are felt through the inflow of foreign private investment. The effects of the international economic environment on third world industrialization reached its peak, when the new global economic order stipulated a nonnegotiable tripod set of conditions, among others, that qualify developing economies for global economic integration, and for partaking in the development benefits this is deemed to offer. Codified in John Williamson's well-known Washington Consensus, stabilization, privatization and liberalization became the arrow-head of economic policy agenda for industrial development, in much of the periphery of the World Economic System. This inspired a wave of economic reforms in Latin America and Sub-Sahara Africa and fundamentally reshaped the policy landscape in these developing regions. In Nigeria, reforms moved with less conviction and speed, nevertheless, a substantial portion of the neo-liberal policy agenda was adopted. Thus, getting prices right, reducing the role of the state and trade liberalization became the thrust of economic policy to court foreign private investment for expanding the industrial base of the national economy. Hence, it is not off place to find out if the presence of foreign investments has significantly impacted the manufacturing sector performance, which is a sub-sect of the industrial sector.

1.2. Reason for the Study

In line with the background argument of the Washington consensus, foreign private capital can theoretically expedite the process of industrial development as well as manufacturing sub-sector in poor countries by providing industry, capital, infrastructure, employment, international market access, revenue and technology. However, the wide variation in the success and failure of developing countries to practically maximise domestic

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benefits and minimise negative externalities of foreign investment extended the questioning of globalization of investment beyond its theoretical frontiers. In particular, the issue of how beneficial foreign direct investment is for developing countries forms the kernel of empirical controversy (see for example, Haddad and Harrison, 1993; De Mello, 1997; Aitken and Harrison, 1999; Lipsey and Sjoholm ,2004; Akinlo, 2004; Carcovic and Levine, 2005; Latorre,2008; Oladipo and Vasquez-Galan, 2009; Aizenman, *et al*, 2011; Iysa Ipek, 2011). Indeed, few issues have generated more controversy in the post-war history of North-South relations than those connected with the role of foreign direct investment in the industrialisation of developing countries. The focus on FDI is not without reasons. First, unlike loans, FDI can bring development capital without repayment commitments. Second, FDI is far more than mere capital: it is a uniquely potent bundle of capital, contacts, managerial and technological knowledge with potential spillover benefits for host country firms. Third, unlike other forms of capital flows, FDI has proven to be resilient during crises. (Lipsey, 2001; Dadush, Dasgupta, and Ratha, 2000). This is evident in the Latin American debt crisis of the 1980s, during the Mexican crisis of 1994-95, and during the Asian financial crisis of 1997-98. These traits have engendered an intense competition for foreign direct investment by developing and transition economies. Despite these attributes, the controversy on whether or not FDI constitutes ladder to development rages on. In the midst of this controversy arises the need for country- specific assessments of the role of foreign direct investment in national industrialisation efforts, with particular emphasis on the manufacturing sub-sector. This is the motivation behind this study.

1.3 Research questions

In order to put the study in the right perspectives, the main question of interest is to find out how significant has the presence of FDI impacted on the development of the manufacturing industries in Nigeria?

1.4. Research Objectives

The broad objective of the study is to examine the effect of foreign investments on the performance of manufacturing sub-sector in Nigeria.

The Specific objective is to:

- carry out a trend analysis on the flow of foreign direct investment and its effect on the manufacturing subsector in Nigeria within the study period;
- examine the relationship between FDI and Manufacturing sector performance in Nigeria and
- find out the significance of FDI on the Manufacturing sub-sector in Nigeria.

1.5. Significance of the study

In view of the vision 20:20:20 of Nigeria, which is to be one of the topmost 20 economies by the year 2020, the manufacturing sub-sector is key to Nigeria's industrial quest. Therefore, it is important to find out whether or not FDI affects industrial development may be the key to understanding the path to industrialization in Nigeria. This will enable policy levers to be activated in the right direction, to maximize both FDI inflows and the gains from FDI.

1.6 Plan of Work

Sequel to the background of the study, previous studies will be examined to find out the nexus between FDI and manufacturing sector performance. Section 3 will examine the theoretical framework and the model specification, while section four presents the results of the analysis carried; section five discusses the result and section six concludes the study.

2. LITERATURE REVIEW

2.1 The Concept of FDI and Manufacturing Industry

World Bank (2004) defines FDI as the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is also the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. FDI is used as percent of GDP, because it allows us to adjust the level of foreign investment for the size of the host country's economy. Thus, normalizing the level of investment is useful because the size of a country's GDP is relevant to the amount of FDI that it receives, and allows us to compare the level of FDI between countries.

But industry can be said to be "a particular way of organizing production and assumes there is a constant process of technical and social change which continually increases society's capacity to produce a wide range of goods" (Hewitt et al.1992a:6). The manufacturing sector is particularly important in the process of industrialization because of its multi-dimensional benefits to the development process. Indeed, some authors define industrialization in terms an increase in the share of the gross domestic product contributed by the manufacturing sector (Rajnesh Chandra, 1992). In developing its Competitive Industrial Development Index, the

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United Nations Industrial Development Organisation (UNIDO) defined the components of the index in terms of the attributes of a country's manufacturing sector (UNIDO, 2009). Accordingly, industrial development report identified Manufacturing Value Added (MVA) as one of the measurement of industrial performance.

2.2. Empirical literature on the effects of multinationals and foreign direct investment

2.2.1. Multinationals are more productive than domestic firms

The comparison with those firms that do not have foreign operations is clear: MNEs are much more productive. This outcome is obtained in studies using either total factor productivity (Doms and Jensen, 1998; Evenett and Voicu, 2001; Lipsey, 2002) or labour productivity (Doms and Jensen, 1998; Djankov and Hoekman, 2000; Conyon et al., 2002; Helpman et al., 2004). This makes a lot of sense, because, as already mentioned, MNEs have "a very distinctive bundle of capabilities" (Barba Navaretti and Venables, 2004, p. 278), the "ownership advantages" on which the OLI paradigm is based (Dunning, 1977, 1979, 2000). An interesting taxonomy has been found. MNEs are larger and more productive than exporting firms, which in turn, are also larger and more productive than firms with no foreign operations (Helpman et al.,2004; Helpman, 2006; Greenaway and Kneller, 2007).

2.2.2. Multinationals pay higher wages than domestic firms

Many studies support this conclusion (Agarwal, 1980; Aitken et al., 1996; Doms and Jensen, 1998; Djankov and Hoekman, 2000; Conyon et al., 2002; Brown et al., 2003; Barba Navaretti and Venables, 2004, chapter 7; Lipsey, 2002; Lipsey and Sjoholm, 2003, 2004; Huttunen, 2007). This result holds for MNEs operating in both developed and developing countries. The reasons for this, however, are not clear and there are many possible explanations:

1) Because MNEs tend to be more prevalent in sectors which employ a large number of nonproduction workers and have high levels of R&D (Molero and Buesa, 1993; Markusen 1995; Molero, 2000; Bajo-Rubio and López-Pueyo, 2002; Markusen, 2002, chapter 1; Barba Navaretti and Venables, 2004, chapter 1; Blonigen 2005). Accordingly, many of their employees receive higher wages, pulling average wages up.

2) MNEs usually are large firms (Molero, 2000; Barba Navaretti and Venables, 2004, chapter 1; Djankov and Hoekman (2000); Helpman et al., 2004; Helpman, 2006), and large firms, in general, tend to pay higher wages (Lipsey, 2002).

3) As MNEs carry with them a bunch of superior assets, this should raise labour productivity, ceteris paribus. Wages remunerating more productive labour experience a tendency to be higher, unless the MNE has considerable market power in the labour market. We know that market power in the labour market will diminish if MNEs are in urban areas because competition from other firms is likely to flatten their perceived labour supply (Brown et al., 2003). In this latter case, maybe higher wages are due to higher productivity.

4) MNEs can pay higher wages to avoid their employees to leave and work for other firms, thus transferring valuable MNEs' knowledge to other firms.

5) It could also be the case that the labour hired by MNEs is more productive per se. MNEs may choose the best workers by paying them more than the rest of firms. Several studies deal with this latter point. Conyon et al. (2002) use a sample of firms in the United Kingdom, which have been acquired by domestic or foreign firms. Their dataset contains firms' performance before and after the change in ownership. This helps them to isolate the effect of "foreign ownership". Interestingly, they find that labour productivity of firms acquired by foreigners was lower than the labour productivity of the firms acquired by domestic firms. This would suggest that MNEs were not choosing firms with the best employees. Lipsey and Sjoholm (2004), after controlling for the quality of labour, find a substantial wage premium in MNEs. However, as they estimate the wage premium without fixed effects for individual establishments, there may still be unmeasured characteristics (e.g., capital intensity) of individual firms that are associated with both high wages and foreign ownership. Therefore, there may be other factors accounting for the differences in wages, apart from skill levels. In another study, which includes establishment fixed effects, Lipsey and Sjoholm (2003) still obtain a wage premium for workers in foreign firms. Huttunen (2007) has analysed the effects of foreign acquisitions on wages of different skill groups using panel data on Finnish establishments, which include plant-specific fixed effects and more modern econometric techniques. Her results also indicate the existence of a wage premium in foreign firms. This gives evidence for the idea that in Finland higher wages in foreign firms are not due to the quality of the workforce, but to foreign ownership itself.

2.2.3 Foreign direct investment and economic growth

MNEs often exhibit more advanced techniques and high levels of R&D expenditures, possess higher skills and experience, and so on. These characteristics lead to think about the role of MNEs as promoters of technological innovation and progress and, therefore, of economic growth. However, given the "intangible" nature of these assets it may be difficult to empirically grasp their impact on growth. What are the results of empirical studies? These studies have found that FDI increases growth when host economies characteristics point to the existence

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of an "absorptive capacity". What exactly constitutes that absorptive capacity varies. It may be related to a high income level (i.e., rich) countries (Blomström, Lipsey and Zejan, 1994), an open trade regime (Balasubramanyam et al., 1996), a highly educated workforce (Borensztein et al., 1998, Campos and Kinoshita, 2002) or well-developed financial markets (Alfaro et al., 2004; 2006). An exception to this positive relationship is the study by Carkovic and Levine (2005). Using a panel for 72 economies over the period 1960-1995 they find no evidence that either the level of education, income, trade openness or the financial system development are critical for the effect of FDI on growth. Nor do FDI flows themselves impact on GDP growth, after controlling for endogeneity, country-specific effects and the inclusion of lagged dependent variables in the growth regression. However, using the same methodology in an analysis for a group of developed and homogeneous economies, Bajo-Rubio et al. (2008) have found a clear positive impact of FDI on growth. This latter analysis again shows that due to the presence of absorptive capacity, in this case, in the Spanish regions, FDI flows increase growth in them.

2.3 Empirical Evidence from Nigeria

There are studies on the FDI-growth nexus in Nigeria in the FDI literature. In a work on FDI and economic growth in Nigeria, Otepola (2002), reported a low level of existing human capital which suggests that the human capital (labour) available in Nigeria is not FDI inducing. The implication is that human capital requirement for FDI to impact on growth is absent in the Nigerian economy. Akinlo (2004) found that foreign capital has a small and not statistically significant effect on economic growth in Nigeria. He noted that export, labour, and human capital are positively related to economic growth in Nigeria. Ayanwale and Bamire (2001) assessed the influence of FDI on firm level productivity in Nigeria and report a positive spillover of foreign firms on domestic firms' productivity. Oyinlola (1995) conceptualized foreign capital to include foreign loans, direct foreign investments and export earnings. Employing Chenery and Stout's two-gap model (Chenery and Stout, 1966), he concluded that FDI has a negative effect on economic development in Nigeria. Adelegan (2000) explored the seemingly unrelated regression model to examine the impact of FDI on economic growth in Nigeria and found out that FDI is pro consumption and pro-import and negatively related to gross domestic investment. Aluko (1961), Brown (1962) and Obinna (1983) report positive linkages between FDI and economic growth in Nigeria. Edozien (1968) discussed the linkage effects of FDI on the Nigerian economy and submits that these have not been considerable and that the broad linkage effects were lower than the Chenery–Watanabe average (Chenery and Watanabe, 1958). Oseghale and Amonkhienan (1987) found that FDI is positively associated with GDP, concluding that greater inflow of FDI will spell a better economic performance for the country. Ayanwale (2007) investigated the empirical relationship between non-extractive FDI and economic growth in Nigeria. Using OLS estimates, he found thatFDI has a positive link with economic growth. However, he cautioned that the overall effect of FDI on economic growth may not be significant. In a cross-country study, Herzer et al (2006) used a bivariate VAR modelling technique and found evidence of a positive FDI-led growth for Nigeria, Sri Lanka, Tunisia, and Egypt; and based on weak exogeneity tests, a long-run causality between FDI and economic growth running in both directions was found for the same set of countries. A slight difference from this result is observed in Okodua (2009) who examined the sustainability of the FDI-growth relationship in Nigeria. Using the Johansen cointegration framework and a multivariate VAR within a vector error correction model, found evidence of a long-run equilibrium relationship between economic growth and FDI inflows. The study also revealed a unidirectional causality from FDI to economic growth.

2.4 Conclusion

From the review, it is evident that the presence of Multinationals in host economies can be dicey, especially in developing economies. As a result, host economies should be able to influence the extent private investments from internationals impact on their economy. Besides, these investments should be carefully channelled to areas where comparative advantage exists, so as not to erode the capability or wherewithal of nationals. Finally, foreign private investments should complement the production efforts of the labour force in host economies, in terms of skills, technical know-how and wages; but not to erode them by unemployment (for instance undue importation of labour), underemployment (ill-positioning or underutilisation of nationals) or provision of asymmetry information or knowledge (that is, the impartation of half-hazard skills or partial training).

3. MODEL SPECIFICATION AND THEORETICAL FRAMEWORK

3.1 Theoretical Framework: Spillover Theory

The main theoretical explanations applied to the analysis of spillovers from multinationals to host country firms are from industrial organization economics. The different theoretical explanations that developed over time have been integrated by Dunning (1993), in his so called **OLI-paradigm,** which has become the standard theoretical framework for studies on foreign subsidiaries of multinational corporations (Jutta Gunther, 2002; Barz, 1998, Autschbach, 1997, Klagge, 1997).

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The OLI-paradigm explains FDI by merging three isolated theories of international production, the monopolistic advantage, the location advantage and internalization theories, in a single approach; hence it is often called an **eclectic theory**. The idea of the eclectic theory of Dunning is a simple, yet profound construct, which rests on a tripod set of conditions for FDI to take place. It avers that the extent, geography and industrial composition of foreign production embarked on by MNCs is determined by the collaboration among a set of three sub-paradigms. Each of these sub paradigms has implicit implication for spillovers in the host economy.

First the potential foreign investor -compared to the firms in the foreign market -must have ownership advantages such as firm specific production technology, marketing strategies and the like, which constitute its competitive advantages in overcoming costs associated with foreign production that are not borne by host country firms. This sub-paradigm asserts that, all things being equal, the greater the competitive advantages of the investing firms relative to potential host country firms, the greater the incentive for engaging in FDI rather than serve the foreign market through international trade. In this way, the extent of resources committed to foreign production is determined by the amount and quality of investing firm's competitive advantages. The ownership advantage has implication for expected spillover benefits to local firms. Knowledge spillovers from FDI take place when the entry of foreign affiliates, which have typically better management and production technologies than domestic firms, increase knowledge of domestic firms, and MNCs do not fully internalize the value of these benefits (Smarzynska, 2003). Indeed the expected positive relationship between inward FDI and the performance of host country locally owned industries is the thrust of FDI incentives. Given the advanced proprietary knowledge, foreign owned firms in host countries could serve to improve host countries' industrial capability and their competitiveness by acting as a medium transferring international diffusion of skills, knowledge, and technology through linkages and spillovers (Findlay,1978; Dunning, 1994).

The second sub paradigm has to do with the location attraction of alternative countries or regions. In particular, the aspired foreign country must offer locational advantages such as cheap raw materials, lower wages and lower taxes among others. This sub paradigm asserts that the more the immobile, natural or created endowments in a country, which foreign investing firms can use jointly with their own competitive advantages, the greater is the locational preference for that country. However locational preference does not translate to automatic spillover benefits. This raises the question of absorptive capacity which is the ability of local firms to recognize, integrate and productively use valuable new knowledge. Many argue that the host country's absorptive capacity such as human capital, infrastructure, fnancial market development, trade openness and institutional quality determines the exent of spillovers. The positive effects of FDI can be found only when it is conditioned on the recipient's absorptive capacity.

The third leg of the OLI tripod offers the condition for the investing firm to establish a subsidiary abroad, rather than exporting or have a local company produce for the foreign market via license agreement. It does offer a framework for evaluating the alternative ways in which firms may organize the exploitation of their core competences, given the locational attraction of different countries. The potential foreign investor must have the capacity to internalize its knowledge advantage. This means that it must be more efficient for the foreign investor to make use of the firm specific technology within the multinational concern through a subsidiary, because asymmetric information leads to the failure of licensing agreements. This paradigm implicitly lays the foundation for the existence of spillovers. This is because the desire to internalize certain firm specific advantages pre-supposes the presence of spillover possibilities. Indeed, some scholars adduced that the technology packed in a foreign subsidiary cannot be completely protected from trickling down to domestic firms (see for example, Blomstrom and Kokko, 1996; Burger, 1998).

Picking up the Marshallian tradition of external economies, Hirschman's idea of backward and forward linkages, Myrdal's (and Kaldor's) suggestion of circular (and cumulative) causation, Anthony Venables (1996) model formalized industrial agglomeration theory, in which agglomeration economies occur via cumulative causation. In this case, such economies are triggered by input-output linkages between intermediate local firms and final-good multinational corporations. This idea is further supported by the analytical framework of the new economic geography in which agglomeration economies, coupled with economies of scale, help lock-in a concentrated structure of industrial production. As noted by Cantwell (1987), the cumulative causation between the technological activities of MNCs and the international competitiveness of an open economy may be intensified in this way. A virtuous circle results when inward FDI in the form of established foreign subsidiaries increase technological dissemination and spur local rivals to a higher rate of innovation. This virtuous circle is nothing but a powerful MNC-driven engine of industrialization. Nicholas Kaldor (1966) formalized this idea in his four-stage model of industrial development. Furthermore, the size of the firm and the size of the market attainable by multinationality of the firm also give strong microeconomic incentives to innovate. This is because the firm's enlarged operations across international markets facilitate transfer of intangible assets at nominal

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marginal costs. This increases the scope for spillovers to host country firms given the increasing amount of firm specific knowledge now available. However, a vicious circle is also a possibility as a result of MNCs market power, which may drive local competitors and hinder technological creation by local firms.

The OLI paradigm paradigm presents a paradox. An increase in firm specific knowledge increases incentive for FDI in order to prevent knowledge from spilling over. However, an increase in FDI in turn may actually serve to increase spillover potential given the large degree of firm specific knowledge now available in host economies. This paradox rests decisively on the assumption that FDI functions as a knowledge transfer mechanism through specific transfer channels. These transfer channels are consequently important for testing the spillover potential of FDI. It is thus vital to test these specific transfer channels provided by economic theory.

3.2. Model Specification

To test the impact of FDI on the Manufacturing sub-sector's performance, the Manufacturing Value Added (MVA) will be used to proxy the performance in the manufacturing industry. Besides, we specify a model that takes into consideration the effect of MVA, total factor productivity (TFP), trade openness (TO) and rate of interest (INT) on FDI. Following Ilyas et al (2010), the model is cast in the form:
MVA = f (FDI, TFP, TO, INT)

We specify the following equation to estimate the effect of TFP, INT, TO and FDI on MVA.

$$\ln MVA = \alpha_0 + \alpha_1 \ln FDI + \alpha_2 \ln TFP + \alpha_3 \ln TO + \alpha_4 \ln INT + e_t \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Parameters α_1, α_2, α_3, α_4, are the long -run elasticities of MVA with respect to FDI, TFP, TO and INT respectively.

The most widely used technique for testing co-integration involves Engle and Granger (1987) test, the MLE-based Johansen (1988, 1991) and Johansen-Juselius (1990) tests. However, these techniques require that all the variables are I(1). Also, the tests are sensitive to sample as small samples produce poor performance. The Autoregressive-Distributed Lag (ARDL) technique proposed by Peasaran, Shin and Smith (1996, 2001) will be adopted in the study. However, we will conduct the conventional techniques proposed by Engle and Granger, Johansen – Juselius (1990) tests along with ARDL to test for the robustness of the estimates. The ARDL approach does not require that all the variables be I (1).

$$\Delta InMVA = \alpha_0 \sum_{i=1}^{q} + \alpha_{1i} \Delta InMVA_{t-i} + \sum_{i=0}^{q} \alpha_{2i} \Delta InFDI_{t-i} + \sum_{i=0}^{q} \alpha_{3i} \Delta InTFP_{t-i} + \sum_{i=0}^{q} \alpha_{4i} \Delta InTO_{t-i} + \sum_{i=0}^{q} \propto_{5i} \Delta InINT_{t-i} + \alpha_6 InMVA_{t-1} + \alpha_7 InTFP_{t-1} + \alpha_8 InTO_{t-1} + \alpha_9 InINT_{t-1} + U_t \text{---------------------------}(2)$$

Where Δ is the first-difference operator, q is the optimal lag length, α_1, α_2, α_3 …..,α_5 represent short-run dynamics of the model and α_6, α_7, α_8, and α_9 represents the long-run elasticities.

Before performing the ARDL model, we will test for the level of integration of all variables because if any variable is I(2) or above, ARDL approach will not be applicable(ILyas et al, 2010).

For the Unit root test, we adopt the Augmented Dickey-Fuller test (ADF) and Philip-Perron test (PP). In order to determine the long-run relationship as given in equation (1) above, we will conduct bound test of equation (2) using F-statistic with two bounds, i.e. lower bound and upper bound. The null hypothesis assumes no co-integration among variables.

If the value of F-statistic is greater than the upper bound then the null hypothesis will be rejected and if it is less than lower bound then null hypothesis will be accepted. If it falls between the lower and upper bounds, the test is inconclusive. The optimal lag-length to be used will be determined by the Schwarz Bayesian Criterion (SBC).
An error-correction version of equation (2) is given as:

$$\Delta \ln MVA = \alpha_0 \sum_{i=1}^{q1} \alpha_{1i} \, \Delta\ln(MVA_{t-1}) + \sum_{i=1}^{q2} \alpha_{2i} \, \Delta\ln(TFP_{t-1}) + \sum_{i=1}^{q3} \alpha_{3i} \, \Delta\ln(TO_{t-1}) + \sum_{i=1}^{q4} \alpha_{4i} \, \Delta\ln(FDI_{t-1}) + \sum_{i=1}^{q5} \alpha_{5i} \, \Delta\ln(INT_{t-1}) + \lambda EC_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

Where q_1, q_2, q_3, $q_4$and$q_5$represent optimal lag length, λ is the speed of adjustment parameter and EC represents the error correction derived from the long-run relationship as given in equation (2).

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3.3 Variables Measurement

FDI- Defined as investment undertaken by an enterprise that is either whole or partly foreign owned. Data on foreign private investment collected by the central bank of Nigeria's survey of enterprises will be used to measure FDI. Enterprises covered by the survey are those in which foreigners hold at least 75% of total equity. FDI will be defined as FDI/GDP as Choi (2009) claims that the ratio of FDI to GDP is the most superior indicator as it avoids the problem of outlying observations; (Source is from World Development Indicators, (WDI), 2011)

TFP – defined as the growth of output not caused by physical inputs but other factors such as technical change, economies of scale, government policies, human capital, vintage of capital, R &D expenditures international trade policies and remittances etc. The study draws upon Hall and Jones (1999) and Ozanne (2006) growth accounting approach; where a weighted logged form of both gross fixed capital formation and labour force is deducted from the log of Gross domestic product of Nigeria; (Source: Self computation with statistics of GDP, labour force and gross capital formation from international Financial Statistics, 2010)

TO – defined as the level of a country's integration to the world economy and will be measured by Nigeria's ratio of trade to GDP (Source: WDI, 2011).

INT – defined as the price of investment and will be measured by rate of interest, (Source; WDI, 2011).

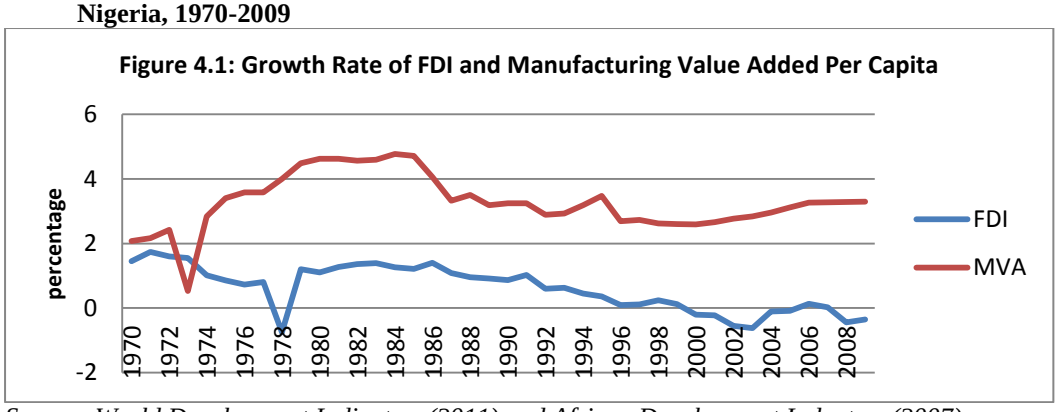
MVA – This is the basic indicator of a country's relative level of industrialisation, in terms of value as opposed to volume, and is deflated by population to adjust for the size of the country. It is defined as the difference between the values of outputs and the value of inputs (Source; ADI, 2007 and WDI, 2011).

3.4 Method of Analysis

The study adopts a time series approach to the development of three different models namely: Manufacturing export model, Manufacturing Value Added Model, and Manufacturing Output Model of industrial development in Nigeria. The Study adopts Auto Regressive Distributed Lag Approach to establish the long run relationship amidst the variables and the short run dynamics of the model. All variables will be tested to confirm the absence or presence of unit roots problems using both ADF (Augmented Dickey-Fuller) and Phillip-Perron tests for the period in consideration. Also, co-integration test will be carried out to find out whether there is long run relationship between non stationary variables.

4. Results of Analysis

4.1 Trend Analysis between FDI and Manufacturing Sub-Sector (Manufacturing Value Added) in Nigeria, 1970-2009



Source: World Development Indicator, (2011) and African Development Indcator, (2007)

The figure 4.1 below revealed the growth rate of FDI and Manufacturing Value Added (MVA) in Nigeria between 1970 and 2010. It is observed that in the early 1970s, the inflow of FDI into Nigeria did not have much influence on the production in the manufacturing industry. For instance, the growth of FDI in 1974 was about 1%, while MVA was a little above 3%; but at the early 1970s, the Nigeria government was investing heavily in industrialising Nigeria and the manufacturing sector was said to be funded by proceeds from the sale of cash crops. Although in 1978, the FDI into Nigeria was negative, the value added to Nigeria's manufacturing Industry was still growing at 4.5%. This showed that the massive investment by the then government on inputs for advancing the manufacturing sector was evident which made the economy less dependent on FDI, (Ayodele and Falokun, 2003).

A cursory look at the GDP revealed that the agricultural sector was contributing more to GDP than any other sector such as the manufacturing sector. For instance, as at 1970, agriculture contributed 48.8% and by 1980, it stood at 25%; while in 1990, it contributed about 30% to total GDP, and by year 2000, agriculture contributed 32% to total GDP; this is against the pattern of the manufacturing industry which grew slowly over the years ; for instance, in 1970, the manufacturing sector contributed about 4.8% to GDP while in 1981, the manufacturing

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industry contributed about 8% to GDP, while in 1990, it contributed about 8% to GDP, and by year 2000, it was about 6% of the total GDP (CBN Statistical Bulletin, 2002). The slowdown in the rate of contributions of the agricultural sector and manufacturing sector between 1970 and 1980 could have been as a result of the deindustrialisation experienced in the Nigerian economy during the period. The deindustrialisation could be attributed to the revenue generated from natural resource sales such as oil earnings, which in turn caused little incentive for institution-building, and failed to implement growth enhancing reforms. Higher corruption, more rent-seeking activity, greater civil conflict, and erosion of social capital are some of the outcomes associated with the Nigerian deindustrialization experience. This was evident in figure 4.1, because as from 1986, which was the period during of structural reforms in Nigeria, it was revealed that by the early 1990s, Nigeria was FDI sensitive; in the sense that as FDI dwindled, MVA followed suit; except in a few cases, like in 1994, where the value added to the manufacturing sub-sector improved a little to 3.5%.

Generally, it was observed that the between 1981 and 1990, the contributions of the agricultural sector to GDP grew by just 5%, while between 1990 and year 2000, the difference in the contribution of the agricultural sector to overall output increase by just 2% (Ayodele and Falokun, 2003). This is because despite the fact that the agricultural sector takes a larger chunk of the total goods and services produced within the economy, the productive capacity may still be very low as evident in the kind of rudimentary techniques used for farming or enjoys little or no FDI. The manufacturing sector is even more worrisome as its contribution to GDP revealed a declining trend over the years. This may be due to the fact that the manufacturing sector makes use of a lot of machines and then employ fewer personnel, unlike the agricultural sector; or worse still, it could be as a result of the fact that the manufacturing sector still comprises more of producing consumer goods to capital goods, thereby accounting for low productivity.
Not until the early 2000s, where FDI improved a little to about 1%, MVA equally advanced forward. This may be explained by the foreign private investments by some of the multinationals in Nigeria, especially in the oil sector, which has thereby caused an improvement in the value added to the manufacturing sub-sector.

4.2. Descriptive Statistics of Data Series

In a bid to carry out this study, the various descriptive statistics of the data used was initially examined. The descriptive statistics of data series gives information about simple statistics such as mean, median, minimum value, maximum value and the distribution of the sample measured by skewness, kurtosis and the Jaque-Bera statistic. Table 4.1 reports the descriptive statistics of data employed in this study. It is worthy of note that all data series used for econometric investigation ranged from 1970 to 2009. For model I, data on manufacturing value added per capita (MVA), total factor productivity growth (TFP), trade openness (TO) human capital (HUM) and foreign direct investment (FDI) have been transformed into their logarithm form before been applied for analysis.

Table 4.1: Descriptive Analysis for the Variables

	MVA	FDI	TFP	TO	HUM
Mean	3.268619	-3.998269	-0.095020	-0.634946	2.844335
Median	3.243373	-3.840732	-0.048340	-0.495507	3.159124
Maximum	4.777441	-2.865499	0.653781	-0.030459	3.663562
Minimum	0.530628	-5.353675	-1.616066	-1.609438	1.098612
Std. Dev.	0.856721	0.699200	0.454404	0.430657	0.703790
Skewness	-0.300589	-0.274862	-0.861116	-0.599815	-1.028242
Kurtosis	4.219799	1.884068	4.212158	2.214652	2.689690
Jarque-Bera	3.082208*	2.579167*	7.392348**	3.426476*	7.209028**
Probability	0.214145	0.275385	0.024818	0.180281	0.027201
Sum	130.7448	-159.9308	-3.800791	-25.39786	113.7734
Sum Sq. Dev.	28.62484	19.06632	8.052823	7.233143	19.31750
Observations	40	40	40	40	40

Note:
*a) Critical values of χ^2 at 5% and 1% levels are 5.99 and 9.21 respectively. * (**) denotes the acceptance of the null hypothesis that the variables are normally distributed at 5% and (1%) significant level, while (≠) implies the rejection of normality at all levels.*
b) All variables in the observation are in their logarithm form.

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Table 4.1 shows that all the series display a high level of consistency as their mean and median values are perpetually within the maximum and minimum values of these series. Besides, the standard deviation revealed that actual data in the series are not really different their mean value. The skewness and kurtosis statistics provide useful information about the symmetry of the probability distribution of various data series as well as the thickness of the tails of these distributions respectively. These two statistics are particularly of great importance since they are of use in the computation of Jarque-Bera statistic, which is used in testing for the normality or asymptotic property of a particular series.

As a basic assumption usually made in econometric modeling, testing for the normality or asymptotic property of data series becomes necessary since most probability distribution and other test statistics, such as t, F and $\chi^2$are based on this assumption.

From Table 4.1, all data are normally distributed at either 1% or 5% level of significance. The normality assumption is further buttressed by the nearness of the mean and median values for these series. The closer the mean and median values of a data series, the greater the probability that such series will be normally distributed.
Table 4.1 shows that all the series display a high level of consistency as their mean and median values are perpetually within the maximum and minimum values of these series. Besides, the standard deviation revealed that actual data in the series are not really different their mean value. The skewness and kurtosis statistics provide useful information about the symmetry of the probability distribution of various data series as well as the thickness of the tails of these variables.

4.3 Unit Root Test and Lag Length Selection Criteria

It is not unusual to discover that most time-series variables are non-stationary in their levels and that several of these variables are therefore, represented in their first difference. These time-series are therefore said to be integrated of order one and are denoted by I(1). The level of some variables can be so large or small that they not revert to their mean as expected, hence the need for stationarity test which is also known as unit root test.
In view of the fact that the stationarity of a time series affects the consistency of the estimates of the error correction model, it becomes necessary to examine the order of integration of data employed in the study. In testing for the stationarity of variables, both the Augmented Dickey-Fuller as well as the Phillip-Perron unit root tests was adopted. The Augmented Dickey-Fuller test adopted lag 1, while the Phillip-Peron test specified 3 lags. The null hypothesis formulated using both test statistics is that the variable in question has a unit root.

Table 4.2: Unit Root Test for Model I

Variable	ADF* (1 Lag)		PP* (3 Lags)		d^*
	With Constant (No trend)	With Constant & trend	With Constant (No trend)	With Constant & trend	
MVA	-2.093559	-2.430800	-1.634144	-1.742813	I(0)
ΔMVA	-4.434150	-4.457900	-3.931834	-3.900056	I(1)
FDI	-1.860146	-3.004744	-1.721954	-2.910786	I(0)
ΔFDI	-3.677590	-3.949555	-8.557371	-8.574891	I(1)
TFP	-0.063482	-0.719812	-0.719832	-1.025711	I(0)
ΔTFP	-4.938511	-4.939571	-4.939537	-4.888124	I(1)
TO	-2.026136	-1.904916	-1.855290	-2.026136	I(0)
ΔTO	-7.335605	-7.414802	-7.291671	-7.391155	I(1)
HUM	-0.630344	-2.214910	-0.784231	-1.719411	I(0)
ΔHUM	-2.724411	-2.645959	-2.724411	-2.613199	I(1)
Mackinnon critical values: Level					
1%	-3.610453	-4.211868	-3.610453	-4.211868	
5%	-2.938987	-3.529758	-2.938987	-3.529758	
10%	-2.609066	-3.198312	-2.607933	-3.196411	
1st Difference					
1%	-3.615588	-4.219126	-3.615588	-4.219126	
5%	-2.941145	-3.533083	-2.941145	-3.533083	
10%	-2.609066	-3.198312	-2609066	-3.198312	

Notes: ***Source:*** *Self computation using E view 7.0*

* *ADF, PP and d denote Augmented Dickey Fuller, Phillip-Perron and decision about the order of integration respectively.*

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Table 4.2 showed the behaviour of variables in their levels and first difference. It could be seen that these series could effectively be referred to have a random walk when they are in levels but refer to their mean level after first difference. Table 4.2.1 also showed that the null hypothesis which is specified that a variable under investigation has a unit root, against the alternative, can be rejected for all the data series in their levels at 1%, 5% and 10% significance level. Having taken the difference of all the series, the ADF and PP test was further employed in testing for the stationarity of the differenced series. By carrying out unit root tests for individual variables in their first difference, the comparison of respective critical values with their reported statistics leads to the rejection of the null hypothesis for all variables at either 1%, 5% or 10% level.

The inference of the Augmented Dickey-Fuller and Phillip-Perron tests, therefore, is that all the data series for this study are I(1) series. This implies that these selected series become stationary when they are differenced once.

4.4. ARDL Test of Long-run and Short-run Relationships of Variables Determining Manufacturing Value –Added Growth in Nigeria.

This sub-section discusses the result emanating from the auto-regressive distributed lag estimates. It basically shows the relationships experienced by the manufacturing value-added in the long-run and in the short-run. Based on some key variables such as foreign direct investment, total factor productivity, trade openness, and human capital, the manufacturing value-added growth in Nigeria is determined, thereby having significant implications for the industrial development in Nigeria.

Testing for existence of a level relationship among the variables in the ARDL model between FDI and Manufacturing Sector Performance in Nigeria (1970-2009)
(Co integration)

Table 4.3: F-Statistic for Testing the Existence of Long-Run Relationship

Order of Lag	F Statistics	95% Lower Bound	95% Upper Bound	90% Lower Bound	90% Upper Bound
1	4.3012	2.5302	3.8164	2.0443	3.2045

Source: Self computation using Micro fit 5.0

From the table 4.3 above, it could be deduced that the results of the long run relationship are sensitive to lag length selected in the model based on Schwarz Bayesian Criterion (Bahmani- Oskooee and Bohal, 2000). The table shows the computed F-statistic in relation to selected optimal lag-length in the model. According to Pesaran*et al.* (2001), with lag of order 1 the lower and upper bound values at 95 percent significance level are 2.5302 and 3.8164 respectively and the lower and upper bound values at 90 percent significance level are 2.0443 and 3.2045 respectively. Thus, we can conclude that the computed value of F-statistic (4.3012) is greater than the upper bound values of F-statistic both at 95% and 90% significance levels. This helps us to reject the null hypothesis of no long run relationship. Therefore, we conclude that there is long-run relationship among the variables.

The optimal lag length of the variables included in the ARDL Model was selected based on the Schwarz Bayesian Criterion (SBC). The table below presents the result of the long run relationship of the selected ARDL Model (1, 0, 1, 0, 0) using SBC.

Table 4.4: Long Run Coefficients of ARDL (1, 0, 1, 0, 0) Model Dependent Variable LNMVA

Regressor	Coefficient	Standard Error	T-Ratio	Probability
$LNFDI_t$	-0.47606	0.28080	-1.6954**	0.099
$LNTFP_t$	-1.5739	0.58473	-2.6917*	0.011
$LNTO_t$	-1.2932	0.42103	-3.0716*	0.004
$LNHUM_t$	0.23094	0.37201	0.62080	0.539

Note, * and ** show significance levels at 5 percent and 10 percent respectively.
Source: Self computation using Micro fit 5.0

ISSN: 1839 - 0846

From the table 4.4 above, it is revealed that FDI impacted negatively on the Manufacturing Value Added in Nigeria. The effect of FDI on MVA is significant at 10 percent level of significance. The coefficient of LNFDI valued at -0.47606 shows that, on average, one percent increase in FDI leads to 0.47 percent decrease in manufacturing value added in the long run. Also, Total Factor Productivity (TFP) impacted on the manufacturing value added negatively in Nigeria. At five percent level of significance, the effect of TFP on MVA is not in conformity with the *apriori* expectation. The coefficient (-1.5739) of LNTFP shows that one percent increase in the Total Factor Productivity leads to 1.57 percent decrease of manufacturing value added in the long run. Also, trade openness impacted negatively on the manufacturing value added but significant at 5 percent significance level. This implies that, one percent increase in the trade openness deteriorates the manufacturing value added by 1.29 percent and it does not conform to the expected sign. Finally, Human capital impacted positively on the manufacturing value added as expected, but insignificant both at five percent and ten percent significant levels. The coefficient of human capital (LNHUM) valued at 0.23094 implies that one percent increase in human capital leads to 0.23 percent increase in manufacturing value added.

Table 4.5: Autoregressive Distributed Lag Estimates (1, 0, 1, 0, 0)Dependent Variable LNMVA

Regressor	Coefficient	Standard error	T-Ratio	Probability
LNMVA (-1)	0.63597	0.10908	5.8304*	0.000
LNFDI	-0.17330	0.084796	-2.0438*	0.049
LNTFP	0.74711	0.29345	2.5461*	0.016
LNTFP(-1)	-1.13201	0.33753	-3.9110*	0.000
LNTO	-0.47077	0.20662	-2.2785*	0.029
LNHUM	0.084072	0.15073	0.55775	0.581
R-squared 0.75150	R-Bar-Squared	0.71385		
S.E. of Regression	0.45236	F-stat. F(5,33)	19.9598 (0.000)	
Mean of Dependent Variable	3.2991	Schwarz Bayesian Criterion	-32.1338	
DW-statistic	2.2939	Durbin's h-statistic	-1.2532 (0.210)	

Note, * shows significance at 5 percent significance level
Source: Self computation using Micro fit 5.0

The result 4.5 above shows the impacts of the current and one lagged value of the explanatory variables and the dependent variable on manufacturing value added. It is revealed that one lagged value of the Manufacturing value added whose coefficient valued at 0.63597 implies that 1 unit increase in LNMVA (-1) leads to 0.63597 increase in LNMVA depicting that they exhibited direct relations. While the t-statistic (5.8304) of the lagged value of LNMVA revealed a significant relationship with the current value of LNMVA. It exhibits significant positive impact which is in line with the expected sign. Besides, LNFDI whose coefficient is valued at -0.17330 depicts that 1 percent increase in the FDI results in 0.1733 percent decrease in the MVA and showed an inverse relationship with the manufacturing value added in the current period.

Regarding the LNTFP, the current value of the growth rate of TFP had a significant positive (t = 2.5461) effect on the growth rate of MVA. This implies that a one percent increase in the current value of TFP, on average, leads to 0.7471 percent increases in MVA. But, one lagged value of LNTFP whose coefficient is -1.3201 and t-statistic is -3.9110 reveals existence of an significant inverse relationship between LNMVA and LNTFP (-1). This means that one percent increase in LNTFP (-1) leads to 1.132 percent decrease in LNMVA. The implication of this analysis implies that in the previous period the growth rate of TFP may not have a significant direct relationship with the growth rate of MVA; but in the current period the reverse will be the case.
Trade Openness (TO), maintains an inverse relationship with the MVA. Its coefficients valued at -0.47077 indicates that one percent increase in LNTO leads to 0.471 percent decrease in LNMVA. While the t-statistic (-2.2785) of the lagged value of LNTO revealed a significant relationship with the current value of LNMVA. Hence, the lagged value of trade openness has a significant indirect relationship with manufacturing value added. However, human capital impacted positively on the manufacturing value added and its coefficient implies that one percent increase in LNHUM results in 0.0841 percent increase in LNMVA.

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Besides, the result revealed at five percent level of significance, the positive effect of the growth rate of human capital on the growth rate of manufacturing value added was not significant as the t-statistic was 0.55775. The R-Squared shows that about 75% of the variation in LNMVA are explained by the combined effect of all variables considered. The F- statistics valued at 19.9598 is significant at 5% which measures the overall significance/ linearity of the regression model. The probability (F-Statistic) is very low and the result shows that *h*-statistic valued at -1.2534 that follows the standard normal distribution asymptotically falls within the range of +3 and -3, which implies that the result is free from serial correction.

Table 4.6: Error Correction Model
Error Correction Representation of the selected ARDL (1, 0, 1, 0, 0)
Model Dependent Variable LNMVA

Regressor	Coefficient	Standard error	T-Ratio	Probability
dLNFDI	-0.17330	0.084796	-2.0438*	0.049
dLNTFP	0.74711	0.29345	2.5461*	0.016
dLNTO	-0.47077	0.20662	-2.2785*	0.029
dLNHUM	0.084072	0.15073	0.55775	0.581
ECM(-1)	-0.36403	0.10908	-3.3374*	0.002
R-squared 0.43140		R-Bar-Squared	0.34525	
S.E. of Regression 0.45236		F-stat. F(5,33)	6.2594 (0.001)	
Mean of Dependent Variable 0.031190		Schwarz Bayesian Criterion	-32.1338	
DW-statistic 2.2939				

*Note, * shows significance at 5 percent significance level*
Source: *Self computation using Micro fit 5.0*

The result of error correction representation of the selected ARDL model is shown in the table 4.6 above. The Coefficients of the variables with (d) sign show the short-run elasticities. The Result once again reflected the same result discussed under the long run relationship in relation to the a priori expectations, level of significance and impacts on the Manufacturing value added. The coefficient of error correction term (-0.36403) is significant (-3.374) both at one percent and five percent levels. Highly significant negative sign of the error correction terms reinforces the existence of long run relationship among the variables. However, the speed of adjustment from the previous year's disequilibrium in manufacturing value added to current year's equilibrium is 36 percent.

Besides, the explanatory variables in terms of their explanatory power (R^2) explained 43% variation in the manufacturing value added, with an adjusted coefficient of determination (R^2) valued at 34%. An examination of the econometric result shows that the overall fit is averagely satisfactory and the F-statistic valued at 6.2594 is significant at 5 percent level.

5. SUMMARY AND CONCLUSION

This finding is consistent with those of Aitken and Harrison (1995), Hadad (1993), Zukowska – Gagelmann (2002) among others which revealed insignificant or even negative spillover effects of foreign direct investment in the performance of domestic firms. The result is in agreement with the observed failure of Import Substitution Industrialization (ISI) in Nigeria where industrialization became highly import dependent rather than import substituting.

The key dimension of firm-level internationalization strategy has been globalization/regionalization of value-adding production networks under the umbrella of global/regional supply chains. MNE's in many countries seek competitive advantages by dispersing manufacturing activities in their supply chains around the globe to areas where each activity can be performed at least cost and highest quality. The result above shows that, Nigeria did not qualify as host to segments of MNE's supply chains in high value added manufacturing.

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Successful countries are not necessarily those that host manufacture of finished goods for the domestic market, but those that host efficient segments of the global supply chains. Nigeria has not been successful in hosting production segments of MNE's that manufacture high quality and high value-adding processed raw materials or components.

The result highlights the fact that there has been no transformational manufacturing development in Nigeria over the study period, and as a corollary, foreign affiliates of MNE's have played a negative role in value adding manufacturing. By acting substantially as sales subsidiaries, MNEs in Nigeria's manufacturing sector invariably discouraged the incipient process of value adding manufacturing in Nigeria.

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