

GLOBALIZATION AND ITS EFFECT ON MANUFACTURING EMPLOYMENT: THE CASE OF PERU 1993-2000

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Abstract

In this paper we will examine the effects of globalization on employment level, in particular the case of the manufacturing industry -considered one of the key sectors where employment is supposed to be generated. The exercise that we will perform is justified on the basis that the whole set of laws and statutes dealing with the new institutional changes in Peru carried out during the nineties were designed to foster private -especially foreign- investment in every economic sector, without any bias regarding to specific industries.

Using a panel data analysis we showed that foreign direct investment- for the 1994-2000 period- had a positive though very small effect on the creation of manufacturing employment. The results also show that both the size of the market and the export orientation were more important in explaining changes in employment in the manufacturing sector.

Our results also showed to be consistent with the fact that most of the FDI in the manufacturing sector was primarily directed to mergers and acquisitions, instead of creating new businesses, therefore contributing to the creation of new employment.

I.- Introduction

In this paper we examine the effects of globalization on employment level, in particular the case of the manufacturing industry -considered one of the key sectors where employment is supposed to be generated. This analysis is justified since

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the whole set of laws and statutes dealing with the market-friendly institutional changes in Peru was carried out during the nineties and aimed to foster private - especially foreign- investment in every economic sector, without any bias regarding to specific industries, and therefore we consider interesting to check if there were any significant real effect on the economy.

Our focus is on the nineties since it is during that period that there was a consistent implementation of an orthodox economic program that was in line to the globalization process occurring in the world during that period. The fact of the consistency in the application of the program help us to analyze the role that foreign direct investment (FDI) played on the generation of employment as policymakers expected.

In general, most of the policies implemented in Peru during the nineties were intended to foster foreign investment. The economic rationality of those policies was based on the *trickle down* assumption: *as businesses grow, their demand for inputs will also grow*, -in particular, labour- and consequently there would be an important reduction on poverty. Although the statement seems to be correct, we consider there were two features to be considered in the aforementioned statement: first, *trickle down economics* seems to overstate the value of the labour-income elasticity whose value appears to be dependent of a complex set of institutional variables.

Notwithstanding the truthfulness of the trickle down proposition, there seems to be a fundamental flaw in the design of the pro investment policies accompanying that approach: policymakers did not set up a monitoring system keeping track of the effects of those policies under implementation to fine tuning their pro investment policies¹. In this regard, this study, to our knowledge, is the first one in Peru in examining the effects of the FDI on employment.

This article is organised as follows: in section II, it is performed a brief historical review of the globalization-friendly policies issued during the nineties. In section III, we make a brief overview of the economic literature related to globalization and employment. In section IV, we take a look on the Peruvian manufacturing industry in terms of the relationship between investment and employment.

In section V, we estimate a panel data model for the 1994-2000 period, in which most of the institutional changes favouring foreign investment took place, and we will also analyse the effect that foreign investment have on some crucial variables in the manufacturing industry. Finally, we draft some conclusions.

¹ As Finger and Nogues (2006) just recently stated there is a role for administrations to play in the implementation of a common set of rules which was in the case of the antidumping and safeguards set of rules of the World Trade Organization.

II.- Globalization and policies issued in Peru

For most economists, globalization can be visualized as the closer integration of economies through trade and factors markets is attained (Lall, 2004)². In this article three forms of public policies associated to globalization are discussed: privatisation, foreign direct investment (FDI), and liberalization of labour market.

During the first half of the nineties, most of the Latin American countries performed much of the pro-market reforms recommended by the so-called "Washington Consensus". Particularly in Peru, structural reforms were implemented since 1992, aimed at deregulating the economy and redefining the role of the state in order to improve an effective economic resources allocation through an increasing and significant participation of the private sector, therefore reducing the level of transactional costs, caused in part by the excessive public sector intervention.

Before the two Fujimori administrations (1990-1995 and 1995-2000), neither the Belaúnde (1980-1985) nor the García (1985-1990) administration attempted to reduce the scope of the state-led activities involving the production of tradable and non-tradable goods. Since 1992, a relatively successful privatisation programme was launched; its peak was reached with the sale of the state-owned telecommunications corporation for US\$ 2 billion in 1994.

During the 1994-2002 period the privatization programme sold almost 200 enterprises in a number of areas, such as mining, energy, banking, manufacturing and telecommunications, rendering revenues for almost US\$ 8 billion with projected investments of 6 billion. If we include public infrastructure concessions for almost US\$1 billion in revenues plus more than US\$ 4 billion in projected investment, the Peruvian privatisation programme resulted in US\$ 9 billion in revenues plus US\$ 10 billion in investment commitments.

Although the overall assessment of the privatisation programme has not been completed, many scholars³ agree in the fact that it brought up important gains in terms of economic efficiency -especially in areas such as telecommunications and electricity services. Thus, labour productivity and profits increased, and some authors have stated that in many instances, there was a positive effect on labour through the indirect effect (Torero, 2002).

The increase in the economic efficiency in telecommunications and electricity has been quite significant since the per employee telephones mainlines number rose from 56 (in 1993) to 271 (in 1999), and the increase in the consumption of electricity rose from 518 KHz per capita in 1993 to 692 in 2001. There has also a reduction in electrical distribution losses, from 18% in 1993 to 11% in 2001⁴.

² Lall, S. (2004), Chapter 4.

³ See Távara, J. (2000), Torero, M. (2002) and Paliza, R. (1999).

⁴ See: http://www.itu.int/ITU-D/ict/statistics/at_glance/basic01.pdf, <http://devdata.worldbank.org/dataonline/> and Abusada, R et. al. (2000).

There have also been some positive distributive effects produced by reforms in the telecommunications density, which went from 3,1 in 1993 to 13,7 in 2001. The electricity supply coverage coefficient of 47% in 1994 rose to almost 70% in 2001. The per capita electric power consumption has also increased⁵.

Within the framework of privatisation, new market-friendly institutions (such as the enactment of new regulations in the financial sector, telecommunications, mining, electricity, and others) were set up. The objective pursued by all these institutions was to guarantee private property -therefore foster foreign and domestic investment.

Since there was a new role for the public sector, new public agencies were created and others reformed to deal with those matters arising from the reforms performed by the government. The main characteristic that distinguished these new public agencies was that they enjoyed much more freedom to organise their governance -also enjoying more financial resources than their predecessors did. Their financial resources were made up of a percentage picked out of the transactions made in the economic activity regulated by the concerned agency.

The liberalisation of the trade and capital account was one of the cornerstone structural reforms performed by the Fujimori administration. The deregulation of the labour market was another structural reform that allowed corporations to adjust their personnel to their labour requirements. Likewise, state participation in collective bargaining was eliminated. In the social security area, a private pension system based on individual capitalisation was launched -taken the Chilean system as its model.

The deregulation of the labour market mainly consisted of attaining more flexibility on the rules dealing with individual service contracts and leaving collective labour relations regulated by fundamental constitutionally- based law. In addition, the rules dealing with the compensation for years of service and participation of workers in profits, management, and ownership of a business also changed. Furthermore, a regulatory framework designed to foster the development of private social security systems was created.

III.- FDI and employment: brief literature review

Although the globalization effect on employment and on poverty constitutes an important research concern, there are comparatively few research on topic compared to other studied topics. UNECA (2005) reviewed much of existing literature about the topic within the African context. The document confirms the nonexistence of the negative relation of market integration and unemployment, but it mentions that

⁵ See World Bank (2001) and Tavera, J. (2001), pp.713-726 6.

there is evidence of a direct relationship between FDI and trade flows, and female labor demand (UNECA, 2005: 211-212). The document also remarks adequate infrastructure, functioning institutions, trade openness and skilled population (education) among the important determinants of the positive employment effects of FDI.

Lee and Vivarelli (2004) compile a set of studies performed by researchers on the relationship of globalisation and employment using empirical support in order to support some theoretical views. It is worthy to mention that due to the unclear and still extensive definition of globalization, the book delimits this concept to the increasing gross trade flows and FDI.

In this context, Lall (2004) analyzes, from a dynamic perspective, the interactions of the globalization and the domestic capability formation, and between growth and competitiveness. According to his statement, economy's capability that depends on national endowments and policies is considered as important factor that determines the relationship between the studied variables: globalization and employment. He remarks the relevance of an active liberalization, building national and domestic capabilities and leveraging international markets and resources, which influences on increasing employment levels.

Therefore, regarding developing countries' case and because of the presence of institutional and market failures, the author concludes that these economies can be damaged if are rapidly exposed to global market forces influenced by the lack of response to high competitors and technology that they are not ready to face.

Meanwhile, Spiezia (2004) analyses the effect that trade and FDI has on employment in the manufacturing sector through empirical results. In one case, he uses a model in which the level of employment (L) depends on the rate of exports (E), to non-traded goods production (D), and inversely related to imports (M). where the function to test is:

$$L = f(E^+, D^-, M^+)$$

Then, applying the method of stationary time series to a sample of 39 countries, with data taken from UNIDO⁶ for periods between mid-1980s and mid-1990s,

⁶ Employment data was taken from UNIDO Statistics Industrialist Database 2000, and exports, imports and volume of non-traded goods were taken from UNIDO Industrial Demand-Supply Balance Database 2000 (corresponding to 80 manufacturing industries) for periods from mid-1980s to mid-1990s.

the expected signs of the model are fulfilled. According to the estimation⁷ for 21 countries of the sample with higher labour-intensive exports than imports and non-traded goods, an increase in the trade volume would have a positive effect on employment. In the other hand, for 18 countries without this characteristic, greater trade volumes would affect negatively the employment.

Similarly, Spiezia (2004) analyzes the employment impact of FDI; regarding this, he assesses the positive relationship between employment and investment, where last factor is compound by two elements: foreign and domestic investment (FDI and DI respectively). Notwithstanding, the effect of FDI would depend on the contribution degree to the capital accumulation and on the labour-intensity of production. Thus, the FDI effect on employment would always be positive if FDI is more labour-intensive than the DI; otherwise, although FDI implies a labour-intensity reduction, the effect on employment would depend on the way FDI be implemented. It would be positive if FDI contributes to the capital given by an increase of capital stock (Greenfield investments), and the effect would possibly be negative if FDI replaces DI by assets transference (M&A). In general terms, the tested function following is tested:

$$L = f(FDI^+, DI^+)$$

Through a panel data method, a model⁸ is estimated for a sample of 41 countries over different periods along mid-1980s and late 1990s. The results indicate no significant impact employment of FDI. Nevertheless, a more accurate analysis of the author considering the income levels of the countries shows that the impact of the FDI is increasing with the per capita income level. Therefore, the results show a null or insignificant employment impact of the FDI in low-income countries; and an important positive of FDI in employment if we consider middle and high-income countries.

⁷ The estimated equation is done by:

$$\frac{\Delta L_i w_i}{L_i} = \beta_i + \beta_E \frac{\Delta E_i}{Y_i} - \beta_M \frac{\Delta M_i}{Y_i} + \beta_D \frac{\Delta D_i}{Y_i}$$

where the first element measures the labor intensity, and the followings measure the exports, imports and non-traded goods production multiplied by their labor-intensities rates, respectively. See Spiezia (2004 : 149-157) for further information.

⁸ In this case, the estimated equation is done by:

$$\frac{\Delta L_{it}}{L_{it}} = \alpha_i + \alpha_D \frac{FDI_{it}}{GDP_{it}} + \alpha_D \frac{DI_{it}}{GDP_{it}}$$

where the first element indicates the employment change, and the followings refer to the FDI and DI as share of GDP, multiplied by factors that indicate the contribution to the capital accumulation (output-capital ratio) and to the labor-intensity (labor-output-ratio). See Spiezia (2004), pp.158-161, for further information.

In sum, Spiezia (2004) concludes that there is no reason to expect that international trade should favor labour demand⁹; moreover, he stresses the unpredictability of that assertion in developing countries. Likewise, he points out that larger technological gap would lead to decreases in employment; however, in developing countries increases in employment are likely if the rate of imitation were larger than the rate of innovation in the industrialized economies (Spiezia, 2004: 149). Finally, this study suggests that the FDI effect on employment depends on how developed is the host country and how capable is this recipient country to innovate, which would be related to the form FDI is implemented, either as Greenfield or M&A¹⁰.

IV.- Foreign Direct Investment and employment in Peru

As many countries did, Peru started during the nineties a comprehensive programme of reforms to smooth the progress of the on-going globalization process boosted after the fall of the Berlin wall. One area that faced some radical changes was the tax regime affecting investment. Special regimes were created to protect it. The concept behind that policy was to increase the level of predictability in favour of investors, especially in connection to the tax regime and the free disposal of foreign currency. The goal of this approach was to attract a significant amount of private investors encouraging them to bring their business skills to the country in order to foster production -especially exports- thus increasing employment levels.

At the beginning of 1991, the Peruvian government enacted a set of laws and regulations intended to attract investment -especially foreign investment. The main statutes were the Foreign Investment Promotion Statute (Legislative Decree 662), the Framework Statute for the Increase of Investment Private (Legislative Decree 757) and the Statute for the Promotion of Private Investment in State-owned Corporations (Legislative Decree 674).

Among the most relevant features of this new legal set was the establishment of a guarantee favouring foreign investors to freely dispose their earnings overseas. Investors were also exempted to get a legal authorisation to start their operations.

⁹ In the study, 18 countries presented that the rising economic integration reduced the labor demand even. Among others, the results show unpredictability of the impact of trade on employment levels.

¹⁰ It refers to investment in the form of Mergers and Acquisitions. The author points out that Greenfield investment creates better conditions to take advantage of the potential of capital creation, innovation and its influence on increasing employment, in contrast of the mere transference (from domestic to foreign firms) of constant capital stock as occur in M&A. See Spiezia (2004), p.158.

They were also guaranteed ten years of fiscal shelter through the so-called *fiscal stability contracts*.¹¹

Another highlight of the legal package passed during the last decade was that investors were covered in their insurances by the MIGA (Multilateral Investment Guarantee Agency¹²), an integral part of the World Bank Group, which means that any contract dispute shall be solved by national or international referees.

Although the designers of the economic reforms wanted to state the no discrimination principle between foreign and domestic investment, it was clear for them that main amount of investment flows would come from the former, which in fact occurred. However, the role played by FDI in the creation of new employment is still quite controversial since a large percentage of the FDI inflows were placed in general in sectors with weak direct effects in formal employment.

As we observe in table 1 the FDI stocks sector source through the whole period of 1992-2003, there were five sectors which concentrate 86% of the total FDI stock in the economy. Noticeably, it was the communications sector which shared almost 30% of the total FDI stock. Certainly, these figures have to be looked carefully since in order that FDI work in the fashion that trickle down economics expected, it matters that FDI were decentralized, and more important than the stock is the flow.

A different picture is obtained if rather than focusing on the volume of FDI, we pay attention to the FDI inflows on a year-by-year basis (Table 2). In this regard, the one which more persistently seems to have performed is the finance sector -not depending on a single shot investment effort, but on a series of consistent inflows of FDI during the nineties.

Differently from the first one, the second approach gives us an idea about how sustainable the FDI effort was during the eleven years period -precisely the feature that policymakers wanted to encourage the most. Therefore, although the communications sector accounted on average around 30% of the whole FDI during the said eleven years period, that result was basically due to the privatization of the formerly state-owned telecommunications corporation (Entel-CPT).

The rate the communications sector shared over the period 1994-2002 reaches 30% of the total FDI, while in terms of its persistence, it drops to 21%. This shows that the relative importance of this sector was over emphasised by the role it played on the FDI in Peru.¹³

¹¹ See Muñoz and Vega (2000). The authors mention that in order to access to these type of contracts, investors should invest as minimum US\$2 millions or US\$0.5 million when they offer to generate 20 permanent jobs or at least US\$2 millions in exports in a 3 years time span.

¹² www.miga.org.

¹³ See Paliza (1999), APOYO (1999) and Torero (2002).

Table 1
STOCK OF REGISTERED FOREIGN DIRECT INVESTMENT
(As of June 2003 - in US\$ millions)

Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Agriculture	5	5	8	7	8	26	42	44	44	44	44
Commerce	228	257	264	381	448	556	565	826	842	840	831
Communications	0	2003	2005	2007	2025	2099	2354	2641	2655	2957	2969
Construction	4	4	14	31	33	44	56	60	71	71	71
Energy	3	365	365	739	1268	1364	1517	1514	1599	1602	1611
Finance	191	235	496	680	786	911	1401	1435	1804	1703	1809
Industry	517	570	710	1040	1246	1378	1508	1548	1710	1845	1846
Mining	565	876	1047	1145	1231	1372	1653	1688	1693	1696	1696
Fishery	1	1	1	1	1	1	1	1	1	1	1
Oil	59	59	61	94	98	98	98	98	98	98	98
Services	40	41	45	57	73	98	115	138	157	394	395
Silviculture	1	1	1	1	1	1	1	1	1	1	1
Transport	8	9	10	11	17	82	82	93	106	119	119
Tourism	12	19	26	36	36	42	58	58	58	58	62
Housing	7	7	7	7	10	11	13	13	15	14	15
Total	1642	4451	5060	6237	7280	8081	9463	10158	10854	11444	11568

Source: http://www.proinversion.gob.pe/orientacion/estadisticas/cont_11.htm

Elaboration: Own

Table 2
FLOW OF REGISTERED FOREIGN DIRECT INVESTMENT
(As of June 2003 - in US\$ millions)

Sector	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average	Average (in %)
Agriculture	0	0	3	0	1	19	16	2	0	0	0	4	0,6%
Commerce	15	29	8	116	68	107	9	261	16	-3	-8	56	8,1%
Communications	0	2003	2	2	18	74	255	287	14	302	12	270	13,8%
Construction	1	1	10	16	2	12	11	4	10	0	0	6	0,9%
Energy	0	361	0	374	529	96	153	-4	85	3	9	146	17,5%
Finance	57	44	262	184	106	125	490	34	369	-101	106	152	22,1%
Industry	51	53	140	330	205	132	130	40	162	135	1	125	17,9%
Mining	9	310	171	98	85	141	281	35	5	4	0	104	11,5%
Fishery	0	0	0	0	0	0	0	0	0	0	0	0	0,0%
Oil	0	0	2	34	3	0	0	0	0	0	0	4	0,5%
Services	0	2	3	13	16	24	17	23	19	237	1	32	5,0%
Silviculture	0	0	0	0	0	0	0	0	0	0	0	0	0,0%
Transport	3	0	1	0	6	65	0	11	13	13	0	10	1,5%
Tourism	0	6	7	10	1	6	17	0	0	0	4	5	0,6%
Housing	1	0	0	0	3	0	2	0	2	-1	0	1	0,1%
Total	138	2809	609	1177	1043	801	1382	694	696	590	124	915	100%

Source: http://www.proinversion.gob.pe/orientacion/estadisticas/cont_11.htm

Elaboration: Own

Overall, what these figures suggest is that there was an important feature in the behaviour of the FDI, in terms that there was an important inflow of FDI but that effort was not followed by a consistent inflow intra sectors during the 1993-2000 period that we would analyse. This characteristic will determine the performance of the FDI in terms of the employment that will generate.

V.- FDI and employment in the manufacturing industry: the gross evidence

We consider that testing the role that FDI plays in the creation of employment becomes feasible if some structural features of the manufacture sectors targeted by FDI are compared to those features in the rest of the sectors within the industry.

We do think this approach is valid since manufacture has received important amounts of FDI, during the nineties, and because it has typically been considered that its production increase is regularly linked to the further creation of employment. As we have mentioned before, the institutional changes performed during the nineties stressed the principle that no differences in treatment between domestic and foreign businesses were to be made. Under this assumption, we do consider that of comparing some structural features between manufacturing firms, which basically differ on their ownership structure -either foreign or domestic- is a valid methodological approach.

Therefore, changes in the level of direct employment in both foreign and domestic businesses will differ on the different way they process changes in the values of some public policy variables targeting particular markets, basically through changes in tariffs and indirect taxes such as the VAT -specifically affecting the sectors in which they operate.

We were able to distinguish the ten most important manufacturing sectors as recipients of FDI from 1980 to 2003, thus defining three sub periods: A, from 1980 to 1989; B, from 1990 to 2000; and C, from 2001 to 2003.

The sub period C, which corresponds to the Toledo administration, can be considered as part of the sub period B, but we will keep that division in order to capture differences in risk perception by the side of investors, as administrations could have changed their policies.

We have chosen the ten most important industrial sectors as recipients of the FDI in each one of the three sub periods. We have then calculated the Pearson correlation between the sectors by sub periods in order to find a pattern in which the FDI took place. We found that the Pearson correlation between sub period A and B was barely 6%, while the correlation between B and C was 92%.

The Pearson correlation between A and C was negative, which can be interpreted as no relationship between former recipients of the FDI with the current recipients of the FDI. The other piece of information seen on table 3 deals with

another difference between the three sub periods: there is more concentration of the FDI in few sectors, which can have effects on the low amount of employment potentially generated.

Table 3
10 major manufacturing sectors recipients of FDI
% of the total FDI in the manufacturing industry

Place	A 1980-1989		B 1990-2000		C 2001-2003	
	ISIC	%	ISIC	%	ISIC	%
1	2423	11,6	2320	13,4	1553	85,1
2	1553	8,8	1541	9,9	1541	9,2
3	2424	8,5	1551	9,7	2511	2,6
4	2511	5,5	1514	9,6	2921	2,3
5	1514	5,4	1543	6,2	2691	0,9
6	3110	5,3	2424	6,1	2424	0,8
7	3130	5,1	2109	5,1	2423	0,5
8	2413	4,5	3130	4,3	3130	0,5
9	3592	4,1	1553	4	2520	0,4
10	1520	3,9	2423	3,3	2520	0,3
	Total	62,7	Total	71,6	Total	102,6

Pearson correlation coefficient

A and B	B and C	A and C
0,06	0,92	-0,1

The next piece of information we discuss deals with some characteristics of the sectors comprising the largest amount of the FDI stock versus the whole manufacturing sector. Here we are especially interested in comparing the amount of formal employment that the 10 top FDI stock sectors can generate respect to the rest of the manufacturing sector.

On tables 4A and 4B, it can be appreciated that, in terms of the labour productivity, the sectors with the most FDI stock are more productive respect to those sector with relative less inflow of FDI. In the years 1999 and 2000, the labour productivity in the 10 top FDI recipients was bigger than the average sector of the

total manufacturing sector. However that figure was different for the years 1994 and 1995. This could be explained by the fact that it was too early to notice the positive effects of the FDI inflows.

Table 4A
Comparison between Total Manufacturing and the 10 top Stock FDI recipients
(In 1994 US\$ Millions)

Year	Sector	Total labor force	Gross Manufacturing Product Value (1994 US\$ MM)	Total Manufacturing Value Added (1994 US\$ MM)	Total Wages (1994 US\$ MM)	Excedent (1994 US\$ MM)	Overseas sales (1994 US\$ MM)	Total Sales (1994 US\$ MM)	FDI flow (1994 US\$ MM)	FDI stock (1994 US\$ MM)
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1994	Total Average for the Manufacturing sector	4 327	293.3	113.8	20.4	45.6	35.3	239.8	0.9	2.3
	Average for the 10 top Stock FDI	8 976	565.8	219.6	45.6	75.4	29.8	452.2	4.3	10.2
1995	Total Average for the Manufacturing sector	4 287	305.8	112.2	20.9	41.9	36.2	252.5	0.8	3.7
	Average for the 10 top Stock FDI	9 399	652.3	251.5	50.2	93,0	38.7	526.4	3.8	17.6
1999	Total Average for the Manufacturing sector	4 829	243.6	32,0	16,0	32.1	29.4	205.4	1.6	8.6
	Average for the 10 top Stock FDI	10 000	657.4	242.6	38.1	77.9	42,0	539.1	8.3	43.9
2000	Total Average for the Manufacturing sector	4 426	239.6	79.8	14.5	31.1	24.9	203.7	1.4	8.3
	Average for the 10 top Stock FDI	9 134	702.2	252.5	34.6	83.1	44.6	569.3	7.8	42,0

In the other hand, FDI sectors typically do not export (less than 8%) compared to the average manufacturing sector, which export around 12% of their total sales (these numbers are for the year 2000). We have also found that FDI sectors paid a higher average salary consistently throughout the 1994-2000 period. Another relevant feature is the fact that the 10 top FDI recipients have higher excedent per capita which is a proxy of the benefits per worker. Again as the case for labour productivity, those benefits were lower respect to the whole manufacturing sector but they increased and surpassed, and for the years 1999 and 2000, benefits in the 10 top FDI recipients were higher than their counterparts.

Another interesting feature coming from the table 4B is the fact that the FDI stock in the whole manufacturing sector increased. In the year 1994 the FDI

per worker and the FDI stock per worker was 206 and 521 respectively for the manufacturing sector. While in the year 2000, these numbers increased (in real terms), the disparity with the 10 top FDI recipients also widened.

Table 4B
Some relationships between the Total Manufacturing Sector and the 10 top Stock FDI recipients

Year	Sector	Labor Productivity (1)	Average Salary (2)	Excedent per capita (3)	Export orientation (4)	FDI per worker (5)	FDI stock per worker (6)
1994	Total Average for the Manufacturing sector	67 790	4 709	10 533	14,7%	206	521
	Average for the 10 top Stock FDI	63 040	5 081	8 397	6,6%	479	1 140
1995	Total Average for the Manufacturing sector	71 341	4 886	9 783	14,3%	191	854
	Average for the 10 top Stock FDI	69 405	5 342	9 896	7,4%	404	1 869
1999	Total Average for the Manufacturing sector	50 457	3 320	6 639	14,3%	339	1 776
	Average for the 10 top Stock FDI	67 538	3 814	7 789	7,8%	826	4 394
2000	Total Average for the Manufacturing sector	54 127	3 270	7 035	12,2%	315	1 874
	Average for the 10 top Stock FDI	76 879	3 788	9 100	7,8%	857	4 603

VI.- Measuring the effects of FDI on labour using a panel data model

In the former section we have analysed the inflows of FDI in the manufacturing sector since 1980 until 2002. We found that, comparing the performance of the manufacturing sector in the period 1998-2000, the effect of the presence of FDI did not make a difference in the generation of more employment.

Now, using a longitudinal data base for the Peruvian manufacturing sector with a set of variables for the period 1994-2000, we consider important to explore the relationship between the level of employment observed in a specific manufacturing sector with respect to a set of variables such as the amount of foreign direct investment, the percentage of the total sales as exports, the level of the gross production value (VBP), and the amount of own investment that firms make independently of being domestic or foreign property¹⁴.

All monetary variables were translated into 1994 US Dollars, and we have worked at the level of three digits of the international standard industrial classification (ISIC) review 3. We worked in such a way since our FDI data (originally at four digits ISIC review 2) showed important discrepancies with its translation into the 4 digits ISIC review 3; therefore, we thought that working at 3 digits level, would reduce those inconsistencies.

We built a panel data with the data obtained from the annual manufacturing survey performed by the Peruvian Ministry of Industry. The dataset was arranged for the period 1994-2000. After we made adjustments in order to preserve consistency with other manufacturing sector data, such as the index of manufacture physical volume, and the use of idle capacity in the manufacturing sector, we obtained a sample of 390 observations arranged in 57 groups.

These 57 groups were those manufacturing sectors at three ISIC levels which received FDI inflows in any form. The number of groups was defined as they were in the year 2000 -which in turn defined the number of the groups for the subsequent years (from 1999 to 1994), therefore, it is quite possible that not all the 57 groups as defined in the year 2000, they would had values in 1994 or 1995.

The first relationship that we wanted to explore was the effect in the generation of employment by the stock of FDI, the size of the manufacturing exports (as a percentage of the total sales), and the level of gross production value (VBP). The results are shown on table 5.

We obtained the right signals for the parameters and, although the value of the parameter for the stock of FDI was noticeable low, its statistical significance was however high. The percentage of sales overseas respect to the total sales proved to be more relevant in the generation of employment in the industrial sector.

The next regression model was performed by taking the manufacturing added value as a function of the FDI and the export sales (as a percentage of the total sales). The results are shown on table 6.

¹⁴ See the methodological annex.

Table 5
Manufacturing permanent labour force as dependent variable

```

xtreg labour_fo stock_fd percent vbp, fe
-----
Fixed-effects (within) regression      Number of obs      =      390
Group variable (i) : ciiu3             Number of groups   =       57

R-sq:  within = 0.1455                  Obs per group: min =       3
       between = 0.3381                  avg =               6.8
       overall = 0.3278                  max =               7

corr(u_i, Xb) = 0.2865                  F(3,330)           =      18.74
                                           Prob > F            =      0.0000
-----
labour_fo |      Coef.   Std. Err.   t    P>|t|   [95% Conf. Interval]
-----+-----
stock_fd |   .0000193   5.14e-06    3.75  0.000    9.15e-06   .0000294
percent |  4290.453   1096.869    3.91  0.000   2132.717   6448.19
vbp     |   3.66e-06   6.26e-07    5.84  0.000    2.42e-06   4.89e-06
_cons   |   3143.44    205.7695   15.28  0.000   2738.655   3548.226
-----+-----
sigma_u |  4919.7008
sigma_e |  722.53174
rho     |  .97888609   (fraction of variance due to u_i)
-----
F test that all u_i=0:      F(56, 330) =   279.42          Prob > F = 0.0000

```

Table 6
Manufacturing Added Value as dependent variable

```

xtreg total_ad stock_fd percent, re
-----
Random-effects GLS regression      Number of obs      =      390
Group variable (i) : ciiu3         Number of groups   =       57

R-sq:  within = 0.3411                  Obs per group: min =       3
       between = 0.3065                  avg =               6.8
       overall = 0.1660                  max =               7

Random effects u_i ~ Gaussian      Wald chi2(2)       =      94.48
corr(u_i, X) = 0 (assumed)         Prob > chi2        =      0.0000
-----
total_ad |      Coef.   Std. Err.   z    P>|z|   [95% Conf. Interval]
-----+-----
stock_fd | -2.580741   .2725533   -9.47  0.000   -3.114935   -2.046546
percent |  1.44e+08   5.93e+07    2.44  0.015   2.82e+07   2.61e+08
_cons   |  1.03e+08   1.76e+07    5.88  0.000   6.89e+07   1.38e+08
-----+-----
sigma_u |  1.105e+08
sigma_e |  38966999
rho     |  .88941906   (fraction of variance due to u_i)

```

We only show the random effect model since after performing the Hausman test, the fixed effect specification was rejected in favour of the random effects model which shows us that the stock of FDI parameter has a negative effect on the added value.

How do we interpret these results? Our results on the relationship between manufacturing added value and stock of FDI although controversial, are consistent with the “hard data”. One explanation for this result may be the fact that an important percentage of the FDI inflows took the form of merges and acquisitions (M&A). As we can observe on table 7, during some years M&A activity has been more important than the Greenfield investment itself.

TABLE 7
PERU – MERGER & ACQUISITIONS AND FDI INFLOWS
(US\$ millions)

Year	M&A	FDI	M&A/FDI
1985	0	16	0%
1986	0	29	0%
1987	0	27	0%
1988	0	8	0%
1989	0	29	0%
1990	0	41	0%
1991	15	-7	-214%
1992	174	-79	-220%
1993	62	761	8%
1994	3082	3289	94%
1995	945	2557	37%
1996	844	3471	24%
1997	911	2139	43%
1998	162	1644	10%
1999	861	1940	44%
2000	107	810	13%
2001	555	1144	49%
2002	461	2156	21%
2003	247	1377	18%

Elaboration: Own based on UNCTAD's FDI Statistics

Most of the M&A activity took place in sectors different from mining, which has been the main recipient of the FDI, and also the major sector associated to Greenfield investment, which it is associated with the creation of new businesses, and consequently, the investment that is associated with the positive effects on creation of jobs.

The case is however that mining is a very capital-intensive sector; therefore the positive effect coming from the sector with the major share in Greenfield investment is modified. So, some reports on investment¹⁵ indicate that most of the M&A activity took place in manufacture industry and financial sectors. It is plausible to conclude that one reason why we did not find the expected signals for FDI on labour productivity was the way FDI took place in the manufacturing sector.

VII.- Conclusions

Both simple relationships and panel data analysis showed that FDI had a positive though very small effect on the creation of employment. In this regard, our results confirm the previous results obtained by the whole economy. It is also clear that both the size of the market and (or more important) the export orientation are key variables to explain changes in employment in the manufacturing sector.

Our results also showed to be consistent with the fact that most of the FDI in the manufacturing sector was primarily directed to mergers and acquisitions, instead of creating new businesses, therefore contributing to the creation of new employment.

According to Unctad (2000), FDI in the manufacturing sector has played a limited role since the domestic capital was quite dominant. That report found that domestic investors acquired around 70% of the former state-owned assets. On the other hand, FDI in manufacturing has relied on reinvestments by existing investors and by merger and acquisition activities performed by existing foreign firms.

As an example of the M&A activity, we can report the case of the acquisition of Embotelladora Latinoamericana by Overseas Ltd United Kingdom in the food and beverages sector. In the ISIC 2424, other major acquisition was the Unilever's take over of Industrias Pacocha, as well as the acquisition of the favourite local drink, Inca Kola by the American Coca Cola.

One point that we want to stress is that getting statistics about the intense process of mergers and acquisitions becomes quite difficult, as, differently to what happens in other parts of the world, Peru does not have any ex-ante control of mergers or acquisitions. Therefore, there is not database on M&A upon which we could clearly distinguish in what economic sectors there has been that phenomena.

¹⁵ See UNCTAD (2000).

We think that our results open an interesting window for discussion about the role FDI theoretically plays on beating poverty and fostering economic development. The main message is that (considering the expected role to be played by FDI in the manufacturing sector) it is seemingly proven that the strategy of attracting foreign investment solely focused on setting fiscal shelters and making the attractiveness of the country the core of the investment policies could be inaccurate.

Peru was indeed an attractive place to invest (Unctad, 2000) since in general its scores were upon the average (Unctad, op.cit page 22). Therefore it is our contention that the main problem with FDI was the wrong assumption made by the government on the tickle-down property attached to a sound investment policy. More appropriately, it would have to design an investment strategy strongly intended to generate more employment and therefore to reduce poverty.

If the manufacturing sector is considered one of the major sectors in which employment is supposedly to be generated -and as we have showed that in the Peruvian case FDI did not create employment- we can then conclude that, only considering the employment factor; the Peruvian investment policy was disappointing.

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Methodological Annex

The data used to perform the analysis on this paper was based on the results of the annual manufacturing survey held by the former Ministry of Industry -now the Ministry of Production- not only covering the manufacturing sector but also the fishing sector. Data available for this analysis cover the period 1994-2000.

The survey considered the industrial establishment as the interviewed unit -and not the corporation as such, given that firms usually run more than one establishment-producing in more than one industrial sector according to the classification established by the *International Standard Industrial Classification* (ISIC). All the manufacturing data as well as the data for foreign direct investment were organised on the 3 digits ISIC-rev.3 basis.¹⁶

All the monetary data were put in real terms, that is, the FDI data was in current US\$ which was divided by the 1995 US\$ GDP deflator obtained from the data contained in the World Development Indicators. Similar transformation was performed in the case of the manufacturing data which was expressed in local monetary unit (Nuevo Sol). In this case, we divided this data by the local exchange rate, and then divided the result by the 1995 US\$ deflator.

Originally the FDI data was obtained as stock variable since 1980. We transformed this data as inflow. Considering the period 1994-2000 as matter for analysis, we obtained the FDI stock at three level ISIC-rev.3, adding the inflows for the years 1992 and 1993, and this value was the stock of FDI for the year 1994. We then added the subsequent inflows for the years 1994 to 1999 to that figure.

We considered that this procedure took into account the fact that since the end of the year 1991, an important institutional set of FDI-friendly regulations was incorporated. Since we wanted to check the effects of the new FDI inflows on the values of some key variables (such as employment), we decided to work with the stock of FDI since 1992.

We organised the data taking into account the structure of the year 2000. So, it is possible that some ISIC groups of that year were not reported in the previous years. In that case, we assigned zeroes as values for that group in previous years.¹⁷

We matched the FDI data with the manufacturing data. The range of the manufacturing data was certainly larger than the FDI data set; so in the case there

¹⁶ The manufacturing data was presented originally at the four digit ISIC rev.3, however the FDI data was presented at four digits isic rev.3. Since we observed that there was a potential source of error in organizing the two sets of data at the same level for the two versions of ISIC, we decided that the probability on incurring an error diminished if we presented the two sets of data at three levels ISIC rev.3.

¹⁷ Groups showing zero were in some cases at most five.

had not been FDI information for a specific group, we assigned a zero for the FDI stock for that group.

Our panel data regression ended with 57 ISIC groups for the seven year period, and we performed several regressions. Those results using inflows proved to be very controversial, and given that data were very volatile, that behaviour is reduced when we used stocks. In economic terms, it is actually more interesting to use stocks instead of inflows for the FDI, because the accumulation of stocks is what counts -given that their effects on real variables remain though the inflow of that variable had been zero for some years.