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Foreign direct investment and income inequality in Latin America: Experiences and policy implications

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Foreign Direct Investment and Income Inequality in Latin America

por
Dirk Willem te Velde

Foreign Direct Investment

and

Income Inequality in Latin America

Experiences and policy implications

by

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Abstract:

There is a heated debate on the effects of Foreign Direct Investment on development. Proponents argue that FDI is good for development, and hence the rapid expansion of FDI in Latin America in the past decade and a half is manna from heaven. In some cases, it is indeed difficult to imagine whether the same development level could have been achieved without FDI. Critics, however, contend that FDI leads to more poverty, isolation and a neglect of local capabilities. Recent difficulties with privatisation in Latin America, which involved FDI, appear to tell us that not all share in the benefits.

The paper positions Foreign Direct Investment (FDI) in the debate on income inequality in Latin America. It argues that:

- Income inequality is persistently and relatively high in almost all Latin American countries. Labour income inequality plays an important role in total income inequality. It is therefore instructive to examine developments in labour income inequality, both by occupation and education. We review different data sources. All support the conclusion that in most countries the relative position of skilled workers has improved over much of the late 1980s and early 1990s. In many, but not all, countries this has manifested itself in an increase in relative wages. Most countries have also experienced an increase in the relative employment of skilled workers (which should have caused a drop in relative wages) (**Section 2**).

- Many researchers have examined the causes of income inequality in Latin America. Income inequality can be determined by at least three factors: the distribution of factors of production, the demand for those factors, and the supply. Labour or human capital, i.e., the distribution of education and the returns to skill, are the factors of production that are driving income inequality (**Section 3**).

- While FDI may have been good for development (e.g. we find positive correlations between FDI and GDP, or productivity, or wages) this masks the fact that different countries with different policies and economic factors tend to derive different benefits and costs of FDI. In addition, not all types of workers necessarily gain from FDI to the same extent. The reasons for this include: FDI induces skill-specific technological change; it can be associated with skill-specific wage bargaining; it may locate in skill-intensive sectors; and it provides more training to skilled than unskilled workers. A review of micro and macro evidence shows that, at a minimum, FDI is likely to perpetuate inequalities. This is in contrast to what traditional trade and FDI theories would predict. Nevertheless, because there are so many opposing effects, empirical research is required (**Section 4**).

- When FDI is measured as stock as a share of GDP, almost all countries experienced substantial growth in FDI over the past decade and a half (with the exception of the last two years). However, growth rates and sector distribution vary markedly by country. New preliminary empirical evidence shows that FDI did not have an inequality-reducing effect in Latin America. There are possible exceptions, such as Colombia, but even here FDI may still have played a relatively minor role in reducing inequality. On the contrary, there are indications that in countries such as Bolivia and Chile FDI may have increased wage inequality. While this does not imply that FDI was or was not good for development and poverty reduction in these countries, it does imply that most of the gains of FDI have benefited skilled and educated workers. FDI tends to raise wages of both types of labour, although for Bolivia the results suggested that FDI lowered wages of less-skilled workers more than wages of skilled workers (**Section 5**).

- Government and business policies affect the link between FDI and income inequality. A government may use education, training, infrastructure, trade and investment promotion policies to improve the developmental impact of FDI. Similarly, businesses can use pay, training, industrial relations and supplier development. There are areas in which both a business and development case can be made for improving the social impact of FDI, and hence where co-ordination is required to realise win-win situations. These include: training, health, supplier development, infrastructure and transparency, security and reputation (**Section 6**).

The main conclusion of the paper is that while FDI may have been good for development, more can be done to improve its impact on income distribution and the poor in Latin America, either through appropriate government policies in the area of education, training and infrastructure (i.e. a general development policy), or through working directly with TNCs through incentives or partnerships. Determining which policies are most appropriate and relevant will depend on country characteristics as well as FDI characteristics, and hence will require further discussion and in-depth studies.

1. Introduction

There is a heated debate about the effects of Foreign Direct Investment (FDI) on development. Proponents argue that FDI is good for development and therefore perceive the rapid expansion of FDI in Latin America during the past decade and a half as manna from heaven. In some cases, it is indeed difficult to imagine whether the same development levels could have been achieved without FDI. Critics, however, contend that FDI leads to increased poverty, isolation and a neglect of local capabilities. Recent difficulties, involving FDI, with privatisation in Latin America show that not everyone shares in the benefits.

This paper intends to position FDI in the inequality debate in Latin America. Inequality in Latin America is persistently high and many researchers have asked why this is. Globalisation has recently been linked to inequality within and between societies and a quite substantial literature exists on trade liberalisation and income inequality in Latin America, see e.g. Wood (1997), Robbins (1996) and Robertson (2000). On the whole, trade liberalisation and international economic reforms have not brought the benefits to the poor that were predicted before countries embarked on this reform in the 1980s. Comparatively little attention has been paid to the effects of FDI on income inequality in Latin America (Feenstra and Hanson, 1995, for Mexico, is the major exception). This paper builds on previous work which as has focused on the relationship between FDI or foreign ownership in five East Asian countries and five African countries (see Te Velde and Morrissey, 2002; Te Velde and Morrissey, 2003; and ODI , 2002)

The structure of the paper is as follows: a review of data on income inequality in Latin America (Section 2) and the causes of income inequality (Section 3); a review of the debate on FDI and development and a review of the link between FDI and income inequality, both theoretically and empirically (Section 4); a discussion of new empirical results on the effects of FDI on income inequality for various Latin American countries (Section 5); and a discussion of the government and business policies that may improve the developmental impact of multinationals (Section 6). Section 7 concludes.

2. Income Inequality in Latin America: Overview of the Data

Income inequality in Latin America is persistently high. Table 1 presents data on the Gini coefficient for income distribution. The Gini coefficient is one of many measures that describe how income is distributed amongst households. Due to measurement issues, considerable care should be taken in comparing these measures across countries and over time. Nevertheless, Table 1 clearly shows that income inequality is much higher in Latin America than elsewhere and this has consistently been the case since at least the 1960s.

Table 2 provides a more recent picture for specific Latin American countries (using a different source). It shows data for the Gini coefficient for the early and late 1990s as well as the change over that period. The table clearly shows that income inequality differs not only between countries of different regions; it also differs substantially within the Latin American region. Costa Rica, Uruguay and Venezuela have the lowest inequality (under 0.500 which is still relatively high compared with countries on other continents), while Brazil, Bolivia, Nicaragua and Guatemala have the highest inequality (above 0.580). Mexico, Chile and Argentina (urban areas) occupy positions in the middle.

Table 1: Gini coefficients (median) for income distribution, by region and period

	1960s	1970s	1980s	1990s
Latin America	53.2	49.1	49.7	49.3
Sub-Saharan Africa	49.9	48.2	43.5	46.9
East Asia and Pacific	37.4	39.9	38.7	38.1
Middle East and North Africa	41.4	41.9	40.5	38
OECD and high-income countries	35	34.8	33.2	33.7
South Asia	36.2	33.9	35	31.9
Eastern Europe	25.1	24.6	25	28.9

Sources: *Deininger and Squire (1996)*

It is striking that Gini coefficients have remained high and have not substantially converged to more 'normal' levels in other regions. The Gini coefficient increased substantially (sometimes by 0.05) during the 1990s in Ecuador, Argentina and Costa Rica, countries that had a relatively low Gini coefficient in the early 1990s. But the Gini also increased further in Brazil and to a lesser extent Nicaragua. Colombia, Honduras and Uruguay recorded large decreases (sometimes by 0.05) in the Gini coefficient. Such changes seem substantial but it should be borne in mind that this process may have taken a full decade for some countries. Nevertheless, there may be underlying patterns (and determinants) that have changed more dramatically but which cancel each other out and so do not show up in persistent and aggregate Gini coefficients.

Table 2: Income inequality in Latin America[1], 1990-1999

	Gini coefficient			Urban Gini– Rural Gini		Poverty-headcount (nationally defined)	Per capita income (current international dollars)
	1989-1991	1999	1999-1990	1989-1991	1999	1998-2000	2000
Argentina[2]	0.501	0.542	0.041	na	na		12,050
Bolivia	0.538[3]	0.586	na	na	-0.136	54.7	2,360
Brazil	0.627	0.640	0.013	0.058	0.048	29.9	7,300
Chile	0.554	0.559	0.005	-0.036	0.042	17.8	9,100
Colombia	0.601[6]	0.572	-0.029	0.009	0.039	48.7	6,060
Costa Rica	0.438	0.473	0.035	0.000	-0.003	18.2	7,980
Ecuador[4]	0.461	0.521	0.060	na	na		2,910
El Salvador	0.507[5]	0.518	0.011	0.024	0.000	43.5	4,410
Guatemala	0.582	0.582	0.000	0.045	0.020	53.5	3,770
Honduras	0.615	0.564	-0.051	0.003	0.006	74.3	2,400
Mexico	0.536	0.539	0.003	0.077	0.021	38.0	8,790
Nicaragua	0.582[7]	0.584	0.002	0.013	-0.007	65.1	2,080
Panama	0.560	0.557	-0.003	0.010	-0.007	24.2	5,680
Paraguay	0.447[9]	0.565	na	na	-0.073	51.7	4,450
Dominican Republic[8]	Na	0.517	na	na	0.026	32.4	5,710
Uruguay	0.492	0.440	-0.052	na	Na		8,880
Venezuela	0.471	0.498	0.027	0.033	Na	44.0	5,740

[1] Based on household surveys [2] Greater Buenos Aires [3] Main cities and El Alto [4]Urban [5] 1995 [6] 1994 [7]1993 [8]1997 [9] Assuncion metropolitan area only.

Source: ECLAC (2002) and *World Development Indicators*

Inequalities in rural and urban areas underline such patterns. Table 2 shows that in most countries income inequality is higher in urban than in rural areas (notable exceptions

are Bolivia and Paraguay), bearing in mind that 77% of the working-age population in Latin America can be found in urban areas. Differences of up to 0.05 between urban and rural Gini are no exception. There can also be dramatic changes in the difference between the urban and rural Ginis over time, see for instance Chile and Colombia (towards higher urban than rural inequality), and Nicaragua (towards higher rural than urban inequality).

Various studies have decomposed income inequality into its components. A decomposition analysis cannot be used to find structural factors behind inequality. Instead, it can provide important descriptions regarding the levels at which inequality is at its most severe or what type of inequality contributes most to aggregate inequality. For instance, much of the evidence shows that Gini coefficients for income inequality are almost entirely determined by Gini coefficients for labour income. IDB (1998) finds that the differences between the two measures is around one percentage point, showing that inequality in profits does not contribute significantly to measures of income inequality, although IDB also admits that there may be problems of underreporting of non-labour income.

Morley (2001a) decomposes labour income inequality (measured by the Theil index) in more detail. He computes what share of total inequality can be described by inequality within groups and between groups, where groups are defined on the basis of education, occupation, age and gender. The greater the share explained by the between group part, the more important that factor is in describing overall income inequality. On this basis, for Latin American countries the between group contribution due to education accounts for 21-37% of overall labour income inequality (and is rising over time), 20-38% is due to occupation, but age, rural-urban and gender differences contribute no more than 10% to the total, partly because of a low share of women in total labour incomes and a low share of population living in rural areas. It would therefore appear that it is important to examine incomes and employment by occupation end education more closely.

Table 3 shows the employment structure on the basis of household surveys in the late 1990s in urban areas. The labour force participation rate (percentage of economically active workers in the working age population) varies between 71% (Argentina) and 84% (Venezuela) for men, and between 43% (Mexico) and 55% (Colombia and Paraguay) for women. The overall participation rate in Latin America increased from 61% to 62.4%. More than 80% of the economically active population are employed, by the public sector (varying from 8% to 20% of the employed), in or by the private sector or on own account or as family workers (varying from 20% in Costa Rica and Chile to 48% in Bolivia). The share of professional and technical workers in the private sector has been increasing in the 1990s for almost all Latin America countries for which a consistent series is available.

Given that labour income inequality plays an important role in total income inequality, it is instructive to examine developments of labour income inequality, both by occupation and education. There are various sources of labour income inequality. Income data by type of occupation published in ECLAC (2002) provide one source which also include data on the informal sector. We concentrate on wage earners in the private sector who make up at least 50% of all employment, see Table 3. Table 4 shows the relative incomes (and employment) of professional and technical wage earners in the private sector compared to non-professional and non-technical wage earners in the private sector.

The table shows that wage inequality (as measured by relative wages) increased dramatically over the 1990s for Chile, Colombia, Guatemala, Mexico, Nicaragua, Uruguay and Venezuela, stayed within a margin of +/- 0.2 in Costa Rica, Panama and decreased in Bolivia, Ecuador, Honduras and Paraguay. Such numbers may mask opposite changes in sub-

periods, such as in Bolivia where inequality increased during most of the 1990s. Relative employment of professional and technical workers increased in all countries, but only to a small extent in Colombia, Mexico, Paraguay, Uruguay and Venezuela. Chile, Guatemala and Nicaragua are clear outliers, bearing in mind that a rise in relative employment would normally reduce relative wages.

Table 3: Employment and unemployment in Latin America, urban areas

	Labour force participation rate		Unemployed	Employed economically active				
				Employers	Wage earners			Own account and unpaid family workers
					Public	Private professional and technical	Other private wage earners	
	Economically active pop % of working age population Male – Female		% of economically active population	% of employed economically active population	% of employed economically active population	% of employed economically active population	% of employed economically active population	% of employed economically active population
Argentina[2]	71	47	14.7	4.4	15.6	9.1	48	23.0
Bolivia	75	54	7.1	4.2	10.3	7.3	30	48.2
Brazil	80	53	11.4	4.7	13.0	11.0	42.6	28.6
Chile	74	41	10.1	4.2	[3]	17.0	59	19.8
Colombia	79	55	19.2	4.3	8.7	5.7	43	38.3
Costa Rica	79	45	6.1	8.0	17.2	8.9	46.6	19.2
Ecuador	82	54	14.2	8.8	10.7	7.0	41.3	32.1
El Salvador	75	52	6.9	4.6	12.3	9.1	43.8	30.3
Guatemala	82	54	2.8	4.7	8.2	9.2	42.6	35.4
Honduras	82	54	5.3	6.2	9.7	7.5	43	33.6
Mexico	81	43	3.2	4.8	14.2	6.6	52.1	22.4
Nicaragua	81	51	13.8	3.8	[3]	13.5	46.3	36.5
Panama	78	48	13.1	2.8	19.4	10.8	44	23.0
Paraguay[2]	83	55	10.1	6.6	11.8	5.1	45.2	31.2
Dominican Republic	83	49	17.0	3.7	11.9	6.7	43.9	33.9
Uruguay	73	50	11.4	4.0	16.2	6.5	49.7	23.6
Venezuela	84	48	14.5	5.1	14.9	4.9	38.1	36.9

[1] Based on household surveys, late 1990s [2] Urban areas [3] Included in private workers
Source: ECLAC (2002), tables 2, 4 and 12.

We can also examine income and employment by occupation and education based on national household surveys. We plot the data for Bolivia (based on education), Costa Rica (occupation) and Colombia (occupation) in Charts 1-3. Relative employment increased in Costa Rica and Colombia but not in Bolivia. Relative wages increased in all three countries, but particularly in Bolivia.

The ILO data constitute the third data source to examine data on incomes and employment by occupation. Chart 5 shows that all countries have employed relatively more skilled workers over time, substituting for low-skilled workers. The pace differs significantly by country. On the whole, the Asian Tigers (Singapore, Hong-Kong and Korea) have had a fast pace in the expansion of the share of skilled workers in formal employment. Most Latin American countries (e.g,. Venezuela and Chile) and occupy a position between the traditional Asian Tigers and new Asian Tigers (e.g., Philippines). Using marginal productivity analysis in traditional economic theory an expansion in the use of skills should have reduced wage inequality, if other factors did not influence the market for skills (the supply effect in Robbins, 1996). However, there are of course various factors that may affect the demand for

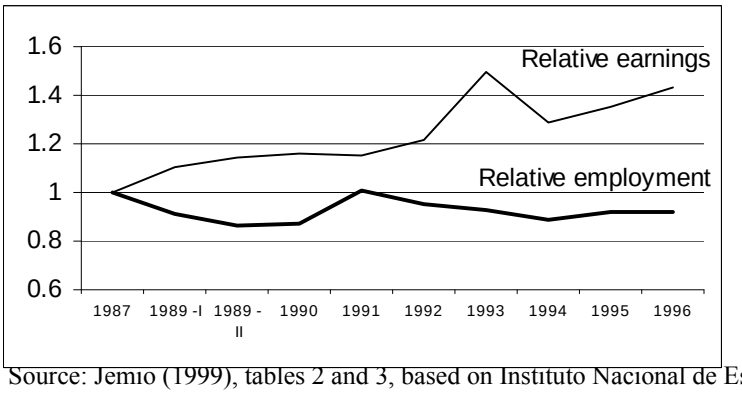
skills (e.g. skill-biased technology), supply of skills (e.g. education) and wage setting factors (e.g. unionisation trends), which may ultimately affect wage inequality

Table 4: Relative incomes and employment of professional and technical wage earners

Country	Year	Relative wage of professional and technical workers	Relative employment of professional and technical workers
Argentina	1990	2.22	0.11
	1999	2.02	0.21
Bolivia	1989	2.67	0.14
	1994	3.38	0.20
	1997	3.44	0.23
	1999	2.43	0.24
Chile	1990	2.39	0.21
	1994	2.64	0.26
	1996	3.25	0.22
	1998	3.02	0.29
Colombia	1991	2.33	0.10
	1994	3.15	0.11
	1997	2.66	0.14
	1999	2.50	0.13
Costa Rica	1990	2.39	0.14
	1994	2.11	0.16
	1997	2.16	0.16
	1999	2.33	0.19
Ecuador	1990	2.44	0.12
	1994	2.39	0.14
	1997	2.44	0.16
	1999	2.00	0.17
El Salvador	1995	2.86	0.17
	1997	2.77	0.19
	1999	2.62	0.21
Guatemala	1989	2.45	0.14
	1998	3.02	0.22
Honduras	1990	3.08	0.11
	1994	2.82	0.14
	1997	2.85	0.15
	1999	1.81	0.17
Mexico	1989	2.28	0.13
	1994	3.31	0.13
	1996	2.70	0.14
	1998	2.64	0.13
Nicaragua	1993	2.31	0.19
	1998	2.79	0.29
Panama	1991	2.76	0.19
	1994	2.93	0.16
	1997	2.87	0.24
	1999	2.69	0.25
Paraguay (As)	1994	3.20	0.10
	1996	2.73	0.09
	1999	2.72	0.11
Uruguay	1990	2.44	0.11
	1994	2.54	0.11
	1997	2.56	0.12
	1999	2.72	0.13
Venezuela	1990	2.05	0.14
	1994	2.29	0.15
	1997	2.75	0.14
	1999	2.52	0.13

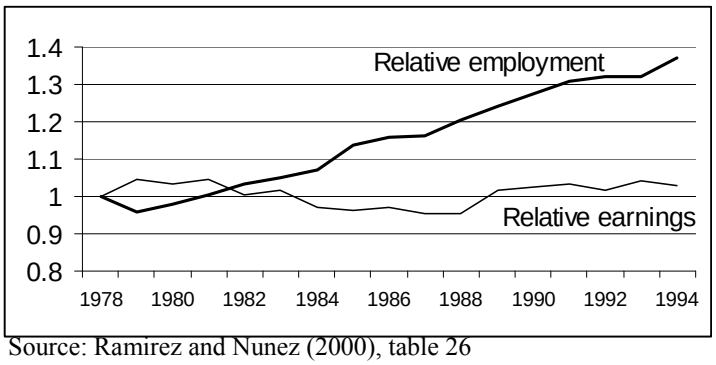
Source: own calculations based on tables 6 and 31 in ECLAC (2002). Wage earners in private sector

Chart 1: Relative employment and earnings of educated workers in Bolivia



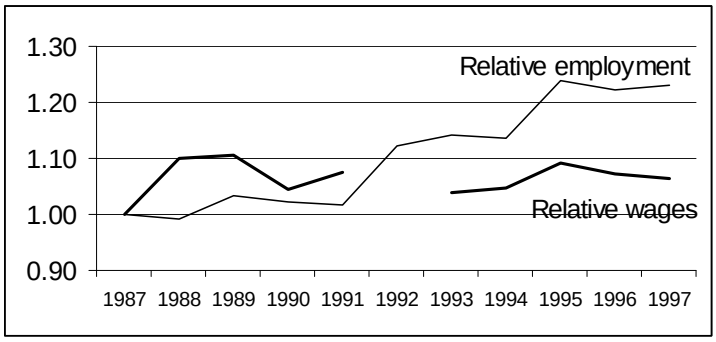
Source: Jemio (1999), tables 2 and 3, based on Instituto Nacional de Estadística, Encuestas a Hogares.

Chart 2: Relative employment and earnings of skilled workers in Colombia



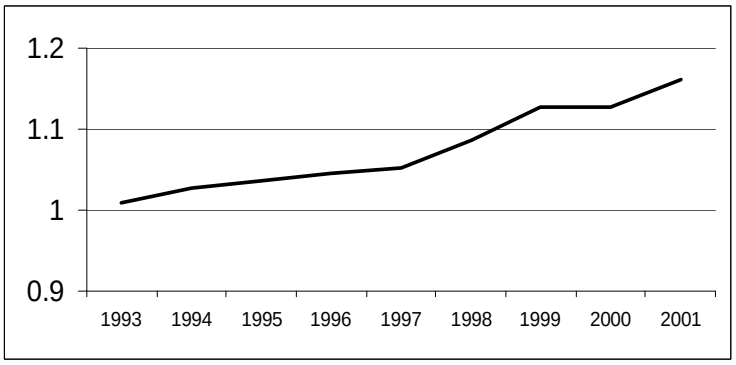
Source: Ramirez and Nunez (2000), table 26

Chart 3: Relative employment and earnings of skilled workers in Costa Rica



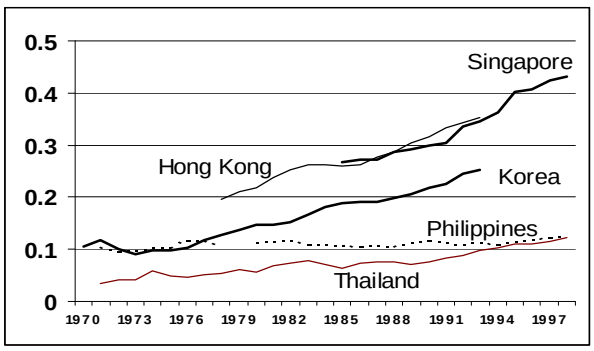
Source: Masis (1999) based on las encuestas de hogares de la DGEC

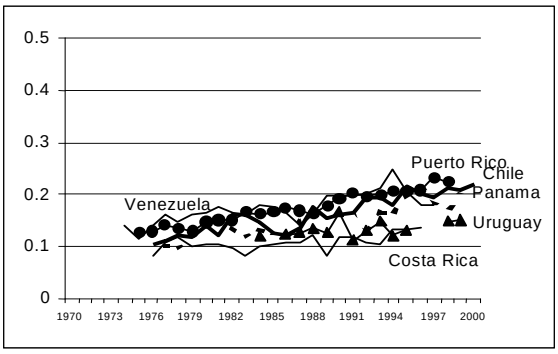
Chart 4: Relative earnings of skilled workers in Chile



Source: Instituto Estadística de Chile, skilled workers include profession and technical workers and managers and administrators (using employment weights), unskilled workers are other workers.

Chart 5: Share of skilled workers in total employment

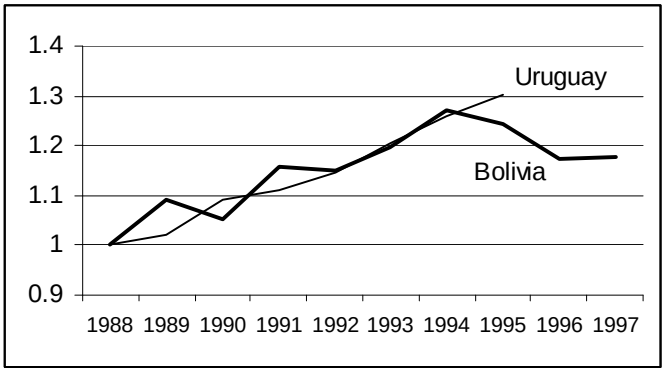




Source: ILO labour market database (see appendix)

ILO data can also be used to construct wage data by occupation. However, the data for Latin American countries are patchy. We plot the relative earnings for two countries: Bolivia and Uruguay. For each country we have selected annual time series by occupation and divided all available occupations in to skilled and less-skilled occupation. The ratio of the mean of the two types of labour was then used to approximate relative earnings.

Chart 6 Relative earnings of skilled workers in Bolivia and Uruguay



Source: ILO labour market database (see appendix)

The general conclusion from the review of the above data sources (ECLAC, national annual household surveys, and ILO) is that the relative position of skilled workers has improved over the 1990s in most countries. In many but not all countries this has manifested itself in an increase in relative wages, while most countries have also experienced an increase in the relative employment of skilled workers (which should have caused a drop in relative wages). Because an important factor behind income inequality is wage inequality, it will be important to understand why wage inequality increased or continued to exist, despite an increase in the relative employment of skilled workers.

3. Causes of Income Inequality in Latin America

Many researchers have examined the causes of income inequality in Latin America in recent years (IDB, 1998; ECLAC, 2000, Behrman *et al*., 2000; Morley, 2001b, Weller, 2001). Income inequality can be determined by three factors: the distribution of factors of production and the demand and supply for those factors. The factor of production that is driving income inequality is labour or human capital. This section will briefly summarise the main points emerging in the debate on income inequality.

- Land distribution is distributed much more unequally in Latin America than elsewhere. No Latin American country was in the group of low or even medium inequality (Morley, 2001b).
- While physical capital and profit income tends to be more skewed towards the rich than labour income, it is argued that labour inequality is more important in affecting income (Morley, 2001b).
- Human capital and education are key drivers of income distribution. Education and experience determine the relative position in the income distribution (Birdsall and Londono, 1997).
- During the 1990s there has been a widening in the wage differential between university and high-school graduates and lower education groups (Behrman et al., 2000) despite a higher share of college and high-school graduates.
- While Asia equalised education increases over the entire labour force, Latin America focused on expanding primary and university (not secondary). This may have delayed the point at which overall educational inequality begins to decline in Latin America (Morley, 2001b).
- Income inequality was relatively high in these countries and remained high or increased during the 1990s (Székely and Hilgert, 1999) despite a significant increase in the supply of skilled workers.
- Inequality in Latin America is unusually concentrated in the top decile which, in part, reflects the relatively high returns to higher education and the fact that relatively few people obtain higher education (IDB, 1998).
- Labour segmentation is associated with income inequality. Controlling for other determinants of pay, rural workers earn a quarter less than urban workers, and formal workers earn less than informal workers (IDB, 1998).
- A poorly functioning capital market generates high return only for a few and ignores opportunities of the poorest (IDB, 1998).

- Traditional trade theory can be employed to understand traditional thinking on the link between openness and wage inequality. The workhorse of traditional trade theory is the Heckscher-Ohlin model with capital and labour as factor of production. By taking skilled and unskilled labour as the two factors of production and assuming that unskilled labour is relatively abundant in Latin America compared to the main trading or investment partners (US, Japan and most of Europe), it is possible to see what traditional trade theory would predict regarding the effect of FDI on wage inequality. Accordingly, factor flows to developing countries (Latin America) should be in unskilled labour intensive sectors, raising the relative demand for unskilled labour (or natural resources). Openness to trade and capital would lead to a narrowing of wage inequality between skilled and unskilled workers. However, Wood (1997), Robbins (1996) and Robertson (2000) did not find compelling evidence for this in Latin America.

4. Foreign Direct Investment and Income Inequality[2]

Where and how does FDI fit into the debate on income inequality? Section 4.1 discusses the effects of FDI on development generally. Section 4.2 discusses the theoretical links between FDI and income inequality and section 4.3 surveys the evidence.

4.1 FDI and development: indicators

There are many areas in which FDI affects development and Table 5 lists seven of these. The table distinguishes between static and dynamic effects and argues that FDI can have positive and negative dynamic effects on development in all of these areas. While FDI was traditionally seen as an additional source of capital, vital for the development of countries with insufficient economic capacity and infrastructure, and where domestic saving rates are low, the view that FDI can also bring new techniques and skills is also important.

The table also shows the indicators used to measure the impact of FDI. The design and measurement of such indicators is not straightforward. As FDI is associated with direct costs and benefits as well as indirect costs and benefits, a simple quantitative measure (FDI flows, direct employment, wage levels, etc.) is not sufficient as a means of assessing the impact of FDI on development. There are three alternatives. First, there are detailed econometric studies assessing one aspect of the investment, for example, productivity spillover effects. Second, there are cost-benefit analyses, valuing the costs and benefits of all aspects of an investment. Finally, there are qualitative accounts comparing outcomes in similar situations but with alternative policies in place. While the first two approaches are criticised for not being able to construct a 'strategic counterfactual', the qualitative approach may not address cause and effect adequately. Outcomes of all approaches may further depend on the time framework and sector of analysis.

There is indeed a heated discussion about the impact of FDI on development, and at least a significant part derives from the observation that (foreign) multinationals are different from local (non-multinationals) firms. Foreign multinationals tend to be larger, pay higher wages, are more capital and skill intensive and introduce more up-to-date technology (see e.g. Dunning, 1993 and Caves, 1996). Some characteristics of multinationals relate simply to

[2] This section is based in part based on an ODI briefing paper *Foreign Direct Investment. Who gains?* available from www.odi.org.uk

the size of the firm, which itself is often related to higher pay, more training and usage of the latest technologies (Tan and Batra, 1997). However, controlling for factors such as size, foreign ownership is still related to better performance.

Te Velde (2002b) discusses the econometric evidence of FDI on growth and productivity. There are different types of econometric studies. Macro and meso studies usually find positive and significant correlations between FDI and GDP per capita or productivity. This may come as no surprise as FDI tends to locate in higher value-added industries. It is often not clear whether productivity increases at the macro level are driven by spillovers to and learning effects in local firms, or only because of a composition effect. It is thus important to understand *whether* and *how* positive spillovers to local firms occur because FDI associated with positive spillovers has long-lasting effects for development whereas FDI without spillovers may have only one-off effects which may disappear when the foreign investors leaves the country.

Micro-econometric studies can account for the composition effect testing whether local firms can improve their productivity as a result of foreign presence. It must be noted, however, that spillover studies are usually confined to the manufacturing industry. A significant body of evidence (e.g. Haddad and Harrison, 1993; Aitken and Harrison, 1999; Djankov and Hoekman, 1999) finds that the productivity level of foreign firms is higher than in domestic firms (but there are some exceptions, see Matsuoka, 2001, for Thailand) but that the effects on productivity levels and growth in domestic firms are mixed. As a result of foreign firms, domestic firms in the same sector could be better off as (foreign) competition forces them to upgrade technologies (as in the case of Indonesia, see Blomström and Sjöholm, 1999). They could be worse off when foreign firms take the market of existing local firms (as in Venezuela, suggested by Aitken and Harrison, 1999). Or they could not learn at all as the productivity gap is too large to learn anything (as in Mexico, see Blomström, 1986). In Morocco, Venezuela and the Czech Republic, the presence of foreign firms lowers productivity *growth* in domestic firms.

Most econometric work on the effects of FDI on development tends to ignore economic and policy factors affecting the link between FDI and development. It is often shown that FDI is correlated with growth and productivity, but this masks the fact that different countries with different policies and economic factors tend to derive different benefits and costs of FDI. Whether the positive effects of FDI outweigh the negative effects in Table 5 will depend on the economic and policy factors in the host country as well as the sector and the strategies of multinational affiliates. Recently, researchers have begun to stress the importance of local capabilities (educated and trainable workforce, see, e.g., Borensztein et al. (1998), investment in R&D see e.g. te Velde (2001), the ability to conduct an outward oriented trade policy, see e.g. Balasubramanyam et al., 1996) in deriving benefits to the local economy. One implication could be that countries with relatively few local capabilities are less able to derive benefits from FDI. On the other hand, however, researchers have also suggested that countries have more to gain the further they have to catch-up.

Table 5 Foreign Direct Investment and host-country development

Impact Area	Static effects		Dynamic effects		
	Indicators	**Differences between foreign and local firms**	**Potential dynamic benefits of FDI**	**Potential dynamic costs of FDI**	**Indicators**
Employment and Income	• Employment generation inside foreign firms • Wage levels for staff with given characteristics	Foreign firms are larger and pay higher wages (especially for skilled employees) than local firms.	Provides employment and incomes directly.	May indirectly crowd-out other employment by replacing existing employment or pushing up factor prices; may lead to increased wage inequality.	• Long-run employment generation inside firm and in suppliers and buyers • Long-run wage development in foreign firms and spillover effects on wage levels in other firms inside or outside sector
Physical capital	• Fixed capital formation • Financial transfers	Foreign firms tend to be more capital intensive	Stable source of external finance, improving the balance of payments, and potentially raising fixed capital formation.	May pre-empt investment and opportunities of domestic firms.	• Long-run relationship between FDI and domestic capital formation
Market access	• Share of inputs imported • Share of output exported	Foreign firms tend to be more trade intensive	Firms can gain access to export markets by using global networks of multinationals.	Multinationals can maintain tight controls of export channels.	• Long-run relationship between exports and FDI, and between imports and FDI
Structure of factor and product markets	• Concentration in product and factor markets • Profit margins	Foreign firms can often be found in sectors with 'barriers to entry'.	Entry by foreign firm may lead to more competition. This may reduce product prices.	The entry of foreign firms can lead to further concentration and market power. This may raise prices of own and other products.	• Long-run relationship between FDI and profitability
Technology, skills and management techniques	• Skill level of employees • Training budgets • Output per employee • R&D budgets • Types of technologies used	Foreign firms are more skill intensive, tend to use more up-to-date technologies and train more.	Provides up to date techniques, skilled personnel and advanced management techniques, raising the return to skills offering additional incentives for education. Positive spillover effects on domestic firms through backward and forward linkages, demonstration effects and human resource development.	Spillovers are not automatic or free. Reliance on foreign technology and skills may inhibit development of local capabilities. Increased linkages raise dependency of domestic firms on multinationals.	• Intra and extra-sectoral spillover effects on productivity in other firms. • Share of inputs sourced locally • Supplier development • Upgrading and long-run development of technology, training and skill levels in foreign firms
Fiscal revenues	• Fiscal payments • Grants to foreign firms	Tax holidays or outright grants are sometimes offered to foreign firms	Multinationals can raise fiscal revenues for the domestic government through the payment of taxes in case of new economic activities with more value added.	If multinationals crowd-out domestic firms, fiscal revenues may actually be lower through the use of special tax concessions, eventually leading to an erosion of the tax base. Special tax concessions are an implicit subsidy and in case of lack of transparency can lead to rent-seeking behaviour.	• Long-run fiscal payments through foreign firms and through a change in economic activity more generally.
Political, social and cultural issues			Foreign firms can expose host country to other norms and values, e.g. environmental management, ethics.	Foreign firms may lead to political, social and cultural problems, by imposing unacceptable values (labour and environmental standards) interfering with political regime, and are said to exacerbate existing problems of corruption.	
Poverty	• Combination of how above indicators affect the poor • Social investment • Core health, environmental and infrastructure programmes		If the effects in this column are important, this provides an enabling environment thereby directly and indirectly alleviating poverty.	If the effects in this column are important, this provides a disabling environment thereby directly and indirectly worsening poverty.	• Combination of the above indicators • Long-run effect of social investment • Lon-run effect of core health, environmental and infrastructure programmes

Source: building on table in UNCTAD (1999).

4.2 FDI and income inequality: what are the links

The links between FDI and income inequality are complex. We may distinguish between the effects on wage inequality and on non-wage income inequality. Appendix A discusses how to assess the effects of FDI on wage inequality. The following general effects play a role:

- *Skill-specific technological change.* In addition to initial efficiency differences, FDI could induce faster productivity growth of labour in both foreign (technology transfer) and domestic firms (spill-over effects). If such productivity growth is skill-biased (for example, information technology), FDI may increase skill-biased technological change (Berman and Machin, 2000).
- *Skill-specific wage bargaining.* Skilled workers are usually in a stronger bargaining position than less-skilled workers because they posses key skills in relatively scarce supply and may have better negotiation skills to negotiate higher wages.
- *Composition effect.* Foreign firms tend to locate in skill-intensive sectors or skill-intensive segments within sectors. If FDI causes a relative expansion of skill-intensive sectors, this will improve the relative position of skilled workers and raise wage inequality (Feenstra and Hanson, 1995).
- *Training and education*. FDI may affect the supply of skills through firm-specific and general training and through contributions to general education. While foreign firms generally train more than their local counterparts, after controlling for other factors that are positively related to training such as size, much training benefits skilled workers.

The above points show that FDI can be expected to increase wage inequality in contrast to prediction by traditional trade theory (in the 2 by 2 skilled/unskilled labour variant of the Hechscher Ohlin model) that FDI reduces wage inequality in developing countries because FDI would allow developing countries to specialise in less-skilled intensive activities. However, because there are many possibly opposing effects, empirical testing is required. See also appendix A for the hypotheses concerning FDI and wage inequality.

In addition to the effects of FDI on wage inequality, there can be effects on non-wage income. For instance, FDI may increase profits and the return to capital, relative to other types of income such as that of the self- employed and employees. Real wages have decreased over the past two decades in many Latin American countries (Weeks, 1999) implying that capital owners have benefited more from the economic reforms. This could have helped increase income inequality. Other effects on income inequality could be indirect, for instance through the effects on fiscal revenues and expenditures. These could nonetheless be very significant or the main link to inequality for certain types of investment (e.g. natural resource based FDI).

4.3 FDI and wage inequality: evidence so far

ODI (2002) summaries recent evidence so far. Most evidence on the relationship between inward FDI and wage inequality at the macro level is for developed countries. Blonigen and Slaughter (2001) find that multinational activity was not significantly correlated with skill upgrading within US manufacturing sectors over the period 1977-1994, but Te Velde (2001) finds evidence for a sector bias towards using skilled workers. Figini and Gorg (1999) find that FDI was, up to a point, associated with skill upgrading and increased wage dispersion in

Irish manufacturing over the period 1979-1995, while Taylor and Driffield (2000) find significant effects of FDI on wage dispersion in UK manufacturing.

With regards to the evidence for developing countries and Latin America in particular, Feenstra and Hanson (1995) find that inward FDI increased the relative demand for skilled labour in Mexican manufacturing over the period 1975-1998. In some regions (that may be very localised), FDI can account for over 50% of the increase in the labour wage share in the late 1980s. Freeman et al. (2001) find no evidence for a consistent relationship between FDI and wage inequality in a large sample of developing countries.

Te Velde and Morrissey (2002) provide macro evidence for the effects of FDI on wages and wage inequality in five East Asian countries (Korea, Singapore, Hong Kong, Thailand and Philippines). Wage inequality has been low and decreasing in some but not all East Asian countries. Using ILO data for wages and employment by occupation, they did not find strong evidence that FDI reduced wage inequality in five East Asian countries over the period 1985-1998. Controlling for domestic influences (wage setting, supply of skills) they found that FDI has raised wage inequality in Thailand. They also found that FDI raises the wages for both skilled and low-skilled workers.

The macro evidence shows that FDI does not tend to reduce wage inequality but may increase it. However, it should be emphasised that the evidence available so far is thin and that most research covers wage inequality in the manufacturing sector and only over a recent period. We have not found any published macro-evidence for specific Latin American countries other than Mexico. This paper extends the analysis in Te Velde and Morrissey (2002) for East Asia to Latin America.

Table 6: Micro-evidence on foreign ownership in Latin American manufacturing

Study	Country, year and number of observations	Dependent variable	Controls	Results
Aitken and Harrison (1999), table 2 column 2	Venezuela, 10,257 manufacturing plants, 1976-1989	Log output in plant	Plant inputs, sector dummies, regional controls, share of foreign ownership in sector and region	Foreign firms have 15.4% higher productivity and is significant.
Aitken, Harrison and Lipsey (1996), table 1	Mexico (1990) and Venezuela (1987), 10000+ and 4700+manufacturing establishments	Log wage of skilled and unskilled wages in plant	Capital stock, royalty payments, output price, region price, industry and region dummies	Foreign firms pay 28.7 per more in Venezuela, and 21.5% in Mexico (skilled workers), and 22.0 in Venezuela and 3.3% in Mexico (unskilled workers).
Blomstrom et al. (2000)	Uruguay (1988), 159 manufacturing plants	Value added per employee	Capital-labour ratio, capacity utilisation, technology payments, share of management personnel, size of firm.	A one percentage increase in the share of foreign ownership in the sector raises labour productivity in local firms by 10% on average. However, spillovers apply only to plants with productivity levels similar to foreign firms.

Te Velde and Morrissey (2003) survey the empirical evidence on foreign ownership and wages at the micro level. They find that:

- foreign-owned firms pay more to their workers than local firms. Wage differentials can be up to 60%, but are often more modest;
- studies that do not control fully for other effects (size, location, industry, etc.) overstate the effect of foreign ownership on wages; and
- studies that distinguish between average wages in two separate skill categories find that wage differentials are greater for non-production (relatively skilled) workers than for production (less skilled) workers. Table 6 shows that this also applies to Mexico.

In general, the evidence for East Asia (Lipsey and Sjöholm, 2001, for Indonesian manufacturing; Matsuoka, 2002, for Thai manufacturing; Zhao, 2001 for Chinese manufacturing) supports the hypothesis that, on average, foreign firms pay higher wages to their workers but that skilled workers are the main beneficiaries of such pay premia. Hence, wage differentials tend to differ according to skill level. Such static effect would *ceteris paribus*, raise wage inequality. There is however a lack of evidence for South American countries.

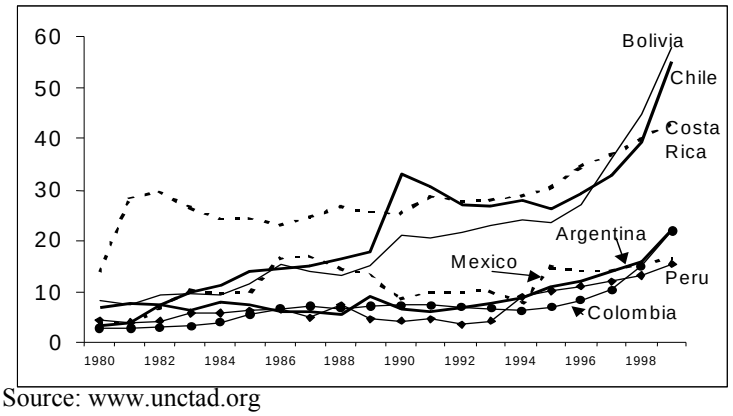
5. FDI and Income Inequality in Latin America: New Empirical Results

This section will present new and preliminary empirical results of the effects of FDI on income inequality. Section 5.1 provides a brief overview of FDI in Latin America and section 5.2 presents the estimation results. Section 5.3 examines exiting case study evidence.

5.1 FDI in Latin America

FDI has risen dramatically in Latin America since the reforms in the 1980s. Some countries reformed earlier than others (Andean in early 1990s). Increased openness to FDI resulted in an increase in FDI in all almost countries. Brazil, Mexico, Argentina, and Chile have attracted the largest amounts of FDI. This partly reflects the size of the market as much of FDI in Latin America has been market-seeking. To allow for the size of the market (GNP), Chart 7 shows the stock (accumulated flows) of FDI as a % of GDP. Bolivia, Chile and Costa Rica clearly top the list in percentage terms. All countries experienced an increase on this measure.

Chart 7: FDI in Latin America (stocks as % of GDP)



Source: www.unctad.org

The largest share of the FDI stock in Latin America originates in the United States, Europe and Latin America itself, while the EU has recently overtaken the US with regards to FDI flows. However, this varies by country. While FDI to Africa is predominantly in the primary sector and FDI to Asia is mostly in manufacturing and services, there appears to be no sector bias of FDI in Latin America. Much depends on the country, as Table 7 shows. Countries such as Bolivia (gas sector) and Chile (mining) have attracted most FDI in the primary sector, while Argentina and Brazil (car industry) have attracted a lot of FDI in manufacturing. The services sector dominates in Peru, and to some extent in Mexico.

However, Mexico and Central America countries have attracted significant US investment in maquila plants.

Table 7: Sector distribution of FDI

	Sector distribution of FDI (stocks or accumulated flows over nearest period)		
	Primary: Agriculture, Mining, and Petroleum	Manufacturing	Services and others
Argentina (1992-1994)	14	35	51
Bolivia (1992-1997)	60	12	28
Brazil (stock in 1995 + flows in 1996 and 1997)	2	30	68
Chile (1974-2001)	35	13	52
Colombia (1994-2000)	9	23	69
Paraguay (1995-200)	5	25	70
Peru (1993-1999)	17	13	70

Source: See appendix A

Table 8: Strategies of multinationals in Latin America

	Efficiency –seeking	Raw materials	Market access (national and regional)
Primary sector		**Oil/gas:** Venezuela, Colombia, Argentina, Bolivia and Brazil **Minerals:** Chile, Argentina and Peru	
Manufactures	**Motor vehicles:** Mexico **Electronics:** Mexico and Caribbean basin and Mexico **Apparel:** Caribbean Basin and Mexico		**Motor vehicles:** Mercosur **Chemicals:** Brazil **Agribusiness, foods and beverages:** Argentina, Brazil and Mexico **Cement:** Colombia and Venezuela
Services			**Financial:** Brazil, Mexico, Chile, Argentina, Venezuela, Colombia and Peru Telecommunications: Brazil, Argentina, Chile and Peru **Electricity:** Chile, Colombia, Brazil, Argentina, and Central America **Gas distribution:** Argentina, Brazil, Chile and Colombia Commerce: Brazil, Argentina, Mexico and Chile

Source: ECLAC (2001)

There are many reasons why FDI in Latin America increased during the 1990s. The first reason is the liberalisation of the FDI regime during the 1980s and 1990s. Almost all countries in Latin America, from Mexico to Argentina, liberalised both trade and investment regimes. Part of the increase in FDI can be explained by efficiency-seeking FDI (Tables 7 and 8), which exploits low labour costs. FDI from the US in manufacturing assembly plants in Mexico and Central America follows such strategies. Another part can be explained by (natural) resources seeking FDI (as was the case in many South American countries). However, a significant increase in FDI in Latin America was caused by the combination of reduction in restrictions on FDI and privatisation of public services. Large privatisation often involves foreign investors with sufficient capital, and countries such as Brazil. Mexico and Argentina have received significant FDI through privatisation. There are also different experiences in smaller Latin American countries. Peru's privatisation policy has been much more successful in attracting FDI than in Ecuador (see UNCTAD's investment policy reviews for these countries.)

A survey of European companies revealed the following reasons for investing in Latin America, in order of importance: the growth and size of the market; efficiency gains; political and social stability; macroeconomic stability; agricultural production potential; foreign investment legislation; skilled manpower; quality infrastructure; raw materials; tax and other incentives; cost of manpower; and membership of a regional grouping (Vodusek, 2001). While many Latin American countries appear investor friendly on paper (see reviews of foreign investment barriers, competitive reviews), there are still many areas in which governments could do better. In addition to the above list, research suggests that conflict and corruption deter foreign investment (e.g. Wei, 2000). For a firm, paying bribes is like paying a tax, but then the firm is faced with more uncertainty. Transparency International collects data on the perception of corruption, mainly on the basis of private sector surveys. Corruption is defined as the misuse of entrusted power for private gain and ranks from 10 (no corruption) to 0 (highly corrupt). Table 9 shows the ranking of 91 countries, with some Latin American appearing at the bottom.

Besides corruption there are other perceived obstacles to FDI in Latin America, as shown in Table 10.

Table 9: Corruption perception index 2001:

Transparency International

2 Denmark 9.5	47 Bulgaria 3.9
3 New Zealand 9.4	Croatia 3.9
4 Iceland 9.2	Czech Rep 3.9
Singapore 9.2	50 Colombia 3.8
6 Sweden 9.0	51 Mexico 3.7
7 Canada 8.9	Panama 3.7
Netherlands 8.8	Slovak Rep 3.7
9 Luxembourg 8.7	54 Egypt 3.6
10 Norway 8.6	El Salvad 3.6
11 Australia 8.5	Turkey 3.6
12 Switzerland 8.4	57 Argentina 3.5
13 United Kingdom 8.3	China 3.5
14 Hong Kong 7.9	59 Ghana 3.4
15 Austria 7.8	Latvia 3.4
16 Israel 7.6	61 Malawi 3.2
United States 7.6	Thailand 3.2
18 Chile 7.5	63 Dom. Rep. 3.1
Ireland 7.5	Moldova 3.1
20 Germany 7.4	65 Guatemala 2.9
21 Japan 7.1	Philippines 2.9
22 Spain 7.0	Senegal 2.9
23 France 6.7	Zimbabwe 2.9
24 Belgium 6.6	69 Romania 2.8
25 Portugal 6.3	Venezuela 2.8
26 Botswana 6.0	71 Honduras 2.7
27 Taiwan 5.9	India 2.7
28 Estonia 5.6	Kazakhstan 2.7
29 Italy 5.5	Uzbekistan 2.7
30 Namibia 5.4	75 Vietnam 2.6
31 Hungary 5.3	Zambia 2.6
Trinidad &Tob 5.3	77 Côte d´Ivoire 2.4
Tunisia 5.3	Nicaragua 2.4
34 Slovenia 5.2	79 Ecuador 2.3
35 Uruguay 5.1	Pakistan 2.3
36 Malaysia 5.0	Russia 2.3
37 Jordan 4.9	82 Tanzania 2.2
38 Lithuania 4.8	83 Ukraine 2.1
South Africa 4.8	84 Azerbaijan 2.0
40 Costa Rica 4.5	
Mauritius 4.5	
42 Greece 4.2	
South Korea 4.2	
44 Peru 4.1	
Poland 4.1	

Table 10: Perceived obstacles to EU FDI in Latin America

Obstacle:	Score
Political instability	58
local regulation and bureaucracy	54.2
legal/judicial insecurity	53.4
corruption	51.9
fear of devaluation	50.8
violence	48.5
problems with repatriation of profits/capital	43.2
level of local taxation	39.4
Underdeveloped infrastructure	39.0
labour legislation	37.1
social problems/poverty	36.7
lack of qualified human resources	34.1
local safety, health and environmental standards	32.2
undeveloped local capital markets	31.4
cultural differences	19.3

Source: Vodusek (2001), based on questionnaire of 66 European TNCs

The motivations of FDI may have implications for how FDI affects wage inequality. For instance, natural resource seeking FDI, while important in terms of value added in certain countries (see appendix table D1 for USFDI), is not a major employer at least directly (there could of course be some indirect jobs), while efficiency seeking FDI in manufacturing may have significant employment effects for low-skilled workers, albeit at possibly low wage levels.[3] The bottom of table A3 contains a classification of countries based on what the main motivations are of FDI. We will use this classification in some of our regressions.

5.2 FDI and Wage inequality: regression results

We used the equations in appendix A to examine the effects of FDI on income inequality. The data for FDI were taken from UNCTAD, while the wage and employment data (by occupation) were mainly taken from annual national household survey data (see Section 2). Detailed regression results can be found in appendix A.

Table 11 contains a summary of the results. These results are tentative and the regressions on annual time series need to be extended to other Latin American countries. Further control variables could also be included to obtain a more accurate picture; and a better description of the dynamics could also be useful. Nevertheless, some general patterns are emerging. On the whole, FDI does not have an inequality reducing effect, although there are possible exceptions (e.g. Colombia) where FDI may have played a relatively minor inequality reducing role. On the contrary, there are indications that FDI in countries such as Bolivia and Chile (and Costa Rica when taken over the whole of the 90s) may have increased wage inequality. This conclusion is still valid when we allow for dynamic relationships (see appendix). The appendix also brings out that FDI raises wage inequality particularly between workers with third and second level education as compared with second and first level education.

[3] An example is Chile, where 8 per cent of employment in US majority owned firms is in mining, while it accounts for 35 per cent of value added. This would suggest high productivity (which is the case) and possibly high wages, which may not be the case as only 12 per cent of value added in US mining firms in Chile goes to compensating workers.

While this does not imply that FDI was or was not good for development and poverty reduction in these countries, it does imply that most of the gains from FDI have benefited skilled and educated workers. In fact, results in the appendix also suggest that for this limited sample the effects of FDI on wages are positive and significant for both types of labour, but are greatest for skilled workers. This suggest that on average FDI may raise wage inequality by raising wages of skilled workers more than wage of less-skilled workers. This mirrors the results found for Thailand in the East Asia example (Te Velde and Morrissey, 2002). However, if we disaggregate the effects of FDI by country, we find for Bolivia that FDI has raised wage inequality because it has negatively affected the wages of less-skilled workers more than the wages of skilled workers (at least over 1987-1997). In Chile, FDI has raised wages of both types of workers.

Table 11: Summary of regression results

	Period and data coverage	Effect FDI on wage inequality (significant coefficient between parentheses)	Part of wage inequality increase associated with FDI
Based on panel of domestic annual data sources, which includes employers and employees in the private and public sector:			
Bolivia	1987-1997	+ (0.023)	Around half of the actual 40% increase in wage inequality can be associated by FDI
Chile	1993-2000	+ (0.0026)	Around half of the actual 13% increase can be associated with FDI
Colombia	1978-1994	- (-0.025)	Almost all of the actual 6% decrease in wage inequality can be associated with FDI.
Costa Rica	1987-1997	No significant effect	
Based on data in ECLAC (2002), wage earners in the private sector:			
Chile and Venezuela (natural resource seeking FDI)	1990s	+ (0.012)	FDI can be associated with 20% increase in earnings inequality in Chile and 10% in Venezuela
Colombia, Ecuador, Honduras, Panama, Paraguay and Uruguay (mainly efficiency and market seeking FDI)	1990s	No significant effect	
Based on IDB (2001), urban male wage earners aged 30-50:			
Chile, Bolivia, Costa Rica and Venezuela (natural resources or skill seeking FDI)	1990s	+ (0.022)	FDI can be associated with significant increases in third/first level (not second/first) wage inequality in Chile, Bolivia Venezuela
Argentina, Brazil, Colombia, Honduras, Mexico and Panama (mainly efficiency and market seeking FDI)	1990s	No significant effect	

Source: see appendix A

5.3 FDI and Wage inequality: case study evidence in literature

It is also possible to examine the distributional impact on the basis of case study evidence. We do this in table 12. There are some well-known FDI cases in the literature, ranging from the water war in Cochabamba to the fiscal wars for automobile investors in Brazil and the

successes of Intel in Costa Rica. We look for evidence that can tell us whether the effects on wage, incomes or real incomes varied by level of education or skill level.

The relevant section on social impact can be summarised as follows

- The Intel plant in Costa Rica benefited skilled workers more than less skilled workers, at least temporarily. In the longer-run the effect of increased inequality can be offset by how government and Intel help to boost the supply (and reward) of skilled workers.
- While the automobile plants in Brazil may have provided employment opportunities in assembly operations, local governments wasted money on grants which could otherwise have been used for social purposes: income inequality could have been reduced more if this had been the government's objective.
- The temporary privatisation of a water plant in Cochabamba led to an increase of wage bills which hurt the poor people who spend a relatively large proportion of their budget on water. This may have led to a worsening in *real* income inequality (i.e. less value for money, particularly for the poor).
- The Inti Raymi (a gold mine in Bolivia) is an example of where investment was made (more) relevant for the poor by starting a foundation for community development.

This selected reading of the evidence indicates that FDI may have benefited skilled workers more than less skilled workers directly (Intel) or indirectly (water in Cochabamba), or that business (Inti Raymi) and government initiatives (less financial grants) may help to improve the distributional impact of FDI. However we will look at how FDI affects distribution in different policy frameworks in the next section.

6. Policies to improve the distributional impact of FDI

FDI has not played a major inequality-reducing role in most of Latin America, and in some countries it may have increased wage inequality. Irrespective of the actual impact of FDI, there is a debate that the impact of FDI should be improved, particularly for low-income workers. According to a Latinobarometro survey in 12 Latin American countries, most respondents believed that the privatisation of state companies (often associated with FDI) was, in 2000, not beneficial. There was a clear trend (in a series of annual surveys) towards also feeling that it had been less beneficial over the past few years. This section reviews government (6.2) and business (6.3) policies which may help to improve the impact of FDI on the poorest part of the workforce. There may also be instances where the business and development case for improving the impact of FDI for low-income workers intersect (6.4). Before this, section 6.1 will discuss a framework in which we can analyse the effects of TNCs on income inequality, which serves as an introduction to analyse the effects of FDI policy.

Table 12 FDI and income inequality in Latin America: implications from selected case studies taken from the literature

	Main motivations to invest include	Economic impact	Social impact	Implications for policy
Intel – Costa Rica (Sources: Spar, 1998; Larrain *et. al*., 2000, Rodriquez-Clare, 2001)	• Export intensive "mobile" electronics investor • Qualified labour force (technicians professional etc) build up over long-run • Political stability; corruption-free and credible legal institutions • Co-ordinated effort to attract skill-intensive technology investments by CINDE • Tax holiday in EPZs (12 yrs)	• **Micro:** pays higher wages than manufacturing average **Macro:** caused around half of GDP and export growth in 1999; net exports were USD 1.5 billion; no additional fiscal receipts. • **Externalities micro** through training (institutes) and linkages with 100 domestic suppliers (helped by linkage promotion schemes); and **macro** through restructuring of investment climate	• Wage increases mainly to skilled workers raising inequality (temporarily) • No direct relevance to poorest; possibly indirectly through effects on growth (but not fiscal receipts), additional FDI and supplier development and premium on being educated.	• **Co-ordinated and targeted approach** may have worked for growth but may also have raised income inequality through increased **demand** for skilled labour • However, Intel also helped increase **supply** of skilled labour through supporting engineering studies at the Costa Rican Technology Institute which may help to lower inequality. • **Appropriate education policy** has helped attracting FDI • **Linkage support policy** helpful for Intel suppliers • Doubts on **tax holidays** which may have helped attracting FDI, but reduces tax receipts which can be used to increase social relevance. (Tax holidays under EPZs will be disallowed for countries such as Costa Rica from 2008)
Foreign automobile investors in Brazil (Hanson, 2000, Rodriquez-Pose and Arbix, 2001)	• Brazilian / Mercosur market (market seeking) • Fiscal grants (up to $ 340.000 per job) unlikely to have been effective at national level, but existence of sub-national competition	• Direct employment in assembly operations • No increase in (local) R&D • Trade balance deficit (imports of parts) as national supply parts industry taken over by foreign firms or imports • Little development of local suppliers	• Forgone spending opportunities after offering grants: "pure waste" for the economy • Reduction in local employment to supply parts	• **Incentives** need to be regulated at least at national and possibly international level (some talks have emerged at MERCOSUR level) to improve social impact of competition for FDI
International Water, Bolivia - consortium incl. Bechtel and Edison (various sources including websites and *the economist*)	• Market seeking	• Increased water bills (doubled for some) • Little investment • Investors suing (ICSID) government for breach of contract – could amount to $25 million to recover foregone profits	• No effect on nominal incomes, but less value (services) for same money; water supply more expensive with poor people bearing the cost disproportionately (increase in real income inequality)	• Need for regulators or **guidelines** in case of local monopolies *before* attraction of FDI • A well considered approach to **bilateral investment treaties** • Direct negative impact on water bills for poor people, increased real income inequality which needs mitigation for distributional purposes.
Inti Raymi, Mining company, Bolivia. Buitelaar, 2001 and Villalobos, 2002)	• Natural resource seeking for exports	• Marco impact of mining activity on GDP in Oruro visible, through employment and second-round effect; low fiscal receipts; Micro: foreign owned mining companies pay higher wages than others.	• Employment opportunities, sometimes with poor working conditions; Inti Raymi foundation with $16.2 million for local programmes since 1991	• **Business initiatives can** help local development as well as alleviate resentment against foreign ownership.

6.1 Analysing the effects of policy on wage inequality in a supply and demand framework

This section discusses a framework in which we can analyse the effects of TNCs on human capital and income inequality. We first propose a demand and supply framework distinguishing between skilled and less-skilled workers, which is instrumental in deriving implications for human capital and income inequality. This serves as an introduction to analyse the effects of FDI *policy*.

We use a supply and demand framework of the market for skilled and less-skilled workers, allowing for market structure (e.g. bargaining), enabling us to analyse the effects of TNCs and FDI policy on human capital development and income inequality. We divide workers into skilled and unskilled (less-skilled) categories, where skills can be based on education or occupation. The income of skilled workers relative to income of unskilled workers is the measure of wage inequality.

Simple demand and supply equations for skilled and unskilled workers are as follows[4]

$$q_U^D = a_U + b_U(w_S - w_U) \quad = \quad \text{Demand for unskilled workers}$$
$$q_U^S = c_U + d_U(w_S - w_U) \quad = \quad \text{Supply of unskilled workers}$$
$$q_S^D = a_S + b_S(w_S - w_U) \quad = \quad \text{Demand for skilled workers} \qquad (6.1)$$
$$q_S^S = c_S + d_S(w_S - w_U) \quad = \quad \text{Supply of skilled workers}$$

where q is demand for (superscript D) or supply of (superscript S) skilled workers (subscript S) or unskilled workers (subscript U); a, b, c and d are coefficients; and w is the wage of workers. We further impose homogeneity of degree zero in wages, and set $a_S - a_U = a; c_S - c_U = c$, so that relative demand (q^D) and supply (q^S) of skilled workers are

$$q^D = a + b\ w \qquad (6.2)$$
$$q^S = c + d\ w$$

where $w = w_S - w_U$, and $b = b_S - b_U; d = d_S - d_U$. Suppose individual supply and demand curves in (6.1) are upward respectively downward sloping ($b_S < 0; b_U > 0; d_S > 0; d_U < 0$) then relative supply and demand curves are also upward and downward sloping ($b < 0; d > 0$). The curves are shown as solid lines (q^D and q^S) in Chart 8 (see also Machin, 1996). In the remainder of the section we will explain how FDI policy can shift the solid curves towards positions indicated by dotted lines.[5]

Chart 8: Relative demand and supply of skills

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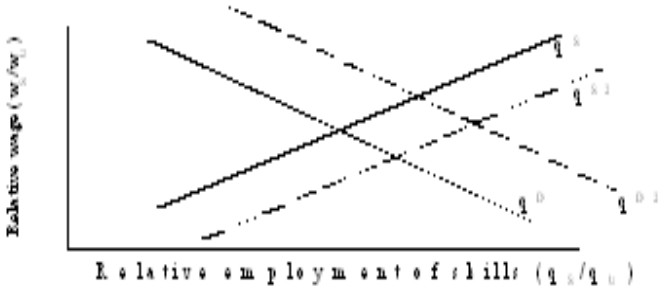
[4] Variables are in logs. Gregg and Manning (1997) argue that the reservation wage of (or demand for) one type of workers depends on the wage of (demand for) the other type.

[5] Taking model (3.1) – (3.2) in addition to $a > c$, we can assume for now that there exists an equilibrium between supply and demand ($q^D = q^S$). The equilibrium relative wage ($\overline{w}$) and relative employment ($\overline{q}$) of skilled workers are

$$\overline{w} = \frac{a - c}{d - b},\ \overline{q} = \frac{ad - bc}{d - b}$$

and positive by assumption. These points (not shown) are at the intersection of the supply and demand curves in Chart 1. Wages can also be affected by 'wage-push' factors related to industrial relations such as minimum wages or wage bargaining. Unemployment can also be analysed in this framework, as this may affect wage bargaining.



The above framework assumes that demand and supply of skills are in equilibrium in a perfectly competitive world. This is not necessarily the case. One can have doubts to what extent factor markets work in this way in developing countries. For example, there may be a surplus of unskilled labour in the informal sector, keeping wages of unskilled labour low. Consider, too, the cobweb model, where it takes time for supply to adjust to new skill demands. TNCs wanting to transfer technologies to the host country require the use of skilled labour. Such skills become available only with a considerable time lag[6], by which time demand for skills may have changed. This market failure calls for policy intervention (Lall, 2000 and 2001).

More generally, there are various factors and labour market institutions which cause a wedge between actual and equilibrium relative demand and relative wage of skilled labour, and there are theoretical models (as well as evidence for developing countries) allowing for imperfect competition in wage setting (employment protection, minimum wage, rent-sharing, efficiency-wage models, see Söderbom and Teal, 2001). A minimum wage is one example. The enforcement of a 'biting' minimum wage (a move down along the relative demand curve) reduces the relative wage raises relative employment of skilled workers.

Te Velde (2002a) discusses how FDI policy can shift the solid curves towards positions indicated by dotted lines. There we focused on the effect of FDI policy on skill development, i.e. relative employment of skilled workers. Table 13 focuses on how FDI policy may affect wage inequality in the suggested framework of relative supply of and demand for skilled workers. The table contains four columns on the type of policy, expected effects on human capital formation, expected effects on wage inequality and on the volume of FDI.

In the remainder of section 6 we will focus on how Latin American countries have used the main policies listed in table 13. This will help to understand how FDI policy (by government and businesses) may have impacted on the relationship between FDI policy and wage inequality. Using the demand and supply framework as set out above will also link in directly with the way the regression model in the previous section has been set up. Hence, policies that are expected to impact on wage inequality (see above), and have been implemented in Latin American countries (as discussed below) will also have affected regression results as found in the previous section.

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[6] TNCs that raise the demand for skilled labour would also raise the return to education, which should lead to a supply response. However, in case of formal education, it can take 6 years before another level of education will be attained. In terms of the supply/demand framework, it means that countries may reach the equilibrium, if at all, only after significant oscillations.

Table 13: FDI policy, human capital formation and wage inequality

FDI policy	Effect on human capital formation (relative employment) ++ very positive + positive ? depends	Expected effect on wage inequality + increase in inequality - reduction in inequality ? depends	Expected effect on volume of FDI inflows + positive ? uncertain
A FDI attraction:			
Firm-specific targeting/clustering/ developing key sectors	+/? TNCs are more skill intensive than local firms (e.g. Singapore, Ireland, Costa Rica), but can also locate in low-skill sectors (garments)	+/- Depends on sector. Targeting high-tech industry is (+), but targeting garments is (-)	+ FDI promotion works (Wells and Wint, 1990), but depends on implementation
Trade facilitation (imports of capital goods, export orientation, trade agreements, etc.)	++ Attracting, export intensive asset-seeking affiliates + Efficiency seeking affiliates (e.g.EPZs)	+ See high-tech manufacturing - TNC affiliates in EPZs employ low-skilled workers	+ Experience of EPZs + Trade openness raises FDI inflows (Morisset, 2000)
Fiscal incentives linked to technology status	+ Pioneer status (see Singapore)	+/? Depends on type of TNC operations	?
Financial incentives	? Depends on elasticity of substitution between skilled and unskilled workers (see Ireland case)	? Depends on elasticity of substitution. However the effect would be negative if the effect on government revenue is taken into account.	? see Brazilian automotive industry, Hanson (2000)
TNC training	+ TNCs tend to train more (see section 6.3)	?/+ Training tends to be aimed at skilled workers	
Supply of skilled labour	++ By definition	- Especially when aimed at delivering primary and secondary education	+ see e.g. Noorbaksch *et al*, (2001).
Specific and general infrastructure policies	+ Improved infrastructure attracts FDI inflows	?	+ Wheeler and Mody (1992)
B FDI upgrading:			
Payroll tax, with revenues hypothecated for training.	+ see e.g. experience of SDF, HRDF and the Dominican Republic	?/- Training at all levels, but tax could be linked to unskilled workers	? Contrasting evidence on effects of taxes
Tax deduction for training expenses	+ anecdotal evidence, e.g. in Malaysia	+/? Even if training was equal among skill groups, this is likely to raise inequality	? see above
Public-private partnerships	+ see PSDC – Malaysia	+ in absence of social objective training aimed at skilled workers	?
Create training institutions with private sector/TNC involvement in planning of training	+ to ensure that training is more relevant to needs of private sector	?	+
Promote technology and innovative capacity (R&D policy) within TNC affiliates	+ see experience of Singapore	+ R&D centres employ skilled workers	?
Abolition of performance criteria (TRIMs)	+ /? Fewer TRIMs lead to more technology payments by US affiliates, Blomström *et al.* (2000, Table 13.2), but TRIMs may reduce local sourcing and employment	?	? Fewer TRIMs could lead to more inflows
C Linkages:			
Promote TNC linkages	+ Spillover effects on local firms	- when local firms employ unskilled workers	+/?
Raise local capabilities through skill enhancement	+ Reduced costs of technology transfer from TNCs, see Teece (1977)	- when local firms employ unskilled workers	

Source; building on Te Velde (2002b).

6.2 Government policies in Latin America related to modifying the impact of FDI

Education

Multinationals are often at the leading-edge in the use of new technology. They are also often more capital intensive and skill-intensive than local firms, requiring workers with knowledge of technical subjects, such as engineers (Lall, 2001). The growth in FDI therefore leads to a growing demand in skilled workers. This further leads to an increase in the relative scarcity of skilled workers who can, unless the education system provides appropriate and good quality workers that can be employed in sectors where FDI is locating, exploit this by demanding a higher wage. Good quality and appropriate education in this context requires at least a good educational basis (at least secondary education) on which TNC and their training systems can build as well as provision of tertiary technical education.

Table 14 provides the score card on primary, secondary and technical tertiary enrolment rates in developing countries and, in particular, Latin American countries. The traditional Asian Tigers stand out as having high enrolment rates in secondary and tertiary education and, particularly, in the tertiary technical subjects. This is less true, however, for Latin American countries which are positioned between the Asian Tigers and the other developing countries such as Middle Eastern and African countries. In particular, Latin America faces a secondary schooling deficit. There is also a lack of appropriate technical education to attract and benefit from much of manufacturing FDI.

The situation facing many Latin American countries is even worse when one considers the overall quality of their education systems. As well as lacking in quantity, Latin American schooling is still lacking in quality. Countries such as Brazil, Mexico and Chile were at the bottom of the world-class in a 2001 OECD study, in comparison to other countries in Eastern Europe and Asia which exceeded the quality levels of many Western countries. To make matters worse, Brazil, Argentina and Chile are usually among the top in Latin America, showing that the rest of the region has education of poor quality. Observers argue that much of education spending is wasted because schools are disorganised and teachers are poorly trained. They have also argued that there appears to be a lack of accountability, for example in terms of standard exams and school evaluation.

Good institutions are required to provide better quantity and quality education, thereby co-ordinating the supply and demand of skills. The involvement of the private sector (with good relationships with unions in tri-partite labour models in e.g. Singapore and Ireland) may improve the relevance of much of the education and training. Good quality and appropriate education will lead to the inclusion of the poorest part of the workforce, and it may help to attract and benefit from FDI (see Noorbaksh *et al*, 2001 and Borensztein *et al*, 1998). The presence of local universities that could produce relevant graduates helped to persuade Intel to invest in Costa Rica. Intel and the government have set up joint training and technology institutes, which benefits Intel as well as other firms working in the sector. Such supply side (or competitiveness) interventions may in the long-run help Costa Rica to benefit from high technology FDI as well as mitigate an adverse distributional effect (see table 12). In fact, FDI has raised wages of skilled and less-skilled workers in Costa Rica (see table A2), and one of the reasons could have been a simultaneous and reasonable supply of appropriate education which will, *ceteris paribus,* shift the relative supply curve in chart 7 outwards and reduce wage inequality.

Table 14: Enrolment rates as % of population

	Enrolment ratio 1st level[1]		Enrolment ratio 2nd level[1]		Tertiary enrolments		Technical tertiary enrolments (natural science, maths, computing, engineering)	
	1980	1995	1980	1995	1995	Percentage point changes 1980-95	1995	Percentage point changes 1980-95
Developing Countries	88	91	34	44	0.82	0.46	0.16	0.08
Sub-Saharan Africa	74	78	17	23	0.28	0.21	0.04	0.03
MENA	88	92	42	59	1.26	0.70	0.22	0.11
Latin America	102	103	45	53	1.64	0.34	0.30	0.05
Argentina	106	113	56	77	3.08		0.47	
Bolivia	84	95	36	37	1.48		0.34	
Brazil	99	112	34	45	1.08		0.18	
Chile	109	99	53	69	2.58		0.73	
Colombia	128	114	44	67	1.80		0.51	
Costa Rica	105	107	48	50	2.58		0.35	
Honduras	93	111	30	32	0.96		0.20	
Mexico	115	111	46	58	1.56		0.44	
Panama	106	106	61	66	2.92		0.59	
Paraguay	104	109	26	38	0.88		0.11	
Peru	114	123	59	70	3.21		0.46	
Trinidad &Tobago	97	96	68	72	0.64		0.14	
Uruguay	106	111	60	82	2.14		0.29	
Venezuela	109	94	41	35	2.52		0.29	
Asia 4 Tigers	106	100	72	82	4.00	2.39	1.34	0.68
Hong Kong	106	96	64	75	1.59		0.49	
Korea	110	101	76	101	4.96		1.65	
Singapore	108	104	58	62	2.52		0.47	
Asia 4 new Tigers	103	102	43	60	1.61	0.65	0.28	0.12
Philippines	113	116	65	79	2.70		0.33	
Thailand	99	87	29	55	2.10		0.19	
China	112	120	46	96	0.60	0.48	0.13	0.08

Source: Lall (2001, tables 5.1 -5A4) [1] as % of relevant age group

Training policies and institutions

Good quality education provides the best basis for training. However, government can do more to co-ordinate the market for skills. They may want to address failures in the market for skills by encouraging training in TNCs and other firms. There is a large theoretical and empirical literature regarding who should pay – government, employers or employees – for different types of training and education, based on the idea that neither private actor could capture all the benefits of these investments.[7] Looking at the empirical evidence, firms *do* invest in general training as employees do not capture all benefits from training, while firms capture some by raising productivity more than wages.

There are various examples of incentives and public-private partnerships to encourage training within firms, including the use of subsidies and tax breaks for TNC training expenditure, tax levies dedicated to supporting training, sharing the costs of training

[7] Most theoretical models predict that training is sub-optimally low and some form of government subsidies and regulation is required to solve this market failure. It was ~~In the beginning of the 20th century,~~ argued that government subsidies were necessary for on-the-job training and schooling since firms do not have sufficient incentives to invest in worker skills because trained workers can decide to work for other firms that can use these skills. Of course this does not imply that government involvement materialises. ~~-~~Becker (1975) distinguished between training for firm-specific skills, raising the productivity of workers only for the current employers, and for general skills, useful for all firms. Becker argued that workers have incentives to pay for general training, while firms can recoup investment in firm-specific training, and that credit constraints mean employees are not able to finance training.

instructors, equipment or locations. Governments have also supported the co-operation between public research institutions and TNCs.

Table 15: Training institutions in Latin America

		Financing		Structure	Enrolments	Illiteracy (2000)	Years of schooling (2000)
		Tax	Deduction of own training costs	Supervision			
Bolivia	INFOCAL	Voluntary contribution of 1% of entrepreneur wages		Ministry of human development and the Confederation of private enterprises	6323 (students 1999)	14.4	5.6
Brazil	SENAI	1%	With authorisation of SENAI	Ministry of Labour	1,813,182 (1999, students)	14.7	4.9
Chile	SENCE	1% on payroll	Up to 1% of payroll	Ministry of labour and social security	522,757 (1999, students)	4.3	7.6
Colombia	SENA	2% on wages and 0.5% from government	Up to 50% on authorised programmes		979,104 (students 1999)	8.2	5.3
Costa Rica	INA	2% on monthly wages for enterprises with more than 5 employees	No	Ministry of labour and social security and public education		4.4	6.1
Dominican Republic	INFOTEP	1% on wages	Yes, for authorised programmes	Ministry of labour	125.225 (1999 graduates)		
Paraguay	SNPP	1% on wages, paid to national workers bank		Ministry of Labour	38,680 (1999, graduates)	6.7	6.2
Peru	SENCICO	0.002% of overall income				10.1	7.6
Uruguay	CTEP/UTU	0.25% to national board of employers			59,964 (students, 1996)	2.2	7.6
Venezuela	INCE	2% of payroll by private employers and 0.5% by workers topped up by the government	When approved by INCE		233,936 (1999, students)	7.0	6.6

Source: www.cinterfor.org.uy and Marquez (2001)

Some countries actively attempt to engage the private sector in the provision and planning of training. Governments are increasingly trying to modify a supply-driven education and training system into a demand-driven system. This involves identifying skill needs, for instance by identifying growth sectors. In this way, skill creation can be made more appropriate to private sector needs. Various countries use tri-sector partnerships, involving employees as well as government and businesses, to address skill needs and training policies and systems (e.g. Ireland and Singapore)

The structure and relevance of training institutions is shown in Table 15. Most countries operate a levy on a firm's payroll that can then be spent on approved training courses. In this way, skill upgrading may occur. However, there is no guarantee that training works for all (although it does raise productivity, see below), whether quality differs by type of programme, and whether such training is aimed at unskilled or only skilled workers with sufficient education. In some countries, training levies are voluntary and few graduates pass through approved training courses. Basic education as measured by years of schooling varies for countries in the table from 4.9 in Brazil to 7.6 in Chile, Peru and Uruguay, and may also affect the impact and extent of training. It is important to realise that there is a long tradition of training institutes and there may be more than in East Asia, where skill upgrading has been faster, suggesting that the mere existence of such institutes is not sufficient. Indeed many

institutions do not appear to provide appropriate training, although Chile may have improved the relevance to private sector needs recently. Instead of offering training directly, the Chilean SENCE now uses an income tax rebate for firms that directly provide training to their employees, so that firms can choose programmes that fit their requirements.

Infrastructure policies

Infrastructure policies may also help to stimulate private sector activity generally. A competitive and vibrant local private sector is more likely to benefit from the presence of foreign firms. For instance, good transport networks and telecommunications systems would facilitate linkages between TNCs and local firms. Such local firms could provide jobs for the poorest workers.

Table 16 Telephone and PCs

Country	Telephone lines per 100 inhabitants	PCs per 100 inhabitants
Chile	23.9	8.4
Argentina	21.6	5.3
Brazil	21.7	6.3
Costa Rica	23.0	17.0
Mexico	13.5	6.9
Peru	7.8	4.8
US	66.5	62.3

Source: www.itu.int (October 2002)

Table 17 Relative conditions of transport systems in the Andean region

	Bolivia	Colombia	Ecuador	Peru	Venezuela
Customs and foreign trade procedures	1.65	2.11	1.36	1.92	1.58
Functioning of ports	1.77		1.64	2.03	1.54
Road infrastructure	1.00	2.42	1.31	2.09	1.69
Land transport	1.28		1.75	2.03	1.84
Sea transport	1.85	2.19	2.06	2.31	2.06
Air transport	1.90	1,21	1.77	2.33	2.19
Transport security	1.77	1.81	1.36	2.08	1.35

Compared with developed countries: 1 much worse; 2 somewhat worse; 3 similar or better
Source: Vial (2001)

As the following tables show, the availability of good quality and appropriate infrastructure differs markedly by country. For instance, poor infrastructure provision in Bolivia appears to discourage investors (particularly in manufacturing), see table 17, and linkage promotion, so it should be an important priority for Bolivia. Improving regional infrastructure and becoming a hub for certain sectors/products is likely to encourage investors in those products/sectors.

Investment promotion policies

Some countries (Ireland, Singapore, Malaysia, Costa Rica, etc.) have actively tried to attract high-tech and skill-intensive electronic TNCs by creating strong and flexible investment

promotion agencies. Some investment promotion agencies (Ireland's IDA, Singapore's EDB) were actively doing this trying to attract asset-seeking TNCs through specific promotion (phone calls, mailings, visit to headquarters, arranging site visits, etc.). The experience of Costa Rica, where targeting was combined with appropriate education policy to attract large TNCs such as Intel, shows that simply opening up to FDI is not sufficient to attract FDI (see table 12). While Chile and Mexico had similar economic fundamentals, they practices fewer targeting. Apparently, Costa Rica had not been on the initial Intel list for potential investor sites, though this was changed after targeting by the IPA. The attraction of Intel has increased the relative demand for skills and thus shifted the relative demand curve outwards (chart 8), thereby raising wage inequality, ceteris paribus. Hence, actively attracting this type of FDI has had an impact on wage inequality.

There is some evidence that FDI-promotion policy works. Wells and Wint (1990) show that developing countries with a promotional body in the US attracted 30% more FDI than countries that did not have such promotional organisation. The effectiveness of FDI-attraction strategies is likely to depend on the organisational structure of the promotion bodies, the method of implementation, and the financial resources available. TNCs prefer real one-stop services to lengthy entry procedures involving many bodies. To the extent that targeting works, it may be considered desirable to target low-skilled and employment-intensive FDI if that has the best impact on the poor. However, targeting is better known for its "one-off" approach which entails (fixed) costs suggesting that it may be less efficient for other types such as light manufacturing operations.

It seems that countries, which really want FDI, do a lot work to attract it. Different countries spend different amounts on investment promotion (e.g. offices abroad). Efficiency and effectiveness of investment promotion always needs to be considered. Similarly, offering incentives should be considered on its merits. The experience shows that much FDI in South America is market seeking, and hence incentives (tax holidays, outright subsidies) designed to cut costs are unlikely to attract additional FDI, i.e. ineffective. In addition to questions about efficiency and effectiveness, other important questions can be raised about the distributional impact of fiscal and financial incentives (see also table 12). Government expenditure can be used for distributional purposes and for financing public goods. Large grants or foregone tax revenues will reduce such a role. In order to understand whether governments achieve the maximum local benefits from TNCs, it would be desirable to know how much taxes TNCs pay to host-country governments and how such revenues are or will be spent (e.g. to compensate locals).

Trade policies

Moran (1998) finds that exposure to *foreign competition* is important to skill upgrading. Firms that are part of a global competitive network, which forces them to remain competitive, appear to have more incentives to invest in training and education and will employ more skilled workers, and are also more likely to introduce the latest technology requiring further training. But it is unclear exactly what type of foreign exposure is helpful in attracting export intensive affiliates, and what type of policies can achieve this.

What is clear is that TNCs in South America tend not to be export intensive. As Shatz (2001) shows, sales of US TNC affiliates in developing countries is divided into 63% to host, 17% to the US and 20% to the rest of the world. However, these figures are 82, 4 and 14 for

South America and within this 77, 6 and 17 for the Andean countries. Thus most US FDI in South America is market seeking and is relatively shielded from foreign competition. Improving the trade performance may also improve the performance on development, though it can raise income inequality by providing further incentives to use skilled workers.

There are few regional or global trade policy instruments that directly help to improve the development dimension of FDI. The EU-ACP relations agreed in the Cotonou Partnership Agreement provides for home country measures (in EU) to support FDI (in ACP countries) and to support local business. But these have not (all) been implemented and there are few other examples. It is not clear whether regional groupings such as Mercosur or Andean have attracted additional FDI (Vodusek, 2001), partly because FDI in these countries is (national) market seeking, though NAFTA does appear to have stimulated FDI.

Other government policies

There are a host of other types of policies that are relevant for how FDI impacts on income distribution. These are mainly indirect, e.g. fiscal policy and how fiscal revenues from FDI or unused grants to foreign investors (automobile in Brazil, table 12) are used to support poor people. In addition, a regulatory framework that is in place before foreign investors take over services such as water supply or banks may also be relevant, although the direct distributional impact is difficult to assess (see e.g. the water case in table 12). An enabling environment is important for firms (foreign or local) to prosper but also to reap the benefits from firms.

6.3 Business policies

There are many TNC policies which can affect the relationship between FDI and wage inequality. These include policies in the area of pay, training, unionisation and supply chain.

Pay policies

As discussed previously, TNCs pay higher wages than local firms. Often this is part of their policy. For instance, Shell and Unilever aim to pay their top level workers a wage that is in the top 25% of the relevant control group. While the control group for top level managers consist of employees working for TNCs, the control group for the bottom level are employees in local and TNC firms. This creates a distortion as TNCs increasingly pay high wages to recruit and retain top-level workers, while this may not be so for the bottom-level employees, thus fostering wage inequality. The Chilean Foreign Investment Committee argues, labour costs for Chilean workers can be quite low, but the wages of top managers are relatively high. A question remains whether high wages for skilled workers are inefficiently high, i.e. are they worth it because they are more productive or do they claim it because they have a good bargaining position.

Training policies

There is evidence that TNCs provide more training than their local counterparts. Using a sample of firms for Colombia, Mexico, Indonesia, Malaysia and Taiwan, the number of firms ranging from 500 to 56000+ in single years in the early 1990s, Tan and Batra (1995) find that firms are more likely to offer worker training when they are large, employ a highly educated

workforce (except Indonesia), invest in R&D investment (except Indonesia), are export oriented (except Malaysia) and use quality control. All these characteristics are associated with foreign ownership (see Dunning, 1993). However, even allowing for this, foreign ownership was also associated with increased training in Malaysia and Taiwan.[8] Tan (2001) finds that there are big *differences* between the proportion of foreign and local firms that train: the percentage of foreign firms that train their workers is higher than the percentage of local firms that train workers by 20% (percentage points) in Trinidad and Tobago, 20% in Haiti, 30% in El Salvador, 30% in Venezuela, 15% in Costa Rica and 10% in Argentina.

UNCTAD (1994) provides further evidence about the extent and nature of TNC training practices. TNCs spend more on training in their foreign affiliates than do local firms, but the differential varies according to size, industry, entry strategy and motivation of the investment. Evidence also shows that training was aimed mainly at managerial and professional staff and less at sales employees and production workers. While TNCs can train production workers on-the-job, professional employees get more formal attention and are sent on international training courses using the TNCs international networks. Workers in electrical, machinery and chemical industries receive more training than other industries, partly because these industries use complex technologies, which requires skilled and trained workers to implement it.

Different motivations of FDI may potentially have different implications for the extent to which TNCs engage in training activities and who benefits. *Natural resource* investments are usually capital extensive requiring a handful of skilled workers (sometimes ex-patriates) needed to operate the complex extraction methods. This may require specific training for a handful of employees. *Efficiency seeking* manufacturing TNCs offer only limited scope training, because such TNCs are often motivated by the availability of low-skill, low-wage labour. Finally, training plays an important role in *strategic-asset seeking* investment. Strategic asset seeking TNCs are often trying to invent and implement new leading–edge technologies. Both activities requires well-educated workers, whose skills can be augmented by specific training.

Finally, *market-seeking* investments involve limited training of local people to exploit the firm-specific advantage. Such TNCs are often replicas of their parents (horizontal TNCs) and may devote training efforts to specific technological or marketing approaches skills. Other examples include market-seeking investments attracted by privatisation of state-utilities in East European countries, and now also in Latin America and Africa. The experience of Eastern Europe suggests that, while a relatively skilled workforce (especially technical subjects) was available, substantial training was needed to improve market-orientation skills (UNCTAD, 1994).

Tan and Batra (1995) find that training positively affects productivity but the impact is largely confined to skilled workers, as opposed to unskilled workers (see Table 18). Some minor positive effects for unskilled workers are discernible when disaggregating by type of training. The productivity effects of in-house training of unskilled workers in Colombia were negative and significant, while training for unskilled workers provided by external buyers and suppliers was positive and significant. On the whole, educated workers are better learners with greater absorptive capacity and hence benefit more from training.

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[8] The proportion of female workers also significantly and negatively affected training in Colombia and Indonesia. This may reflect the fact that female workers can be found in simple assembly operations. Unionisation, on the other hand, led to more training in Colombia, Mexico, Malaysia and Taiwan. In theory, the effect of unions can go different ways, depending on whether unions bargain for higher wages or more training.

Training policies matter in this respect. TNCs tend to spend a fixed percentage of their pay-roll, often between 3-5%, more than (smaller) local firms, and more than the percentages in Table 15. While this policy is determined by TNC headquarters (e.g. Shell and Unilever), the actual disbursement of funds is determined by their affiliates (e.g. in Latin America). There is no requirement to train at every level of the workforce, and hence managers may have higher training budgets than operatives.

Table 18: Percentage productivity effects of training by skill level

Country	Skilled workers	Unskilled workers
Colombia (1992, 500 firms)	38.6*	-26.3
Indonesia (1992, 300 firms)	143.1*	-55.0
Malaysia (1994, 2200 firms)	25.2*	-4.1
Mexico (1992, 5072 firms)	20.4*	-13.2

* Significant. Source: *Tan and Batra (1995, Table 12)*

Industrial relations policies

There is a tendency towards an individualisation of industrial relations, and in many Latin American countries this is because of privatisation and not because of TNCs. Interviews with TNCs so far have revealed that actual practices may vary. One oil TNC did not discourage unionisation but promoted industrial relations at an individual level. A manufacturing TNC did have business principles which affiliates were expected to adhere to and said it would work with 'sensible' unions. A water TNC had only recently acquired firms in Latin America and was still assessing whether headquarter policies could be reconciled with affiliate policies without many costs.

Supply chain and business principles

The extent to which and the way in which TNCs work with suppliers also affects the link between FDI and income inequality in the host economy. The more linkages are developed, the more jobs can be created indirectly. The extent and quality of linkages differ by sector, TNC policies and host country characteristics and policies. Some TNCs depend on good quality and just-in-time supplies. This is the case in the car assembly industry, which depends on quality supplies of car components.

TNCs engage in local supplier development when this is in their own interest (UNCTAD, 2001). Sometimes FDI in the car assembly industry is followed by FDI in the car components sector (see e.g. the experience in Brazil), and quality imported supplies replace local supplies. But when TNCs help to develop local suppliers, they train them on business standards and principles (health and safety) and may provide loans.

6.4 The intersection between the business and the development case

There are potentially ways in which government and business can co-ordinate their actions or form partnerships in order to improve the impact of TNCs on the development of the poorest workers (and a reduction of income inequality). Such opportunities are most likely to arise when government and business actions are interdependent. The following areas, where the business and development cases are linked, deserve further attention

- **Education and Training**. TNCs will train their workers more when workers have a good and appropriate basic education. Governments could therefore consider whether the quantity and quality of basic education is sufficiently geared towards areas of economic expansion and the needs of TNCs. Governments may also consider providing incentives (public-private partnerships in training, subsidies, taxes, standardisation) for more training of less-skilled workers, particularly in larger firms.
- **Health.** A healthy workforce is in the (business) interest of the TNC and a healthy population is a government priority. In the case of epidemics, TNCs and less-wealthy governments may join to fight the disease as witnessed in Southern Africa. Neither partner could fight the epidemic on its own. The government may have limited funds, while the provision of health care for (future) employees can make economic sense.
- **Supplier development.** TNCs will source locally when local quality suppliers are present. There may be a role for the government to provide an enabling environment for private sector development and to actively support linkages between TNCs and local firms in a market-led way. This would involve matching local suppliers with TNCs and upgrading the basic capabilities of local firms. Well-developed Investment Promotion Agencies (IDA Ireland and Singapore EDB) already perform such tasks through national linkage-support programmes. TNCs may then develop their suppliers further. An example of supplier development in Latin America related to the Intel plants which has more than 100 suppliers. The Costa Rican government, aided by the IDB is helping local suppliers to become more competitive (see Larrain *et al*, 2000). Public support for linkage creation is discussed in Te Velde (2002c).
- **Infrastructure.** It may be in the interest of both the TNC and local communities to provide local infrastructure. A combination of TNC activities and government funds may maximise the benefits to the development of infrastructure in host countries.

Box 1 Partnerships and livelihoods of poor people.

Partnerships. Recently, partnerships between firms, government and civil society have emerged to improve the impact of FDI (see, for example, the 230 partnerships put forward to the World Summit in Johannesburg in August 2002). Each of the partners can bring something to the table. In the case of businesses, this does not simply imply cash for compensation of oil leaks (alone), but thinking about what core competencies (finance capacities, marketing networks, etc.) a business employs in order to reduce poverty and improve local livelihoods. A variant of the partnership approach has been taken by Inti Raymi in Bolivia (Villalobos, 2002). This approach has moved beyond simple compensation by establishing a foundation helping livelihoods of poorer people surrounding the investment. This has also leveraged in other support for co-operation. However, in general, there is relatively little evidence so far about what type of partnerships can make a difference for the poor in what type of settings.

7 Conclusions

The paper has tried to position FDI in the debate on income inequality in Latin America. It has argued that:

- Income inequality is persistently and relatively high in almost all Latin American countries. Labour income inequality plays an important role in total income inequality. It is therefore instructive to examine developments in labour income inequality, both by occupation and education. We review different data sources. All support the conclusion that in most countries the relative position of skilled workers has improved over much of the late 1980s and early 1990s. In many, but not all, countries this has manifested itself in

an increase in relative wages. Most countries have also experienced an increase in the relative employment of skilled workers (which should have caused a drop in relative wages) (**Section 2**).

- Many researchers have examined the causes of income inequality in Latin America. Income inequality can be determined by at least three factors: the distribution of factors of production, the demand for those factors, and the supply. Labour or human capital, i.e., the distribution of education and the returns to skill, are the factors of production that are driving income inequality (**Section 3**).
- While FDI may have been good for development (e.g. we find positive correlations between FDI and GDP, or productivity, or wages) this masks the fact that different countries with different policies and economic factors tend to derive different benefits and costs of FDI. In addition, not all types of workers necessarily gain from FDI to the same extent. The reasons for this include: FDI induces skill-specific technological change; it can be associated with skill-specific wage bargaining; it may locate in skill-intensive sectors; and it provides more training to skilled than unskilled workers. A review of micro and macro evidence shows that, at a minimum, FDI is likely to perpetuate inequalities. This is in contrast to what traditional trade and FDI theories would predict. Nevertheless, because there are so many opposing effects, empirical research is required (**Section 4**).
- When FDI is measured as stock as a share of GDP, almost all countries experienced substantial growth in FDI over the past decade and a half (with the exception of the last two years). However, growth rates and sector distribution vary markedly by country. New preliminary empirical evidence shows that FDI did not have an inequality-reducing effect in Latin America. There are possible exceptions, such as Colombia, but even here FDI may still have played a relatively minor role in reducing inequality. On the contrary, there are indications that in countries such as Bolivia and Chile FDI may have increased wage inequality. While this does not imply that FDI was or was not good for development and poverty reduction in these countries, it does imply that most of the gains of FDI have benefited skilled and educated workers. FDI tends to raise wages of both types of labour, although for Bolivia the results suggested that FDI lowered wages of less-skilled workers more than wages of skilled workers (**Section 5**).
- Government and business policies affect the link between FDI and income inequality. A government may use education, training, infrastructure, trade and investment promotion policies to improve the developmental impact of FDI. Similarly, businesses can use pay, training, industrial relations and supplier development. There are areas in which both a business and development case can be made for improving the social impact of FDI, and hence where co-ordination is required to realise win-win situations. These include: training, health, supplier development, infrastructure and transparency, security and reputation (**Section 6**).

The main conclusion of the paper is that while FDI may have been good for development, more can be done to improve its impact on income distribution and the poor in Latin America, either through appropriate government policies in the area of education, training and infrastructure (i.e. a general development policy), or through working directly with TNCs through incentives or partnerships. Determining which policies are most appropriate and relevant will depend on country characteristics as well as FDI characteristics, and hence will require further discussion and in-depth studies.

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Appendix A: Modelling the effects of Foreign Direct Investment on Wage Inequality

Foreign Direct Investment affects wage inequality through various routes. An obvious way to analyse the effects of FDI on the market for skills is in a supply and demand framework (as discussed in section 6). In this section we focus on how this framework can provide equations that can be estimated to inform us about the effects of FDI on wage inequality. The model is described in Te Velde and Morrissey (2002) and applied to five East Asian countries.

The supply and demand framework can be represented by a two-factor CES production function with low-skilled labour (*U*) and skilled labour (*S*) following Katz and Murphy (1992).

$$f(U_t, S_t) = \left\{\lambda(\psi_{Ut}U_t)^{\rho} + (1-\lambda)(\psi_{St}S_t)^{\rho}\right\}^{\frac{1}{\rho}} \rho < 1 \qquad \text{(A.1)}$$

where $\varphi_{Ut} \equiv \ln \psi_{Ut}$ and $\varphi_{St} \equiv \ln \psi_{St}$ are functions of labour efficiency units, and the parameter $\rho < 1$. The labour efficiency index can be interpreted as accumulated human capital or the skill-specific technology level. The elasticity of substitution between *U* and *S* is $\sigma=1/(1-\rho)$. In neo-classical theory, the technology level changes exogeneously. However, it is perfectly possible to have shifts in the pattern of technical change, dependent on such factors as inward FDI. This is one way that FDI can affect the market for skills, and we model this below.

We let the labour efficiency indices (skill-specific technical progress) depend on an exogenous time trend, *t*, and the real stock of inward FDI as a per cent of GDP, *fdis,*

$$\varphi_{Ut} \equiv \ln \psi_{Ut}; \varphi_{Ut} = \gamma_{1U} t + \gamma_{2U}\, fdis; \varphi_{St} \equiv \ln \psi_{St}; \varphi_{St} = \gamma_{1S} t + \gamma_{2S}\, fdis \quad \text{(A.2)}$$

and using the first-order condition that factor productivity equals the real factor price we can derive a formula for the wage of skilled relative to low-skilled workers (skill-premium),

$$\ln\left(\frac{w_{St}}{w_{Ut}}\right) = \ln\left(\frac{1-\lambda}{\lambda}\right) - \frac{1}{\sigma}\ln\left(\frac{S_t}{U_t}\right) + \frac{\sigma-1}{\sigma}\gamma_1 t + \frac{\sigma-1}{\sigma}\gamma_2\, fdis_t + \varepsilon_t \qquad \text{(A.3)}$$

where α is a constant, $\gamma_1 = \gamma_{1S} - \gamma_{1U}$ and $\gamma_2 = \gamma_{2S} - \gamma_{2U}$. This equation can easily be interpreted. Wage inequality depends on a supply term (the more skilled workers that are employed the lower the returns to skill *ceteris paribus*), a time trend (skill biased technological progress implies higher return to skills) and FDI. If γ_2 is positive, inward FDI raises the relative wage of skilled workers and hence wage inequality.

The derivation of A3 in this appendix emphasises the technology transfer aspect of FDI, but there are other routes through which FDI can affect the market for skills. *First*, the effects of FDI comprise a composition effect (foreign firms may have different skill intensities from domestic firms) pushing up the average skill intensity. Traditional trade theory (the Heckscher-Ohlin model) would suggest that FDI in developing countries with abundant low-skilled workers is located in low-skill sectors such as garments and simple assembly operations (see Wood, 1995, for the predictions of traditional trade theory for trade liberalisation and wage inequality). New trade models also based on Heckscher-Ohlin foundations consider cases where Transnational Corporations transfer activities abroad, which are less-skilled compared to the home average but more-skilled compared to the host-country average (Feenstra and Hanson, 1995). In addition, new trade models have been developed where TNCs locate abroad because of firm-specific assets (Markusen and Venables, 1997) and TNCs are assumed more skill intensive than local firms. The latter appears to be the case for FDI in relatively complex production processes and in particular

sectors using above average skills (electronics, chemicals, etc.), bringing up the national average employment of skilled labour.

Secondly, FDI could induce faster productivity growth of skilled and/or low-skilled labour in domestic firms (spill-over effect).[9] *Thirdly*, the approach includes a potential sector bias of FDI, if FDI causes a relative expansion of skill intensive sectors, leading to a higher relative wages for skills. *Fourthly,* while the derivation of equation A3 assumes perfect competition, the same equation can be derived under a situation of imperfect competition, where FDI affects the relative bargaining position of skilled workers. In fact, other variables can be included that allow for imperfect wage-setting, such as a measure of the relative scarcity of skilled labour in A3 to allow for pressure on the relative wage of skilled workers if skilled labour is relatively scarce. *Finally,* FDI may affect the supply of skills through training and contributions to general education. Equation (A3) combines all of these effects at the national level, and it can be expected that FDI has different effects in different countries.

Equation A3 estimates the effect of FDI on the relative wage of skills, it is often important to examine how FDI affects the absolute wage of low-skilled workers. For instance, it may be important to know whether FDI causes equitable growth. And if not, why not and what can be done about it. For this we can estimate a wage equation for each group of workers jointly with cross-equation restrictions imposed on σ. We thus estimate the following equations, with *P* a price deflator and *Y* is real GDP

$$\ln(\frac{w_U}{P})_t = \ln(\lambda) - \frac{1}{\sigma}\ln(\frac{U}{Y})_t + \frac{\gamma_{1U}(\sigma-1)}{\sigma}t + \frac{\gamma_{2U}(\sigma-1)}{\sigma}\,fdis_t + \varepsilon_{1t} \qquad \text{(A.4)}$$

$$\ln(\frac{w_S}{P})_t = \ln(1-\lambda) - \frac{1}{\sigma}\ln(\frac{S}{Y})_t + \frac{\gamma_{1S}(\sigma-1)}{\sigma}t + \frac{\gamma_{2S}(\sigma-1)}{\sigma}\,fdis_t + \varepsilon_{2t}$$

This approach also assumes two factors of production, skilled and low-skilled workers. The effect of capital accumulation on skill-specific wages is captured by the time trend (we expect different coefficients on the time trend by level of skill based on the capital-skill complementarity hypothesis). It is possible to derive equations for skill-specific wage levels with three factors of production, but these would be very difficult to estimate, asking too much from the data we use in this paper.

By estimating equations (A3) and (A4) we can answer two important questions. First, we can test whether inward FDI leads to a rise in the relative wage of skilled workers, i.e. $\gamma_2 > 0$ in (3) or $\gamma_{2S} > \gamma_{2U}$ in (4). Secondly, we can test whether inward FDI raises wages and productivity of (low-) skilled workers in the absolute sense, i.e. $\gamma_{2S} > 0$ ($\gamma_{2U} > 0$) in (4). This leads to the following hypotheses

Situations 1 and 3 are the most desirable from a poverty perspective. Only if FDI raises low-skilled wages can it help to alleviate poverty. Situations 1 and 2 are most desirable if one is concerned about reducing inequality. We will derive policy implications depending on which of these scenario's has occurred. If it is shown that FDI increases overall income, but also increases income inequality (e.g. 1), then this can move debate from overall impact of FDI to appropriate policies to use FDI.

Table A1 shows the results of estimating equation A3 in two ways. First we use a panel of four countries (Chile, Bolivia, Colombia and Costa Rica) using annual time series taken from national data sources as shown in charts 1-4 (columns 1,2 and 3). Then we use ECLAC data as in table 4. This is for selected years, but available for more countries.

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[9] The effects of FDI on growth at the macro-level is compelling (e.g. Borensztein *et al*, 1998), although the routes through which this occurs -composition or spillover effect – are less clear.

1	$\gamma_2 > 0,\ \gamma_{2S} > \gamma_{2U}$	$\gamma_{2U} > 0$	FDI raises skilled wages more than low-skilled wages, thereby raising inequality
2	$\gamma_2 > 0,\ \gamma_{2S} > \gamma_{2U}$	$\gamma_{2U} < 0$	FDI raises skilled wages and reduces low-skilled wages, thereby raising inequality
3	$\gamma_2 < 0,\ \gamma_{2S} < \gamma_{2U}$	$\gamma_{2S} > 0$	FDI raises low-skilled wages more than skilled wages, thereby reducing inequality
4	$\gamma_2 < 0,\ \gamma_{2S} < \gamma_{2U}$	$\gamma_{2S} < 0$	FDI raises low-skilled wages and reduces skilled wages, thereby reducing inequality

We use as much information over time as possible, and hence estimate an unbalanced panel using the OLS method adjusting the standard errors for heteroscedasticity.[10] Equation A in Table A1 imposes the same β (the inverse of the elasticity of substitution between skilled and low-skilled workers) across countries. We also impose similar time or technology trends but allow for country-specific fixed effects, thus allowing for different levels of technology. The elasticity of substitution is –(1/-0.69) = 1.4 which is the average of estimates for some other countries (see Hamermesh, 1993; Robbins, 1996). This implies that a one per cent increase in the employment of relatively skilled labour reduces wage inequality by 1.4 per cent.[11]

Independent from the above substitution effect there has been an 'exogenous' increase in the relative wage. This can be due to many factors, such as skill-biased technological change raising the demand for and hence wages of skills (see Berman and Machin, 2000). The average trend indicates that there is an average increase of 2.0 per cent per annum in relative wages in the Latin American sample countries (compared to 2.3 in East Asian countries, see Te Velde and Morrissey, 2002, and 3.3 per cent in the US, see Katz and Murphy, 1992). We then want to explain differences around this trend by other structural variables such as FDI, whose effect may vary by country.

We thus include as another determinant of skill-specific wages the stock of FDI as a per cent of GDP. The limited number of degrees of freedom does not allow us to estimate country-specific effects for each of these variables, but the second column, marked B, shows that the exogenous increase in relative wages in Chile has been much faster than elsewhere. The third column, marked C, shows that FDI has different effects in different countries as theory also suggests. Column D allows for country specific trade effects, but the results related to FDI still stand.

FDI appears to have increased wage inequality in Chile (1993-2000) and Bolivia (1987-1997), over the time period specified. FDI has had no significant effect in Costa Rica (1987-1996) but has reduced wage inequality in Colombia (1978-1994). The fact that FDI has not reduced wage inequality in all countries is contrary to predictions by traditional trade

[10] The OLS approach assumes that relative employment is exogenous for relative wages, as is assumed in Katz and Author (1992). This may not always be realistic, in which case we would have to use suitable instruments. But this would involve using lagged variables as instruments thereby reducing the already few degrees of freedom. We have thus opted for OLS estimation, thereby realising that the coefficients may suffer from an endogeneity bias.

[11] This finding has implications for examining the effects of FDI and trade on wage inequality in countries that have experienced skill-upgrading. Amongst others, in countries with skill-upgrading, correlating FDI or trade with wage inequality without taking increased employment of skills into account would bias the results towards finding a negative relationship between FDI or trade and wage inequality.

theory which suggests that FDI should be inequality reducing in less-skilled labour intensive countries.

It is also possible to account for a dynamic relationship between variables, while focusing attention at the long-run effects. Equations E in table A1 attempts to introduce dynamics. We first estimate a version of dynamic fixed effects model (with one change term: Δ; and allowing for country specific variances); λ is the speed of adjustment to the long-run, while we still allow for country specific intercepts. We find a well-define long run relationship, with a long-run elasticity of substitution of around 1.6=-1/-0.60, a time trend of 1.4 per cent annual increase in relative wages, while the pooled FDI effect is positive and significant (0.0040, i.e. a 10 percentage point increase in the FDI stock as per cent of GDP relates to a 4 per cent increase in relative wages) for this sample as a whole. We then estimate a version of a Pooled Mean Group model (Pesaran *et al.*, 1999), which allows for country specific dynamics, while keeping pooled long-run effects. The results are as before, although it should be noted that the dynamics are not well-determined. Finally, if we allow for country specific long-run effects (final column, table A1 continued), the results that FDI has raised wage inequality in Chile and Bolivia are unchanged.

As discussed on the basis of A4 above, it is desirable to assess whether FDI raises wages in Chile and Bolivia of skilled labour more than of less-skilled labour, or whether one or both type actually loose out after an inflow of FDI. We thus estimate equation A4 and present results in table A2. Pooled estimations finds that the time trend for low-skilled wages is not significant while that of skilled wages is 1.2 per cent per annum (compare 2.3 in the East Asia sample) and significant. Hence, there have been 'exogenous' developments that caused an increase in wages of skilled workers but not of low-skilled workers. Capital accumulation would do this when there is evidence of capital-skill complementarity. The elasticity of substitution is less well-determined. Importantly, in this sample the effects of FDI are positive and significant for both type of labour, but are greatest for skilled workers. This suggest that on average FDI may raise wage inequality by raising wages of skilled workers more than wage of less-skilled workers. This mirrors the results found for Thailand in the East Asia example. However, if we disaggregate the effects of FDI by country in the next column, we find for Bolivia that FDI has raised wage inequality because it has negatively affected the wages of less-skilled workers more than wage of skilled workers. (The effects in Colombia are economically small).

Table A3 concentrates on a panel of 9 or 10 countries depending on the data source. The final two columns use employment and wage data from ECLAC data covering selected years in the 1990s for 10 countries. The time trend is now divided into three time dummy for time period 1994 (2), 1996 (3) and 1999 (4) or nearest. Again, a normal wage curve can be identified with an elasticity of substitution close to 3 (1/0.34). We also include trade (export and imports as per cent of GDP) and the unionisation rate as controls. When we include the FDI variable (stock as per cent of GDP) we find that FDI does not affect wage inequality much in the majority of countries. However, we can divide countries into two groups as mentioned at the bottom of the table: those countries where FDI strategies are mainly natural resources seeking (e.g. Venezuela) or motivated by exploiting relatively skilled workers (Costa Rica) and other countries. It then appears that FDI has a more positive (here: inequality increasing) effect in the former group of countries than in the latter. This would confirm that natural resources seeking or skill seeking FDI benefits skilled workers more than less-skilled workers.

An analysis based on IDB data brings out similar findings. It appears that FDI affects wage inequality between workers with third and second level education, not between second and first level education. While there is the value added of more countries included, there are

few observations in total because there are only between 2 and 4 observations during the 90s per country

Table A1: FDI and Wage Inequality in Latin America (1978-2000)

(eq A) $\ln\left(\frac{w_{Sit}}{w_{Uit}}\right) = \alpha_i + \beta \ln\left(\frac{S_{it}}{U_{it}}\right) + \gamma_1 t + \varepsilon_{it}$, i = country i

(eq B) $\ln\left(\frac{w_{Sit}}{w_{Uit}}\right) = \alpha_i + \beta \ln\left(\frac{S_{it}}{U_{it}}\right) + \gamma_{1i} t + \varepsilon_{it}$, i = country i

(eq C) $\ln\left(\frac{w_{Sit}}{w_{Uit}}\right) = \alpha_i + \beta \ln\left(\frac{S_{it}}{U_{it}}\right) + \gamma_1 t + \gamma_{2i}\, fdis_{it} + \varepsilon_{it}$ i = country i

(eq D) $\ln\left(\frac{w_{Sit}}{w_{Uit}}\right) = \alpha_i + \beta \ln\left(\frac{S_{it}}{U_{it}}\right) + \gamma_1 t + \gamma_{2i}\, fdis_{it} + \gamma_{3i} trade_{it} + \varepsilon_{it}$ i = country i

	Annual data			
	A	**B**	**C**	**D**
		Pooled effects		
β (inverse of negative of elasticity of substitution)	-0.69 (-4.30)*	-0.15 (-1.71)**	-0.23 (-2.09)*	-0.23 (-1.93)**
TIME (γ_1)	0.020 (5.25)*		0.012 (4.02)*	0.011 (3.72)*
		Country-specific effects		
		TIME	FDI	FDI
Chile		0.037 (10.0)*	0.0019 (4.10)*	0.0026 (2.75)*
Bolivia		0.020 (7.46)*	0.015 (4.10)*	0.023 (2.64)*
Colombia		0.004 (1.64)**	-0.018 (-2.86)*	-0.025 (-4.18)*
Costa Rica		0.005 (1.28)	-0.003 (-1.60)	0.0011 (0.22)
				TRADE
Chile				0.0086 (0.65)
Bolivia				-0.030 (-1.26)
Colombia				0.013 (4.12)*
Costa Rica				-0.004 (-0.61)
Country intercepts included	Yes	Yes	Yes	Yes
Observations	46	46	46	46
Parameters (incl. intercept)	6	9	10	14
LL	75.40	78.75	89.00	94.20
Countries	4	4	4	4

Robust standard errors in parentheses. * (**) significant at 5% (10%) level; country-specific fixed effects not included; β is inverse (and negative) of elasticity of substitution).

Table A1 (continued): FDI and Wage Inequality in Latin America (1979-2000)

$$\Delta \ln\left(\frac{w_{Sit}}{w_{Uit}}\right)_t = \alpha_i + \lambda(\ln\left(\frac{w_{Sit}}{w_{Uit}}\right)_{t-1} - \beta \ln\left(\frac{S_{it}}{U_{it}}\right)_{t-1} - \gamma_1 t - \gamma_{2i}\, fdis_{it-1}) +$$

(eq E) $$+ \gamma_{3i}\Delta \ln\left(\frac{S_{it}}{U_{it}}\right) + \gamma_{4i}\Delta \ln\, fdis + \varepsilon_{it}$$ i = country i

	Annual data		
	Dynamic Fixed Effects (country specific variances)	**Pooled Mean Group Estimator**	**Dynamic Model (FDI specific effects)**
		Pooled effects	
β (inverse of negative of elasticity of substitution)	-0.60 (-3.39)*	-0.73 (-3.88)	-0.24 (-1.22)
TIME (γ_1)	0.014 (2.94)*	0.017 (3.65)*	0.011 (1.89)**
Fdis γ_2	0.0040 (2.21)*	0.0032 (2.48)*	
γ_3	0.11 (0.95)		
γ_4	0.11 (0.63)		
λ	-0.67 (-3.24)*	-0.71 (-3.22)*	-0.90 (-4.12)*
		Country-specific effects	
		Δ FDI	FDI
Chile		0.0025 (2.49)*	0.0027 (3.05)*
Bolivia		-0.0023 (-0.39)	0.014 (2.82)*
Colombia		-0.0088 (-0.61)	-0.012 (-1.27)
Costa Rica		0.0057 (1.15)	-0.0053 (-1.54)
		Δ S/U	
Chile		0.27 (2.32)*	
Bolivia		0.043 (0.021)	
Colombia		-0.32 (-0.94)	
Costa Rica		0.45 (2.09)*	
Country intercepts included	Yes	Yes	Yes
Observations	42	42	42
Parameters (incl. intercept)	10	16	12
LL	76.77	78.75	89.00
Countries	4	4	4

Robust standard errors in parentheses. * (**) significant at 5% (10%) level; country-specific fixed effects not included; β is inverse (and negative) of elasticity of substitution). Δ is first difference operator

Table A2: FDI and skill-specific wages in Latin America (1978-2000)

Chile, Bolivia, Colombia and Costa Rica,

$$\ln(\frac{w_U}{P})_{it} = \alpha_{1i} + \beta \ln(\frac{U}{Y})_{it} + \gamma_1 t + \gamma_{2i} fdis_{it} + \varepsilon_{it}$$

$$\ln(\frac{w_S}{P})_{it} = \alpha_{2i} + \beta \ln(\frac{S}{Y})_{it} + \gamma_1 t + \gamma_{2i} fdis_{it} + \varepsilon_{it}$$

	Low-skilled wages	Skilled wages	Low-skilled wages	Skilled wages
	(SUR estimation)			
β	-0.14	-0.14	0.24	0.24
	(-0.83)	(-0.83)	(1.34)	(1.34)
Time trend	-0.004	0.012	0.011	0.034
	(-0.54)	(2.14)*	(1.32)	(5.82)*
γ_2	0.0076	0.0085		
	(2.24)*	(2.70)*		
$\gamma_{2, CH}$			0.0066	0.0051
			(2.88)*	(2.47)*
$\gamma_{2, BO}$			-0.0020	-0.011
			(-2.41)*	(-1.74)**
$\gamma_{2, CO}$			-0.011	-0.064
			(-0.63)	(-4.23)*
$\gamma_{2, CS}$			0.045	0.025
			(5.98)*	(3.56)*
Observations		46		46
Parameters (excl intercepts)		5		11
Log Likelihood		98.84		135.00

* (**) significant at 5% (10%) level; instruments include "own" variables and changes in FDI regime.

Table A3: FDI and Wage Inequality in Latin America (1978-2000)

(eq A) $\ln\left(\frac{w_{Sit}}{w_{Uit}}\right) = \alpha_i + \beta \ln\left(\frac{S_{it}}{U_{it}}\right) + \gamma_1 t + \varepsilon_{it}$, i = country i

(eq B) $\ln\left(\frac{w_{Sit}}{w_{Uit}}\right) = \alpha_i + \beta \ln\left(\frac{S_{it}}{U_{it}}\right) + \gamma_1 t + \gamma_{2i}\, fdis_{it} + \gamma_3 trade_{it} + \gamma 4 union_t + \varepsilon_{it}$ i = country i

	IDB data			ECLAC data		
	3/1	**3/2**	**2/1**	**A**	**B**	**B**
			Pooled effects			
β (inverse of negative of elasticity of substitution)	-0.42 (-0.95)	-1.00 (-1.73)	0.41 (1.26)	-0.34 (-1.79)**	-0.37 (-1.33)	-0.38 (-1.31)
TIME (γ_1)	-0.035 (-0.26)	0.05 (0.823)	-0.05 (-0.81)			
TIME (γ_1) – 2				0.16 (3.33)*	0.16 (3.03)*	0.16 (2.92)*
TIME (γ_1) – 3				0.17 (3.66)*	0.16 (2.91)*	0.17 (2.60)*
TIME (γ_1) – 4				0.09 (1.67)**	0.07(0.84)	0.078 (0.85)
Trade	-0.06 (-1.66)	-0.020 (-1.56)	-0.025 (-1.63)			-0.001 (-0.29)
Union density	0.062 (1.48)	0.019 (1.70)	0.04 (2.05)*		-0.004 (-0.84)	-0.004 (-0.86)
			Country-specific effects			
FDI mainly natural resource seeking and skill intensive	0.022 (2.04)*	0.019 (2.43)*	-0.0046 (-0.83)		0.012 (1.66) **	0.01 (1.28)
Other FDI	-0.012 (-0.86)	-0.0012 (-0.27)	-0.006 (-1.20)		-0.00 (-0.173)	-0.00 (-0.17)
Country intercepts included	Yes	Yes	Yes	Yes	Yes	Yes
Observations	25	25	26	39	39	39
Parameters(incl. intercept)	14	14	14			
Countries	9	9	9	10	10	10

Robust standard errors in parentheses. * (**) significant at 5% (10%) level; country-specific fixed effects not included; β is inverse (and negative) of elasticity of substitution).

Classification based on tables 7 and 8 and tables D1 and D2.
ECLAC data:
FDI natural resource seeking and skill intensive: Chile and Venezuela
FDI other (e.g. efficiency seeking, market seeking): Colombia, Ecuador, Honduras, Panama, Paraguay and Uruguay.

IDB data (2002, table 12.1): (3/1 means hourly wages for urban males aged 30-50 with third level education relative to those with first level; these age data are linked to employment data from ECLAC, 2002, refer to all ages defined with the workforce, third level employment are those with more than 12 years schooling, first level those with less than 6 years, second level are the residual group)
FDI natural resource seeking and skill intensive: Chile, Bolivia, Costa Rica and Venezuela
FDI other (e.g. efficiency seeking, market seeking): Argentina, Brazil, Colombia, Honduras, Mexico, Panama.

Appendix B: FDI in Latin America by sector

Argentina - Foreign Direct Investment - Economic Activity						
Sector	**Year**				**Total**	
	in $m				in $m	in perc
	1992	1993	1994	1995	1992/5	
Oil	2,400	2,182	2,566	n/a	7,148	13.82%
Manufacturing Industry	5,213	5,732	7,056	n/a	18,001	34.81%
Electricity, Gas & Water	2,304	3,165	3,685	n/a	9,154	17.70%
Business	535	540	754	n/a	1,829	3.54%
Communications	1,896	1,808	2,024	n/a	5,728	11.08%
Banks	1,457	1,875	2,035	0	5,367	10.38%
Other	1,025	1,175	2,280	n/a	4,480	8.66%
					51,707	
Source:						

Bolivia - Composition of Foreign Direct Investment									
Sector	**Year**								**Average**
	(%)								(%)
	1992	1993	1994	1995	1996	1997	1998	1999	1992/9
Hydrocarbons	22.44	50.68	36.13	41.06	27.40	50.70	58.51	38.25	40.65
Minerals	66.26	32.62	16.15	14.13	12.48	7.03	4.26	2.34	19.41
Industry and Agroindustry	10.71	16,23	18.11	15.78	16.84	3.06	1.81	15.36	11.67
Business & Services	0.59	0.47	29.61	29.03	43.27	39.21	35.42	44.05	27.71
Foreign Investment	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Source: Vice Minister of Investment and Privatisation, INE, BCB									

Brazil - Foreign Direct Investment in Brazil, by Sector, 1995-1997								
Sector	**Year**						**Total**	
	1995		1996		1997			
	Value in $m	%	Flow in $m	%	Flow in $m	%	Value in $m	% (av)
Agriculture, cattle raising and mining	688.60	1.62	110.50	1.44	456.10	2.98	1,255.20	2.01
Industry	23,402.40	55.03	1,740.00	22.70	2,036.40	13.30	27,178.80	30.34
Motor vehicle manufacture	*2,851.30*	*6.70*	*286.10*	*3.73*	*222.70*	*1.45*	*3,360.10*	3.96
Manufacture of other transport equip	*223.00*	*0.52*	*0.00*	*0.00*	*0.00*	*0.00*	*223.00*	0.17
Services	18,439.00	43.36	5,814.90	75.86	12,818.60	83.72	37,072.50	67.65
Total	42,530.00	100.00	7,665.40	100.00	15,311.10	100.00	65,506.50	100.00
Source: BACEN (Central Bank of Brazil) data.								

Chile - Foreign Investment under the Foreign Investment Statute by Sector 1974-2002									
Sector	**Year**							**Total**	
	in nominal $m							in $m	in per
	74-95	1996	1997	1998	1999*	2000*	2001*		1974/2001
Agriculture & Livestock	163	16	14	12	21	22	10	258	0.53%
Construction	303	26	114	280	216	29	166	1,134	2.34%
Electricity, Gas & Water	93	406	1,395	495	4,560	860	908	8,717	17.96%
Fishing and Agriculture	129	21	12	9	1	94	6	272	0.56%
Forestry	133	20	29	37	19	4	1	243	0.50%
Industry	2,731	917	593	530	779	191	755	6,496	13.39%
Mining	8,558	999	1,705	2,393	1,221	242	898	16,016	33.01%
Services	2,686	1,958	1,197	2,006	1,910	665	705	11,127	22.93%
Transport & Communication	906	459	171	211	359	870	1284	4,260	8.78%
Total	15,702	4,822	5,230	5,973	9,086	2,977	4,733	48,523	100.00%
Source: Foreign Investment Committee - Chile									
*Provisional figures as of June 30 2002									

Colombia - Foreign Direct Investment by Sector									
Sector	**Year**							**Total**	
	in $m							in $m	in percentage
	1994	1995	1996	1997	1998	1999	2000		1994/2000
Foreign Direct Investment	1,446	968	3,112	5,639	2,932	1,326	2,615	18,038	100.00%
Other Sectors Total	1,312	817	2,333	5,257	2,841	2,057	3,328	17,945	99.48%
Transport, Storage, Communications	249	42	125	45	263	190	874	1,788	9.91%
Electricity, Gas & Water	5	12	517	2,962	675	-306	60	3,925	21.76%
Mining and Quarrying	47	-65	51	303	-6	464	658	1,452	8.05%
Financial Sector	300	242	755	1,094	712	691	900	4,694	26.02%
Agriculture, Forestry, Fishing & Hunting	21	-2	37	22	24	30	40	172	0.95%
Commerce, Restaurants & Hotels	113	7	79	117	212	340	305	1,173	6.50%
Manufacturing Industry	536	521	731	553	816	518	432	4,107	22.77%
Community Services	15	16	19	37	195	129	85	496	2.75%
Construction	25	43	20	124	-49	1	-26	138	0.77%
Oil	135	151	778	382	91	-732	-713	92	0.51%
Source: Balanza de Pagos Banco de la Republica, June 2001									

Peru - Net Foreign Investment Flows by Sector - 1993-1999									
Sector	**Year**							**Total**	
	in $m							in $m	
	1993	1994	1995	1996	1997	1998	1999		1994/1999
Agriculture	0.0	0.0	2.8	-0.5	0.5	17.0	15.4	35.2	0.50%
Commerce	14.4	29.3	7.8	114.1	51.7	48.0	5.6	270.9	3.83%
Communications	0.1	2,003.0	1.9	1.6	18.1	73.9	54.3	2,152.9	30.45%
Construction	1.3	0.2	9.6	16.2	1.9	0.6	0.0	29.8	0.42%
Energy	0.2	361.4	488.6	-104.8	532.4	93.7	64.6	1,436.1	20.31%
Finance	56.7	43.7	258.8	184.4	98.6	124.8	120.2	887.2	12.55%
Industry	50.9	52.5	137.9	330.0	211.8	113.2	18.2	914.5	12.94%
Mining	8.8	310.3	169.8	95.2	84.1	139.6	284.7	1,092.5	15.45%
Fishing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%
Petroleum	0.1	0.1	1.8	33.6	9.1	31.3	4.7	80.7	1.14%
Services	0.4	1.6	3.0	10.3	16.7	16.2	4.7	52.9	0.75%
Forestry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%
Transport	3.4	0.4	1.4	0.3	6.3	64.8	0.0	76.6	1.08%
Tourism	0.0	6.2	7.0	10.0	0.6	5.6	0.5	29.9	0.42%
Housing	2.3	0.1	0.3	0.1	3.2	2.5	1.5	10.0	0.14%
Total	**138.8**	**2,808.8**	**1,090.9**	**690.6**	**1,034.9**	**731.3**	**574.5**	**7,069.8**	100.00%
Source: Trade Policy Review, Peru 2002 (WTO)									

Appendix C: Data sources

Employment by occupation. We used the ILO database (www.ilo.org) on employment (formal sector) by occupation. We used the ISCO 1968 basis for all countries. For the purpose of this paper we divided occupations into skilled (ISCO 1968: major groups 0/1, 2, 3) and low-skilled workers (other major groups). Appendix D also provides estimates based on data in ECLAC (2002), which includes the informal sector.

Wages by occupation. We used the ILO which has also been used in Freeman and Oostendorp (2000). For our purpose we collected a time series on wages by occupations on the basis of male earnings. We divided occupations into skilled and unskilled workers as above. Almost all 'skilled' workers were paid higher wages than 'low-skilled' workers. We calculated the wage of skilled workers as the mean of skilled occupations on the basis of male earnings, after cleaning the data for gaps and duplications in records. The present method does not allow for weights of the various occupations in the two skill groups, but is the best possible use of the data due to lack of suitable alternatives (weights can not be easily found for all occupations). The wage data cover up to 60 occupations for Chile and Bolivia. Appendix D also provides estimates based on data by IDB (2002, table 12.1) and ECLAC (2002).

Foreign Direct Investment: Data used is from UNCTAD and is the accumulation of flows since 1970. The accumulation of flows may understate the stock of FDI if revaluation of the equity component is large, but overstates the stock if the depreciation rate is high.

Other variables: Unionisation rates from Visser (1999) and data on trade from *World development Indicators* . Real GDP and Price Deflator taken from IMF World Economic Outlook database. Real wages for Bolivia from Jemio (1999).

More details are available from the authors.

Appendix D

Table D1 Majority-owned nonbank Foreign Affiliates of nonbank US parents (2000) – source *BEA*

	Emp (1000s)		Share of total			**Value added (mn $)**		Share of totals			**Value added per employee (1000s)**					Share of compensation in value added			
	Total	Mining	Utilities	Manufacturing	Other	Total	Mining	Utilities	Manufacturing	Other	Total	Mining	Utilities	Manufacturing	Other	Total	Mining	Utilities	Manufacturing
All countries	8,065	0.02	0.01	0.54	0.44	605,888	0.10	0.02	0.52	0.36	75	439	188	73	62	0.43	0.08	0.17	0.41
Europe	3,688	0.01	0.01	0.52	0.47	333,375	0.06	0.02	0.54	0.38	90	929	180	95	73	0.46	0.06	0.19	0.43
Latin America and Other Western Hemisphere	1,584	0.03	0.01	0.66	0.30	70,401	0.11	0.03	0.52	0.34	44	156	120	35	51	0.37	0.19	0.21	0.43
South America	657	0.06	0.02	0.55	0.37	37,913	0.16	0.05	0.50	0.29	58	152	114	53	46	0.39	0.18	0.22	0.40
Argentina	100	0.04	0.04	0.43	0.49	7,224	0.22	0.07	0.48	0.23	72	388	113	81	34	0.41	0.12	0.27	0.41
Brazil	344	0.01	0.02	0.72	0.25	19,413	0.02	0.05	0.66	0.28	57	113	148	51	63	0.39	0.37	0.17	0.38
Chile	55	0.08		0.20		2,762	0.35		0.19		51	238		48		0.34	0.12		0.39
Colombia	59	0.12		0.29		2,816	0.38	0.00	0.29	0.33	47	152		48		0.35	0.15		0.41
Ecuador	11	0.14	0.01	0.46	0.39	381	0.63	0.06	0.24	0.07	35	160	220	18	7	0.33	0.13	0.05	0.40
Peru	21	0.56	0.01	0.16	0.28	1,130	0.65	0.04	0.11	0.20	55	64	215	40	39	0.36	0.25	0.19	0.45
Venezuela	58	0.10		0.46		3,394	0.24		0.30		59	134		38		0.42	0.27		0.59
Other	11	0.22	0.02	0.37	0.40	794	0.30	0.04	0.30	0.36	75	104	150	62	67	0.25	0.22	0.13	0.28
Central America	883	0.00	0.00	0.75	0.24	22,290	0.01	0.02	0.74	0.23	25	94	165	25	24	0.46	0.33	0.12	0.47
Costa Rica	25		0.00	0.56		528		0.00	0.76		21			29		0.52			0.39
Honduras	20	0.00		0.62		358	0.00		0.62		18			18		0.42			0.42
Mexico	804	0.00	0.00	0.78	0.22	20,180	0.01	0.01	0.77	0.22	25	105	135	25	25	0.47	0.37	0.09	0.47
Panama	15		0.02	0.20		353	0.05	0.12	0.14	0.69	24		140	16		0.48		0.36	1.00
Other	19	0.04	0.04	0.57	0.36	871	0.04	0.16	0.44	0.36	46	49	204	35	46	0.28	0.35	0.09	0.32
Other Western Hemisphere	44	0.14	0.01	0.46	0.39	10,199	0.12	0.01	0.09	0.78	232	199	173	48	458	0.12	0.18	0.17	0.31
Barbados	1	0.07	0.00	0.36	0.57	1,986	0.04	0.00	0.02	0.94	1,419	840		86	2,324	0.02	0.05		0.16
Bermuda	4	0.00	0.00	0.05	0.95	4,295	0.00		0.00		976			90		0.07	0.00		0.39
Dominican Republic	17	0.00	0.02	0.71	0.27	905	0.00	0.04	0.38	0.59	53		107	28	116	0.21		0.16	0.27
United Kingdom Islands, Caribbean	6	0.28	0.00	0.38	0.33	750	0.42	-0.01	0.24	0.35	125	184		79	133	0.45	0.32	0.00	0.34
Other	15	0.29	0.01	0.33	0.37	2,262	0.37	0.02	0.17	0.44	148	191	230	75	177	0.16	0.14	0.13	0.34
Africa	127	0.13	0.00	0.52	0.36	13,877	0.73	0.00	0.12	0.15	109	618		26	47	0.17	0.05	0.00	0.54
Middle East	65	0.11	0.00	0.41	0.48	6,910	0.51	0.00	0.24	0.26	107	479		62	57	0.30	0.09		0.43

Table D1 (continued) Majority-owned nonbank Foreign Affiliates of nonbank US parents (2000) – source *BEA*

	Emp (1000s)	Share of total				**Value added (million of $)**	Share of totals				**Value added per employee (1000s)**					Share of compensation in value added			
Asia and Pacific	1,563	0.02	0.00	0.55	0.42	108,927	0.11	0.03	0.48	0.38	70	408	399	60	64	0.40	0.06	0.09	0.34
Australia	257	0.01	0.01	0.40	0.58	18,646	0.15	0.05	0.45	0.35	72	1,039	402	82	43	0.49	0.03	0.12	0.44
China	240	0.00	0.00	0.76	0.23	5,516	0.08	0.01	0.80	0.11	23	424	820	24	11	0.34	0.08	0.05	0.30
Hong Kong	101	0.00		0.35		8,270			0.18		82			41		0.46			0.38
India	67	0.01	0.00	0.65	0.35	1,642	0.14	0.09	0.52	0.26	24	555	1,450	20	18	0.37	0.04	0.01	0.36
Indonesia	60	0.33	0.00	0.43	0.24	6,371	0.91	0.02	0.04	0.03	106	295	645	11	13	0.09	0.06	0.05	0.37
Japan	234		0.00	0.33		36,277	0.00	0.00	0.50	0.50	155			236		0.46	0.67		0.34
Korea, Republic of	56	0.00	0.00	0.51	0.49	4,134		0.00	0.54		73			78		0.45			0.40
Malaysia	117	0.01	0.00	0.87	0.12	4,349	0.31	0.00	0.58	0.11	37	783		25	36	0.25	0.05	0.00	0.31
New Zealand	35	0.01	0.02	0.46	0.51	1,605	0.04	0.08	0.38	0.50	46	300	194	38	45	0.46	0.07	0.10	0.41
Philippines	72	0.00	0.00	0.73	0.27	2,372		0.08	0.62		33		970	28		0.26		0.02	0.28
Singapore	113	0.01	0.00	0.62	0.37	10,730	0.00	0.00	0.73	0.26	95	74		111	67	0.33	0.79		0.23
Taiwan	76	0.00	0.00	0.43	0.57	3,936		0.00	0.45		52			56		0.44			0.45
Thailand	111	0.01	0.00	0.79	0.19	3,816	0.27	0.00	0.50	0.22	34	802	10	22	39	0.21	0.05	1.00	0.25

Table D2 Distribution of US outward FDI stocks by country and sector

	Petroleum	Total man	Food	Chemicals	Metals	machinery	electronics	Transportation	Other man	Wholesale	depository	finance	services	others
All countries	0.07	0.27	0.03	0.08	0.02	0.04	0.04	0.03	0.05	0.07	0.04	0.41	0.06	0.07
Europe	0.04	0.28	0.03	0.10	0.02	0.04	0.03	0.02	0.05	0.07	0.03	0.44	0.07	0.06
Latin America and Other Western Hemisphere	0.04	0.17	0.03	0.04	0.01	0.01	0.01	0.03	0.04	0.04	0.04	0.57	0.04	0.11
South America	0.08	0.28	0.05	0.08	0.03	0.02	0.02	0.03	0.06	.02	.07	0.26	0.05	0.24
Argentina	0.04	0.16	0.06	0.10	0.01	0.00	0.00	-0.04	0.04	0.02	0.13	0.41	0.04	0.20
Brazil	0.03	0.43	0.04	0.10	0.04	0.04	0.05	0.06	0.09	0.01	0.06	0.29	0.06	0.12
Chile	0.01	0.16	0.06	0.04		0.00	0.00		0.01	0.03	0.09	0.26	0.02	0.44
Colombia	0.22	0.29	0.07	0.08		0.00	0.00			0.02		0.18	0.02	
Ecuador	0.28	0.45	-0.17	0.27	0.00	0.00	0.14			0.10		0.18	0.01	
Peru	0.12	0.06	0.02	0.03	-0.01	0.00	0.00	0.00	0.02	0.02		0.24	0.02	
Venezuela	0.27	0.14	0.04	0.02	0.00	0.00	0.01	0.02	0.04	0.02	0.00	0.07	0.12	0.37
Other	0.11	0.16	0.07	0.03	0.00	0.00	0.00	0.01	0.05	0.06	0.19	0.07	0.06	0.36
Bolivia	0.23			0.00	0.00	0.00	0.00		0.00		-0.01	0.00		.56
French Guiana	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Guyana	0.26			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73
Paraguay	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.00	0.00	
Suriname	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Uruguay	0.03			0.06	0.00	0.00	0.00	0.00	0.12	0.07		0.15	0.10	
Central America	0.01	0.26	0.06	0.05	0.01	0.01		0.08		0.04		0.42	0.02	
Costa Rica	0.03	0.29	0.09	0.11	0.02	-0.01	0.07	0.00	0.01		0.00	0.00	0.00	
Guatemala	0.16	0.39	0.20	0.14	0.00	0.00	0.00	0.00	0.05	0.06		0.27	0.01	
Honduras	0.24	1.10		0.04	-0.02	0.00	0.00		0.04	0.14		0.10	0.00	
Mexico	0.01	0.38	0.09	0.07		0.01	-0.01		0.08	0.04		0.18	0.02	
Panama	0.01	0.01	0.00			0.00		0.00				0.94	0.02	0.00
Other	0.22	0.14			0.00	0.00	0.00	0.00		0.04		0.37	0.00	
Belize			0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.78	0.00	0.00
El Salvador	0.12	0.19		0.09	0.01	0.00		0.00	0.01			0.42	0.00	0.18
Nicaragua			0.00			0.00	0.00	0.00	0.00		0.00	0.00	0.00	
Africa	0.73	0.09	0.00	0.02	0.01	0.01	0.00	0.02	0.03	0.02	0.03	0.04	0.02	0.07
Middle East	0.23	0.24	0.01	0.02	0.00	0.01	0.15	0.00	0.04	0.04	0.07	0.15	0.11	0.17
Asia and Pacific	0.23	0.31	0.02	0.05	0.01	0.07	0.10	0.03	0.05	0.10	0.05	0.29	0.08	0.07