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Summary

After several decades of "state-capitalism" characterized by import substitution policies, Bolivia implemented in 1985 a New Economic Policy (NEP) following neo-liberal ideas of free trade, privatization, and liberalization of capital flows. It was hoped that the opening up of the economy would attract foreign direct investment (FDI) which in turn would help modernize Bolivian industry, improve productivity, increase exports, stimulate growth, and reduce poverty. This paper investigates to what extent this actually happened.

Keywords: Trade, Foreign Direct Investment, Poverty, Inequality, Bolivia.
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I   Introduction

After several decades of "state-capitalism" characterized by import substitution policies, Bolivia implemented in 1985 a New Economic Policy (NEP) following neo-liberal ideas of free trade, privatization, and liberalization of capital flows. The NEP started with a very effective stabilization package that stopped record level hyperinflation (almost 25,000% per year), liberalized prices, exchange rates and interest rates, abolished export and import controls, and reduced the public sector deficit[1]. The NEP was later complemented by structural reforms, consisting of privatization, pension reform, decentralization, and education reform[2].

It was hoped that the opening up of the economy would attract foreign direct investment (FDI) which in turn would help modernize Bolivian industry, improve productivity, increase exports, stimulate growth, and reduce poverty. In this chapter we will investigate to what extent this actually happened. The chapter is organized as follows: Section II describes trade policy and the evolution of trade in Bolivia before and after the introduction of the NEP. Section III discusses the privatization and capitalization processes that led to rapidly increasing FDI flows into Bolivia. Section IV describes the evolution of per capita growth, poverty and other welfare indicators, and Section V analyzes how trade and FDI have affected growth, inequality and poverty in the Bolivian case. Section VI concludes.

II   Trade

The NEP quickly simplified the previously very complex tariff regime introducing a single import tariff of 20% for all goods. By 1990 this tariff was further reduced to 10%, and later the tariff on capital goods was reduced to 5%. Simultaneously, there were various efforts to promote and diversify exports. In 1987, the National Institute for Exports was created, modelled after the successful PROCHILE, and various tax incentives were offered to exporting enter-prises[3].

In order to improve access to export markets, Bolivia signed several regional trade agreements and improved on already existing agreements. During the 1990s, Bolivia signed several partial integration agreements through the Latin American Integration Association (LAIA): Peru (1992), Chile (1993) and MERCOSUR (1997), and a free trade agreement with Mexico (1995). Moreover, Bolivia is a beneficiary country of the Andean Trade Preference Act (1991) from the United States and the Andean Generalized System of Preferences (1990) from the European Union. Both agreements granted preferential tariffs as support for the Andean Community's war on drugs, under the principle of shared responsibility. Recently, Bolivia signed a partial integration agreement with Cuba (2000) and is a beneficiary country of the Andean Trade Promotion and Drug Eradication (ATPDEA).

Although Bolivia was hailed as an early and profound reformer[4], the shift to a more open economy actually had little effect on trade. If anything, it appears that exports as a percentage of GDP fell after the implementation of trade liberalization policies (see Chart 1).

[1] For a complete description of the stabilization package, see Morales & Sachs (1990).
[2] For a thorough review of structural reforms in Bolivia, see Antelo & Jemio (2000).
[3] Antelo & Jemio (2000, p. 42).
[4] E.g. Lora (2001).

The disappointing export performance since 1985 could potentially be due to falling export prices, so it is important to have a look at the evolution of prices for our main export goods. Between 1980 and 2002, our main export good has been natural gas with a contribution of US$ 4.8 billion. Natural gas does not have a world market price, but is determined by long term contracts in bilateral negotiations between the seller and a very limited number of buyers.

**Chart 1: Bolivian Exports and Imports (official)**
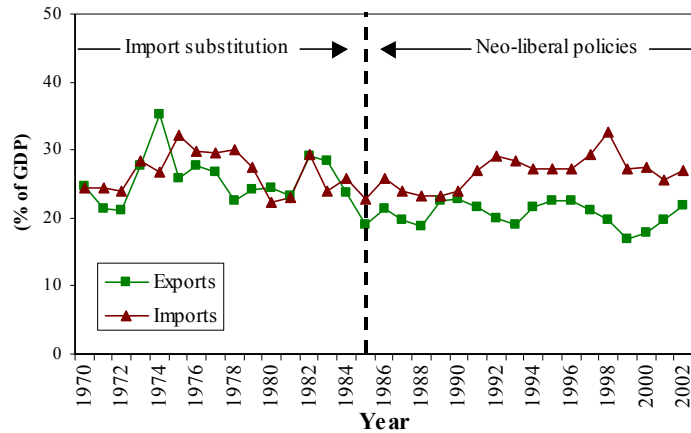
Source: World Development Indicators, The World Bank.

Chart 2 shows the evolution of the price that Bolivia has been able to charge for its natural gas from its two international buyers, Argentina and Brazil. During the last 30 years, that price has varied by more than a factor 17, from a low of US$ 0.28 per thousand cubic feet in 1972 to a high of US$ 4.81 in 1983 and 1984. Before the first oil crisis, the price was even lower. Between 1962 and 1967, the price was fixed at just US$ 0.08 per thousand cubic feet.

The price has dropped dramatically since 1985, clearly contributing to a worsening in the terms of trade. However, the current price levels do not appear low, neither in a long run perspective nor in comparison to alternative energy sources. It is not clear, either, that high prices would be beneficial for Bolivia. The high prices during the early eighties coincide with the worst recession in recent history, and the relatively favourable prices by the beginning of the present century also coincide with a recession period (see Chart 6 further below).

Chart 2: Price of Bolivian Natural Gas, 1972 - 2003
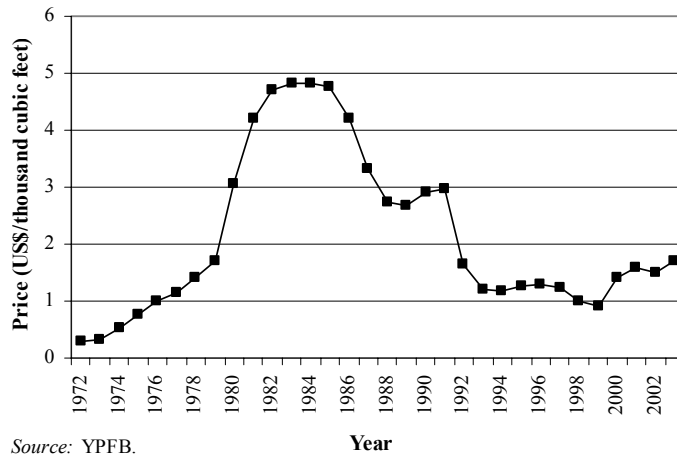
Source: YPFB.

Bolivia's main export metals are tin, zinc, gold, and silver with exports of US$ 3.0 billion, 2.4 billion, 1.2 billion and 1.2 billion, respectively between 1980 and 2002. Chart 3 shows price indices for these 4 commodities, with 1985 US$ current prices set to 100. The prices of tin and silver have been relatively low since 1985, which helps explain part of the poor export performance. On the other hand, the prices of zinc and gold have been relatively high. There was also a period between 1979 and 1984 where all prices were highly favourable, but

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exports nevertheless not particularly high, and the whole economy in deep recession with per capita GDP growth between –2% and –6% (see Chart 6 below).

The last very important export product, soya, with accumulated exports of US$ 2.3 billion just between 1990 and 2002, has experienced relatively stable prices, with the high prices in 1998 being only 30% higher than the low prices in 2001.

Chart 3: Export price indices
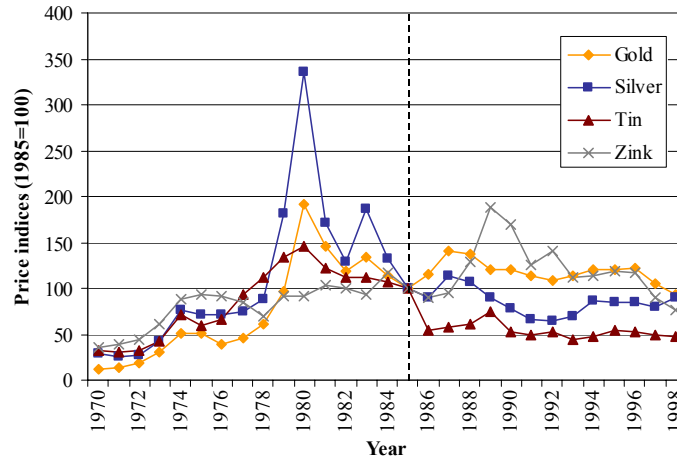
Source: International Financial Statistics, IMF.

The poor export performance since 1985 can only partly be attributed to unfavourable export prices, and the prices only appear low in comparison to the unusually high prices experienced in the early 1980s. In 2003, export prices were considered quite favourable, but exports were still insufficient for creating economic growth[5].

It would seem, at a first glance, that the basic premises of the NEP have failed. Privatization and trade liberalization did **not** stimulate more exports, and exports could thus not help generate faster growth and more rapid poverty reduction. However, this is too superficial a conclusion, because much more important than the total volume of exports is the composition and quality of exports, and this has changed substantially since the period of import substitution.

Chart 4 shows that in 1980, mining products (mainly tin and silver) comprised almost two thirds of the total value of exports, and hydrocarbons contributed almost one quarter. These two groups together are called traditional export goods in Bolivia, because they historically have accounted for almost all of the country's exports. In 1980, only 14% of exports were non-traditional, including mainly sugar, coffee, and some wood products.

By 2002, the picture had changed substantially. Mining only accounted for around one quarter of exports, while non-traditional exports have become almost as important as traditional exports. Soya and soya derivatives accounted for half of all non-traditional exports, but jewellery and other products with higher value added have also become significant.

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[5] See for example Fundación Milenio (2004).

Chart 4: Change in the composition of Bolivian Exports, 1980 -2002

1980   2002
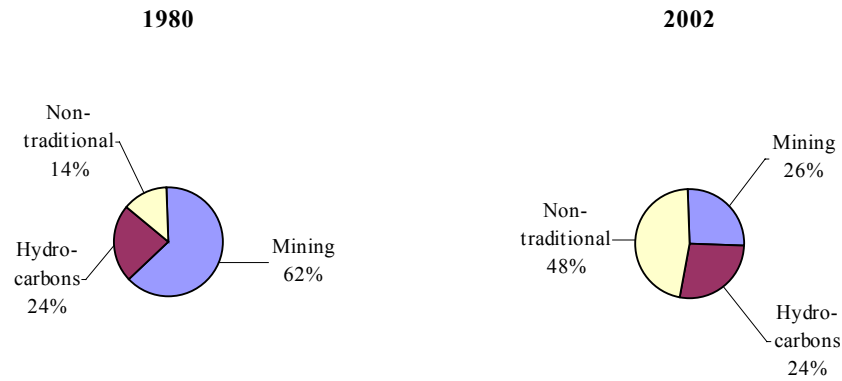
Source: National Statistical Institute.

The change in the composition of exports may not have much effect on the overall GDP growth rate, but it could still have substantial impacts on the distribution of income, and thus on poverty, since the persons involved in the production of non-traditional export products are completely different from the ones working in the mining and hydrocarbon sectors.

In this paper, rather than investigating the impact of trade on growth, and growth on poverty, at the aggregate levels, we will instead explore the impacts of changes in the composition of exports on changes in the distribution of income and thus on changes in poverty. We will also explore to what extent FDI has been a determinant of the observed change in the composition of exports.

III   Privatization and FDI in Bolivia

For most of the 1990s, the Bolivian economy experienced sharp increases in the levels of FDI. Although the stock of FDI is one of the smallest in Latin America, it represented the largest average annual ratio of FDI to GDP (see Table 1). During the period 1990-2000, most FDI into Bolivia came from the US (39%), Europe (28%) and South America (27%). FDI from the neighbouring countries Argentina (11%), Brazil (7%) and Chile (5%) is also important. Over the same period, the hydrocarbons sector attracted around 40% of total FDI inflows, while the services sectors attracted 26% (mostly finance, constructions and transport), utilities and telecommunication 17%, manufacturing 9%, and mining 7%.

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Table 1
Net Inflows of FDI, 1990-2000

Region or Country	Accumulated Flows		Annual Average	
	(US$ m.)	Share (%)	(US$ m.)	(% of GDP)
Latin American & Caribbean	453558	100.0	41233	-
South America	328012	72.3	29819	-
Argentina	79795	17.6	7254	2.7
Bolivia	4730	1.0	430	5.6
Brazil	137494	30.3	12499	1.9
Chile	36308	8.0	3301	5.2
Colombia	20406	4.5	1855	2.2
Ecuador	5264	1.2	479	2.9
Paraguay	1491	0.3	136	1.7
Peru	16016	3.5	1456	2.8
Uruguay	1374	0.3	125	0.6
Venezuela	25134	5.5	2285	2.7

Source: *World Development Indicators*, World Bank.

Chart 5 shows that the interest of foreign investors in Bolivia accelerated in the second half of the 1990s, when the Second-Generation Structural Reforms (SGSR) improved the economic policy framework. The new set of reforms constituted a deepening of the original First Generation Structural Reforms (FGSR), launched at the same time as the stabilisation programme in 1985. The reforms established a favourable regulatory framework for FDI by relaxing rules regarding market entry and foreign ownership and improving the treatment accorded to foreign firms and the functioning of markets.

Chart 5
FDI inflows in Bolivia
(In percent of GDP)
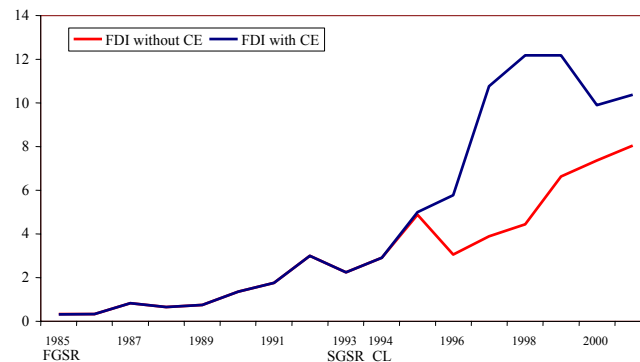
Source: Central Bank and Ministry of Foreign Trade and Investment of Bolivia.

An inappropriate policy framework can in part explain the slow growth of FDI in the early 1990s. The FGSR, which included goods markets deregulation, and fiscal, trade and financial reforms, appear not to have been focused on the locational decisions of foreign investors. Moreover, political instability and the uncertainty regarding the success of the stabilisation programme constrained both foreign and domestic investment. Although clear rules for foreign investment were set out already in the early 1990s, mainly through the Investment Law (1990) and the Privatisation Law (1992), foreign investors did not really become interested until strategic state monopolies were opened up to private investors.

The Capitalisation Law (CL) was launched in 1994 and is considered the centrepiece of the SGSR. It established the economic and legal conditions for capitalising (Bolivian term for privatising) large state-owned companies and promoting foreign capital inflows. Under the capitalisation process, the six principal state-owned enterprises, YPFB (oil and gas), ENDE (electricity), ENFE (railways), ENTEL (telecommunications), LAB (aviation) and EMV

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(mining and smelting), were put up for sale by international tender and the winning bidders gained management control and a 50% stake in the enterprise, while the government retained the remaining 50% share. In addition, unlike traditional privatisation schemes where funds are transferred to the government, capitalisation required the successful bidder to invest the money in the company itself over a stated period, effectively securing fixed capital investment.

The process has had a considerable impact on FDI because it has promoted the creation of firms backed by foreign capital or capitalised enterprises (CEs) and produced investment commitments worth around US$ 1.7 billion in the period since 1995. In addition, the policy framework has given enterprises the opportunity to access abundant natural resources, such as hydrocarbons and water, and control of companies with monopoly power, such as electricity and telecommunications.

Capitalised enterprises were responsible for almost 40% of all inflows to Bolivia in the period 1995-2001. While the investment boom in the CEs is now coming to an end, FDI in other sectors shows a continued upward trend, partly encouraged by the liberal investment climate demonstrated by the capitalisation process. However, the end of the wave of capitalisations coincided with a worldwide economic crisis as well as increased political and economic instability in Bolivia, all of which deterred FDI inflows.

IV   Growth, Poverty and Inequality in Bolivia

Economic growth in Bolivia has been very erratic and entirely insufficient for the purpose of reducing the very high poverty rates observed, especially in rural areas.

Chart 6 shows annual per capita GDP growth rates between 1966 and 2002. The average growth rate is zero, implying that the level of productivity in Bolivia is now precisely the same as it was in the mid 1960s. It does appear, however, that the volatility of growth has fallen after the introduction of the NEP in 1985, and average per capita GDP growth has also been positive since 1985 (averaging 0.7% per year between 1986 and 2002).

Despite the lack of productivity growth, there has been some progress in poverty reduction. Especially non-monetary indicators of well-being show significant improvements between the 1976 and 2001. According to the census of 1976, 85.5% of the population were suffering from Unsatisfied Basic Needs (UBN). By 2001, this share had fallen to 58.6%, reflecting massive public investment in basic services, such as water, sanitation, and education (see Table 2).

Chart 6: Per capita GDP growth in Bolivia, 1966-2002

Source: World Develoment Indicators, The World Bank.

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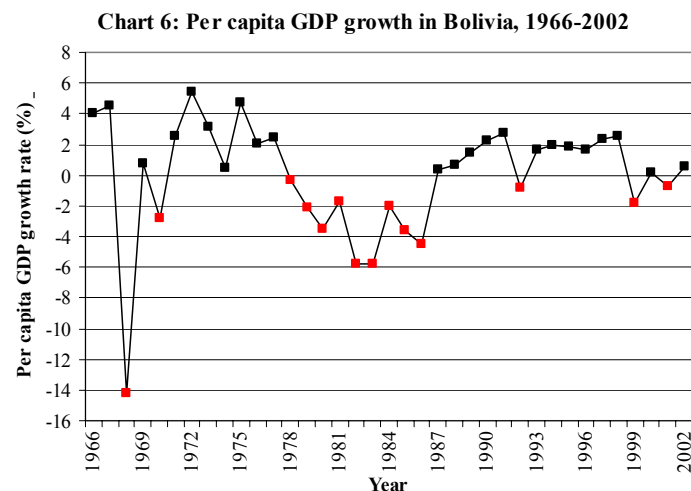
The share of people who do not have even their basic needs satisfied is still much too high, however, and the regional disparities are getting more and more pronounced. Table 2 shows that the regions that were initially less poor have shown sharper reductions in poverty than the initially poorest regions, implying that regional inequality is widening. Potosí continues to be the poorest department in the country, with 79.7% of its population with unsatisfied basic needs, showing hardly any progress since 1992 (80,5%). Santa Cruz, on the other hand, had the lowest level of unsatisfied basic needs in 1976 and showed the biggest reduction in poverty between 1976 and 2001 (41,2 percentage points).

Table 2: Population with Unsatisfied Basic Needs (UBN), 1976 - 2001

|	Census			Average annual change	
Region	1976	1992	2001	1976-2001	1992-2001
Chuquisaca	90,5	79,8	70,1	-0,82	-1,05
La Paz	83,2	71,1	66,2	-0,68	-0,53
Cochabamba	85,1	71,1	55,0	-1,21	-1,74
Oruro	84,5	70,2	67,8	-0,67	-0,26
Potosí	92,8	80,5	79,7	-0,53	-0,09
Tarija	87,0	69,2	50,8	-1,45	-1,99
Santa Cruz	79,2	60,5	38,0	-1,65	-2,43
Beni	91,4	81,0	76,0	-0,62	-0,54
Pando	96,4	83,8	72,4	-0,96	-1,23
Bolivia	**85,5**	**70,9**	**58,6**	**-1,08**	**-1,33**

Source: INE-UDAPE (2002).

Much of the improvement in non-monetary poverty indicators has been possible due to generous foreign aid (averaging 10% of GDP since 1985). But although people have been provided with education, water, sanitation and health services, their income earning capacity has barely increased, and monetary poverty has thus remained stubbornly high, despite reforms, foreign aid, and FDI.

The data on income poverty is very limited, due to a lack of national household surveys before 1997. However Klasen & Thiele (2004) has recently made a fair attempt at estimating national poverty rates back to 1989 using a new methodology combining urban income surveys with national health surveys. Although the estimations are still preliminary, the basic trends are likely to be correct.

Their results show substantial reductions in income poverty in urban areas during the 1990s, but there appears to be a partial reversal during 2000-2002. In rural areas there was a moderate reduction in poverty during the second half of the 1990s, but an almost complete reversal during the first years of this decade (see Chart 7). Thus, these 13 years of structural and social reforms supported by a massive influx of foreign aid and foreign direct investment, have barely bade a dent in rural poverty. It appears that the rural part of the country is insulated from the rest of the Bolivian economy, unable to benefit from any trickle-down effects there might be from reform-induced growth.

It is interesting to notice that the relatively good year in terms of poverty (1999) coincides with a record *low* level of exports (17% of GDP, see Chart 1), whereas the relatively bad years (1989 and 2002) coincide with relatively high levels of exports, at least by after-1985 standards (22% of GDP). These casual observations make it unlikely that even a thorough empirical analysis could demonstrate that overall exports would have a significant beneficial impact on poverty in Bolivia.
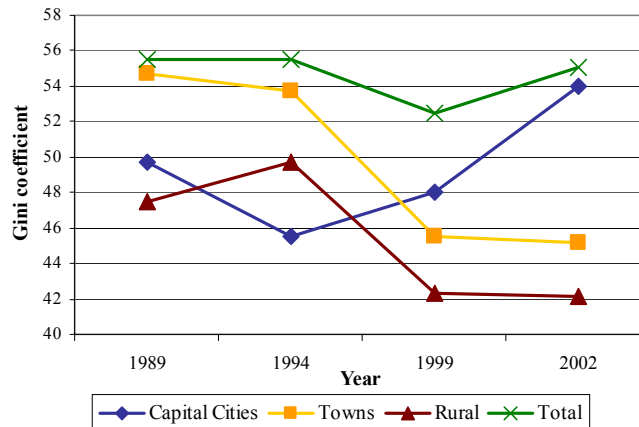
Chart 7: Evolution of monetary poverty in Bolivia, 1989 - 2002.
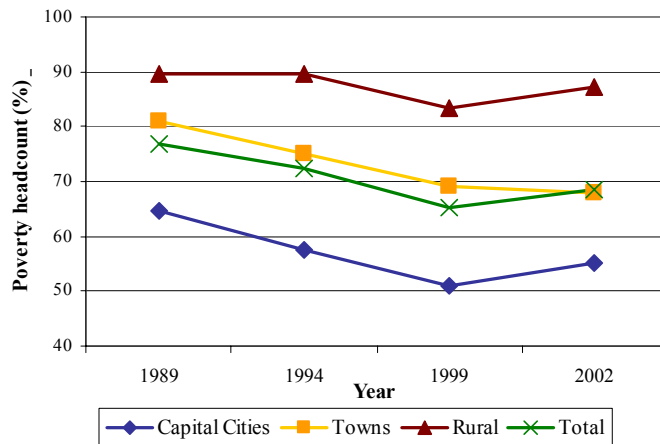
Source: Klasen & Thiele (2004). *Note:* 1989 and 1994 poverty are estimated using National Health Surveys in addition to urban household surveys.

Klasen & Thiele (2004) also provide estimates of the evolution of inequality between 1989 and 2002 using the same methodology of combining national health surveys with urban income sur-veys. The results indicate that overall inequality is approxi-mately the same in 2002 as it was in 1989 (Gini coefficient around 55) but with a dip in 1999 corresponding to the lower poverty that year, and with substantial differences between rural and urban areas (see Chart 8). Whereas inequality in the capital cities seems to have increased dramatically between 1994 and 2002, rural and provincial poverty seem to have fallen. It thus appears that the fate of the urban population, including the urban poor, has been closely linked to macro developments and has recently led to a significant deterioration in poverty and inequality. In contrast, the much poorer rural population have been more detached from improvements and deteriorations in the overall economic environment and their poverty trends have followed a different logic.

Chart 8: Evolution of inequality in Bolivia, 1989 - 2002.

Source: Klasen & Thiele (2004). *Note:* 1989 and 1994 numbers are estimated using National Health Surveys in addition to urban income surveys.

V   Impact of Trade and FDI Policies on the Economy

FDI and growth

FDI is generally believed to promote economic growth in the recipient country by increasing total investment and improving efficiency through the introduction of new technology and

better management practices. Nevertheless, the realisation of these benefits depends crucially on the existence of certain channels through which technological and management spillovers can be effected, such as through demonstration-imitation, backward-forward linkages, competition or education and training.

In the case of developing countries, the empirical evidence shows a positive relationship between FDI and growth, but there is no agreement on whether FDI leads to growth or vice versa. Cross-section evidence supports the hypothesis that FDI requires preconditions to promote growth. For example, Borensztein et al. (1998) point out that FDI has a positive effect on growth when the country has a minimum threshold stock of human capital; and Alfaro et al. (2002) find that FDI promotes growth in economies with sufficiently developed financial markets.

Although the international evidence for these complementary effects is relatively strong, it is difficult to find such effects for a time-series analysis in the case of Bolivia. Table 3 shows that neither education nor financial market development interact significantly with FDI in their effect on growth. Trade, on the other hand, does seem to have a complementary effect on FDI. Only when the ratio of trade to GDP is more than 52%, will FDI raise growth. This suggests that policies that promote exports (e.g. reducing the fixed costs of exporting by supporting transport infrastructure and distribution networks) would improve the impact of FDI. When interactions are omitted, FDI is not significantly correlated with growth.

The lack of complementary effects between FDI and education and FDI and financial market development indicates that the contribution of FDI to economic growth may have been limited by local conditions. A low level of human capital limits the capacity to absorb new technology and apply modern management techniques, while underdeveloped financial markets limit the economy's ability to exploit potential FDI spillovers, because, in order to take full advantage of new knowledge, firms will generally have to do some restructuring, which will require financing (Alfaro et al., 2002). The commercial banking system in Bolivia is characterised by very high real interest rates, short-run loans, and requires a 200% real estate collateral.

Independent Variable	(1)	(2)
Constant	-0.51[*] (0.13)	-0.40[*] (0.05)
Freedom Index [a] * (1-SPEI)[b]	0.0047[**] (0.0021)	0.0036[***] (0.0018)
Log (Government spending/GDP)	-0.22[*] (0.04)	-0.20[*] (0.02)
Education[c]	0.12 (0.17)	
Private Sector Credit/GDP	-0.01 (0.05)	
Trade/GDP		-0.03 (0.05)
FDI /GDP (lag 1)	0.94 (0.67)	-1.36[**] (0.66)
FDI /GDP (lag 1)*Education	-1.99 (1.40)	
FDI /GDP (lag 1)*Private Sector Credit/GDP	0.06 (1.34)	
FDI /GDP (lag 1)*Trade/GDP		2.66[***] (1.38)
R^2	0.78	0.77
R^2- Adjusted	0.71	0.72
Durbin Watson	2.24	2.09
Number of Observations	30	30

Note: All the variables were found to be nonstationary, I(1), and the residuals from the regressions turned out to be I(0). The standard error is given in parentheses and the asterisks indicate level of significance at [*] 1%, [**]5%, and [***]10%..
[a] State of Freedom by Freedom House: Those with ratings averaging 1-2.5 are generally considered "Free," 3-5.5 "Partly Free," and 5.5-7 "Not Free."
[b] Structural Policy Efficiency Index (SPEI) (Lora, 2001): where 0 corresponds to the worst reading for any year and 1 to the best.
[c] Secondary Gross Enrollment

The economy's ability to exploit potential FDI spillovers may also depend on its sectoral distribution. Table 4 shows that the most important destination of FDI has been capital-intensive and skill-intensive sectors, like hydrocarbons, telecommunications, and electricity. While the hydrocarbons sector did experience the introduction of new processes, advanced technologies, managerial skills, employee training, international production networks, and access to markets, it created relatively few linkages with the local economy and thus fewer possibilities for significant spillovers. Similarly, FDI has contributed to the modernisation of telecommunications and electricity services, but the linkages with local suppliers are weak. As more than half of all FDI over the period 1996-2001 was directed into sectors with relatively few linkages, there may be fewer benefits of FDI to Bolivia than was expected by looking at the experiences of FDI in many East Asian countries where spillovers and linkage creation often related to manufacturing sectors such as electronics, automobile and garments and textiles. In Bolivia, only 8% of FDI went into manufacturing during 1996-2001, thus limiting the possibilities for reaping the advantages of potential spillovers.

Table 4
FDI and export compositions by sector (%)
(Accumulated Stock: 1996 – 2001)

| Sector	FDI Share	Export Share
Primary	**35.5**	**42.6**
Hydrocarbons	34.1	11.6
Mining	1.3	20.3
Agriculture	0.1	10.7
Manufacturing	**8.0**	**57.4**
Food products and beverages	3.3	22.8
Refined petroleum products	2.1	0.9
Non-metallic mineral products	0.8	0.2
Furniture and jewelry	0.7	6.4
Basic metals	0.3	15.7
Chemicals and chemical products	0.3	0.7
Paper and paper products	0.2	0.2
Other manufacturing	0.2	10.4
Service	**56.1**	**0.0**
Telecommunications	14.1	
Construction	10.2	
Electricity	7.3	
Transport via pipeline (natural gas)	5.3	
Financial intermediation	4.7	
Transport	3.3	
Other services	11.3	
Total (US$ m.)	4,965	7,090

Source: National Institute of Statistics of Bolivia

On the basis of the results of a survey conducted with executives of foreign companies in Bolivia, Nina and Rojas (2001) find that access to natural resources and regional markets was amongst the main motivations for FDI. Recently, FDI in natural gas has helped gas to become the main export, accounting for 20% of total exports in 2002. However, Andersen and Faris (2002) argue that the effects of a substantial increase in natural gas exports due to capitalisation may lead to a temporary (but not permanent) increase in GDP growth during the few years of rapidly expanding export volumes.

Since FDI does not automatically lead to growth, public policies may be required to attract FDI and create an enabling environment to benefit from it. Vidaurre (2002) points out that the government needs to pay attention to additional factors that influence investors' locational decisions. He suggests a range of business facilitation measures that seek to reduce costs through a combination of improvements in communications infrastructure and the creation of larger markets. He also mentions that the manufacturing sector would benefit from a clear investment policy, since technology diffusion is not an automatic consequence of the presence of some knowledge stock.

One of the channels through which FDI can enhance economic growth in host countries is by increasing total investment. FDI can crowd in or crowd out domestic investment. However, on average, Bosworth and Collins (1999) find that an increase of a dollar in FDI is associated with an increase in total domestic investment by an average of 80 cents in developing countries. In Bolivia, data analysis suggests that only half of FDI translates into an increase in total domestic investment (see Chart 9), although this increases to a one-for-one increase in total domestic FDI investment through the capitalisation process. In the remaining sectors, the impact of FDI on total domestic investment has been very low, and it has encouraged little if any complementary local investment.

Chart 9
The impact of $1 of FDI on total domestic investment
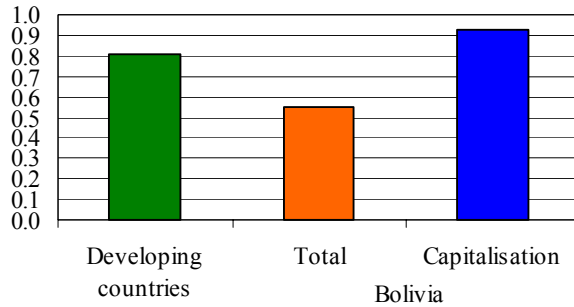
Sources: Developing Countries: Bosworth and Collins (1999) – Period 1979 - 1995.
Bolivia: Own estimations – Period 1976 - 2000.

FDI through capitalisation may also have reduced the need for local public investment and this may have enabled a reallocation of public investment from the productive to the social sector. This reallocation can partly compensate for the lack of spillovers, as it allows the government to invest directly in people, including those outside the foreign companies. However, the role of government should extend beyond reallocating public funds. For instance, privatised natural monopolies, such as water and electricity, require strict regulation to protect consumers.

FDI, Inequality and Poverty

The effects of FDI on income inequality can be analysed through the effects on wage inequality and non-wage inequality. According to Te Velde (2002), the effects of FDI on wage inequality can be analysed by looking at (i) composition effects (foreign firms may have different skill intensities from domestic firms), (ii) skill-specific technological change (FDI could induce faster productivity growth of labour in both foreign and domestic firms), (iii) skill-specific wage bargaining (skilled workers are usually in a stronger bargaining position than less skilled workers), and (iv) training and education (foreign firms generally undertake more training than local counterparts). The effects on non-wage income could be indirect, for instance through public policies or partnerships between foreign firms, governments, and local communities.

The empirical evidence shows that some Latin American countries have experienced an increase in wage inequality as a result of FDI. In the case of Bolivia, Te Velde (2002) finds that FDI may have accounted for a significant part of the observed increase in urban wage inequality during the period 1987-97, with FDI correlated with lower real wages for skilled and unskilled workers. Recently, Vedia (2002) found that the capital-intensive sectors have significant positive correlations with the fifth quintile of urban income distribution. Furthermore, as Table 5 shows, the real wages of workers in the capital-intensive sectors have experienced a revival since 1996. Workers in these sectors tend to be the more educated workers. FDI is also concentrated in these sectors.

Table 5
Employment, real income and educated workers in Bolivia, 2000

Sector	Employment share	Educated workers[a]	Real wage[b] (Bs./month)	Annual growth (1996-2000)	
				Employment	Real Wage
Agriculture	38.9	1.0	160	-2.0	-11.9
Hydrocarbons and mining	1.4	19.9	2494	-4.7	28.3
Manufacturing	10.1	10.5	612	-1.4	-2.8
Electricity, water and gas	0.5	24.5	1759	7.6	9.9
Construction	6.6	7.7	907	9.2	4.3
Transport and communications	4.3	19.3	1160	1.5	-0.5
Financial intermediation	0.5	77.3	2517	2.2	6.8
Other services	37.6	27.8	754	2.9	0.0
Total (Persons)	3637048	509187			

Source: National Institute of Statistics
Note: [a] Workers with more that 13 years of education. [b] June 1996 = 100

The results can in part be explained by the fact that FDI has gone into the skill-intensive sectors, thus creating a relative shortage of skilled labour. The TNCs have had to train their workers intensively, and subsequently pay them higher salaries to prevent them depart in with that newly acquired knowledge. These findings are supported by Andersen and Faris (2002), who find that the expansion of the hydrocarbons sector mainly benefits the groups that initially earned the highest incomes, i.e. skilled workers. Similarly, Jemio and Wiebelt (2002) find that FDI worsens income distribution slightly.

There are valid reasons for concern about the deterioration in income distribution caused by FDI, particularly as there is no evidence of significant poverty reduction. The majority of poor people are working in agriculture, manufacturing and other services, three sectors which have seen deteriorating or stagnant real wages. The dramatic fall in agricultural incomes during the period of the FDI boom is particularly worrying, as it inevitably contributes to a deepening of poverty and likely pushes many people into extreme poverty.

There are various public policies available that can help to improve the distributional effect of FDI. One is to use fiscal revenues for social investment (e.g. education) in the long-run development of the poorer segments of the economy. However, there are also private sector policies that can help to improve the developmental impact of FDI. In Bolivia there are examples of mining companies complementing their time limited exploitation activities with socially responsible and sustainable activities in order to smoothe boom-bust cycles in affected communities.

Trade, inequality and poverty

While there appears to be little effect of overall trade on growth in Bolivia (see Table 3), trade is obviously necessary for a highly indebted poor country which needs foreign exchange to service its debt and foreign exchange to buy essential investment goods that are not locally produced. It may also be the case that even though there is no relationship between aggregate trade, growth and poverty in Bolivia, people working in specific export sectors do benefit from such exports in terms of higher salaries and less poverty. In order to

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test this hypothesis, we have identified the principal sector of work (down to four ISIC[6] digits) for each salaried person in the 2001 MECOVI household survey, and matched it with the value of exports in each of these sectors.

The Bolivian working population is distributed among more than 200 different sectors, but only a few of these are important in terms of export. Table 6 shows seven of the most important export sectors, accounting for close to 80% of all exports in 2001, together with the number of people employed in each sector and the average monthly income gained by those who work in the sector[7]. It is clear that the two main export sectors, soya and natural gas, are also the sectors that pay by far the highest salaries. The problem is that it is relatively few people who benefit from these high salaries, and the ones who do tend to be highly educated (in the case of the natural gas sector) or large land owners (in the case of soya production), so this kind of export would tend to worsen the income distribution.

The remaining export sectors pay closer to the national average for salaried workers ($135/month), with workers manufacturing jewellery doing slightly better ($146/month) than average, and workers making clothes doing somewhat worse ($95/month). Notice that the moderate poverty line is only about $40/month, so the people working in these export sectors are in general well above the poverty line, and changes in their salaries would thus not directly affect the poverty head count.

Table 6: Main Bolivian export sectors, employment and exports in 2001

ISIC Sector	Employment (1000 persons)	Average salary (US$/month)	Exports (million US$)
1514 Manufacture of vegetable and animal oils and fat (soya)	3.7	510	317
1110 Extraction of crude oil and natural gas	6.0	495	285
1320 Mining of non-ferrous metal ores	35.0	137	185
2720 Manufacture of basic and non-ferrous metals	n.d.	n.d.	146
3691 Manufacture of jewellery and related articles	8.0	146	101
2010 Sawmilling and planing of wood	4.5	139	25
3610 Manufacture of furniture	40.8	131	23
1810 Manufacture of wearing apparel, except fur	54.5	95	15

Source: MECOVI 2001 and UN COMTRADE. *Note:* Employment numbers are estimated based on the MECOVI survey, which is not designed to be representative at the sectoral level. The numbers are therefore only rough approximations. In addition, the numbers only include persons who earn a positive income from the activity. Helping spouses and children who are not paid, are not included.

In order to test whether trade has a positive impact on salaries at the individual level, we run a regression with the logarithm of the monthly salary as the dependent variable and the log of sectoral exports and imports as explanatory variables. A number of control variables, such as education, age, gender, ethnicity, work sector, and location, are also included. The regression results are shown in Table 7 below.

The results show that the value of exports is indeed a positive and significant determinant of wages in the exporting sector. Holding everything else constant, persons working in sectors that export more would tend to earn higher monthly wages than persons working in tradeable sectors with less export. However, the estimated elasticity of wages with respect to exports is quite low. If one sector has twice as high exports as another, the level of salaries would only be 3% higher. Assuming that this estimated difference in salaries is indeed due to exports (and not to some unobserved variable such as capital intensity) we can also conclude that, if,

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[6] The International Standard Industrial Classification (ISIC) used by the United Nations.
[7] Only people earning positive income are counted. Helping spouses and children who do not receive any salary are thus ignored.

for example, exports of soya were to double, it would imply an increase in salaries of about 3% for the people who work in the soya sector.

Table 7
The effect of sectoral imports and exports on salaries (2001)

Independent variable: Log (income)	Coefficient	t-value
Constant	3.6551	20.78
Years of education	0.0566	19.27
Age	1.4326	14.55
Age squared	-0.1755	-11.82
Dummy for woman	-0.3967	-14.18
Dummy for indigenous	-0.1546	-6.48
Dummy for blue collar worker	-0.3713	-5.03
Dummy for white collar worker	-0.3522	-4.74
Dummy for self-employed	-0.8746	-12.01
Dummy for cooperative worker	-0.7255	-5.91
Dummy for work in family business	-0.6108	-6.48
Dummy for public sector	0.6557	6.20
Dummy for traditional agriculture	-0.3015	-5.51
Dummy for electricity sector	0.4263	3.69
Dummy for construction sector	0.4045	7.80
Dummy for commerce sector	0.4687	8.48
Dummy for hotel and rest. sector	0.6709	8.72
Dummy for transportation sector	0.5254	9.02
Dummy for banking sector	1.0945	5.79
Dummy for highland residence	-0.3040	-10.46
Dummy for lowland residence	0.1545	5.49
Log (sectoral exports)	0.0301	4.09
Log (sectoral imports)	-0.0187	-2.51
R^2	0.3513	
Number of Observations	8014	

Source: Author's estimation based on MECOVI 2001 and trade data from UN COMTRADE.
Note: t-values are based on robust standard errors as estimated by the Huber/White "sandwich" estimator.

Imports, on the other hand, tend to have a negative effect on salaries in the sectors that produce these goods locally, most likely because they compete with locally produced goods and press down prices and salaries. The problem is biggest in the sectors where there is a considerable local production, i.e. the manufacturing of food, drinks, and clothing, whereas the imports of capital goods have no such negative effect since there is virtually no local production to compete with. Needless to say consumers might well have gained from imports.

The estimated coefficients on the control variables all have the expected signs. Holding all other characteristics constant, people with more education tend to earn higher salaries, people with more experience tend to earn more (until a certain point), women tend to earn about 40% less than men, indigenous people tend to earn about 15% less than non-indigenous people, people in the highlands earn about 46% less than people in the lowlands, and people in the public sector about 66% more than people in the private sector. Of the non-tradeable sectors, the one that has the most attractive level of salaries is the banking sector, followed by hotel and restauration, transportation, commerce, electricity, construction. Far behind these comes traditional agriculture. The most attractive type of income owner is employer,

followed by white collar worker, blue collar worker, family worker, and cooperative worker, while self-employed in the informal sector is the least attractive.

Persons who combine many of the characteristics with negative coefficients, for example indigenous women living in the rural highlands and working in subsistence agriculture from which there are no exports, have extremely low incomes and are thus extremely poor. Since they neither export nor import any goods there is little direct effect of trade on these unfortunate people. However, there may be indirect effects and medium to long run effects. It is possible that if some labor intensive export sectors boomed, these sectors could attract previously self-employed people into blue or white collar positions, which could imply a substantial improvement for these persons in terms of income.

Table 8 shows how the composition of employment has changed between the census in 1992 and the census in 2001.

Table 8: Occupied population, by sector, 1992-2001

Sector	Census 1992	Census 2001	Difference 1998-2001	Av. Annual growth rate
Agriculture, hunting, fishing	**966,760**	**877,432**	**-89,328**	**-1.1**
Extraction of minerals and hydrocarbons	**51,291**	**37,863**	**-13,428**	**-3.3**
Mining	45,119	32,016	-13,103	-3.7
Hydrocarbons	6,172	5,847	-325	-0.6
Manufacturing industry	**218,553**	**330,871**	**112,318**	**4.7**
Food products and tobacco	48,669	75,016	26,347	4.9
Textiles, clothes and leather products	77,462	117,796	40,334	4.8
Wood products and paper	13,032	12,032	-1,000	-0.9
Editing and printing activities	7,377	11,308	3,931	4.9
Chemical products	4,517	5,537	1,020	2.3
Rubber and plastic products	1,547	3,115	1,568	8.1
Non-metallic mineral products	14,485	22,065	7,580	4.8
Metal products, except machinery and equipment	11,493	21,301	9,808	7.1
Machinery and equipment	3,975	4,760	785	2.0
Furniture and matresses	35,996	57,941	21,945	5.4
Services	**1,194,883**	**1,749,890**	**555,007**	**4.3**
Electricity, gas, water	5,977	9,709	3,732	5.5
Construction	124,104	184,649	60,545	4.5
Commerce	204,039	483,328	279,289	10.1
Hotels and restaurants	24,855	125,312	100,457	19.7
Transport, storage, communication	114,078	167,214	53,136	4.3
Financial intermediation	9,305	15,131	5,826	5.6
Real estate, business and rental services	44,052	81,692	37,640	7.1
Public administration, defence, social security	57,855	73,654	15,799	2.7
Education	101,748	150,415	48,667	4.4
Health and social services	33,849	60,158	26,309	6.6
Community services	106,093	84,714	-21,379	-2.5
Domestic services	102,229	144,074	41,845	3.9
Services of foreign organizations	1,923	1,178	-745	-5.3
Not specified	**264,776**	**168,662**	**-96,114**	**-4.9**
Total	**3,626,370**	**4,745,946**	**1,119,576**	**3.0**

Source: National Statistical Institute, census tabulations.

The sector that have lost most employment between 1992 and 2001 is clearly the agricultural sector, and most likely the traditional part of agriculture, without exports. This is a positive development as extreme poverty tends to be concentrated in this sector. The mining sector has also lost a large number of jobs, which coincides with the fall in exports from that sector. This has likely contributed to an increase in poverty, as miners do not easily find alternative employment. The increase in hydrocarbon exports can not be seen in the number of jobs in the hydrocarbon sector, as the capitalization process included a complete restructuring of the sector and a further intensification of capital instead of labor.

The manufacturing sector has created more than 100,000 new jobs between 1992 and 2001, likely affected by the substantial increase in non-traditional exports, but not by foreign direct investment, which was almost negligible in the manufacturing sector. Most job creation was found in the manufacturing of textiles, clothes and leather products, followed by food products and furniture.

By far the biggest job-generator between 1992 and 2001 was the service sector, however, largely unaffected by both exports and FDI. The hotel and restauration business has created almost 280,000 jobs, which is a very positive development for several reasons. First, the sector employs a lot of unqualified labor and pays relatively well (compared to realistic alternatives for these workers). It is thus likely to have a beneficial effect on poverty. Second, it employs relatively many women, offering a very desirable alternative to the informal and badly paid jobs in private residences. Third, the sector services to a large extent foreigners, which means that it generates foreign revenues, even if no goods leave the country. Fourth, there are many positive spill-over effects to other sectors, as the sector uses mainly local inputs. This sector is likely to be responsible for a large part of the extra construction jobs and they may also have provided stimulation for several manufacturing sub-sectors (e.g. furniture, matresses and textiles). They may also help create a critical mass of tourist facilities, that can help stimulate the more lucrative parts of the tourism business than the young back-packers that currently tend to dominate the picture.

All in all, although there are many positive trends to be observed in the sectoral composition of jobs in Bolivia, FDI and changes in trade patterns do not seem to be the drivers of those changes.

An alternative way of analyzing the distributional impacts of exports from different sectors is presented in a recent study by Andersen & Evia (2003). It uses a highly disaggregated Computable General Equilibrium Model[8] of the Bolivian economy to investigate the likely impacts of hypothetical, price-induced export booms in several different export sectors. The model operates with 13 different productive sectors and six different household types as well as a government sector and an entity called "Rest of the World". The flows in the model are based on a social accounting matrix from 1997 that shows from which sectors each type of household earns their income and in which sectors they spend their money[9]. It also shows where the government gets its revenues from and how it spends these revenues. With such a model it is possible to experiment with the international trade variables and see who would be affected and how.

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[8] The disaggregated CGE model was developed mainly by Manfred Wiebelt of Kiel Institute for World Economics based on a more aggregated CGE model developed by Luis Carlos Jemio.

[9] The disaggregated Social Accounting Matrix was developed by a group of researchers at the Kiel Institute for World Economics. It is described in detail in Thiele & Piazolo (2003).

The results from the study indicate that there are three export sectors that have beneficial impacts on inequality and poverty, in the sense that exports from these sectors would tend to increase the income of the poorer population groups and reduce the Gini coefficient of inequality. One is "Modern Agriculture" whose expansion would tend to benefit especially rural unskilled workers, urban informals, and, to a smaller extent, employers. Another is "Consumer Goods[10]" which tend to benefit urban informals and rural small-holders, the two population groups which contain almost all urban and rural poor. The last export sector with such beneficial properties is the "Coca" sector which provides dramatic benefits for rural unskilled workers and rural small-holders.

In sharp contrast to these three sectors stands the traditional export sector, namely "Mining." A boom in mining exports would tend to benefit the already richest population group, employers, and the relatively well-paid unskilled workers that work in the mines[11]. Rural workers and rural small-holders would suffer substantial reductions in their income, mainly due to the adverse effects on "Modern Agriculture" arising from the "Dutch Disease" that invariably would follow the mining boom.

A natural gas boom would have little effect on household incomes and thus little effect on the income distribution. The only big effect is to be felt on government revenues, but even after all these revenues have been spent and invested, households are unlikely to be better off, unless the government dramatically changes their spending and investment patterns.

According to Table 4, less than 5% of all FDI received between 1996 and 2001 went into the three export sectors that tend to have a beneficial impact on poverty and inequality, and this modest contribution was partly or wholly offset by the efforts to eradicate the one sector which tend to benefit the rural poor most.

Conclusions

Bolivia introduced the New Economic Plan in 1985 in the hope that this would attract more investment and foster trade which would lead to faster growth and poverty reduction. Nearly two decades on, this plan seems to have failed to achieve many of its goals. Trade as percent of GDP has not increased, though FDI has increased due to the privatisation policy. GDP per capita has not increased when taken over the past four decades (though it must be noted that other politically unstable economies have seen GDP per capita fall), but there appears to be an upturn in GDP per capita over the latter half of the period.

Poverty has fallen in the 1990s particularly in regions that were already less poor, but there appears to have been some reversal in the most recent years. Inequality in capital cities increased dramatically. Thus it seems that the increase in FDI and the continuation of existing exports have not been able to reduce (income) poverty and inequality significantly. For this, trade and FDI have not had a sufficient poverty-focus. For example, FDI has not benefited (export) sectors such as clothing and modern agriculture that would help income opportunities of the poor.

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[10] The "Consumer Goods" sector inludes food, beverages, clothes, leather, wood, paper, wood products, and paper products.
[11] Miners, as well as most other unskilled workers, earn about $120-140/month and are thus located well above the moderate poverty line ($60/month). The two large groups located below the poverty line are rural small-holders and self-employed urban informals.

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