

**Report No. 26238**

**REPUBLIC OF EL SALVADOR  
COUNTRY ECONOMIC MEMORANDUM**

**Background Studies**

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# EL SALVADOR

## COUNTRY ECONOMIC MEMORANDUM

### Background Studies

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# I. EL SALVADOR DURING THE 1990s.

## Background<sup>1</sup>

1.1 The last Country Economic Memorandum (CEM) for El Salvador was completed in 1995. The 1995 CEM reviewed bottlenecks that prevented more rapid economic growth, and proposed a policy agenda to leapfrog into a new stage of development. However, the years following the CEM (no causality implied) witnessed a dramatic deceleration of GDP growth: growth, which had averaged almost 6 percent per year over 1990-95, was less than 3 per cent per year over 1996-01. The mirror image of this deceleration in growth was the evolution of poverty: poverty which had decreased by 12 percentage points over the first half of the decade, fell only by six percentage points over the second half.

1.2 This slowdown in growth rates has taken place despite the country's impressive economic transformation and prudent macroeconomic policies. Over the past decade, successive administrations have undertaken significant stabilization and modernization efforts. Structural reforms included trade liberalization, financial sector strengthening, re-privatization of the financial sector and other state enterprises, comprehensive tax reform, pension reform and improvements in the competitiveness environment for private investment. The Heritage Foundation ranked El Salvador at the top of the Latin American free-market reforming countries and one of the freest in the world in 2000. In other words, El Salvador is a country that has put in place about as good policies as are possible (always near the top in terms of the World Bank's Country Policy and Institutional Assessment ratings), where institutional capacity is relatively good and despite it not only growth has not picked up but also has suffered a significant slowdown in parallel to the mentioned transformation

1.3 Against this background, both the Government and the Bank have articulated the need for greater understanding of the growth process in El Salvador. Even as the last CAS was being prepared in 2001, the Bank recognized the inadequate understanding of growth developments after 1995 and more generally, of the Salvadoran growth experience. On its part, the Government has also acknowledged the puzzle created by a deceleration of growth in parallel to the implementation of an extremely successful reform agenda. In recognition of this gap, the 2001 CAS proposed to conduct analytical work that might (i) explain the main features of the Salvadoran growth experience during the 1990s; and (ii) explore policy alternatives that may lead to an acceleration in economic growth.

1.4 The rest of the report structured as follows. Chapter I reviews the Salvadoran growth experience over the 1990s, paying especial attention to the deceleration after 1995. The chapter also assesses progress in the areas that the 1995 CEM identified as priority areas. Chapter II is more forward looking and focuses on narrowing the set of potential sources of growth to a few areas which can be expected to have the largest impact on future growth prospects. To this end, the chapter exploits the results of a recent Regional Study on Growth in Latin America to place the Salvadoran experience in a broader comparative framework. This is complemented with a review of the implications for El Salvador that emerge from the Global Competitiveness Report (GCR), which has a focus on the microeconomic determinants of development. Chapter III to VI would elaborate on each of these priority areas. In chapter III the report reviews the Investment

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<sup>1</sup> Most of the figures and statistics used for this report come from the World Development Indicators of the World Bank. As such, it is possible that there are some discrepancies between national figures and those reported in this document.

Climate in El Salvador. This issue is even more relevant when the low investment rates in El Salvador are taken into consideration. Chapter IV focuses less on factor accumulation and more on factor productivity. In this regard, the chapter explores the efficiency of the Salvadoran national innovation system and identifies some of the main obstacles for improvement. Chapter V focuses on international trade. Beyond the importance of expanding trade in a small economy like El Salvador, the announcement in early 2002 that the U.S. was to negotiate a Central American Free Trade Agreement (CAFTA) with the Central American countries has reinforced the need for a clearer understanding of the economic opportunities and, admittedly, the challenges that CAFTA will bring. Finally, Chapter VI follows the strand of the 2003 Latin American Region Flagship, *Closing the Gap in Education and Technology*, and concentrates on human capital formation in El Salvador.

## **The 1995 CEM**

1.5 The 1995 CEM was prepared with the purpose of supporting government efforts towards accelerating equitable growth by quickly transforming policies to increase global competitiveness and meet the challenge of globalization. The report recognized El Salvador's formidable achievements in the first half of the 1990s, including the end of the civil war, the consolidation of democracy, the implementation of a coherent economic strategy leading to the stabilization of the economy and the reactivation of growth, and the systematic attack on poverty undertaken by successive administrations. Per capita GDP, which had declined by an average of about 3 percent per year over the 1980s grew by almost 4 percent per year over 1990-95, a period where poverty levels fell from about 60 percent to less than 50 percent. However, despite this impressive performance, real GDP per capita levels in the mid-1990s were still below pre-war levels, and in this regard there was a clear sense that even more rapid economic growth was a necessary condition to alleviate poverty and consolidate peace.

1.6 In order to identify bottlenecks for faster growth, the CEM undertook a comparison with the East Asian economies which had an impressive growth record (almost 8 percent per year on average from 1961 to 1995) and were a development example until the late 1990s. This comparison suggested that to accelerate growth in El Salvador, the focus had to be on augmenting physical and human capital, increasing outward orientation, and enhancing the allocative efficiency of the productivity of resources (i.e. raising total factor productivity).

1.7 The savings rate. From a theoretical point of view an increase in the savings rate would increase future growth prospects, in a temporary manner according to neoclassical models of growth, and permanently according to the endogenous growth literature. In this regard, and notwithstanding the improvements of the early 1990s, El Salvador continued to show relatively low investment and saving levels in the mid 1990s: Gross Domestic Savings (as a percentage of GDP) in El Salvador averaged about 3 percent over 1990-95, against 37 percent in East Asia. Differences in Gross National Savings were smaller due to the significant effect of remittances but still suggested a very low savings rate for El Salvador in relation to East Asia (16.1 percent of GDP against 36 percent of GDP). Low saving and investment levels were attributed to the impact of the civil war and a very regulated and distortionary macroeconomic environment during the 1980s, which increased the costs and the risk of doing business. Low domestic savings was seen as the result of inadequate public savings, an increase in private consumption fueled by remittances, and the lack of opportunities for financial savings.

1.8 CEM recommendations. To address this constraint, the 1995 CEM suggested a number of policy measures including: (i) increasing the depth and efficiency of the financial sector; (ii) reforming the social security system moving from a pure pay-as-you-go system to a new one that

allows capitalization; (iii) increasing public savings by broadening the tax base, strengthening the tax administration, and enforcing compliance; and (iv) modernizing the public sector to improve efficiency.

1.9 Human capital. An educated and skilled labor force, coupled with efficient and flexible labor markets, are key conditions for growth. The importance of human capital derives not only from its direct role as a factor of production, but also because education and human capital can serve as a complement to other factors, determine the rate of technological innovation and facilitate technological absorption. As a result it should not be a surprise to find in the 1995 CEM strong references to importance of human capital, and especially of education, to sustained growth. Further, El Salvador was in the mid 1990s characterized by (i) a low human capital stock (mean years of education were higher in East Asia by 1.75 years); (ii) low primary enrollment ratios (about 80 percent in El Salvador against more than 100 percent in Asia); and (iii) low education quality as evidenced by high drop out and repetition rates. These constraints were perceived as critical given the government's goal of moving toward a technologically advanced country which would need an educated and flexible labor force.

1.10 CEM recommendations. The 1995 CEM recommendations in this area took into account the relatively competitive labor markets in El Salvador and focused on raising the skills and productivity of labor. Issues to be addressed included: (i) ensuring a growing supply of skilled labor through education reforms; (ii) enhancing the productivity of existing capital stock by supporting private efforts to develop an active and comprehensive training policy; and (iii) contributing to the quality and efficiency of labor supply through health sector reforms.

1.11 Infrastructure. Infrastructure can directly enter a country's production function, improve total factor productivity, and encourage additional private investment. In this regard, deficiencies in the quality and quantity of infrastructure were perceived as hampering private sector growth in the mid 1990s. This was in part the result of the war when the targeting of infrastructure facilities by the guerrilla was compounded by under-development and under-maintenance. As a result, El Salvador electricity generation capacity was about one third of that in East Asia (3.4 versus 9.7 kt oil equivalent per capita over 1990-95), whereas the number of installed telephone lines were less than 20 percent of those in East Asia (35 per 1,000 people versus 235 per 1,000 people).

1.12 CEM recommendations. In order to fulfilling the country's potential the CEM stressed the need to expand and modernize the public services infrastructure. This would require: (i) revising the basic legal framework; (ii) reforming market structures within the sector; (iii) specifying the financial role of government; (iv) promoting private sector participation; and (v) creating appropriate regulatory mechanisms.

1.13 International trade openness. There is ample evidence in the economics literature of the positive effects of trade for growth. In this regard, El Salvador's export base at 8 percent of GDP in 1995 (10 percent of GDP if net maquila exports are included and 15 percent of GDP with gross maquila exports) seemed quite limited. Trade volumes (defined as exports plus imports in relation to GDP) for El Salvador in the early 1990s were about 10 percent of those of Singapore, 20 percent of those of Hong-Kong, and 50 percent of those of Thailand. Further, more than 50 percent of 1995 non maquila exports were in primary sectors subject to sharp price changes.

1.14 CEM recommendations. In order to support outward-oriented private sector growth the CEM suggested enhancing export supply response: (i) deepening and sustaining trade liberalization by moving to a uniform tariff rate, and eliminating administrative barriers regulating import flows; (ii) eliminating policy and institutional obstacles to trade expansion

(import- and export-related administrative costs and procedures); (iii) continue strengthening trade negotiation capabilities; and (iv) improving business-government consultation mechanisms.

1.15 Total Factor Productivity. The recent growth literature is emphasizing the importance of total factor productivity for growth, to the effect that changes in GDP growth seem to be driven more by TFP growth and less by factor accumulation. TFP estimates for El Salvador<sup>2</sup> would suggest a negative contribution to growth in each of the three decades from 1960 to 1990. More than a reflection of technological regress, this could reflect that over that period there was a declining efficiency of the economy as a whole. In comparison with the East Asian economies, which experienced over 1960-90 TFP growth rates of more than 2 percent per year on average, El Salvador's TFP growth was extremely low.

1.16 CEM recommendations. The CEM recommended the following steps to improve competitiveness: (i) efficient resource allocation, through market mechanisms, in the labor market, capital market, and international trade; (ii) facilitating private sector efforts to gain access to technology and enhancing its capability of adapting to those technologies; and (iii) improvements in the legal and regulatory sectors aimed at securing property rights, improving contract law, facilitating company entry and exit, strengthening competition, and improving predictability and speed of conflict resolution.

### **Progress removing bottlenecks**

1.17 Could it be that the slowdown in the second half of the 1990s was due to lack of progress in removing the bottlenecks reviewed above, or even worse, that there was a reversal with the structural reform program? This section addresses the progress made after 1995 in each of the priority areas identified in the CEM.

### Investment and savings levels: Significant on the policy front but little impact on saving rates

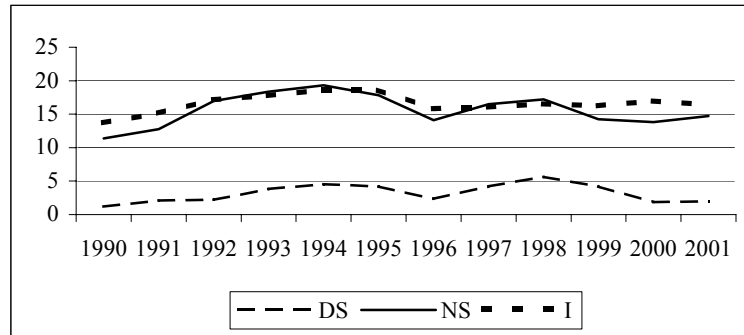
1.18 Despite significant progress with the reforms proposed in the CEM (social security reform, increase in the VAT from 10 to 13 percent in 1995, significant improvements financial sector supervision) saving and investment levels have not increased after 1995. In fact, as Figure 1 shows, the maximum level of investment (I) was actually reached in 1995 and it has declined thereafter. The average investment rate over 1990-95 was at 16.8 percent of GDP about half a percentage point higher than over the 1996-2001 period. National savings (NS) have followed investment very closely and also record a decline of about 1 percentage point of GDP. This decline in national savings is due in part to the evolution of foreign savings, but also to low domestic savings (DS). In fact, while on the one hand DS have increased slightly between the pre- and post- 1995 period by about .6 percentage points of GDP to 3.6 percent of GDP on the other hand, the domestic savings rate in 2000-2001 was at about the same levels of the early 1990s (about 2 percent of GDP). This fall in domestic savings has been mainly driven by a decline in public savings by about 3 percentage points of GDP since the mid 1990s.

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<sup>2</sup> TFP estimates are adjusted for quality of labor associated with increases in education attainment. When there is no adjustment for the quality of labor, the 1960s would show positive TFP growth rates but the 1970s and 1980s would still have negative TFP growth rates.



**Figure 1: Saving and Investment Trends (% of GDP) in ELS, 1990-2001**



Source: World Bank (WDI)

Human capital: Significant progress

1.19 El Salvador has been making good progress in the education sector reflecting the high priority assigned by successive administrations to the sector. The nationally agreed 10-year Reform Plan (1995-2005) focused on expanding coverage (both primary and secondary), improving quality, and enhancing efficiency, especially through the highly successful EDUCO program. As a result of these efforts, the gross rate of matriculation in basic education has increased from 83 percent in 1992 to more than 100 percent in 2001. Net enrollment rates for primary school have also improved by about 12 percentage points during the 1990s to about 82 percent today. As a result the average number of years of education has increased from 7.5 years in the early 1990s to more than 8 today, and the illiteracy rate of the group of 15 to 24 years old has decreased from 16 to 11 percent over the same period. Regarding quality, the repetition rate in primary education has been reduced from 8 to 7.5 percent and the persistence to fifth grade has increased from 58 percent to 77 percent during the 1990s.

**Table 1: Educational statistics in El Salvador (1990-2001)**

	Primary enrolment (gross)	Primary enrolment (net)	Average years of education	Illiteracy rate (15-24)	Repetition in primary education	Persistence to fifth grade
1990 1/	83	70	7.5	16	8	58
2001 1/	111	82	8.1	11	7.5	77

1/ Or closest available year.

Source: World Bank (WDI)

1.20 With respect to progress within the regional context (table 2), El Salvador still lags in most of the education indicators. The regional context is relevant in this set up because if the neighbors have a more educated labor force, El Salvador will remain at a disadvantage to attract foreign investment. In this regard, enrolment, persistence, and average years of education are higher in the median Latin American country than in El Salvador, whereas illiteracy and repetition are lower.

**Table 2: Educational statistics in the LAC Region (1990-2001) 1/**

	Primary enrolment (gross)	Primary enrolment (net)	Average years of education	Illiteracy rate (15-24)	Repetition in primary education	Persistence to fifth grade
1990 2/	100	90	8.4	4.5	9.7	82
2001 2/	112	94	9	2.8	6.5	92

1/ Median values for the region

2/ Or closest available year.

Source: World Bank (WDI).

1.21 The good news, however, is that El Salvador is catching up with the region. Table 3 reports the relative position of El Salvador with respect to the median Latin American country. Values close to 1 would indicate that El Salvador is close the median value whereas values away from 1 would indicate a discrepancy. For example in enrolment (both net and gross), persistence, and average years of education, El Salvador is catching up with the median LAC country (El Salvador is now closer to the median than in the early 1990s). In illiteracy (of 15 to 24 years old group) and repetition, however, the region seems to have made more progress than El Salvador. Whereas, the percentage of illiterates (in the 15-24 group) was about 3.5 times that of the regional median in 1990, it is now almost 4 times, and whereas the repetition rate was lower than the regional median in 1990 it is now higher. It must be noted however, that the regional gains in the illiteracy indicator are likely driven by the situation in the early 1990s where the regional enrolment rate was larger than the Salvadoran one.

**Table 3: Relative position of El Salvador with respect to LAC Region (1990-2001)**

	Primary enrolment (gross)	Primary enrolment (net)	Average years of education	Illiteracy rate (15-24)	Repetition in primary education	Persistence to fifth grade
1990 1/	0.83	0.78	0.89	3.6	0.82	0.71
2001 1/	0.99	0.87	0.90	3.9	1.15	0.84

1/ Or closest available year.

Source: World Bank (WDI).

#### Infrastructure: Mixed progress

1.22 The Salvadoran infrastructure sector presents a mixed picture. In telecommunications and electricity the situation has improved significantly over the past few years. The number of installed telephone mainlines has almost trebled over the decade to reach 100 per 1,000 people, whereas commercial energy production has increased by almost 20 percent over the decade. This progress can be explained in part by the privatization of the telecommunications company and the creation of a competitive market, and the privatization of electricity distribution, and of two thermal electricity plants. Further, substantial progress has been made establishing modern regulatory systems in those sectors which would put El Salvador at the top of the region. However, the situation with roads and ports is still deficient. Only about 20 percent of roads are paved, and among non-paved roads only about 8 percent are in good conditions. In ports, the situation would also be characterized by high inefficiencies and lack of adequate infrastructure, including installations not ready to handle containers.

Export base and outward orientation: Significant progress.

1.23 As noted in the previous section, El Salvador's export base seemed low and little diversified in the early and mid 1990s. In this regard, significant progress has been made with merchandise exports which have increased from about 15 percent of GDP in 1995 to more than 21 percent in 2001. Admittedly, this increase is more modest when one considers the evolution of net maquila exports (exports would have increased from 10 percent in 1995 to about 13 percent in 2001), and even more modest when maquila is completely excluded, in which case exports would have remained basically constant since the mid 1990s. Thus, the main driving force behind the gains in expanding the export base is the evolution of maquila which has increased from less than 7 percent of GDP in 1995 to 12 percent in 2001 in gross terms, and from 2 percent of GDP in 1995 to about 4 percent of GDP in 2001 in net terms. One might be tempted to highlight the lack of progress in non-maquila exports. However, this last figure hides an important element, namely the negative evolution of the Salvadoran export prices in the second half of the 1990s. In fact, controlling for price changes, the share of export merchandise in GDP has also increased in the second half of the 1990s from about 8.5 of GDP in 1995 to more than 14 percent of GDP now.

**Table 4. El Salvador: Evolution of merchandise exports over 1993-2001 1/**

	1993	1995	1997	1999	2001
Exports 2/	8.8	8.5	12.2	9.6	9.1
Maquila Exports	4.2	6.8	9.5	10.7	12.0
Exports 3/	13.0	15.3	21.7	20.3	21.1
Exports 2/ 4/		8.5	11.8	12.3	14.2

1/ In percent of GDP; 2/ Excludes maquila; 3/ Includes maquila;

4/ Exports to GDP (constant 1995 prices)

Source: World Bank (WDI and LDB)

1.24 Another area where significant progress has been posted regards the dependence of exports on primary commodities, which in the early and mid 1990s represented about 50 percent of exports and now they represent about 16 percent. It could be argued that this low share of primary commodities in 2001 is due to the low price of important items such as coffee and sugar, but even if exports are considered in real terms it is possible to observe a similar declining path for the share of commodities between the early 1990s and today (50 percent in the early 1990s, 36 percent in 1995 and 18 percent in 2001).

**Table 5. El Salvador: Evolution of merchandise exports over 1990-2001 1/**

	1990	1993	1995	1997	1999	2001
Merchandise exports 2/	100	100	100	100	100	100
Primary commodities	50.8	44.9	35.8	30.6	20.5	17.8
O/w coffee	44.7	36.5	27.9	23.6	14.4	9.7
Manufactures	59.2	55.1	64.2	69.4	79.5	82.2

1/ Percentage of merchandise exports.

2/ Excludes maquila

Source: World Bank (LDB)

## Efficiency and Productivity Levels: Mixed results

1.25 El Salvador's TFP averaged -2.25 percent per year over the 1981-1990. This would be consistent with GDP growth declining by .4 percent per year, capital increasing by .73 percent and labor by 1.13 percent per year on average. The 1990s, however, observed a recovery in TFP. With growth between 1991-2000 at 4.56 percent, capital increasing by 2 percent, and adjusted labor by 1.64 percent per year on average, El Salvador's TFP would be estimated at .88 percent. Although small, this would place El Salvador's productivity slightly above the median of the region. These results, however, should be no surprise when one takes into account the armed conflict of the 1980s.<sup>3</sup>

**Table 6. El Salvador: TFP growth over the 1990s 1/**

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
TFP growth	0.7	4	3.4	1.9	1.9	-1.9	0.5	-0.3	-0.1	-1.6

Source: Staff calculations.

1.26 However, a closer look to the evolution of TFP over the 1990s reveals that the TFP gains observed for the decade were due to the gains of the early 1990s. TFP growth averaged 2.4 percent over 1991-95, but posted an average -.7 percent per year over 1996-2000. Put in other words, the second half of the 1990s was not able to sustain the observed gains of the aftermath of the conflict.

### **The post 1995 growth slowdown**

1.27 Despite progress made in some of the areas identified as bottlenecks in 1995, especially in human capital and in expanding the export base, the good intentions of the 1995 CEM in terms of El Salvador leapfrogging into a new stage of development characterized by faster growth did not materialize after 1995. In fact, growth did not even stay at comparable levels; the average growth rate over 1996-2001 was about half that achieved over 1990-95. Per capita income which had been increasing by almost 4 percent during the first half of the 1990s, averaged less than 1 percent per year in the post-1995 period.

**Table 7: Growth during the 1990s. El Salvador vs. LAC**

	GDP		Per capita income	
	1990-95	1996-2001	1990-95	1996-2001
El Salvador	6.0	2.8	3.8	0.8
LAC 1/	3.4	3.1	1.7	1.3
Trading Partners 2/	2.8	3.2		
US	2.3	3.7		
East Asia	8.1	3.3		

1/ Median value for the region.

2/ Weighted average of US, Germany, Guatemala, Costa Rica, and Japan.

Source: World Bank (WDI)

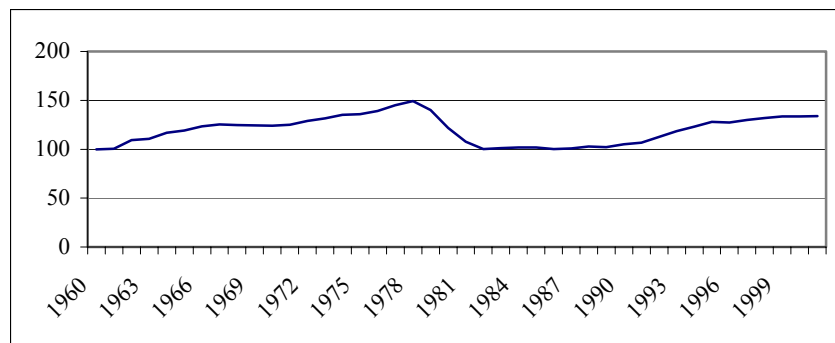
<sup>3</sup> There is also an issue regarding the quality of TFP estimates during the 1980s. It is likely that the stock of capital presents significant measurement errors over these years when estimates of conflict-related capital damage and destruction, and therefore of total capital, are likely to be highly inaccurate.

1.28 Within the Latin American context, the Salvadoran growth slowdown is also remarkable. Median Latin American growth also fell between the first half and the second half of decade, but the deceleration (about one-quarter of a percentage point for GDP growth) is not of a comparable magnitude. Further, when looking at El Salvador's main trading partners, it can be observed that El Salvador's growth decline has taken place in an external environment that cannot be catalogued as negative: growth in the main trading partners accelerated by about half a percentage point from about 2.7 percent per year over 1990-95 to about 3.2 per year on average over 1996-2001. This positive environment is even more marked when only the main trading partner is considered: growth in the United States accelerated from about 2.3 percent per year over 1990-95 to about 3.7 percent per year on average over 1996-2001. The only group with a comparable growth slowdown is East Asia, where growth also more than halved between the first and the second half of the 1990s, but the slowdown there is deeply related to the financial crisis of 1998 when median growth for the region was -6.7 percent, and two countries –Indonesia and Thailand- suffered GDP contractions of more than 10 percent.

### The Evolution of Poverty

1.29 The growth slowdown of the second half of the 1990s has dramatically influenced the date when the country will reach once more pre-conflict real per capita income levels and the speed of poverty reduction. In 2001 El Salvador's per capita income was at the 1974 level, or about 12 percent below its maximum level -reached in 1978. On current trends, El Salvador will reach its 1978 per capita income level in 2015, whereas on pre-1995 trends it would have already reached it in 1999.

**Figure 2. Real GDP per capita 1960-2001 (1960=100)**



Source: World Bank (WDI)

1.30 The mirror image of the growth slowdown is the slowdown in poverty reduction. The first half of the 1990s witnessed a decrease in poverty of 12 percentage points. However, the rate of poverty reduction was halved between 1995 and 2000, and poverty fell only by 6 percentage points over that period. To better illustrate the impact of growth on poverty reduction, table 8 reports, together with actual poverty figures, an estimated or “virtual” poverty series that simulate the poverty levels if the average per capita growth rate observed during 1990-95 had been

maintained after 1995.<sup>4</sup> Inspection of this “virtual” poverty series suggests that if the growth rate of the early 1990s had been maintained after 1995, the share of households living in poverty would have fallen by approximately 4 additional percentage points, or about 250 thousand people.

**Table 8. Share of households in poverty in El Salvador, 1991-2000**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000 1/
Actual	59.7	58.7	57.5	52.4	47.5	51.7	48	44.6	41.3	41.3
Virtual	59.7	58.7	57.5	52.4	47.5	50.5	46.3	42.3	38.4	37.6

1/ Estimate

1.31 An additional question that arises in this context regards the degree of pro poorness of the growth process in El Salvador. That is, whether the growth process has been accompanied by progressive, neutral or regressive distribution changes.

1.32 Analytically, an identity links income growth, changes in the distribution of income, and the reduction in poverty. In general, for a given country and time period, the impact of growth on poverty reduction will increase if accompanied by progressive distributional and decrease if accompanied by regressive distributional changes. Thus for a given growth experience the degree of pro poorness can be assessed by examining the evolution of inequality. Table 9 reports the evolution of income distribution (as measured by the Gini coefficient) for El Salvador during the 1990s. Inspection of Table 9 suggests slight improvements in the overall Gini coefficient both when income distribution is measured by total per capita Household income and by labor income although in the latter case the gains are smaller. As we will see below, the larger gains in the income distribution when total household income is considered are likely due to the role of workers remittances. In any case, the evidence presented here points towards a growth pattern where the poor have benefited, even if slightly, more than the better off.

**Table 9. El Salvador Inequality 1991-97**

	1991	1997
By per total capita household income	0.53	0.51
By labor income of occupied workers	0.50	0.49

EHPM 1991 and 1997

### **Workers Remittances**

1.33 A review of the Salvadoran experience during the 1990s would not be complete without addressing the role of workers remittances, which increased from an average of 2.6 percent of GDP during the 1980s to more than 11 percent during the 1990s. There are two different type of impacts that one may consider when analyzing the remittances: macroeconomic, and poverty and inequality impacts.

#### Macroeconomic impact

1.34 The conceptual framework for the analysis of the impact of remittances on the economy would be similar to the Dutch Disease phenomenon associated with an export boom (in the case

<sup>4</sup> An increase in per capita income by one percentage point would have resulted in a 0.78 percent decline in the headcount index of extreme poverty, and in a 0.42 percent decline in the headcount index of moderate poverty.

of remittances exports of labor) and to the effects of an increase in capital inflows. However, there are two critical differences with export booms. First, remittances tend to be more permanent than export booms; second, given the different transmission channels (households in the case of remittances versus firms in the case of exports) the use of foreign exchange receipts tend to be different. In fact, a much higher proportion of remittances tend to be spent on consumption (estimates by FUSADES, a Salvadoran think-tank would put the share of remittances consumed at about 70 percent) particularly on non-tradables relative to the tradables.

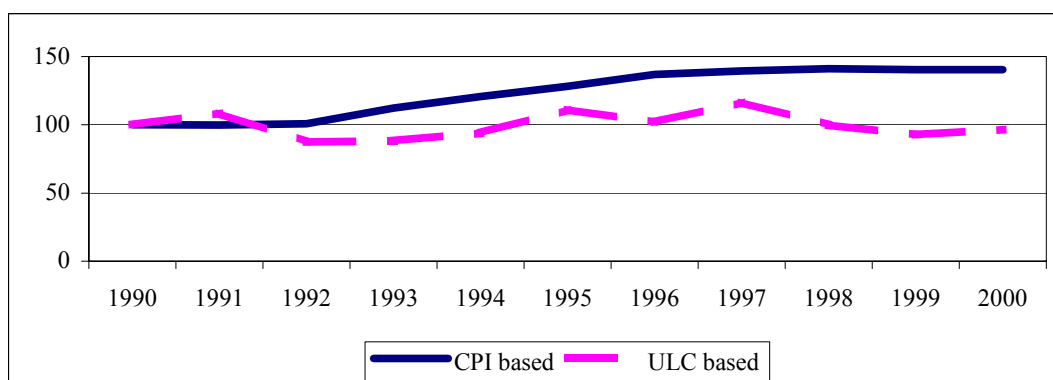
1.35 In principle there are several effects that an increase in capital flows may have on the economy:

- A worsening in the trade deficit. This would be caused by the higher level of domestic expenditures on imported goods.
- Inflationary pressures. In a supply constrained situation, the increased demand for non tradable goods as a result of the increase in incomes would drive up the prices of non tradables.
- Real exchange rate appreciation. The higher inflation would in turn lead to a real exchange rate appreciation, although this effect can be somewhat mitigated if there are productivity gains.
- A decline in the export sector. The increase in the relative price of non tradables with respect to tradables would create incentives to reallocate resources between sectors.
- Short run monetary disequilibrium. The increased foreign exchange flows (not spent on tradable goods) would result in a balance of payments surplus, an accumulation of reserves, and an expansion of the money supply. Under a fixed exchange rate, in absence of sterilization measures, the monetary expansion would drive prices up. Alternatively, sterilization would push interest rates up and tighten domestic credit.

1.36 With the exception of the real exchange rate appreciation, most of the previous effects have been noticeable in El Salvador. For example, the trade balance worsened considerably over the 1990s (from less than 7 percent of GDP during the 1980s to almost 14 percent of GDP during the 1990s); and as noted above the share of exports (excluding maquila) in GDP has remained basically constant during the 1990s (although admittedly the terms of trade did not help). Also, the first half of the 1990s witnessed high inflation rates (15 percent per year on average against less than 4 percent on average during the second half). On the other side, interest rates that averaged about 4 percent over 1990-95 increased to about 12 percent over 1996-2000 reflecting the tighter monetary stance of the second half of the 1990s.

1.37 As for the evolution of the real exchange rate, Figure 3 highlights two important elements. First, there is no doubt that El Salvador CPI-based real effective exchange rate has appreciated over the 1990s (by about 40 percent). However when one considers the real effective exchange rate based on unit labor costs (ULC) Figure 3 also highlights that external competitiveness has been maintained. This would be a reflection of a relatively flexible labor market and a decline in the real minimum wage that helped maintain competitiveness despite the evolution in the consumer price index.

**Figure 3. El Salvador CPI- and ULC- based real exchange rates 1990-2000**



Source: IMF

The impact of remittances on households incomes

**Table 10. El Salvador Remittances and household incomes**

Decile	Share of households receiving remittances		Share of non labor income in total income of households with remittances	
	1991	1997	1991	1997
1	3	5	43	59
2	7	10	36	57
3	9	13	32	44
4	10	15	34	52
5	11	15	32	37
6	14	14	30	36
7	15	18	28	37
8	18	18	27	36
9	19	19	24	28
10	22	15	24	26

Source: EHPM 1991 and 1997

1.38 In addition to the impact that the aggregate inflows may have had on the economy, remittances reaching households are likely to also have had an impact on poverty and inequality. In fact, the increase in remittances over the 1990s led to an increasing share of non-labor incomes in total household incomes. Table 10 shows the proportion of households receiving remittances by deciles and the share of non labor income in total income due to remittances. Inspection of table 10 suggests that in the early 1990s, the share of households receiving remittances was higher in the upper deciles than in the lower deciles. For example, 17 percent of households in the five upper deciles were receiving remittances, against only 8 percent of households in the five lower deciles. An extreme case is that of the first decile; in the early 1990s only 3 percent of households were receiving remittances (against almost one quarter of the households in the highest decile). However, over the 1990s the share of households in the first five deciles receiving remittances increased significantly reaching 12 percent. In contrast, over the same



period the share of households in the five upper deciles remained stable at a 17 percent. This evolution is also observed when one examines the share of non labor income in total income for households receiving remittances. Table 10 reveals that as expected, the importance of remittances in non labor income is higher for the poorer households than for the richer. This holds true for both the early and the late 1990s. However, the gains in the lower deciles over the decade are much more significant than those of the upper deciles. The former increased the share of remittances from 35 to 50 percent of non labor income whereas the latter o increased the share more modestly from 26 percent to 32 percent. One factor that may have contributed to this is that as noted by Cox and Ureta<sup>5</sup> the remittance amount in 1997 was independent of the pre-remittance income of the recipient household with a typical median amount of 875 colones (US\$ 100) or half that amount. Thus the relative weight of the remittances was higher for households in the lower deciles. All in all, these figures suggest that remittances may have played a significant role in the reduction of inequality achieved during the 1990s.

### **Looking for explanations**

1.39 The previous sections have reviewed progress made on the reform front over the second half of the 1990s and concluded that progress in education and therefore in increasing the human capital stock has been the most significant. Not only the country has improved most of its education indicators but also it is closing the gap with other Latin American countries. Regarding the export base, progress has also been significant with merchandise exports –including maquila–increasing from 15 percent of GDP in 1995 to 21 percent of GDP in 2001. Most importantly, although the share of on non-maquila exports to GDP has been stable, non-maquila exports are now much less concentrated on primary commodities which traditionally are subject to large terms of tradefluctuations. On productivity, the record is more mixed. Total Factor Productivity, which had been negative in the three decades from 1960 to 1990, recovered during the 1990s. However, this recovery was mainly driven by developments before 1995. Finally, on the savings front and most importantly on the investment front, there is little progress to report. In this regard, and despite uneven progress it seems difficult to justify the slowdown of the 1990s in terms of a reversal in the reform program. This section further explores these issues, paying attention to both domestic and external factors, and to stabilization policies to address imbalance, created in part by the boom in remittances, that may help to explain the slowdown.

#### Domestic factors: Supply side

1.40 The pattern of GDP growth in El Salvador during the early 1990s already presented some concerns due to reliance on non-tradables growth. Table 11 illustrates that following sharp declines in all the sectors during 1979-90, the early 1990s witnessed an across the board recovery. However, it was construction activities (related to post conflict reconstruction) and services (spurred by repressed demand during the war and the as noted in the previous chapter the remittances boom) leading the pack with growth rates at 7.5-8 percent per year on average. Given the low share of construction in GDP (less than four percent), its contribution to overall growth was a modest .3 percent per year on average, but services accounted for about three-quarters of the growth rate over the early 1990s. After 1995, the growth rates of all the sectors declined but while in agriculture and non-construction activities the decline is modest (.9 and .7 percentage points respectively), the declines in construction (from 7.6 percent to 3.7 percent) and in services (from 7.9 percent to 2.6 percent) are much more significant. In fact, the decline in services and construction would account for most of the overall growth decline: should services and

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<sup>5</sup> Alejandra Cox and Manuelita Ureta (2003), International Migration, Remittances and Schooling: Evidence from El Salvador. Texas A&M University, College Station, Texas. Mimeo.

construction growth rates have been maintained after 1995 GDP growth would have averaged about 5.8 percent per year.

1.41 Table 12 further explores this issue and disentangles the evolution of value added in services into a set of sub-sectors and reports weighted growth rates for transportation, trade, housing, banking, public administration, and others (i.e. unidentified factors). Inspection of table 12 suggests that although growth falls in most of the service sub-sectors (public administration is the only exception with a small increase from .1 to .2 between the pre-1995 to the post-1995 periods), the main declines are in trade<sup>6</sup> (from 2.9 percent to .8 percent) and others. The evolution of the trade sub-sector, where most of the retail consumption would be captured, is likely to reflect the recovery of repressed demand in the aftermath of the armed conflict and a subsequent adjustment to more sustainable level following the boom of the early 1990s.

**Table 11. Sectoral GDP growth rates and GDP shares.**

	Agriculture	Industry		Services
		Non Const.	Const.	
<b>Sectoral Growth</b>				
1979-1990	-0.6	-0.4	-2.6	-0.8
1991-1995	1.5	5.4	7.6	7.9
1996-2001	0.6	4.7	3.7	2.6
<b>GDP shares</b>				
1979-1990	19.2	18.4	3.1	59.5
1991-1995	15.4	22.7	3.6	58.3
1996-2001	12.7	23.5	3.8	60.0
<b>Contribution to GDP growth</b>				
1979-1990	-0.1	-0.1	-0.1	-0.5
1991-1995	0.2	1.2	0.3	4.6
1996-2001	0.1	1.1	0.1	1.6

Source: World Bank (LDB)

**Table 12. Services: Sub-sectoral growth**

Sub-Sector	1991-1995	1996-2000
Transportation	0.8	0.7
Trade	2.9	0.8
Housing	0.3	0.1
Banking	0.6	0.4
Public Administration	0.1	0.2
Others	3.3	0.4
<b>Total Services</b>	<b>7.9</b>	<b>2.6</b>

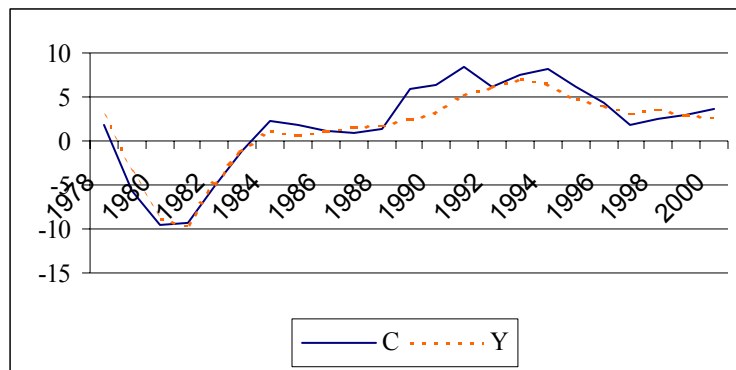
Source: World Bank (LDB)

<sup>6</sup> Trade is defined as the growth rate of value added of output of the trade industry less the value of intermediate consumption (intermediate inputs). Trade comprises wholesale and retail trade, and hotel and restaurants services.

### Domestic factors: Demand side

1.42 A different way of looking at these issues is by concentrating on the demand side of the economy. In fact, if services and construction were the main driving forces behind growth in the early 1990s one would also expect high growth rates in consumption and investment. Figure 3 explores the evolution of consumption growth rates the early 1990s. To this end, figure 4 plots smoothed<sup>7</sup> growth rates for GDP and private consumption. Inspection of figure 3 suggests that following the contractions in both income and consumption of the 1980s, the end of the conflict brought a recovery in consumption. In fact over 1990-95, consumption grew faster than GDP in 5 of the 6 years, averaging 8.3 percent (against about 6 percent for GDP). Subsequently, the growth rate of private consumption decelerates to about 2.5 on average over the post-1995 period, more in line with GDP growth. Thus, this would be consistent with the reference above to a pattern of growth driven by consumption demand in the early 1990s and a growth slowdown once consumption growth returned to a sustainable path.

**Figure 4: Consumption (C) and GDP (Y) growth rates, 1978-2000**



1.43 As for investment, whereas the early 1990s witnessed annual growth rates of more than 11 percent, the late 1990s experienced growth rates that averaged less than 1.5 percent (table 13). Thus, the evidence on this front is also consistent with a growth rate in the early 1990s driven to a large extent by a construction boom.

1.44 Government consumption, however, which at the peak of the conflict had reached 16 percent of GDP declined between 1990 and 1995 (by 3.7 percent per year on average) before increasing slightly in the 1996-2001 period.

<sup>7</sup> 5-year moving average.

**Table 13. Key National Accounts Aggregates**

	Growth rates (%)		Shares of GDP (%)	
	1990-95	1996-2001	1990-95	1996-2001
GDP	5.9	2.8	100	100
Private Consumption	8.3	2.5	97	96
Government Consumption	-3.7	2.2	9	10
Investment	11.4	1.4	18	16
Exports of GNFS	13.7	13.8	19	25
Imports of GNFS	20.3	7.3	34	37

Source: World Bank (WDI)

1.45 All in all, the review of the internal factors would point to a GDP growth rate mainly driven by an investment boom concentrated mainly in the construction sector (likely to be related to reconstruction activities) and by a consumption boom (likely to be related to a recovery of repressed consumption). These elements appear when looking both at sector production (supply side) and at the aggregate demand, and raise concerns of the sustainability of the observed growth rates.

#### External factors

1.46 On the external front there are two main elements to consider. One regards the evolution of trade volumes. The volume of exports has been increasing at a similar rate over the whole decade of the 1990s (between 13 and 14 percent per year on average). The volume of imports, however, which was increasing at about 20 percent per year over 1990-1995 (in part to finance the consumption boom), falls dramatically after 1995 to about 7 percent per year. As a result, the external sector, which was negatively contributing to GDP growth in early 1990s, starts contributing positively after 1995. One exercise that can be performed is exploring the growth rate in exports that El Salvador should have maintained after 1995 to compensate for the deceleration in consumption and investment growth: in this regard, it is found that El Salvador would have needed export growth of more than 20 percent per year.

1.47 The second element to consider here is the evolution of the terms of trade (that is, the relative prices of exports and imports). It was already noted when discussing table 4 that export prices have not been favorable for El Salvador during the second half of the 1990s, and this may have prevented exports from growing at a faster pace. Table 14 reports the evolution of export prices for the first and second halves of the 1990s. It indicates that the early 1990s benefited from price increases running at more than 6 percent per year; however, after 1995 El Salvador experienced export price deflation, when export prices fell by about 1.3 percent per year.

**Table 14. Terms of Trade**

	Price changes	
	1991-95	1996-2000
Exports of GNFS	6.3	-1.3
Imports of GNFS	2.7	2.4
Terms of Trade GNFS 1/	3.6	-3.7

1/ A positive entry indicates an improvement.

Source: World Bank (WDI)

1.48 Regarding import prices, they have been increasing a similar rate during the whole decade. As a result, the terms of trade significantly improved over 1991-95 (about 4 percent per year on average), but also a significant deteriorated over 1996-2000 (also about 4 percent per year on average). This is clearly a negative factor to take into account to understand growth developments in El Salvador.

1.49 Entering now into more detail in the evolution of export prices, the second half of the 1990s would have suffered lower prices than the first half in all of the components but manufactures. Price deterioration is especially significant in primary commodities where prices fall by more than 6 percent per year on average over 1996-2000. Coffee, is especially hit and after having increased significantly over 1991-95 suffers a significant deterioration after 1995.

**Table 15. Export Prices and Shares of Significant Products**

	Price changes		Share in Exports GNFS	
	1991-95	1996-2000	1991-95	1996-2000
Exports of GNFS	6.3	-1.3	100	100
Merchandise	1.2	-2.4	53	43
Primary Commodities	11.5	-6.6	25	15
o/w Coffee	14.4	-4.3	20	12
Manufactures	-5.5	4.1	28	28
NFS 1/	17.0	0.4	47	57

1/ Includes maquila.

Source: World Bank (LDB)

1.50 This price evolution would help to explain the changes in the composition of exports over the decade, with non factor services increasing its share from about 50 percent of total exports in the first half of the decade to about 60 percent in the second half. This increase clearly reflects a decrease in primary commodities (and in turn in the merchandise balance), and especially in coffee whose share in total exports falls from 20 percent in the first half of the 1990s to about 12 percent in the second half. The weight of manufactures, however, has remained constant for the whole decade at close to 30 percent.

1.51 All in all, the review of the external factors highlights one important element, namely a significant reversal in the terms of trade between the early and late 1990s. This reversal may help to partly explain why export volume growth stabilized in the second half of the 1990s and therefore could not compensate for the fall in the domestic demand.

## Pricking the bubble

1.52 In order to understand the boom of the early 1990s (and its end), in addition to the external developments reviewed above (decline in terms of trade) it is necessary to take into account the Salvadoran credit cycle. The re-privatization and liberalization of the financial sector, an important component of the structural reform program of the early 1990s, was followed -not surprisingly- by a credit boom. Banks were more than willing to lend, as financial liberalization encouraged competition for market share. Also projected cash flows of potential customers looked very promising with the economy growing at about 6 percent per year. By the middle of 1994 credit was growing by almost 40 percent in real terms, helping unleash the repressed spending that led to the construction and real state bubble. Aggressive lending by private banks led on the one hand to excessive private sector indebtedness and a sharp decline in private savings, and on the other hand to a deterioration of loan portfolio quality.

1.53 In 1996, however, there is a sharp contraction in private credit expansion. In part, this was motivated because the private sector's capacity to borrow was reaching the limit and banks' lending policy became more cautious, but it is also worth noting the role that monetary policy played in pricking the bubble.

1.54 In particular since the Central Bank was trying to compensate for weaknesses in the supervisory capacity of the Financial Sector Superintendency, monetary policy became tighter in the mid 1990s to limit the demand for credit: ex-post real interest (lending) rates that averaged 4.3 percent per year during 1990-95 increased significantly to about 12 percent over the period 1996-2000. This is further confirmed when one can estimate the monetary policy surprises over the 1990s using an econometric model with growth in the real money supply (M2) as dependent variable, and lagged GDP growth and lagged real money growth among the dependent variables<sup>8</sup>. Such a model would suggest a loose monetary policy over 1990-94 (as evidenced by positive surprises averaging 8 percent per year), a significant contraction in 1995 (as evidenced by a negative surprise of almost 8 percent), and neutral monetary policy after 1995 (as evidenced by a negative surprise of less than 1 percent on average per year). Thus both ex-post real interest rates and money surprises would suggest a government role in pricking the bubble.

## **Beyond observed growth rates: estimates for the underlying growth rate**

1.55 While it has been argued that El Salvador's growth in the aftermath of the conflict was above potential, no estimate for the underlying or long-run growth rate has been presented. More importantly, no reference has been made to the evolution of the underlying growth rate (the relevant measure to assess the impact of the reform program implemented by the successive administrations) over the 1990s. In part this derives from the inherent difficulty to analyze a variable which is not directly observable and therefore that must be estimated using an array of statistical assumptions.

1.56 This section explores this issue and provide estimates for the Salvadoran underlying growth rate over the 1990s. The issue is extremely relevant for policy purposes. If the observed growth slowdown is the result of transitory or business cycles factors, then it may be worth exploring the slowdown from a stabilization policies viewpoint (given the dollarization of El Salvador in 2001, and therefore the limitations for stabilization policy this is likely to be

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<sup>8</sup> In essence the econometric model is a Vector Autoregression (VAR) for real money growth and GDP growth, and the monetary policy surprise would be the one-period ahead forecast error for real money growth.

especially important issue if cycles are long-lasting). If on the other hand, the slowdown is the result of structural forces, then a review of the reform agenda should be undertaken.

1.57 There are two main ways of approaching the estimation of the underlying, or long-run growth rate: time series analysis and cross section regression.

#### Time series analysis

1.58 It has now become standard in the business cycle literature to de-trend the economic time series with a filter that decompose the time series under analysis into different and uncorrelated frequency components. The most common of these filters are the Hodrick-Prescott (HP) filter (Hodrick and Prescott (1980)<sup>9</sup>), and the moving average (MA) family of filters. The HP filter<sup>10</sup> has become the most widely used procedure to estimate business cycles in applied work, including the one performed at important economic institutions (see for example, International Monetary Fund (1993), Giorno et al. (1995) for the OECD, European Commission (1995), and European Central Bank (2000)).<sup>11</sup> As for the MA filter, Baxter and King (1999)<sup>12</sup> notice that it approximates quite well the ideal band pass filter if variations at the business cycles frequencies are not very important.<sup>13</sup> Table 16 below reports the results of applying these two filters to the Salvadoran data using different degrees of smoothing for the HP filter (current empirical practice when applying this filter to annual data is to use  $\lambda=100$  or  $\lambda=400$ ) and the MA family of filters (BE in table 16 uses 3 equally weighted leads/lags and BK uses the ideal weights computed by Baxter and King).

**Table 16: Trend Growth during the 1990s. El Salvador**

	GDP	HP $\lambda=$			MA	
		50	100	400	BE	BK
1990-2001	4.39	4.28	4.20	3.65	4.17	4.06
1990-1995	5.96	4.55	4.16	3.27	4.66	4.73
1996-2001	2.81	4	4.24	4.03	3.67	3.38
Diff 1/	3.15	.55	-.08	-.76	0.99	1.35

1/ Average growth over 1991-95 minus average growth over 1996-01.

Source: Staff calculations.

<sup>9</sup> Hodrick, R. and E. Prescott (1980), "Post-war U.S. Business Cycles: An Empirical Investigation," Working paper, Carnegie-Mellon University.

<sup>10</sup> The HP filter is a linear filter aimed at removing the trend component (defined as the variation of the series at low frequencies) from a series. Originally it was presented as a solution to a penalty function-type problem, where a smoothing parameter  $\lambda$  balances the trade-off between lack of smoothness and poor fit of the trend.

<sup>11</sup> International Monetary Fund (1993), "Structural Budget Indicators for the Major Industrial Countries," World Economic Outlook, October 1993, 99-103. Giorno, C., P Richardson, R. Roseveare, and P Van den Noord (1995), "Estimating Potential Output, Output Gaps and Structural Budget Balances," OECD Economics Department Working Paper, 152. European Commission (1995) "The Commission Services Method for Cyclical Adjustment of Government Budget Balances," DG11/401/95-EN. European Central Bank (2000), "Seasonal Adjustment of Monetary Aggregates and HICP for the Euro Area," Frankfurt, ECB.

<sup>12</sup> Baxter, M. and R. King (1999), "Measuring Business Cycles: Approximate Band-Pass Filters for Economic Time Series," The Review of Economics and Statistics, 81(4).

<sup>13</sup> Baxter and King (1999) recommend that with annual data the MA filter uses three past and future observations in addition to the current one. They also provide the weights for the moving average.

1.59 Inspection of table 16 reveals several noteworthy points. First, there are indications that during the 1990-95 period the observed GDP growth rate was significantly influenced by positive cyclical factors, and therefore that a growth slowdown was to be expected. The magnitude of the cyclical factors varies depending on the filter used and the degree of implicit smoothing applied to each of the filters. It would range from about 1.3 percent per year (BE) to about 2.7 percent per year (HP 400). As for the 1996-01 period, it would have witnessed growth below potential ranging from .6 (BK) to 1.6 (HP 100), and therefore, in principle a rebound is to be expected in the coming years. Potential growth rates after 1995 could be in the 3.5 to 4 percent range or roughly speaking 1 percent above observed growth over 1996-2001.

1.60 As for the difference between long-run growth rates in the first half of the 1990s and in the second half, the last row of table 14 indicates that whereas the observed deceleration in growth was 3.15 percentage points, the deceleration in long-term growth would be much smaller. It would range from 1.3 percentage points (BK) to about .5 (HP 50) or even increased by .8 percentage points (HP 400). Put in other words, the statistical evidence presented here goes in line with the explanation skimmed above that the high growth rates observed in El Salvador during the first half of 1990s were in part the result of a post-conflict catch-up recovery and that following that initial boom, growth started declining towards values consistent with long-run trend values. The decline, however, seems to have gone a bit too far and it is estimated that growth fell below trend values after 1995. As noted above, this could be motivated in part by the tight monetary policy of the after-1995 period.

1.61 A second element to highlight from table 16 is that, admittedly in contrast with most of the recent studies on the Salvadoran growth experience, according to two of the experiments potential growth might have increased from the pre-1995 period. The HP 100 experiment suggest a small increase (about .1 percent per year) whereas according to the HP 400 experiment potential growth could have increased more dramatically (about .75 percent per year). Therefore, the observed values for GDP growth during the 1990s may well be hiding (if the cyclical components are as implied by HP 100 and HP 400) a different story to the one that observed growth figures suggest.

1.62 The previous results can also be related to the evolution TFP during the 1990s. Since TFP tends to rise in booms and fall in recessions, one would expect a close match between the evolution of TFP growth and GDP growth. Among the main explanations used for the procyclicality of productivity one may mention, the existence of increasing returns to scale, the procyclicality of technology shocks, imperfect competition, or resource reallocation. For example, the correlation between GDP growth and TFP for El Salvador over 1960-2000 at .97 indicates that annual swings in growth are basically matched by annual swings in TFP. In this regard, and notwithstanding the importance of cyclical productivity factors for stabilization policy purposes, it might be more interesting exploring the underlying trends in productivity. To this end table 17 reports TFP estimates for the 1990s computed on the basis cycle-removed GDP, labor and capital. As above, given the sensitivity of the statistical procedures used to remove the cycle, several versions of the filters are presented.



**Table 17. El Salvador's TFP over the 1990s -trend estimates.**

year/filter	TFP	HP 1/			MA	
		50	100	400	BE	BK
1991	0.7	1.4	1.0	0.1	1.5	1.1
1992	4.0	1.6	1.2	0.4	1.8	1.8
1993	3.4	1.6	1.3	0.6	1.8	2.3
1994	1.9	1.5	1.3	0.7	1.5	2.3
1995	1.9	1.3	1.2	0.8	1.4	1.8
1996	-1.9	1.0	1.1	0.8	0.8	1.1
1997	0.5	0.7	1.0	0.8	0.1	-0.1
1998	-0.3	0.6	0.9	0.8	-0.2	-0.4
1999	-0.1	0.4	0.8	0.8	-0.5	-0.7
2000	-1.6	0.4	0.8	0.8	-0.2	-0.1
1991-95	2.4	1.5	1.2	0.5	1.6	1.9
1996-00	-0.7	0.6	0.9	0.8	0.0	-0.0
Diff. 2/	3.0	0.8	0.3	-0.3	1.6	1.8

1/ Hodrick-Prescott filter for  $\lambda=0, 50, 100, 400$

2/ Average TFP over 1991-95 minus average TFP over 1996-00.

1.63 Inspection of table 17 suggests that on the basis of the TFP estimates computed on the raw series, TFP would have dramatically fallen from 2.4 percent per year in the first half of the 1990s to -.7 percent per year in the second half. Thus the increase in TFP experimented over the 1990s would have been due to developments in the immediate aftermath of the armed conflict, with the late 1990s reflecting a return to the negative TFP growth experienced during the 1970s and 1980s.

1.64 This evolution in TFP, however, can be challenged when one considers the cycle-removed version of TFP. Depending on the procedure used to remove the cycle, the difference in TFP growth between the early and late 1990s can be as large as 1.8 percent (BK) or as small as -.3 percent (HP(400)) which would imply that TFP actually increased over the 1990s by .3 percent. Therefore, it seems that consistently with the results for GDP growth presented above, the raw data would be overestimating the fall in TFP and that under plausible assumptions productivity may have increased during the 1990s.

#### Cross section analysis

1.65 Although time series analysis is the standard procedure to separate business cycles from long-term or permanent components, the results produced by univariate time series techniques are likely to be somewhat limited in a framework characterized by the implementation of a stabilization package or of significant reforms that may significantly affect long-run growth rates. This section tries to complement the previous analysis and provides estimates of the evolution of the long-run growth rate for El Salvador taking into account the significant progress made on the structural front by El Salvador.

1.66 In order to incorporate the impact of the different policies, a cross section perspective is now taken to derive implications from the international evidence on the patterns and determinants

of growth,<sup>14</sup> following the largest strand of the empirical growth literature, which links a country's economic growth rate to economic, political and social variables using a large sample of countries and time periods. The estimated model can be used to compute expected growth rates that are conditional on the observed policy determinants, and a disturbance element that is orthogonal to the different determinants and has a purely transitory nature. In this regard, one could use expected growth as a measure of long-term growth underlying actual or observed growth.

1.67 In practice there are a large variety of economic and social variables that can be used as determinants of economic growth. This report focuses on the variables that have received most attention in the economic literature and in policy circles. These variables can be divided into three main groups: structural policies and institution, stabilization and external conditions.<sup>15</sup>

1.68 Regarding structural policies, the endogenous growth literature stresses the impact that good policies and institutions may have on the rate of economic growth. Indicators that are considered here represent all major categories of public policies including: education, financial depth, government burden, public services and infrastructure, governance, and international trade openness. As for stabilization policies, its importance would go beyond their impact at the business cycles frequencies. In fact, it is not difficult to argue that macroeconomic stabilization and crisis-related variables have an impact on growth over short and long horizons. Fiscal, monetary and financial policies that contribute to a stable macroeconomic environment and avoid financial and balance of payments crisis are important for long-run growth. External conditions (whose importance for El Salvador has already been stressed above) are also incorporated in the model to take into account the possibility of transmission of cycles across countries, via international trade, external financing flows, and investors perceptions of economic conditions. Since access to international capital markets by El Salvador<sup>16</sup> is still somewhat limited, here the change in the terms of trade is used as an indicator of prevalent external conditions.

1.69 The proposed methodology to compute the long-run growth rates consists of fitting an econometric model for per capita growth. This is done by including the variables reviewed in the previous paragraph, a period specific shift (that would summarize the prevalent global conditions at a given time and reflect worldwide recessions and booms, and global technological innovation) and country specific effects that takes into account permanent country specific characteristics not captured by the determinants.<sup>17</sup> In an attempt to somewhat mitigate business cycles events, the regression is performed on five and 10 year averages, using the Generalized Methods of Moments estimator (GMM). See table 18 for the main estimation results and "Economic Growth in Latin America and the Caribbean: Stylized Facts, Explanations, and Forecasts" by Norman Loayza, Pablo Fajnzylber, and Cesar Calderon. The World Bank, for further details).

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<sup>14</sup> This section is based on the findings of "Economic Growth in Latin America and the Caribbean: Stylized Facts, Explanations, and Forecasts" by Norman Loayza, Pablo Fajnzylber, and Cesar Calderon. The World Bank.

<sup>15</sup> The econometric specification also includes variables that capture cyclical reversion and transitional convergence.

<sup>16</sup> Admittedly, El Salvador has recently been accessing international financial markets and placing paper in extremely good conditions. Further, El Salvador Eurobond Spreads are the lowest in Central America and about 75 bp lower than those of Mexico.

<sup>17</sup> The regression also controls for the initial level of income and the position in the business cycle at the beginning of each period. GDP growth rates are per capita. Number of countries in the regression 78; Number of observations 350.

**Table 18. Determinants of growth**

GDP per capita growth rate	10-year	5-year
Initial GDP per capita	-0.033	-0.018
(logs)	-4.88	-3.80
Initial output gap	-0.167	-0.237
(log actual/potential GDP)	-5.57	-8.52
Education	0.006	0.017
(log secondary enrollment)	0.73	6.70
Financial depth	0.006	0.006
(log private domestic credit/GDP)	1.92	4.28
Trade openness	0.025	0.010
(log adjusted trade volume/GDP)	5.02	3.14
Government burden	-0.017	-0.015
(log government consumption/GDP)	-2.44	-3.18
Public Infrastructure	0.024	0.007
(log per capita telephone lines)	5.28	2.71
Governance	-0.006	-0.001
(principal component ICRG)	-2.27	-0.68
Price Stability	-0.021	-0.005
(log [100 + inflation rate])	-5.36	-1.89
Cyclical Volatility	-0.508	-0.277
(std output gap)	-3.48	-3.76
External imbalances	-0.001	-0.006
(log Dollar index)	-0.17	-3.90
Banking crisis	-0.006	-0.029
(frequency of years)	-0.60	-7.42
External conditions	0.000	0.072
(growth rate of TOT)	2.40	4.98

Source: Loayza, Fajnzylber, and Calderon (2002)

1.70 Table 19 reports observed and expected growth rates for the periods 1991-95 and 1996-99. Inspection of table 19 suggests that contrary to what the slowdown in the observed growth rates would suggest, expected growth rates have increased significantly over the 1990s (by about 2 percentage points). Put in other words, on the basis of regional and world trends in growth and on the basis of the implemented policies in El Salvador, one would have expected growth to pick up. It must be acknowledged that it could be difficult to argue that long run growth has increased by 2 percent over the decade while actual growth has fallen by 3 percentage points (which in turn would imply that El Salvador is about 3 percentage points below growth potential). However, if one considers that implemented structural reforms may have added 1.5 percent per year to long run growth; stabilization policies .3 percent per year; the external conditions would have

prevented growth from increasing further by .6 percent per year, one would obtain an increase in the long-run growth rate of 1.2 percent, that although still on the high side could be reasonable. In any case, the cross section exercise also suggests that long-run growth rates may have increased in El Salvador.

**Table 19. Long-run growth rates through cross section**

	Actual	Expected
1991-95	6.2	4.1
1996-99	3.2	6.2
Diff	-3	2.1

Source: Loayza, Fajnzylber, and Calderon (2002)

**Table 20. Contribution to changes in growth rates. 1996-99 vs. 1991-95**

Total	Structural reforms	Stabilization policies	External conditions
1.2	1.5	0.3	-0.6

Source: Loayza, Fajnzylber, and Calderon (2002)

1.71 All in all, and trying to answer the question in the title of this chapter, there is some evidence pointing towards long-run growth having actually increased over the 1990s. From a policy perspective this result deserves attention. Contrary to what an anti-globalization supporter might conclude in terms of the rightness or wrongness of the “model”, the findings in this section could be taken as an indication that the implemented reform program might have been much more successful than as suggested by a decline in growth rates of 3 percentage points.

### Overall Assessment

1.72 The analysis presented in this chapter suggests that progress in addressing the bottlenecks identified in the 1995 CEM has been uneven but positive overall. Two areas that have experienced significant progress are education and the outward orientation of the economy. In education not only the country has improved most of its indicators but also it is closing the gap with other Latin American countries. Regarding the export base, progress has also been significant with merchandise exports –including maquila- increasing from 15 percent of GDP in 1995 to 21 percent of GDP in 2001. Most importantly, non-maquila exports are now much less concentrated on primary commodities which traditionally are subject to large terms of trade fluctuations. On productivity, the record is more mixed. Total Factor Productivity, which had been negative in the three decades from 1960 to 1990, recovered during the 1990s. However, this recovery was mainly driven by developments before 1995. Similarly, in some infrastructure areas (telecommunications and electricity) progress has been significant but in others (roads and ports) it has been much more limited. Finally, on the savings front and most importantly on the investment front, there has been little progress in outcomes, as saving and investment rates have declined from their 1995 levels.

1.73 The chapter also suggests that there are four key elements to understand the economic developments in El Salvador over the 1990s: (i) the end of the armed conflict; (ii) a boom in remittances; (iii) the government’s reaction to the macroeconomic imbalances created by the remittances; and (iv) the evolution of the terms of trade.

1.74 During the first half of the decade, growth trends would have reflected the strong post war reactivation of public investment (reconstruction activities), private investment (especially real state), and consumption (especially of durable goods). The consumption boom was to some extent facilitated and reinforced by the massive inflow of workers remittances. The high remittances, however, created problems familiar to other countries facing a surge in capital inflows. In particular, the inflows could be associated with an expansion of the money supply, higher domestic credit and high inflation until 1995. However, 1995 marks an inflexion point when tight monetary policy aims at lowering the inflation rate and containing excesses in the banking sector (in mid-1994 bank credit was growing by 40). Nor surprisingly, the resulting higher real interest rates, coupled with the loss of dynamism of the post war reconstruction process, and a deterioration of the terms of trade led in turn to a sharp deceleration in economic activity. Thus, the growth performance of El Salvador during the 1990s seems to have been affected to a large extent by business cycle forces that may hide the impact that the structural changes may have had on the long-run or underlying growth rate of the economy.

1.75 In fact, when transitory fluctuations are filtered out from the observed growth rates, there is some evidence indicating that the underlying long-run growth rate for the economy may have not decreased significantly over the 1990s and indeed, there is some evidence indicating that it might have increased. Observed growth in the early 1990s could have been, on average, about 2 percentage points above potential whereas the growth rate after 1995 could be about 1 percentage point below potential. This would result in a stable underlying growth rate for the decade and would show a much more optimistic picture than that embedded in the actual growth rates.

## II. THE ROAD AHEAD

### Background

2.1 The previous chapter has reviewed the performance of the Salvadoran economy over the 1990s but so far no evaluation of possible sources of growth has been made. This section looks into this issue. Given the broad set of potential sources of growth, especially in developing countries where admittedly there are few areas that in principle do not require some degree of attention, the first step is narrowing these potential areas to the few that are expected to have the largest impact on future growth prospects. This exercise can also be considered as a first effort to set some clear policy priorities. To this end, this chapter uses two different -but complementary- approaches. First the cross section model introduced in Chapter I is exploited now to forecast growth under different sets of assumptions for the evolution of the growth determinants. In turn, the different forecasts can be used to assess the sensitivity of growth to changes in different policy variables.

2.2 The second approach is more of microeconomic in nature and explores issues related to the investment climate. Stable political and legal institutions, and a sound macroeconomic framework are necessary conditions that set the overall context for high and sustained growth. However, they are not sufficient to ensure a prosperous economy. In practice, wealth is created at the microeconomic level and therefore the determinants of growth must necessarily consider the business environment and the sophistication with which companies compete in a given country. In order to shed light on this front this report makes use of a well known composite index, The Global Competitiveness Report of the World Economic Forum. This index is published annually in collaboration with the Center for International Development at Harvard University.

### Macroeconomics and growth

2.3 Chapter I explored whether long-run growth has likely increased over the 1990s by relating GDP growth to a set of growth determinants through regression analysis. The idea is to use now those results to first assess what can be realistically expected for El Salvador over the coming years, and second to assess the sensitivity of those projections to deviations in the explanatory or control variables. To this end it may be useful to review the different areas to be considered and the relative position of El Salvador on each of these areas.

#### Structural policies and institutions

2.4 The endogenous growth literature stresses the impact that good policies and institutions may have on the rate of economic growth. Here we consider indicators representing all major categories of public policies including: education, financial depth, government burden, public services and infrastructure, governance, and international trade openness.

2.5 **Education:** Already noted above, human capital has a crucial role in long-run growth. In this exercise we measure the policies directed to increase education and human capital in general with the rate of gross secondary enrollment. This flow measure captures more closely current policies on schooling and human capital investment than stock measures related with educational attainment of the adult population of life expectancy.

2.6 El Salvador's position. Despite still lagging in the region –El Salvador would rank 16 in a sample of 23 Latin American countries<sup>18</sup>- it would be the third country that had the most gains over the 1990s. This result is consistent with the findings above where it was noted that progress in education has been significant over the 1990s.

2.7 **Financial depth.** There is ample evidence from firm-level, industry level and cross country studies that financial development and well functioning financial systems promote long-run growth. They influence economic efficiency and economic growth through different channels. Financial markets facilitate risk diversification by trading pooling, and hedging financial instruments. They can help identify profitable investment projects and mobilize savings to them. Further, financial systems can help monitor firm managers and exert corporate controls. The measure of financial depth is the ratio of private domestic credit supplied by private financial institutions to GDP. The use of this variable is justified not only on its own merit (the incentives to perform efficiently are clearer and stronger for private agents) but also on the significant correlation it exhibits with other variables such as M2/GDP, market capitalization to GDP and the turnover ratio.

2.8 El Salvador's position. The Salvadoran financial system is dominated by private commercial banks. There are 3 public banks (two first –tier and one second-tier) but their relative weight within the financial sector has decreased over the decade. Within the regional context, El Salvador would rank sixth by financial depth and would also be among the countries that most progress has made over the recent years (fourth).

2.9 **Government burden.** Despite the significant role that Government's can play in the provision of public goods and services, government may also be a drain for private activity. This is likely to be the case if it imposes high taxes, uses this revenue to maintain ineffective public programs and a bloated bureaucracy, distorts markets, and interferes negatively in the economy by assuming roles most appropriate for the private sector. The measure that is used here for comparing the government burden across countries is the ratio of government consumption to GDP. Admittedly there are government consumption expenditures such as those on health, education, and police that are not wasteful and may indeed promote growth. However, the consideration of other variables, such as education and governance, should help mitigate the problem. For example, a country with low government consumption but also low education indicators may not in the end be in a better position than a country with a higher government consumption ratio due to say heavy investment in the social sectors.

2.10 El Salvador's position. With government consumption at about 9.5 percent of GDP over the second half of the 1990s, El Salvador ranks sixth lowest in Latin America. However, the mirror image of the low government consumption has been low social spending. As the government has stepped up efforts to improve social indicators so have the financing needs of priority areas (public spending in health and education basically doubled over the 1990s).

2.11 **Public services.** The importance of public services and infrastructure to explain growth performance has been long acknowledged in the growth literature. Public services and infrastructure can directly enter the production function, improve total factor productivity, and encourage additional private investment. There are few alternative measures of public services and infrastructure, and most of them concentrate on the provision of infrastructure. Data

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<sup>18</sup> The countries are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Honduras, Haití, Jamaica, México, Nicaragua, Panama, Peru, Paraguay, El Uruguay, Venezuela and obviously El Salvador.

considerations would lead to use telecommunications capacity as a proxy for public service provision. In addition to its large coverage, it must also be noted that the correlation between telecommunications and electricity generated and paved roads (two other likely candidates) is .8 and .7 respectively. The correlation between telecommunications and the first principal component of the three variables is .9.

2.12 El Salvador's position. Similar to the situation with human capital, El Salvador ranks low regionally (bottom half); however its gains over the decade have been impressive, almost doubling the number of telephone lines per capita. This gain is even more impressive when one takes into account that it has taken place after 1998. There have also been significant gains in the provision of basic services as water and electricity (more than 10 percentage points gain over the decade). This would place El Salvador as the third country with the largest gains.

2.13 **Governance.** This area comprises several aspects of the institutional quality of government, including respect for civil and political rights, bureaucratic efficiency, absence of corruption, enforcement of contractual agreements, and prevalence of law and order. To capture the level of governance of the different countries, we use the first principal component of four indicators reported by the International Country Risk Guide. They are prevalence of law and order, quality of bureaucracy, absence of corruption, and accountability of public officials.

2.14 El Salvador's position. This is another case where El Salvador ranks low (thirteenth out of the twenty one Latin American countries in our sample) but where progress has been very significant (fifth). In the early 1990s, El Salvador's index was 87 percent of the regional average and the late 1990s it cut the gap by half to 93 percent of the regional average.

2.15 **International trade openness.** This area was already stressed in the 1995 CEM. In fact, the bulk of the empirical literature indicates that the relationship between economic growth and international openness is indeed positive and that it reflects a virtuous cycle by which higher openness leads to faster growth and this in turn generates larger trade. The typical measure of international openness used in the literature is the volume of trade (exports plus imports) over GDP. However, this measure does not take into account structural characteristics. For example, small countries are more dependent on international trade; oil exporters can have quite large volumes of overall trade but impose significant restrictions in non-oil trade; and landlocked countries tend to face larger transport and trading costs and hence to trade less than other countries. To avoid attributing to trade policy what is merely the result of country characteristics, we use a volume of trade that is adjusted by country size (area and population), whether the country is landlocked, and whether it is an oil exporter.

2.16 El Salvador's position. With an unadjusted volume of trade of about 60 percent of GDP in the late 1990s, El Salvador would rank in the middle of the classification of Latin American countries (tenth). When the adjusted measure of trade is considered, El Salvador ranks slightly worse (twelfth), but as is the case with most of the other areas reviewed above where the country lags behind the median, the improvements over the 1990s have been very significant: El Salvador would be the fifth country in terms of gains in trade openness during the decade.

### Stabilization policies

2.17 The importance of stabilization policies for growth goes beyond their impact at the business cycles frequencies. In fact, it is not difficult to argue that macroeconomic stabilization and crisis-related variables have an impact on growth over short and long horizons. Fiscal, monetary and financial policies that contribute to a stable macroeconomic environment and avoid



financial and balance of payments crisis are important for long-run growth. Here we consider indicators that capture the quality of fiscal and monetary policies.

2.18 **Macroeconomic stabilization.** This is a vast area but it is possible to consider two interrelated effects of fiscal and monetary policies. The first is the lack of price stability as measure by the inflation rate. The inflation rate tends to be a good summary measure of the quality of fiscal and monetary policies and is positively correlated with other indicators of poor macroeconomic policies such as fiscal deficits and the black market premium on foreign exchange. The second aspect is the cyclical volatility of GDP and would reflect the lack of output stability.

2.19 El Salvador's position. After the end of the civil war, the successive administrations of El Salvador have maintained strong fiscal and monetary policies, which helped to reduce public debt in relation to GDP and the rate of inflation to less than four percent on average after 1995. In fact, there are only two other Latin American countries with lower inflation rates over the late 1990s (Argentina and Panama). Interestingly, Argentina, Panama and El Salvador had fixed exchange rates regimes. As for output volatility and despite the expectation that countries with fixed exchange rates have a larger volatility, there are only two Latin American countries (Guatemala and Nicaragua) with a volatility lower than El Salvador.

#### External Conditions

2.20 The economic activity and growth of a country is not only determined by internal factors but also by external conditions. These have an influence on the domestic economy both in the short and in the long run, and there is ample evidence of transmission of cycles across countries, via international trade, external financing flows, and investors perceptions of economic conditions. Since access to international capital markets by El Salvador<sup>19</sup> is still somewhat limited, here we use the change in the terms of trade as an indicator of prevalent external conditions.

2.21 El Salvador's position. Already noted above, over the 1991-1995 period El Salvador experienced a significant improvement in the terms of trade (about 4 percent per year on average), but over 1996-2000 the situation was reversed and a significant deterioration took place (also about 4 percent per year on average). Regionally, the change in the terms of trade of El Salvador in the second half of the 1990s would be the fifteenth worst, whereas the in the first half of the 1990s the changes would have been the fifth best.

2.22 All in all, this review suggests that there are four areas where the country does relatively well (financial depth and government burden among the structural policies, and inflation and output volatility among the stabilization policies) and it ranks among the top thirty percent of the region. In most of other areas reviewed so far (human capital, public services, governance and international trade openness) the country is in the lower half of the region, but it is in this areas where the country is experiencing the most important gains and by this measure would rank among the top performers of the region. In other words, El Salvador is either at the top of the classifications, or when at the bottom, at the top of the countries making progress. The exception is an exogenous variable, the terms of trade, which is not only negative over the late 1990s but also shows a significant deterioration from the early 1990s.

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<sup>19</sup> Admittedly, El Salvador has recently been accessing international financial markets and placing paper in extremely good conditions. Further, El Salvador's Eurobond Spreads are the lowest in Central America and about 75 bp lower than those of Mexico.

2.23 In order to generate the growth projections and the relative importance of each of the areas reviewed in the previous paragraphs, we this chapter makes use of the quantitative relation in table 18 of chapter 1. The estimated coefficients of this relationship together projections on the evolution of the explanatory variables is enough to generate a set of projections. Clearly, there is first the need to generate realistic projections of the growth determinants. To this end, it is assumed that progress on the structural front continues at the same path of the last decade. From a technical point of view the projections are computed with univariate regression models. Another possibility is to assume scenarios characterized by reform paths that are not necessarily consistent with the past (either because the reform program evolves faster or slower). In this regard, in a second scenario it is assumed that each policy explanatory variable jumps to the highest quartile of its distribution within the Latin American region over the next decade. This is likely to be an unrealistic assumption, but it serves to assess the growth potential of the different areas giving more weight to areas where the country performs well behind the Latin American benchmark.

2.24 Regarding stabilization policies and the external environment, it is assumed that of a similar macroeconomic framework continuous, and no changes to the terms of trade. That is, other than transitional convergence and cyclical recovery, changes to the growth rate are assumed to come only from the implementation of structural reforms. Table 1 reports the results.

2.25 Inspection of table 1 indicates that under the realistic projection scenario, the per capita growth rate could accelerate during the present decade by about 1 percent per year on average. This would imply a per capita GDP growth rate of about 3.8 per year, or GDP growth rate of about 5.5 percent. Under the aggressive scenario, the projected acceleration in growth would be even larger (about 1.5 percent per year) which would result in a per capita growth rate of more than 4 percent and in a GDP growth rate of about 6 percent. Note that although these projections are fully consistent with the results reviewed above that point towards an acceleration of the underlying growth rate, the results seem to be on the very optimistic side.

**Table 1. El Salvador Growth forecasts 2000-10**

Area	Projection Scenario	
	Realistic	Aggressive
Structural		
Education	0.37	1.22
Financial depth	0.39	0.02
Trade openness	0.56	0.26
Government burden	-0.20	0.00
Infrastructure	0.83	0.66
Other	-0.59	-0.59
Projected change 2000-10	1.12	1.57
Per capita growth 91-99	2.67	2.67
Projections 2000-10		
Per capita growth	3.79	4.24
GDP growth	5.59	6.04

Source: LFC

2.26 Beyond the projections, the importance of table 1 lies in the contribution of each of the policies. Under the realistic scenario, public infrastructure would be the area that contributes the most to future growth. It would be followed by an expansion in the volume of trade, gains in the financial sector, and education. Instead, under the aggressive reform program the largest gain would come from improvements in education, followed by improvements in infrastructure, and finally by an expansion in the trade volume. To understand why education is now more important one has to take into account that the aggressive scenario takes into account both the impact of the policy on growth and the relative position of the country within the region (which admittedly and despite progress over the last decade is low). As for the reasons behind the financial sector contributing so little under the aggressive scenario, it is important to recall that El Salvador was already at the top of the Latin American region in this area both in terms of current situation and in terms of progress over the past decade. That is, if one assumes a continuation of trends, the “realistic” reform program would take El Salvador beyond the 25 percent of the Latin American distribution.

### **Microeconomics and growth**

2.27 Beginning in 1998, the World Economic Forum started to examine the microeconomic foundations of economic development in an array of countries in the Global Competitiveness Report (GCR). The GCR approach focuses on the detailed conditions that support high productivity led growth, and aims to move beyond the examination of broad aggregate variables as done in the previous subsection.

2.28 The GCR evaluates the general business environment of each country as is determined by legal, regulatory and bureaucratic dimensions, as well as physical infrastructure, education and technology, and financial market development. In 2000, the GCR included indicators for 58 countries and El Salvador ranked 51. Chile was the top ranked Latin American country (26). The other Latin American countries in the GCR are Brazil (31), Mexico (42), Costa Rica (43), Argentina (45), Colombia (48), Peru (49), Venezuela (54), Ecuador (57) and Bolivia (58).

2.29 Reviewing the situation on all the 179 indicators in the GCR would not only be extremely burdensome but also in many cases redundant (many of the GCR indicators tend to move together). Two (complementary) approaches can be undertaken to efficiently process the information in those indicators. On the one hand, if there is evidence pointing towards some indicators mattering more for growth than others, then the obvious choice would be exploring the country’s performance with those indicators. On the other hand, one can also explore those indicators where the country fares significantly behind the cohort of countries under analysis. Clearly there are pros and cons with both approaches. Selecting on the basis of cross section econometric causality has lots of theoretical appeal but may fall short of expectations if the econometric model used to pick the most “significant” indicator is not well specified, or a particular country is an outlier (in the sense that the estimated relationship is influenced by special factors present in the country of interest). Here a comprehensive strategy that follows both approaches is adopted.

2.30 First, regarding the relative importance of the different factors for growth, the GCR explores the issue by: (i) testing the causality<sup>20</sup> of each indicator for growth in a bivariate regression that also includes the initial GDP level at the beginning of the period; and (ii)

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<sup>20</sup> In this context, by causality it is meant that there is statistical evidence pointing in the direction that the value of a given indicator is useful to forecast growth.

exploring the explanatory power of the regression model for growth.<sup>21</sup> This would capture the extent to which a given variable captures the sources of dynamism. The basic results of that test are as follows. When all the countries are considered the most influential variables for growth are the intensity of local competition, ease of access to loans (which alone explained more the 25 percent of the differences in GDP per capita across countries), and the decentralization of corporate activity (which explains about 20 percent of GDP growth variability). Local competition would explain an even higher percentage of growth variability in low (about 60 percent) and medium (about 30 percent) income countries, whereas the decentralization of corporate activity would explain about 40 percent of growth variability in low income countries. Ease of access to loans would be the most relevant indicator for high income countries (explaining 40 percent of the variance of growth) but less so for low income countries (where it explains between 20 and 25 percent of the variance) and medium income countries (about 35 percent). A variable that is both significant and explains a high proportion of growth variance in low income countries (about 55 percent of growth variance) is the state of cluster development. However, cluster development would not be significant in medium and high income countries.

2.31 Other variables that capture the extent of dynamism and growth include the intensity of government infrastructure investment and the quality of telephone infrastructure, which in low income countries would explain more than 30 percent of differences in GDP growth rates. On the technology side, the sophistication of production processes, company spending on research and development, and collaboration between universities and industry also appear as significant variables with high explanatory power (above 30 percent of growth variance in low income countries).

2.32 Surprisingly, there are several variables for which one would have strong priors regarding their importance for growth that are not included among those reviewed above. Those include the quality of public schools, crime, judicial independence, corruption, the administrative burden for start-ups, and tariff liberalization. All these variables are significant in the regressions where all the 58 countries in the GCR are considered, but do not appear so in the group of low-income countries.<sup>22</sup>

2.33 Table 2 reports GCR measures for the areas identified above with most explanatory power. The first row of the table reports the percentage of low-income countries' growth variance explained by the respective microeconomic competitiveness variable. Of the nine variables in table 20, El Salvador is below the Latin American average in five cases, and below the East Asian countries average in all but one case (intensity of local development). The average of all the nine scores would also put El Salvador below the Latin American average, and well below the East Asian average.

2.34 The area where El Salvador ranks the best is in the intensity of local competition: it would be above both the Latin American and the East Asian average. In fact, only Chile scores higher in intensity of local competition (Chile scores always higher than El Salvador); Costa Rica and Peru would equal El Salvador. Among the Asians, Thailand and Singapore would have the same score as El Salvador whereas Malaysia and Korea would be below.

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<sup>21</sup> As given by the adjusted R<sup>2</sup>.

<sup>22</sup> Although it could be argued that indicators like corruption, or crime, etc, work through actual economic policies (including regulation) the fact that the causality tests are based on bivariate regressions (i.e. the models do not control for policies) clearly raises some concerns regarding the robustness of the results.

**Table 2. GCR Ratings for El Salvador, Latin America, and East Asia<sup>a</sup>**

	Local compet.	Cluster develop.	Spending on R&D	Corporate Activity	Production Process	University research	Public infrastruc. invest.	Teleph. Infrast.	Loan access	All
	56	55	51	42	38	37	34	31	22	
ELS	4.9	3.2	2.3	2.6	3.2	2.6	3.9	5.5	2.7	3.4
CHL	5.6	3.7	2.7	4	5.1	3.2	4.8	6.3	3.3	4.3
MEX	4.4	3.9	2.5	3.3	4.2	3.5	3.8	4.9	2.4	3.7
BRA	4.8	4	2.9	4.3	4.7	3.9	3.3	4.8	3.4	4.0
CRI	4.9	3.4	2.9	3.5	4	3.5	3.3	3.4	2.6	3.5
ECU	3.4	2.7	2.4	2.8	3.7	2.6	2.3	3.2	1.6	2.7
VEN	3.3	3	2.2	2.8	3.9	3.3	3	5.1	2.5	3.2
COL	4.3	3.4	2.4	3.4	3.9	3.5	3.4	4.9	2.2	3.5
PER	4.9	3.5	2.4	2.9	3.6	3	5	4.8	2	3.6
BOL	3.7	2.6	2	2.4	3.1	3.4	3	4.5	2.3	3.0
THA	4.9	3.9	2.5	3.6	4.2	3.6	4.8	5	2.8	3.9
SGP	4.9	5.3	4.1	5.1	5.8	4.2	6.5	6.7	4.2	5.2
MAL	4.6	4.3	2.8	3.9	4.8	2.5	5.6	5.4	3.1	4.1
KOR	4.6	4.6	4.1	3.8	5	3.4	4.8	6.1	3.3	4.4
LAC	4.4	3.3	2.5	3.2	3.9	3.3	3.6	4.7	2.5	3.5
EA	4.8	4.5	3.4	4.1	5	3.4	5.4	5.8	3.4	4.4

Source: The Global Competitiveness Report 2000.

<sup>a</sup> Each index ranks from 1 to 5.

2.35 Other areas where El Salvador fares relatively well with respect to Latin America are government investment in infrastructure, quality of telephone infrastructure and access to loans. The quality of telephone infrastructure is likely to capture the impact of the successful privatization of the telecommunications company and the introduction of a competitive market, events that improved significantly the quality of service. In this area, El Salvador would only rank behind Chile (among the Latin Americans) and Singapore and Korea (among the East Asians)

2.36 As for the likelihood of obtaining a loan to finance a business plan, it is lower in El Salvador than in East Asia where only Thailand is close to El Salvador. Within the Latin American context, El Salvador is slightly above the average. In fact, obtaining a loan in Costa Rica, Peru Bolivia and even Mexico is more difficult than in El Salvador. Brazil and Chile are the leaders in this area.

2.37 The GCR also suggests a powerful role for cluster development. Connections across industries seem to be as important as conditions within the firms themselves. El Salvador performs in this area very closely to the Latin American average, and ahead of Venezuela, Bolivia and Ecuador. The decentralization of corporate strategy, one of the measures of the context for firm strategy and rivalry, scores also poorly in El Salvador. Not only the country is behind East Asia and Latin America, but also is at the end of the ranking when one considers the 58 countries in the GCR.

2.38 There are three additional areas where El Salvador seems to be behind both East Asia and Latin America. These are related in some sense to the creation and application of knowledge in the areas of company operations (sophistication of production process), company strategy (spending on research and development), and technology creation (collaboration between

university and industry). Further, in the three mentioned areas El Salvador would be at the end of the ranking of the 58 countries of the GCR. For example, in the ranking of sophistication of production process El Salvador is 54, in that of spending on research and development 55, and in collaboration between industry and university 58.

2.39 We now change approach and concentrate on the areas where El Salvador has relative advantages and disadvantages, regardless of whether there is evidence of the relative importance of the indicator. It must be stressed once more that picking areas on the basis of the causality of a given indicator alone (as done in the previous paragraphs) is likely to lead to somewhat limited results. In this regard, El Salvador is among the strongest performers in terms of the low number of capital account restrictions, the share of the banking system in private hands, tax burden, and government size. The country also scores relative well in terms of air transport facilities, quality of telephone service, and wage setting framework.

2.40 However, there are a large number of areas where the country scores poorly. For example, despite a competitive financial sector that would intermediate between savers and investors to direct savings to the most efficient areas, El Salvador suffers from extremely low saving rates, and, what is worse, extremely low investment rates (at the very end of the GCR classification). Also, while on the one hand the tax burden and the size of the government are very low, on the other hand there is the perception that the public sector is not providing all necessary goods and services. One might infer that other areas where the country scores poorly, such as quality of health and education, or overall infrastructure quality are related to the lack of public funding for those particular areas.

2.41 It is also interesting to note that whereas the country performs well in terms of quality of the telecommunication infrastructure, it does not do so in terms of the satisfied demand for telephone lines where the country is at the very end of the GCR classification. Also, whereas the existing framework allows individual companies to determine wages, there is also the perception that pay and productivity are not linked.

2.42 Two final indicators related to the institutional framework are worth mentioning. The first is the crime rate, where the country is at the end of the GCR classification with a score similar to those of Colombia, South Africa, or the Russian Federation. The second relates to compensation for state interference where there exists the perception that it is difficult for private business to seek compensation from the state as a result of unlawful interference.

## **Conclusion**

2.43 This chapter has presented an analysis of the potential sources of growth in El Salvador. The analysis has explored both macroeconomic and microeconomic factors whose removal or fine tuning may lead to faster growth. The results that emerge from this combined analysis would point towards the following areas.

2.44 **Investment climate.** El Salvador has one of the highest crime rates of the Western Hemisphere and this is perceived as a significant cost on business. There is also a perception of judicial insecurity for businesses understood as the legal right to seek compensation from the state for damages incurred as a result of unlawful interference. Further, even if the privatization of the telecommunications seems to have had a positive impact on the quality of telephone service in El Salvador, the density of lines -8 lines per 100 persons- is still low. The GCR also detects some quality problems with port facilities which seem to be neither extensive nor efficient.

2.45 **Technology and innovation.** There is some evidence pointing towards El Salvador trailing in the area of technology. Salvadoran companies spend little in research and development, there is little collaboration between firms and research institutions, and the sophistication of production processes is low. El Salvador also is at the end of the GCR classification in terms of licensing of foreign technology, domestic technology development, and product design. A comparison of the business environment with the sophistication of the Salvadoran companies would suggest that the business environment is ahead of the average sophistication of local companies and subsidiaries.

2.46 **Trade.** The potential for growth from expanding international trade seems very significant. In fact notwithstanding the efforts made since the late 1980s adopting trade policies aimed at expanding international trade, export volumes (excluding maquila) have remained constant. In this regard the announcement of President Bush in January 2002 that the U.S. would start negotiating a Free Trade Agreement with the Central American countries (CAFTA) is a welcome development.

2.47 **Education.** Although technology and innovation can be borrowed from abroad, it seems self evident that the quality of a country's education weighs in heavily in shaping the capacity for innovation and technological level of the country in question. In this area, El Salvador scores very poorly both when one looks at education in terms of enrollment in and the quality of schools.

### III. THE INVESTMENT CLIMATE IN EL SALVADOR: IS THERE STILL WORK TO BE DONE?<sup>23</sup>

#### Background

3.1 As has been highlighted in the previous two chapters, during the 1990s, few countries experienced as much progress as El Salvador in the introduction of first generation reforms in macroeconomic stabilization, trade liberalization and privatization. As a result of these reforms, and the end of armed conflict, the Heritage Foundation ranked El Salvador at the top of Latin America free-market reforming countries and one of the freest in the world in 2000. However, despite this significant progress the country needs to remain focused on removing existing bottlenecks that may be preventing it from fully benefiting from the reform agenda already implemented. Chapters III to VI of this CEM cover those areas where progress may potentially contribute to faster growth.

3.2 Sustained increase in economic growth is achieved by either a permanent increase in gross fixed capital formation (GFKF) or in productivity growth (mainly through technical progress). The two issues,<sup>24</sup> however, are not perfectly separable, as GFKF may also be a vehicle for productivity growth (this second possibility is examined in Chapter IV). This Chapter investigates some possible causes for the low level of capital accumulation in El Salvador and seeks to understand how the “investment climate” prevents capital accumulation, affecting investment rates and thereby growth in El Salvador. It focuses on four main elements: (a) the availability of infrastructure; (b) the state of governance (quality of institutions and rule of law); (c) the development of the financial sector; and (d) crime. As important components of the “costs” of doing business in El Salvador, each of these variables could affect the marginal product of physical capital, prevent physical capital accumulation, and thereby economic growth.<sup>25</sup>

3.3 Infrastructure, governance, finance and crime are typical second-generation issues, in the sense that progress in these areas demands progressive institution building and reforms that cannot be achieved by the stroke of a pen.<sup>26</sup> Rather, it is quite common for countries embarking on a path of deep traditional market reforms to experience underperformance in this second set of issues, a phenomenon referred to as “reform fatigue.” This diagnostic seems to fit El Salvador’s case although less ambitious reforms were achieved at the microeconomic level, where market-oriented reforms have reduced the role of the government. Yet, first generation reforms are no substitute for improvements in infrastructure, governance, finance and crime prevention, and further political investments in these areas may be necessary. This chapter is organized as follows. The following section assesses the investment climate in El Salvador in terms of its infrastructure, governance, finance and crime variables, first in the aggregate and then in more detail. The third section examines whether improvements in infrastructure, governance finance and crime prevention might affect economic growth in El Salvador. The final section summarizes the main conclusions.

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<sup>23</sup> The material for this chapter has been prepared by Paulo Correa and Lorenzo Costantino.

<sup>24</sup> For example, an increase in infrastructure investments not only expands capital formation but also improve total factor productivity. Similarly, the acquisition of new equipment not only adds to capital formation but also increase labor productivity.

<sup>25</sup> These were variables emphasized by the 1995 CEM. Preliminary evidence discussed by the Background Paper for this CEM did not provide any other hypothesis for further investigations.

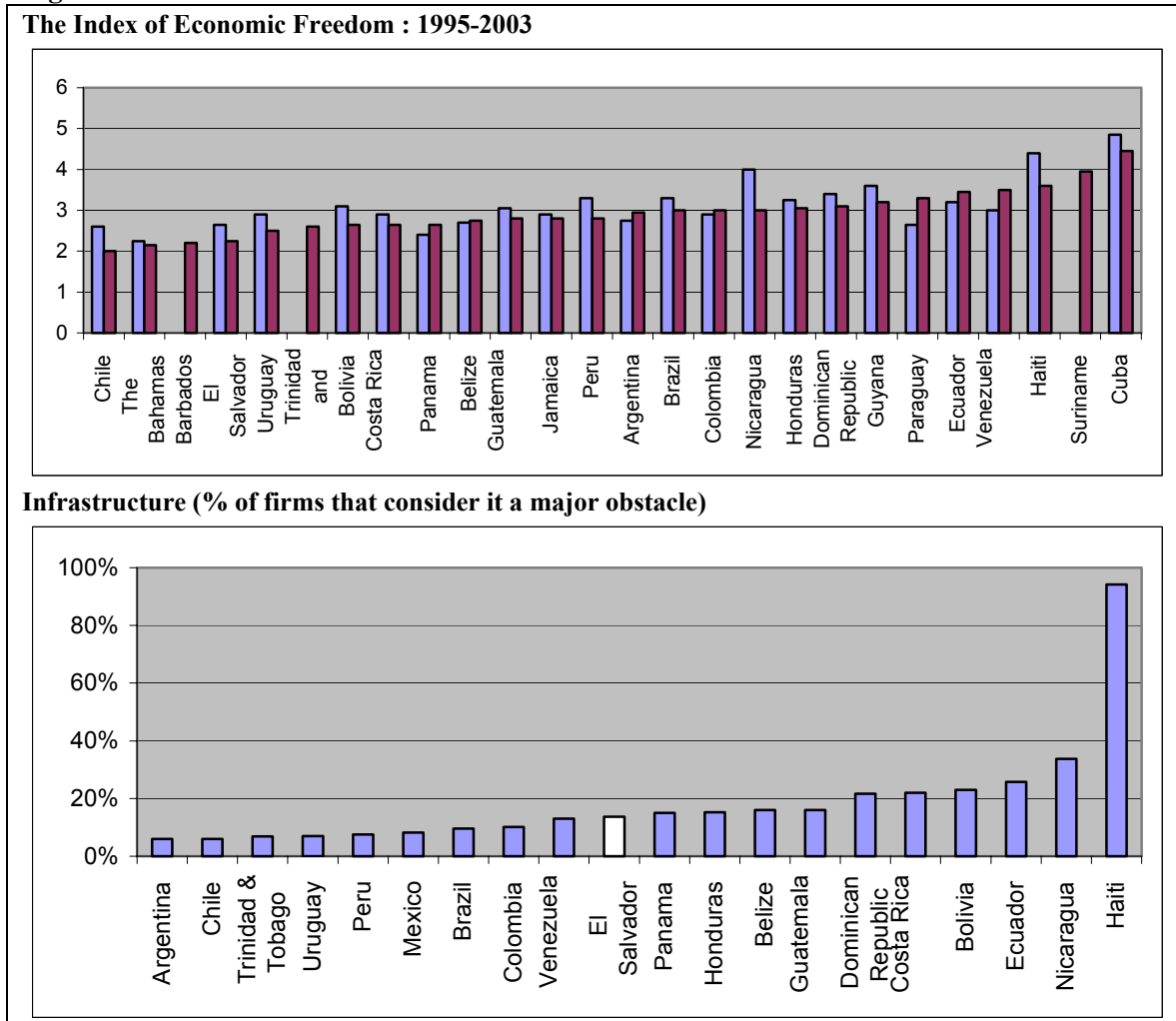
<sup>26</sup> See for example Stiglitz, J. (1998): *Distribution, Efficiency and Voice: Designing the Second Generation of Reforms*. Mimeo. The World Bank: Brasilia, Brazil.



## Investment Climate: Infrastructure, Governance, Finance, and Crime

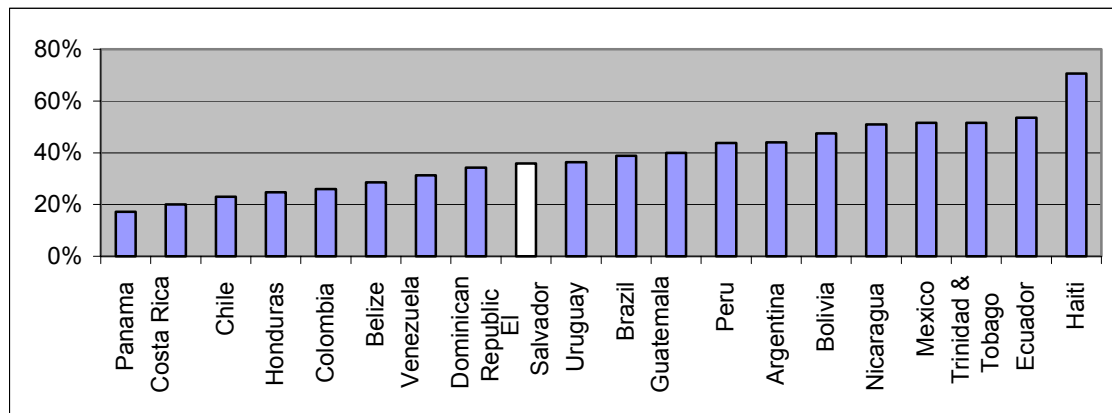
3.4 **General Assessment.** Figure 1 compares the macro and microeconomic performance of El Salvador. It generally indicates that microeconomic variables perform relatively worse compared to the macroeconomic environment. The Heritage Index of Economic Freedom ranks El Salvador among the top five countries in LAC. Progress was consistent over the years.<sup>27</sup> El Salvador's performance in infrastructure, regulation, taxes and finance is about average among LAC countries and the second worst in terms of crime.

**Figure 1:** The Macroeconomic and Microeconomic Indicators for LAC

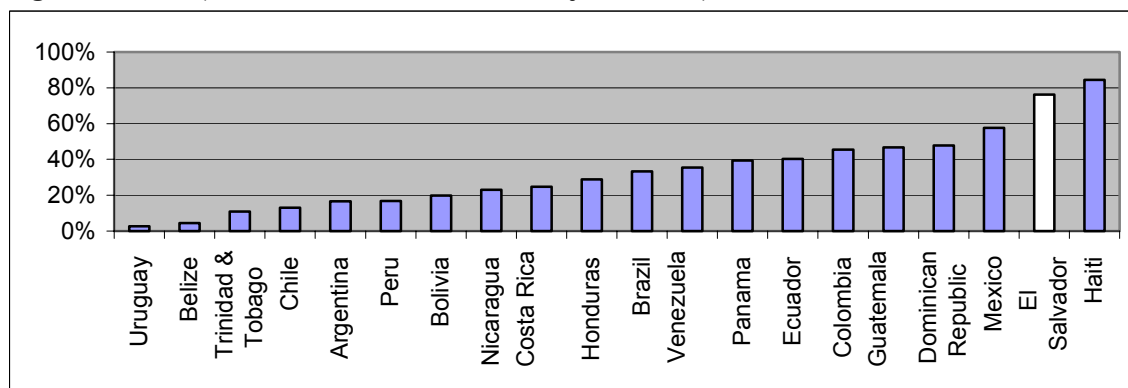


<sup>27</sup> Also, the Global Competitiveness Report ranks El Salvador the 5<sup>th</sup> best among 75 countries in terms of government burden.

### Finance (% of firms that consider it a major obstacle)



### Organized crime (% of firms that consider it a major obstacle)



Source: 2003 Index of Economic Freedom- The Heritage Foundation and The World Business Environment Survey (WBES) -- 2000

## Infrastructure

3.5 **Telecommunications.** The telecommunications market has evolved rapidly since the initial legislative reforms to privatize and open the telecom sector to competition. Currently, seven operators offer fixed telephone services, although CTE Telecom (the new name of the former state owned incumbent operator ANTEL, now privatized), maintains almost 90 percent of the fixed line market. The number of mobile telephones has surpassed fixed lines in El Salvador. In this more competitive segment, six service providers using different technologies provide a wide range of services in a market dominated by Telemovil – with 40- 45 percent market-share. There are five Internet Service Providers (ISPs), and six companies offering data networking, mainly focused on corporate and business services in urban areas. Comparison with countries in the region indicates the success of the reforms. For examples, even in the fixed phones line the number of telephone lines per 100 inhabitants in El Salvador in 1995 was roughly one third that of Costa Rica, a ratio that increased to 42 per cent only 6 years later (see Table 1). However, low PC penetration, high hardware costs and connection fees are preventing proper development of the Internet, with very low levels of use especially in rural areas. The recent and impressive growth in cellular telephony may be a deterrent for investment in traditional fixed line services, which are still needed for Internet access.

**Table 1: Main ICT Indicators – Regional Comparison**

		El Salvador	Honduras	Costa Rica	Peru'	Jamaica
Main telephone lines (000)	1995	284.8	160.8	478.9	1'109.2	290.3
	2001	598.0	309.7	945.0	2'022.3	512.6
Main telephone lines per 100 inhabitants	1995	5.03	2.70	14.38	4.71	11.61
	2001	9.34	4.71	22.97	7.75	19.73
Cellular mobile subscribers (000)	1995	13.5	n.a.	18.8	73.5	45.1
	2001	800.0	237.6	311.3	1'545.0	700.0
	Per 100 inhabitants	12.50	3.61	7.57	5.92	26.94
	As % of total phone subscribes	57.2	43.4	24.8	43.3	57.7
Internet Users	In thousands	50.0 *	40.0 *	384.0	3'000.0	100.0
	Per 10'000 inhabitant.	79.67 *	61.68 *	933.63	1'149.73	384.91
Estimated PCs	In thousands	140	80	700	1'250	130
	Per 100 inhabitants	2.19	1.22	17.02	4.79	5.00

\* Data are for 2000

Source: 2001 ITU Statistics, International Telecommunications Union, 2003, Geneva

3.6 **Energy.** The energy market in El Salvador presents a striking contrast to the telecommunications sector, despite the enactment of the 1996 Electricity law and major initiatives to restructure the sector. The 1996 Law provided for: (a) the unbundling of generation, transmission, distribution and commercialization activities; (b) competition in generation and commercialization; (c) open access to the transmission system; and (d) unregulated generation prices. These reforms represented a complete set of market-oriented changes. Privatization included all thermal plants, but the government kept the control of hydroelectric (CEL) and geothermal (Gesal) units. Results were mixed. Expansion of the system and coverage performed well, specially in urban areas, while prices have increased (see Table 2). Even considering that El Salvador's electricity prices cannot be directly compared to those of neighboring countries, an overall evaluation suggests that prices in El Salvador are among the highest in Central America. Energy prices were particularly high in 2000, at a high of US\$ 216.15/Mwh. Two possible explanations for this poor performance are pricing policy and market power. Pricing policy was based on bidding prices, where, until recently, no cap was set. Concentration indexes in generation were high, with the state-owned firm controlling 47 percent of the market and the market-share of the four largest totaling 91 percent in 2001.<sup>28</sup> In particular, two private thermal plants, Duke and El Paso, seem to have market power at peak levels. In 2003, changes in the pricing policy designed to mitigate the existence of firms with market power have been proposed to Congress. Their impact is still unclear.

<sup>28</sup> See CEPAL (2002): Proceso de consolidación de los mercados mayoristas de electricidad en los países centroamericanos. Mimeo: LC/MEX/L.547.

**Table 2: Trends in the Electricity Market 1993-2001**

	1993	1999*	2001*
Capacity (MW)	815	988	1118
Number of customers (thousand)	695	982	1129
Electricity coverage	61	73	74
Price to final consumer (US\$ cents/kwh)	5.0	10.4	12.0

Source: Energy Sector Modernization Project- Implementation Completion Report. The World Bank December, 2002.

3.7 **Roads.** Inace's 1999 report ranked the quality of roads in El Salvador 52nd among 75 countries.<sup>29</sup> According to this report, railway services aside, roads presented the worst performance among infrastructure variables. Between 1995 and 2000, despite recent important mega-projects in the San Salvador metropolitan area, the lack of appropriate maintenance resulted in the continued poor quality of roads. Conditions were particularly critical for unpaved roads, which roughly corresponded to 85 percent of the country's road system. In 1997, for example, eight percent of unpaved roads and 11 percent of paved roads were classified as in "good" condition. Overall conditions for paved roads seemed to be relatively better and improving over time: 75 percent of paved roads have been submitted to some kind of maintenance classified as "acceptable" in 1998. This reflected a major improvement in comparison to 1993 when only 30 percent were classified as such.<sup>30</sup> A more recent report describes a very similar situation: overall quality of roads in El Salvador was ranked lower than the LAC average, and similar to countries with lower per capita incomes (such as Nicaragua, Honduras and Ecuador). Poor road maintenance was caused by both lack and misallocation of resources, as a large share of the budget of the *Ministerio de Obras Publicas* (MOP) was allocated to salary expenses. This changed recently with an impressive restructuring of MOP.

3.8 The poor quality of unpaved roads is most likely to affect rural development and price-competitiveness of agricultural goods. Expanding paved roads might also be relevant. Compared to other countries in the region, the share of paved roads is relatively low (see Figure 2). A 1998 World Bank study estimates the social rate of return of investments in rural roads to be in the range of 14 to 31 percent (not taking into consideration impacts on non-agricultural activities).<sup>31</sup> Consistent with the World Bank report, a 1997 FUSADES study indicated that the average distance between the Salvadoran farm and the closest paved road was 5.8 km.<sup>32</sup>

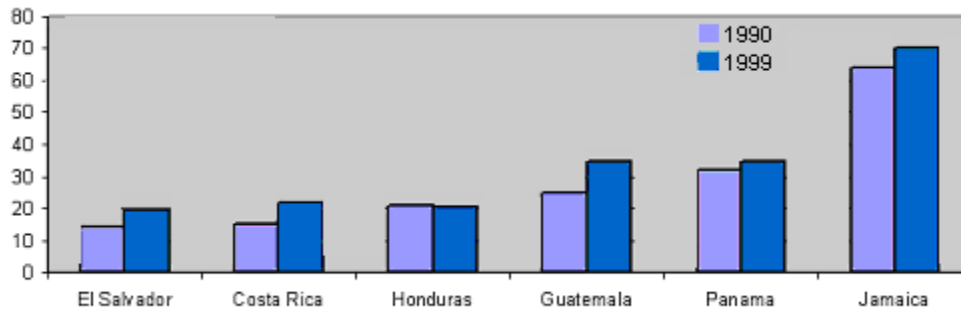
<sup>29</sup> Inace (1999). La Competitividad Microeconomica de Centro America. Mimeo.

<sup>30</sup> Fischer, R. (1998): Informe sobre Infraestructura en El Salvador. Mimeo, San Salvador: Fusades

<sup>31</sup> World Bank (1998): El Salvador: Rural Development Report. Washington, D.C: The World Bank.

<sup>32</sup> FUSADES (1997). Pobreza Rural. Boletim Economico y Social No. 138, mayo.

**Figure 2: Share of Paved Roads in Selected Countries 1990 and 1999 (%)**



Source: WBI (2002)

3.9 **Ports.** The *Comisión Ejecutiva Portuaria Autónoma* (CEPA) is the public agency responsible for the management of the commercial ports of *Acajutla* and *Cutuco*. As the port authority, CEPA is also responsible for the many activities related to commercial ports, such as loading and unloading, cargo transshipment, handling, safe-keeping and storage of import and export cargo and so on. This management structure has generated concern among the national policy makers, and reforms have been undertaken to enhance the efficiency of logistics and transport. In late 2002, Congress approved bidding documents to outsource the management and operation of the *Acajutla* port to the private sector. In addition, the port of *Cutuco*, currently under reconstruction, will be managed by the private sector to ensure efficient management.

3.10 **Water.** The water sector presents a mixed picture concerning regulation and supervision. A number of agencies from the public sector have jurisdiction over the water sector. The Ministry of Agriculture operates and administers the national irrigation system. The Ministry of Public Health monitors the quality of water for human consumption and industrial production, and the *Administración Nacional de Acueductos y Alcantarillados* (ANANDA) operates and regulates water and sewage. The Government has failed to produce a comprehensive policy framework for the water sector, mainly due to fragmentation in the management and control over its many segments. There are efforts to reform the water sector as a whole, with ANANDA drafting legislation to open up the market to competition by 2004 and establish a regulatory entity to oversee national water policy. El Salvador is lagging behind neighboring countries in the region, some of them with much lower per capita income, in terms of access to improved water sources, as shown in Table 3.

3.11 **Overall assessment.** The legacy of 1980s was highly negative for infrastructure. With the end of civil war, impressive progress has been achieved. But overall, the results have been mixed among sectors. Telecommunications clearly ranks among the top performer both in terms of legal reforms and tremendous improvement in services. Water and sanitation seem to be in the other extreme, where basic legal/institutional reforms are still pending and services have improved at a much slower pace. Power and logistics present an intermediate situation. In the power sector, deep legal/institutional reforms have been introduced but effective results in terms of improvement of services are still to be achieved. In particular, improvement in the regulatory environment and market design may be required. In the logistics sector, institutional and legal reforms have been gradually introduced – notably in terms of simplifying customs procedures -- but further improvement is required in terms of the regulatory environment for roads and ports. Improvement in the whole logistics system is key for export-led growth.

**Table 3: Access to Improved Water Source – Year 2000**

	% of population national average	% of urban population	% of rural population
<b>El Salvador</b>	74	88	61
<b>Guatemala</b>	92	97	88
<b>Honduras</b>	90	97	82
<b>Jamaica</b>	71	81	59
<b>México</b>	86	94	63
<b>Chile</b>	94	99	66
<b>Peru</b>	77	87	51

Source: World Development Indicators, 2002

### **Quality of Regulation and Rule of Law**

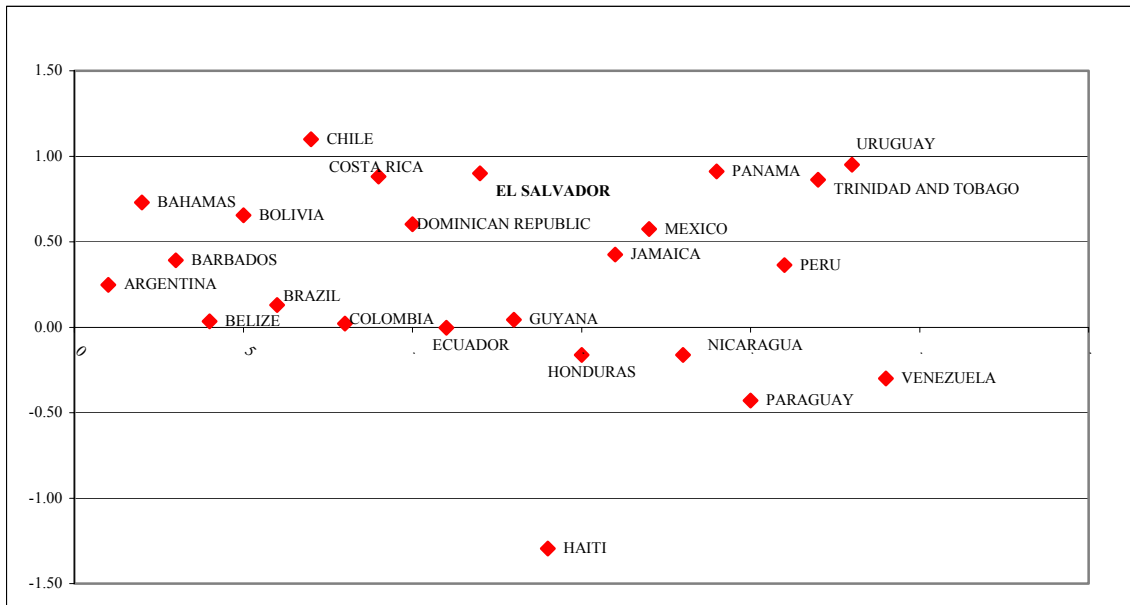
3.12 El Salvador has experienced an extensive reform of its legal and regulatory framework for private sector development and entrepreneurship. Overall, the move to overcome the bottlenecks identified in the 1995 CEM has modernized its regulatory environment, aligned major legislation to international standards and rationalized administrative regulation. Despite these efforts, some rigidities still prevent the market to fully and properly function. However, the lack of important complementary legislation, such as Competition and Bankruptcy laws, generates unbalances in the overall regulatory framework. The business environment is jeopardized, not by missing legislation but mainly by low levels of enforcement and governance. In particular, the inadequacy of the judicial system and outdated, lengthy and costly procedures prevent the system as a whole to achieve its efficiencies and properly protect and implement the guarantees put forward by the regulatory framework.

3.13 The mismatch between legislation and enforcement is reflected in El Salvador's performance in the WBI Indicators "Regulatory Quality" and "Rule of Law". The "Regulatory Quality" indicator measures the quality characteristics of the legal rules while "Rule of Law" measures the extent to which agents have confidence in and abide by these rules.<sup>33</sup> These indicators together measure the degree of success of a society in developing a business environment in which fair and predictable rules form the basis for economic (and social) interactions. It is revealing that while El Salvador ranks among the top tier countries in the LAC Region for quality of regulation it is among the laggards for what concerns the rule of law.

### **Figure 3: Comparing Law and Law Enforcement in El Salvador**

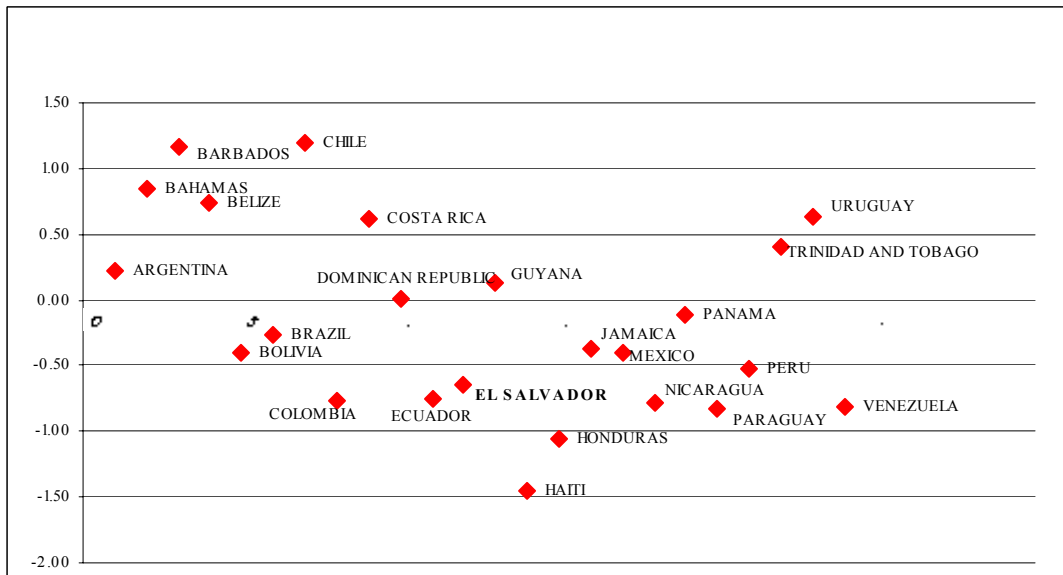
<sup>33</sup> Although it includes more general indicators such as those related to the incidence of violent and non-violent crime, it mainly includes indicators on the effectiveness and predictability of the judiciary, and the enforceability of contracts.

## Quality of Regulation



Indicators are oriented so that higher values correspond to better outcomes on a scale from -2.5 to 2.5

## Rule of Law



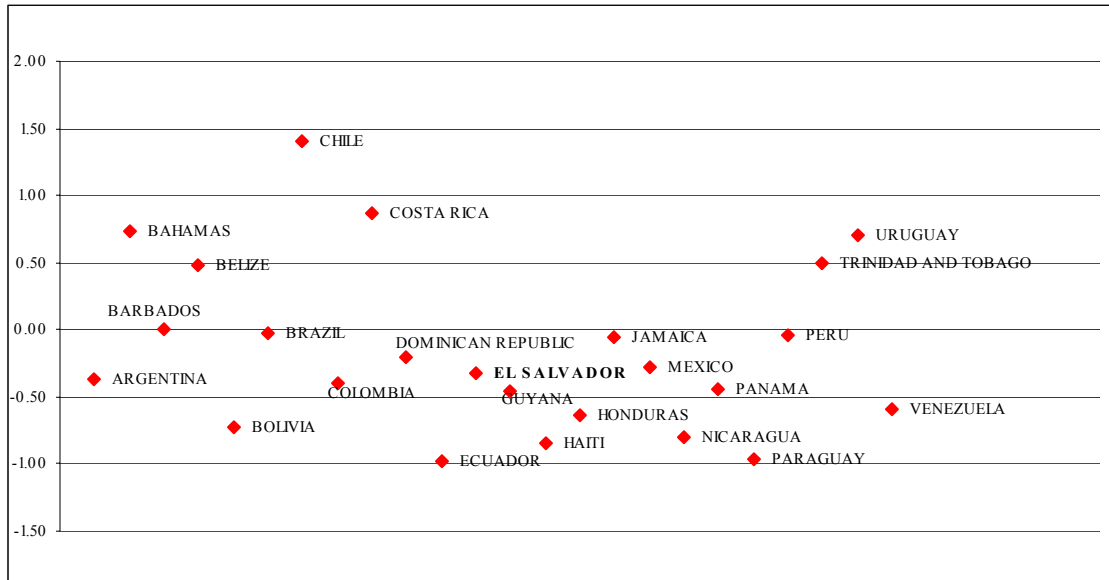
Indicators are oriented so that higher values correspond to better outcomes on a scale from -2.5 to 2.5

Source: World Bank Governance Indicators Database, [www.worldbank.org/wbi/governance](http://www.worldbank.org/wbi/governance). Data are for 2000/2001 and refer to point estimate of governance.

**3.14 Corruption.** The indicator on corruption measures the “perception” of corruption, conventionally defined as the exercise of public power for private gain. Despite this straightforward focus, the particular aspect of corruption measured by the various sources differs somewhat, ranging from the frequency of “additional payments to get things done,” to the effects of corruption on the business environment, to measuring “grand corruption” in the political arena or in the tendency of elite firms to engage in “state capture.” The presence of corruption is often a

manifestation of a lack of respect by both the corrupter (typically a private citizen or firm) and the corrupted (typically a public official or politician) for the rules, which govern their interactions, and hence represents a failure of governance. In El Salvador, corruption was not limited to the judiciary but was, reportedly, a more general phenomenon. In fact, Figure 4 suggests that El Salvador still has a lot to obtain from investments in fighting corruption.

**Figure 4: Control of Corruption**



Source: World Bank Governance Indicators Database, [www.worldbank.org/wbi/governance](http://www.worldbank.org/wbi/governance). Data are for 2000/2001 and refer to point estimate of governance. Indicators are oriented so that higher values correspond to better outcomes on a scale from -2.5 to 2.5

**3.15 Property Rights.** El Salvador has made significant progress in securing efficient and effective registration of real and intellectual property rights. The Land Registry has improved its capacity to handle the registration process and has streamlined the procedures, resulting in a cheaper, faster and more reliable land title registration process. In addition, the Registry has automated most of its operations. The 1993 Law of Promotion and Protection of Intellectual Property meets international standards for patent protection, although some more specific alignment to TRIPS standards are needed – mainly on the length of validity of patents for certain products, such as pharmaceuticals.<sup>34</sup> The new Law on Trademarks and Distinctive Signs, passed in June, 2002, addresses the remaining gaps in El Salvador’s TRIPS (the WTO- Trade Related Aspects of Intellectual Property Rights agreement) obligations by regulating the acquisition, registration, and protection of trademarks, logos, statements, distinctive advertising signs, and geographical indicators.<sup>35</sup> El Salvador has also passed other relevant legislation and ratified relevant international conventions and treaties in this areas.<sup>36</sup>

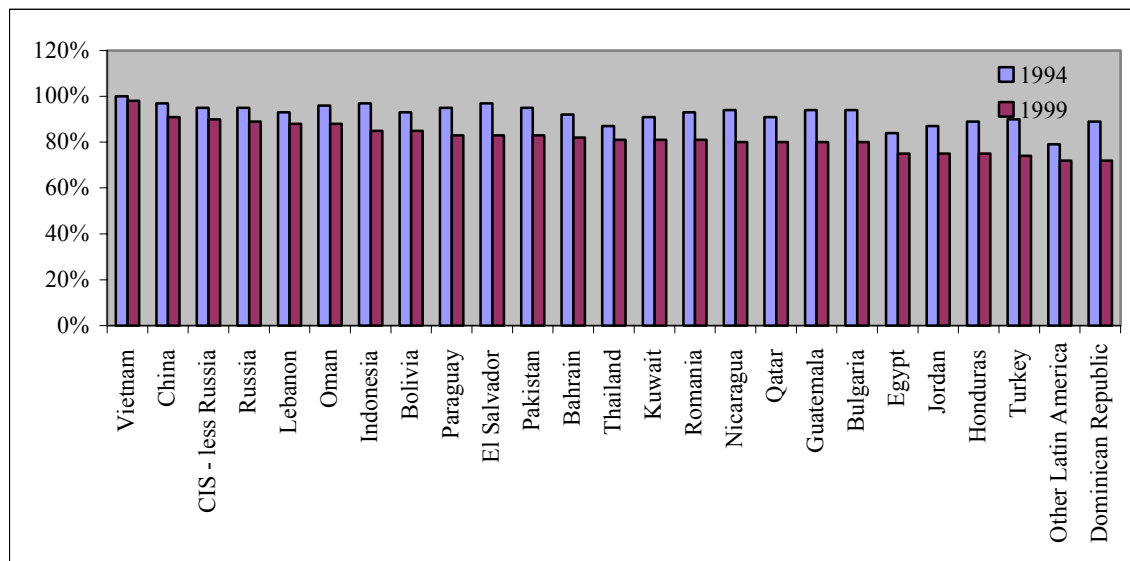
<sup>34</sup> The 1993 Intellectual Property Protection Law has reportedly made the effort of designing an overall framework in compliance with TRIPS, but there are still areas of improvement to be addressed, including a limitation of 15 years on patent protection from the date of application for pharmaceutical products. Other problems include the lack of protection of products in the development pipeline. Source: USTR, El Salvador Country Profile, 2002

<sup>35</sup> The TRIPs agreement applies to WTO members according to the single undertaking principle – by which all the agreements apply to countries once membership is granted. Developing countries have been granted a transition period to implement relevant legislation, according to their specific developmental priorities and needs. These delays define the transition from before the agreement came into force until it is applied



3.16 **Enforcement of property rights.** Property rights are enforced by the *Centro Nacional de Registros*, which incorporates the business registry, the cadastre, the *Instituto Geográfico Nacional*; the *Registro de la Propiedad, Raíz e Hipotecas* and operates under the aegis of the Ministry of Economy. In particular, El Salvador is one of the countries with the highest software piracy rates, both at regional and global level. The lack of proper implementation of the law has a direct impact on lost revenue opportunities for both producers and vendors of software. Between 1994 and 1999, piracy rates were reduced in El Salvador from 97 to 83 percent, implying a change from the second worst performer (after Vietnam and together with China) to 9<sup>th</sup> position, well below China, Russia and Indonesia. The speed of improvement was also remarkable. During this period, piracy rates in El Salvador declined 0.67 percent annually, the third best performer, after the Dominican Republic and Turkey, together with Bulgaria and other Central American countries. Despite this effort, lost revenues from piracy have risen, from 10.4 percent in 1997 to 16.9 percent in 1999, possibly due to an increase in the value (quality) of software.<sup>37</sup>

**Figure 5: Top 25 Countries for Software Piracy: 1994-1999**



Source: Global Software Piracy Report A study conducted by International Planning and Research Corporation For the Business Software Alliance And Software & Information Industry Association May 2000

3.17 **Business Entry, Operation and Exit.** The reform of the entire registry system in mid-2002 has facilitated the business registration process, which reportedly takes an average of three days for internal processing within the registry. Business registration has been facilitated by simplifying the number of steps and lowering the time needed to register a new business or modify the status of legal entities. The *Oficina Nacional de Inversiones (ONI)*, a department of

in member countries. El Salvador is among the group of countries granted a transition period that lasted until the end of 2001.

<sup>36</sup> El Salvador has adhered to the Bern Convention for the Protection of Literary and Artistic Works, the Paris Convention for the Protection of Industrial Property, the Geneva Convention for the Protection of Producers of Phonograms Against Unauthorized Duplication, the World Intellectual Property Organization (WIPO) Copyright Treaty, the WIPO Performance and Phonograms Treaty, and the Rome Convention for the Protection of Performers, Phonogram Producers, and Broadcasting Organizations.

<sup>37</sup> *Global Software Piracy Report A study conducted by International Planning and Research Corporation For the Business Software Alliance And Software & Information Industry Association May 2000*

the Ministry of Economy, has set up a *Ventanilla Unica* (one-stop-shop) to facilitate entrepreneurship. Initially established to facilitate entry of foreign investors, ONI also handles domestic investors' requests. The one-stop-shop reduces the number of steps for investors to set up a business from 16 to just five, and the time to formalize a legal commercial entity (up to eight days).

3.18 On business operations, El Salvador still relies on the Commercial Law from 1971, which is in any case deemed to be relatively suitable to sustain economic activities in the country. However, the need for a more flexible and modern Commercial Law is a priority. To this end a Commission, which includes the private sector, is preparing a draft for a new Commercial Code. Business exit is not properly regulated, with no major changes to the situation detected by the 1995 CEM. Since then, no specific legislation on bankruptcy has been passed, even though it is deemed of crucial importance by the private sector to strike a balance between proper allocation of resources and protection of creditors' rights. The preparatory work for the new Commercial Code intentionally does not include provisions on bankruptcy. The preparatory commission considers it appropriate to have a special law regulating such a sensitive issue.

3.19 Even though the Constitution bans monopolistic practices, there is no explicit legislation to enforce this mandate. Competition Law and policy are complementary to the initial steps undertaken by the government to open the local economy, but failure to design proper legislation for competition may lead to monopolization, collusive and exclusionary practices. In this sense and considering all the important reforms undertaken recently, competition policy and legislation is an important element for the development of the overall economy, particularly in specific segments and sectors, such as agricultural and meat products distribution, cement, retail distribution (mainly pharmacies) and the banking. Only one company operates in the cement sector and the distribution of meat and agricultural products is dominated by a few firms. Recent experience has shown how anti-competitive behaviors can affect tariff and price setting in the energy sector.

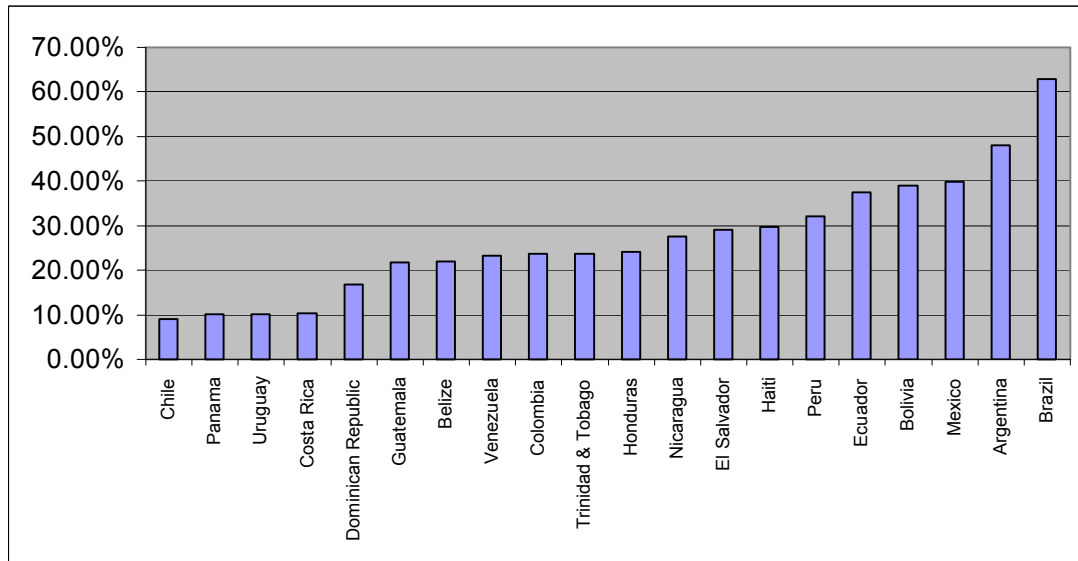
3.20 The Consumer Protection Law is well drafted although not sophisticated, granting legal guarantees to consumers without imposing excessive burdens on the private sector. The Council for Consumer Protection is a well functioning institution responsible for managing complaints, carrying out investigations and enforcing the law. The institution needs strengthening to enhance the efficiency of the law and overall consumer protection in El Salvador.<sup>38</sup>

3.21 **Taxation.** 4.11 On taxation, since 1992 several measures to simplify tax incidence and collection have been implemented, including reducing the corporate tax rate to 25 percent. Further step were undertaken by the 2001 fiscal reform. Most entrepreneurs lament the lack of clarity and the frequent introduction of unexpected changes in the tax regulations. Other issues concerning taxation as a burden to enterprises relate to reporting and inspections, both characterized by corruption. This general negative perception is reflected in Figure 6. It is important to keep in mind, however, that the overall government burden, measured by the share of government consumption in GDP, is among the lowest in LAC.

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<sup>38</sup> Some of the requirements of the Consumer Protection Law include: 1) Retailers must have the price of the product either on the packaging or in a visible place; 2) Products that are sold by weight or volume or any other measure must have the weight, volume or an exact measure of its content on the label; 3) For pharmaceuticals, the list of ingredients, expiration date, dosage, contraindications, risks involved when used, residual toxic effects, etc. as established by the Ministry of Public Health must be printed on the label; 4) Labels on frozen and canned foods must include an expiration date.

**Figure 6 - Tax Regulation (1999)**



Source: WBES (2000)

3.22 **Foreign Investment and *Maquila*.** In late 1999 a new Investment Law was passed to facilitate investment in the country. Mainly targeted at attracting foreign investors, the Investment Law aims at facilitating the administrative procedures to start and operate a business in El Salvador. The streamlined requirements were intended to complement other relevant legislation, such as the Free Zones Law of 1998. The main incentives provided to foreign investors who establish businesses in Export Processing Zones (*Zonas Francas*) include exemptions of up to 20 years from income, municipal, and other taxes; duty-free importation of machinery, equipment, tools, spare parts, furniture, and other items necessary for the production process; raw materials, semi-manufactured and intermediate goods; duty-free importation of fuels; and unrestricted remittance of net profits. The set of benefits and incentives has sustained the phenomenon of the *maquila*, with 13 EPZs currently operating in El Salvador.

3.23 Overall, the government's strategy for the *maquila* has been a success. However, EPZs tend to generate little technology and/or knowledge transfer. As a result, the typical long-term and indirect advantages associated with foreign direct investment are not nurtured and exploited. Thus a more programmatic approach to FDI should be designed to take full advantage of foreign capital and technology, for instance a sector focus to develop a strategic national industry or attract investors with technology intensive production. Linkages should be promoted to connect the Export Processing Zones to the rest of the local economy to generate virtuous circles of capacity building, upgrade skills for human capital development and develop value chain integration for local SMEs.

3.24 **Electronic Commerce.** The Government is currently preparing a draft of an e-Commerce Law. This legislative project is quite ambitious, since the draft tries to address the many issues related to the use of innovative technologies to conduct business: e-Signature, electronic and digital documents, security, privacy and treatment of sensitive personal information and electronic transactions in general. A draft has been outlined following international practices and standards (among which the UNCTAD standards), but it remains in the embryonic stage. Regulation in this sphere is deemed essential to sustain the modernization process and allow the country and domestic companies to tap into the international e-Commerce scenario. Yet, any e-

Commerce legislation will be devoid of meaning if it is not accompanied by measures targeted at sustaining technology adoption and improving awareness and capacity in the potential and benefits of technology across the private sector and civil society. Electronic transactions in El Salvador are still in their infancy, despite many opportunities to leverage Information and Communication technology (ICT) to sustain growth.

3.25 In the area of e-Commerce and e-Business, the limitations appear to be not merely in the lack of specific regulation, but more in the overall eco-system supportive of electronic business. Although appropriate legislation is crucial to create trust and confidence in innovative means of conducting business and to clear the ground of uncertainty, the overall e-Business environment appears to be weak. Low levels of capacity and skill among entrepreneurs, little understanding of the potential of e-Commerce and the slow adoption of ICT seem to be the main deterrent for e-Business in El Salvador. In addition, the overall logistics in support of proper e-Business are an additional bottleneck. Electronic payment systems are still not widely available across both enterprises and households, automation among firms, especially SMEs, is very low, and the poor quality and reliability of delivery systems, such as the postal infrastructure, would erode the main advantages (speed and cost) of e-Business. Consumer e-Business is still in its infancy, due to low per capita income, lack of trust in the Internet, low PC and Internet penetration among consumers, and a lack of access to credit cards and reliable logistics services. Business-to-Business (B2B) e-Commerce is in its infancy as well, since domestic companies cannot rely on industry-specific portals and e-Marketplaces. Most Internet use by Salvadoran companies is still dedicated to gathering information and not for complex solutions, such as conducting on line transactions.

3.26 **The Judicial System.** As highlighted by the recent CAS for El Salvador, 44 percent of the population felt insecure, and a similar percentage had no confidence in the judicial system's ability to punish delinquency. In particular, the high degree of corruption undermines the credibility of the entire judicial system. Many shortcomings jeopardize the capacity of the judiciary to properly enforce legislation and thereby to enhance the overall business environment. First, weak institutional management leads to misallocation of resources and the organizational structure is weak. Second, the generation of the judiciary system is highly inefficient. Some 2,400 cases per non-criminal court (civil, commercial, family and labor) are awaiting disposition at the first instance level, and typical civil cases take about 3 to 4 years from filing to disposition.<sup>39</sup> In the small claims courts, there are about 11,000 cases pending. Most of the judges' time is allocated to administrative functions.<sup>40</sup> There is poor case management, lack of judicial statistics, slow enforcement proceedings, and poor facilities. Third, the judicial system is not open, with a lack of access to legal information. There are no ICT systems that link the judiciary both internally and externally. A recent WBG project will address some of these rigidities. The Judicial Modernization Project aims at improving the institutional management capacity of the judiciary, modernizing the court system and providing tools and opportunities to encourage knowledge for transparency and sustaining the capacity of the Judicial Branch's officers and employees.

3.27 Mistrust of the judiciary and its inefficiencies dramatically increase uncertainty within the business environment. Contract enforcement is slow, preventing the private sector from operating under legal certainty. New legislation was passed in 2002. The Arbitration Law is in the

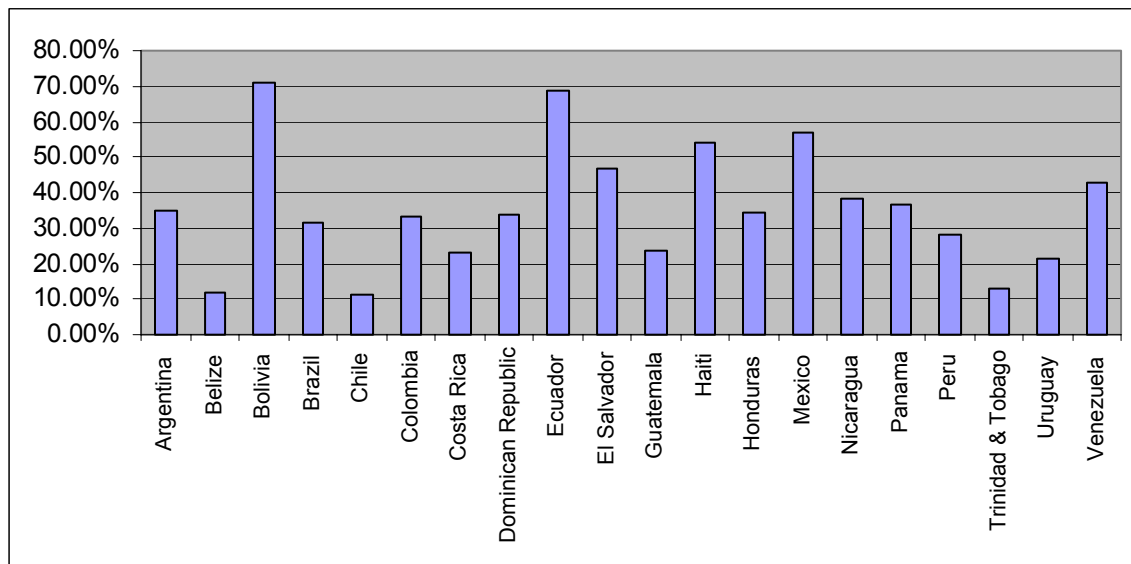
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<sup>39</sup> Although a comparison with other legal systems would not be totally appropriate, a reference to other examples is useful to better understand the value of this judicial delay. In the courts of Iowa, the time elapsing from filing to disposition is 18 months for Civil Jury Cases and 12 months for Nonjury Civil Cases. In Wisconsin it takes four months for a case to proceed from filing to disposition.

<sup>40</sup> Judicial Modernization Project (P064919) 05/05/2002, PAD

process of being implemented and arbitration centers will soon be established. The law has been designed following international examples for extra-judiciary dispute settlement and will expedite the process of solving disputes between entrepreneurs who agree to rely on a cheaper, more expeditious yet reliable system. Some issues remain concerning the reliability of extra-judiciary dispute settlements that are often based on general legal concepts of trust and confidence, very low in El Salvador among civil society and the business community.

**Figure 7: The judiciary as a main obstacle for business development (1999)**



Source: WBES (1999)

## Finance

3.28 El Salvador made impressive progress in strengthening its financial sector in the 1990s. Ten years after nationalization of the banks, the crisis of the banking system was evident: banking deposits had contracted by a fourth, the total credits by a third, the debt level had tripled and the liquidity coefficient had suffered a drastic fall to the point where it threatened the ability of the banks to cover the legally required limit.<sup>41</sup>

3.29 **Regulation.** Privatization in the early 1990s, the establishment of Superintendence for the Financial System in 1996 and a 1999 Banking Law established an adequate environment conducive to stability of the financial system. As a result, El Salvador boasts one of the most developed and stable financial systems in Central America. The 1999 Banking Law has a number of positive features that enhance the powers of the regulatory and supervisory agencies. Among other things, it (i) enables the consolidated supervision of financial conglomerates; (ii) establishes a gradual increase in the required ratio of capital to risk-weighted assets with the aim of reaching a capital-to-asset ratio (CAR) of 12 percent in 2005; (iii) increases the minimum capital required to establish new banks (to the equivalent of about \$14 million USD); (iv) lowers the limit on loans to related parties from 15 to 5 percent of paid-in capital and reserves, while establishing

<sup>41</sup> *The Liberalization of the Financial System in El Salvador*, SAPRIN, Structural Adjustment Participatory Review Initiative, March 2001, [http://www.saprin.org/elsalvador/research/els\\_res\\_financiero.pdf](http://www.saprin.org/elsalvador/research/els_res_financiero.pdf).

more effective criteria to identify related parties; (v) creates an explicit, limited deposit insurance scheme funded via premiums assessed on the banking industry; (vi) establishes positive weights for mortgage loans and asset trusts for the purposes of calculating required capital; (vii) improves prompt corrective action rules to deal with troubled banks and strengthens bank failure resolution powers significantly; (viii) provides legal protection to supervisors for actions taken in the discharge of their official duties; and (ix) shifts the responsibility for issuing prudential norms from the President of the Republic to the Superintendent of Banks.

3.30 Banking legislation reforms enacted in 2002 have completed the regulatory framework for the financial sector. The new legislation introduces international standards aimed at improving the capacity and strengthening the supervisory powers of the regulator. In addition, the decree introduces internationally aligned measures to improve management, supervision, and capital adequacy. The Superintendence was established as an autonomous and independent institution by governmental decree in early 1996. This body has regulatory and supervisory functions for the overall banking financial sector, for both banking and non-banking financial institutions (commercial banks, savings and loans associations, insurance companies, foreign exchange houses). The Superintendence's autonomy is also guaranteed by an autonomous budget composed of fees from financial institutions (regulatory and licensing, inspection and penalty fees).

3.31 Recently a Leasing Law was passed to introduce and regulate this financial tool. The Law is well designed and implemented, but this activity is not developing rapidly. Factoring is also available, but the lack of confidence and trust in this financial instrument seems to be preventing a wider adoption. Titling and terms of payment constitute limitations, and most factoring companies face long repayment terms (as long as 180 days).

3.32 **Market Structure and Performance.** Notwithstanding the small size of the market, there are 13 banks operating in El Salvador, and despite the lack of massive foreign participation, the banking and financial sector has adopted innovative management and operational techniques and technologies. Despite the massive privatization program, the *Banco Multisectorial de Inversiones* (BMI), a public financial institution, was created by the Government in 1994 to support private investment intermediary financial institutions.

3.33 The introduction of new legislation has spurred consolidation in the banking sector, with intense mergers and acquisitions in the late 1990s: *Banco de Comercio* acquired *Banco Alcatel* in June 1999; *Banco Desarrollo* and *Banco Agrícola* merged in 2000, as well as *Bancasea* and *Banco Salvadoreño*. Yet, the consolidation process and the lack of competition law enforcement has generated some unbalances in the banking sector, with four banks controlling almost 80 percent of the market, rising the risk of abuse of dominance or plain collusion. The development of the banking sector has benefited from free capital flows and low inflation, and the effect of dollarization. Although foreign banks have a very limited presence in El Salvador, local financial institutions face some external competitive pressure. Foreign banks are slowly becoming financial service providers to Salvadoran and regional large enterprises, attracted by more sophisticated financial products and in some instances lower interest rates. Yet, the four major players dominating the market and the competitors focusing on niche segments have few incentives to improve and diversify services.

3.34 Interest rates for short-term loans (less than one year) dropped from 16 percent in December 2000 to the current 6.5 percent p.a. and those on longer term loans decreased from 18 to 8.2 percent. Collateral requirements are not prohibitive and stand at 125 percent of the loan amount. Interest rates have been falling in the last two years, also as a result of the lower inflationary risks due to dollarization. In addition, the retail-banking network seems properly

developed with appropriate coverage throughout the country. In addition to loans, micro-finance is developed as well: *cajas*, cooperatives and NGOs provide micro-finance services to about 200,000 individuals for an approximate total loan value of US\$ 319 million in 2002. Micro-credit carries higher interest rates, ranging from 11 to 26 percent.

3.35 Loan rates have declined but access to finance remains one important complaint among entrepreneurs in El Salvador. Reportedly, most of the credit is on a short-term basis, with very low levels of long term lending. The reason for that may be twofold. On the one hand the conservative approach of banks, and low competition in the banking sector, prevents long-term lending, crucial to sustain growth in the economy. On the other, there seems to be a capacity issue among entrepreneurs. Firms lack overall managerial skills to draft sound and solid business plans to present plausible financing requests to banks. Moreover, banks find it difficult to make risk analyses and credit judgments also due to inadequate accounting and financial reporting, especially by SMEs. Finally, effective loan rates (interest rates plus service rates) have declined very little or not at all, suggesting an increase in service rates.

3.36 Such limitations are more relevant for SMEs and micro enterprises. To facilitate access to finance for SMEs, a new law passed in 2001 allows for the establishment of *Sociedades de Garantía Recíproca* (SGR). As a mutual guarantee mechanism, SGRs provide professional support and technical assistance to SMEs: a credit analysis would assess the financing request of a small firm and validate it with an “*avallo*” if deemed viable. The SGRs have been recently established, so any evaluation would be premature.

3.37 Although the introduction of the International Accounting Standards<sup>42</sup> is a positive sign of alignment to international standards to promote increased transparency and openness, Salvadoran firms seem to be slower in fulfilling the requirements when compared to the faster pace of adoption elsewhere in the region. Using international accounting standards fosters international integration, as adherence helps reduce barriers for financial integration, making accounts more accessible to potential investors and enhancing transparency and financial stability.

## **Crime and Violence**

3.38 Despite some reduction since 2001 El Salvador’s high rates of crime and violence continue to plague the country generating high degrees of social instability (see Table 4). The causes of the high crime rate can only be identified in general terms and associated with the deep social imbalances resulting from the civil war and natural disasters. It is also possible to identify some of the most common determinants of violence, Gun diffusion is present and, not surprisingly, firearms are the cause of the majority of homicides. Low income and poverty, low educational level and lack of employment opportunities undermine any prevention of violence efforts.<sup>43</sup> In addition, El Salvador shares with developed nations one relatively new phenomenon: juvenile delinquency and street gangs.

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<sup>42</sup> International Accounting Standards are set by the International Accounting Standards Board (IASB), an independent body established in 2001 to succeed and replace the International Accounting Standards Committee. Such Committee was formed in 1973 by professional accountancy bodies from Australia, Canada, France, Germany, Japan, Mexico, the Netherlands, the United Kingdom and the United States of America to develop a single set of globally understandable and enforceable accounting standards.

<sup>43</sup> Juan Luis Londoño and Rodrigo Guerrero, *Violencia en América Latina Epidemiología y Costos*, Inter-American Development Bank, Working Paper R-375, Washington, DC, 1999

**Table 4 : Rate of Homicide per 100,000 Inhabitants**

Country	Official Data 1995 *	Estimate 1999 **
Brazil	17.8	79.8 <sup>^</sup>
Colombia	76.3	76.0
El Salvador	39.9	138.9
México	17.6	19.6
Peru	2.9	10.2
Venezuela	11.2	35.0

Source: Juan Luis Londoño and Rodrigo Guerrero, *Violencia en América Latina Epidemiología y Costos*, Inter-American Development Bank, Working Paper R-375, Washington, DC, 1999

\* Source: Pan American Health Organization, *Health Situation in the Americas. Basic Indicators, 1996*, Washington, DC, 1996

\*\* Source: Estimates by Juan Luis Londoño and Rodrigo Guerrero

<sup>^</sup> Data for Rio de Janeiro only.

**3.39 Diffusion of weapons.** To eradicate the problem of gun diffusion, specific programs have been implemented. Although a United Nations peacekeeping force reported collecting and destroyed approximately 40,000 weapons since the end of civil war, a large number of guns remained in civilian hands. The government's buy-back scheme did not prove very successful, mainly because of mistrust of the military. A more successful program, "Goods for Guns," was launched in 1996 by a coalition of citizens, businesses, non-governmental organizations and churches called the *Patriotic Movement Against Crime* that exchanged weapons with coupons for large consumption products. It is estimated, however, that there are at least 400,000 guns at large in El Salvador.<sup>44</sup> Another study estimates that there are at least 450,000 guns in El Salvador, of which only 38 percent are officially registered.<sup>45</sup>

**3.40 Street and organized crime.** Street crime is considered to be a major obstacle for business operation and growth by more than 80 percent of Salvadoran firms, the second highest level in LAC (after Haiti, see Figure 9). Street crime and common violence in El Salvador are exacerbated by the increase in juvenile delinquency. More than 30,000 youths, nearly 20 percent of Salvadoran adolescents between the ages of 9 and 15, are estimated to belong to gangs, known in Spanish as "*maras*." Now, a decade after the problem first came to the fore as a major public safety issue, and as the older gang members become adults, the inter-gang violence characteristic of past years has escalated into a plethora of acts committed against the public, including kidnappings, car thefts, commercial robberies, and murder.<sup>46</sup> The phenomenon of juvenile delinquency is rooted in the many layers of society and not often reported to authorities. Yet, most street crime in the country is characterized by intentional homicides most frequently by groups between the ages of 15 and 34.

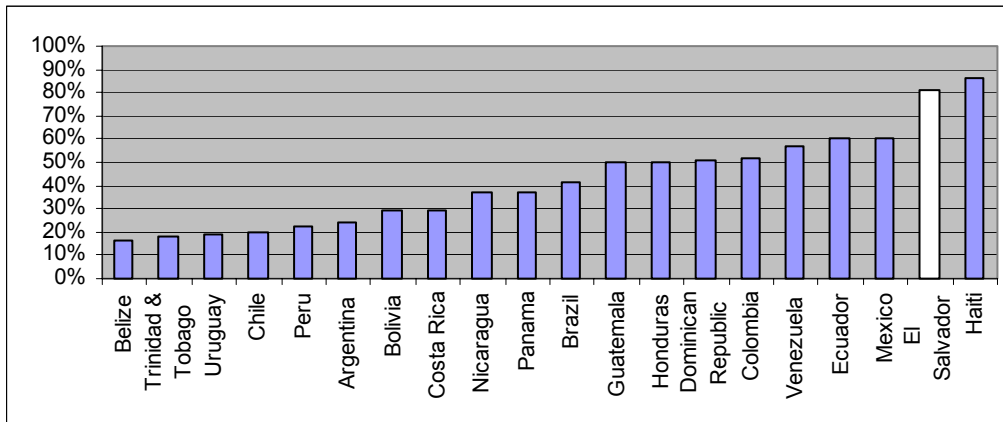
<sup>44</sup> This estimate is based on extensive primary research. For details, see Jose M. Cruz and Maria A. Beltran, *Las Armas en El Salvador: Diagnostico sobre su Situacion y su Impacto*, Instituto Universitario de Opinione Publica, Universidad Centroamericana Jose Simeon Canas, San Salvador, June 2000.

<sup>45</sup> "*Armas de Fuego y Violencia*" carried out by the *Instituto Universitario de Opinión Pública* (IUDOP) and the *Fundación de Estudios para la Aplicación del Derecho* (FESPAD) and sponsored by the UNDP.

<sup>46</sup>Source: Freedom House, Country Rating and Survey, Washington, DC, 2002



**Figure 8 - Street Crime (% of firms that consider the variable a major obstacle for business)-1999**



Source: The World Business Environment Survey (WBES) 2000

3.41 **Organized crime.** The phenomenon of organized crime is also detrimental to private sector development in El Salvador. The rising occurrence of organized crime generates great economic and social disruption, and is perceived among the business community in El Salvador to be as damaging as street crime (more than 75 percent of firms considered it to be a major obstacle for business operation and growth). Although the two phenomena have different causes and effects, both dramatically hamper productivity and growth. Street crime impedes growth by affecting entrepreneurship with minor crimes (theft, damage to private property and so on). The impact of organized crime (racketeering, extortion, arm trafficking, etc.) is equally as cumbersome.<sup>47</sup>

3.42 In this perspective, the problem is not relegated to domestic issues. The phenomenon of organized crime gains a regional, cross-border dimension. El Salvador should leverage regional cooperation to offset cross-border crime, addressing the problem, domestically, through a broader partnership between the state and civil society. The inefficiency of the judicial system, which is only partly due to imperfect legislation, has an especially destructive impact on the fight against organized crime.

3.43 **The economic impact of crime.** The phenomenon of violence in El Salvador is first a major social issue with a significant impact on people's lives. It also presents an economic impact as a deterrent of economic and productivity growth. At the microeconomic level, crime affects the development of human capital and destabilizes the overall business environment. Crime creates heavy burdens on entrepreneurs by increasing the costs of operating in a very unstable and unpredictable market with weak prospects of rule of law and enforcement of legislation. This hampers the competitiveness of domestic companies both at the local and international levels. . . At the macroeconomic level, it discourages investment, both domestic and foreign, and generate distortions in allocation of private and public resources. Violence and crime have great economic

<sup>47</sup> The questionnaire of the World Business Environment Survey (WBES) refers to "General constraint-street crime" and "General constraint-organized crime" as a major constraint to business, without explicitly distinguishing between the two. Street crime is described as "street crime/theft/disorder", while organized crime is referred to as "Organized Crime/Mafia" (Question 38, item "i" and "j" respectively) – Source, World Business Environment Survey "Measuring Conditions for Business Operation and Growth" Private Enterprise Questionnaire.

costs deriving from the value of goods and services used for prevention that could be purposefully used otherwise to sustain internal growth. This investment diversion is mirrored at firm level with most enterprises incurring in added operational costs due to crime and violence. Most entrepreneurs have to buy insurance at high premium, secure production facilities, and hire security guards. In this respect, it might be one of the reasons behind low rates of aggregate investment. Only those enterprises equipped – logistically and financially –to bear the increased operational costs due to crime can grow and compete domestically and globally.

3.44 Despite the relevance of the phenomenon of crime, few efforts have been made to understand and tackle violence both at the national and regional levels.<sup>48</sup> Many studies have tried to address the impact of violence and crime on economic growth and assess its economic costs as percentage of GDP. Estimates vary depending on the methodology. One study considers both direct costs (personal, institutional, rehabilitation and prevention costs, legal expenditures) and indirect costs (lost income generation opportunities, lost revenues for the economy as a whole and material damages) to achieve a total of 13.46 percent of GDP.<sup>49</sup> Others consider health and material damages as direct costs and the impact of crime on productivity, investment, consumption and labor force and general public expenditures, increasing the value up to 24.9 percent.<sup>50</sup> In addition to direct economic costs, there is another important element to consider. The relevance of crime is becoming so important that security services have been growing as a sector of the economy. The security services sector employs, at 22,000 workers, employs a larger workforce than the national police (at 20,000 workers). In this instance, it is evident that violence creates distortions in terms of allocation of human resources. A large portion of the labor force of the security industry could be allocated in more productive sectors of the economy. More focused research and analysis on the relevance and economic impact of crime in the Central American region should be undertaken to understand the key dynamics of this phenomenon and unlock the potential for competitiveness and growth.

3.45 **Impact on firms.** Urban crime and violence may also have an effect on firms' competitiveness. Crimes against properties have been increasing in the recent past and initial estimates confirm this trend also for the years after 1998 (see Table 5). Reportedly, one of the reasons is the introduction of a new Criminal Code in 1998 that provides for greater legal guarantees on criminals, lowering the threshold of value for qualification of misconduct from crime to minor offense. At present, it is unclear what impact the introduction of the new criminal code has had on crime prevention. Yet, preliminary reports from the private sector – entrepreneurs and lawyers –indicate that the Criminal Code may not be suitable to tackle fully the needs of the country given the nature of crime and violence. Reportedly, the Criminal Code is biased in favor of granting excessive protection to the accused party, without striking an adequate balance with the need to protect the victim.

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<sup>48</sup> The lack of systematic analysis and evaluation of crime and its impact is acknowledged also by local and international experts. See also, *Jose M. Cruz, Alvaro T. Arguello and Francisco Gonzalez, The Social and Economic Factors Associated with Violent Crime in El Salvador*, a Report prepared for the World Bank, Instituto Universitario de Opinion Publica, Universidad Centroamericana Jose Simeon Canas, San Salvador, November 1999

<sup>49</sup> Luis Ernesto Romano, *Los costos de la Violencia en El Salvador*, 1997

<sup>50</sup> Juan Luis Lond6no and Rodrigo Guerrero, *Violencia en America Latina: Epidemiologia y Costos*, Inter-American Development Bank, Working Paper R-375, Washington, DC, 1999.

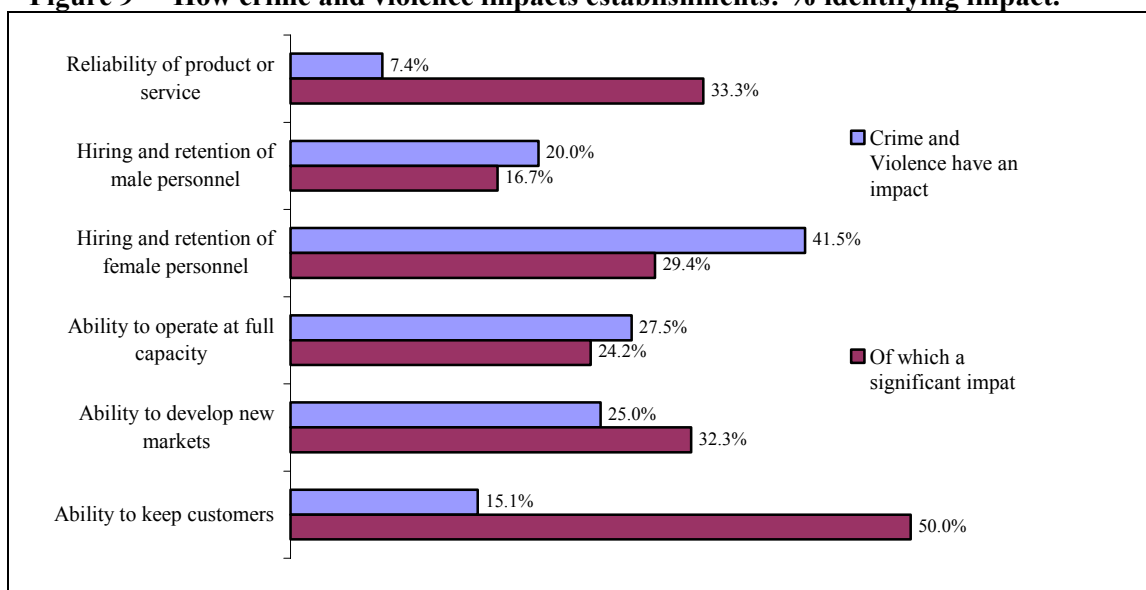
**Table 5: Number of Proceedings Initiated by the Attorney General's Office for Crimes Against Property at National Level**

	1994	1995	1996	1997	1998
<b>Type of Crime</b>					
<b>Robbery</b>	3,484	3,647	5,288	3,825	9,388
<b>Theft</b>	3,168	5,280	4,185	5,988	13,075
<b>Damage</b>	2,184	2,498	2,273	2,586	2,136

Source: Report prepared for the World Bank by Jose M. Cruz, Alvaro T. Arguello and Francisco Gonzalez, The Social and Economic Factors Associated with Violent Crime in El Salvador, Instituto Universitario de Opinion Publica, Universidad Centroamericana Jose Simeon Canas, San Salvador, November 1999

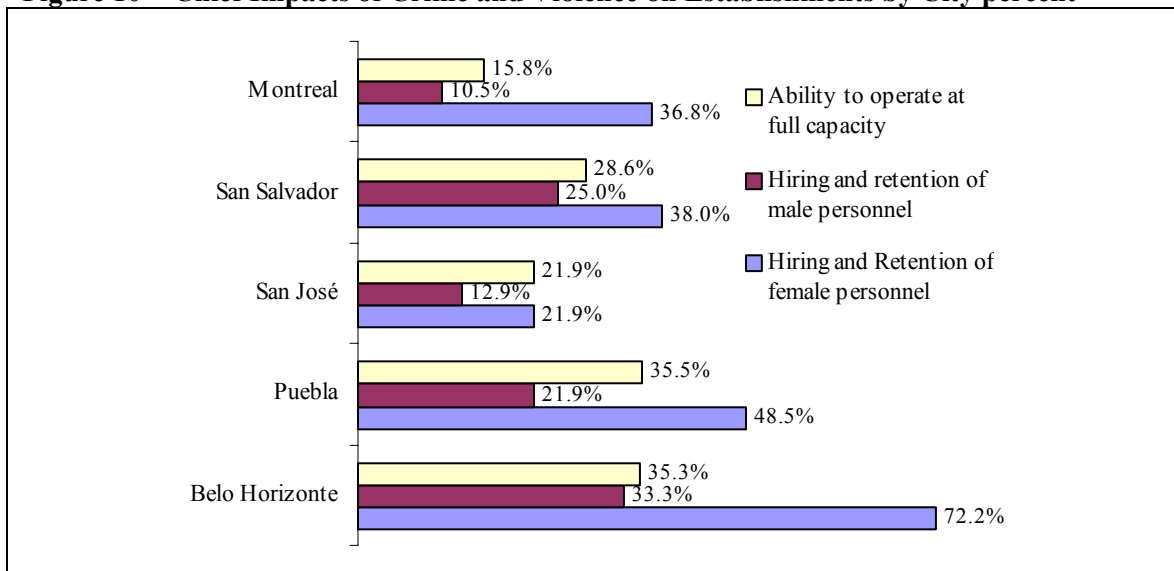
3.46 A recent Bank study reports that urban crime is perceived to affect a broad spectrum of business operations. Some 30 percent of surveyed establishments indicated that crime affected their ability to operate at full capacity.<sup>51</sup> This impact is highest in southern cities, and undoubtedly largely indirect. Concerns for their own safety affect the ability and willingness of employees to work at different times of the day.

**Figure 9 - How crime and violence impacts establishments: % identifying impact.**



Source: Freire, Polese, Echeverria, Connecting Cities with Macroeconomic Concerns, the missing link, upcoming, World Bank and INRS, Montreal, 2003

**Figure 10 - Chief Impacts of Crime and Violence on Establishments by City percent**



Source: Freire, Polese, Echeverria, Connecting Cities with Macroeconomic Concerns, the missing link, upcoming, World Bank and INRS, Montreal, 2003

3.47 **Street Crime.** Street crime represents a heavy disruption to business and commerce: 57 percent of firms in San Salvador reported that armed assaults on their premises occurred about once a month (26 percent once a week). A similar picture results in Belo Horizonte, where assaults with weapons near premises occurred about once a month for 65 percent of establishments (25 percent once a week). The situation is exacerbated by the corruption levels within the public security police forces. Most entrepreneurs feel that inadequate means and tools of protection are a major cause of growing concern in urban areas. Reportedly, weak enforcement of the law prevents effective police patrolling and deterrence of criminal behavior.

3.48 **The role of Prevention.** Whilst judicial reform and a strengthening of the penal system and law enforcement are essential, most countries battling high levels of crime and violence, find that these measures are not sufficient to have a significant impact on crime and violence. Therefore, the focus is increasingly on crime and violence *prevention* by understanding and addressing the causes of crime and violence, the risk factors associated with them, as well as constructing safer communities by building on their strengths (e.g. level of community organization). Furthermore, prevention is *cost effective* compared with criminal justice solutions. In the US, for example, it is estimated that between \$6.00 and \$7.00 dollars could be saved on control programs for every dollar invested in prevention. (Buvinic, Morrison, Shifter, 1999<sup>52</sup>).

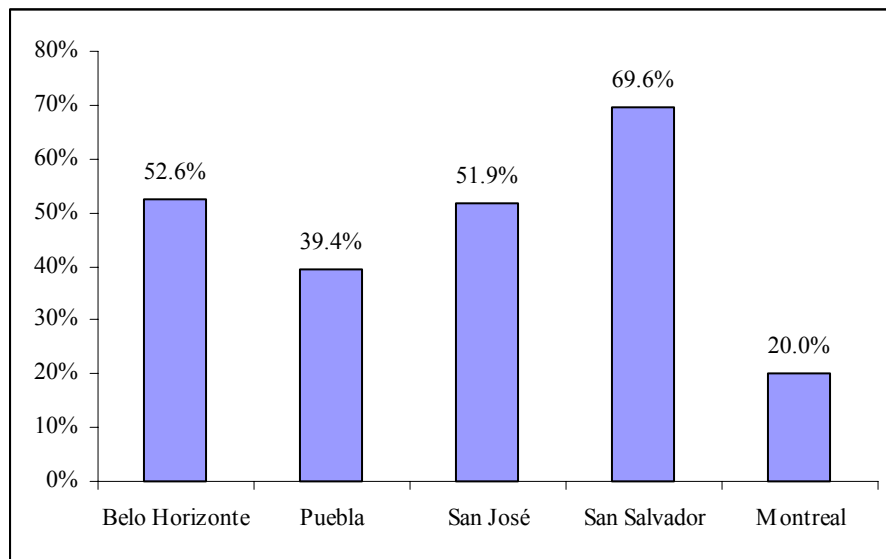
3.49 International experience from cities such as Bogota, Boston, and Belo Horizonte show that programs that combine **judicial/policing reform** - ensuring that order, fairness, and access to due process is maintained in the day to day activities of the community - with **social prevention** - targeted multi-agency programs that address the causes of crime and violence, particularly of

<sup>52</sup> Buvinic, Mayra., Morrison, Andrew and Shifter, Michael. 1999. "Violence in Latin America and the Caribbean: A Framework for Action". Technical Study, Sustainable Development Department. IDB, Washington, D.C.

youth violence - and **situational prevention** – measures that reduce opportunities for particular crime and violence problems through urban spatial interventions such as the Crime Prevention Through Environmental Design (CPTED) methodology<sup>53</sup>, can be very successful in bringing down high levels of crime and violence.

3.50 At a national level, the government of El Salvador launched its (IDB-supported) ‘Programa de Paz Social’ in 2000. Whilst this program is focused on the prevention of crime and violence, and especially on youth, it appears to have had limited impact to date, perhaps because it has been carried out with little coordination and integration of local authorities and communities. In addition to this program, there exist a plethora of interesting NGO programs as well as programs supported by multi- and bi-lateral organizations aimed at at-risk children and youth, the maras, etc. Unfortunately, they mostly operate in isolation and in a limited and piecemeal fashion. Effective government action requires strong and coordinated action at the level of local government. It requires all the municipal services to work together, rather than in isolation. It requires support from the different sectors in the community such as justice, health, education, media, police, social services, NGOs, and other CBOs such as religious organizations. And importantly, it requires support from higher levels of government and links between the national, regional, and local level.

**Figure 11 - Inadequate Police Protection as a Factor Contributing to Criminal Activity in the Neighborhood**



Source: Freire, Polese, Echeverria, Connecting Cities with Macroeconomic Concerns, the missing link, upcoming, World Bank and INRS, Montreal, 2003

<sup>53</sup> The basic premise of CPTED is that if the physical environment is planned, designed and managed appropriately, certain types of crime can be reduced, e.g. street lighting, public transport adaptations, design of open spaces, rerouting of pedestrian traffic, etc.

### Box 1

#### Promotion of SME's in El Salvador: Recent Achievements

The overall investment climate in El Salvador has improved in the recent past and that has important impacts on the prospects of growth to the small and medium enterprises (SME's).<sup>54</sup> Yet, more direct measures to SME promotion have been undertaken, under the coordination of CONAMYPE, the institution responsible for SME development and promotion.

To facilitate SME development and improve the capacity of small entrepreneurs, a special fund has been established, the *Fondo de Asistencia Tecnica* (FAT). FAT assists SMEs in accessing basic advisory and consulting services. SMEs that need technical assistance and advisory services can request FAT financing to cover up to 80 percent of the costs for technical assistance. When requesting funds, SMEs are directed to a number of companies short-listed with CONAMYPE to provide business services and technical assistance. In 15 months of operation, FAT has assisted almost 1,500 companies – of which 40 percent are based in rural areas or outside San Salvador - with a total allocation of 1 MI US\$. Overall, SMEs have requested services and technical assistance on marketing, business process, cost reduction and quality improvement.

To support export activity two initiatives have been implemented: a special fund (FOEX) and a trade facilitation unit. FOEX, provides matching grants to SMEs' export activities. The grants fund entrepreneurs' visits to foreign markets and general market prospection, including funds to allow SMEs to participate in international trade fairs. The Trade Point works as an export promotion agency to support Salvadoran SMEs that may lack the capacity – managerial, logistic, human and financial – to understand the complex dynamics of foreign markets. The Trade Point offers many services, from basic advisory services and information to market research and product analysis. Services are provided for free or on a fee-basis, depending on their sophistication. Since its establishment in July 2002, the Trade Point has assisted almost 350 companies, mainly SMEs. Overall, the Trade Point seems to be a well functioning institution, properly assisting firms in accessing foreign markets.

The presence of such initiatives, funds and institutions is a positive sign of the increasing attention to the needs of small businesses in El Salvador. Yet, there is room for improvement in the area of fiscal issues and taxation. The corporate tax rate of 25 percent applies indifferently across the board to large enterprises SMES and micro-enterprises. A differentiation in the fiscal treatment could stimulate some companies operating in the informal economy to formalize their status. Other general improvements in the investment climate such as the enactment of a competition law; further improvements in infrastructure services (energy in particular) and reduction in crime rates may be of special relevance for SME's.

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<sup>54</sup> For instance, the public procurement process had been said to be, in most cases, lengthy and not transparent, preventing SMEs from fully take advantage of opportunities to supply the public sector. The Ley de Adquisiciones y Contrataciones de la Administración Pública-LACAP establishes a more transparent framework and process for government purchases and contract and may improve SME's opportunities in the public procurement.

### **Is the investment climate (still) a priority?**

3.51 As discussed in the previous sections, El Salvador undertook major first-generation reforms and several important second generation measures during the 1990s – including defining part of the regulatory framework for infrastructure, improving the country’s legal environment and the conditions for financial intermediation. Recent growth in El Salvador, especially between 1996 and 99, to a great extent reflects the benefits of the economic reforms and the end of armed conflict.<sup>55</sup> Not surprisingly, after a decade of intense structural change, the general political climate in El Salvador indicates some “fatigue” for economic reforms. In this context, it would be appropriate to ask whether the investment climate should (still) be a priority for the government or, in other words, whether there are still economic gains to be obtained from further investment of (scarce) political capital in improving the investment climate in El Salvador.

3.52 Economic growth in El Salvador during the 1990’s has been driven by factor accumulation and not productivity growth. Contribution of physical capital to output growth corresponded to roughly 2.2 percent annually (out of 4.56 percent on average per year). To put this into perspective, physical capital contribution in Brazil corresponded to 0.77 percent (out of 2.21 percent) and 2.73 (out of 6.6 percent) in Chile.<sup>56</sup> Investment levels (measured by GFKF), however, have been comparatively low: roughly 17.06 percent in El Salvador against 27.05 percent in Panama; 24.86 percent in Chile; and 20.87 percent in Peru. Interestingly, output growth in El Salvador was higher or equal to Panama and Peru. This suggests that the marginal productivity of investment is relatively high in El Salvador. So why did investment levels in El Salvador not increase over the decade as it did in the selected countries? More generally: why is physical capital not attracted to where it is scarce and therefore where it obtains higher marginal returns? The answers to these questions would lead us to the standard Lucas (1988) explanation: marginal product of capital is not higher where it is scarce because in such countries other capital inputs complementary to physical capital are also scarce. Lucas (1988) emphasized the role of human capital (or simply skills) while others, such as Schmitz (1993), extend this model to include policy variables (or intangible capital).<sup>57</sup>

3.53 The previous section sought to show how investment climate variables might be affecting physical capital accumulation in different ways. For example, the lack of appropriate regulation in electricity may induce above-normal energy prices and thereby increase optimal costs in the country; the weak legal framework for private participation in infrastructure may be preventing the expansion and improvement of road and water services; poor enforcement of laws and a few missing pieces of legislation increase the costs of doing business, reducing domestic and foreign investment. Crime rates may not only increase the costs of doing business in El Salvador but also crowd-out resources from more productive activities. These are typical second-generation reform issues. Relatively low levels of capital accumulation have been supporting relatively high growth rates of per capita GDP growth, probably indicating the gains from first-generation reforms. Second-generation reforms may increase the levels of capital accumulation, amplifying the gains from a more open, stable and competitive environment.

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<sup>55</sup> See for example tables II.5 A and B in Loayza, Fajnzylber, and Calderon (2002). *Economic Growth in Latin America and the Caribbean- Stylized Facts, Explanations and Forecasts*. Mimeo. The World Bank: Washington, D.C.

<sup>56</sup> See Loayza, Fajnzylber, and Calderon (2002).

<sup>57</sup> See Lucas, R. (1988): On the mechanics of economic development. *JME* 22 (July) 3-42 and Schmitz, J.A. (1993): Early progress in the problem of economic development. *Federal Reserve Bank of Minneapolis Quarterly Review*. Spring, vol17, No2.

**Table 6: Gross Formation of Capital and GDP per capita (1990-2000)**

	Gross formation of fixed capital - 1990-2000 (% GDP)	Gross formation of fixed capital - 1996-2000 (% GDP)	GDP per capita 1990-2000 (1990=100)	GDP per capita 1996-2000 (1990=100)
El Salvador	17.06	16.23	1.49	1.67
Costa Rica	19.36	17.66	1.15	1.9
Honduras	30.48	31.8	1.35	1.24
Nicaragua	20.06	18.5	1.38	-1.52
Panama	27.05	31.2	1.49	1.71
Chile	24.86	25.12	1.58	1.91
Peru	20.87	22.41	1.47	1.52
Guatemala	15.77	15.84	1.43	1.65
Philippines	21.99	21.15	1.37	1.67
Jamaica	28.26	28.37	1.33	1.18

Source: World Bank (WBI)

## Conclusion

3.54 Available qualitative and quantitative evidence seems to suggest that there are economic gains to be obtained from further improvements in the investment climate in El Salvador. These should be focused on second-generation issues, in particular, institution building and the enactment of complementary legislation, focused on measures that increase marginal productivity of capital and thereby facilitate capital accumulation. Among others, these measures should include:

- (i) improve the institutional environment for better provision of infrastructure services by: (i) completing regulatory reforms (as for example in water and sanitation); (ii) issuing complementary legislation as required (as for example in energy and logistics); (iii) improving regulatory governance by strengthening the institutional capacity of SIGET, ANDA and CEPA and (iv) enhancing the role of competition as a complement to regulation.
- (ii) improve the legal environment for business operation, enacting, for example, competition and bankruptcy laws;
- (iii) enhance law enforcement by investing in institution building, in the overall public sector, possibly targeting specific issues such as property rights (as for example to reduce further software piracy) and
- (iv) advance gradually the reform of the judiciary to reduce corruption and low efficiency particularly regarding organized and street crime combined with increased emphasis on crime prevention.



## IV. EL SALVADOR'S INNOVATION SYSTEM. WHERE DOES IT STAND AND WHAT ARE THE POLICY OPTIONS?<sup>58</sup>

### Background

4.1 An increasing body of economic literature has emphasized the role of technical progress in the explanation of cross-country total factor productivity (TFP) differences and per capita income divergence.<sup>59</sup> Empirical evidence also indicates that a technology gap exists between the Latin American and Caribbean (LAC) countries and core-innovators (such as the U.S. and Japan); natural resources abundant economies (such as Finland and Australia); and other developing countries (such as Korea and Taiwan).<sup>60</sup> Not surprisingly, most LAC countries have experienced low economic growth and poor productivity performance.<sup>61</sup> El Salvador seems not to be an exception. Little, if any, progress was achieved in the field of innovation and technology policy during the 1990s, in contrast to the infrastructure industries, where important institutional reforms were implemented. The 1995 Country Economic Memorandum has already addressed the importance of technological progress for economic growth in El Salvador.

4.2 A country's capacity to innovate is related to the availability of key inputs (knowledge; research and development (R&D) expenditures; science personnel; quality of labor force, information and communications technology (ICT), finance, among others); economic incentives to use these inputs efficiently (such as the intellectual property rights regime; tax breaks and market discipline) and linkages between public institutions (universities and research centers) and the business sector. The way public institutions and private firms react to economic incentives and interact among each other to combine the available inputs defines the National Innovation System (NIS). A well-performing NIS is a key condition for a country to develop technology regardless of its stage of economic development. In the early stages, NIS tends to facilitate primarily technology absorption while, as economic conditions change, its role in supporting technology adaptation and generation tend to increase.

4.3 The aim of this chapter is to evaluate where El Salvador stands in terms of its technology gap and to identify its underlying causes. In other words, the objective is to assess the efficiency of El Salvador's NIS as well as the main obstacles for improvement. Some policy alternatives are also discussed and key messages are proposed. The chapter is organized as follows. Section Two reviews indicators of innovation performance while Section Three investigates possible causes, emphasizing the availability of inputs; the structure of economic incentives and linkages between the public sector and private firms. Section Four discusses some policy alternatives and states the main messages while a summary of findings is presented in the final section.

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<sup>58</sup> The material for this chapter has been prepared by Paulo Correa.

<sup>59</sup> See Hall and Jones (1999), Dollar and Wolf (1997). Hall, Robert, and Charles I. Jones. (1999). Hall, Robert, and Jones, Charles I. 1997. "Why Do Some Countries Produce So Much More Output Per Worker Than Others?" *Quarterly Journal of Economics* 114(1) 83-116. Dollar, David, and Wolf, Edward N., 1997. "Convergence of Industry Labor Productivity Among Advanced Economies, 1963-1982", *The Economics of Productivity*, United Kingdom, Elgar.

<sup>60</sup> World Bank (2003) "Closing the Gap in Education and Technology". *The World Bank Latin American and Caribbean Studies*, Washington, D.C.

<sup>61</sup> Loayza, Norman, Pablo Fajnzylber, And César Calderón. 2002. "Economic Growth in Latin America and the Caribbean: Stylized Facts, Explanations, and Forecast." *World Bank*, Washington, D.C. Processed.

## Innovation Performance: technology generation, adoption and diffusion

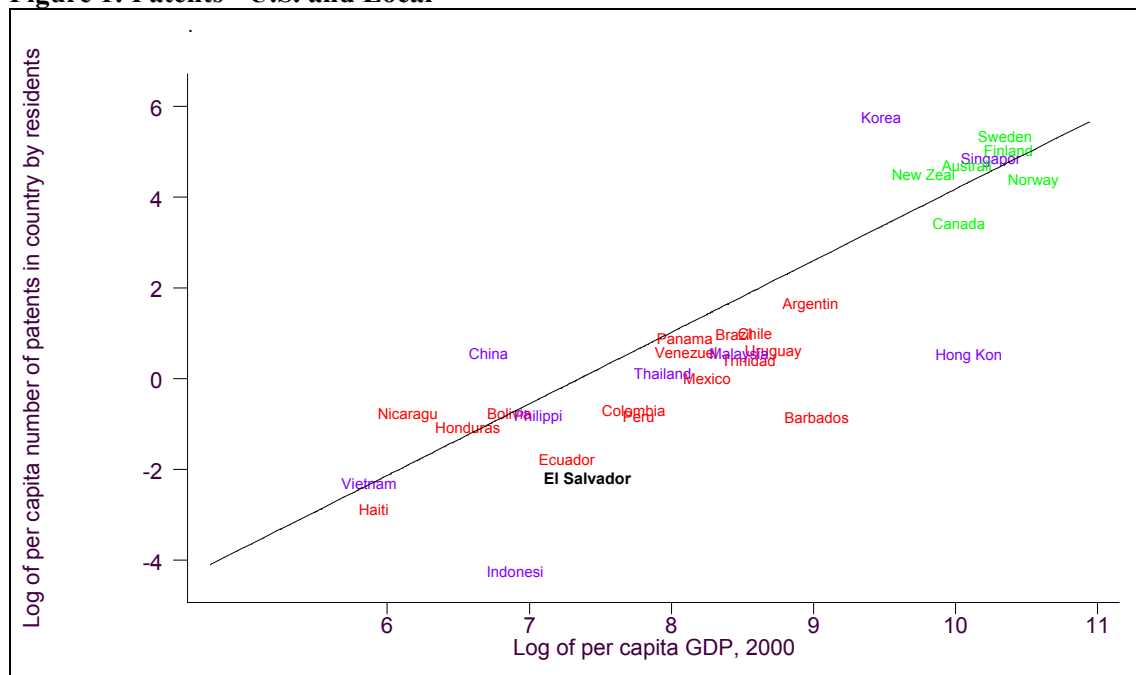
4.4 **Patents.** Patents are the standard indicators of a country's innovative performance, especially in terms of knowledge creation. Not only is patent registration low in El Salvador, it is low for the country's level of per capita income. The number of patents registered by residents of El Salvador in the country or in the U.S. Patents Office is the poorest among the countries covered in the LAC and East Asia regions, including countries with a lower per capita income, such Honduras and Ecuador (see Table 1). This result persists even controlling for per capita income, in which case the Salvadoran performance is the worst among similar countries and third worst, surpassing only Indonesia and Haiti (see Figure 1).

**Table 1: Patents (U.S. and Local)**

	Domestic patents to residents (per million inhabitants)	US patents to residents (per million inhabitants)
<b>Latin American</b>	2.07	0.80
Argentina	4.65	1.83
Bolivia	0.41	0.22
Brazil	2.33	0.72
Chile	2.43	1.09
Colombia	0.44	0.27
Costa Rica		2.10
Ecuador	0.15	0.19
El Salvador	0.10	0.11
Honduras	0.30	0.48
Mexico	0.90	1.00
Nicaragua	0.41	0.08
Panama	2.17	0.46
Peru	0.38	0.19
Trinidad and Tobago	1.33	0.70
Uruguay	1.66	1.17
Venezuela	1.58	2.02
<b>East Asian "tigers"</b>	187.0	54.4
Hong Kong	1.53	27.8
Korea	283.6	81.0
Malaysia	1.54	1.80
Singapore	113.1	48.4
<b>Natural resource abundant countries</b>	83.8	114.8
Australia	96.1	49.0
Canada	26.8	138.3
Finland	133.6	160.0
New Zealand	80.4	38.3
Norway	71.7	66.0
Sweden	184.3	208.6

Source: World Bank (2003)

**Figure 1: Patents - U.S. and Local**



Source: World Bank (2003).

4.5 **Trade, licensing and FDI.** Trade, foreign direct investment (FDI) and royalties are indicators of knowledge absorption. Trade is one of the main channels for technology transfer. Countries may acquire knowledge through trade by learning the know-how embodied in the imported goods – by, say reverse engineering -- or simply by employing technologically-advanced inputs in the production process. Countries in LAC generally have lower import penetration rates than those in East Asia. Import penetration in El Salvador is higher than the LAC average, but import of capital goods is lower. Imports of capital goods as a percentage of GDP in El Salvador are almost half of Costa Rica and lower than Chile, countries with a larger manufacturing structure. In these countries, capital goods correspond to roughly 25 percent of the imports against 16 percent in El Salvador. During the 1990s, imports of capital goods for the construction sector increased, to the detriment of machines and equipment to manufacturing and, especially, agriculture.<sup>62</sup>

4.6 Licensing technology through bilateral contracts among firms is probably the second most important source of technology transfer. Not all technological developments are available to be licensed and the decision to license a certain technology depends mostly on the phase of the product cycle. As licensing generates competitors directly or indirectly (through leakage), transnational corporations have an incentive to license mature technologies, keeping as much as possible of the economic value of their recent innovations. Latest technologies are mostly transferred by means of FDI or joint ventures. Licensing activity as measured by the amount of royalties paid by LAC countries seems to be lower than that of the East Asian countries. El Salvador's performance on this front, however, is above the LAC average.

4.7 FDI can provide technology transfer not only by supplying technology-intensive inputs, as in the case of trade but also through technological spillovers (vertical and horizontal). Vertical

<sup>62</sup> Rivera-Campos, R., 2002. "La Economía Salvadoreña al Final del Siglo: Desafíos Para el Futuro", Segunda Edición Ampliada. FLACSO, San Salvador.

spillovers result mainly from backward linkages established by the transnational corporation. Backward linkages normally lead to incremental but continuous product quality improvements or cost reductions, as a result of stronger requirements imposed by transnational corporations. Horizontal spillovers may be caused either by labor turnover or simple imitation by local companies. Direct technology transfer to the recipient firm in the host country is another way for FDI to effect innovation and TFP. FDI penetration varies significantly among LAC countries. In El Salvador, the volume of FDI between 1992 and 1997 was negligible. Most of it was directed to the *maquila* activity, in particular, the textile industry, (see Chapter V for more analysis of *maquila*). The 1998-99 increases in FDI resulted from privatization in the electricity and telecommunication sectors.

**4.8 Information and communication technologies (ICT).** ICT is an instrument for access to technological information and for the diffusion of knowledge. ICT may also reduce transaction costs, thereby increasing a firm's productivity, as it reduces search costs. Reduced search costs may facilitate out-sourcing and therefore specialization, further improving productivity. ICT affects productivity in the informal sector too, as the web-based technology reduces the costs of daily transactions for the self-employed (such as paying bills or checking bank accounts). The mobile phone may also reduce the number of missed opportunities for those self-employed. Surprisingly, the estimation of the impact of ICT on productivity growth is still subject to academic controversy. One of these studies estimates that the use of information technologies and the production of computers account for two-thirds of the one percentage point increase in productivity growth between the two halves of the last decade in the U.S.<sup>63</sup>

**4.9** ICT in LAC countries is significantly lower than in East Asia. El Salvador is among the lowest performers, with Costa Rica, Chile and Mexico among the top performers and Peru, Uruguay and Ecuador among the countries in the "middle" range. Recent data indicate that the current teledensity ratio for fixed line telephony is very low, with almost 10 lines per 100 people. Although this is counterbalanced by the increasing penetration of mobile telephony – at present there are more wireless than fixed line subscribers in the country – low fixed line penetration remains a hindrance to Internet development in El Salvador. Internet adoption is also slowed by the very low level of PC penetration among households and businesses: a mere 2.19 PCs per 100 inhabitants (according to ITU Statistics) cannot sustain growth of the Internet. The high cost of hardware and Internet service provision still undermines the capacity of citizens and entrepreneurs to absorb viable technology tools and services. Privatization and gradual liberalization of the telecommunication market have sustained the improvement of quality and decrease in cost of service in the recent past. The entrance of new operators in various segments of the market (fixed and wireless lines, Cable TV, Internet service provision) has also enhanced the range of services offered and the technological level of most of the state of the art infrastructure.

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<sup>63</sup> See Oliner, Stephen and Sichel, Daniel (2000). "The Resurgence of Growth in the Late 1990s: Is Information Technology the Story?". Federal Reserve Board, Washington, DC. Mimeo.

**Table 2: Import and capital goods penetration and royalty payments**

	Imports Goods & Services (% of GDP)	Capital Goods Imports (% of GDP)	Net FDI (% of GDP)	Royalty Payments (% of GDP)
<b>Latin America</b>	19.10	7.69	3.33	0.15
Argentina	11.42	4.16	2.72	0.16
Bolivia	25.09	9.88	10.81	0.06
Brazil	12.13	4.18	4.39	0.17
Chile	30.79	7.45	2.46	0.07
Colombia	20.42	4.31	1.62	0.07
Costa Rica	46.08	11.74	3.56	
Ecuador	30.80	4.58	4.28	0.40
El Salvador	42.71	6.90	3.75	0.19
Guatemala	27.88	8.74	1.84	
Honduras	56.37	15.35	3.44	0.22
Mexico	33.23	14.75	2.52	0.16
Nicaragua	81.17	18.79	7.53	
Panama	38.93	13.14	7.43	0.33
Peru	17.86	4.59	2.72	0.10
Uruguay	20.71	4.97	0.93	0.05
<b>East Asian “tigers”</b>	83.77	29.51	2.95*	0.47
Hong Kong, China	145.26	41.60	-20.40	
Korea, Rep.	42.20	10.75	0.74	0.47
Malaysia	104.36	49.95	4.94	0.47
Singapore	161.45	78.29	6.93	
<b>Natural resource abundant countries</b>	34.09	12.59	5.07	0.37
Canada	40.78	17.95	5.62	0.43
Finland	29.27	10.50	6.81	0.31
New Zealand	32.75	11.14	3.75	0.64
Norway	32.83	9.34	3.91	0.18
Sweden	37.83	10.67	8.91	0.50

Source: World Bank (2003).

**Table 3: ICT**

	Telephone sets	Main telephone lines in operation	Main lines per 100 inhabitants	Cellular subscribers per 100 inhabitants	Total telephone subscribers per 100 inhabitants	Total telephone subscribers	Cellular mobile telephone subscribers	Number of internet hosts	Estimate of Internet users per 100 inhabitants	Number of personal computers per 100 inhabitants
Argentina	4,622,360	8,107,982	22.38	19.26	41.64	15,082,921	6,974,939	465,359	11.32	8.28
Bolivia	304,668	563,941	6.76	10.46	17.22	1,436,617	872,676	1,522	3.24	2.28
Brazil	15,220,996	38,810,000	22.32	20.06	42.38	73,691,000	34,881,000	1,644,575	8.22	7.48
Chile	1,873,622	3,581,165	23.25	42.83	65.86	9,912,900	6,445,698	122,727	20.61	11.93
Colombia	5,696,480	7,766,000	17.94	10.62	28.56	12,363,000	4,597,000	57,419	4.58	4.93
Costa Rica	485,683	1,037,986	25.05	12.75	37.80	1,566,033	528,047	8,551	9.27	16.90
Cuba	761,068	574,415	5.11	0.08	5.19	582,994	8,579	878	1.07	1.96
Dominican Rep.	675,121	955,145	11.02	14.65	25.67	2,225,227	1,270,082	41,761	2.15	0.00
Ecuador	691,460	1,426,188	11.02	12.06	23.08	2,987,049	1,560,861	3,383	3.89	3.11
El Salvador	329,898	667,699	10.34	13.76	24.10	1,556,517	888,818	975	4.65	2.17
Guatemala	331,000	755,956	6.47	9.70	16.17	1,889,963	1,134,007	6,630	1.71	1.28
Haití	50,000	130,000	3.25	1.34	4.59	380,800	140,000	10	0.96	0.00
Honduras	192,698	322,497	4.80	4.86	9.67	649,005	326,508	408	2.98	1.19
Jamaica	487,000	532,100	20.47	24.43	44.90	1,167,100	635,000	1,472	3.85	5.00
Mexico	15,665,609	14,941,626	14.67	25.45	40.12	40,869,888	25,928,264	918,288	4.58	6.77
Nicaragua	50,459	171,632	3.20	4.47	7.66	411,559	239,927	2,194	1.68	2.79
Panamá	283,168	462,476	16.43	16.40	29.57	851,853	475,354	15,084	4.17	3.82
Paraguay	151,876	288,818	5.15	28.83	33.56	1,940,236	1,667,018	2,704	1.73	1.38
Peru	814,197	2,022,265	7.75	8.60	13.67	3,567,265	2,300,000	13,504	7.66	4.79
Trinidad and Tobago	335,116	325,054	24.98	27.81	52.78	686,965	361,911	6,872	10.60	7.95
Uruguay	668,407	950,866	28.29	15.47	43.76	1,470,857	519,991	70,892	11.90	11.01
Venezuela	2,735,000	2,841,771	12.20	26.35	37.28	9,305,332	6,489,907	22,614	5.11	5.21

Source: ITU

**4.10 ISO certification.** Standards are documented agreements containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics. Standards ensure that materials, products, processes and services are fit for their purpose. The importance of standardization includes facilitating the international exchange of goods and services, and cooperation in the spheres of intellectual, scientific, technological and economic activity. For developing countries ISO standards are an important source of technological know-how for economic development and improving their capability to export and compete in global markets. Conversely, the existence of non-harmonized standards for similar technologies in different countries or regions can contribute to so-called "technical barriers to trade." ISO provides different certifications according to the purposes of the technology. ISO 9001 is the most complete certification because it includes not only quality of production, installation and servicing, but also quality of design and development.

4.11 In El Salvador, ISO certification is in its early stages. A 1998 survey of innovative firms coordinated by the *Consejo Nacional de Ciencia y Tecnología (Conacyt)* reported that none of the enterprises were ISO certified, although several of them claimed to have the intention to apply soon.<sup>64</sup> In 2000, 19 firms had ISO certification, a level equivalent to Nicaragua and lower than Ecuador and Cuba. Those countries with lower entrepreneurial development have performed

<sup>64</sup> See Conacyt. 1998. "Estadísticas e Indicadores de Ciencia y Tecnología - El Salvador". San Salvador.

better than Salvadoran firms might be an indication of poor economic incentives and limited entrepreneurial background.

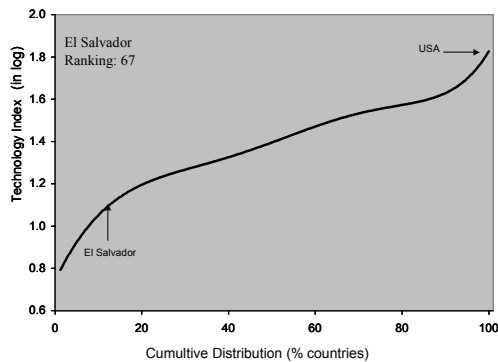
**Table 4: ISO Certification**

	Jan 93	Sept 93	Jun 94	Mar 95	Dec. 95	Dec. 96	Dec. 97	Dec. 98	Dec. 99	Dec. 00
Argentina	3	9	23	37	86	302	397	807	1388	2056
Bolivia								2	4	20
Brazil	19	113	384	548	923	1198	2068	3712	6257	6719
Chile			9	11	21	29	34	61	135	235
Colombia		6	23	51	49	71	170	213	388	614
Costa Rica		1	2	2	2		7	12	33	79
Cuba							7	12	33	79
Dominican Rep.				1	4	4	5	7	7	8
Ecuador					1	4	13	16	37	89
El Salvador			1	1	1	3	3	3	6	19
Guatemala						1	1	3	3	8
Honduras								2	3	4
Jamaica					2	12	10	12	12	20
Nicaragua								1	1	3
Panama						17	9	17	19	19
Paraguay						1	3	6	9	30
Peru				6	7	8	13	46	74	141
Uruguay				6	8	17	32	49	154	251
Venezuela	5	9	28	56	81	5	157	163	336	368

Source: *The ISO Survey of ISO 9000 and ISO 14000 Certificates.*

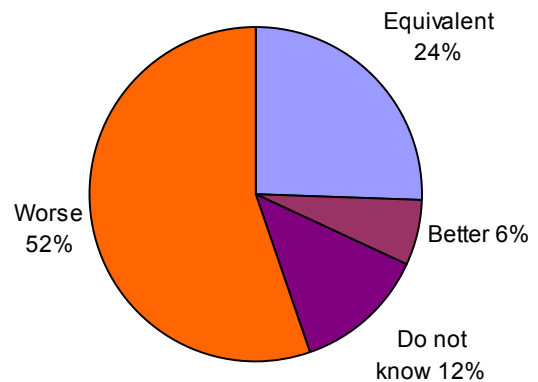
**Overall assessment.** Not surprisingly, aggregate measures of technological development reveal that El Salvador performs relatively worse than comparable countries. Technology used by innovative firms seems to be predominately outdated: Conacyt's report indicates that only five out of 17 innovative firms claimed the technology they apply to be equivalent or superior to that of their international competitors.

**Figure 2: Aggregate Technology Index**



Source: *World Economic Forum (2003).*

**Figure 3: Technology update in vision of firms - Comparing to Foreign Competitors**



Source: *Conacyt (1998).*

## Looking for possible causes: Inputs, Incentives and Linkages

### Inputs: Research and Development (R&D), labor, Information and finance

4.13 **R&D expenditures.** Research and development expenditures enable firms not only to generate new technologies but also to better absorb and adapt existing advanced technologies. Higher levels of R&D are a necessary condition for improved performance of innovation systems. The evidence suggests that private investments in research and development have in general been more productive than public investment. Therefore, larger ratios of private to public R&D may indicate a more efficient allocation of R&D resources. In El Salvador, both the level and the distribution of R&D between the private and the public sectors are not favorable. El Salvador's investments in R&D in 1998 were estimated at US\$ 9.65 million (of which 65 percent public), corresponding to 0.084 percent of GDP, lower than other Central American countries and among the lowest in the LAC region. The amount of R&D per worker (Table 5) is also lower than the LAC average, indicating that Salvadoran workers have access to less domestic R&D capital stock than those elsewhere. The rate of private to public R&D per worker – although consistent with other countries in the region – is far below that of Finland, Israel and Korea, countries with a better innovation performance.

**Table 5: R&D expenditures per worker**

	Private R&D per worker (1995 \$)	Public R&D per worker (1995 \$)	Public R&D /Private R&D
<b>Latin America</b>	13.6	33.7	2.48
Argentina	9.3	52.4	5.63
Brazil	19.9	41.8	2.10
Chile	16.6	37.2	2.24
Colombia	3.9	9.9	2.54
Costa Rica	2.1	23.8	11.33
Ecuador	3.0	6.7	2.23
El Salvador	5.7	5.5	0.96
Guatemala	6.2	9.6	1.55
Nicaragua	1.0	5.7	33.70
Peru	4.1	18.6	1.83
Uruguay	3.6	7.5	20.31
<b>East Asian "tigers"</b>	77.7	40.9	0.53
Korea	299.2	84.5	0.28
Philippines	2.7	4.8	1.78
Singapore	106.7	61.2	0.57
Thailand	4.6	13.0	2.83

Source: World Bank (2003).

4.14 **Basic vs. Experimental R&D.** Allocation among its possible uses (basic and applied research and development) also affects the productivity of R&D and thereby its impact on growth. For developing countries, investment in experimental development – toward improving goods that already exist – presents not only a lower rate of failure when compared to basic research but may also be considered part of the learning process through which knowledge is acquired by nations. In the LAC region the largest proportion of the investments in R&D is directed to basic research. El Salvador follows this trend, with roughly 60 percent. By contrast, the U.S. and Korea present the opposite balance, with at least 55 percent of total R&D allocated to experimental development. This is in part a result of a more profit-driven approach adopted by the private sector. It is interesting to note, however, that Cuba strikes a similar balance between



experimental development and basic research. Cuba's performance reflects a gradual change over the second half of the 1990's and might be indicating that even not-for profit R&D allocation may favor experimental development if a more output-driven innovation system is to be achieved.

**Table 6: Distribution of R&D Expenditure by Activity (in percentage)**

	Basic Research		Applied Research		Experimental Development	
	1995	2000	1995	2000	1995	2000
Argentina	28.6	28.0	48.1	44.8	23.3	27.2
Bolivia		49.0		39.0		12.0
Chile	58.6	55.3	36.5	31.6	6.7	13.1
Colombia	39.7	22.3	21.5	49.7	38.8	28.0
Ecuador		30.1		64.0		6.0
El Salvador		58.8		31.8		9.4
Mexico	35.9	23.3	33.1	47.7	31.1	29.1
Panama	51.6	47.6	24.2	45.9	24.1	6.5
Peru		38.3		48.3		13.4
Korea	12.5	12.6	25.7	24.3	62.5	63.1
Portugal	24.9	26.2	45.0	42.6	30.1	31.2
Spain	26.3	22.0	37.0	36.9	37.7	41.1
USA	15.8	18.3	20.8	22.9	61.8	61.1

Source: World Bank (2003).

4.15 **Private R&D.** Data on R&D activity by the business sector in El Salvador are particularly scarce. Preliminary information on the objectives of the research activity; its motivation and obstacles may be obtained from a 1999 survey of 17 innovative firms. These firms were drawn from a sample of 30 innovative firms provided to Conacyt by the *Asociacion Salvadoreña de Industriales (ASI)*. The sample is mainly composed of large domestic firms from the food/agribusiness, plastics and metal-mechanical industries. Results therefore should be interpreted with care, as generalizations for the entire private sector may not be always appropriate.

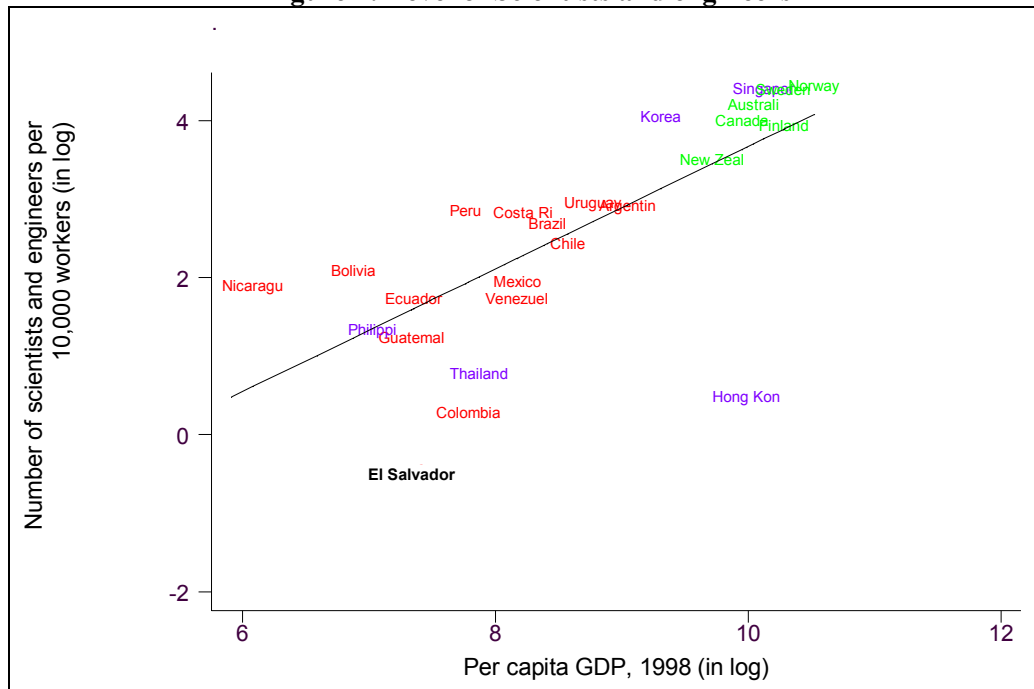
4.16 Innovation activity by the business sector is predominantly aimed at improving the quality of products (roughly 56 percent), while fewer firms are focused on developing new products (25 percent). Roughly half of the firms had a department specifically dedicated to quality control. Most of the firms (roughly 40 percent) reported a lack of adequate labor input as their main obstacle to improvement of innovation performance. However, a minority of the firms (31 percent) seemed to plan systematically for labor training. Few enterprises (11 percent) attributed relevance to difficulties in establishing appropriate cooperation agreements with research centers and universities and none of them gave relevance to access to information or technical assistance.

4.17 **Scientists, Engineers and Researchers in labor force.** The number of scientists and engineers is another important input to the domestic technology function. Most LAC countries have a supply of scientists and engineers consistent with their income levels. El Salvador, however, is an exception, showing the weakest performance among comparable countries (together with Venezuela and Colombia). One possible explanation is the migration of workers during the civil war.<sup>65</sup> Consistently, the number of researchers in the labor force is also the lowest in the region. El Salvador, however, presents a high percentage of students in science and

<sup>65</sup> By way of comparison, in Ireland, 25 percent of male emigrants with completed tertiary educations returned during the 1990's, mainly from California, benefiting the Irish software industry.

engineering as a function of gross tertiary enrolment levels. As tertiary enrolment in the country is consistent with per capita income, it seems plausible to suggest that the lack of scientists and engineers in the labor force is not caused by a low domestic supply.

**Figure 4: Level of Scientists and engineers**



Source: World Bank (2003).

4.18 The previous statement should be balanced against preliminary data on the supply of academic training in the corresponding fields. In 1988, roughly 88 percent of academic careers were in the fields of human and social sciences, economics and business administration, to the detriment of engineering and technology. Also, of the 12 PhD programs in the country, 11 were in the health sector and there were no-post graduate studies in engineering.

4.19 **Labor training.** Training may be seen as efforts from firms and workers to customize skills acquired elsewhere to the specific technology in use. Skills may be used not only to operate acquired technology but also for further adaptation and improvement. Training therefore is part of the necessary conditions to technology adoption and adaptation. Preliminary evidence suggests that El Salvador performs poorly in terms of labor training. The topic is discussed in more detail in the human capital section.

4.20 **Telecenters.** For the last decade, governments and non-profit organizations have experimented with telecenters as a means of extending access to computers, the Internet and other ICT services. In El Salvador, a similar recent experiment is taking place with the *Infocentros*. The *Infocentros* follow the franchising model.<sup>66</sup> The public budget (the only source of financing for the Association) allocated for this activity was US\$ 10 million, mainly coming from the privatization of the state-owned telecom operator ANTEL. The main mission of the *Infocentros* is

<sup>66</sup> The Association *Infocentros* is a not for profit institution, managed by board composed by representatives of the public and private sector, academia and civil society. The central association provides for standards (technology, quality and service) and services (technical assistance, supervision and support). Each *Infocentro* is a for-profit entity.

to facilitate access to ICT infrastructure, especially in rural areas and to contribute to the development of relevant local digital content.<sup>67</sup> In October 2000, the first five *Infocentros* were installed. The network gradually expanded to 25 telecenters by June 2001 and, at present, there are 40 *Infocentros* spread across the country. Future expansion is envisioned to reach at least 100 *Infocentros*. The sustainability of this model has been undermined recently by telecenters that did not manage to become economically viable entities. Part of the problem lies in the capacity to attract and retain users. The lack of electronic services and applications in the country may also have contributed to the small number of users.<sup>68</sup> Currently there is an ongoing discussion in El Salvador on whether the public sector should step in to support the operation of the *Infocentros*.

4.21 **Finance.** Global experience of innovative firms across sectors has shown how financing innovation has relied on unconventional financial tools. Experience from other countries, both OECD and transitioning economies, has shown how venture capital is pivotal for innovation. Typically, the best source of financing for early-stage/high-growth firms (the most innovative) is often offered by non-bank investors, who typically provide more than pure capital investment. These investors usually engage in more activities than just financing; they provide guidance on a range of business issues - such as product development, marketing, financial management, and general operations – hence becoming value-added financiers. Therefore, venture capital investment has become a vital source of financing for innovation.

4.22 Venture capital investments seem to be still in their infancy in El Salvador. There seems to be a missing link between local companies and international investors, who have limited their interventions in El Salvador to large operations and acquisitions (such as in the *maquila* and telecommunications sectors) without seeking opportunities in small firms. In fact, the whole venture capital scenario appears to be fragmented and unclear, mainly due to the lack of awareness and understanding from the management of start-up and early stage companies. There is a general reluctance to allow outsiders to participate in the company as owners. Moreover, the lack of exit possibilities due to the small size of the capital market and the resulting almost total absence of IPOs undermines the ability of venture capitalists to operate in the country. Because of the lack of structured venture capital funds there are few opportunities for innovative entrepreneurs to seek financing outside of the typical financial infrastructure represented by commercial banks. The most common examples of small equity financing are represented by some “angel” investors (experienced entrepreneurs, family and friends who may provide seed funds). Overall, equity financing seems to be undermined by the conservative approach of investors, reluctant to undertake risks, and entrepreneurs, reluctant to dilute their control over the firm. In many transitioning economies equity financing has taken off, thanks to the increase in international business relationships with investors from developed economies.

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<sup>67</sup> To strengthen their content creation capacity the *Infocentros* have recently partnered with the Country Development Gateway – the local spin-off of the Development Gateway Foundation that supports ICT adoption, use and local content creation in developing and transitioning countries. Each *Infocentro* is equipped with an average of 20 state of the art personal computers with Internet connection. It provides access to the World Wide Web, to basic ICT services, (e-mail, word processing, spreadsheets) and to more elaborated software applications (small-business tools). In addition, each *Infocentro* provides relevant technology and Internet training, computer skill development courses and more focused training according to the needs of local communities.

<sup>68</sup> In fact, very few e-Government applications are available in El Salvador, limited to basic information dissemination systems (portals of the public administration) and only one more sophisticated application for e-Customs, through which exporting firms can access vital information related to export procedures, process the paper-work for exports and pay custom duties electronically.

## Economic Incentives: IPR, Tax Breaks and Market Discipline

4.23 **Intellectual Property Rights Regime (IPR).** By creating property rights for innovations, IPRs are essential to encouraging both research and development and technology transfer. Empirical evidence has shown that IPRs in the host country often affect the amount, cost and quality of technology available for transfer. However, it is unclear whether better IPR enforcement leads to more technology transfer, as the benefit from the use of last-available technology might be balanced against lower leakage per unit of technology. A better IPR regime may however facilitate the acquisition of state-of-the-art technology.

4.24 Intellectual Property Rights in El Salvador are enforced by the *Departamento de Propiedad Intelectual del Centro Nacional de Registro (CNR)*, which operates under the aegis of the Ministry of Economy. The law of Promotion and Protection of Intellectual Property, enacted in 1993, contains international standards for patent protection and is generally aligned to principles established by the WTO agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS).<sup>69</sup> A weaker performance however is found in the enforcement of legislation. For example, a survey conducted for the Business Software Alliance and the Information Industry Association in 2000 found that El Salvador was among the world's top ten countries in terms of software piracy rates between 1994 and 1999 (third in the LAC region after Bolivia and Paraguay).

4.25 In recent years, El Salvador has made significant progress securing efficient and effective registration, as for example, the program to digitize most of CNR operational routines. The patent registry, employing 50 people, seems to be properly staffed and equipped to carry out its main function of registration. The registration fee for a Patent is US\$57, below international standard costs and can take up to six months, depending on the sophistication of the patent and the processes needed for international recognition. Upon request, the Registry offers advisory services to large companies, small and medium enterprises and individuals upon request. The Registry's services offer not only a complete introduction to the general concepts of intellectual property rights, but also customized advice. The IP Registry also undertakes awareness campaigns to raise understanding in academia and the private sector of the importance and value of intellectual property rights. However, the Patent Registry does not have either the mandate or the capacity for appeal and opposition to patent registration. In other countries, a Division of Appeal, to which IPR holders (or interested parties) can refer for screening of appeals and opposition legal counsel and arbitration in case of disputes, is a common feature of patent registry offices.

4.26 **Incentives for R&D.** The fiscal regime for R&D does not stimulate investments in innovation from private enterprises. There are no specific accounting standards for R&D expenditures. There are no opportunities for companies to capitalize their costs of R&D as an intangible asset and amortize these costs over future years. In addition to the lack of depreciation allowances, there are no fiscal incentives for R&D, neither on a volume nor on an incremental basis – in the former a tax relief is granted in proportion to the total amount of R&D expenditure a company incurs, in the latter, the tax relief is limited to the amount by which a company

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<sup>69</sup> El Salvador is among the group of countries granted a transition period to implement relevant provisions of the WTO TRIPS agreement that lasted until the end of 2001. Some observers argue that there are still areas of improvement to be addressed, such as the limitation of 15 years on patent protection from the date of application for pharmaceutical products and the lack of protection of products in the development pipeline. See for example USTR, El Salvador Country Profile, 2002.

increases its R&D expenditure compared to prior years. These are common incentives in developing and developed countries, but rather rare in Latin America. The use of tax relieves should be seen with care in El Salvador as the country already presents a more business friendly tax regime when compared to other countries in the region.

**Table 7: Fiscal Incentives Regimes for R&D as of 2000**

	Current R&D Depreciation Method	Capital R&D Depreciation Method	Carry-Forward Provision	Tax Credit Rate	Base for Tax Credit	B-Index 1995
Australia	150%	3 years	3-10 years	None	-	0.893
Brazil	100%	Like invest.	4 years	None	-	1.030
India	100%	100%	N/A	None	-	N/A
Ireland	100%	100%	N/A	> 100%	N/A	1.000
Korea	100%	20%	N/A	10-25%	Incremental	0.893
Mexico	100%	3 years	N/A	None	-	1.015
Spain	Capitalize	100%	3-5 years	15-30%	Incremental	0.658
Sweden	100%	30%	N/A	None	-	1.015
Taiwan (China)	100%	Like invest.	4 years	15-20%	Volume	N/A
USA	100%	3 years	3-15 years	20%	Incremental	0.893
Peru	-	-	-	None	-	N/A
Argentina	-	-	-	None	-	N/A
Chile	-	-	-	None	-	N/A
Colombia	-	-	-	None	-	N/A
Costa Rica	-	-	-	None	-	N/A

Source: World Bank (2003).

**4.27 Clearly defining property rights.** The absence of clarity on the ownership of the innovation carried out with public funds provides another way to view the lack of incentives for innovation. The “employee agreement”<sup>70</sup> between the public university and the researcher (by which the result of scientific research is owned by the employer and not the scientist), does not represent an incentive for researchers in public university to innovate. The current regime may not provide incentives to carry out research and development for researchers in the university system. A more flexible regime for the ownership of innovation carried out with public funds may stimulate research and development activities from researchers and professors in public universities. A system of sharing the property right between university and researchers - for instance a 75/25 percent model – could encourage professors to undertake more commercially focused and oriented research in public laboratories. Under the current regime, the main motivation for R&D among researchers is the mere professional recognition of research publications. More importantly, by statute, a public university cannot be a service provider for the private sector for R&D, jeopardizing any sort of direct cooperation between university and enterprises.

**4.28** The ownership of innovation resulting from R&D activities of private universities is regulated by each organization’s statute or by specific contracts. At present, there are discussions to draft an explicit ownership model for innovation in the Salvadoran university system in. The issue remains at the discussion level.

<sup>70</sup> The employee agreement is crystallized in the national legislation in the arts. 118 and 199 of the Ley de Fomento y Protección de la Propiedad Intelectual.

4.29 **Market Discipline.** The credible threat of failure and the possibility to profit from productive investment, as provided by market discipline, is a key determinant of innovation performance. Firms in LAC have not faced enough competitive pressures until the 1990's. El Salvador was no exception. During the 1990's however, an impressive set of macro and microeconomic reforms took place, favoring a more open and competitive business environment in the country. Trade liberalization was significant but competitive gains are still to be obtained from further integration to the world economy.

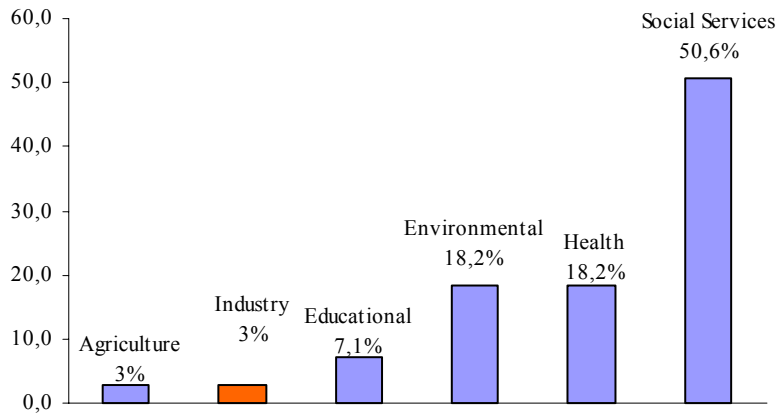
Linkages among Universities, Research Centers and the Business sector: coordination and Networks

4.30 **Coordination.** *The Consejo Nacional de Ciencia y Tecnología* (Conacyt), created in 1992 under the Ministry of Economy, is the entity responsible for the coordination and implementation of S&T policy in El Salvador. Conacyt is responsible for establishing national standards in line with international practice. In 1998, its budget corresponded roughly to US\$ 0.5 million. It is reported to be poorly equipped and understaffed. Most recently the institution has been more active in the role of defining technical standards and quality norms.

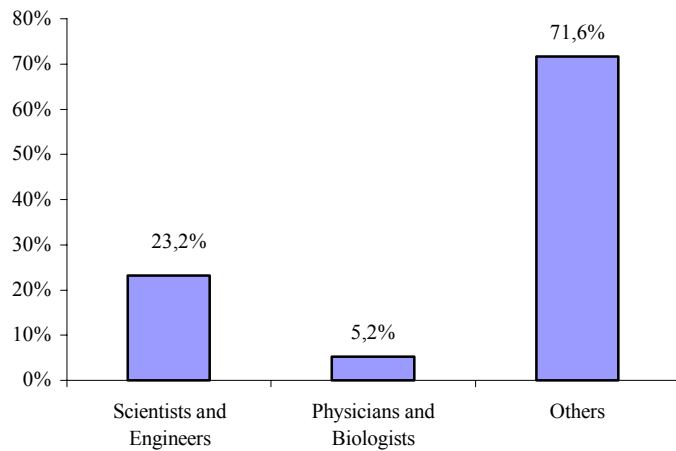
4.31 **Universities and Technological Institutes.** In 1998, the government funded at least five Technological Institutes – *Fedpade-ITCHA*, *Fepade-ITCA*; *Fepade – Instituto Tecnológico de Zacatecoluca*; the *Instituto Salvadoreño de Formación Profesional* (Insaforp) and the *Escuela Nacional de Agricultura* – and one public university, the *Universidad de El Salvador* (UES), with a total expenditure of US\$ 35 million. UES and Insaforp were the major beneficiaries, accounting roughly for 90 percent of allocated funds. In 1998, there were approximately 29 private universities in El Salvador, which invested US\$1.62 million in R&D in 1998. Less than 10 percent of the research projects had agricultural or industrial development of agriculture as their main target. Most of the projects focused on social or health improvements (50 and 19 percent respectively). Less than five percent were classified as development projects, while almost 40 percent could be defined as basic research. Almost all projects (97 percent) were funded by the private universities. The Government funded two projects and the business sector only one.

**Figure 5: University and technologic development**

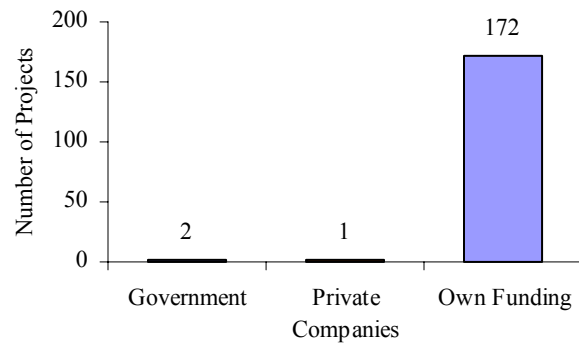
7.a - Objective of the Projects developed by Universities



7.b – Academic courses breakdown



7.c – Funding to projects developed by universities



Source: Conacyt (1998).

4.32 **Public research centers.** The Government owns at least three research centers that provide basic technological services to the business sector. The *Centro Nacional de Tecnología Agropecuaria y Forestal* (CENTA) is the most important with a budget of roughly US\$ 7.89 million in 1998, more than 75 percent of the total amount of resources allocated to technology services. CENTA's research focus is on basic grains, coffee, sugar cane and non-traditional agriculture (such as pineapple). The *Centro de Desarrollo Pesquero* and *Investigaciones Geotécnicas* are the other two research centers, but these are rather small institutions. Agricultural development followed by environmental control was the two major objectives of publicly funded projects, accounting for more than 50 percent. On the other hand, industrial development was the aim of less than 15 percent of publicly funded projects. Most researchers were trained in the agricultural or biological sciences and none of them specialized in engineering.

4.33 **Metrology and quality accreditation centers.** The responsible organization for setting national standards has the challenging function of designing standards that strike a balance between private sector needs and safety concerns. Standards should be set to establish appropriate protection of health, safety and environment without constituting a burden on the private sector. In addition, it is essential to follow international practice to align national production systems to internationally recognized standards. Aligning national standards to international practice avoids duplication of effort for both importers and exporters.

4.34 **Facilities and methodologies for testing and certification** should be accredited following standard procedures and using instruments and equipment of appropriate accuracy. By certifying their production and management practices, firms certify that their product, service, system, process, or material conforms to specific requirements and the enterprise meets the applicable standards. In El Salvador, there are many laboratories in the private sector, and in the universities and government agencies that provide testing and accreditation services.<sup>71</sup> At present, however, there are no ISO certification companies and agencies in the country, and the few ISO certified companies have to rely on external experts to gain their ISO certification. The lack of domestic expertise and capacity exacerbates the situation, since increased cost and time for obtaining certification represent an additional constraint for local companies. Reportedly<sup>72</sup>, some small firms have been using or requesting grants from the Fondo de Asistencia Técnica (FAT) to access consulting and advisory services related to quality and standards.

4.35 **Networks.** Close interaction of government agencies, universities and the business sector has been critical to technological performance in advanced economies. Networks facilitate research cooperation and technology diffusion. Cooperation increases the net expected return of R&D activities. When a country's resources for research are largely allocated to public

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<sup>71</sup> Private laboratories: *Laboratorio Especializado en Control de Calidad* LECC, specialized in food, water and drugs quality control (certified with ISO IEC 17025); *Laboratorio* FUSADES, specialized in food, water and drugs quality control (certified with ISO IEC 17025 for water quality control); *Laboratorio* ESPINSA, (certified with ISO IEC 17025 for water quality control); *Laboratorio* ESMI, specialized in food quality control (certified with ISO IEC 17025 for microbiology); *Laboratorio* de OIRSA, specialized in alimentos, aguas y medicamentos (certified with ISO IEC 17025 for water quality control) *Laboratorio IQB*, specialized in drug quality control (under process of certification with ISO IEC 17025 for drugs); *Laboratorio de Síntesis Química*, specialized in food and drugs (certified with ISO IEC 17025 in drugs quality control). Public laboratories: *Laboratorio* de ANDA; *Laboratorio* de Ministerio de Salud and *Laboratorio* de CENTA. University Laboratories: UCA's Lab, specialized in food, water and drugs quality control (certified with ISO IEC 17025 for quality control in honey production). Universidad Nacional, investigación y desarrollo/Universidad Alberto Masferres(USAM).

<sup>72</sup> Primary research and meetings with the organization managing the Fondo de Asistencia Técnica (FAT), CONAMYPE (SME development agency), have revealed such a trend.



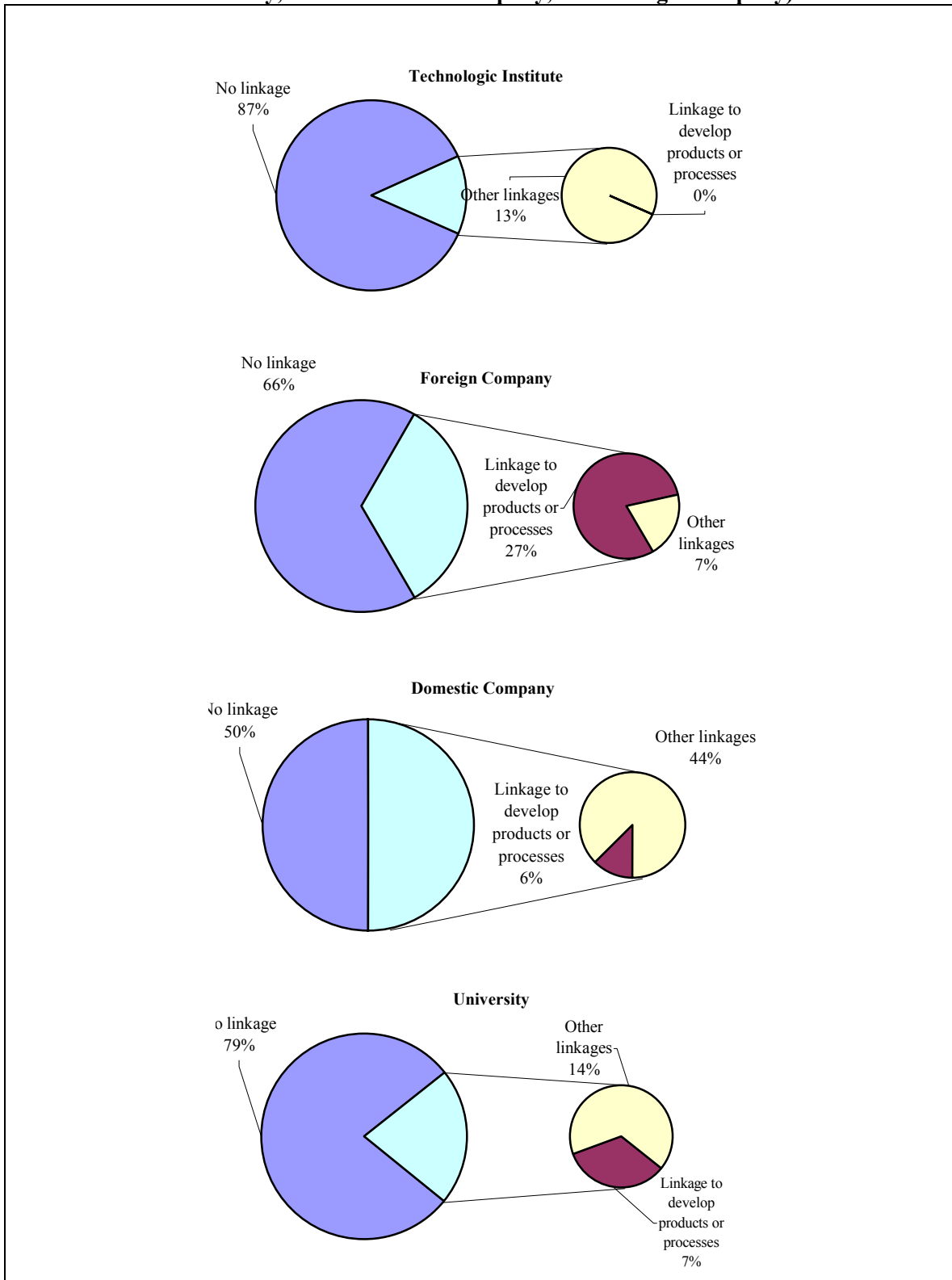
institutions, access by the private sector may be a key element for the effective impact of R&D in productivity growth. For example, the strength and dynamism of the *Universidad de Costa Rica* and of the *Instituto Tecnológico de Costa Rica*,<sup>73</sup> were among the driving forces behind the country's relative success in the software industry.

4.36 Linkages among different institutions in the Salvadoran innovation system are weak, as indicated by a survey of 17 innovative firms performed by Conacyt in 1999. Only half of the innovative firms had some form of alliance with other local firms and none of them was aimed at the development of new products. Rather, emphasis was in the development of new markets, probably as joint-ventures to exploit export opportunities. Alliances between local and foreign firms seemed to be more frequent: roughly 33 percent of the firms reported to have engaged in some kind of cooperation, most of it targeted to the development of new products and processes. Surprisingly, no technological cooperation was established between the local firms and the technological institutes (the only two firms that reported positively on this topic were aimed at developing new markets for their products). Similarly, only two out of fourteen innovative firms reported to have worked with universities or technology centers and the main purpose of the reported cooperation was training of labor force rather than strict technological activities. These results contrast with countries that have recently improved technological performance, such as Finland, or even with countries in the LAC region with better technological indicators such as Chile. In Finland, 47 percent of innovative firms reported cooperating with higher education institutes and 38 percent of them cooperated with public laboratories in 2001. In Chile, 25 percent of the innovative firms reported to have signed contracts with universities.

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<sup>73</sup> Rodriguez-Clare, Andres. 2003. "Innovation and Technology Adoption in Central America." World Bank, Washington, D. C. Processed.

**Figure 6: Linkage between Salvadoran Companies and other entities (Technology Institute, University, other Domestic Company, and Foreign Company)**



Source: Conacyt (1998).

4.37 Part of the explanation for the low cooperatoin among the business sector, the universities and the public research institutes is the perceived low quality of these institutions in El Salvador. In a score from 1 (“non-existent”) to 7 (“the best in their fields”), scientific research institutions in El Salvador obtained a score of 2.7 from local businessmen, which ranks them among the four worst in an eighty-country survey (after Haiti, Paraguay and Honduras).<sup>74</sup>

4.38 **Clusters.** Geographic concentration of interconnected firms and institutions in a specific area of economic activity (clusters) may represent the outcome of economies of agglomeration and technological externalities (spill-overs). Clusters are mainly important because externalities of innovation are usually limited to a specific geographic area and sector.<sup>75</sup> Backward and forward linkages are also important, perhaps not for the multiplier effect, but mainly for the permanent buyer-supplier interaction that may lead to important incremental improvements in products and processes. Very often, ideas for an innovation come from outside the firm that turns it into a viable commercial product.<sup>76</sup> For instance, the Finnish pulp-and-paper cluster benefited from demanding domestic consumers and from equipment manufacturers that are world-class companies.

4.39 In El Salvador, client requirements were described as the most important incentive to innovate in 1998.<sup>77</sup> Nevethless, cluster relations, client requirements and local supply are underdeveloped. In a score from 1 (“unsophisticated and make choice based on the lowest price”) to 7 (“knowlegdeable and buy based on superior performance”), buyer sophistication in El Salvador was graded 2.7 from local businessman, which ranks it among the tenth worst in an eighty-country survey. The enforcement of standards of product and service quality is also among the 10th worst and the availability of local suppliers is also relatively low.<sup>78</sup> As a result, the state of cluster development in El Salvador is the fourth worst in the survey. This is an apparent contradiction, given the existence of a vibrant maquila sector; a noticeable pharmaceuticals industry as well as strong coffee and sugar industries. Yet, the low levels of ISO certification and quality management standards is also a mirror of the low integration of local companies in the international markets and the downside of the lack of full integration between the international investors of the *maquila* sector and the low level of engagement of local companies in their production value chain.

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<sup>74</sup> The Global Competitiveness Report 2002-03.

<sup>75</sup> The presence in a cluster enable firms to better identify the opportunity and the need for innovation. But he success of clusters also depend on the availability of key inputs that facilitate the speed transformation of ideas into commercial products. Saxenian (1994) contrasts Silicon-Valley with Route 128 area near Boston performances to conclude that better performance of the former was driven by better openness and interchange of ideas by engineers and managers; faster job-change; availability of start-up money; closer links between universities and corporations; among others. Saxenian, AnnaLee. *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge Mass.: Harvard University Press, 1994.

<sup>76</sup> See von Hippel (1988). Von Hippel, Eric. *The Sources of Innovation*. Oxford: Oxford University Press, 1988.

<sup>77</sup> Conacyt. 1998. "Estadísticas e Indicadores de Ciencia y Tecnología - El Salvador". San Salvador. –pag 73: Question 5: “Factores que han motivado las actividades de innovacion y desarrollo tecnologico de la empresa.”

<sup>78</sup> World Economic Forum. 2003. Global Competitiveness Report 2002-03. Harvard University, Center for International Development. Geneva: World Economic Forum.

4.40 **The pharmaceutical industry.** The pharmaceutical (and chemical) industry accounted for almost 9 percent of the value of manufacturing production in 2000, employing 0.3 per cent of the labor force. Roughly 97 percent of the employees receive more than minimum wage, as a result of above-average qualification. In 2000, drug exports totaled US\$53 million, the third largest after *maquila* and *coffee* and greater than clothing exports. In 1995, Bayer chose El Salvador to host its Central American operation.<sup>79</sup> To become an innovative cluster, however, the pharmaceuticals industry faces important obstacles.

4.41 The pharmaceutical industry in El Salvador began during the 1930s when its geographical position inhibited imports. El Salvador's pharmaceuticals industry developed by producing *asociaciones* (drugs based on combinations of existing chemical components) that are sold over-the-counter. As a result, El Salvador's pharmaceutical companies compete mostly through pricing: only 8 percent of the domestic products are priced higher than their international competitors. R&D activities on new drugs are therefore negligible. Although 80 percent of the companies claim to have their own quality control laboratories, reputation problems persist: a large share of Salvadorans believes that their national products lack quality. Moreover, the Pan American Office of Health (OPS) has expressed concerns regarding the poor quality of medicines in El Salvador. Finally, other pharmaceutical companies, such as Procter and Gamble, Roche, and Abbott Laboratories have started operations in Costa Rica.

4.42 **The *maquila* sector.** Over the last decade, El Salvador experienced exceptional economic growth and expansion of exports – in particular those from Export Producing Zones (EPZs) – played a major role. Yearly aggregate exports almost tripled during the decade and the ratio of exports to GDP also grew significantly (see Chapter V). In less than five years, net exports of the EPZs almost tripled and the EPZs' share of exports, mostly *maquila*, passed from 41 percent to 54 percent. This expansion of exports was not concentrated in traditional goods (such as coffee), which reduced their share in total exports. Despite these positive results, however, the *maquila* sector should not be considered in a role of a technology cluster.<sup>80</sup>

4.43 In general, EPZs generate little technology and/or knowledge transfer and provide little investment in training. And they do not promote value chain integration with local companies outside of the EPZs. As a result, the typical long-term and indirect advantages associated with foreign direct investment are not nurtured and exploited. As a result, it would be important that a more programmatic approach to FDI is designed to take full advantage of foreign capital and technology.

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<sup>79</sup> Bayer entered the country by acquiring Bonima, a local operating company. Recently, Bayer announced the expansion of its production facilities with an investment of US\$ 20 million. Salvadoran Bayer plant is the regional headquarters for its pharmaceutical division in Central America, and one of the most modern production facilities in the Western Hemisphere.

<sup>80</sup> Net exports of EPZs are estimated as the difference between exports and imports of the EPZ as a share of the difference of total exports and imports of EPZs.

**Box 1--Trade and the Dutch Disease: Does sector specialization matter?**

Recent economic literature has emphasized the possible impacts of industry structure and productivity and thereby suggesting that sector specialization matters in terms of growth.<sup>81</sup> This issue, raised in different moments in the past and by different economist from countries with different stages of development –from Lutz in the XIX century Germany to Prebisch from Argentina in the beginning of the XX century– may also be of concern in El Salvador during the first half of last decade. As discussed in other section of this document, during this period, “Dutch Disease” phenomena distorted trade specialization towards non-tradable sectors (services).

Although the phenomena of the “Dutch Disease” may affect price stabilization through higher interest rates, its indirect impact through trade specialization is not necessarily negative. This is so because there is nothing intrinsically wrong with a services industries accounting for a larger share of national product, which is indeed the tendency in advanced economies. In fact, Van Ark, Inklaar, and McGuckin (2002) demonstrate that most of the productivity growth of the U.S. economy during 1995-2000 may be attributed to the service industries mainly – although not only -- derived from the use of ICT technologies (see Table below).<sup>82</sup> The authors also argue that all of the productivity growth differential between the U.S. and Europe in this period was generated in three sectors – retail, wholesale and security trading. Yet, technology gains in these sectors were generated not only by ICT use but also by economies of scale associated to newly built “big box” stores.

Specialization in the service sector may not bring the expected productivity gains when regulation creates obstacles to the development of new retail organization (for example, land use regulation that reduces the availability of sites and restrictive labor rules that limits the organization of the working space). These seem not to be particularly relevant to El Salvador. Another concern is that service specialization may include an increase in the informal sector. Informality is not caused by specialization itself but rather by excessive regulation that increases the costs of formality. Informality tends to imply less access to credit and thereby to ICT, on the one hand, and, on the other, it limits firm size and therefore the economies of size the firm obtains. El Salvador’s share of the informal sector is estimated to be among the 20 percent largest in a 80-country survey, larger than the fractions in Argentina, Brazil and India.

**Labor productivity by industry group: USA-EU 1990-2000**

	<i>United States</i>		<i>European Union</i>	
	1990-95	1995-2000	1990-95	1995-2000
Total economy	1.1	2.2	2.4	1.5
ICT-producing Industries	6.1	6.5	6.0	8.5
ICT-Using Industries	1.4	4.2	1.9	1.3
Non-ICT-Industries	0.4	0.4	2.4	1.0

Source : Van Ark, Inklaar, and McGuckin (2002)

<sup>81</sup> Nordhaus (2001), for example, estimates that 1 percentage point of the 3.2 percent increase in labor productivity in the business sector in the US over the 90’s was driven by productivity in ICT industries See Nordhaus, W, 2001. “Productivity Growth and the New Economy. National Bureau of Economic Research Working Paper 8096, January.

<sup>82</sup> Van Ark, B., R. Inklaar, and R. H. Mc Guckin. 2002. “ Changing Gear: Productivity, ICT and Service Industries: Europe and the United States.” Paper presented to Brookings Workshop on Services Industry Productivity. Washington, D.C., May 17.

## Evaluating Policy Options

4.44 Based on the assessment of El Salvador's standing in terms of its NIS, this section will discuss the main objectives of the innovation policy, its corresponding measures and a possible focus on specific sectors.

4.45 **Rationale and general objectives.** Knowledge in general and innovation in particular are not perfectly **appropriable** and generate positive externalities. Non-**appropriability** and externalities create a divergence between social and private returns. The reason for private investment in knowledge and innovation tends to be less than the social optimum. High risk, long term maturation and indivisibilities also reduce the incentives for private investment in knowledge and innovation. Such market failures are generally accepted as economic justification for the development of innovation policies. In defining technology policies, at least three stylized strategic objectives may be considered: (i) creating the conditions for firms to benefit fully from the existing world stock of knowledge (absorption); (2) generating the technological infrastructure that enables firms to adapt the available knowledge to particular needs (adaptation); and (3) generating new products and processes (creation). These strategies are not mutually exclusive. They may be combined according to the specific needs of the country. Each strategy, however, implies different economic costs and benefits. In defining an innovation policy, it is crucial to identify the balance between the three options that best fits the economic and technological conditions of the country and is more likely to provide the highest pay-off.

4.46 Essentially, the critical element for developing countries is the ability to take advantage of the stock of knowledge abroad and apply it domestically in their initial areas of comparative advantage and then gradually create new ones.<sup>83</sup> The Costa Rica and Chile cases are good illustrations of successful innovation strategies. Both emphasized a strategy to quickly absorb international knowledge building on existing comparative advantages, which thereby implied focusing on certain clusters. They differ, however, in the main instruments used to absorb technology and in the relevance of adaptation. These experiences are further discussed in Box 2.

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<sup>83</sup> Stern, Porter, and Furman (2002); Romer (1990); Nelson (1993); Wright (1999). Furman, Jeffrey L., Michael Porter, and Scott Stern. 2002. "The Determinants of National Innovative Capacity." *Research* 31: 899-933. Romer, Paul M. 1990. "Human Capital and Growth: Theory and Evidence." *Carnegie-Rochester Conference Series in Public Policy* 32(0): 251-86. Nelson, Richard R., 1993. "National Innovation Systems: A Comparative Analysis". New York: Oxford University Press. Wright, Gavin. 1999. "Can a Nation Learn? American Technology as a Network Phenomenon". NBER Conference Report series. Chicago: University of Chicago Press.

## Box 2—The Costa Rican and Chilean experience.

**The Costa Rican experience.** Intel's decision to invest in Costa Rica is the best indication of technological development in Costa Rica. Intel is not an isolated case and other technology-intensive firms (such as Procter and Gamble) also started operations in the country. Technology-intensive FDI in Costa Rica was, in part, the outcome of a set of financial and non-financial incentives to develop export-processing zones (EPZs), which did not differ much from the incentives offered by other countries in the region, including El Salvador. Location – particularly the proximity to the U.S.) has also benefited the country. Yet, a key element for successfully attracting technology-intensive FDI has been the quality of labor force and technological institutions, variables in which the country performed relatively better than its closest competitor. A survey of the labor market conditions faced by high-tech firms organized by PROCOMER in 2000 was fairly favorable, as managers, engineers, technicians, skilled and unskilled workers receive high marks in terms of productivity, speed of learning, and willingness to work variable shifts. The survey also suggests that although higher compared to neighboring countries labor costs in Costa Rica were more than compensated by higher productivity. Also, the quality of the two main educational institutions, the University of Costa Rica and the Costa Rican Institute of Technology, received good evaluations.

**The Chilean experience.** Chile's fruit export success has been strongly related to its innovation policy, first in adapting technology available in other regions -- such as in California -- to the specific local climate and soil conditions and, second to upgrading the quality of the product, or simply creating brand new goods. Chile's natural comparative advantage for certain agricultural products is well known. Yet, its capacity to reform innovation policy to benefit fully from the world stock of knowledge and efficiently use human, financial and public resources is an example of how innovation policy can help to create new areas of comparative advantage. R&D policies were key for the emergence of the fruit sector in Chile. Exports of the fruit sector grew at a rate of 20 percent annually in the first 20 years after the 1974 reforms. The amount of land dedicated to commercial production nearly tripled and fruit production quadrupled. Several technological institutions played important roles in this process. For example, in the early 1960s, the *Corporación de Fomento* (CORFO) provided technical and economic assistance.<sup>84</sup> In 1965 a ten-year program for cooperation with the University of California and *Universidad de Chile* was established to permit technical cooperation and improve graduate training, which helped the development of a first-rate faculty in fruit-related sciences in the *Universidad de Chile*. The National Institute of Agricultural Research (INIA), established in 1964, paid relatively high salaries and attracted skilled researchers and initiated a fruit research program fruit development.<sup>85</sup> Yet, reforms in the technology policy had a broader scope. Starting on 1975, non- public funds for research were developed. Also, several institutions were created to promote private sector participation. Competition principles were introduced in research and development together with requirements to use either collaborative funding or research (or both) originating in the private sector. Support of public institutions was for the most part open to rivalry across regions and between researchers in any economic sector. For university-based research, a 1989 law introduced tax incentives for research donations to institutions of higher education. The implementation of the development fund FONDEF in support of R&D contributed to a doubling of private spending to about 20 percent of total farm sector research expenditures over the last decade. The nature of funding for the largest agricultural research institution, INIA, also changed: prior to the reforms, INIA relied on budgetary sources for 90 percent of its expenses while by 1985, only 40 percent was publicly provided (40 percent came from sales and 20 percent from grants, loans, and other non-government sources).

4.47 **Where the country stands.** Previous sections suggest the following conclusions about the evaluation of NIS in El Salvador:

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<sup>84</sup> Such as surveying existing fruit orchards, analysis of potential demand in foreign markets, elaboration of production goals, introduction and screening of new varieties, establishment of nurseries to propagate disease-free plants, construction of cold storage facilities at strategic locations to promote post harvest care, phytosanitary inspection of exported fruit, establishment of favorable credit lines and working capital and "drawback" payments for fruit exports.

<sup>85</sup> See Jarvis, Lovell S., 1992. "Cambios en los roles de los sectores publico e privado en el desarrollo tecnologico: lecciones a partir del sector fruticola chileno". Colección Estudios CIEPLAN 36: 5-39.

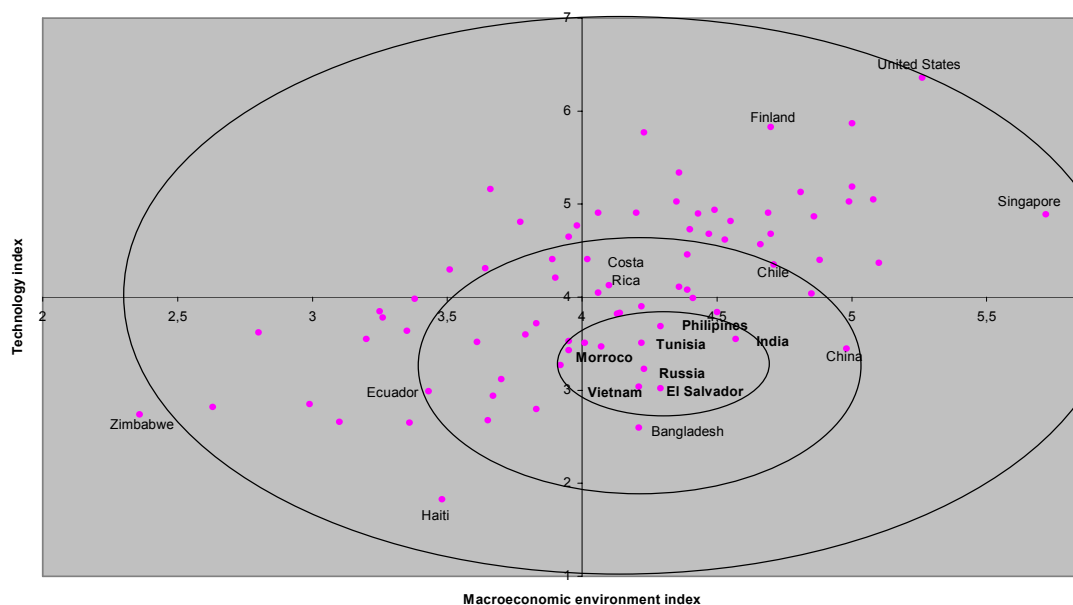
- El Salvador is not well connected to the world knowledge stock, and private investments in R&D are significantly low
- Government commitment to fostering innovation (either in terms of direct incentives or in terms of quality of research institutions) is relatively low
- Collaboration among universities and private firms is not significant and clusters are relatively underdeveloped
- Market discipline for product improvement is relatively weak.

4.48 Interesting insights can also be gleaned by using the technology and macroeconomic indexes calculated by the Global Competitiveness Report (2002-2003) to benchmark the development of El Salvador's NIS against the state of its macroeconomic environment (a success during the 1990's). It is not surprising that most of the countries are located in the first or third quadrants of the graph – suggesting that they tend to perform consistently in both the macroeconomic and technology variables (see Figure 7). Very few countries are located in the third quadrant, suggesting the primacy of the macroeconomic environment over technological issues. El Salvador is located in the second quadrant, indicating that its technology development is not consistent with its macroeconomic environment. Almost all countries ranked in the neighborhood of El Salvador's macroeconomic index perform better in the technology field (with the only exception of Bangladesh). Countries with lower per capita income (both GNI and GDP), such as Morocco, India and the Philippines, present a much better technological performance than El Salvador. This might suggest that the relative scarcity of capital (human and financial) is not a binding constraint for technology improvement in El Salvador. This is consistent with findings in previous sections that show input, incentives and linkages in El Salvador at much lower levels than comparable countries. As a note of optimism, it is interesting to verify that no country at the same level of technology development as El Salvador has as yet been able to develop further its macroeconomic environment without improving also its aggregate measures of technology.

4.49 That also reinforces the perception that improving El Salvador's NIS should be a top priority for the country. Clear priority objectives and focus are required.



**Figure 7: Relationship between Technology Index and Macroeconomic Index**



Source: World Economic Forum (2003).

**4.50 Policy options and instruments.** Before discussing policy objectives and related measures it would be useful to have a sense of relevance among different available alternatives. For that purpose, we performed two sets of regressions for two samples of countries (world and LAC), based on information provided by the Global Competition Report (2002-2003). In the first set of regressions we investigate the intensity of the impact of primary technological strategies—FDI attraction, licensing or R&D—on GDP. On the second set of regressions we examine separately how each of the previous three items are affected by the quality of research institutions, collaboration among universities and private sector and by tax credits and subsidies for firm-level R&D. Results are summarized on Table 9. For our purposes, the following tentative results are of interest: (i) the impact of R&D on GDP per capita is higher than the effect of technology transfer which, in turn, is bigger than FDI's;<sup>86</sup> (ii) technology licensing is mainly affected by tax credits and subsidies for firm-level R&D and to a lesser extent by the quality of research institutions when the world sample is considered;<sup>87</sup> (iii) R&D performance is mainly affected by the quality of research institutions and by collaboration among universities and private firms but not by tax credits and subsidies for firm-level R&D;<sup>88</sup> and (iv) it was not possible to establish any statistically relevant relationship between FDI and the proposed explanatory variables.<sup>89</sup> From there we draw the following tentative results: an emphasis on technology adoption and adaptation (through R&D efforts) is advisable, for which tax incentives

<sup>86</sup> Only technology licensing estimates are statistically different from zero when only LAC countries are considered. In the world sample, R&D, technology transfer and FDI estimates were all statistically significant at 95 percent level and presented the expected (positive) sign (except FDI).

<sup>87</sup> No statistically and economically meaningful results were found for the LAC countries. Estimates for tax credits and subsidies are statistically significant with both specifications (with or without the index on the macroeconomic environment). Estimate for quality of research institutions is statistically significant when the macroeconomic index is not included.

<sup>88</sup> The estimates for quality of the research institutions and collaboration between universities and the private sector are both statistically different from zero in both specifications. For LAC, no robust result was found but we are able to reject the null hypothesis for quality of research institutions.

<sup>89</sup> None of the results in the FDI is robust and almost none of them is statistically meaningful.

for firm-level R&D and improving the quality of research institutions should be among the main measures. We discuss this topic in further detail below.

**Table 8: Technology indexes -- regressions analysis**

			FDI and technology transfer Index		Prevalence of Foreign Technology licensing Index		Company spending on research and development Index		GDP per Capita	
			(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
<b>Technology Index</b>	World Sample	Coefficient	-0,049	0,215	0,493 *	0,299 *	0,555 *	0,176 *	N/A	0,090 *
		t Stat	-0,441	2,071	4,055	3,311	9,741	3,749		8,481
	LAC Sample	Coefficient	0,088	0,261 *	0,738 *	0,338 *	0,244	0,104	N/A	0,117 *
		t Stat	0,607	2,905	5,063	3,090	1,674	1,178		5,828
			Quality of scientific research institutions Index		Subsidies and tax credit for firm-level research and development Index		University / Industry research collaboration Index		GDP per Capita	
			(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
<b>FDI and technology transfer Index</b>	World Sample	Coefficient	0,210	0,151	0,142	0,086	-0,102	0,141	N/A	0,016 *
		t Stat	1,372	0,106	1,595	1,525	-0,732	0,066		-2,563
	LAC Sample	Coefficient	0,572 *	0,736	0,193	0,186	0,004	-0,065	N/A	-0,040
		t Stat	2,561	2,321	0,918	0,871	0,012	-0,172		-0,739
<b>Prevalence of Foreign Technology licensing Index</b>	World Sample	Coefficient	0,321 *	0,321 *	0,197 *	0,198 *	-0,091	-0,092	N/A	0,000
		t Stat	2,437	2,368	2,580	2,561	-0,757	-0,725		0,029
	LAC Sample	Coefficient	0,469	-0,170	0,010	0,037	0,285	0,555	N/A	0,154 *
		t Stat	1,930	-0,635	0,042	0,208	0,723	1,741		3,416
<b>Company spending on research and development Index</b>	World Sample	Coefficient	0,564 *	0,519 *	0,033	0,039	0,411 *	0,344 *	N/A	0,025 *
		t Stat	5,608	5,198	0,559	0,688	4,488	3,681		2,317
	LAC Sample	Coefficient	0,434 *	0,245	0,050	0,059	0,426	0,506	N/A	0,045
		t Stat	2,739	1,122	0,337	0,398	1,660	1,938		1,232

(1) Specification not including GDP per Capita

(2) Specification including GDP per Capita

\* Statistically Significant at 95% of confidence level

World sample size: 80 countries - LAC sample size: 21 countries

Source: World Economic Forum (2003)., except GDP per Capita (WBI)

## Improving technology absorption and adaptation

4.51 **Improving technology absorption.** Given the scarcity of both human and financial capital, no country in Latin America, has successfully defined an innovation policy predominantly on the basis of generating new technology. Yet, cross-country studies estimate the elasticity of total factor productivity in developing countries to research and development expenditures in advanced economies to vary between 0.02 to 0.10, an indication of high potential impacts of technology transfer on growth for developing countries.<sup>90</sup> Analysis in previous sections also suggests that El Salvador has under performed in the field of technology transfer. Increasing El Salvador's absorption capacity by better connecting the country to the world stock of knowledge seems to be an appropriate target of innovation policy in the country. But, which measure should be emphasized?

4.52 Licensing may be negatively affected also by poor enforcement of intellectual property rights and bureaucratic requirements. Despite recent progress, these are areas where significant institutional improvement is still to be made. Selective tax incentives for acquisition of capital goods and licensing of technology may also be recommended. Also, the impact of technology transfer on productivity growth varies according to the level of education. For example, a recent study of Guatemala, Panama and Bolivia found that the indirect impact on TFP through absorption of foreign technology, of an increase in the stock of adults with secondary school education is almost as high as its direct effect. Combining technology transfer and educational improvements may even duplicate the impacts of education on growth. Labor force training is also required. Education and labor training are explored in another chapter. Yet, the country might explore the role of FDI as a source of technology transfer.

4.53 **The role of FDI.** As Costa Rica's case illustrates, the quality of the labor force is a major asset in competition for knowledge-intensive FDI, which is an area where El Salvador has a lot to improve.<sup>91</sup> It is also important to keep in mind that very often-foreign firms in technology-intensive sectors use less than the best-available technology due to the weak enforcement of IPR in the host country (as has been reported to be the case in Brazil). Yet, it would be crucial to discuss the role to be played by the EPZs. Foreign investment in the *maquila* sector was mainly conceived to generate short-term gains in the form of low skill jobs and export revenues, not high-skill jobs and productivity growth. Changing the objectives of the *maquilas* would require public-private investment in labor, training and improving linkages to the rest of the economy, conditions that may imply high economic and political costs.

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<sup>90</sup> This results means that a 10 percent increase in R&D in developed countries (on average) increases total factor productivity in developing countries (on average) by 0.2 to 1 percent. Blyde forthcoming.: FLG

<sup>91</sup> Xu (2000) technology transfer (the impact of technology transfer spending of MNC) from transnational corporation does not significantly impact the productivity of countries with male secondary school attainments below 1.4 to 2.4 years. See Xu, 2000. "Multinational Enterprises, Technology Diffusion, and Host Country Productivity Growth." *Journal of Development Economics* 62(2): 477-93.

**Message 1:** Improve the capacity of El Salvador to fully benefit from the available stock of knowledge (increase absorptive capacity). Imports of capital goods and licensing should be emphasized. Full benefits of FDI in terms of technology transfer are easier to be obtained as the country improves its human capital and innovation infrastructure. Improvement of the absorptive capacity may be obtained by:

- simplifying process for technology licensing and patent registration;
- further favoring the import of capital goods;
- upgrading metrology and quality systems;
- increasing the effectiveness of training mechanisms; and
- better enforcing IPRs.

4.54 The impacts of technology transfer through licensing and import of capital goods may be improved when coupled with local R&D efforts. Currently, no incentive for private R&D is being applied and, as discussed above, El Salvador's quantity and quality of R&D expenditures are comparatively low. An initial effort to spur R&D and innovation in El Salvador comes from the Ministry of Education, which is currently designing a special fund for innovation.

4.55 **The Innovation Fund.** Although the blueprint of this innovation fund is not yet clearly defined, the initial budget is expected to be US\$4 Million – US\$ 3 million from the Ministry of Education and US\$ 1 million from private universities and enterprises. Resources are expected to support activities in the fields of science, technology, health and environment. At this stage it is premature to measure the viability of the fund. It is, however, crucial that the Ministry of Education consider some essential elements in designing the details of the fund to improve its impact on the overall national innovation system. For example, the initial identification of thematic areas is an encouraging sign of a certain focus for this fund, but it is crucial for the Ministry to identify more narrow areas of intervention to ensure that the funds are allocated efficiently. In addition, the involvement of the private sector in identifying the thematic focus is essential to guarantee linkages between the fund and the business community.<sup>92</sup> Clear objective criteria should be set for the selection process of the projects to be financed. Depending on the field and kind of research, the private sector could also be involved in the selection process for the allocation of funds. According to the current draft of the innovation fund, IPRs will belong to the Ministry in the case of R&D carried out by universities, while companies will have *preferential treatment* over ownership in the case of R&D carried out in a joint university-private sector project, on the condition that the financial contribution from the private firm exceed 50 percent of the whole project. Such ownership scheme seems to be detrimental to innovation, since it does not provide any specific incentive to researchers. In addition, it is unclear what “*preferential treatment*” means in the case of private sector participation. Public funds for *Infocentros* are another innovation-related government expenditure.

4.56 **Expenditures in the Infocentros.** *Infocentros* are conceptually well defined and are generally consistent with international best-practices. The lack of financial sustainability of some units, may indicate that the target initially proposed by the *Infocentros* program (roughly 100 entities) may not be compatible with effective demand. If this interpretation is correct, the US\$10 million fund for the development of *Infocentros* could be excessive. In a context of scarce

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<sup>92</sup> Clear indicators and criteria should be set for the selection process of the projects to be financed. Depending on the field and kind of research, the private sector could also be involved in the selection process for the allocation of funds. This would validate the selection with the perspective of entrepreneurs and bankers who assess projects also for their sustainability and commercial potential.

financial resources, it is striking that the funds allocated for *Infocentros* are more than twice the intended innovation fund.

**Message 2:** Enhance the incentive-regime for private R&D to help technology absorption and support gradually technology adaptation. Financial incentives for private R&D are not employed. Public funds are rather scarce and not directly targeted to innovations. Innovation fund (to be created) should clearly establish rules for allocation of resources. In this sense, to improve the incentive regime for private R&D would be recommended:

- reviewing tax incentives for private R&D;
- reviewing the amount of resources allocated to *Infocentros* (if possible) to free resources to increase finance for R&D
- increasing the volume of public R&D expenditures targeting it to support private sector effort and focusing on experimental development activities (to the detriment of basic research) by means of matching grants/competitive subsidies schemes.
- aligning incentives and clearly defining the property rights on innovations generated under the Innovation Fund.

4.57 The impact of the previous suggestions could be more easily effected by carefully focusing on specific sectors at the beginning, thereby increasing their payoff. This should not be confused with picking the winners or similar industrial policy strategies. On the contrary, the idea would be to focus on those activities in which the country has already revealed (or may do so in the short term) comparative advantage. Focusing in this case would improve the effectiveness of the scarce resources allocated to innovation. We discuss in more detail which activities could consist potential focus for cluster activity and collaboration.

### Collaboration and Clusters

4.58 **Agribusiness.** Empirical evidence suggests that in the LAC countries economic reforms had a positive impact on agricultural productivity. As usual, some countries benefited more than others: Argentine labor productivity in agriculture more than tripled while Chile outperformed the other LAC economies after the reforms. Brazil, Costa Rica and Peru also increased labor productivity. El Salvador, on the contrary, has presented a negative evolution of -1.48 percent during 1990-99, the third worst performance in LAC. On the other hand, Salvadoran agriculture still has enormous productivity gains to be achieved.<sup>93</sup> The country presents at least one of the pre-requisites for success in this field: sound adequate macroeconomic management. Since the exchange rate is fixed, productivity gains are even more important to guarantee the international competitiveness of agriculture in El Salvador. On the microeconomic side, *Centa* may serve as an important asset, if it is better employed. Regardless of its deficiencies, *Centa* has sustained a pool of human capital available for more efficient use once incentives are better aligned. Yet one last necessary effort might be to increase market discipline, as suggested by the Chilean experience.<sup>94</sup> Improving market discipline means not only letting the relative prices to adjust fully to market conditions but also creating the appropriate mechanism for exit of firms and reallocation of productive resources. Focusing on agricultural productivity, therefore, may be seen as both an opportunity and a necessity.

<sup>93</sup> See De Ferranti, David, Daniel Lederman, William F. Maloney, and Guillermo E. Perry, 2002 "From Natural Resources to Knowledge Economy: Trade and Job Quality" World Bank Latin American and Caribbean Studies, Washington, D.C.

<sup>94</sup> See Foster, William, and Valdes, Alberto. 2001. "Has Reform Failed Latin American Agriculture? A review of Argentina, Chile and Colombia." World Bank, Washington, D.C. Processed.

4.59 **Pharmaceuticals.** The payoff of an eventual focus on the pharmaceutical industry is less obvious. First, the lack of drug accreditation tests (such as the bioequivalence), the relatively small size of the market (local and regional) and the relatively large number of pharmaceutical firms strongly limits the potential for a generic drugs industry. As mentioned earlier, reputational problems in this sector, are a serious obstacle for FDI in this industry, which reduces the possibilities of using the country as a regional manufacturing basis. Perhaps better perspectives may be found by further specialization in agricultural inputs (pesticides) benefiting from some natural protection and upward linkages with the agriculture sector.

4.60 **Maquilas.** The possible use of the EPZ as cluster is also puzzling. Despite their geographic proximity and economic linkages (horizontal and to a less extent vertical), EPZs do not share the technological dynamism of traditional clusters. “Natural” clusters, such as those in the Silicon Valley (IT) or in the Boston Route 128 (IT and Biotechnology), are essentially the result of economies of agglomeration and technological externalities. EPZs are “induced” clusters that result from temporary public incentives (notably tax breaks) and static comparative advantages (labor cost), without any economic incentives to invest in innovation. In this sense, it is unclear whether focusing the innovation policy on the *maquila* sector would be any better than focusing on any other geographic area.

4.61 **Teleservices.** Countries such as Barbados, Jamaica and Trinidad and Tobago turned to the ICT sector as an alternative for export diversification. Similar to the *maquila* sector, jobs in the teleservice industry tend to be low skilled with few options for additional training. However, teleservices offer advantages over the more traditional assembly jobs. Workers receive some training in technology-related areas, lasting from two weeks to three months. This training can generate spillovers, as ICT training can be employed in other industries.<sup>95</sup> Wages are higher in this sector than in other typically female jobs, such as textile manufacturing, which could be considered a relevant variable given the evolution of crime among youth.<sup>96</sup> Since the work is visibly located in offices with a sizeable workforce, the workers generally receive all the benefits that accrue to formal sector work.<sup>97</sup> Critical for the success of this strategy for the Caribbean countries was their high teledensity, a literate, English speaking and relatively cheap labor force, and geographic proximity to the U.S. market. Lower teledensity (although growing at high rates) and the generally lower level of literacy of the labor force may pose some obstacle for El Salvador. Enormous success in the reform of the telecommunication sector as well as an increasing English-speaking labor force may provide some basis for the development of such a strategy. Yet, as an important user of ICT, the teleservices are a potential candidate for above-average productivity growth.

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<sup>95</sup> In Jamaica, for example, graduate and undergraduate courses changed curriculum and degrees offered to include a strengthening of ICT component. Barbados and Jamaica, for instance, have deepened their telecommunications reform programs to assure provision of competitive services, such as low-cost broad band capacity at special rates for information service companies.

<sup>96</sup> Processing firms, which compete for contracts on pricing, prefer to hire young women, who constitute 90 percent of the workforce. Employers appear to assume that women are more patient, dexterous, and flexible in learning new skills and hence are more productive at secretarial-type work and this has led to a high demand for female labor. They tend to have low levels of education, to be young (18–19 years old), to be able to type, and have an aptitude for dealing with technology and the stress of high workloads.

<sup>97</sup> Pearson, Ruth. 1997. “Gender and New Technology in the Caribbean: New Work for Women?” In Janel Momsen, ed., *Women and Change in the Caribbean: A Pan Caribbean Perspective*. Kingston: Ian Randle Press.

**Message 3: Strengthening public-private partnerships particularly (although not only) in selected clusters.** Agribusiness, due to the potential of its productivity gains and the impact on overall productivity and GDP growth and long-distance teleservices, due to its potential in terms of absorbing technology and to the relatively well developed telecommunications industry in El Salvador are two possible candidates. Measures for each of these cluster might differ, but should be include more generally:

- Aligning the incentives for research in *Universidad de El Salvador* and stimulate commercial application of inventions;
- increasing accountability and improving the incentives for outcomes based performance of CENTA and improving cooperation with private sector;
- improving market discipline in agriculture (particularly in traditional agriculture, as coffee);
- strengthening of regulatory enforcement in telecom to guarantee a competitive supply of inputs for long distance teleservice industry.
- improving labor training for teleservice.

Finally, it would be also recommended to improve coordination and enhance policy-making.

4.62 **Coordination and policy-making.** *Conacyt* is poorly staffed and equipped. Data on technology quality and innovation are precarious. Coordination among public initiatives is weak and policy-formulation, monitoring and evaluation are almost nonexistent, reducing the effectiveness of public policies.

**Message 4: Improve coordination; policy-making and effectiveness of public interventions.** Among other measures, it would be recommended:

- upgrade *Conacyt*;
- improve statistics on technology and productivity;
- create effective monitoring and evaluation mechanism for the existing programs.
- Increase transparency through issuing of public reports.



## Conclusions

4.63 A well-performing NIS is a key condition for a country to develop technology regardless of its stage of economic development. The aim of this chapter was to evaluate where El Salvador stands in terms of its technology gap and the main underlying causes for this outcome. In contrast to the macroeconomic and business environment, where important institutional reforms were implemented, little if any progress was achieved in the field of innovation and technology policy during the 1990s. In summary: (i) El Salvador seems not to be enough connected the world's stock of knowledge; (ii) private investments in R&D are significantly lower than countries with similar per capita income; (iii) innovation-oriented public policy (either in terms of direct incentives or in terms of quality of research institutions) is relatively worse than comparable countries; (iv) collaboration among universities and private firms is not significant and (v) clusters are relatively underdeveloped. On the positive side, the relative scarcity of capital (human and financial) seems not to be a binding constraint for technology improvement in the country.

4.64 Overall, aggregate measures of technology performance are not consistent with the macroeconomic environment. Interestingly, no country with the same level of technology development as El Salvador has been able to further develop its macroeconomic environment without improving its (aggregate measures of) technology. That indicates a sense of urgency but also of opportunity. Even the extreme lack of development (“backwardness”) of El Salvador's NIS may be seen as an opportunity, as initial reforms (if well focused) tend to generate high marginal gains. Still to be achieved productivity gains in agriculture and successful reforms in telecommunications offer some possible focus for public intervention in the near future. We suggested, among others, the following initiatives to improve El Salvador's NIS: (i) improve the capacity of El Salvador to fully benefit from the available stock of knowledge; (ii) enhance the incentive-regime for private R&D to help technology absorption and support gradual technology adaptation; (iii) Strengthen public-private partnerships particularly (although not only) in agriculture and teleservices; and (iv) improve coordination, policy-making and effectiveness of public interventions.

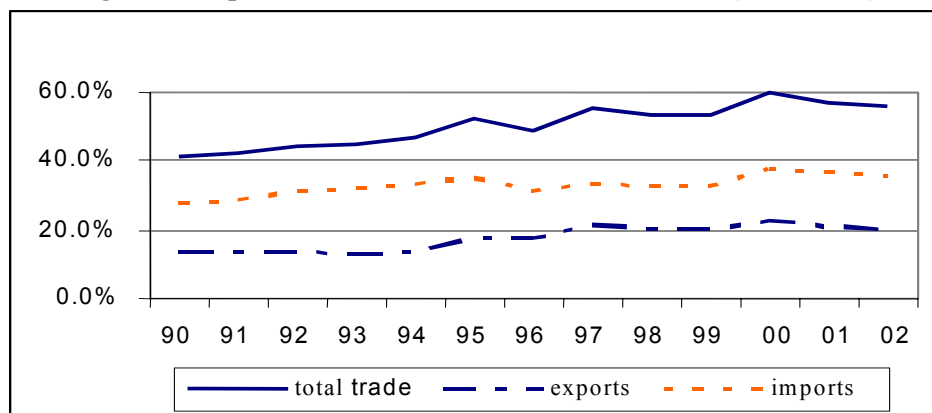
## V. TRADE IN EL SALVADOR<sup>98</sup>

### Background

5.1 There is a large amount of empirical evidence that shows a positive significant relationship between trade openness and economic growth. Most of this evidence also suggests the existence of a virtuous circle by which greater openness leads to higher growth and this in turn to greater trade expansion. There are five main channels through which trade could affect economic growth. First, trade leads to higher specialization hence contributing to gains in total factor productivity (TFP) by allowing countries to develop their comparative advantage. Secondly, it expands potential markets, which allow domestic firms to exploit their economies of scale which also increases their TFP. Third, through interactions with foreign firms and markets, trade helps to disseminate technological innovations and better managerial practices. Fourth, trade liberalization tends to reduce anti-competitive practices of domestic firms and finally, greater trade openness reduces the incentives for firms to conduct unproductive rent-seeking activities.

5.2 Conscious of this positive effect of trade on growth, since the end of the armed conflict El Salvador has been making sustained efforts aimed at expanding trade. The country has been one of LAC's leaders in trade reform during the last decade. This is reflected in the increase in trade volumes (imports + exports/PIB), which increased sharply from 41.4 percent in 1990 to 56 percent in 2002 (including gross maquila exports). The share of exports increased by 7 percent points of GDP during this period, while the share of imports increased by 8 points (Figure 1).

**Figure 1. Importance of Trade Flows in El Salvador (% of GDP)**



Source: World Bank and BCR.

5.3 The greater opening up of the Salvadoran economy has contributed significantly to increase economic growth. According to Loayza et al. (2002), trade openness contributed with 0.4 percent points to the total estimated variation of 2.1 percent in GDP per capita, between the 1990s and the 1980s.

<sup>98</sup> The material for this chapter has been prepared by C. Felipe Jaramillo, Martha Delgado and Jorge Camacho,

5.4 However, despite the significant progress already noted there is a sense that El Salvador has not reached its full potential on the trade front. In fact El Salvador still lags behind the top performers in the CACM –Honduras and Costa Rica- and Mexico. All these countries registered in 2001 trade shares of GDP above 60% with a share of exports on GDP above 30% (Table 1).

**Table 1. Trade flows (% of GDP)**

	<b>1991</b>	<b>2001</b>
<b>El Salvador</b>	42.4%	57.1%
Exports/GDP	13.6%	20.7%
Imports GDP	28.8%	36.4%
<b>Honduras</b>	70.7%	96.2%
Exports/GDP	33.0%	38.3%
Imports GDP	37.7%	57.9%
<b>Nicaragua</b>	39.2%	55.6%
Exports/GDP	12.2%	21.2%
Imports GDP	27.0%	34.4%
<b>Costa Rica</b>	47.5%	71.3%
Exports/GDP	20.8%	30.6%
Imports GDP	26.7%	40.8%
<b>Guatemala</b>	33.5%	41.3%
Exports/GDP	13.8%	14.0%
Imports GDP	19.7%	27.4%
<b>CA</b>	46.7%	64.3%
Exports/GDP	18.7%	25.0%
Imports GDP	28.0%	39.4%
<b>Mexico</b>	35.6%	66.5%
Exports/GDP	16.4%	32.5%
Imports GDP	19.2%	34.0%
<b>Colombia</b>	38.2%	37.3%
Exports/GDP	22.1%	18.1%
Imports GDP	16.1%	19.2%
<b>Brazil</b>	14.8%	23.1%
Exports/GDP	8.4%	11.0%
Imports GDP	6.4%	12.1%

Includes total exports and imports, including those from maquila.

Source: World Bank and BCR.

5.5 This Chapter addresses the issue of how El Salvador could further expand trade flows and pays special attention to the ongoing negotiations between the U.S. and the Central American countries towards a Central American Free Trade Agreement (CAFTA). The Chapter first review issues related to trade policy in El Salvador before moving to address the challenges, implications and actions that the country could take to fully exploit the benefits of CAFTA.

### **Trade Policy in El Salvador**

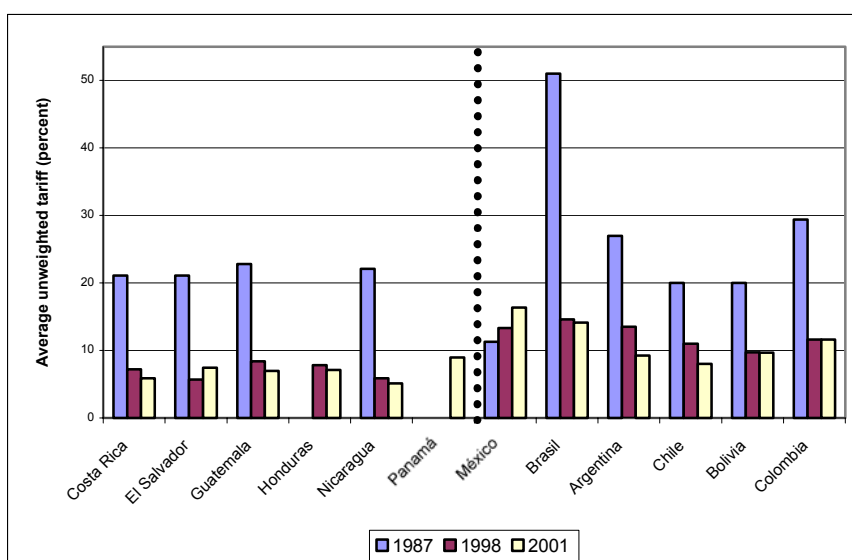
5.6 During the 1990s El Salvador implemented strong liberalization reforms with a drastic reduction in trade barriers early in the decade, aimed at increasing the integration of the economy to world trade flows. Particular emphasis was given to the provision of a favorable environment

for export expansion through a series of policies aimed at reducing the anti-export bias of domestic production via reduction in tariffs, offering incentives to export industries and increasing overseas market access for its products. As a result, El Salvador boasts one of the most open trade regimes in Latin America.

## Trade Barriers

5.7 Since 1989, El Salvador has undergone a progressive policy of unilateral trade liberalization which has led to the reduction of the average tariff level from 21.9 percent in 1989, to 10.1 percent in 1995 and 7.4 percent in 2002. By 2002, the majority of tariff rates (86.5 percent) had fallen within the 0 to 15% band mandated by CAM agreements, with about half of them at the 0% level (Table 2). In regional terms, El Salvador's average tariff is one of the lowest in LAC and similar to other countries in Central America (Figure 2). The range of tariffs is also the lowest (0-40%, same as Guatemala) and the number of tariff levels (9) is the lowest in Central America.

**Figure 2. Average Tariffs**



Source: Lederman et al (2002) with data from WITS, USITC and IADB.

**Table 2. El Salvador: Import tariffs by sector 1995 2002**

	Tariff lines		Average (%)		Range (%)		Std. Dev. (%)	
	1995	2002	1995	2002	1995	2002	1995	2002
<b>Total</b>	5,800	5,989	10.1	7.4	1-30	0-40	7.6	9.0
Agriculture	368	388	12.0	8.6	1-20	0-40	6.1	7.1
Mining	110	108	6.8	2.2	5-20	0-20	3.6	3.8
Manufacturing	5,321	5,492	10.1	7.5	1-30	0-40	7.8	9.1

Source: WTO, 1995, 2003.

5.8 Despite the reduction in the average tariff, since 1995 El Salvador has slowed down the liberalizing pace of the first half of the decade. A government proposal to establish a flat tariff of

6% by the end of the 1990s was scrapped and some tariffs have been increased recently, partly as a result of efforts to homogenize policies with CACM members.<sup>99</sup> In 2000, tariffs for some agricultural products were substantially increased due to pressures from domestic producers.

5.9 As for non-tariff barriers, El Salvador eliminated most barriers when it became a member of the WTO in 1994.<sup>100</sup> Sanitary and phytosanitary norms are applied to imports of chemicals, drugs, food, and to a significant number of agricultural products (live animals, products and subproducts of animal and vegetal origin, seeds, roots, and plants and packing made of natural fibers). While these norms have been applied in accordance with sound scientific knowledge, a few have cases or unjustified reactions have been reported to the WTO.<sup>101</sup>

5.10 El Salvador has advanced in the reduction of institutional barriers to trade and has been working with CACM Partners on the terms for creating a customs union. In recent months, Guatemala and El Salvador have been unifying their border customs offices and are advancing on plans to share custom revenue in order to eliminate customs posts in common borders. This experience could facilitate similar agreements with other CACM members.

### **Export Promotion Policies**

5.11 Export promotion policies have also played a role in El Salvador's trade expansion. Three instruments have been applied: (i) The Law for the Reactivation of Exports (1990), which highlights an export subsidy in the form of a 6% drawback; (ii) The Law on Industrial and Marketing Free Zones (most recently, 1998), and (iii) an aggressive policy of securing FTAs at the regional and bilateral levels to guarantee preferential access to its exports. Further, an export subsidy in the form of a 6% drawback on the value of exports is granted to exporters of non-traditional goods outside the region. Exporters of traditional products with a minimum value added of 30 percent are also eligible for this reimbursement. According to WTO regulations, this drawback may be considered an export subsidy and should be eliminated by 2004. In 2001, 7.8 percent of total exports benefited from this refund.

### **Export Processing Zones (EPZs)**

5.12 EPZs have expanded rapidly since 1990 as a result of the implementation of a new legal framework, and improved CBI preferences for apparel. New legislation authorized private capital to own and operate free zones and granted exemptions in import duties as well as for income and municipal taxes.<sup>102</sup> In 2001, there were 243 enterprises operating under this program, providing employment to 243,000 Salvadorans (83,000 directly and 160,000 indirectly), equivalent to nearly 10% of the labor force (WTO, 2003, p.56).<sup>103</sup> Recently the WTO granted an extension of EPZ regimes to small economies, including El Salvador, until 2007.

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<sup>99</sup> Most of these increases have affected manufacturing products such as textiles and footwear. (WTO, 2003)

<sup>100</sup> Import licensing is required for jute packing, salt, sugar and some sugar substitutes (Alas de Franco, 2002).

<sup>101</sup> The U.S. and Paraguay have complained that these measures have been used to restrict their exports of chicken meat, beef and milk products to El Salvador (WTO, 2003, p.50)

<sup>102</sup> The Law on the Free Zone and Tax Free Areas Regime (1990), which was repealed by the Law on Industrial and Marketing Free Zones. This new Law allows products from free zones to be sold in the domestic and regional markets, after payment of all taxes.

<sup>103</sup> The rest were divided up between marketing (31), laundry services (13), textiles and embroidery (10), agroindustrial (10) and boxes, packaging and waste recycling (3). (WTO, 2003, p.56)

5.13 The development of EPZs has played an important role in the economic achievements of the last decade in El Salvador. Since 1990, they have contributed significantly to job creation by generating nearly 17% of total formal employment. Employment conditions in EPZs are superior than those provided by the Salvadoran formal private sector in general. In addition, the preferences granted under the CBI to most of these firms allow the American authorities to monitor them in order to ensure that local labor standards are met and fundamental labor rights are upheld. Furthermore, most of the employment generated by EPZ has benefited women, increasing job opportunities to a sector of the population that has traditionally been discriminated in the labor market. EPZs have also been a critical determinant of the dynamism of Salvadoran exports of recent years and their diversification towards light manufacturing products. In addition, the value added of the maquila sector has increased gradually since 1990, as a result of growing backward linkages to the rest of the Salvadoran economy.

5.14 However, EPZs have not been very successful in attracting investment to sectors different from apparel for export to the US market. This has made this sector dependent on the continuity of the unilateral preferences and on the cyclical fluctuations of the US economy. Other vulnerability factors are the reliance of EPZs on fiscal incentives and the end of the quota regime that has governed global trade in textiles and apparel for various decades, slated to end in December of 2005 under WTO terms. CAFTA and WTO commitments are likely to require a virtue end of the fiscal and tariff – deferment advantages offered by EPZs. In the future, El Salvador will need to rely more on offering an attractive investment climate rather than an specific EPZ-type regimes.

### **Free Trade Agreements**

5.15 Since the early 1990s, El Salvador has promoted the strengthening of regional integration, through the CACM and through new sub-regional agreements such as the Northern Triangle (TN) with Guatemala and Honduras (1993) and the Guatemala Agreement (1996). These agreements aim at accelerating regional economic integration, given the differences that have arisen among the CACM members (Alas de Franco, 2002).<sup>104</sup> El Salvador also participates in the Plan Puebla Panama (PPP), intended to accelerate social and economic development in the southern part of Mexico and Central America. In addition, El Salvador has subscribed FTAs with the Dominican Republic (1998), Panama (2002), Chile (2001) and the FTA Northern Triangle-Mexico (2001). The latter generated great expectations, despite the exclusion of important sectors such as cement, beer, cars, transport services and most agricultural products.<sup>105</sup>

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<sup>104</sup> Costa Rica and Nicaragua have opted for having their own negotiating agendas, while El Salvador and Guatemala want to deepen regional integration and act as a block in FTA negotiations with third countries. Nicaragua joined the TN countries to negotiate an FTA with Canada (Alas de Franco p.35).

<sup>105</sup> The TN countries (Guatemala, Honduras El Salvador) opposed the inclusion of products in which Mexico has a clear comparative advantage (cement, beer, and automotive industry), while Mexico opposed the liberalization of the transport sector, which was key for Central America in order to reach the American Market (Alas de Franco, 2002).

## **The Caribbean Basin Initiative (CBI)**

5.16 Since 1983 El Salvador has enjoyed access to the unilateral preferences granted by the U.S. under the Caribbean Basin Initiative. This program grants duty free access to some local goods which have at least 35 percent of local value added, or 20 percent when inputs from the U.S. are used. These preferences cover most traditional exports from El Salvador and have played a crucial role in the development of the maquila activity in the region by extending the preferences to clothing items made with US textiles.<sup>106</sup>

5.17 Under the CBI, most agricultural and agro industrial products do not face tariff barriers to access the US market. However, the CBI establishes import quotas for products such as meat, milk products, sugar, peanuts, tobacco and cotton. In addition, most fruits and vegetables are covered by seasonal tariffs. In the case of El Salvador, it is estimated that 68% of the value of its food exports to the US face some type of non tariff barrier.<sup>107</sup>

5.18 In May 2000, the Trade and Development Act of 2000 extended the benefits of the CBI to other products previously excluded.<sup>108</sup> In particular, it extended the benefits to the production of apparel, one of the activities with greater export potential in El Salvador, by allowing for the incorporation of more value added from the region.<sup>109</sup> These measures have had a positive effect, but their full impact has been dampened by the slowdown in U.S. economic activity since 2001, doubts about the application of some norms by U.S. customs and the partial reversion of some of these benefits in 2002.<sup>110</sup>

## **Foreign Direct Investment**

5.19 In addition to a liberal trade regime, El Salvador has also implemented a liberal FDI regime through a series of regulations culminating with the Investment Law of 1999. El Salvador has signed bilateral investment treaties with 23 countries, including the U.S. The treaty signed in 1999 with the U.S. includes commitments similar to those included in the investment chapter of NAFTA, including the right to invest in terms no less favorable than those accorded domestic or third-country investors in most sectors, and the free transfer of capital, profits and royalties,

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<sup>106</sup>Since 1991, the ICC-II program granted some benefits to access the U.S. market to clothing made with U.S. textiles. Specifically, tariffs are only levied on the value added portion of the product, when it is produced in a CBI country from U.S. textiles, regardless if the fabrics are cut in the U.S. (program 807-A) or cut in El Salvador (program 807).

<sup>107</sup> For Costa Rica this share is 48%. Thus, a greater liberalization in this area under NAFTA would bring greater benefits to El Salvador (Monge-Gonzales et al., 2002).

<sup>108</sup> Now products included in CBI trade preferences with the Trade and Development Act include leather products, watches, oil and oil products, canned tuna, and sugar and its products, although the latter are still subject to quotas (Alas de Franco, 2002)

<sup>109</sup> In particular, the new legislation allows for: i) Duty and quota free entry for apparel cut and assembled in the region from U.S. made fabric; previously, apparel exports paid tariffs on the value added in the beneficiary country and they could not be cut in the region.; ii) duty free entry but subject to an annual quota for knit –to-shape apparel assembled and cut in the region; iii) it accepts additional process to be included in garments such as dyeing, enzyme washing, permanent pressing, and screen printing; and iv) it allows that up to 25% of the cost of the components for findings and trimmings could be of non-US origin.

<sup>110</sup> Specifically, the possibility of performing dyeing and finishing processes in CBI countries for fabrics originating in the U.S. was eliminated in mid-2002 with the approval of the Trade Promotion Authorization (Fast Track), as part of the political concessions required by the U.S. textiles interests.

freedom from trade and investment distorting performance requirements, access to international arbitration and standards for expropriation and compensation consistent with U.S. practice.

### **CAFTA and its implications for El Salvador**

5.20 The U.S. and the five countries of Central America that make up the CACM announced their intention to negotiate a free trade agreement (CAFTA) in 2002. Such an agreement will only be the third between the US and Latin American countries, following those signed with Mexico (1994) and Chile (negotiated, approval pending). CAFTA is likely to be approved ahead of the hemisphere-wide initiative Free Trade Area of the Americas (FTAA). The parties of CAFTA have announced a rapid negotiating schedule, which would involve 10 rounds of talks in 2003, signature in early 2004 and congressional approval soon thereafter.<sup>111</sup>

5.21 CAFTA will provide a broad framework for trade and investment relations between the U.S. and the five countries of Central America, and will be substantially more comprehensive than the unilateral preferences granted to beneficiaries of the Caribbean Basin Initiative (CBI) since 1983. First, CAFTA will be a *reciprocal* FTA, granting market access concessions and rights for dispute resolution to both sides. Second, it will provide a *permanent* framework for trade and investment relations, as opposed to CBI preferences which required occasional renewal to sustain the regime in time. Third, in addition to trade in goods, it will encompass new rules for trade in *services* and rules and disciplines for investment relations between partner countries. CAFTA is likely to include new areas that El Salvador has not developed in previous trade agreements, such as anti-corruption norms, labor and environmental standards and e-commerce.

5.22 Clearly, CAFTA will offer opportunities but also present challenges. Some of the latter are related to changes in norms and regulations, others to changes in longstanding policies and, perhaps most difficult of all, enforcement of all treaty obligations. Fortunately, El Salvador already has in place a legal framework that is broadly consistent with NAFTA disciplines, many of them derived from previous FTAs that entailed similar commitments. The policy changes required should not generate great controversy, with the only exception of clauses related to the EPZ regime and trade policy related to sensitive agricultural crops. In this regard, the greatest challenges are likely to be in the area of guaranteeing the actual enforcement of all of the legal commitments, including in such areas as intellectual property rights, anti-corruption, and labor and environment standards. Additionally, implementing CAFTA is likely to lead to some fiscal losses, at least in the short-term.

5.23 As for the expected effects of CAFTA, overall the accord is likely to provide many significant opportunities to boost exports, investment, growth and employment. An expanded and more stable market access to its largest trading partner, as well as the investment and dispute resolution frameworks will be positively received by investors, both local and foreign. The more comprehensive nature of the FTA is expected to “lock-in” trade liberalization and other structural reforms undertaken in El Salvador since the early 1990s, as well as provide opportunities to advance on second generation reforms that should be critical to leverage CAFTA into further growth. In this regard, this section also reviews the potential for trade expansion in both agriculture and manufactures, analyzes expected investment and growth gains, and draws lessons from the NAFTA experience to describe complementary actions that El Salvador needs to undertake in order to maximize the potential growth gains from CAFTA.

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<sup>111</sup> According to political analysts, due to presidential campaigning and the sensitive nature of trade issues, it is possible that formal approval by the U.S. congress may only occur in 2005.



## Legal and Institutional Reforms to Implement CAFTA

5.24 The actual content of CAFTA is unlikely to differ much from NAFTA and the recent draft of the US-Chile accord. In general terms, the text is unlikely to pose serious challenges to the current legal and institutional setup in El Salvador.<sup>112</sup> The country has already adapted its legislation and drawn up trade and investment related disciplines to be consistent to other NAFTA-type FTAs, including those subscribed with Mexico (2001) and Chile (2001) and the treaty under negotiation with Canada. Investment provisions will likely expand on the Bilateral Investment Treaty signed with the U.S. in 1999.

5.25 However, there are some areas where El Salvador's current policies and norms run counter to NAFTA and the US-Chile commitments, and where decisions are likely to be prompted before CAFTA can be finalized. These potential conflicts include the following:

- **EPZs and tax exemptions for imported inputs:** NAFTA establishes restrictions to programs that allow for tariff deferment for inputs used for exported goods as well as on those that require firms to export minimum quantities. These requirements would in effect end key benefits of the EPZ framework in El Salvador. However, as in NAFTA, such restrictions would not hold for the case of exports that use inputs from the U.S. which should allow for the survival of the maquila industry as established in El Salvador.<sup>113</sup>
- **Agricultural trade:** The most contentious issue is likely to be whether trade in all agricultural goods will be subject to (eventual) liberalization, and the length of the phase out of tariffs for sensitive goods (e.g., maize, beans, dairy products, poultry, meat, sugar, rice). However, the small economic size of agriculture in El Salvador is likely to make this less controversial than for neighboring countries. Agricultural disciplines included in CAFTA would ban all export subsidies, suggesting that the 6% drawback for non traditional exports may need to be phased out. Additionally, the U.S. has announced it wants to eliminate restrictions to trade in genetically modified foods, whereas El Salvador has suggested in international fora that is looking into potential restrictions.
- **Government procurement:** NAFTA rules on this front include commitments on minimum thresholds to trigger competitive bidding and other procurement procedures among FTA partners to guarantee transparency and non discrimination. El Salvador, Guatemala and Honduras abstained from including a chapter on this subject in their joint FTA with Mexico. Further, El Salvador has not signed the Plurilateral Agreement on Government Procurement of the WTO. El Salvador revamped its government procurement legislation in 2002, although it maintains some preferential treatment for national suppliers.
- **Competition (Anti-trust):** The constitutional principle that bans monopolistic practices has not been developed in legislation, prompting El Salvador to avoid commitments on this front in its FTAs. The signing of CAFTA will put pressure on the passage of a legal framework, including the definition of enforcement responsibilities in a government body.

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<sup>112</sup> Much of the análisis of this section follows Anabel Gonzalez, 2002, "Modificaciones Legales e Institucionales Necesarias para la Firma del Tratado de Libre Comercio de Centroamérica (CAFTA)", report to the World Bank.

- **There are also some areas where lax enforcement of current laws could be of consequence under CAFTA.** These include intellectual property rights, customs procedures, anti-corruption, labor and environmental standards. On the latter two subjects, El Salvador has traditionally argued that they should not be included in FTAs but should be dealt with in the appropriate international fora. However, authorizing legislation for trade negotiations for the U.S. have dictated the compulsory inclusion of these areas in new FTAs. On labor, obligations are likely to require adherence to international labor conventions as well as enforcement of fundamental labor rights. While El Salvador's legal framework on labor rights is broadly adequate, and is a party to most international labor conventions, there have been complaints that have been taken up at the ILO as well as within the CBI review mechanism, concentrated on potential violations on unionization rights, the lack of enforcement of some labor regulations in EPZs and the failure to enforce international commitments to eliminate child labor. As with non compliance with environmental norms, it is likely that the U.S. will attempt to introduce clauses into CAFTA that will require compensatory payments for lack of enforcement of laws and regulations.
- **CAFTA will also entail short-term fiscal costs that are likely to require compensatory measures.** Despite low overall tariffs, estimates suggest the potential for a non-negligible decline in tariff revenue. In an extreme scenario, if all tariffs on imports from the U.S. were eliminated and volumes remained constant, the treasury would lose about 7% of central government revenues (Lederman, et al, 2002). This order of magnitude only gives a sense of the maximum direct fiscal cost of NAFTA. However, there will be indirect costs that are more difficult to assess, including the costs associated with the negotiation stage (i.e., studies, lobbying and legal fees), as well as those required for implementation and enforcement of commitments. Compensatory measures will likely be needed to avoid an unnecessary deterioration in the fiscal accounts.

## BOX 1: Lessons from NAFTA

A recent study "Lessons from NAFTA for Latin America and the Caribbean" by Daniel Lederman, William Maloney, and Luis Servén (World Bank, 2003) highlights the following lessons, among others:

- NAFTA can be credited for boosting Mexico's growth in the post 1994 period. By inducing a reciprocal reduction in trade barriers and locking-in the reforms of recent years, it has yielded a positive impact on trade flows, foreign direct investments, and growth of industrial productivity. It is also responsible for the creation of many new jobs and some reduction in poverty rates of recent years in Mexico.
- Despite the positive growth effect, NAFTA has not sufficed to guarantee income convergence among North American countries. This reflects mainly pending items in Mexico's policy agenda including institutional gaps (i.e., corruption and rule of law), deficiencies in education (both coverage and quality), a passive innovation policy, the lack of critical infrastructure (especially in lagging regions) and some weaknesses in macroeconomic policy. The experience has demonstrated that while positive, an FTA with a developed partner is not sufficient to increase growth on a sustainable basis unless an agenda of complementary reforms is pursued.
- NAFTA benefits have been concentrated in states in the North and Center of Mexico. Southern states have not seen much of an impact, due to key deficiencies in institutions, education and infrastructure.
- Contrary to some predictions, NAFTA has not had a devastating effect on Mexico's agriculture. In fact, both domestic production and agricultural trade rose during the NAFTA years. The negative effects did not materialize because aggregate demand expanded rapidly in both Mexico and the U.S. in the latter half of the 1990s, some segments of Mexican agriculture recorded substantial increases in productivity (esp. irrigated lands), and outdated subsidies were transformed into targeted efficient programs (e.g., Procampo) which delinked transfers to farmers from current and future production levels.
- Mexico's experience also shows that there are some key remaining barriers to trade that have limited the growth potential of certain sectors. In particular, restrictive rules of origin affecting clothing exports to the U.S. market seem to have limited the ability of Mexican exporters to take full advantage of NAFTA preferences. This issue is likely to be a key topic for El Salvador and other Central American countries.

### Potential Impacts of CAFTA

5.26 CAFTA is likely to generate positive impacts in El Salvador with respect to trade, FDI, technological transfer and growth, areas where clear gains have been identified in Mexico in the post-NAFTA period (see Box on Lessons from NAFTA). Trade flows should increase by virtue of lower trade barriers and improved customs procedures. FDI is expected to grow, because the treaty is expected private sector confidence and bolster the legal and economic environment.<sup>114</sup> Technological transfer and increased productivity should be the result of new FDI flows, imports and greater overall competition. Additionally, the treaty should bring some degree of convergence to the remuneration to both labor and capital across borders, which will improve efficiency and increase the remuneration of Salvadoran laborers.

5.27 While trade diversion can be a significant distortion introduced by some FTAs, this is unlikely to be significant with CAFTA.<sup>115</sup> The U.S. is already the largest trading partner for El Salvador and the fact that trade flows with the U.S. have grown over the past decade along with those to other natural trading partners (e.g., members CACM) suggest that there is little scope for displacement of trade flows from their most efficient sources.

5.28 The available empirical evidence suggests that FTAs that involve at least one developed country partner offer the greatest trade and growth gains for developing countries (Berthelon,

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<sup>114</sup> In México, NAFTA introduced important changes to the existing FDI regime, giving national treatment and most favored national privileges to investors from the US and opening most sectors of the economy to such investors. For the case of El Salvador, the liberal regime in place will not imply drastic changes.

<sup>115</sup> In general, North-South FTAs have been found to offer less scope for trade diversion.

2002). This is a likely result of greater market access opportunities as well as the boost in trade and investment disciplines that are usually associated with such treaties. Such treaties can “lock-in” progress made on unilateral trade liberalization making it more immune to protectionist pressures that may arise in the future. More broadly, a treaty like CAFTA can serve to increase the credibility of reforms and guarantee that trade and investment rules are more likely to be enforced.

5.29 A simple method to quantify potential effects of CAFTA is to assume that it will lead to higher trade flows (as a share of GDP) following the Mexican experience. Using the growth model of Loayza et al (2002), it is first assumed that El Salvador would reach by 2010 the magnitude of trade openness (corrected for non-policy factors such as area, population and per capita GDP) that Mexico reached in the 1996-1999 period. In this scenario, El Salvador’s growth rate would be forecasted to grow at an additional 0.75% throughout the decade. If only half of this value were obtained then the per capita growth boost of greater trade flows would be reduced to 0.37% annually.

5.30 FTAs are traditionally seen as having direct trade enhancing effects inasmuch as they involve the reduction of tariff barriers (and some NTBs). This was for example the case of NAFTA, where the average tariff on US goods entering Mexico was reduced substantially while that of Mexican goods into the US also dropped. Trade flows from both sides of the border have grown sharply after NAFTA and Mexico’s trade openness index increased by nearly 20 percentage points of GDP between 1994 and 2002.

5.31 For the case of El Salvador, it is unlikely that dramatic NAFTA-type trade gains be repeated in the short run. By contrast to Mexico, El Salvador has enjoyed preferential access to the U.S. market for a substantial share of the trade spectrum since 1983 through the CBI program. Additionally, El Salvador already boasts one of the most open trade regimes in Latin America. Nevertheless, there is scope for some short and medium run potential trade creation under CAFTA through an enhanced access to the US market beyond CBI terms, as well as indirectly through the impact on trade flows of greater investment.

5.32 **Agriculture:** In accordance with CBI tariff preferences, the majority of tariff headings under the agricultural and agro processed foods chapters of the HTS enjoy tariff free access to the US market. Exceptions include canned tuna, and quotas and safeguards on sensitive crops in the U.S. such as beef, dairy, sugar, peanuts, tobacco and cotton. Despite this, some 68% of Salvadoran potential agro exports actually face trade barriers that could be potentially negotiated under CAFTA, including seasonal tariffs for a wide variety of fruits and vegetables, licenses for beef products, and quotas for dairy products. The existence of these barriers suggest that there could be potential short term gains for Salvadoran exporters of enhanced market access under CAFTA. In addition, experts would benefit from technical assistance and information on dealing with standards, sanitary and phytosanitary requirements applied to the US market.

5.33 A Bank-sponsored study found recently that there are some 200 8-digit tariff headings of agricultural and agro industrial goods in which El Salvador exhibits broad comparative advantage.<sup>116</sup> 116 of these headings do not exhibit revealed comparative advantage in the U.S. market, a potential outcome of existing trade barriers. However, the U.S. is a net exporter of 60 of these headings, making it unlikely that Salvadoran producers could penetrate easily. Reduced tariffs may lead to significant gains then in 56 tariff headings, including dairy products, animal

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<sup>116</sup> Results taken from Monge and Gonzalez-Vega (2003). The methodology used is Balassa’s revealed comparative advantage.

fat, sugar, cereal products, and other processed foods, tobacco and birdfeed. During 1998-2000, exports to the U.S. of these products only amounted to US\$1 million, while exports to the rest of the world were \$11.9 million, signaling strong potential for export expansion in the U.S. Additionally, there is also significant potential for exports of agricultural and processed foods to the markets that cater to the tastes of the Salvadoran immigrant population in the U.S., estimated at around 2 million. These include red beans, tropical fruits (i.e., marañón, mamey and jocote) and processed foods made with wheat and corn flour (i.e., panes, galletas, tamales). Box 2 discusses policy sensitivities in Salvadoran agriculture and the example of NAFTA.

5.34 **Manufactures:** El Salvador exhibits a manufacturing sector relatively developed for its level of income and manages to export a substantial amount to its regional partners (esp. Guatemala). However, its trade with the U.S. is essentially made up of apparel maquila products (nearly 90% of exports in 2001) and traditional exports 3.1% (mainly coffee). To quantify the potential effect of the elimination of U.S. tariffs on Salvadoran exports, partial equilibrium analysis and estimates of market-specific elasticities provided by the SMART software yield the results in Table 4.<sup>117</sup> The simulation uses tariffs that are corrected by the 2001 utilization rates of the CBTPA preferences (i.e., the share of U.S. imports from El Salvador that actually enjoy the zero tariff treatment upon entry for each item). Additionally, the results reflect a scenario where all CACM countries gain zero-tariff access to the U.S. As expected, the results suggest that gains would be concentrated in the apparel sector. Gains of the order of \$182m (15%) for heading 61 and \$161m (39%) for heading 62 are estimated, assuming no significant capacity constraints. Smaller absolute gains would also be expected for other made up textile articles, footwear, articles of leather and cotton.

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<sup>117</sup> Estimations using SMART with trade data from UNCOMTRADE and Tariffs from TRAINS databases.

**Table 4. Estimated effects of US tariff elimination.**

<b>Product Description</b>	<b>HS Code</b>	<b>Actual Exports 2001 (\$ 000)</b>	<b>CAFTA potential gain</b>	<b>Pct. Chg.</b>
<b>Total</b>		1,664,350	355,512	21.4
Art of apparel & clothing access, Total	61	1,209,455	181,827	15.0
Art of apparel & clothing access, n Total	62	408,666	160,667	39.3
Other made up textile articles; set Total	63	22,246	5,716	25.7
Footwear, gaiters and the like; par Total	64	7,698	2,988	38.8
Articles of leather; saddlery/harne Total	42	4,772	2,023	42.4
Cotton. Total	52	7,580	1,319	17.4
Knitted or crocheted fabrics. Total	60	1,309	683	52.2
Man-made filaments. Total	54	626	180	28.7
Manufactures of straw, esparto/other Total	46	1,037	51	4.9
Headgear and parts thereof. Total	65	195	23	11.8
Miscellaneous edible preparations. Total	21	469	17	3.5
Man-made staple fibers. Total	55	18	7	37.5
Wadding, felt & non-woven; yarns; tw Total	56	70	5	7.4
Sugars and sugar confectionery. Total	17	88	3	3.9
Prep.of cereal, flour, starch/milk; Total	19	89	1	1.6
Furniture; bedding, mattress, matt Total	94	13	1	8.1
Cocoa and cocoa preparations. Total	18	15	1	3.6
Special woven fab; tufted tex fab; Total	58	4	0	10.7
Impregnated, coated, cover/laminate Total	59	1	0	8.2
Other vegetable textile fibres; pap Total	53	1	0	11.8

Source: Estimations using SMART with trade data from UNCOMTRADE and Tariffs from TRAINS

5.35 The results of these partial equilibrium simulations need to be interpreted with caution. While the usage of utilization rates of trade preferences is an improvement over traditional analysis of potential apparel gains, simulations cannot easily deal with the complicated structure of export restrictions associated with rules of origin requirements that are likely to be in place in CAFTA for this industry. The greatest potential for expanded Salvadoran apparel exports resides in a loosening up of current rules of origin. For instance, the current quota for knit apparel made from regional inputs, could be expanded to include all types of apparel and other textile-using products and the rule of origin associated with this quota could be less restrictive, establishing that products qualify for tariff free status if component fabrics originate in the CAFTA region. Reforms along these lines could attract investment into yarn spinning, fabric making, and other dyeing and finishing processes for fabrics and apparel into El Salvador that could greatly increase local value added in this sector. El Salvador is well poised to attract such investment given recent ventures in yarn spinning and fabric-making. El Salvador may also benefit the possibility of an apparel quota for products that do not need to meet origin requirements, as obtained by Chile in the recent FTA with the U.S.

5.36 Hopes for expanded apparel exports from El Salvador and from Central America as a whole face significant uncertainties derived from the end of the world textile agreement in January of 2005, when all textile quotas among WTO members are to be eliminated. At that point, it is expected that countries with strong absolute comparative advantage like China may

increase sharply their imports into the U.S. market, to the detriment of higher cost participants.<sup>118</sup> However, even under a complete elimination of quantitative restrictions on apparel trade, El Salvador and other Central American countries are likely continue to enjoy a significant tariff advantage (i.e., zero tariff vs 10% to 30% MFN tariffs in apparel categories) over Asian competitors. In addition, Central American countries enjoy a distance advantage which provides them with a competitive edge in markets where fashion trends change rapidly and just-in-time deliveries and rapid supply response are important. Given El Salvador's strong development of apparel exporting firms, it seems well poised to become an important regional exporting center concentrated in the labor-intensive phases of production. This should create significant opportunities for development of local input supplies and other support services for this cluster, beyond the pure assembly model associated with Maquilas.

5.37 With respect to non apparel manufactures, partial equilibrium simulations do not reveal significant gains aside from maquila products. However, these simulations traditionally underestimate supply response to FTAs because they cannot anticipate new exports aside from those for which positive exports exist. Simulations made for Mexico before NAFTA also under-predicted the expansion of new export categories for the same reason. Before NAFTA, Mexican exports to the US were concentrated in primary products, including oil. After NAFTA, Mexico broadened greatly its export base, with manufacturing trade largely surpassing traditional primary products.

5.38 CAFTA is also expected to encourage investment, including FDI flows to El Salvador. Investors are likely to be attracted by the profit opportunities available in El Salvador and, more significantly, from the reduced risk (or credibility effect) that CAFTA is likely to introduce. This risk effect has been found a critical factor in Mexico, implying the "lock-in" of trade policies and broader reforms (ranging from regulation and competition policies, to property rights, contract enforcement, and macro stability) and the guarantee of access to partner's markets. Empirical analysis has confirmed that FDI flows react positively to FTAs, including in some cases an initial burst that starts from the moment negotiations are announced (as in the case of NAFTA for Mexico).

5.39 However, CAFTA-type treaties are a necessary but not sufficient condition for greater FDI flows. CAFTA cannot substitute for an investor friendly policy and institutional environment or counteract the deleterious effects of volatile macroeconomic management or weak institutions. The following section reviews the complementary actions required to ensure that greater FDI, trade and overall development effects materialize in El Salvador with CAFTA, derived from the experience of other successful cases.

### **Actions to Maximize CAFTA Opportunities**

5.40 CAFTA is the most promising initiative at hand for El Salvador to expand trade levels and boost growth. Government efforts to pursue this agreement within a reasonable time frame seem thus well founded. CAFTA is likely to enhance market access to some Salvadoran products, while making permanent the unilateral preferences offered in the past through CBI legislation. Little if any trade diversion is expected, since the U.S. has been traditionally the largest natural market for Salvadoran exports, as well as its largest source of imports.

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<sup>118</sup> Some uncertainty also arises related to how EPZ regimes will transition into CAFTA. Under WTO rules, maquila exports from free trade zones are considered discriminatory since exporting companies have the advantage of not paying most taxes. El Salvador and most small economies of LAC obtained special WTO dispensation to maintain free trade zone regimes until 2007.

5.41 CAFTA is likely to present some difficulties to agricultural negotiators. Sensitive crops that have been traditionally protected will likely require longer phase out periods. Technical assistance programs will be required to facilitate technological upgrading or crop substitution for weak producers. On the other hand, CAFTA is also likely to present opportunities for development new non-traditional agricultural exports, for which negotiators will need to ensure reciprocity in market access in the U.S. Programs will need to be developed to disseminate information on requirements to access the U.S. market, including technical assistance on how to overcome technical barriers to trade and sanitary and phytosanitary standards.

5.42 In the manufacturing front, negotiators will be well served to focus on pressing for loose rules of origin that diminish costs of trade and prevent some of the restrictions imposed in NAFTA. In particular, in apparel and other products, El Salvador has the demonstrated potential of becoming an important base for labor-intensive phases of production, with more capital intensive inputs sourced from other countries. A growing cluster in apparel and textiles is likely to offer opportunities for greater value added, with substantial backward linkages into the rest of the economy.

5.43 CAFTA and upcoming WTO regulations require that El Salvador begin to think about a transition out of the EPZ regime. Fiscal and other privileges will need to be phased out, without endangering the development of the firms and jobs that today revolve around the maquila cluster. For this, El Salvador needs to provide an improved investment climate, that may compensate for lost advantages to established firms, as well to attract new investors.

5.44 While CAFTA will provide opportunities to accelerate development in El Salvador, complementary actions are required to derive the maximum benefits. The recent Bank study “Lessons from NAFTA” (Lederman et. al., 2003) identifies a number of critical gaps that have limited some of Mexico’s gains. From this experience and others from around the world, important items in the policy agenda for El Salvador include the following:

5.45 **Education and knowledge absorption and generation:** CAFTA is likely to bolster FDI and imports with the capacity to improve technology and productivity. However, to materialize the potential and enhance technological spillovers will require sufficient levels of human capital and an adequate knowledge and innovation system. In education, this means that El Salvador needs to close its ‘gap in skills’, expanding coverage and quality of its primary and secondary schooling system (as explained in Chapter 1). In the innovation front, it will need to boost the quality of its institutions of research, increase expenditures on R&D and develop links between public researchers and private sector users (see Chapter IV). There are important synergies to be exploited between a functioning innovation system and critical higher education initiatives.

5.46 **Institutional development and governance:** El Salvador has achieved considerable progress in the institutional and governance front over the past decade, including the consolidation of democracy and reforms in public administration. However, serious deficiencies still exist, particularly in the rule of law and personal security front, as evidenced by corruption, violence and crime indicators (as explained elsewhere). In particular, El Salvador exhibits one of the highest homicide rates in the world. Weaknesses in rule of law are part of the reason for the apparent low growth yield of reforms in El Salvador in recent years.<sup>119</sup> To reap the rewards of

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<sup>119</sup>Recent empirical studies confirm the importance of institutions and governance in economic development. (D. Kaufman, A. Kraay, 2002, Governance Matters; Growth Without Governance, World



CAFTA, continued improvement in institutions is required, especially those aimed to improve the rule of law and fight corruption. This will require substantial local efforts, as such improvements have not been automatic byproducts of North-South free trade agreements.

5.47 **Infrastructure:** While El Salvador has made great strides in modernizing its infrastructure (esp. airports and roads) in recent years, there are deficiencies that need to be addressed, particularly in road networks and ports (see chapter III). The latter have suffered from operational and administrative inefficiencies that need to be addressed. In addition, the experience of Mexico has shown that the southern provinces have lagged behind the rest of the country in taking advantage of the growth opportunities offered by NAFTA, principally because of low education levels, and weak transport and communications infrastructure.<sup>120</sup> To allow all regions of El Salvador to benefit from CAFTA, strategic investments in infrastructure will be required, with increased emphasis on lagging regions.

5.48 **Macroeconomic management:** Investors should be attracted by El Salvador's record of stable macroeconomic management of recent years. Potential fiscal losses associated with CAFTA will need to be compensated and macroeconomic management strengthened. Within the dollarization framework, the Central Bank's role as lender of last resort to the financial system needs to be bolstered and efforts must be redoubled to ensure compliance with strict prudential norms and regulations. Further fiscal consolidation will also be required in order to pursue effective counter cyclical policies (Perry et. al., 2003).

5.49 **Trade policy:** In addition to strengthening institutions related to meeting CAFTA commitments in the trade administration sphere, El Salvador is likely to benefit from continuing to pursue its agenda of unilateral, bilateral and multilateral actions to expand trade and broader integration opportunities. Deepening trade and other links with regional neighbors through the CACM will improve allocation of resources in the region and provide economies of scale needed to launch new viable export ventures. Further progress in reaching FTAs with Canada, the European Union and with other Latin American countries through FTAA will further broaden economic integration and minimize any possible trade diversion effects from existing FTAs.

5.50 **Broadening the benefits of CAFTA:** Attention is also required to ensure that benefits of CAFTA are spread across all levels of Salvadoran society. This includes policies to foster development of financial services beyond large companies, so that MSMEs have access to finance. This is likely to require legal and institutional shortcomings regarding the protection of creditor and shareholder rights. Retraining programs and targeted transfers for low income farmers/laborers may also be needed for those who are likely to be displaced from their current activities, to facilitate a smooth transition to other areas with more growth potential.

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Bank; Easterly and Levine, 2002.) These studies have also found that improvements in governance do not occur automatically but require substantial reform efforts. (D. Kaufman, Kraay, 2002).

<sup>120</sup> See Esquivel, Lederman, Messmacher and Rios (2002).

## BOX 2: Agriculture, CAFTA and the case of Mexico

Despite substantial trade liberalization in recent years, El Salvador maintains some trade restrictions on imports of certain key agricultural and agroprocessed products, including beef, poultry and pork meat, milk and dairy products, sugar, rice and corn. Most of these restrictions are reflected in tariff levels that are substantially higher than those in other sectors. Tariffs on some of these goods were doubled in 2000, as a response to domestic political pressures.

El Salvador could obtain considerable potential welfare gains through a greater trade liberalization in sensitive sectors through CAFTA. The vast majority of Salvadorans, who are net consumers of these products would clearly benefit. Studies of the potential impact on poor rural households suggest that net consumers would benefit, while larger farmers who are net sellers may face welfare losses. Careful analysis should be carried out to prevent a deterioration in the income situation of poor households in the rural sector.

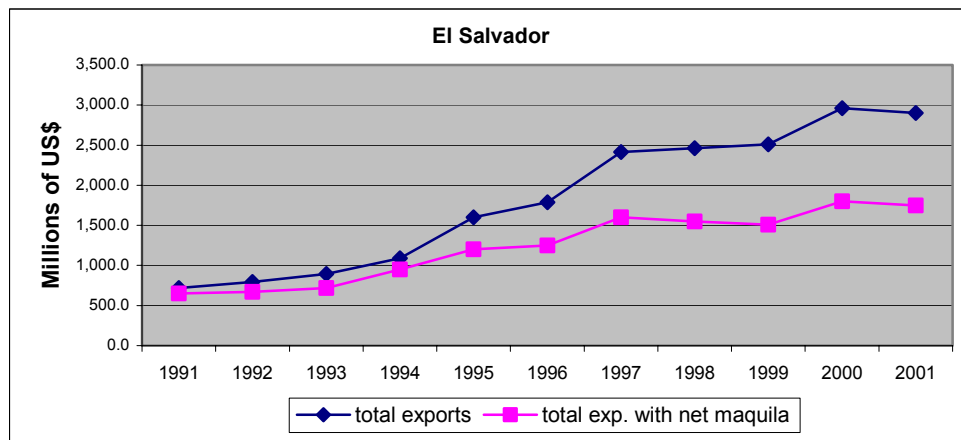
In this area, the post-NAFTA experience provides some important lessons. Mexico included in the agreement all agricultural products, resisting strong pressures to leave some goods excluded from market access disciplines. However, most sensitive crops were allowed to enjoy a gradual 10 and 15 year tariff and quota phase-outs (corn and beans in 15 years). Yet the tariff-rate quotas for most sensitive crops (maize, grains, rice, beans) were not binding, implying that the liberalization achieved thus far was quite substantial. By January 2003, the bulk of agricultural trade faced free trade. Interestingly, trade flows have grown significantly but production levels in Mexico, even of sensitive crops, have not declined. Total consumption of maize has increased, reflecting sharp additional demand for feed from the poultry and pork sectors. Most maize and bean farmers have not seen their welfare decline, apparently since most were net consumers and received income support through the PROCAMPO program. The latter provides income support that is not dependent on the value of production of the sensitive, uncompetitive crops. Many subsistence farmers have also remained isolated from national markets. By contrast, exports of non traditional crops from Mexico, especially vegetables and some fruits, have grown sharply from a low base.

Source: Yunez Naude (2002), Taylor (2002), Monge and Gonzalez Vega (2003) and Lederman et al. (2003, Chapter 3).

## Annex I. TRADE TRENDS IN EL SALVADOR

5.47 After a dismal record in the 1980s (–8 percent average growth rate), Salvadoran exports experienced substantial growth between 1991 and 2002, exhibiting an average annual rate of 14.3 percent. In 2002, total exports in dollar terms had grown to 4.5 times the magnitude recorded in 1990. Even if maquila exports are added only in net terms (i.e., subtracting imported inputs), the value of exports rose to \$1,709 million in 2002, growing at an average rate of 11 percent (Figure 1). This remarkable performance has taken place despite substantial exchange rate appreciation (see Chapter 1). The appreciation has not exerted a significant negative impact on exports since El Salvador has maintained a flexible labor market and a prudent minimum wage policy. This has allowed the country to compete (especially in the apparel sector) in similar conditions with countries such as Mexico and the Dominican Republic, which were the fastest growing exporters to the U.S. market during the 1990s.

**Figure 1. El Salvador: Total exports (US\$ millions)**

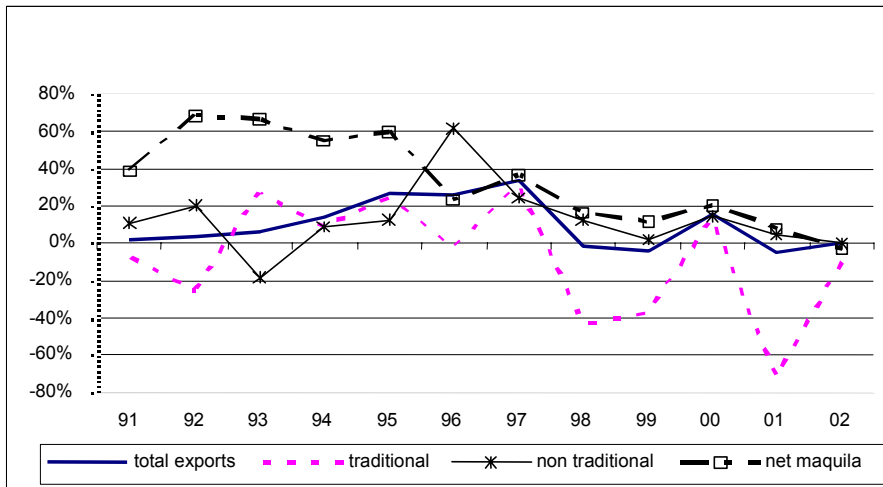


Source: World Bank and BCR

5.48 Export growth, however, has not been sustained during the whole period. Between 1991 and 1997 total exports grew at an average rate of 21.3 percent reflecting the strong increase in exports of maquila products and non traditional exports to the Central American Common Market (CACM) (16.9 percent). From 1998 to 2002, export growth was only 4.5 percent on average, due mainly to the sharp fall in coffee prices, the impact of the earthquakes, and weaker demand in the US and the CACM (Figure 2).

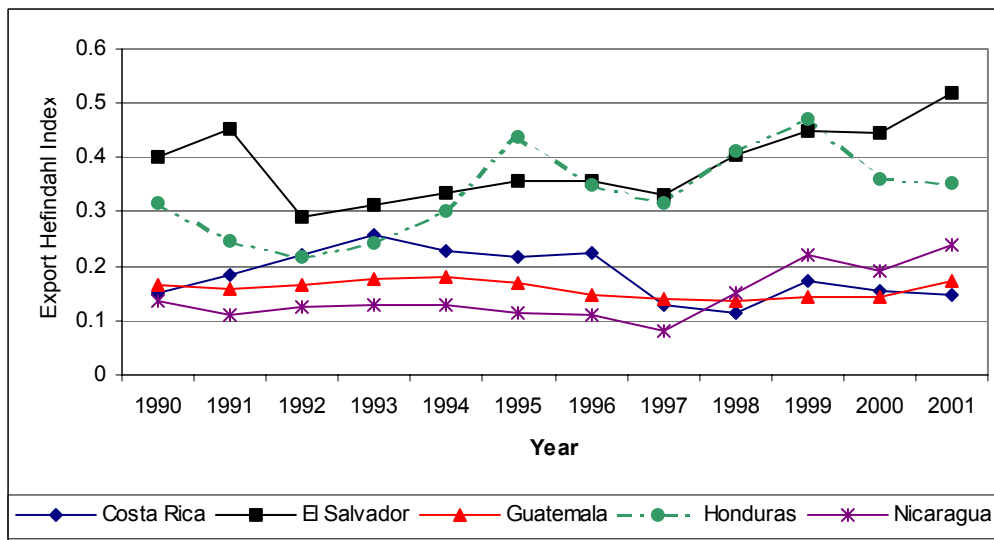
5.49 Exports have diversified into light manufactures. El Salvador has exhibited a clear structural transformation during the last decade, with the share of traditional commodity exports declining in favor of light manufactures. Traditional exports fell from 50 percent of total exports in 1990 to 15% in 2002, while the shares of non traditional exports and net maquila exports went from 48 percent to 58 percent and from 3 percent to 28 percent, respectively, during the same period. However, according to the Herfindahl index of export revenue concentration, El Salvador has made little progress since the early 1990s, since the high concentration in a few commodities has been replaced by concentration in apparel exports. More efforts are needed to foster a diversified export base since recent empirical studies for a wide sample of countries show that export diversification is strongly correlated with economic growth. (Lederman and Maloney, 2003)

**Figure 2. Export growth (%)**



Source: World Bank

**Figure 3 Export Diversification Index**



Source: World Bank

Table 1. Trends in Maquila Exports and Value Added, 1991-2002

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>Net maquila exports</b>	25	42	70.1	108.4	173.6	213.6	291	339	378	456.3	490	475
<b>Annual Growth %</b>	38.9	68.0	66.9	54.6	60.2	23	36.2	16.5	11.5	20.7	7.4	-3.1
<b>Value added %</b>	18.9	21.2	24.2	25.2	26.8	27.9	27.5	28.5	28.4	28.4	29.7	27.0

Source: World Bank and BCR.

Value added calculated as the share of net maquila exports on total maquila exports

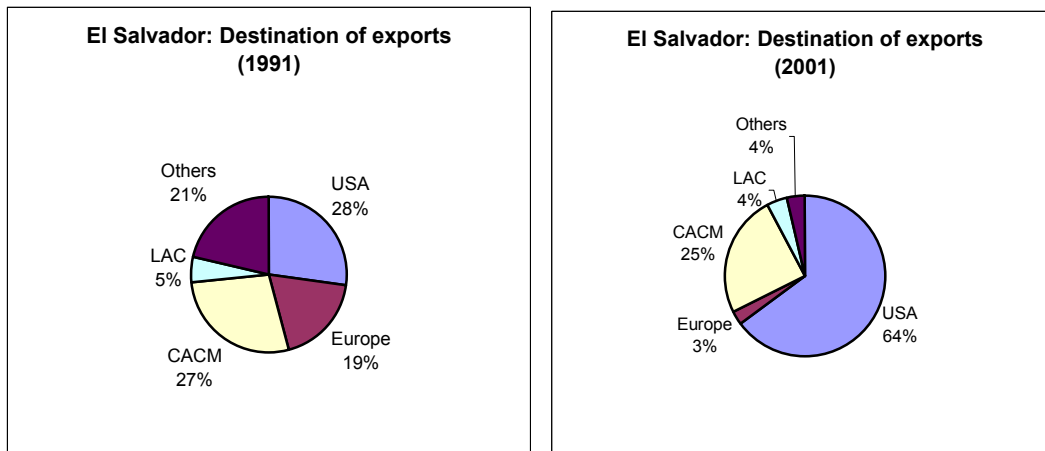
5.50 The manufacture of maquila (assembly) products, has been the most dynamic export activity in El Salvador in the last 12 years, with an average net growth rate of 34 percent. This expansion has been the result of very successful efforts to attract investors after the Peace Accords of 1992, the introduction of a competitive regime for Export Processing Zones (EPZs) regime, and key developments in the textile and apparel industry worldwide. Interestingly, this sector which is often criticized for a lack of backward linkages with the local economy, has shown a steady increase in value added between 1991 and 2001, from 18.9 percent to 30 percent in 2001, while new tariff preferences for assembly operations were responsible for a drop to 27 percent in 2002.

5.51 The maquila activity in El Salvador is mostly dedicated to the production of apparel and other textile products (about 95 percent of maquila exports in 2001). These products have enjoyed from gradually improving conditions of entry into the U.S. market, associated with the CBI initiative, particularly since the early 1990s. Its rapid expansion has also been associated to strategic changes among US textile firms, who took the initiative to develop production sharing arrangements with the CBI members by translating the most labor intensive stages of production to these countries.

5.52 The importance of the U.S. to Salvador's products has grown during the last decade, with the share of exports rising from 28 percent of total exports in 1991, to 64 percent in 2001.<sup>121</sup> The composition of exports to the US market has also changed: while in 1991 more than 51% of total exports of goods to the U.S. were traditional products, by 2002 the share of other products was 82%, of which 65 percent corresponded to gross maquila exports (Figure 4).

<sup>121</sup> This share is based on **gross** maquila exports. When net maquila exports are included the U. S. share in total exports goes down to 42% in 2001.

**Figure 4. El Salvador: Trade Markets, 1991-2001**



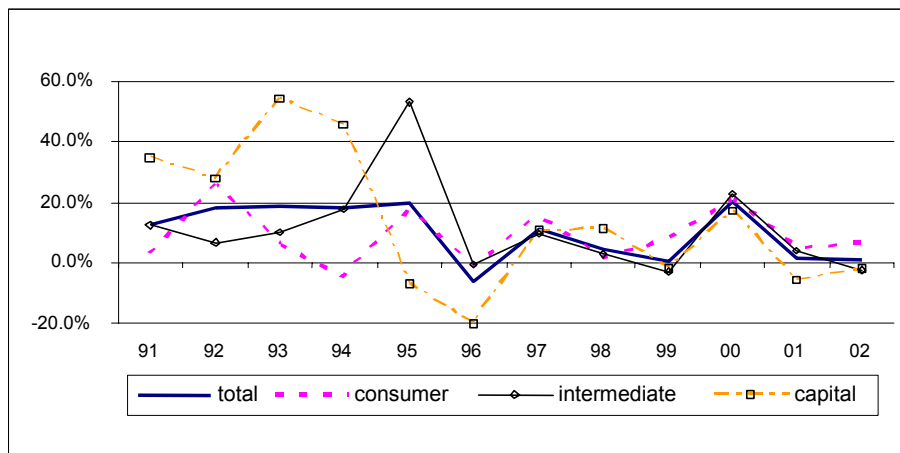
Source: World Bank

5.53 The CACM is the second most important market for El Salvador's exports. Exports to these countries increased more than threefold from \$197m in 1991 to \$722m in 2001. Exports to the CACM are highly diversified and consist mainly of manufacturing non traditional products such as processed foods, paper and iron and steel products. Guatemala is the main trade partner in the region, with a share in the total exported of 19 percent in 2001.

5.54 By contrast, exports to all other destinations aside from the U.S. and CACM have stagnated, with exports to Europe falling sharply in recent years due to the decline in the value of coffee exports.

5.55 As for imports, shipments have exhibited a rapid rise from \$1,400m to \$4,500m between 1991 and 2002.<sup>122</sup> Capital goods have shown the greatest growth, followed by intermediate and consumer goods, except in 2002, when the economic slowdown led to a reduction in imports of capital and intermediate goods (Figure 5).

**Figure 5. El Salvador: Import Trends, 1991-2002**



Source: World Bank

<sup>122</sup> Excludes imports for maquila exports.

5.56 Import structure. By type of product, manufacturing imports have the biggest share (66.5 percent in 2001), followed by agricultural products and fuels (19.2 and 13 percent respectively, in 2001). This composition of imports has not changed significantly during the whole period. Machinery, transport equipment and chemicals account for a large share of manufacturing imports. Agricultural imports consist mainly of a wide range of food products (16.7 percent of total imports in 2001).<sup>123</sup>

5.57 Origin of imports: The U.S. continues to be El Salvador's main trading partner on the import side, although its share fell from 41.1 percent in 1991 to 34.3 percent in 2001, excluding maquila inputs. The U.S. is followed by the CACM countries, with a share of 21.3 percent in 2001. Guatemala is the most important regional exporter to El Salvador (11.3 percent), followed by Mexico (8 percent in 2001).

5.58 FDI inflows to El Salvador increased significantly during the 1990s. Between 1990 and 2002, the stock of FDI in El Salvador increased to \$2,361m, as a result of the opening of the economy, the privatization of public enterprises and reforms to the legal framework. By sectors, in 2002 electricity boasts a share of the FDI stock of 35%, followed by manufacturing (18%), communications (17%), commerce (9%) and maquila (8%). The U.S. is the main investor in El Salvador (36% in 2001), followed by Venezuela (13.8%) and France (9.6%). An interesting feature is the growing importance of the Central American region as a source of FDI for El Salvador (Panama 3.8%, Mexico 3.2 and other CACM countries 4% in 2001). Similarly, El Salvador has also increased its share of FDI in the region, especially in Guatemala and Honduras.

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<sup>123</sup> Data from WTO, 1995, 2003. All the import data excludes maquila.

## VI. HUMAN CAPITAL AND GROWTH

### Background

6.1 Chapter 2 identified progress in education as a potential source of future growth for El Salvador, but did not discuss how this progress could be achieved given the country's conditions, potential and constraints. This Chapter elaborates on these issues building upon the last Flagship of the Latin American region "*Closing the Gap in Education and Knowledge*" and analyzing how these apply to the particular case of El Salvador.

6.2 In this regard, the basic message emerging from this chapter is consistent with the findings of the Latin American report: the main gap in the Salvadoran education system appears in secondary education enrolment. The present gross enrolment in secondary education of 40 percent is roughly 20 percentage points lower than the expected enrolment for a country with El Salvador's level of income. This is a huge gap in education, which places the country in a distinct disadvantage in the world market. In contrast, the estimated deficits in preprimary, primary and tertiary seem more modest: 5 percentage points or less in each case. Since present enrolments determine how stocks will evolve in the future, public policy and therefore public resources should concentrate on expanding secondary education of acceptable quality. The chapter highlights the other shortcomings in the sector, including quality of primary education (which appears low when considered both in terms of completion rates and standardized student test scores), the financing problems of the enterprise training system for workers, and the deficit of workers with high-level technical skills (like engineers and scientists). However, none of these problems could compare to the big gap in secondary education.

6.3 Two issues must be considered in relating human capital and economic growth. First, it is important to stress that the pay-offs of human capital investments through the traditional education system (primary, secondary and tertiary) take place only over long time horizons. Educating a child from pre-primary education to secondary education in itself lasts approximately 15 years and if tertiary education is also considered the period of investments could easily take around 20 years. In this regard, the impact of human capital investments on productivity and growth will take place as new cohorts benefiting from these investments enter the labor market and start representing a significant share of the labor force. Thus, education and human capital policies must be viewed and planned as instruments of long-term growth, not as devices for sparking economic growth spurts.

6.4 Second, it is also important to recognize that interventions in the education sector produce different kinds of benefits. Human capital has a crucial and positive role in long-run growth and, therefore, higher quantity and quality of education will be expected to support a higher standard of living. But education also plays a social role. In fact when one considers potential policy interventions that may lead to a better income distribution, education (especially primary education) always appears as one of the strongest candidates. Without denying the possibility that both objectives of higher efficiency and equality complement each other, in principle it does not follow immediately that sector interventions aimed at one or the other will coincide. In this regard, this chapter focuses especially on the kind of education interventions that might lead to both faster growth and a more equal distribution of income.



## Status of Human Capital Formation in El Salvador

6.5 The formal Salvadoran education system is divided into four basic levels: pre-primary education, primary education (grades 1 to 6), secondary education (grades 7 to 11), and tertiary education (grades 12 to 17). At the tertiary level there are also some technological schools, which offer shorter courses (grades 12 to 15). In addition to this formal system there is an organized labor market training system where government, private sector, and trade unions form a partnership. This classification follows the International Standard Classification of Education, ISCED. This international classification differs from the national classification in one instance. Lower secondary education, grade seven to nine, is classified as *educación básica* in the national classification. We follow the international classification because this classification allows for consistent comparisons across countries.

**Table 1 The Salvadoran Education System Consists of Five Basic Elements:**

	<b>International Education Classification*</b>	<b>National Education Classification</b>	<b>Modality</b>	<b>Grade</b>	<b>Age</b>
1	Pre-primary	<i>Parvularia</i>	General		4-6
2	Primary	<i>Básica</i> 1 <sup>st</sup> and 2 <sup>nd</sup> cycle	General	1-6	7-12
3	Secondary (lower)	<i>Básica</i> 3 <sup>rd</sup> cycle	General	7-9	13-15
	Secondary (upper)	<i>Media</i>	General	10-11	16-17
			Vocational	10-11**	16-18
4	Tertiary	<i>Superior</i>	Technological Institutes	12-15	17-21
			University	12-17	17-23
5	Labor Market Training	<i>Formación Profesional</i>	Training***	-	Lifelong learning

Source: UNESCO (2001) and MINED (2002)

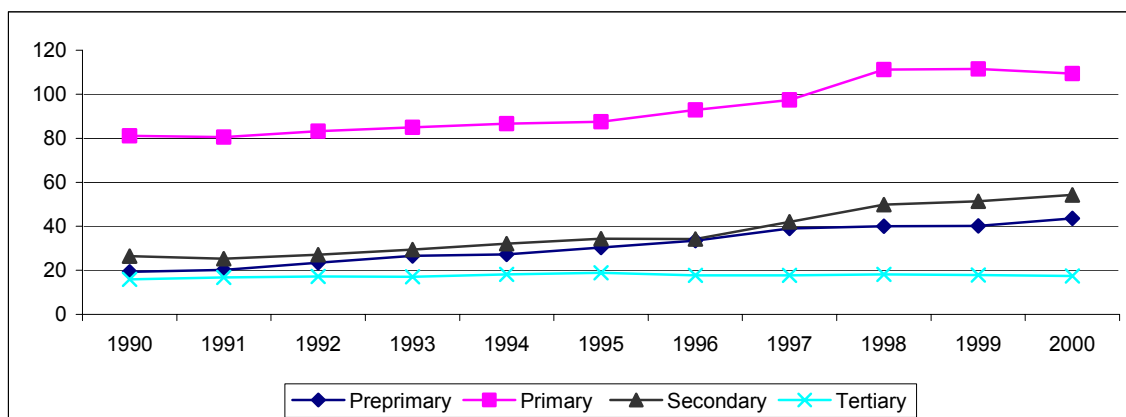
Note: \* International Standard Classification of Education (ISCED) from 1997.

\*\*Vocational secondary education involves parallel vocational education corresponding to one additional year.

\*\*\* Labor market training is administrated by *Instituto Salvadoreño de Formación Profesional*, INSAFORP

6.6 Since the cessation of the armed conflict in the 1992, El Salvador pursued a strategy aimed at expanding education coverage. The best example of this commitment is the implementation of the highly successful EDUCO program, which is based on the involvement of communities, parents and private sector in the provision of education. The country also achieved gains through the traditional schools via the creation of school boards with the participation of teachers and parents. Although the main focus of the Salvadoran strategy has been on pre-primary and primary education, progress can be observed at all different levels. From 1990 to 2001, pre-primary, primary and secondary education expanded significantly by 14, 28 and 28 percentage points respectively. Tertiary education also expanded but the gains, at 2 percentage points, were more modest. As a result of these gains, in 2000 the enrolment rates reached 40 percent in pre-primary (gross), 81 percent in primary (net), 40 percent in secondary (net) and 18 percent in tertiary (gross) (Figure 1).

**Figure 1. El Salvador: Considerable Progress in Gross Enrolment 1990-2000**



Source: World Development Indicators (WDI)

6.7 Despite these improvements in access, El Salvador still compares unfavorably with the rest of the world, even when controlling for income levels. Table 2 reports the actual and expected enrolment levels once one controls for income levels. Analyzing enrolments using cross-country data, we find that El Salvador under-performs in every education level. Controlling for income level, the analysis shows that the divergence between actual and expected enrolments in pre-primary, primary and tertiary is quite modest (5 or less percentage points). This is not the case for secondary education, where the divergence is quite significant (almost 20 percentage points). El Salvador should have a gross enrolment rate of close to 60 percent in secondary education.

**Table 2. El Salvador: Enrolments (1998) and Efficiency (2000) -actual versus expected-**

Enrolment	Pre-Prim <sup>b</sup>	Primary <sup>a</sup>	Secondary <sup>a</sup>	Tertiary <sup>b</sup>	Efficiency	Completion	Repetition
Actual	40	81	39	18	Actual	80.2	7.54
Expected	45	84	57	22	Expected	82.6	7.52
Difference	-5	-3	-18	-4	Difference	-2.4	.02

Note: <sup>a</sup> Net Enrolment. <sup>b</sup> Gross Enrolment, Completion is for grade 1-6 and Repetition is for grade 1-15

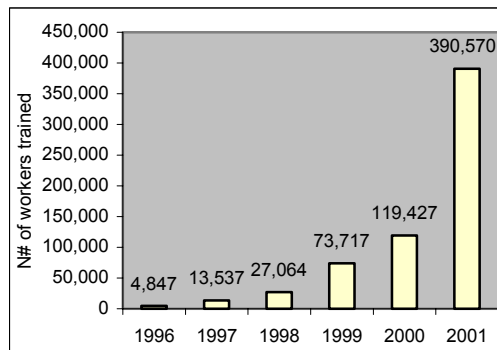
Source: WDI and own calculations

6.8 El Salvador faces significant problems in terms of efficiency and quality of education. In fact, enrollments are important but school completion may even be more important to infer the type of skills that are created. Only four fifths of students completed the first two cycles of primary education in 2000, compared to 61 percent in 1989. Clearly, El Salvador has gone a considerable way to close the gap in primary education, but there is still a long way to reach universal primary education. One important measure of quality of education is that of standardized student test scores. Results from national standardized test scores show that Salvadoran children in grade 3, 6 and 9 only score 50 percent of maximum achievement levels. These scores would indicate that most students would fail if a standard curve were to be used to evaluate them. A second measure on quality that one can consider is the repetition rate in primary education. This is almost 8 percent. A high repetition rate contributes to increasing the share of overage students and the associated problems. When however a similar cross-country

comparison to that in Table 2 suggests that the Salvadoran system does not perform worse than comparable countries in terms of repetition.<sup>124</sup>

### Enterprise Training of Workers

**Figure 2 Impressive growth in firm training**



Source: INSAFORP Memoria de Labores 2001

to consider in the training system. It is organized as an autonomous tri-party institution coordinating with the government through the Ministry of Labor. The members of the board are four private sector representatives, three labor union representatives and three government officials. It started operating in 1994 and is financed through a one percent pay-roll levy.

6.9 Although the formal school system is the centerpiece of any skill building system, general skills acquired in this system are likely to become obsolete as the individual starts working. This is one of the rationales for the implementation of an on-the-job training system. The main difference between traditional and training systems is that whereas schools, colleges and universities concentrate on providing general skills, training systems focus especially on customizing those general skills to the specific technology in use.

6.10 *Instituto Salvadoreño de Formación Profesional* (INSAFORP), the Salvadoran enterprise training organization, is the one element

6.11 The organization primarily finances training solicited by companies and provided by private training centers. Where no private provider exists, INSAFORP provides direct training. This institutional set-up can be considered modern—many Latin American and OECD training systems are currently reforming towards this type of service delivery. This structure avoids at least one of the two common pitfalls of many training systems in Latin America: (i) provision of irrelevant training with little impact on productivity and wages; and (ii) inefficient public provision of training.<sup>125</sup>

6.12 The training system appears to function well: the number of workers receiving training reached 390,000 in 2001 with most workers receiving shorter term courses (Figure 2). Whether the creation of INSAFORP led to additional skill-formation, or instead it simply substituted for firm payment of training is uncertain. However, it seems plausible that the implementation of the training levy raised the level of training beyond the pure market solution and thus successfully addressed some of the market failures involved in the provision of training. The rapid increase in funded courses outpaced revenue growth, and as a consequence INSAFORP used accumulated reserves during 2001 to accommodate high demand. Hence, the current high level of firm training is unsustainable in the medium run without the infusion of additional funds or savings from a more efficient delivery of training.

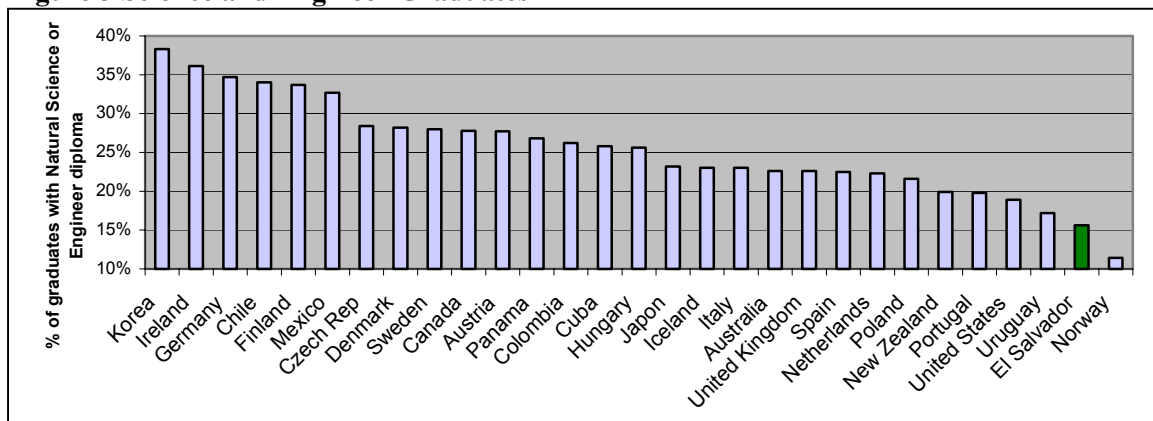
<sup>124</sup> Admittedly half full glasses are also half empty and therefore, El Salvador would not be performing better than expected either.

<sup>125</sup> see Batra, Geeta (2002), “Training, Technology and Firm-Level Competitiveness-Evidence from World Business Survey from Latin America and the Caribbean”, Background paper, World Bank, Washington DC, and the 1993 Latin American Region Flagship.

## The Demand for Skilled Labor

6.13 This is an additional element that may shape the impact of the education system on productivity and growth. For example, the number of scientist and engineers is an important input into both the production of domestic research and development and the capacity of firms to adapt foreign technologies, both factors associated with higher technological levels and faster growth. Thus having workers capable of creating and adapting new technologies is an issue of interest in the skill building chain. Although the number of graduates of technological studies has quadrupled over the past decade, El Salvador still compares poorly with regional and global competitors (Figure 3). According to UNESCO, only 16 percent of graduates from the country's education institutions hold a science or an engineering degree. This compares with 25 percent for the average OECD country. For the Latin American region, the 2003 Flagship study finds a similar lack of technological competence in the labor force, but attributes this to a shortfall in overall enrolment in tertiary education and not as a bias against technical disciplines. For El Salvador, there seems to be strong evidence pointing to a shortcoming of technological skills.

**Figure 3 Science and Engineer Graduates**



Source: UNESCO

6.14 In summary, we find that despite El Salvador's impressive progress in education and training over the last decade, an area where the country should focus its resources is in the expansion of secondary education. The deficit of El Salvador in secondary education is about half the current net enrolment. Other areas that appear as deserving special attention are: (i) the poor quality of primary education where school completion rates are only at 80 percent and standardized test scores are low; (ii) the tripartite system of labor force training that seems to be achieving significant results, but that will have to decrease training in order to be financial sustainable; and (iii) the low number of graduates with science and engineering degrees that may create and adapt new technologies.

6.15 Human skill is a factor traded on the labor market. In economic terms, this special and highly complex factor obeys to the general rules of supply and demand as any other commodity. Its value is determined by (i) the supply of labor with different levels of education, which heavily reflects the functioning of the education system; and (ii) the demand for labor shaped by the choice of technologies. Education is a scarce commodity in the adult population of El Salvador, especially in secondary education. According to the national household survey in 2000, the average adult—above 25 years of age—has completed on average 4.8 years of schooling. This compares to a regional average of 5.8 years in 2002, to an average of 9.7 years for the fast

growing tiger economies in East Asia, and to 11.1 years for OECD countries. A cross-country analysis indicates that given El Salvador's level of income, its population should have at least 6.4 years of education (not 4.8 years).

6.16 In order to estimate the value attached to education by the Salvadoran labor market, one must take into account that the salary level often depends of individual characteristics and context-specific circumstances. For example, younger workers might be more educated, but earns less due to lack of experience. Hence, the difference in observed wages would underestimate the value of education if the difference in experience is not taken into account. Calculation of rates of return to schooling provides a widely used method to separate the impact of co-varying effects, such as experience from the impact of education on wages. To this end, one can specify the following model:

$$y_i = \varphi(s_i, x_i) + u_i \quad (1)$$

where  $y_i$  is the logged labor market earnings for individual  $i$ ;  $s_i$  stands for completed years of schooling,  $x_i$  is a matrix of personal characteristics other than schooling, namely, age, age squared, gender, and, labor market status. The last component,  $u_i$ , is a random disturbance term that captures unobserved characteristics.

6.17 The functional form for education has been deliberately left unspecified in equation (1), because the model will be specified in three different ways to address the following three different questions: (i) what value is attached to an extra year of education; (ii) what value is attached to different educational levels (primary, secondary, or tertiary); and (iii) different types of education (technical, or academic-non-technical). The specifications are the following. Respectively:

- (i) Linear formulation of education, where the model assumes a constant return to one additional year of schooling regardless of the level:

$$y_i = \beta_0 + \beta_{sch} S_{scho,i} + x_i' \beta + z_i' \beta_z + u_i \quad (2)$$

$\beta_{sch}$  could be interpreted as the returns to one year of additional schoolings and  $S_{scho}$  stands for the years of schooling for individual  $i$ .

- (ii) Spline form of years of schooling, where the average return to one additional year of schooling can vary between levels of education:

$$y_i = \beta_0 + \beta_{pri12} S_{pri12,i} + \beta_{low\ sec} S_{low\ sec,i} + \beta_{upp\ sec} S_{upp\ sec,i} + \beta_{ter} S_{ter,i} + x_i' \beta + z_i' \beta_z + u_i \quad (3)$$

The different subscripts for  $S$  refer to the number of years of schooling completed in primary education (1-6 years of schooling), lower secondary education (7-9 years of schooling), upper secondary education (10-11 years of schooling), and tertiary education (12 + years of schooling).

- (iii) Different return to technological tertiary education taught at one of the 6 technological institutes in El Salvador as compared to the return to academic tertiary education provided by universities:

$$y_i = \beta_0 + \beta_{pri12} S_{pri12,i} + \beta_{low\ sec} S_{low\ sec,i} + \beta_{upp\ sec} S_{upp\ sec,i} + x_i' \beta + z_i' \beta_z + \beta_{tech} D_{technological} S_{ter,i} + u_i \quad (4)$$

In (4)  $D_{\text{technological}}$  is a dummy variable taking a value of one for former students from technology institutes.

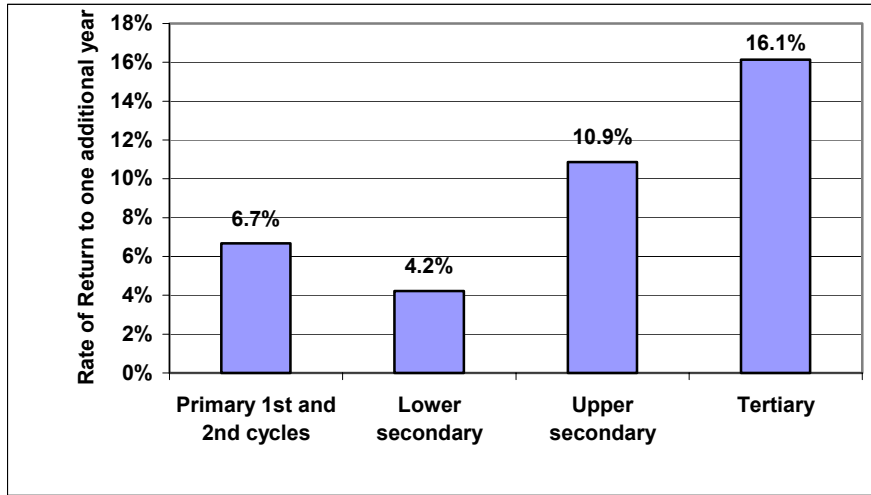
6.18 The main results emerging from estimating rate of returns to schooling suggest that (Annex 1 presents detailed results) the typical Salvadoran receives a 8.7 percent return to an additional year of education. This rate of return would be lower than that for Latin America and the Caribbean (12 percent per additional year), but higher than the one found in the Middle East and North Africa (about 7.5 percent) and in OECD countries (7.1 percent). This is probably expected due to the lower educational levels of El Salvador (and therefore lower skill supply). What is surprising, however, is why it is lower than most of Latin American. This may suggest that, given the lower supply of skilled labor in El Salvador relative to the region, the demand for these skills must also be lower. Clearly, the comparison with the two other groups of reference (Middle East and North Africa, and OECD) would indicate that skilled labor is still a scarce factor in El Salvador.

6.19 The results on estimates for different returns by level of education suggest that the value of one additional year of schooling depends crucially upon the level of schooling (Figure 4). For basic skills taught at the first six years of primary education, there would be a return of close to 7 percent, while lower secondary education is relatively meekly rewarded at 4.2 percent. In contrast, the minority that passed the barrier to upper secondary education earns a high return of close to 11 percent. Finally, the even fewer who made it to tertiary education realize a substantial return of about 16 percent. It is important not to interpret returns by education levels as independent. They are linked in the sense that nobody can pass tertiary education only. Thus, the high return to this level of education should partly be attributed to returns to the lower levels of education that permitted access to tertiary education. This pattern of rising returns with the level of education is consistent with those found in other Latin American countries (see for example the 2003 Flagship) although the return for secondary education for El Salvador seems to be higher.<sup>126</sup> On the other hand, this is not surprising given the lower enrolments of El Salvador in upper secondary education.

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<sup>126</sup> For example, the returns in primary and secondary education in Brazil and Colombia in 2000 would be between 7 and 8 percent, with the return in tertiary increasing to about 20 percent in both cases.

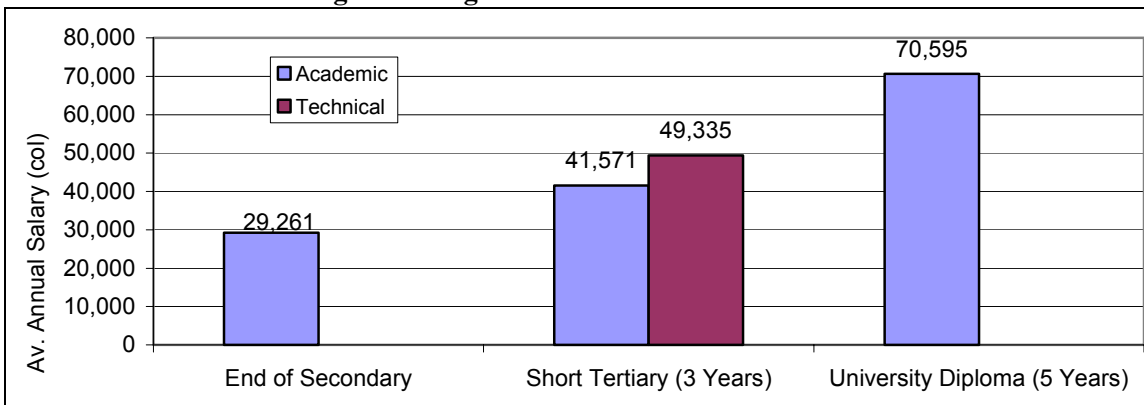
**Figure 4 Returns to different levels of education**



Note: For wage and salaried workers only  
 Source: Household Survey, 2001

6.20 As for the results of the third method, Figure 5 synthesizes the premium to technical education. It shows the annual wages of graduates by type of institution. Judging from point estimates, graduates from technical studies experience a higher wage increase than graduates from non-technical short-term education: about US\$5,600 (col 49,500) compared to US\$ 4,750 (col 41,500) per year respectively. However, if the student would have chosen a university career—and finished it—the average wage would have been higher US\$ 8,100 (col 70,500) per year.<sup>127</sup> A word of caution is required here though, since controlling for observable factors, such as age and experience, the difference in the returns to technological and academic education is statistically insignificant.

**Figure 5 Wage Premium to Technical Skills**



Note: For salaried workers only.  
 Source: Household Survey, 2001

<sup>127</sup> The completion of the final year of the university education is especially rewarding, (the so-called “diploma-effect” or “sheepskin effect”). This effect is so important that dropouts from university will earn less than graduates from technological institutes even though they have completed the same number of years of schooling.

6.21 In summary, the overall demand for skilled labor in El Salvador seems to be high, although it appears to be lower than the average for the Latin American region, since the rate of return of one additional year of education is somewhat lower in El Salvador. Further, there is no evidence of a large significant wage premium on higher education technical skills with respect to higher education academic skills. Where there seems to be relative scarcity is in upper secondary education, something that would be consistent with the findings of the section analyzing the supply of skills.

## **Addressing the Constraints to Human Capital Development**

### **Continuing Progress in Pre-primary Education**

6.22 Pre-primary interventions are likely to be an area that yields high social returns in El Salvador. Pre-primary programs improve school readiness and reduce drop-out rates in primary years. International evidence suggests that pre-school interventions have been successful in altering the social skills and motivation of children and are associated with increases in sector efficiency that extend beyond the preprimary level. For example, evidence for Brazil would indicate that preschool attendance has significant beneficial effects in terms of learning and earnings, even controlling for family background and other factors.<sup>128</sup> Two years of preschool increases (i) schooling attainment by about one year, with some evidence that this effect is greater for poorer households; (ii) reduces grade repetition by 6-10% (greater for poorer households), thus increasing the efficiency of education expenditures; and (iii) increases male earnings by between 4 and 12 percent, again with some indication of a higher increase for poorer families.<sup>129</sup>

### **Improving the Quality of Primary Education**

6.23 Quality of primary should be improved through consistent policy initiatives. Considerable efforts went into reforms of the primary school system in the 1990s. The reforms promoted in an integrated way improvements in coverage, quality and efficiency of primary education. The quality initiatives were developed along the following three axes:

1. Improving the measurement and evaluation of educational outcomes through: (i) the introduction of standardized testing at the primary and secondary level; and (ii) the development of a system of educational standards and competences.
2. Enhancing the management of the system through: (i) establishment of school-based management schemes, not only by the EDUCO-schools, and but also by the creation of participatory school councils in all the traditional schools; (ii) the introduction of Institutional Education Projects (PEI); (iii) decentralization of resource to the schools (*bonos* or vouchers) with the main objective of putting resources and decision-making directly in the schools; and (iv) provision of administrative support to the individual schools.
3. Increasing the quality of teaching staff through: (i) decentralization of teacher training/development program; and (ii) establishment of a performance-based incentive scheme for teachers in rural areas.

6.24 These initiatives led to considerable improvements in quality, but evidence suggests that El Salvador still lags behind in international comparison. Quality needs to be further improved.

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<sup>128</sup> See for example the 2002 Latin America Flagship “*From Natural Resources to the Knowledge Economy*”.

<sup>129</sup> Myers, Robert (2003), "Quality Counts: Preschools in Mexico", presentation at the World Bank.



6.25 To improve quality, community and school-based management strategies need to be strengthened to focus on the quality aspects of teaching and learning in the classroom. Again, increasing school accountability for results is a priority. To support local efforts, the country should: (i) continue efforts to raise achievement scores via curriculum revision, completion of the system of educational standards, provision of materials, teacher training and testing; (ii) increase access to educational technology; and (iii) support for the school to work transition, including financing for projects prepared and implemented by students, youth career goal orientation and counseling, and alliances with the private sector through internship programs and training support. Institutional strengthening is also needed. In particular, to facilitate school accountability, management capacity and tools need to be strengthened to guarantee the appropriate use of resources transferred to schools and to monitor results.<sup>130</sup>

### **Aggressive Expansion of Secondary Enrollment**

6.26 On the basis of the discussion above, the country's major challenge within the education sector appears to be that of closing the gap in the middle levels of the education ladder. Hence improvements in the completion of the third cycle of primary education, grade 7-9, and overall increases in secondary education enrolment. There are several reasons for this:

- (i) transition to lower secondary and upper secondary education are the missing links for the majority of the young population. In these two transitions or during lower secondary education, 60 percent of the children leave the education system and only a few return;
- (ii) expansion of the system at this level would be equitable given it is children from middle and lower income families that exit at this level, (Marquez, 2003). Expansion of secondary education is therefore expected to contribute to the establishment of a large middle class in society and a more equal and stable society.<sup>131</sup>
- (iii) private returns to lower secondary education are low, below 5 percent.

These reasons imply that without public intervention, progress is unlikely to be forthcoming rapidly, thus slowing down the formation of human capital.

6.27 The nature of public intervention should aim at removing supply and demand constraints. Supply-side initiatives mostly seek to increase school infrastructure by building classrooms and improving curriculum and supply of materials. In this area, the EDUCO-program proved successful. FUSADES (2002) reports that average distance to the nearest primary school is less than 1 km in the rural area. Importantly, construction of classrooms need to be based on current and future needs and take into account the costs of provision of schools. Demand-side policies

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<sup>130</sup> More than US\$20 million are sent to school governments to complement their operational and investment budgets

<sup>131</sup> Goldin (1999 and 2001) ("Egalitarian and the Returns to Education during the Great Transformation of American Education", *Journal of Political Economic History* 107 (6): S65-S94. and "The Human Capital-Century and American Leadership: Virtues of the Past", *Journal of Political Economic History* 61(2): S263-S94) finds that the massification of secondary education in the US, the "high school movement", from 1910 to 1940 led to expansion of supply of secondary graduates. This supply-push put a downward pressure on the previously high wage-premium to this group of workers, which implied a more equal distribution of income and higher quality of the work force. A similar evolution can be observed in Brazil from 1976 to 1999, although at a smaller scale. A modest expansion of the supply of workers with lower and upper secondary education implied a reduction in the returns to secondary education on the labor market, which accounted for more than a third of the overall reduction in wage-inequality in Brazil from 1989 to 1999.

seek to induce families to send their children to school. These policies aim to reduce costs associated with schooling. These costs could take the form of (i) direct costs of schooling, such as school fees and text books; (ii) foregone wages; and (iii) low returns to schooling. FUSADES shows that demand side constraints are important. Two thirds of children between the age of 13 and 17 do not attend schooling because of high opportunity costs. These costs consist of the need to work (19.8 percent), the need to perform households tasks (20.3 percent), and the need to shoulder for expensive costs of schooling (20.4 percent).<sup>132</sup> Further, the low return in third cycle of primary education is worrisome. Therefore, programs counterbalancing these costs appear to be an appropriate element in a policy for expansion of the third cycle of primary education and secondary education.<sup>133</sup> There are many examples of successful demand side financing in Latin America. Such as the *Oportunidades (Progressa)* program in Mexico and *Bolsa Escuela* in Brazil.

6.28 The appropriate policy mix of supply and demand side initiatives could be based on careful diagnostic of supply and demand constraints taking into various specific characteristics. For example, constraints to expansion are likely to differ between geographical areas. Lack of school infrastructure in rural areas has been a substantial constraint to expansion of secondary education, while low demand for schooling has reduced enrolment in urban areas. Demand for school is also highly depend upon socio-economic economic group. Other characteristics could influence enrolment, such as socio-economic status and parents' information about the value of education. Therefore, more in depth analysis is needed to design an effective and efficient strategy for expansion of the secondary education system, and interventions would need to be meticulously and consistently evaluated.

### **Financing More Enterprise Training**

6.29 Given fiscal considerations, it is clear that there is a limit to how much the government can increase investment in education, at least in the short run. One alternative, however, is the possibility of involving the private sector in the financing of some activities. In principle, increased private financing could be introduced in areas with high demand, since the beneficiaries of these activities will likely be willing to contribute to the costs without reducing the amount of training already taking place.

6.30 Training is one of the areas of the system where excess demand occurs. Currently, INSAFORP is rationing training to one out of every three request for training.<sup>134</sup> As previously described, the institution is financed by a 1 percent pay-roll levy. Upon approval of the request for training, it funds the training free of charge. Leveraging these funds would be an important means to raise monetary support to increase skill building in the labor force. Leveraging funds could take place through co-financing by firms. In addition, this would raise efficiency since only companies that foresee a sufficiently high return to the proposed training would co-finance. Thus,

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<sup>132</sup> “Invertimos en educación para desafiar el crecimiento económico y la pobreza”, Fundación Salvadoreña para el Desarrollo Económico y Social Departamento de Estudios Económicos y Sociales, San Salvador.

<sup>133</sup> Further, an important demand factor for completion of the third cycle of primary education is access to secondary and tertiary education. Opening these two levels will increase the option value of the lower levels, because it gives the graduate an option to continue to secondary and tertiary education where the labor market gains are substantially higher.

<sup>134</sup> INSAFORP does not keep account of number of formal and informal request for funding, only approved applications, but there is some evidence indicating that only one third of requests are being funded currently.

only the highest value added training would be financed. Box 1 provides international experience on a successful co-financing scheme in Malaysia.

#### **Box 1 Direct co-financing of training: the case of Malaysia**

Most training systems in Latin America are financed by a training levy imposed on firm's pay roll with little or no subsequent contribution to training. In contrast, many training systems in East Asia require enterprises to contribute directly (beyond a general training levy) to a training activity involving its employees. For example, the Malaysian training scheme (HRDF) is funded by a one percent pay roll levy and administered with private sector majority, as in El Salvador. The two schemes, however, differ in their financing of training: the HRDF scheme only reimburses a portion of training costs, while INSAFORP pays the total costs of training. The implicit co-financing from the firm allows HRDF to increase the level of training for the same tax revenue. Further, this mechanism allows for a favorable treatment of small and medium enterprises, which tend to require higher subsidies to undertake training of its workers. HRDF reimburses a higher percentage of the training costs to small and medium enterprises. The introduction of the HRDF scheme has been found to have significantly increased the skill building of the workforce with sizable impacts on productivity, especially in conjunction with new investments in technology.

Source: Gill (2002), Tan (2002) and Batra (2002)<sup>135</sup>

#### **Expanding Formation of High Skilled Labor**

6.31 It seems obvious that technological development would require that the country possesses the appropriate skills. For example, Brazil invested massively in technology during the last three decades, but with few results due to missing human capital. However, it is also the case that if too much investment is concentrated on the creation of high skills and there is no demand for this factor, the situation may be sub-optimal. Further, the analysis above suggests that at the moment there is not an excess of demand for technical workers (at least compared to workers with academic formation).

6.32 Available international evidence suggests a circular relationship between skills and technology, where skills attract technology-rich foreign direct investment (FDI) and where technology in turn increases the demand for additional technological skills. So the issue may be posed as to how countries steer into a virtuous circle where skill begets technology development and vice versa. Educational expansion can be the best technology policy to along with a sound macro-economic framework with an open trade-regime exercising competitive pressure on the domestic economy. (World Bank, 2003).

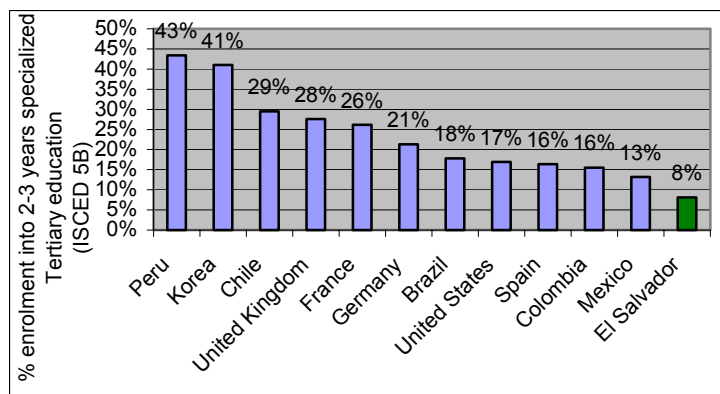
6.33 For example, Monge (2002) reports from interviews with government officials that one of the decisive factors for Costa Rica's successful bid for Intel's production site of computer

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<sup>135</sup> Gill, Indermit (2002), "An Economic Approach to the Knowledge Economy": Technology-Skill Complementarity and Their Implications for Productivity and Policy, Background study to World Bank (2003), World Bank, Washington DC; Tan, Hong (2002) "Do Training Levies Work? Malaysia's HRDF and Its Effects on Training and Firm Level Productivity", World Bank Institute Working Paper, World Bank, Washington DC. Batra, Geeta (2002), "Training, Technology and Firm-Level Competitiveness-Evidence from World Business Survey from Latin America and the Caribbean", Background paper, World Bank, Washington DC.

chips were the quality of its labor force and flexibility of education institutions. In the same paper, Monge analyzes how FDI attracted by Costa Rica had a higher level of embedded technology than El Salvador. Monge ascribes this difference to Costa Rica's relatively high quality of labor force. These case studies are confirmed by cross-country regression studies that underscore that coverage of secondary education seems to be the key human capital element explaining receipt of FDI.

**Figure 8 Low diversification of tertiary education**



Source: Country sources for Latin American countries and OECD (2002) Education at a Glance 2002

Note: Enrolment shares for Non Latin American OECD countries are based on entry rates into tertiary education with an assumed length of International Standard Classification of Education (ISCED) of type 5B studies of 2.5 years and ISCED 5A of 4 years.

tertiary education could be a way to (i) increase relevance of skill building to private sector demand; (ii) reduce investment requirements in the sense that costs per graduate would decline; (iii) and would focus on a student population from middle income families instead of university education that traditionally caters to students from the most affluent backgrounds. As mentioned above, the high returns to tertiary education and the inequitable funding implies that public policies towards expansion of tertiary should focus on facilitating private investment through regulation that would improve functioning of the market for higher education. These initiatives could include (i) increase information available to students, (ii) maintain flexible accreditation system and (iii) unsubsidized support to remove credit constraints.<sup>136</sup> A competitive fund could be a flexible and suitable funding instrument to stimulate private investments to increase capacity of technological institutes.

6.35 While under-capacity in the technological institutes and insufficient demand from students are the major barriers to expansion of tertiary education in the short and medium run, the low number of graduates from secondary is the real long run obstacle to expansion of tertiary education and technological development.

6.34 To expand high skilled labor, tertiary education in El Salvador could be guided towards the needs of the private sector. A diverse tertiary education sector often indicates a vibrant sector providing the broad spectrum of skills demand by society. The Salvadoran tertiary education system is poorly diversified. Only eight percent of the student population attends short-term courses (2-3 years), while most Latin American countries enroll at least the double. Many high-income countries enroll four times as much, (Figure 8). Facilitating this level of

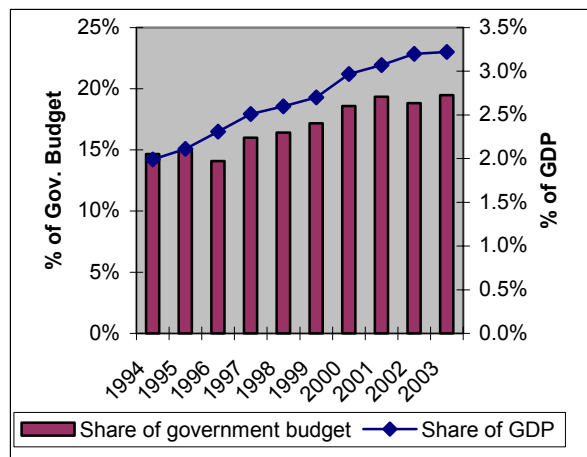
<sup>136</sup> Holm-Nielsen, Lauritz, Andreas Blom and Patricia Zuniga Garcia, "The World Bank in Tertiary Education in LAC", En Breve, No. 18, World Bank, Washington DC

## Financing Issues: The Unavoidable Trade-offs

6.36 A critical issue for educational improvements is the resource constraint. Many of the suggested initiatives would entail additional resources to be successfully implemented. Given the country's fiscal situation, there will not be sufficient resources for all initiatives. Unavoidably, policymakers will have to weigh the benefits of policy initiatives one against the other.

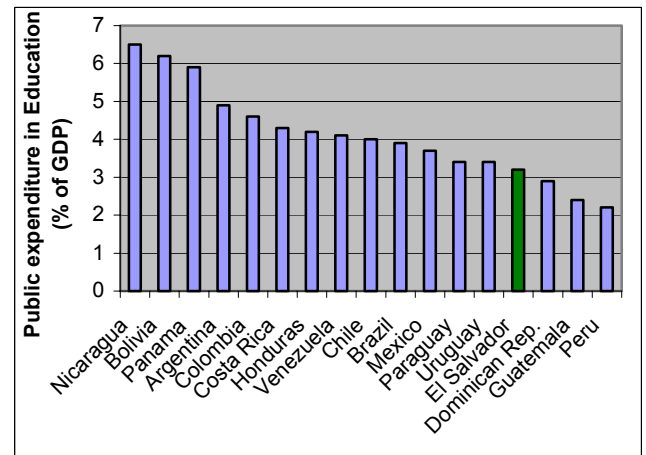
6.37 One consideration is whether major investments in the educational system can take place out of efficiency gains or whether new resources are necessary. In this regard, a recent study by Marquez (2003) finds that there is some room for efficiency improvements in primary and secondary education, especially if the improvements aim at addressing repetition and drop out rates.<sup>137</sup> Overall, El Salvador's levels of efficiency in converting invested resources into outputs seem to be high by international standards. The possibilities of making room for additional investment within the existing budget envelope seem quite limited. The share of government budget devoted to education increased from 15 percent in 1994 to 20 percent in 2003. Expressed as share of GDP, public investment into education amounts to 3.2 percent in 2003. Despite the significant increase in public investment in education, the country still seems to spend too little on education. The average Latin American country invests 4.1 percent of GDP in education, which is 28 percent higher than El Salvador. In fact, the level of public investment in education in El Salvador is still among the bottom five countries in Latin America (Figures 6 and 7).

**Figure 6 Public Education Expenditures in El Salvador**



Source: MINED 1994-2003

**Figure 7 Public Expenditures on Education in Latin American**



Source: UNESCO with the exception of El Salvador (MINED).

Note: Around 2000, for El Salvador 2003.

6.38 There are policy recommendations that need not involve additional public investment, but requires reform. One such example is the introduction of an appropriate co-payment for enterprise training. Such regulatory adjustments could be carried without weighing the benefits and fiscal costs against the other policy initiatives.

6.39 Other policy initiatives require major investments, in particular quality improvements in primary education and programs to expand secondary enrolment. These reforms will therefore

<sup>137</sup> Marquez (2003), "Social Expenditure Review", working paper prepared for the World Bank.

compete for government resources and policymakers will have to weigh the benefits and costs of each program with competing programs. There exists little analysis on the trade-off between investment in quality of primary education and expansion of secondary education that can guide policymakers. However, it is also important to emphasize the complementarity between quality of primary education and expansion of secondary education. A pupil graduating from a high quality primary school would likely attend and complete secondary education. In light of this complementarity, this report recommends a middle-way where incremental resources would be allocated between quality improvements in primary education and expansion of secondary education, with a focus on improving completion of third cycle of primary education and expansion of secondary.

6.40 One highly debated issue is the trade-off of investments in tertiary education versus investment in lower education levels. Some scholars have examined whether this decision involves a trade-off between a more equal society and a more prosperous society. Investments into secondary education benefit a large share of the population, but attract a lower return, while, on the other hand, investments into tertiary education flow to the affluent few, but attract high returns. While this trade-off might exist in the short run, it vanishes in the long run, since a large and vibrant tertiary education system cannot exist without a large pool of high-quality graduates from secondary education. On this possible short run trade-off, this report advises against large public investments in tertiary education. Investments in secondary education are believed to contribute to the establishment of a large middle class, which is of major importance for a stable economic and social development. The quest for an equal and stable society is likely to bring the country higher welfare. Hence, only very strategic government resources should go into tertiary education at this stage of El Salvador's economic development. Reforms of tertiary education should aim for more efficient use of public investments, establishing of an enabling regulatory framework, and promotion of private investment. Such reforms could have an important economic pay-off without diminishing investments into primary and secondary education.

**Table 3. El Salvador: Summary of Policy Recommendations**

<b>Policy Area</b>	<b>Evidence</b>	<b>Policy Recommendation</b>
Pre-Primary	<ul style="list-style-type: none"> <li>• Gross enrolment of 40 %</li> <li>• Enrolment gap of 5 %</li> <li>• Large benefits of well-funded public pre-primary programs in Brazil, Mexico and US, especially for disadvantaged children: schooling attainment up, grade repetition down, earnings up and crime down.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain attention to pre-primary programs. Increase funding for targeted programs for disadvantaged children</li> </ul>
Primary Education	<ul style="list-style-type: none"> <li>• Improving net enrolment 80%</li> <li>• Enrolment gap of 3%</li> <li>• <b>Quality could be improved</b></li> <li>• Moderate return to first and second cycle (7%)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Continue expansion and quality improving policies in place since the early 1990s</b></li> <li>• Prepare to reallocate incremental resources away from primary education as demographic transition occurs over the next decade</li> </ul>
Secondary Education	<ul style="list-style-type: none"> <li>• Low net enrolment 40%</li> <li>• <b>Enrolment gap of 50 % compared to similar countries (18 percentage points)</b></li> <li>• Moderate to low return to third cycle (4%)</li> <li>• <b>High return to upper secondary (11 %)</b></li> <li>• Underspending: only 10% of the education budget is devoted upper secondary education</li> <li>• <b>Expansion will be non-elitist given near universal primary school enrollment</b></li> <li>• Important private demand for this type of skills</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Prioritize expansion of secondary education through a careful location-specific mix of supply and demand initiatives</b></li> <li>• <b>Undertake analysis of the most appropriate policy initiatives for expansion (supply interventions versus demand-side interventions)</b></li> <li>• <b>Address shortfalls in completion in lower secondary education (grades 7 to 9)</b></li> <li>• Increase funding</li> </ul>
Tertiary Education	<ul style="list-style-type: none"> <li>• Low gross enrolment 18%</li> <li>• Gap of 5 %</li> <li>• Low catering to the demand from the private sector for technical skills (only 6 % of students enrolled in technological education)</li> <li>• Low spending on tertiary 7%</li> <li>• High return: 16%</li> </ul>	<p>Facilitate expansion of the private sector through</p> <ul style="list-style-type: none"> <li>• Focus on technological education</li> <li>• Competitive fund for new (private) programs/campuses</li> <li>• Student loans</li> <li>• Consider a competitive fund for scientific and technological development</li> </ul>
Enterprise-based training	<ul style="list-style-type: none"> <li>• <b>Excess demand</b></li> <li>• Modern institutional structure</li> <li>• Seemingly relevant and effective training</li> <li>• <b>No marginal cost to the firm</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Leverage available funds through co-financing from firms, with softer conditions for small and medium enterprise private</b></li> </ul>

## Annex I

### Estimation results of demand for skilled labor model

Linear formulation of education, where the model assumes a constant return to one additional year of schooling regardless of the level:

$$y_i = \beta_0 + \beta_{sch} S_{scho,i} + x_i' \beta + z_i' \beta_z + u_i$$

Variable	Coefficient	T-value
Age	0.071351	24.85
Age Squared	-0.00078	-20.16
Female	-0.26921	-22.71
Rural	-0.13461	-9.64
<b><u>Education</u></b>		
<b>Years of Schooling</b>	<b>0.086646</b>	<b>67.99</b>
<b><u>Regions</u></b>		
La Union	0.016682	0.51
Morazan	-0.15687	-5.11
San Miguel	-0.07143	-2.16
Usulután	-0.14249	-4.97
San Vicente	-0.1167	-3.99
Cabanas	-0.08638	-2.72
La Paz	-0.07731	-3.05
Cuscatlán	-0.07464	-2.56
La Libertad	0.043771	2.32
Chalatenango	-0.09872	-2.94
Sonsonate	-0.06369	-2.92
Santa Ana	-0.05266	-2.29
Ahuachapán	-0.15039	-5.23
Constant	7.878259	154.91
R2		0.4765
N# observations		9,588

Note: For wage and salaried only. Regions are relative to San Salvador



## Formulation 2

Spline form of years of schooling, where the average return to one additional year of schooling can vary between levels of education:

$$y_i = \beta_0 + \beta_{\text{pri12}} S_{\text{pri12},i} + \beta_{\text{low sec}} S_{\text{low sec},i} + \beta_{\text{upp sec}} S_{\text{upp sec},i} + \beta_{\text{ter}} S_{\text{ter},i} + x_i'\beta + z_i'\beta_z + u_i.$$

Variable	Coefficient	T-value
Age	0.064588	22.73
Age Squared	-0.00071	-18.75
Female	-0.28749	-24.57
Rural	-0.14837	-10.8
<b><u>Education</u></b>		
Primary (1 and 2 cycle)	0.066768	18.34
Lower Secondary	0.042233	6.39
Upper Secondary	0.108622	16.97
Tertiary	0.161394	31.4
<b><u>Regions</u></b>		
La Union	-0.02231	-0.7
Morazan	-0.20297	-6.71
San Miguel	-0.11045	-3.39
Usulután	-0.18443	-6.54
San Vicente	-0.1453	-5.06
Cabanas	-0.11268	-3.62
La Paz	-0.07865	-3.16
Cuscatlán	-0.06991	-2.44
La Libertad	0.031175	1.68
Chalatenango	-0.13627	-4.12
Sonsonate	-0.087	-4.06
Santa Ana	-0.075	-3.31
Ahuachapán	-0.17086	-6.05
Constant	8.152715	153.77
R2		0.496
N# observations		9,588
Note: For wage and salaried only, Regions are relative to San Salvador		

### Formulation 3

Different return to technological tertiary education taught at one of the 6 technological institutes in El Salvador and academic tertiary education provided by universities:

$$y_i = \beta_0 + \beta_{pri12} S_{pri12,i} + \beta_{pri3} S_{pri3,i} + \beta_{low\ sec} S_{low\ sec,i} + \beta_{upp\ sec} S_{upp\ sec,i} + x_i' \beta + z_i' \beta_z + \beta_{tech} D_{technological} S_{ter,i} + u_i.$$

Variable	Coefficient	T-value
Age	0.064473	22.68
Age Squared	-0.00071	-18.7
Female	-0.28794	-24.59
Rural	-0.14811	-10.78
<b><u>Education</u></b>		
<b>Primary (1 and 2 cycle)</b>	<b>0.066725</b>	<b>18.32</b>
<b><i>Lower Secondary</i></b>		
	<b>0.042224</b>	<b>6.39</b>
<b>Upper Secondary</b>	<b>0.108153</b>	<b>16.87</b>
<b>Tertiary</b>	<b>0.159812</b>	<b>30.22</b>
<b>Technical Tertiary (additional to tertiary)</b>	<b>0.015198</b>	<b>1.27</b>
<b><u>Regions</u></b>		
La Union	-0.02339	-0.73
Morazan	-0.20524	-6.77
San Miguel	-0.11297	-3.46
Usulután	-0.1871	-6.61
San Vicente	-0.14716	-5.12
Cabanas	-0.11416	-3.66
La Paz	-0.07978	-3.2
Cuscatlán	-0.07081	-2.47
La Libertad	0.030778	1.66
Chalatenango	-0.138	-4.17
Sonsonate	-0.08818	-4.11
Santa Ana	-0.07588	-3.35
Ahuachapán	-0.17163	-6.08
Constant	8.155879	153.66
R2		0.4963
N# observations		9,588
Note: For wage and salaried only, Regions are relative to San Salvador		

6.1 Chapter 2 identified progress in education as a potential source of future growth for El Salvador, but did not discuss how this progress could be achieved given the country's conditions, potential and constraints. This Chapter elaborates on these issues building upon the last Flagship of the Latin American region "*Closing the Gap in Education and Knowledge*" and analyzing how these apply to the particular case of El Salvador.

6.2 In this regard, the basic message emerging from this chapter is consistent with the findings of the Latin American report: the main gap in education El Salvadoran appears in secondary education enrolment. The present gross enrolment in secondary education of 40 percent is roughly 20 percentage points lower than the expected enrolment for a country with El Salvador's level of income. This is a huge gap in education, which places the country in a distinct disadvantage in the world market. In contrast, the estimated deficits in preprimary, primary and tertiary seem more modest: 5 percentage points or less in each case. Since present enrolments determine how stocks will evolve in the future, public policy and therefore public resources should concentrate on expanding secondary education of acceptable quality. The chapter highlights the other shortcomings in the sector, including quality of primary education (which appears low when considered both in terms of completion rates and standardized student test scores), the financing problems of the enterprise training system for workers, and the deficit of workers with high-level technical skills (like engineers and scientists). However, none of these problems could compare to the big gap in secondary education.

6.3 Two issues must be considered in relating human capital and economic growth. First, it is important to stress that the pay-offs of human capital investments through the traditional education system (primary, secondary and tertiary) take place only over long time horizons. Educating a child from pre-primary education to secondary education in itself lasts approximately 15 years and if tertiary education is also considered the period of investments could easily take around 20 years. In this regard, the impact of human capital investments on productivity and growth will take place as new cohorts benefiting from these investments enter the labor market and start representing a significant share of the labor force. Thus, education and human capital policies must be viewed and planned as instruments of long-term growth, not as devices for sparking economic growth spurts.

6.4 Second, it is also important to recognize that interventions in the education sector produce different kinds of benefits. Human capital has a crucial and positive role in long-run growth and, therefore, higher quantity and quality of education will be expected to support a higher standard of living. But education also plays a social role. In fact when one considers potential policy interventions that may lead to a better income distribution, education (especially primary education) always appears as one of the strongest candidates. Without denying the possibility that both objectives of higher efficiency and equality complement each other, in principle it does not follow immediately that sector interventions aimed at one or the other will coincide. In this regard, this chapter focuses especially on the kind of education interventions that might lead to both faster growth and a more equal distribution of income.

## The Supply of Skills in El Salvador: Formal School System and the Training System

6.5 The formal Salvadoran education system is divided into four basic levels: pre-primary education, primary education (grades 1 to 6), secondary education (grades 7 to 11), and tertiary education (grades 12 to 17). At the tertiary level there are also some technological schools, which offer shorter courses (grades 12 to 15). In addition to this formal system there is an organized labor market training system where government, private sector, and trade unions form a partnership. This classification follows the International Standard Classification of Education, ISCED. This international classification differs from the national classification in one instance. Lower secondary education, grade seven to nine, is classified as *educación básica* in the national classification. We follow the international classification because this classification allows for consistent comparisons across countries.

**Table 1 The Salvadoran Education System Consists of Five Basic Elements:**

	<b>International Education Classification*</b>	<b>National Education Classification</b>	<b>Modality</b>	<b>Grade</b>	<b>Age</b>
1	Pre-primary	<i>Parvularia</i>	General		4-6
2	Primary	<i>Básica</i> 1 <sup>st</sup> and 2 <sup>nd</sup> cycle	General	1-6	7-12
3	Secondary (lower)	<i>Básica</i> 3 <sup>rd</sup> cycle	General	7-9	13-15
	Secondary (upper)	<i>Media</i>	General	10-11	16-17
4	Tertiary	<i>Superior</i>	Vocational	10-11**	16-18
			Technological Institutes	12-15	17-21
5	Labor Market Training	<i>Formación Profesional</i>	University	12-17	17-23
			Training***	-	Lifelong learning

Source: UNESCO (2001) and MINED (2002)

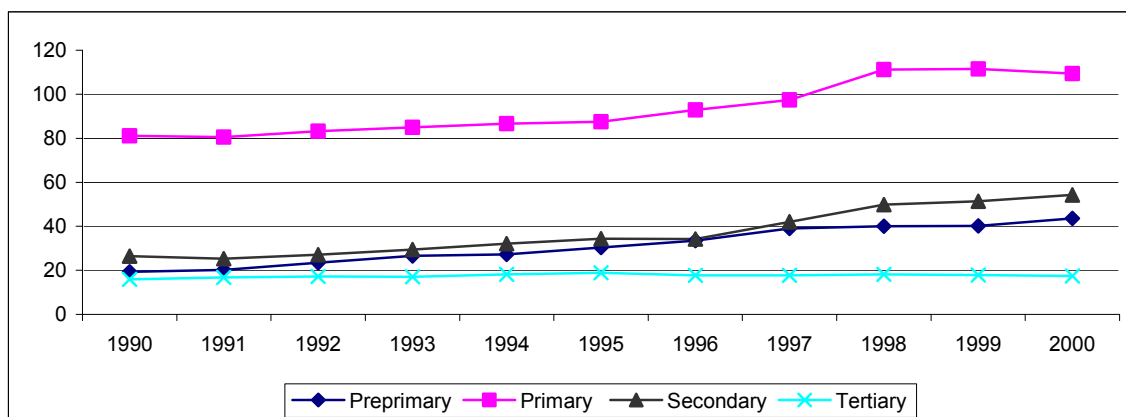
Note: \* International Standard Classification of Education (ISCED) from 1997.

\*\*Vocational secondary education involves parallel vocational education corresponding to one additional year.

\*\*\* Labor market training is administrated by *Instituto Salvadoreño de Formación Profesional*, INSAFORP

6.6 Since the cessation of the armed conflict in the 1992, El Salvador pursued a strategy aimed at expanding education coverage. The best example of this commitment is the implementation of the highly successful EDUCO program, which is based on the involvement of communities, parents and private sector in the provision of education. The country also achieved gains through the traditional schools via the creation of school boards with the participation of teachers and parents. Although the main focus of the Salvadoran strategy has been on pre-primary and primary education, progress can be observed at all different levels. From 1990 to 2001, pre-primary, primary and secondary education expanded significantly by 14, 28 and 28 percentage points respectively. Tertiary education also expanded but the gains, at 2 percentage points, were more modest. As a result of these gains, in 2000 the enrolment rates reached 40 percent in pre-primary (gross), 81 percent in primary (net), 40 percent in secondary (net) and 18 percent in tertiary (gross) (Figure 1).

**Figure 1. El Salvador: Considerable Progress in Gross Enrolment 1990-2000**



Source: World Development Indicators (WDI)

6.7 Despite these improvements in access, El Salvador still compares unfavorably with the rest of the world, even when controlling for income levels. Table 2 reports the actual and expected enrolment levels once one controls for income levels. Analyzing enrolments using cross-country data, we find that El Salvador under-performs in every education level. Controlling for income level, the analysis shows that the divergence between actual and expected enrolments in pre-primary, primary and tertiary is quite modest (5 or less percentage points). This is not the case for secondary education, where the divergence is quite significant (almost 20 percentage points). El Salvador should have a gross enrolment rate of close to 60 percent in secondary education.

**Table 2. El Salvador: Enrolments (1998) and Efficiency (2000) -actual versus expected-**

	Enrolment Pre-Prim <sup>b</sup>	Primary <sup>a</sup>	Secondary <sup>a</sup>	Tertiary <sup>b</sup>	Efficiency	Completion	Repetition
Actual	40	81	39	18	Actual	80.2	7.54
Expected	45	84	57	22	Expected	82.6	7.52
Difference	-5	-3	-18	-4	Difference	-2.4	.02

Note: <sup>a</sup> Net Enrolment. <sup>b</sup> Gross Enrolment, Completion is for grade 1-6 and Repetition is for grade 1-15

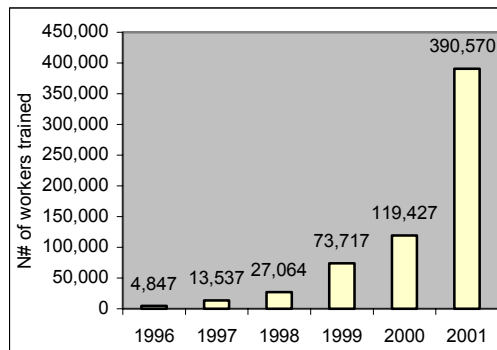
Source: WDI and own calculations

6.8 El Salvador faces significant problems in terms of efficiency and quality of education. In fact, enrollments are important but school completion may even be more important to infer the type of skills that are created. Only four fifths of students completed the first two cycles of primary education in 2000, compared to 61 percent in 1989. Clearly, El Salvador has gone a considerable way to close the gap in primary education, but there is still a long way to reach universal primary education. One important measure of quality of education is that of standardized student test scores. Results from national standardized test scores show that Salvadoran children in grade 3, 6 and 9 only score 50 percent of maximum achievement levels. These scores would indicate that most students would fail if a standard curve were to be used to evaluate them. A second measure on quality that one can consider is the repetition rate in primary education. This is almost 8 percent. A high repetition rate contributes to increasing the share of overage students and the associated problems. When however a similar cross-country

comparison to that in Table 2 suggests that the Salvadoran system does not perform worse than comparable countries in terms of repetition.<sup>138</sup>

### Enterprise Training of Workers

**Figure 2 Impressive growth in firm training**



Source: INSAFORP Memoria de Labores 2001

training system. It is organized as an autonomous tri-party institution coordinating with the government through the Ministry of Labor. The members of the board are four private sector representatives, three labor union representatives and three government officials. It started operating in 1994 and is financed through a one percent pay-roll levy.

6.9 Although the formal school system is the centerpiece of any skill building system, general skills acquired in this system are likely to become obsolete as the individual starts working. This is one of the rationales for the implementation of an on-the-job training system. The main difference between traditional and training systems is that whereas schools, colleges and universities concentrate on providing general skills, training systems focus especially on customizing those general skills to the specific technology in use.

*Instituto Salvadoreño de Formación Profesional (INSAFORP)*, the Salvadoran enterprise training organization, is the one element to consider in the

6.10 The organization primarily finances training solicited by companies and provided by private training centers. Where no private provider exists, INSAFORP provides direct training. This institutional set-up can be considered modern—many Latin American and OECD training systems are currently reforming towards this type of service delivery. This structure avoids at least one of the two common pitfalls of many training systems in Latin America: (i) provision of irrelevant training with little impact on productivity and wages; and (ii) inefficient public provision of training.<sup>139</sup>

6.11 The training system appears to function well: the number of workers receiving training reached 390,000 in 2001 with most workers receiving shorter term courses (Figure 2). Whether the creation of INSAFORP led to additional skill-formation, or instead it simply substituted for firm payment of training is uncertain. However, it seems plausible that the implementation of the training levy raised the level of training beyond the pure market solution and thus successfully addressed some of the market failures involved in the provision of training. The rapid increase in funded courses outpaced revenue growth, and as a consequence INSAFORP used accumulated reserves during 2001 to accommodate high demand. Hence, the current high level of firm training is unsustainable in the medium run without the infusion of additional funds or savings from a more efficient delivery of training.

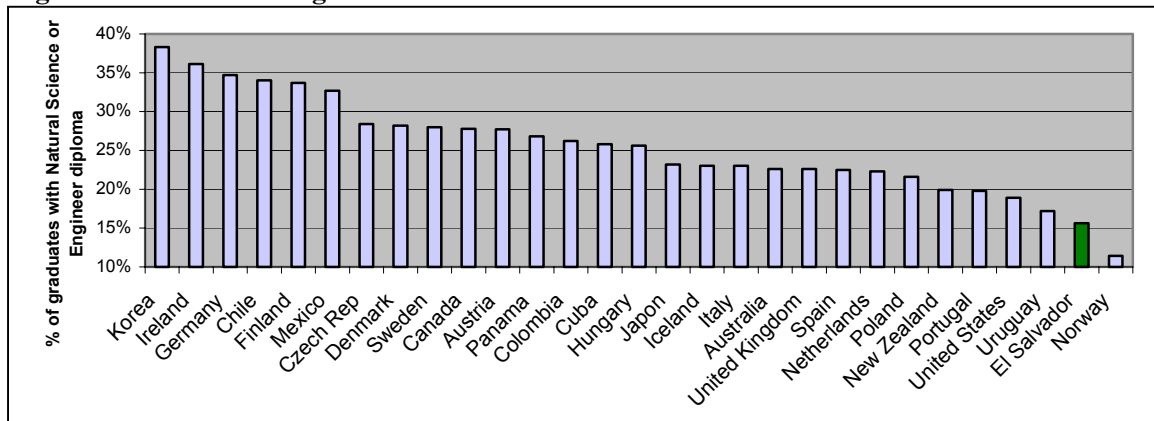
<sup>138</sup> Admittedly half full glasses are also half empty and therefore, El Salvador would not be performing better than expected either.

<sup>139</sup> see Batra, Geeta (2002), “Training, Technology and Firm-Level Competitiveness-Evidence from World Business Survey from Latin America and the Caribbean”, Background paper, World Bank, Washington DC, and the 1993 Latin American Region Flagship.

## Skills for Technological Innovation

6.12 This is an additional element that may shape the impact of the education system on productivity and growth. For example, the number of scientist and engineers is an important input into both the production of domestic research and development and the capacity of firms to adapt foreign technologies, both factors associated with higher technological levels and faster growth. Thus having workers capable of creating and adapting new technologies is an issue of interest in the skill building chain. Although the number of graduates of technological studies has quadrupled over the past decade, El Salvador still compares poorly with regional and global competitors (Figure 3). According to UNESCO, only 16 percent of graduates from the country's education institutions hold a science or an engineering degree. This compares with 25 percent for the average OECD country. For the Latin American region, the 2003 Flagship study finds a similar lack of technological competence in the labor force, but attributes this to a shortfall in overall enrolment in tertiary education and not as a bias against technical disciplines. For El Salvador, there seems to be strong evidence pointing to a shortcoming of technological skills.

**Figure 3 Science and Engineer Graduates**



Source: UNESCO

6.13 In summary, we find that despite El Salvador's impressive progress in education and training over the last decade, an area where the country should focus its resources is in the expansion of secondary education. The deficit of El Salvador in secondary education is about half the current net enrolment. Other areas that appear as deserving special attention are: (i) the poor quality of primary education where school completion rates are only at 80 percent and standardized test scores are low; (ii) the tripartite system of labor force training that seems to be achieving significant results, but that will have to decrease training in order to be financial sustainable; and (iii) the low number of graduates with science and engineering degrees that may create and adapt new technologies.

## The Demand for Skills

6.14 Human skill is a factor traded on the labor market. In economic terms, this special and highly complex factor obeys to the general rules of supply and demand as any other commodity. Its value is determined by (i) the supply of labor with different levels of education, which heavily reflects the functioning of the education system; and (ii) the demand for labor shaped by the

choice of technologies. Education is a scarce commodity in the adult population of El Salvador, especially in secondary education. According to the national household survey in 2000, the average adult—above 25 years of age—has completed on average 4.8 years of schooling. This compares to a regional average of 5.8 years in 2002, to an average of 9.7 years for the fast growing tiger economies in East Asia, and to 11.1 years for OECD countries. A cross-country analysis indicates that given El Salvador’s level of income, its population should have at least 6.4 years of education (not 4.8 years).

6.15 In order to estimate the value attached to education by the Salvadoran labor market, one must take into account that the salary level often depends of individual characteristics and context-specific circumstances. For example, younger workers might be more educated, but earns less due to lack of experience. Hence, the difference in observed wages would underestimate the value of education if the difference in experience is not taken into account. Calculation of rates of return to schooling provides a widely used method to separate the impact of co-varying effects, such as experience from the impact of education on wages. To this end, one can specify the following model:

$$y_i = \varphi(s_i, x_i) + u_i \quad (1)$$

where  $y_i$  is the logged labor market earnings for individual  $i$ ;  $s_i$  stands for completed years of schooling,  $x_i$  is a matrix of personal characteristics other than schooling, namely, age, age squared, gender, and, labor market status. The last component,  $u_i$ , is a random disturbance term that captures unobserved characteristics.

6.16 The functional form for education has been deliberately left unspecified in equation (1), because the model will be specified in three different ways to address the following three different questions: (i) what value is attached to an extra year of education; (ii) what value is attached to different educational levels (primary, secondary, or tertiary); and (iii) different types of education (technical, or academic-non-technical). The specifications are the following. Respectively:

- (iv) Linear formulation of education, where the model assumes a constant return to one additional year of schooling regardless of the level:

$$y_i = \beta_0 + \beta_{sch} S_{scho,i} + x_i' \beta + z_i' \beta_z + u_i \quad (2)$$

$\beta_{sch}$  could be interpreted as the returns to one year of additional schoolings and  $S_{scho}$  stands for the years of schooling for individual  $i$ .

- (v) Spline form of years of schooling, where the average return to one additional year of schooling can vary between levels of education:

$$y_i = \beta_0 + \beta_{pri12} S_{pri12,i} + \beta_{low\ sec} S_{low\ sec,i} + \beta_{upp\ sec} S_{upp\ sec,i} + \beta_{ter} S_{ter,i} + x_i' \beta + z_i' \beta_z + u_i \quad (3)$$

The different subscripts for  $S$  refer to the number of years of schooling completed in primary education (1-6 years of schooling), lower secondary education (7-9 years of schooling), upper secondary education (10-11 years of schooling), and tertiary education (12 + years of schooling).



- (vi) Different return to technological tertiary education taught at one of the 6 technological institutes in El Salvador as compared to the return to academic tertiary education provided by universities:

$$y_i = \beta_0 + \beta_{\text{pri}12} S_{\text{pri}12,i} + \beta_{\text{low sec}} S_{\text{low sec},i} + \beta_{\text{upp sec}} S_{\text{upp sec},i} + x_i' \beta + z_i' \beta_z + \beta_{\text{tech}} D_{\text{technological}} S_{\text{ter},i} + u_i \quad (4)$$

In (4)  $D_{\text{technological}}$  is a dummy variable taking a value of one for former students from technology institutes.

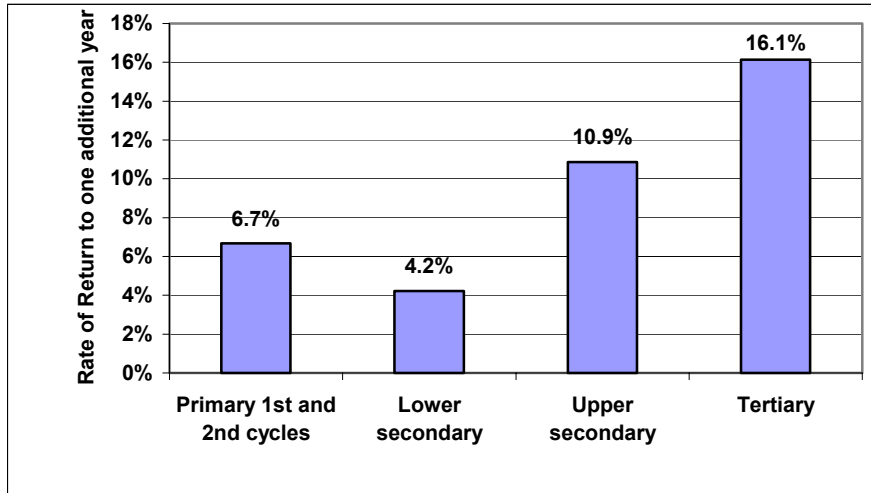
6.17 The main results emerging from estimating rate of returns to schooling suggest that (Annex 1 presents detailed results) the typical Salvadoran receives a 8.7 percent return to an additional year of education. This rate of return would be lower than that for Latin America and the Caribbean (12 percent per additional year), but higher than the one found in the Middle East and North Africa (about 7.5 percent) and in OECD countries (7.1 percent). This is probably expected due to the lower educational levels of El Salvador (and therefore lower skill supply). What is surprising, however, is why it is lower than most of Latin American. This may suggest that, given the lower supply of skilled labor in El Salvador relative to the region, the demand for these skills must also be lower. Clearly, the comparison with the two other groups of reference (Middle East and North Africa, and OECD) would indicate that skilled labor is still a scarce factor in El Salvador.

6.18 The results on estimates for different returns by level of education suggest that the value of one additional year of schooling depends crucially upon the level of schooling (Figure 4). For basic skills taught at the first six years of primary education, there would be a return of close to 7 percent, while lower secondary education is relatively meekly rewarded at 4.2 percent. In contrast, the minority that passed the barrier to upper secondary education earns a high return of close to 11 percent. Finally, the even fewer who made it to tertiary education realize a substantial return of about 16 percent. It is important not to interpret returns by education levels as independent. They are linked in the sense that nobody can pass tertiary education only. Thus, the high return to this level of education should partly be attributed to returns to the lower levels of education that permitted access to tertiary education. This pattern of rising returns with the level of education is consistent with those found in other Latin American countries (see for example the 2003 Flagship) although the return for secondary education for El Salvador seems to be higher.<sup>140</sup> On the other hand, this is not surprising given the lower enrolments of El Salvador in upper secondary education.

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<sup>140</sup> For example, the returns in primary and secondary education in Brazil and Colombia in 2000 would be between 7 and 8 percent, with the return in tertiary increasing to about 20 percent in both cases.

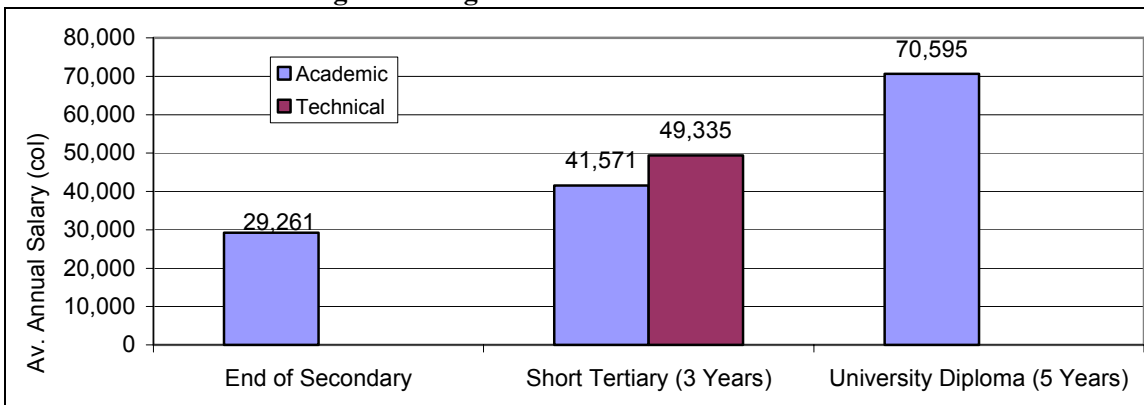
**Figure 4 Returns to different levels of education**



Note: For wage and salaried workers only  
 Source: Household Survey, 2001

6.19 As for the results of the third method, Figure 5 synthesizes the premium to technical education. It shows the annual wages of graduates by type of institution. Judging from point estimates, graduates from technical studies experience a higher wage increase than graduates from non-technical short-term education: about US\$5,600 (col 49,500) compared to US\$ 4,750 (col 41,500) per year respectively. However, if the student would have chosen a university career—and finished it—the average wage would have been higher US\$ 8,100 (col 70,500) per year.<sup>141</sup> A word of caution is required here though, since controlling for observable factors, such as age and experience, the difference in the returns to technological and academic education is statistically insignificant.

**Figure 5 Wage Premium to Technical Skills**



Note: For salaried workers only.  
 Source: Household Survey, 2001

<sup>141</sup> The completion of the final year of the university education is especially rewarding, (the so-called “diploma-effect” or “sheepskin effect”). This effect is so important that dropouts from university will earn less than graduates from technological institutes even though they have completed the same number of years of schooling.

6.20 In summary, the overall demand for skilled labor in El Salvador seems to be high, although it appears to be lower than the average for the Latin American region, since the rate of return of one additional year of education is somewhat lower in El Salvador. Further, there is no evidence of a large significant wage premium on higher education technical skills with respect to higher education academic skills. Where there seems to be relative scarcity is in upper secondary education, something that would be consistent with the findings of the section analyzing the supply of skills.

## **Addressing the Constraints to Human Capital Development**

### **Continuing Progress in Pre-primary Education**

6.22 Pre-primary interventions are likely to be an area that yields high social returns in El Salvador. Pre-primary programs improve school readiness and reduce drop-out rates in primary years. International evidence suggests that pre-school interventions have been successful in altering the social skills and motivation of children and are associated with increases in sector efficiency that extend beyond the preprimary level. For example, evidence for Brazil would indicate that preschool attendance has significant beneficial effects in terms of learning and earnings, even controlling for family background and other factors.<sup>142</sup> Two years of preschool increases (i) schooling attainment by about one year, with some evidence that this effect is greater for poorer households; (ii) reduces grade repetition by 6-10% (greater for poorer households), thus increasing the efficiency of education expenditures; and (iii) increases male earnings by between 4 and 12 percent, again with some indication of a higher increase for poorer families.<sup>143</sup>

### **Improving the Quality of Primary Education**

6.23 Quality of primary should be improved through consistent policy initiatives. Considerable efforts went into reforms of the primary school system in the 1990s. The reforms promoted in an integrated way improvements in coverage, quality and efficiency of primary education. The quality initiatives were developed along the following three axes:

4. Improving the measurement and evaluation of educational outcomes through: (i) the introduction of standardized testing at the primary and secondary level; and (ii) the development of a system of educational standards and competences.
5. Enhancing the management of the system through: (i) establishment of school-based management schemes, not only by the EDUCO-schools, and but also by the creation of, participatory school councils in all the traditional schools; (ii) the introduction of Institutional Education Projects (PEI); (iii) decentralization of resource to the schools (*bonos* or vouchers) with the main objective of putting resources and decision-making directly in the schools; and (iv) provision of administrative support to the individual schools.
6. Increasing the quality of teaching staff through: (i) decentralization of teacher training/development program; and (ii) establishment of a performance-based incentive scheme for teachers in rural areas.

These initiatives led to considerable improvements in quality, but evidence suggests that El Salvador still lags behind in international comparison. Quality needs to be further improved.

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<sup>142</sup> See for example the 2002 Latin America Flagship “*From Natural Resources to the Knowledge Economy*”.

<sup>143</sup> Myers, Robert (2003), "Quality Counts: Preschools in Mexico", presentation at the World Bank.

6.23 To improve quality, community and school-based management strategies need to be strengthened to focus on the quality aspects of teaching and learning in the classroom. Again, increasing school accountability for results is a priority. To support local efforts, the country should: (i) continue efforts to raise achievement scores via curriculum revision, completion of the system of educational standards, provision of materials, teacher training and testing; (ii) increase access to educational technology; and (iii) support for the school to work transition, including financing for projects prepared and implemented by students, youth career goal orientation and counseling, and alliances with the private sector through internship programs and training support. Institutional strengthening is also needed. In particular, to facilitate school accountability, management capacity and tools need to be strengthened to guarantee the appropriate use of resources transferred to schools and to monitor results.<sup>144</sup>

### **Aggressive Expansion of Secondary Enrollment**

6.24 On the basis of the discussion above, the country's major challenge within the education sector appears to be that of closing the gap in the middle levels of the education ladder. Hence improvements in the completion of the third cycle of primary education, grade 7-9, and overall increases in secondary education enrolment. There are several reasons for this:

- (iv) transition to lower secondary and upper secondary education are the missing links for the majority of the young population. In these two transitions or during lower secondary education, 60 percent of the children leave the education system and only a few return;
- (v) expansion of the system at this level would be equitable given it is children from middle and lower income families that exit at this level, (Marquez, 2003). Expansion of secondary education is therefore expected to contribute to the establishment of a large middle class in society and a more equal and stable society.<sup>145</sup>
- (vi) private returns to lower secondary education are low, below 5 percent.

These reasons imply that without public intervention, progress is unlikely to be forthcoming rapidly, thus slowing down the formation of human capital.

6.25 The nature of public intervention should aim at removing supply and demand constraints. Supply-side initiatives mostly seek to increase school infrastructure by building classrooms and improving curriculum and supply of materials. In this area, the EDUCO-program proved successful. FUSADES (2002) reports that average distance to the nearest primary school is less than 1 km in the rural area. Importantly, construction of classrooms need to be based on current and future needs and take into account the costs of provision of schools. Demand-side policies

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<sup>144</sup> More than US\$20 million are sent to school governments to complement their operational and investment budgets

<sup>145</sup> Goldin (1999 and 2001) ("Egalitarian and the Returns to Education during the Great Transformation of American Education", *Journal of Political Economic History* 107 (6): S65-S94. and "The Human Capital-Century and American Leadership: Virtues of the Past", *Journal of Political Economic History* 61(2): S263-S94) finds that the massification of secondary education in the US, the "high school movement", from 1910 to 1940 led to expansion of supply of secondary graduates. This supply-push put a downward pressure on the previously high wage-premium to this group of workers, which implied a more equal distribution of income and higher quality of the work force. A similar evolution can be observed in Brazil from 1976 to 1999, although at a smaller scale. A modest expansion of the supply of workers with lower and upper secondary education implied a reduction in the returns to secondary education on the labor market, which accounted for more than a third of the overall reduction in wage-inequality in Brazil from 1989 to 1999.

seek to induce families to send their children to school. These policies aim to reduce costs associated with schooling. These costs could take the form of (i) direct costs of schooling, such as school fees and text books; (ii) foregone wages; and (iii) low returns to schooling. FUSADES shows that demand side constraints are important. Two thirds of children between the age of 13 and 17 do not attend schooling because of high opportunity costs. These costs consist of the need to work (19.8 percent), the need to perform households tasks (20.3 percent), and the need to shoulder for expensive costs of schooling (20.4 percent).<sup>146</sup> Further, the low return in third cycle of primary education is worrisome. Therefore, programs counterbalancing these costs appear to be an appropriate element in a policy for expansion of the third cycle of primary education and secondary education.<sup>147</sup> There are many examples of successful demand side financing in Latin America. Such as the *Oportunidades (Progressa)* program in Mexico and *Bolsa Escuela* in Brazil.

6.26 The appropriate policy mix of supply and demand side initiatives could be based on careful diagnostic of supply and demand constraints taking into various specific characteristics. For example, constraints to expansion are likely to differ between geographical areas. Lack of school infrastructure in rural areas has been a substantial constraint to expansion of secondary education, while low demand for schooling has reduced enrolment in urban areas. Demand for school is also highly depend upon socio-economic economic group. Other characteristics could influence enrolment, such as socio-economic status and parents' information about the value of education. Therefore, more in depth analysis is needed to design an effective and efficient strategy for expansion of the secondary education system, and interventions would need to be meticulously and consistently evaluated.

### **Financing More Enterprise Training**

6.27 Given fiscal considerations, it is clear that there is a limit to how much the government can increase investment in education, at least in the short run. One alternative, however, is the possibility of involving the private sector in the financing of some activities. In principle, increased private financing could be introduced in areas with high demand, since the beneficiaries of these activities will likely be willing to contribute to the costs without reducing the amount of training already taking place.

6.28 Training is one of the areas of the system where excess demand occurs. Currently, INSAFORP is rationing training to one out of every three request for training.<sup>148</sup> As previously described, the institution is financed by a 1 percent pay-roll levy. Upon approval of the request for training, it funds the training free of charge. Leveraging these funds would be an important means to raise monetary support to increase skill building in the labor force. Leveraging funds could take place through co-financing by firms. In addition, this would raise efficiency since only companies that foresee a sufficiently high return to the proposed training would co-finance. Thus,

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<sup>146</sup> “Invertimos en educación para desafiar el crecimiento económico y la pobreza”, Fundación Salvadoreña para el Desarrollo Económico y Social Departamento de Estudios Económicos y Sociales, San Salvador.

<sup>147</sup> Further, an important demand factor for completion of the third cycle of primary education is access to secondary and tertiary education. Opening these two levels will increase the option value of the lower levels, because it gives the graduate an option to continue to secondary and tertiary education where the labor market gains are substantially higher.

<sup>148</sup> INSAFORP does not keep account of number of formal and informal request for funding, only approved applications, but there is some evidence indicating that only one third of requests are being funded currently.

only the highest value added training would be financed. Box 1 provides international experience on a successful co-financing scheme in Malaysia.

#### **Box 1 Direct co-financing of training: the case of Malaysia**

Most training systems in Latin America are financed by a training levy imposed on firm's pay roll with little or no subsequent contribution to training. In contrast, many training systems in East Asia require enterprises to contribute directly (beyond a general training levy) to a training activity involving its employees. For example, the Malaysian training scheme (HRDF) is funded by a one percent pay roll levy and administered with private sector majority, as in El Salvador. The two schemes, however, differ in their financing of training: the HRDF scheme only reimburses a portion of training costs, while INSAFORP pays the total costs of training. The implicit co-financing from the firm allows HRDF to increase the level of training for the same tax revenue. Further, this mechanism allows for a favorable treatment of small and medium enterprises, which tend to require higher subsidies to undertake training of its workers. HRDF reimburses a higher percentage of the training costs to small and medium enterprises. The introduction of the HRDF scheme has been found to have significantly increased the skill building of the workforce with sizable impacts on productivity, especially in conjunction with new investments in technology.

Source: Gill (2002), Tan (2002) and Batra (2002)<sup>149</sup>

#### **Expanding Formation of High Skilled Labor**

6.29 It seems obvious that technological development would require that the country possesses the appropriate skills. For example, Brazil invested massively in technology during the last three decades, but with few results due to missing human capital. However, it is also the case that if too much investment is concentrated on the creation of high skills and there is no demand for this factor, the situation may be sub-optimal. Further, the analysis above suggests that at the moment there is not an excess of demand for technical workers (at least compared to workers with academic formation).

6.30 Available international evidence suggests a circular relationship between skills and technology, where skills attract technology-rich foreign direct investment (FDI) and where technology in turn increases the demand for additional technological skills. So the issue may be posed as to how countries steer into a virtuous circle where skill begets technology development and vice versa. Educational expansion can be the best technology policy to along with a sound macro-economic framework with an open trade-regime exercising competitive pressure on the domestic economy. (World Bank, 2003).

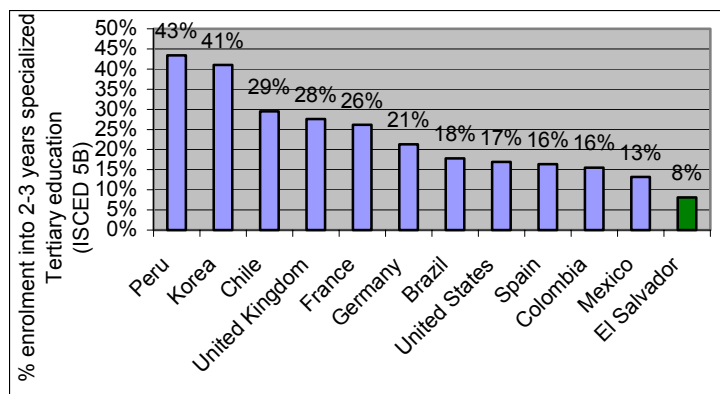
6.31 For example, Monge (2002) reports from interviews with government officials that one of the decisive factors for Costa Rica's successful bid for Intel's production site of computer

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<sup>149</sup> Gill, Indermit (2002), "An Economic Approach to the Knowledge Economy": Technology-Skill Complementarity and Their Implications for Productivity and Policy, Background study to World Bank (2003), World Bank, Washington DC; Tan, Hong (2002) "Do Training Levies Work? Malaysia's HRDF and Its Effects on Training and Firm Level Productivity", World Bank Institute Working Paper, World Bank, Washington DC. Batra, Geeta (2002), "Training, Technology and Firm-Level Competitiveness-Evidence from World Business Survey from Latin America and the Caribbean", Background paper, World Bank, Washington DC.

chips were the quality of its labor force and flexibility of education institutions. In the same paper, Monge analyzes how FDI attracted by Costa Rica had a higher level of embedded technology than El Salvador. Monge ascribes this difference to Costa Rica's relatively high quality of labor force. These case studies are confirmed by cross-country regression studies that underscore that coverage of secondary education seems to be the key human capital element explaining receipt of FDI.

**Figure 8 Low diversification of tertiary education**



Source: Country sources for Latin American countries and OECD (2002) Education at a Glance 2002

Note: Enrolment shares for Non Latin American OECD countries are based on entry rates into tertiary education with an assumed length of International Standard Classification of Education (ISCED) of type 5B studies of 2.5 years and ISCED 5A of 4 years.

way to (i) increase relevance of skill building to private sector demand; (ii) reduce investment requirements in the sense that costs per graduate would decline; (iii) and would focus on a student population from middle income families instead of university education that traditionally caters to students from the most affluent backgrounds. As mentioned above, the high returns to tertiary education and the inequitable funding implies that public policies towards expansion of tertiary should focus on facilitating private investment through regulation that would improve functioning of the market for higher education. These initiatives could include (i) increase information available to students, (ii) maintain flexible accreditation system and (iii) unsubsidized support to remove credit constraints.<sup>150</sup> A competitive fund could be a flexible and suitable funding instrument to stimulate private investments to increase capacity of technological institutes.

6.33 While under-capacity in the technological institutes and insufficient demand from students are the major barriers to expansion of tertiary education in the short and medium run, the low number of graduates from secondary is the real long run obstacle to expansion of tertiary education and technological development.

### Financing Issues: The Unavoidable Trade-offs

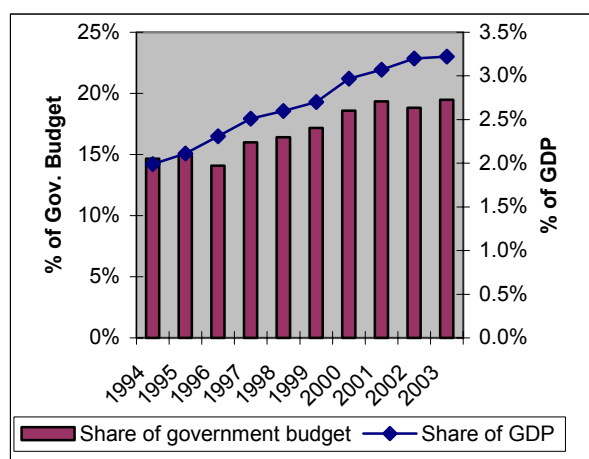
<sup>150</sup> Holm-Nielsen, Lauritz, Andreas Blom and Patricia Zuniga Garcia, "The World Bank in Tertiary Education in LAC", En Breve, No. 18, World Bank, Washington DC

6.32 To expand high skilled labor, tertiary education in El Salvador could be guided towards the needs of the private sector. A diverse tertiary education sector often indicates a vibrant sector providing the broad spectrum of skills demand by society. The Salvadoran tertiary education system is poorly diversified. Only eight percent of the student population attends short-term courses (2-3 years), while most Latin American countries enroll at least the double. Many high-income countries enroll four times as much, (Figure 8). Facilitating this level of tertiary education could be a

6.34 A critical issue for educational improvements is the resource constraint. Many of the suggested initiatives would entail additional resources to be successfully implemented. Given the country's fiscal situation, there will not be sufficient resources for all initiatives. Unavoidably, policymakers will have to weigh the benefits of policy initiatives one against the other.

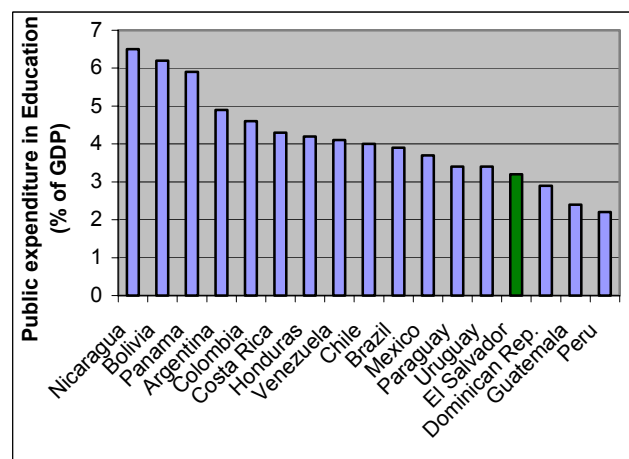
6.35 One consideration is whether major investments in the educational system can take place out of efficiency gains or whether new resources are necessary. In this regard, a recent study by Marquez (2003) finds that there is some room for efficiency improvements in primary and secondary education, especially if the improvements aim at addressing repetition and drop out rates.<sup>151</sup> Overall, El Salvador's levels of efficiency in converting invested resources into outputs seem to be high by international standards. The possibilities of making room for additional investment within the existing budget envelope seem quite limited. The share of government budget devoted to education increased from 15 percent in 1994 to 20 percent in 2003. Expressed as share of GDP, public investment into education amounts to 3.2 percent in 2003. Despite the significant increase in public investment in education, the country still seems to spend too little on education. The average Latin American country invests 4.1 percent of GDP in education, which is 28 percent higher than El Salvador. In fact, the level of public investment in education in El Salvador is still among the bottom five countries in Latin America (Figures 6 and 7).

**Figure 6 Public Education Expenditures in El Salvador**



Source: MINED 1994-2003

**Figure 7 Public Expenditures on Education in Latin American**



Source: UNESCO with the exception of El Salvador (MINED).

Note: Around 2000, for El Salvador 2003.

6.36 There are policy recommendations that need not involve additional public investment, but requires reform. One such example is the introduction of an appropriate co-payment for enterprise training. Such regulatory adjustments could be carried without weighing the benefits and fiscal costs against the other policy initiatives.

6.37 Other policy initiatives require major investments, in particular quality improvements in primary education and programs to expand secondary enrolment. These reforms will therefore compete for government resources and policymakers will have to weigh the benefits and costs of each program with competing programs. There exists little analysis on the trade-off between

<sup>151</sup> Marquez (2003), "Social Expenditure Review", working paper prepared for the World Bank.



investment in quality of primary education and expansion of secondary education that can guide policymakers. However, it is also important to emphasize the complementarity between quality of primary education and expansion of secondary education. A pupil graduating from a high quality primary school would likely attend and complete secondary education. In light of this complementarity, this report recommends a middle-way where incremental resources would be allocated between quality improvements in primary education and expansion of secondary education, with a focus on improving completion of third cycle of primary education and expansion of secondary.

6.38 One highly debated issue is the trade-off of investments in tertiary education versus investment in lower education levels. Some scholars have examined whether this decision involves a trade-off between a more equal society and a more prosperous society. Investments into secondary education benefit a large share of the population, but attract a lower return, while, on the other hand, investments into tertiary education flow to the affluent few, but attract high returns. While this trade-off might exist in the short run, it vanishes in the long run, since a large and vibrant tertiary education system cannot exist without a large pool of high-quality graduates from secondary education. On this possible short run trade-off, this report advises against large public investments in tertiary education. Investments in secondary education are believed to contribute to the establishment of a large middle class, which is of major importance for a stable economic and social development. The quest for an equal and stable society is likely to bring the country higher welfare. Hence, only very strategic government resources should go into tertiary education at this stage of El Salvador's economic development. Reforms of tertiary education should aim for more efficient use of public investments, establishing of an enabling regulatory framework, and promotion of private investment. Such reforms could have an important economic pay-off without diminishing investments into primary and secondary education.

**Table 3. El Salvador: Summary of Policy Recommendations**

<b>Policy Area</b>	<b>Evidence</b>	<b>Policy Recommendation</b>
Pre-Primary	<ul style="list-style-type: none"> <li>• Gross enrolment of 40 %</li> <li>• Enrolment gap of 5 %</li> <li>• Large benefits of well-funded public pre-primary programs in Brazil, Mexico and US, especially for disadvantaged children: schooling attainment up, grade repetition down, earnings up and crime down.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain attention to pre-primary programs. Increase funding for targeted programs for disadvantaged children</li> </ul>
Primary Education	<ul style="list-style-type: none"> <li>• Improving net enrolment 80%</li> <li>• Enrolment gap of 3%</li> <li>• <b>Quality could be improved</b></li> <li>• Moderate return to first and second cycle (7%)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Continue expansion and quality improving policies in place since the early 1990s</b></li> <li>• Prepare to reallocate incremental resources away from primary education as demographic transition occurs over the next decade</li> </ul>
Secondary Education	<ul style="list-style-type: none"> <li>• Low net enrolment 40%</li> <li>• <b>Enrolment gap of 50 % compared to similar countries (18 percentage points)</b></li> <li>• Moderate to low return to third cycle (4%)</li> <li>• <b>High return to upper secondary (11 %)</b></li> <li>• Underspending: only 10% of the education budget is devoted upper secondary education</li> <li>• <b>Expansion will be non-elitist given near universal primary school enrollment</b></li> <li>• Important private demand for this type of skills</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Prioritize expansion of secondary education through a careful location-specific mix of supply and demand initiatives</b></li> <li>• <b>Undertake analysis of the most appropriate policy initiatives for expansion (supply interventions versus demand-side interventions)</b></li> <li>• <b>Address shortfalls in completion in lower secondary education (grades 7 to 9)</b></li> <li>• Increase funding</li> </ul>
Tertiary Education	<ul style="list-style-type: none"> <li>• Low gross enrolment 18%</li> <li>• Gap of 5 %</li> <li>• Low catering to the demand from the private sector for technical skills (only 6 % of students enrolled in technological education)</li> <li>• Low spending on tertiary 7%</li> <li>• High return: 16%</li> </ul>	<p>Facilitate expansion of the private sector through</p> <ul style="list-style-type: none"> <li>• Focus on technological education</li> <li>• Competitive fund for new (private) programs/campuses</li> <li>• Student loans</li> <li>• Consider a competitive fund for scientific and technological development</li> </ul>
Enterprise-based training	<ul style="list-style-type: none"> <li>• <b>Excess demand</b></li> <li>• Modern institutional structure</li> <li>• Seemingly relevant and effective training</li> <li>• <b>No marginal cost to the firm</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Leverage available funds through co-financing from firms, with softer conditions for small and medium enterprise private</b></li> </ul>

## Annex I

### Estimation results of demand for skilled labor model

Linear formulation of education, where the model assumes a constant return to one additional year of schooling regardless of the level:

$$y_i = \beta_0 + \beta_{sch} S_{scho,i} + x_i' \beta + z_i' \beta_z + u_i$$

Variable	Coefficient	T-value
Age	0.071351	24.85
Age Squared	-0.00078	-20.16
Female	-0.26921	-22.71
Rural	-0.13461	-9.64
<b><u>Education</u></b>		
<b>Years of Schooling</b>	<b>0.086646</b>	<b>67.99</b>
<b><u>Regions</u></b>		
La Union	0.016682	0.51
Morazan	-0.15687	-5.11
San Miguel	-0.07143	-2.16
Usulután	-0.14249	-4.97
San Vicente	-0.1167	-3.99
Cabanas	-0.08638	-2.72
La Paz	-0.07731	-3.05
Cuscatlán	-0.07464	-2.56
La Libertad	0.043771	2.32
Chalatenango	-0.09872	-2.94
Sonsonate	-0.06369	-2.92
Santa Ana	-0.05266	-2.29
Ahuachapán	-0.15039	-5.23
Constant	7.878259	154.91
R2		0.4765
N# observations		9,588

Note: For wage and salaried only. Regions are relative to San Salvador

## Formulation 2

Spline form of years of schooling, where the average return to one additional year of schooling can vary between levels of education:

$$y_i = \beta_0 + \beta_{\text{pri12}} S_{\text{pri12},i} + \beta_{\text{low sec}} S_{\text{low sec},i} + \beta_{\text{upp sec}} S_{\text{upp sec},i} + \beta_{\text{ter}} S_{\text{ter},i} + x_i'\beta + z_i'\beta_z + u_i.$$

Variable	Coefficient	T-value
Age	0.064588	22.73
Age Squared	-0.00071	-18.75
Female	-0.28749	-24.57
Rural	-0.14837	-10.8
<b><u>Education</u></b>		
Primary (1 and 2 cycle)	0.066768	18.34
Lower Secondary	0.042233	6.39
Upper Secondary	0.108622	16.97
Tertiary	0.161394	31.4
<b><u>Regions</u></b>		
La Union	-0.02231	-0.7
Morazan	-0.20297	-6.71
San Miguel	-0.11045	-3.39
Usulután	-0.18443	-6.54
San Vicente	-0.1453	-5.06
Cabanas	-0.11268	-3.62
La Paz	-0.07865	-3.16
Cuscatlán	-0.06991	-2.44
La Libertad	0.031175	1.68
Chalatenango	-0.13627	-4.12
Sonsonate	-0.087	-4.06
Santa Ana	-0.075	-3.31
Ahuachapán	-0.17086	-6.05
Constant	8.152715	153.77
R2		0.496
N# observations		9,588
Note: For wage and salaried only, Regions are relative to San Salvador		

### Formulation 3

Different return to technological tertiary education taught at one of the 6 technological institutes in El Salvador and academic tertiary education provided by universities:

$$y_i = \beta_0 + \beta_{pri12} S_{pri12,i} + \beta_{pri3} S_{pri3,i} + \beta_{low\ sec} S_{low\ sec,i} + \beta_{upp\ sec} S_{upp\ sec,i} + x_i' \beta + z_i' \beta_z + \beta_{tech} D_{technological} S_{ter,i} + u_i.$$

Variable	Coefficient	T-value
Age	0.064473	22.68
Age Squared	-0.00071	-18.7
Female	-0.28794	-24.59
Rural	-0.14811	-10.78
<b><u>Education</u></b>		
<b>Primary (1 and 2 cycle)</b>	<b>0.066725</b>	<b>18.32</b>
<b><i>Lower Secondary</i></b>		
	<b>0.042224</b>	<b>6.39</b>
<b>Upper Secondary</b>	<b>0.108153</b>	<b>16.87</b>
<b>Tertiary</b>	<b>0.159812</b>	<b>30.22</b>
<b>Technical Tertiary (additional to tertiary)</b>	<b>0.015198</b>	<b>1.27</b>
<b><u>Regions</u></b>		
La Union	-0.02339	-0.73
Morazan	-0.20524	-6.77
San Miguel	-0.11297	-3.46
Usulután	-0.1871	-6.61
San Vicente	-0.14716	-5.12
Cabanas	-0.11416	-3.66
La Paz	-0.07978	-3.2
Cuscatlán	-0.07081	-2.47
La Libertad	0.030778	1.66
Chalatenango	-0.138	-4.17
Sonsonate	-0.08818	-4.11
Santa Ana	-0.07588	-3.35
Ahuachapán	-0.17163	-6.08
Constant	8.155879	153.66
R2		0.4963
N# observations		9,588
Note: For wage and salaried only, Regions are relative to San Salvador		