EMPLOYMENT AND TRAINING PAPERS

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The employment impact of external capital flows in developing countries

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Foreword

The socially costly process of structural adjustment undergone by most developing countries in the decade since the "debt crisis" has been accompanied by dramatic changes in the nature of international capital flows. Resource transfers towards the public sector have been replaced by capital inflows to the private sector; aid has shifted away from development projects towards humanitarian relief; and private investment has moved away from bank credit towards risk capital.

This changing scenario of international financial markets offer new opportunities and pose fresh problems for LDCs which necessarily condition their economic development strategies. On the one hand, employment and wage policies in particular are now constrained both by the need to maintain international trade competitiveness and by the need to attract foreign investment. On the other, access to world capital markets appears to offer a new opportunity to raise productive investment rates in order to support modernization and sustainable growth.

This study sets out to establish the relationship between foreign investment and employment by looking at the direct impact of different types of capital flows (foreign direct investment, commercial bank loans, portfolio asset acquisition and official development assistance) on levels of capital formation in the public and private sectors of the host economy.

This relationship is complicated by the interaction between the public and private sectors, and by the impact of structural adjustment policies and exogenous capital inflows on the level of macroeconomic activity. The study explores these "second order" effects in some detail, and shows the composition of capital inflows to be as significant as the level of resource transfer itself.

The study argues that private investment is the main source of sustainable employment in the host economy, and with appropriate institutional support, of the level of labour skills as well. In view of the productivity growth associated with new investment projects, it is likely therefore, that the direct contribution of foreign investment to employment will be relatively small; although the indirect contribution may be substantial due to the growth of domestic income and the release of external or other policy constraints.

Further, the study suggests that in poor countries the external finance of public investment in infrastructure and labour skills (by official development assistance or commercial borrowing) has a critical role. Underinvestment due to capital market constraints or misguided stabilization policies can result in a level of private investment and employment growth which is lower than could be attained by a more balanced and sustained strategy.

The study presents an analytical framework developed from the standard macroeconomic policy model which introduces sectoral employment, heterogeneous capital inflows and their inter-relationships. Careful exploration of this framework reveals not only that aid and government borrowing can contribute positively to employment generation, but that the response of private investment (and thus permanent jobs in the modern sector) to capital inflows depends critically on both the form of the inflow and the macroeconomic policy regime in place.

This framework is then reduced to a form that can be tested rigorously on time-series data, and applied to two case studies - Republic of Korea and Mexico. The results of these two case studies confirm the validity of this new analytical approach, while revealing that major differences between the behaviour of the public and private sector in the two countries mean that the

effective "use" made of foreign capital to increase domestic investment and employment is much greater in Republic of Korea than in Mexico.

Finally, policy implications are derived from the study which suggest the criteria which should be applied to the design of a strategy towards foreign investment consistent with the generation of higher yet sustainable employment levels in developing countries.

Contents

1. Introduction

The politically difficult and socially costly process of structural adjustment undergone by most LDCs during the past decade has been accompanied by dramatic changes in the nature of international capital flows. Resource transfers towards the public sector have been replaced by capital inflows to the private sector; aid has shifted away from development projects towards humanitarian relief; and private investment has moved away from bank credit towards risk capital. This changing scenario of international capital markets poses new problems for LDCs and necessarily conditions their economic development strategies.

Standard theory would suggest that the shift in relative factor prices brought about by structural adjustment policies would both generate greater employment from the existing capital stock (a "substitution effect") in the short term and attract further foreign investment which would generate greater output and employment (a "growth effect") in the medium term. Indeed, many international institutions and developing country governments seem to have placed their faith in foreign investment as the solution to the problem of sustainable growth and economic modernization. However, in many countries public sector employment has been reduced and the slow recovery of private investment has created few new jobs in the modern private sector despite the decline in real wages. Meanwhile the informal sector still appears to act as an "employer of last resort" causing concern as to the distributive consequences of the process of economic globalization – and by extension the sustainability of structural adjustment policies themselves.

Moreover, the marked heterogeneity in capital flows means that the different forms of foreign finance are not substitutes; while a clear segmentation of labour markets in LDCs between public and private employment, and between formal and informal sectors, persists. These structural characteristics of international capital markets and domestic labour markets are clear in the empirical literature, but are not reflected in analytical models of structural adjustment.

Changing employment levels, labour skills and wage rates are clearly a central consequence of the investment process – which in turn determines both the economic success of the adjustment programme itself and the social consequences thereof. However, rigorous work on the relevant linkages is still at a comparatively early stage. Little appears to have been written on the economic relationship between recent changes in international capital flows and labour conditions in LDCs. The present study is thus a first attempt to define the main analytical elements involved and to indicate the orders of magnitude to be expected. We take as a central theme the link between external capital flows and the expenditure response of the public and private sectors which in turn determine employment and human capital formation. We hope that the model set out and tested here will contribute to further quantitative research on the subject.

The study is composed of four elements. First, the changing nature of international capital flows and their contribution to resource mobilization in developing countries is outlined in Chapter 2, with particular reference to the process of capital accumulation. Second, the impact of these capital flows is examined in the context of structural adjustment in Chapter 3, in order to establish the expected impact of different kinds of capital inflow on labour. Third, a formal model is presented in Chapter 4, constructed on the basis of the conclusions of the previous two chapters. This model allows the direct and indirect impact of capital flows on employment to be identified under different macroeconomic policy regimes. Fourth, careful econometric tests are carried out in Chapter 5 which allow the model to be calibrated for Republic of Korea and Mexico. This process reveals critical differences in public and private sector behaviour in the two

economies which determine the distinct impact of capital flows on employment. Finally, some preliminary policy conclusions are derived from the findings of the study as a whole in Chapter 6.

2. International capital flows and investment in developing countries

2.1 The changing nature of capital flows

Recent years have witnessed major changes in the composition of international capital flows to developing countries, as Table 2.1 indicates. These changes include: (i) the relatively slow increase of official development assistance and a shift away from project aid towards programme assistance through the emergence of Structural Adjustment Loans (SALs) and humanitarian aid; (ii) the marked decline of commercial bank lending to public sectors and its replacement by portfolio flows with a new regional distribution, conditionality and liquidity; and (iii) the sharp rise and the increasing importance of direct foreign investment (FDI) with a greater concentration on few countries and new sectors.

Several events in the global economy during the 1980s contributed to the these changes in the composition of external capital flows. Firstly, the serious damage to the balance sheets of major international banks following the Mexican default of 1982 revealed their incapacity to assess and monitor loans to LDC governments adequately. The protracted attempts to write off these debts with the participation of OECD government support and the negotiating skills of the international financial institutions (IFIs) over the past fifteen years have not yet solved this problem. Commercial banks subsequently withdrew from the market for loans to LDC governments as indeed they were withdrawing from long-term credit provision within OECD capital markets too as these became securitised. Only in the 1990s did banks and bondholders return to the developing countries, although now in a relatively minor role in market-based flows, which are now dominated by direct foreign investment and equity portfolio purchases – as investors moved towards direct management control or stock market liquidity as means of coping with sovereign risk.

Second, while the debt overhang significantly reduced the ability of developing countries to attract new loans, capital markets in the industrial countries suffered falling saving rates, persistent fiscal deficits and the deregulation of banking operations - all of which made most LDCs relatively unattractive creditors. The increasing outflow of funds from non-bank institutions such as pension funds and insurance companies moved towards a few developing countries with dynamic stock markets. These "emerging markets" appear to be those with rapidly growing industry and radical privatization programmes.

Thirdly, the LDC debt problem was aggravated by the chronic commodity crisis. The collapse in commodity prices during the 1980s continued into the 1990s dramatically affected the export earnings – and thus debt service capacity as well as growth potential – of most developing countries. The inability of international commodity agreements to stabilise prices, together with the residual debt problem severely affected the macroeconomic performance of many developing countries and led to fundamental changes in the composition of official development assistance. Non-market flows from governments, multilateral institutions and non-governmental organizations (NGOs) stagnated after the mid-1980s: a significant decline in official development finance to middle-income countries was balanced by a moderate rise in multilateral lending and NGO grants. Despite this effort, non-market flows, upon which the low-income developing countries rely, had fallen to 43 per cent of total capital flows to the developing countries by the mid-1990s.

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Fourthly, fiscal problems in the industrial countries and consequent downward pressure on aid budgets coincided with the end of the Cold War which created new groups of countries asking for foreign assistance. Although success of post-socialist reforms in stimulating the economies of the new republics was expected to not only release aid but also initiate economic growth which would benefit both developing countries (Stevens and Kennan: 1992), this virtuous circle has been slow to establish itself. Indeed, elsewhere post-Cold War political instability has led to a dramatic increase in the number of refugees forced to spend long periods in exile, requiring aid flows to sustain both them and the host community; this has caused a further shift of aid away from investment towards consumption.

Table 2.1 Total net capital flows to developing countries, 1980-94 (US$billions) (at current prices)

	1980	1986	1990	1994
Official Development Assistance	26.1	38.5	52.8	59.7
of which: bilateral ODA	16.9	29.8	39.3	41.3
multilateral ODA	9.2	8.7	13.5	18.4
Other official development finance	5.0	11.0	21.6	13.7
Grants from NGOs	2.4	3.3	5.1	5.7
Total non-market flows	33.5	52.8	79.5	79.1
Direct foreign investment	10.1	10.7	26.4	47.0
International bank lending	18.3	7.0	15.0	21.0
Bond lending	12.0	-4.0	0.9	15.0
Other portfolio flows	–	8.3	4.4	21.7
Total market flows	40.4	22.0	46.7	104.7
Total net resource flows (at 1993 prices and exchange rates)	73.9	74.8	126.2	183.8
Total net resource flows	121.2	110.5	135.3	176.4
of which: non-market flows	54.9	78.0	85.2	75.9
market flows	66.3	42.5	50.1	100.5

Source: calculated from OECD (1996).

2.2 The segmentation of capital flows

The overall OECD-DAC aid effort remained stable during the 1970s and the 1980s at just below 0.35 per cent of GNP; well below the UN target for aid from each donor country of 0.7 per cent. By the mid-1990s this had fallen below 0.30 per cent. Aid flows from non-government organizations (NGOs) are also growing: in 1994, NGOs gave aid of about 5 billion dollars in grants to developing countries, equivalent to 7 per cent of non-market resource flows.

Project aid was the main type of foreign assistance until the 1970s. Project aid is susceptible to a strict control over the resources released and thus facilitates accountability; it has a greater degree of specificity as compared to programme assistance; it allows for the specification of the commitments and obligations of both donor and recipient; and finally, project assistance can be evaluated by means of sophisticated project appraisal techniques. Public investment in many LDCs is directly linked to the flow of project aid.

Programme assistance dominated aid in the 1980s, particularly World Bank Structural Adjustment Loans (SALs). The shift of aid from project to programme assistance was intended to enable recipient countries to adjust their economies instead of restricting aggregate demand to close the balance of payments gap. The economic policy changes would involve tax reforms, public spending control, trade liberalization, public enterprise and institutional reforms. It is possible for the IFIs to characterize the majority of the SALs as successful in terms of their own objectives, since they managed to strengthen the balance of payments in recipient countries, improve exports and help trade liberalization. Exchange rates were also strongly affected, for most programmes were associated with substantial currency depreciations which were sustained in real terms. However, inflation proved difficult to contain except by stringent demand repression, so the impact on economic growth was rather weak, making fiscal and monetary policies unsustainable (Khan and Knight, 1985; Goldstein, 1986; and Killick, 1984).

Two lines of criticism have emerged from within the "aid community". On the one hand in practice these programmes, while derived from objectives which were widely recognized as desirable, frequently become over-complex and impossible to implement in practice (Mosley et al., 1991), and were criticised because they depressed not only public investment but also private capital formation (Servan and Solimano, 1993). On the other hand, the impact of SALs on social welfare is highly controversial, because they often resulted in a deterioration in health and education standards in recipient countries, especially in sub-Saharan Africa (e.g. Ghana) and Latin America (Cornia et al., 1988; and Stewart, 1992) despite attempts to construct compensatory "safety nets" for vulnerable social groups.

Above all, the employment losses and real wage declines commonly associated with structural adjustment were not compensated by a reallocation of the stagnant real value of ODA towards agriculture, industry or other production sectors (see Table 2.2) even though for the least developed economies (LLDCs) in Asia and Africa this had become virtually their only source of external resource receipts. Indeed, although the share of ODA allocated to Sub-Saharan Africa rose from 30 per cent to 37 per cent (a region where in 1993 aid accounted for 16 per cent of GNP) between 1983-84 and 1993-94, the proportion going to LLDCs worldwide actually fell from 27 per cent to 24 per cent (OECD, 1996).

Table 2.2 Composition of Official Development Assistance, 1975-94 (percentage of total ODA)

by purpose:		1975-76	1992-93
Social and administrative infrastructure		20	27
Economic infrastructure		10	28
Agriculture		8	9
Industry and other production		14	6
Food aid		13	2
Programme assistance and other		35	28
Total		100	100
by modality:	1980	1991	1994
Technical cooperation	28	30	31
Food aid and emergency relief	6	10	13
Debt forgiveness	7	15	8
Bilateral (project) loans	24	16	15
Other modalities	35	29	33
Total	100	100	100
by region:		1983-84	1993-94
sub-Saharan Africa		30	37
South and Central Asia		20	15
Other Asia and Oceania		17	11
Middle East and North Africa		20	23
Latin America and the Caribbean		13	14
Total		100	100

Source: OECD (1996).

Market-based capital flows to developing countries were already growing rapidly during the 1970s, due mainly to expanding bank lending to governments as foreign direct investment (FDI) actually decreased somewhat in this period. In the 1980s the debt crisis affected bank lending and portfolio flows radically, although FDI remained fairly steady. In sharp contrast, all types of market flows accelerated to reach record levels in the 1990s. However, FDI represents only one third of net capital flows to developing countries in the 1990s, much the same as in the previous two decades, as Table 2.3 indicates. Portfolio flows have revived again to take the place previously occupied by banks and aid agencies, shifting from a net outflow in 1977-82 (mainly due to capital flight) to a third of all net inflows by 1990-94.

However, the regional distribution has been uneven with the flow of capital towards Asia being not only higher but less volatile over time than that towards Latin America - mainly because Asia received a greater proportion of FDI, which is more stable, and Latin America a larger share of portfolio flows which are more volatile. It is also worth noting that Latin America suffered a substantial net outflow during the 1983-89 period due to debt service obligations and capital flight. The other developing countries (predominantly Africa) have not benefited to the

same extent from the boom in outward investment from OECD countries and once its own capital flight is taken into account does not appear from the IMF estimates to have received net more than US$1 bn a year during the whole period 1977-95.

Table 2.3 Private capital flows by main region, 1977-95 (annual average in US$ billions)

	1977-82	1983-89	1990-95
All developing countries:			
Net foreign direct investment	11.2	13.3	43.4
Net portfolio investment	-10.5	6.5	46.5
Other private and official	29.8	-11.0	51.2
Total net capital flows	30.5	16.7	141.1
Asia:			
Net foreign direct investment	2.7	5.2	27.5
Net portfolio investment	0.6	1.4	11.7
Other private and official	12.5	10.1	20.5
Total net capital flows	15.8	16.7	60.1
Latin America and the Caribbean:			
Net foreign direct investment	5.3	4.4	13.2
Net portfolio investment	1.6	-1.2	20.9
Other private and official	19.4	-19.8	10.4
Total net capital flows	26.3	-16.6	44.5

Source: Calculated from data in IMF: *International Capital Markets* (various years).

The major part of FDI flows goes to Latin America and Asia: together they absorbed more than three-quarters of the total FDI flow to developing countries in the 1970s and 1980s, and some 8 per cent in the first half of the 1990s. This form of capital flow - which has the most direct effect on technology transfer and employment creation - is even more concentrated on relatively few countries within these two regions. In fact, as Table 2.4 indicates, it is currently focused on only ten countries (three in Latin America and seven in Asia) which accounted in 1993 for 79 per cent of the flow and 67 per cent of the accumulated stock of FDI in the developing world. Moreover, Japan and the United States are the main sources of FDI, accounting for about three-quarters of the total flow through the whole 1970-95 period. In fact there seems to exist a "triad'" pattern for FDI with US multinationals focusing on Latin American markets, Japan on East Asia and the European Union members on Africa and Eastern Europe (UNCTAD, 1996).

This regional allocation is determined by two factors: the rate of growth of local markets and the local capability to act as an export platform; and the relative rates of return on investment and low sovereign risk. Both these factors in turn depend upon the quality of economic infrastructure and the skills of the labour force on the one hand, and the stability of the economic policy regime on the other. The fact that the average rate of return on FDI from the USA for the period 1980-86 was 29 per cent in Asia compared to 12 per cent in Latin America (Claessens, 1993) may help to explain the allocation between these two regions noted above.

Table 2.4 Geographical concentration of FDI, 1993 (US$ billion)

	Gross flow	Net stock
All LDCs	73.4	500.9
Ten largest hosts:	58.0	337.0
China	27.5	57.2
Singapore	6.8	50.8
Argentina	6.3	44.2
Malaysia	5.2	41.9
Mexico	4.9	40.4
Indonesia	2.0	26.9
Thailand	1.7	22.5
Hong Kong	1.7	21.7
Colombia	1.0	17.7
Taiwan	0.9	13.8

Source: UNCTAD (1996).

Portfolio flows (ie. purchases of securities on emerging capital markets) have become very important for selected LDCs in recent years, although the country concentration is even more concentrated than in the case of FDI (World Bank, 1993a). Three different elements are involved. First, there is the sale of government securities on domestic markets, which often bear very high real rates of inflation but clearly involve exchange rate risk. These instruments have become very popular with nationals wishing to return flight capital while retaining liquidity, and with foreign investors seeking high yields. Second, share issues associated with the privatization of state owned enterprises, which have particularly attracted foreign companies interested in the sector itself – often as potential suppliers, contractors or managers.

2.3 Capital flows, domestic resource mobilization and investment

It is a central contention of this study that sustainable employment generation requires high rates of productive investment to provide both jobs and skills, while rising real wages depend upon the increased productivity and eventual labour scarcity that are generated thereby. In consequence, the potential contribution of foreign capital flows to improving labour conditions will primarily be found in their contribution to productive investment.

Traditionally, external capital flows have been seen primarily as an addition to the resources available to developing countries, the mobilization of which resources allows the domestic rate of capital formation to rise and thus increase both output and employment. However, as Table 2.5 indicates, despite the globalization of capital markets and the absolute increase in net capital flows discussed above, "external savings"' (ie. the current account deficit in the balance of payments) have not in fact become significantly more important to developing countries as a whole over the past two decades. As far as individual regions are concerned, the experience is varied but this general conclusion still holds. Indeed in Africa, the most externally dependent region, both external and internal savings have declined as a share of GDP. The declining rates

of saving in Latin America and Africa are also a major source of concern, particularly when contrasted with the rising saving rate in Asia.

Table 2.5 Resource mobilization in LDCs, 1973-93 (percentage of GDP)

	1974-81	1982-89	1990-95
All developing countries:			
Internal saving	26.6	22.7	25.7
External saving	-0.7	1.8	1.7
Total resources	25.9	24.5	27.4
Africa:			
Internal saving	29.0	17.6	17.4
External saving	2.9	4.8	3.3
Total resources	31.9	22.4	20.7
Asia:			
Internal saving	26.5	27.2	31.4
External saving	-0.8	0.9	0.8
Total resources	25.9	27.6	32.2
Latin America:			
Internal saving	20.6	19.4	18.2
External saving	1.8	2.9	2.2
Total resources	25.4	22.3	20.4

Source: Calculated from data in IMF: *World Economic Outlook* (1995).

Although there is good reason to believe that FDI is stimulated by, and in turn stimulates private investment in the host country (Dunning, 1988) the strength of this relationship varies by region and is not necessarily true of other forms of private capital flows. Thus portfolio flows towards equity issues and government bonds do not appear to lead directly to new fixed investment in LDCs, but rather provide liquidity to large firms or reduce fiscal deficits. Moreover new fixed capital formation seems to be the aim of most FDI in East Asia, while in Latin American countries it is often channelled towards the acquisition of existing corporate capacity. In addition, there has been a worldwide shift of FDI flows from the manufacturing towards the services sector, particularly the new capital intensive activities, such as telecommunications, transportation, banking and public utilities (World Bank, 1993).

The fact that private capital flows are concentrated on particular markets is mainly due to rapidly changing macroeconomic performance and new regulatory conditions in these countries which made them attractive. These conditions include creditworthiness, low inflation, high real interest rates and high dividend payout rates in the case of portfolio flows; and export promotion, legislative incentives, good domestic infrastructure, country size, workforce skills and regional market links in the case of FDI. In practice, this may mean that features that attract portfolio flows to Latin America - such as high interest rates and overvalued exchange rates - are actually dissuasive for both FDI and domestic fixed investment. The reverse appears to be true of Asia.

Mosley, Harrigan and Toye (1991), Pfefferman and Madarassy (1992) and FitzGerald and Sarmad (1990) all suggest – from quite different viewpoints – that overall private investment, both in real terms and as a share of GDP, was significantly lower in the 1980s as compared to the 1970s. Serven and Solimano (1992a), conclude that "... in many countries, macroeconomic adjustment has not improved the response of private investment. Even when substantial progress has been made in correcting imbalances and restoring profitability – often through drastic cuts in real wages – the effect on private investment has been weak and slow to appear" (p. 96).

This relatively poor behaviour of private fixed capital formation in developing countries – which appears to have been only partially reversed by the mid-1990s – is difficult to explain in terms of conventional investment theories. Empirical studies of private investment determinants in developing countries are usually based on theoretical models that were formulated for firms in developed countries (Serven and Solimano, 1992b; Greene and Villanueva, 1991). Moreover, evidence from country case studies indicates that policy regime stability, financial regulation and growth expectations are key explanatory factors, though such influences are difficult to measure in cross-country comparisons. Two recent econometric studies indicate, however, that external capital flow variables are strongly significant as determinants of private investment in developing countries (FitzGerald, Jansen and Vos, 1994; FitzGerald and Mavrotas, 1996) – both positively as in the case of FDI and infrastructure aid, and negatively in the case of accumulated debt burdens.

As Table 2.6 below indicates, the rate of investment (ie. gross fixed capital formation as a share of GDP) has declined seriously in Africa over the past two decades, while in Asia it has been steadily rising; in Latin America the rate of investment appears to have stagnated after the debt crisis. This situation is serious enough. However, if we estimate an index of investment per capita by multiplying these investment rates by the real GDP per head indices for each region, a much more disturbing picture emerges: the index has almost doubled for Asia, but has fallen by one half in Africa and by one third in Latin America. Broadly speaking, this index reflects the capacity of the economy to replace the capital with which existing workers are employed, and to provide more jobs for new entrants to the workforce. These trends would lead us to expect an improving employment (and thus wage) situation in Asia and a deteriorating one in Latin America and Africa, which is indeed the case as we shall see in the next chapter.

Table 2.6 Rates of gross fixed capital formation by region, 1973-95

	1973-80	1981-87	1988-93
GFCF as % of GDP:			
All developing countries	25.9	24.5	27.4
Africa	31.9	22.4	20.7
Asia	25.7	28.1	32.2
Latin America	25.4	22.2	20.4
Index of real GFCF per capita:			
All developing countries	100	114	135
Africa	100	68	52
Asia	100	147	190
Latin America	100	85	79

Source: As Table 2.5.

3. Evaluating the impact of international capital flows on labour

3.1 Structural adjustment and labour

Assessing the impact of different kinds of capital flows on labour in developing countries is a difficult task. There is firstly little analytical literature or statistical data on the link between capital flows and labour markets. Secondly, such linkages have been overshadowed in a number of recipient countries by Structural Adjustment Lending and programme assistance since the early 1980s. In particular, these programmes have been the condition for receiving Official Development Assistance (ODA) or the renegotiation of the international commercial bank of LDC governments through the good offices of the international financial institutions (IFIs). These programmes are intended to stimulate private investment in general and foreign direct investment (FDI) in particular, as well as to restore LDC access to global capital markets. In consequence we must first consider the impact of structural adjustment programmes (SAPs) and the associated structural adjustment lending (SALs) on the accumulation of physical and human capital, before turning to the possible linkages between the labour market and capital inflows.

The assessment of the macroeconomic impact of structural adjustment in developing countries is approached in several ways in the published literature. The "before and after programme" and the "with and without programme" approaches are contrasted by Corbo and Rojas (1992) and Summers and Pritchett (1993). Most evaluations aim at a comparison between what has happened and what would have happened had the programme not been launched – that is, with some counterfactual outcome which may be approximated in various ways. As the counterfactual cannot be observed but depends on a simulation derived from behavioural assumptions the results are necessarily hypothetical and thus controversial.

None the less, there does seem exist a widespread consensus to the effect that rural incomes on average have improved in the Early-Intensive Adjustment Lending countries (EIALs) according to the available empirical evidence, accompanied by a deterioration of the economic conditions for urban labour. This outcome has in effect been the explicit objective of standard SAPs, in an attempt to correct of the "urban bias" held to be responsible for both the stagnation of tradeable primary production and the growth of a parasitic informal service sector in poor countries. The median economy-wide compensation of employees as a share of GDP in EIAL countries was the same in the late 1980s as it was in the 1970s, while in 13 out of 16 cases there were no significant changes in the employee share during the adjustment years. There has also been an increase in the average and median rates of growth of real rural incomes per capita in most EIALs, with agricultural wages improving for about half these cases. In contrast, there is evidence that in 7 out of 20 countries the share of the wage bill in manufacturing value added fell during the programme years, while both average and median wages in the EIALs were lower in the late 1980s than in the 1970s. In general, "... EIAL countries experienced a worsening in labour's position in the 1985-87 period compared with 1970-80 and 1981-84 and compared with the average experience of non-EIAL countries" (Maasland and van der Gaag, 1992, p. 42).

This major shift in labour remuneration under structural adjustment is also directly attributed to shifts in the internal terms of trade in favour of agriculture rather than in capital inflows. None the less, some authors (e.g. Mosley, 1991) point out that the "success" of EIALs may be due to the amount of ODA they have received as a consequence of agreeing to adjust early under IMF and World Bank guidance rather than to the benefits of the relative price adjustment as such. Indeed, it does appear that EIALs did indeed receive more ODA than LDCs that did not adopt

SAPs until the late 1980s – although the direction of causality (ie. whether adjustment leads to more aid or more aid leads to adjustment) remains open to dispute.

What is clear, however, is that the overall improvement of employment and real wages expected by the IFIs as a result of the SAPs has been very slow to appear. As for employment (see Table 3.1 below), there has been a decrease in the unemployment rate in two thirds of the EIALs during the 1985-87 period as compared to the period 1981-84 (Chile, Costa Rica, Ghana, Jamaica, Republic of Korea and Mexico), but Bolivia, Colombia and Philippines were the important exceptions.

Table 3.1 Unemployment rates in EIAL countries

EIALs	1970-80	1981-84	1985-87
Ghana	1.0	0.7	0.5
Jamaica	25.8	26.4	24.3
Philippines	4.2	5.7	7.2
Thailand	0.9	2.5	n.a.
Republic of Korea	4.0	4.2	3.6
Bolivia	5.6	12.4	19.5
Chile	12.5	14.9	9.6
Colombia	8.9	10.4	12.4
Mexico	6.3	5.3	4.9
Costa Rica	5.0	8.0	6.2

Source: Maasland and van der Gaag (1992).

A more detailed study of the Philippines shows that, the services sector was the only one that did not experience a decline in unemployment in 1984-85 (UNICEF, 1988). Employment growth fell from 11 per cent in 1982-83 to 2 per cent in 1983-84 and then to 1 per cent in 1984-85. Rural areas were more severely affected where employment fell by 7 per cent in 1983-84 and 1 per cent in 1984-85. In urban areas the decrease in wage and salary employment was counteracted by an increase in own-account workers and unpaid family workers: as a result, the urban informal sector expanded by 30 per cent between 1980 and 1985. Moreover, there was a severe decline of real earnings for all groups of workers in 1982-85 with average earnings of urban wage and salaries falling 46 per cent and earnings of urban own account workers by 49 per cent. It is significant that this employment and earnings loss in the Philippines was associated with the decline of capital inflows in the wake of the debt crisis, but above all with the collapse of private investment.

An ILO study (Sattar, 1989) of adjustment in Asia concludes that in general the explicit policy-employment link within the framework of adjustment programmes is minimal or non-existent in most Asian LDCs. Indeed the "disemployment" effect of SAPs in recipient countries is considered may be intentional and not accidental because "... the economic policy package directed towards growth, inflation control or balance of payments equilibrium ignores the employment implications, resulting in more unemployment than necessary or less employment than would be feasible with a different policy mix to achieve the same ends. The term therefore refers to a situation with less than the optimal level of employment associated with a given

policy" (Sattar, 1989, p.2). After careful econometric analysis of employment data for nine Asian LDCs over the period 1977-86 the author concludes that for the less developed Asian countries (India, Indonesia, Pakistan, Philippines, Sri Lanka and Thailand) fiscal and monetary policies have had significant negative effects on employment. Only in the case of three Asian NICs (Republic of Korea, Taiwan and Singapore) does there seem to be a significant link between stabilization policies and employment. This is partly because in these latter countries supportive labour market policies (particularly for skilled workers) facilitated rapid recovery; but above all because private investment responded strongly to new export opportunities and ample credit facilities.

A more recent study on Indonesia explores the impact of the structural adjustment programme on the labour market, undertaken in the early 1980s after the collapse of the oil prices and consequent macroeconomic deterioration. The study concludes that, "... there is no doubt that the impact of the economic reform programme has been, on balance, employment-friendly. This is not to deny that growth of employment would have been higher if interest rates had been lower and if the net domestic impact of the government budget had been cut less. Nor can it be denied that many problems have emerged, including unequal geographical incidence of benefits, concentration of land ownership and premature mechanization. Nevertheless, the net impact of the programme on the demand for labour has been positive" (Godfrey, 1993, p. 29). The above conclusion seems to confirm the central argument of this chapter: that the overall impact on labour will depend on the macroeconomic regime as it affects private investment and public expenditure and thus employment. Real wage cuts as resulting from stabilization and adjustment programmes do not lead to significantly increased employment.

For Latin America as a whole it has been estimated that about four million fewer jobs were created in the 1980s than would have been created if pre-crisis growth trends had continued (Stewart, 1992). In Brazil, there was an increase in open unemployment between 1981 and 1984 in six major urban areas because growth was reduced in order to generate a capital *outflow* (i.e. current account surplus) to service the debt (Macedo, 1988). This problem affected most of Latin America during the mid-1980s (as Table 2.3 clearly indicates) and had a widespread negative impact on production and investment, with inevitable consequences for sustainable employment and wages. A recent ILO study of the Chilean labour market, covering the period 1973-92, distinguishes two main periods in the impact of economic reforms and stabilization policies on the labour market. In the period 1973-85, the negative impact on employment was severe with accelerating levels of open unemployment of long duration. This is mainly attributed to factors such as the initial shock of stabilization in 1975, the reduction of public employment in 1973-80, and the magnitude of the internal and external financial imbalances accumulated in 1975-81. In the 1987-1992 period, the employment trend was finally reversed in the tradeable sector as exports and investment gradually recovered, although wages still lagged behind the expansion of per capita GDP due to productivity growth (Garcia, 1993).

In Costa Rica, unemployment rose from 6 to 10 per cent of the workforce between 1981 and 1983 because of stagnant employment opportunities and a greater supply of labour following the implementation of a structural adjustment programme in 1982 (ILO, 1992). In 1984 unemployment started to decline, reaching 4 per cent in 1989, but the key feature of the labour market in the 1980s was the dramatic shift of employment out of agriculture into industry and trade - which is not the outcome expected in the standard SAP design. Furthermore, real wages fell by 40 per cent over the period 1980-82 and only regained their pre-crisis purchasing power

in the late 1980s. This wage recovery was not however due to private investment or capital inflows but rather to the role of governmental income compensation programmes during the 1980s. Skills training was also apparently crucial in facilitating relatively rapid adjustment by increasing the productivity and adaptability of the Costa Rican workforce.

A study of Mexico provides further evidence as to the impact of structural adjustment on the labour market in Mexico between 1981 and 1991 (Garcia, 1992). Even though it was impossible to distinguish the impact of exogenous shocks from those of domestic adjustment policies, in combination they provoked a negative effect on the Mexican labour market, particularly in the two years after the debt crisis of 1982. During 1985-87 the contractionary tendencies continued, and only after 1988 was there a substantial recovery of employment and wage indicators. This seems to suggest two central conclusions. First, the negative impact on the labour market was provoked by the fiscal and external sector adjustments in 1982-84 – as the main economic reforms in Mexico were undertaken between 1985 and 1989, it is not possible to attribute the impact to them. Second, following the "heterodox" adjustment programme (which involved negotiated agreements between government, employers and trades unions) a net positive effect on labour markets was registered from 1988 onwards, which allowed employment and wages to recover to some extent, but mainly because investment, exports and output recovered.

Turning to Sub-Saharan Africa, the ILO-JASPA African Employment Report (1990) documents the impact of SALs in the labour market during the period 1986-90 when thirty-six African LDCs entered SAPs designed by the World Bank. The total amount of SAL resources rose from an annual average of US$2 billion a year in the first half of the 1980s to US$4 billion in 1990. Table 3.2 summarises unemployment the region during this period: the urban unemployment rate ranges between 15 and 20 per cent, compared to about 10 per cent in the mid-1970s. In absolute terms, there were approximately 9 million urban unemployed in Sub-Saharan Africa by the end of the 1980s according the ILO. More seriously, the unemployed population is still growing at 10 per cent a year in the 1990s, a much higher rate than the estimates 6 per cent a year during the 1970s: urban unemployment is thus expected to triple during the 1990s, rising from 9 to 28 million people, equivalent to an increase from 18 to 31 per cent in the urban unemployment rate. This emergence of a large labour surplus is undoubtedly due to low rates of aggregate investment and output growth (and thus labour demand) rather than wage levels or labour market "stickiness" - that the reverse might be the case is not proposed by any serious observer.

Out of 28 Sub-Saharan African countries for which recent data are available, only one reported a modest increase in real wages during the 1980s. The other 27 countries experienced considerable losses. On average, real wages declined by 30 per cent between 1980 and 1986 and in some countries the average wage rate dropped by 10 per cent or more every year since 1980. Real minimum wages fell by 20 per cent over the same period for the same sample of 29 countries. It is notable that the dramatic fall in real wages occurred during the first half of the 1980s (that was the case mainly in Sierra Leone, Kenya, Tanzania and Togo). According to the ILO Report the economic crisis of the 1980s in Sub-Saharan Africa "... had indeed a devastating impact on the labour market situation. The major characteristics of the Africa labour market during the 1980s included increased urban female labour force participation, stagnating wage employment, steep wage erosion, dramatic compressions in the wage structure, widespread moonlighting, mounting youth unemployment, and the rising dependence on the informal and agricultural labour sponges" (ILO, *African Employment Report*, 1990, p.53).

Table 3.2 Urban unemployment rates in selected sub-Saharan African countries

Country	Year	Open unemployment rate (%)
Tanzania	1984	21.6
Kenya	1986	16.0
Nigeria	1985	9.7
Zambia	1986	10.0
Ethiopia	1981	23.0
Somalia	1982	22.3
Ivory Coast	1985	20.0
Senegal	1985	17.3
Botswana	1985	31.2
Zimbabwe	1987	18.3
Sierra Leone	1988	14.8

Source: ILO/JASPA: *African Employment Report,* 1990.

3.2 Structural adjustment and the formation of capital

Structural Adjustment Programmes (SAPs) are intended to restore business confidence and provide further financial resources for firms, leading to increased private investment and FDI. The inevitable fall in employment and wages as aggregate demand and public expenditure are cut under the stabilization programmes is supposed to be compensated by sustainable labour demand from tradeable production. Structural adjustment had a negative impact on private investment in a substantial number of countries with structural adjustment experience. Both World Bank studies and critics of adjustment lending come to the same conclusion concerning private investment trends in developing countries since the early 1980s. Moreover, some countries may not even have been able to replace depreciating capital because of the severity of the investment decrease. For instance, Africa was estimated to need a minimum investment at 13 per cent of GDP to replace depreciated capital. In 1987, the investment rates of 7 sub-Saharan Africa countries were below that level. In Latin America, the corresponding investment rate was estimated at 14 per cent: in 1987, three countries were still below that level (Serven and Solimano, 1992b).

The aim of Structural Adjustment Loans (SALs) is the economic rehabilitation of the recipient countries. This would normally involve significant private investment in traded goods and services, stimulated by increased profitability arising from real devaluation, flexible labour markets and financial liberalization. In spite of these reforms, private investment rates show little sign of trend recovery in Latin America and Africa - as we have seen in Chapter 2 – where they have been applied with most enthusiasm; and thus the export and employment targets of the SAPs have not been achieved even if inflation is reduced and growth recovered. Indeed, the World Bank itself concluded that "... adjustment programmes appear to have led to a drop in the investment share in GDP (...) the hope for recovery of investment to sustain future growth did not occur in most EIAL countries" (World Bank, 1990, p. 21). The record (see Table 2.6) of steadily rising investment rates in Asia reflects a much more cautious and unorthodox style of macroeconomic management.

Much of the problem appears to have arisen because, on the one hand, large firms were disconcerted by unstable macroeconomic policies and high real interest rates, while small firms and household could not expand because of severe credit restrictions – all of which were intrinsic characteristics of the design of SAPs. In order to ensure a realistic private employment target it would have been necessary to abandon the standard assumption of a homogeneous private sector in developing countries responding positively to reduced fiscal deficits and import liberalization. and replace it with a set of differentiated policies based on the actual behaviour of private investors – households, small-scale enterprises, domestic companies and multinational corporations (FitzGerald, 1992 and 1993).

As we have seen in Chapter 2, despite the shift towards private capital flows, official development assistance (ODA) is still crucial to many poor economies. Project aid has traditionally provided immediate employment on a considerable scale – often in remote areas and to relatively unskilled labour – in the construction of infrastructure projects. These projects, in turn, have provided longer-term employment opportunities either by generating private investment in productive activities or by improving human resources. Although the shift away from capital aid towards humanitarian assistance and food aid tends to sustain consumption rather than investment; employment may still be created in make-work schemes and in support activities such as storage and transport financed from counterpart funds. Moreover, commodity aid can support real wage levels by the provision of wage-goods in situations of acute shortage.

The decline in international commercial bank credit to LDC governments in the wake of the debt crisis has clearly also had serious budgetary effects, particularly on the level of public investment and by extension on employment and wages. In a number of cases, these governments have recently returned to global capital markets thus loosening the budgetary constraint on public expenditure; thereby permitting more public sector employment in social services and infrastructure and lifting the foreign exchange constraint on domestic demand. In this way aggregate output and thus employment rise again, although renewed debt accumulation still contains serious dangers. The net impact of such borrowing depends upon whether aggregate output is constrained by balance of payments problems or the need to reduce the fiscal deficit (Bacha, 1990). The process of trade liberalization and real devaluation on the one hand and of monetary stabilization on the other, have both led to a general situation where the traditional external constraint has been replaced by a fiscal one.

In recent years, moreover, there has been a decline in the real level of Technical Co-operation (TC) between developed and developing countries which has had negative effects on labour skilling. The decline in the real value of ODA discussed in Chapter 2 has reduced the level of TC grants, and although their share in ODA as a whole has remained fairly stable, the proportion of bilateral aid assigned to TC (which relates more directly to labour training as such - as opposed to advisory services) has declined steadily since 1970s as Table 3.3 indicates. This trend in TC grants is likely to have a negative impact on training provision in developing countries and therefore on skills generation, human capital formation, employment opportunities and growth. Technical assistance supplements and upgrades the level of productive aptitudes, technical capability and managerial capacity and thus acts as a means of improving productivity and trade competitiveness in the recipient countries through innovation.

Table 3.3 Technical cooperation grants

Year	TC (% of total ODA)	TC (% of bilateral ODA)
1970	22.3	45.9
1975	21.5	46.6
1980	20.0	38.7
1986	20.4	35.5
1990	21.5	37.0
1994	21.2	36.5

Source: OECD: *Development Cooperation*, various issues.

3.3 Private capital flows and labour

As the *World Employment Report* (ILO, 1995) points out, "the reason why the rate of growth of modern-sector jobs is essential is because these are "good jobs" in the case of a typical developing country". However, although these jobs offer a certain degree of security and access to social services, in Latin America and Asia they have been accompanied by declining real wages. The co-existence of falling wages and falling employment in these two regions, and rising wages with rising employment in much of Asia would seem to indicate that the standard assumptions of the neoclassical employment model, which informs standard adjustment policies, are implausible to say the least. This model assumes that falling wages (and rising interest rates) will cause forms to substitute labour for capital, and thus increase employment in the medium term. Moreover, the lower capital-output ratio should raise potential output in a situation of capital scarcity.

Table 3.4 Real wages in manufacturing

	1970s	1980s
Annual trend:		
sub-Saharan Africa	-1	-12
Latin America	-2	-3
East and South-East Asia	5	5
South Asia	0	2

Source: Calculated from data in ILO, 1995.

In recent years, the expectations of developing country governments as to potential role of foreign investment in creating "good jobs" have risen considerably. However, according to the *World Employment Report* multinational enterprises (MNEs) employed some 73 million people worldwide in 1993, and when indirect job creation is taken into account, this estimate rises to about 150 million. However, "the 12 million jobs created by MNEs in developing countries amount to a mere 2 per cent of the labour force in these countries; adding another 12 million jobs on account of possible indirect employment pushes this figure up to 4 per cent" (op. cit., p. 45). This estimate seems somewhat optimistic as it does not appear to take into account the displacement of existing jobs by MNE investment – either because they crowd local firms out

of the market with more attractive products, or because they take over and rationalize existing large firms.

Even if we accept this estimate of global MNE employment, it is clear that FDI cannot generate sufficient new jobs to balance the growth of the global labour force, because it can only contribute positively to employment growth in the minority of middle-income LDCs which receive the bulk of FDI (see Table 2.4). The *World Investment Report* (UNCTAD, 1995) calculates that the inward stock of foreign investment in 1994 for developing countries as a whole totalled some US$ 583 billions, which crudely divided by the ILO estimate of MNE employment for that year, would approximate a "cost per job" of some US$50,000. The same source estimates that FDI accounted for about 7 per cent of gross fixed capital formation in developing countries in 1993, even though MNEs employ only 2 per cent of the LDC workforce. Thus, on average it would appear that the capital intensity of these jobs created by FDI must be two or three times greater than that of those created by domestic investors.

Despite this limited impact of FDI on employment, it is widely agreed that MNEs improve the "quality" of labour both directly by training their own workforce, and indirectly by forcing domestic firms to raise their demand for skilled labour (Bailey, 1995). The negative effects arising from the slowdown of technical cooperation discussed above should thus be offset to some extent by the increasing importance of FDI in recent years – at least for those LDCs fortunate enough to receive it in substantial quantities. According to available empirical evidence, FDI assists the spread of new technology and is influenced by the level of skilled labour: indeed human capital formation through skilling forms a central element of recent "endogenous growth" models (Romer, 1986, 1990; Lucas, 1988) through their effect on productivity and investment. What is more, numerous studies (eg. Wheeler and Mody, 1991) emphasise the importance of the existing stock of skilled labour as a factor attracting FDI in the first place. This trend has a worrying implication: that an increasing gap is emerging between those LDCs which possess labour skills and attract FDI, which then further improves labour quality on the one hand; and those without such human resources, which do not receive enough aid to build up labour skills, and thus attract FDI.

An effective training system should create both job opportunities and a competitive labour force through involvement in international markets. This is potentially the key role of FDI in labour markets in LDCs: competition gives firms incentives to acquire and train skilled workers while links with foreign firms are important for firm level technological capability and learning. Building and strengthening technical capacity (i.e. the ability of people to use and modify new and existing technology) is crucial in helping LDCs to achieve sustainable growth.

FDI may also lead to an increase in local expenditures on research and development (R & D) to adapt global technology to local needs which, combined with training, should result in an overall improvement in productivity and trade competitiveness in recipient countries (World Bank, 1993).

In consequence, it seems reasonable to expect that of all the forms of capital inflows, FDI will have the greatest effect on private investment, and thus on productive employment – although this will be in the "modern sector" of the economy and thus not in labour-intensive small-scale activities, which must necessarily depend much more on domestic policies and factors such as the access to bank credit, marketing networks and simple infrastructure. The macroeconomic impact of FDI (and thus the indirect employment consequences) will also depend upon the sector

to which it is directed: traded sectors (eg mining, manufacturing exports) will expand exports and thus the overall level of activity and demand for labour; while the modernization of existing non-traded sectors (eg banking, transport) will not have the same growth consequences and may even lead to net employment losses in the short run as existing firms are displaced.

As we have seen in Chapter 2, the recent portfolio capital inflows are concentrated on government stock and on privatization issues. In the short run, privatization is usually associated with employment losses as the formerly state-owned enterprises are restructured and unproductive labour is shed. The longer-run effects are difficult to gauge, but may be presumed to be positive. Government securities issues on narrow domestic capital markets, however, do appear to increase upward pressure on real interest rates, which in turn tends to "crowd out" private investment, especially by the small firms which provide most employment in LDCs. There is little evidence that portfolio inflows have a positive effect on private investment directly, because firms in LDCs (as is also the case in OECD countries) do not rely upon equity issues in order to finance fixed investment – relying for this mainly on retained profits and long-term bank credit. In other words, except for the balance-of-payments relief – which may be short-lived as very liquid liabilities are involved and exchange rates tend to become overvalued – portfolio investment is not likely to have a positive effect on employment, and by extension on human capital formation.

From the argument so far, it should be clear that the four distinct types of capital flow identified in Chapter 2 (ODA, official borrowing, foreign direct investment and portfolio flows) have very different effects upon employment, wages and skilling. In particular, we expect that FDI will have much more positive effects on employment, wages and skilling than portfolio flows. Similarly project-related ODA will have a more positive impact than programme loans. In addition, the experience of structural adjustment demonstrates that the macroeconomic (or "indirect") effects on labour from international capital flows may be as important as the microeconomic (or "direct") effects identified so far, due to the impact of capital inflows on the public sector budget, the domestic savings shortage, and the balance of payments. In order to examine these effects in a more rigorous way, it is necessary to construct a formal model framework, a task to which we turn in the next chapter.

4. A model of the employment impact of external capital flows

4.1 Macromodels and employment

In recent years a number of macromodels have been constructed related to the impact of structural adjustment and stabilization programmes in developing countries. According to Robinson (1991) there exist two main categories of Computable General Equilibrium models (CGE). "Structuralist" macromodels in the tradition of Kalecki, Kaldor and Keynes, constitute the source for basic features of macro-structuralist CGE models (Taylor, 1988, 1990M; Bacha, 1990). "Neoclassical structuralist" CGE models based on the work of Dervis, de Melo and Robinson (1982) employ Walrasian general equilibrium and neoclassical trade theory. The former stress macroeconomic closures, while the latter emphasize sectoral distortions. Earlier CGE models (such as the Adelman-Robinson model of Republic of Korea and the Taylor-Lysy model of Brazil) had considered the impact of policy alternatives on the degree of poverty and income distribution but this feature is less important in the adjustment models constructed during the 1980s, which were mainly concerned with the gains in static production efficiency to be gained from price liberalization.

However, more recent models aim at studying the impact of structural adjustment on growth and income distribution by including a considerable degree of disaggregation across sectors, production factors and households (such as Bourguignon et al., 1991). These models are distinguished by the degree of tradeability and input-output linkages that explain net factor intensity across sectors. Employment is approached through several routes but emphasis is placed on partial labour mobility between sectors and different rules for wage determination to take into account real wage rigidity and labour market segmentation. A government sector with current and capital expenditures as well as a financial sector that incorporates portfolio choice by households and firms are also included in Bourguignon (op. cit.). This new approach, which combines macro and micro elements in general equilibrium, offers greater disaggregation of product and factor markets than the typical open-economy IS/LM framework from which they stem, but has two shortcomings. First, it does not include explicit investment behaviour or capital flows; and second it is too unwieldy to allow for analytical results, relying instead on numerical simulation.

Another family of models of relevance to the effect of macroeconomic imbalance on labour are related to the Revised Minimum Standard Model (RMSM) used by the World Bank. The RMSM model and its extensions RMSM-X and RMSM-XX are rooted in Harrod-Domar growth theory and subsequent two-gap models, and are discussed in detail by Addison (1989) and Mills and Nallari (1992). However, employment does not appear to be considered explicitly as a key macroeconomic variable or even as a target – except implicitly perhaps in the maximization of GDP growth as the policy objective. Moreover, the RMSM does not consider heterogeneous capital flows explicitly either. None the less, the World Bank model does have the virtue of being relatively simple to construct and test, and in fact some of the functional forms have been used in the model presented below.

The familiar "two-gap" models designed by Chenery (Chenery and Bruno, 1962; Chenery and Adelman, 1966; Chenery and McEwan, 1966; and Chenery and Strout, 1966) from which the RMSM itself derives explicitly consider how foreign capital is capable of easing the savings and foreign exchange constraints and thus of having a positive impact in recipient countries. However, these two-gap models are widely criticised on a number of grounds. First, output

growth is not necessarily the main objective in the development process: other targets such a poverty alleviation or sustainable development may be more important. Second, the mechanical relationship the two-gap model supposes to exist between changes in external capital flows and changes in output is implausible since it seems unrealistic to assume that foreign capital provides a one-to-one increment to the capital stock. Indeed, external capital flows may even inhibit domestic capital accumulation – as in the "displacement of savings" hypothesis of Griffin (1970) suggests. Third, in most of the versions of the two-gap model, the required imports are treated as one aggregate variable; but while imports of intermediate goods are essential for utilization of existing productive capacity in developing countries, those of capital goods are necessary for the creation of additional productive capacity. Financing these two categories of imports with foreign capital logically has distinct effects on growth, gross domestic savings, exports and production structure of the economy. Fourth, two-gap models cannot account for the potential impact of foreign investment on relative prices in recipient countries (Findlay, 1973). As van Wijnbergen (1985, 1986) points out, the downward pressure of capital inflows on real exchange rates can have a negative effect on exports and growth. Finally, the "fiscal response" literature has emphasized the importance of domestic borrowing to finance investment by the government in developing countries, which may "crowd in" or "crowd out" private investment depending upon whether the positive effect of public infrastructure provision outweighs the negative effect of adsorbing available funds (Bacha, 1984, 1990).

Taylor (1988) has carried out an extensive application of "three-gap" models which include public and private sectors (and thus "savings", "external" and "fiscal" gaps) to several developing countries in order to evaluate the impact of stabilization programmes in recipient countries. This exercise overcomes some of the problems of excessive aggregation and behavioural implausibility mentioned above but does not include employment or private capital flows explicitly. The model presented in the rest of this chapter can be seen as an extension of this line of enquiry, attempting to handle the weaknesses in the two- and three-gap models by specifying private sector behaviour in more detail, and by allowing the consideration of the employment impact of external capital flows in developing countries.

4.2   The logic of the proposed model

The main purpose of this chapter is thus to construct a simple model which will reflect the key conclusions on the employment effects of external capital flows through their consequences for public and private expenditure discussed in Chapters 2 and 3. In particular, these are: first, that the direct impact of these flows is quite different, according to whether they affect investment or consumption, and are directed towards the public or private sectors; and second, that the indirect impact depends upon the macroeconomic policy regime in place, particularly as affected by structural adjustment programmes.

Standard economic theory, of course, would link investment to employment in the familiar way through a production function of the form:

$$Y = AL^aK^b \qquad\qquad [1]$$

where: Y = output, K = capital stock, L = employment;

and a cost function of the form:

$$C = wL + rK \qquad [2]$$

where: C = production costs, w = wage, r = user cost of capital.

The maximization procedure (which is supposed to reflect firms maximizing their profits by minimizing costs with capital and labour mutually substitutable along a continuous concave production function) yields an equilibrium condition:

$$w/r = aK/bL \qquad [3]$$

On the reasonable assumption that labour is freely available at the ruling real wage (w), but that the capital stock is exogenous – that is, determined by investment decisions in an earlier period – at a given user cost (r); then employment is determined by:

$$L = (a/b)(r/w)K \qquad [4]$$

So a simple model can be constructed such that a flow of foreign capital (F) creates new employment by adding to the capital stock:

$$\Delta L = (a/b)(r/w)F \qquad [5]$$

If it were the case that capital inflows depressed the factor price ratio – by reducing domestic interest rates, raising real wages or reducing the local price of imported capital goods through the so-called 'Dutch Disease' effect – then by applying the relevant elasticity ($\varepsilon<0$),

$$\Delta L = (a/b)(r/w)(1+e)F \qquad [6]$$

However, this "standard model" suffers from a number of serious shortcomings. First, it could logically only apply to private enterprise behaviour at best, and not that of the public sector. Second, it allows for no constraint on the achievement of equilibrium position, other than the shortage of capital. Third, it is assumed that capital inflows all add completely to the capital stock and thus do not affect either public or private consumption.

In contrast, we propose to construct a complete equation system for an economy with various institutional sectors, types of employment, categories of external capital flows and alternative macroeconomic regimes. Our model is thus based on the employment and investment behaviour of three institutional sectors (government, firms and households) in response to four types of capital inflows under three policy regimes in an attempt to reflect the relationships identified in Chapters 2 and 3 in a more plausible way. The model focuses on short-term employment effects, but these have longer-term "dynamic" consequences due to changes in the productive capital stock – a point taken up again at the end of this chapter. Our model does not, however, capture the effects of domestic macroeconomic or structural variables on the level or composition of capital inflows (which we assume to be exogenous), nor does it allow for changes in the human capital stock except insofar as these are embodied in new investment. Nor does it reflect the cumulative effect of the stock of FDI on new FDI flows (generally though to be positive) and that of bank debt on further lending (clearly negative). Finally, changes in relative prices arising from capital inflows and the supposed elasticity of employment to real wages are excluded as their is little evidence that they are as significant in practice as is supposed in standard theory as we have argued in Chapter 3 above. Indeed, the relative price effects are also absent in policy models such as the World Bank's RMSM.

The four external capital flows separately identified in our model are: loans for infrastructure provision (F_1); humanitarian aid in the form of grants (F_2); direct foreign investment (F_3); and portfolio flows in the form of bond and equity purchases (F_4). All four capital flows are taken as exogenous in the sense that they are determined by causes outside the model. The real wage and the user cost of capital are also given. Three types of employment are identified: employment in the public sector (L_1); employment in the modern private enterprise sector (L_2); and employment in the "informal" sector (L_3) which includes both rural peasants and urban artisans etc..

Different macroeconomic regimes are represented by the authorities maximizing GDP subject to alternative binding constraints in addition to the usual capacity constraint defined by fixed capital. Labour is assumed to be freely available to the public and private sectors at the going wage, while the informal sector can obtain extra employees from within the household. The three possible constraints, of which one can be taken as binding at any one time – unless a "corner solution" emerges by coincidence (Bacha, 1990) – are as follows: (i) a balance of payments constraint, where imports rise with GDP to the level warranted by exports and capital inflows; (ii) a fiscal constraint, where government expenditure rises with GDP to the level warranted by tax revenues and borrowing limits; and (iii) a savings constraint, where investment rises with GDP to the level warranted by domestic and external savings.

4.3   The structure of the model

We can now proceed to examine the behavioural relationships which make up the model. These can be conveniently grouped under three blocks corresponding to the external, public and private balances of the economy (FitzGerald, 1993).

The *external balance* is defined as:

$$X - M - J + \sum_{i=1 \text{ to } 4} F_i \equiv R \qquad [7]$$

where X and M stand for exports and imports of goods and non-factor services respectively; J represents net factor payments depending on debt etc.; and R stands for changes in external reserves. The sum (Σ) of all four net capital flows, as equivalent sources of foreign exchange, enters here too. We assume that exports and factor payments are given in the short run as well as the capital flows, and that imports are a linear function of real GDP (Y), so that:

$$M = M_0 + mY \qquad [8]$$

The *fiscal balance* is defined as:

$$(G + I_g) - (T + F_1 + F_2) \equiv Z \qquad [9]$$

where the difference between the sum of current government expenditure (G) and investment (I_g), less the sum of tax income (T) and the inflow of development loans (F_1) and humanitarian grants (F_2), yields the domestically financed fiscal deficit (Z). Tax income depends on real income (Y):

$$T = tY \qquad [10]$$

Current government expenditure depends the ability to respond to household demand for welfare and administrative services (reflected in Y) and the availability of grant support for such activities (F_2) the existence of which tends to generate additional government activities:

$$G = g_1 Y + g_2 F_2 \qquad [11]$$

Similarly, investment in the public sector depends on the demand by firms for infrastructure (reflected by Y) and the effect of foreign aid projects (F_1):

$$I_g = h_1Y + h_2F_1 \qquad [12]$$

The *private sector balance* is defined in terms of the 'accumulation account' :

$$S_p + F_3 + F_4 \equiv Z + I_p + R \qquad [13]$$

which shows the balance between the sources of funds to the private sector – private savings (S_p) plus FDI (F_3) and portfolio purchases from abroad (F_4) – on the one hand, and the uses of funds – acquisition of government liabilities (Z) in the form of money or bonds, plus gross capital formation (I_p) and accumulation of central bank reserves (R) – on the other. As usual in models of this kind, private savings depend on aggregate income (Y):

$$S_p = sY \qquad [14]$$

A key behavioural equation in this model is the private investment function, which is in effect an investment *demand* (I_p') function where the independent variables are changes in the level of GDP (ΔY), the level of FDI (F_3), reflecting technology transfer, and the level of public investment (I_g):

$$I_p' = r_1\Delta Y + r_2F_3 + r_3I_g \qquad [15]$$

This function is derived from the "externally constrained accelerator model" discussed and tested in FitzGerald *et al.* (1994). Unless otherwise constrained, ex ante investment demand will be realized (ie $I_p = I_p'$), so that either the acquisition of government liabilities (Z) or reserve accumulation (R) will be determined by [13].

The three types of employment identified in the model are expressed as follows. Employment in the public sector depends upon the level of current and capital expenditure by the government:

$$L_1 = a_1G + a_2I_g \qquad [16]$$

Employment in the modern private (i.e. "corporate") sector depends upon the capital stock in the sector (K_t), arising from private investment in previous years, as discussed in Chapter 3:

$$L_2 = a_3K_t \qquad [17]$$
$$\text{where } K_t = K_{t-1} + I_p$$

Note that equation [17] corresponds to the standard form discussed above for an elastic supply of labour to the modern private sector at the given wage.

Employment in the informal sector depends upon the general level of activity (Y) and thus demand for petty services etc, extra labour being available from the household (particularly in the form of rising female participation rates):

$$L_3 = L_0 + a_4Y \qquad [18]$$

Finally, total employment is defined as:

$$L = L_1 + L_2 + L_3 \qquad [19]$$

4.4 Macroeconomic behaviour in the model

Macroeconomic equilibrium is attained as the government maximizes GDP by expanding demand subject to an overall capacity constraint provided by the previous accumulation of capital in the public and private sectors. This maximization of GDP can be taken to be the result of monetary policy, independently of the fiscal variables themselves – for example by domestic variations in the reserve requirements on banks. However, in general, we expect one of the three policy constraints to bind in practice.

The overall capacity constraint is simply that:

$$Y \leq a.K_t$$

where α is the output-capital ratio. So that by solving for Y-max (Y*) we obtain:

$$Y^* = a.K_t \qquad\qquad [20]$$

For the three policy constraints we derive in turn:

– from the *external constraint* that the change in reserves (R) should not be negative

$$R \geq 0$$

and substituting into [7] and [8], Y-max is

$$Y^* = \{X - J - M_0 + \textstyle\sum_{i=1 \text{ to } 4} F_i\}/m \qquad\qquad [21]$$

– from the *fiscal constraint* that the domestically financed net fiscal deficit (Z) should not exceed a maximum proportion (z) of GDP

$$Z \leq zY$$

substituting [10], [11] and [12] into [9] and solving for Y* yields:

$$Y^* = \{F_1(1 - h_2) + F_2(1 - g_2)\}/(g_1 + h_1 - t - z) \quad [22]$$

– finally, from the *savings constraint* that private investment should be no more than the resources available to finance it

$$I_p' \leq I_p$$

by substituting [12], [14] and [15] into [13] we get:

$$Y^* = \{h_2(1+r_3)F_1 + g_2F_2 + r_2F_3 + (X - J - M_0 - r_1Y_{t-1})\}/$$
$$\{s + t + m - \{r_1 + g_1 + h_1(1+r_3)\}\} \qquad\qquad [23]$$

In this way, for a given set of foreign capital inflows (F_i) and any one binding constraint, the corresponding set of employment levels (L_i) can be derived by substituting equations [20] to [23] into equations [16] to [19].

What is immediately clear by inspection is that not only do the sectoral employment levels depend on the policy regime which obtains, but also that the marginal effect of changes of external capital flows will correspondingly differ under these three policy regimes. IN other words, there are no less than sixteen possible answers to the question "what effect does an external capital inflow have on employment in developing countries" depending upon which of the four possible constraints binds and which of the four types of capital flow is involved.

4.5 Some preliminary results

In this section we explore the way in which the model generates direct (ie. microeconomic) and indirect (ie. through changes in the macroeconomic equilibrium) effects of changes in capital flows for employment. This joint effect can only be regarded as a "partial equilibrium model" because so many other factors (such as labour market clearing and the international capital market itself) are not endogenized. None the less labour incomes are implicit in our model through: the policy-determined public sector wages in the government expenditure coefficients (equation [16]); informal sector incomes in the direct link to GDP (equation [18]); and an efficiency wage linked to technology in private sector firms (equation [17]).

To consider the direct effect of the four types of external capital flows (F_i), on employment (L) we first examine the case where none of the three policy constraints bind and thus Y is given by production capacity (equation [20]). Substituting [11], [12] and [15] into [19], after substituting [12] into [15], allows for the "crowding in" of private by public investment and yields:

$$L = a_1(g_1Y+g_2F_2) + a_2(h_1Y+h_2F_1) + a_3K_{t-1}$$

$$+ a_3(r_1\Delta Y+r_2F_3+ r_3h_1Y + r_3h_2F_1) + (L_0+a_4Y) \qquad [24]$$

And this, when differentiated gives us:

$$\partial L/\partial F_1 = (a_2 + a_3r_3)h_2$$

$$\partial L/\partial F_2 = a_1g_2$$

$$\partial L/\partial F_3 = a_3r_2$$

$$\partial L/\partial F_4 = 0$$

Generally, we can say the following about these derivatives. The effect of portfolio inflows (F_4) is, of course, zero by construction as they do not lead to greater private investment. It is reasonable to suppose that the labour content of public investment is greater than that of private investment $(a_2 > a_3)$ and that project loans generate a disproportionate increase in public investment $(h_2 > 1)$, so that the condition for these latter to generate more employment - in the short run at least - than FDI (that is, $\{a_2 + a_3r_3\}h_2 > a_3r_2$) is met. Finally, given that $(h_2 > g_2 > 1)$, it seems reasonable to assume that the employment content of current expenditure is much greater than that of investment $(a_1 > a_2)$ so that the net employment effect of project aid is less than that of consumption aid (ie. $\{a_2 + a_3r_3\}h_2 < a_1g_2$).

In consequence, it would thus appear that generally:

$$\partial L/\partial F_2 > \partial L/\partial F_1 > \partial L/\partial F_3 > \partial L/\partial F_4$$

The "indirect impact" of the four different forms of capital flows on employment depends on their respective effect on aggregate output (Y) which then from the differential of [20] yields the employment impact, because

$$\partial L/\partial Y = a_1g_1 + a_2h_1 + a_3(r_1 + r_3h_1) + a_4$$

However, the function for aggregate output depends, in turn, on which of the three policy constraints is operative (equations [21] to [23]).

First, if the external constraint binds, then:

$$\partial Y^*/\partial F_1 = \partial Y^*/\partial F_2 = \partial Y^*/\partial F_3 = \partial Y^*/\partial F_4 = 1/m$$

Second, if the fiscal constraint binds and we assume – as seems reasonable – that the denominator (i.e. the net budgetary effect of output growth) is positive, then:

$$\partial Y^*/\partial F_1 = (1-h_2)/(g_1+h_1-t-z) > 0$$

$$\partial Y^*/\partial F_2 = (1-g_2)/(g_1+h_1-t-z) > 0$$

$$\partial Y^*/\partial F_3 = \partial Y^*/\partial F_4 = 0$$

Third, if the savings constraint binds and we reasonably assume that the denominator (i.e. the modified Keynesian multiplier) is positive, then:

$$\partial Y^*/\partial F_1 = h_2(1+r_3) /\{s+t+m-\{r_1+g_1+h_1(1+r_3)\}\} > 0$$

$$\partial Y^*/\partial F_2 = g_2 /\{s+t+m-\{r_1+g_1+h_1(1+r_3)\}\} > 0$$

$$\partial Y^*/\partial F_3 = r_2 /\{s+t+m-\{r_1+g_1+h_1(1+r_3)\}\} > 0$$

$$\partial Y^*/\partial F_4 = 0$$

From these results it is already clear that the effect of the different inflows is extremely sensitive to the policy regime. In particular, the twelve derivatives set out above for the four types of capital inflow and the three policy regimes imply that:

(a) if the external constraint binds, all capital inflows will have the same positive effect on GDP because they allow imports (and thus the activity level) to rise by an equal amount;

(b) if the fiscal constraint binds, then both forms of capital inflow to the public sector allow GDP (and thus the budget deficit) to rise without violating the domestic borrowing limit; however, capital inflows to the private sector do not have this positive effect;

(c) if the savings constraint binds, then the two public sector inflows and FDI all allow GDP to rise because they raise investment as well, as providing funding; portfolio flows (in our model, at least) do not have this effect.

We can finally derive the three sets of indirect employment effects, therefore:

binding external constraint

$$(\partial L/\partial Y)(\partial Y/\partial F_1) = (\partial L/\partial Y)(\partial Y/\partial F_2) = (\partial L/\partial Y)(\partial Y/\partial F_3) =$$

$$(\partial L/\partial Y)(\partial Y/\partial F_4) = \{a_1g_1+a_2h_1+a_3(r_1+r_3h_1)+a_4\}/m.$$

binding fiscal constraint

$$(\partial L/\partial Y)(\partial Y/\partial F_1) = \{(a_1g_1+a_2h_1+a_3(r_1+r_3h_1)+a_4)(1-h_2)\}/(g_1+h_1-t-z)$$

$$(\partial L/\partial Y)(\partial Y/\partial F_2) = \{(a_1g_1+a_2h_1+a_3(r_1+r_3h_1)+a_4)(1-g_2)\}/(g_1+h_1-t-z)$$

$$(\partial L/\partial Y)(\partial Y/\partial F_3) = (\partial L/\partial Y)(\partial Y/\partial F_4) = 0$$

binding savings constraint

$$(\partial L/\partial Y)(\partial Y/\partial F_1) = (a_1g_1+a_2h_1+a_3(r_1+r_3h_1)+a_4)\{h_2(1+r_3)\} \, / \, \{s+t+m-\{r_1+g_1+h_1(1+r_3)\}\}$$

$$(\partial L/\partial Y)(\partial Y/\partial F_2) = (a_1g_1+a_2h_1+a_3(r_1+r_3h_1)+a_4)g_2 \, / \, \{s+t+m-\{r_1+g_1+h_1(1+r_3)\}\}$$

$$(\partial L/\partial Y)(\partial Y/\partial F_3) = (a_1g_1+a_2h_1+a_3(r_1+r_3h_1)+a_4)r_2 \, / \, \{s+t+m-\{r_1+g_1+h_1(1+r_3)\}\}$$

$$(\partial L/\partial Y)(\partial Y/\partial F_4) = 0$$

Which constraint binds in practice will depend not only on the parameter values and stock positions in any one period, but also the level of economic development and the priority given by the government to stabilization as apposed to growth. Thus, for instance, the poorer primary exporters in sub-Saharan Africa are generally understood to be balance-of-payments constrained due to deteriorating terms of trade, while the richer primary exporters in Latin America are mainly seen as fiscally constrained due to chronic inflation, and the successful industrial exporters of S.E. Asia can be said to be savings constrained due to excess investment demand. Thus, we would logically expect programme aid to have a far more positive employment effect in Africa than in Asia and direct foreign investment to contribute more to employment in Asia than in Latin America. Programme aid would have the greatest employment effect in Latin America, due to the combination of the lifting of the fiscal constraint on growth and private investment; while in fact the major capital transfer of recent years has taken the form of portfolio flows, which have little or no employment effect.

The process of structural adjustment itself is intended to relax these constraints (Summers and Pritchett, 1993): lifting the balance of payments constraint by real devaluation; the fiscal constraint by public sector reform; and the savings constraint by financial liberalization. None the less, in practice these three constraints still appear to be real enough – if only because it has not proved possible to implement and sustain reforms that are sufficiently radical to clear markets by price alone.

4.6   Dynamic effects

The model we have explored so far might appear to be essentially static in nature. This is not in fact so, because modern sector employment (L_2) depends upon the capital *stock*: jobs created in this sector are "permanent" so to speak, and thus this part of our model is "dynamic" because investment in any one year raises employment in subsequent years as well. None the less, employment in the other two sectors is determined by the *current* level of aggregate demand (Y), either directly in the case of the "informal" sector (L_3), or indirectly through tax revenue in the case of the public sector (L_1). As we have seen, when one of the three "policy" constraints binds, the effect of capital inflows (F_i) is to release this constraint and create additional employment be allowing aggregate output – and thus demand – to rise. However, this is a temporary gain which will be reversed if the flow does not continue in subsequent years.

The rise in these two forms of employment (L_1, L_3) will only be permanent – and thus "dynamic" – when the overall capacity constraint binds, and thus further investment will permanently raise the level of aggregate real demand. In this case, there will be a permanent

upward shift in the labour demand function for these two sectors as a result of the income generated by the new capital stock, as well as the increased employment required to operate it directly. (L_2).

Consider the situation in equation [20] above. Substituting [11], [12], [16] and [18] and then differentiating with respect to Y yields an expression for the additional public and informal employment (L') generated by an increase in the capital stock (K):

$$\delta L'/\delta K = \alpha \beta \qquad\qquad [25]$$

where $\quad \beta = a_1.g_1 + a_2.h_1 + a_4$
$\qquad\qquad L' = L_1 + L_3$

Substituting [12] and [15] and differentiating with respect to the two relevant capital flows (F_1, F_3) yields:

$$\delta K/\delta F_1 = r_3.h_2$$

$$\delta K/\delta F_3 = r_2$$

So that:

$$\delta L'/\delta F_1 = r_3.h_2.\alpha.\beta$$
$$\delta L'/\delta F_3 = r_2.\alpha.\beta$$

In other words, only development loans and FDI will have an additional dynamic employment effect in the strict sense defined in our model – and even then only when none of the three policy constraints bind so that capital stock alone constrains the level of aggregate demand – which is not genrally considered to be the case in LDCs.

There is, of course, a wider sense in which "dynamic" employment effects of foreign capital inflows might be expected. The residual element of observed output growth that cannot be attributed to the accumulation of factor stocks (capital, labour and skills) is commonly known as "total factor productivity" and is broadly interpreted as reflecting technological progress. In our model this would broadly correspond to changes in the capital-output ratio (α) over time as this is our only constraint on output. To the extent that higher rates of investment in general – and technical assistance or FDI in particular – raise the rate of total factor productivity growth, then there would be a strong dynamic effect of current investment on future employment. However, there is little theoretical justification for this view (Roemer, 1986), and the available empirical evidence (Taylor, 1996) indicates that in practice the difference between the long-run growth performance of industrializing LDCs is almost entirely attributable to factor accumulation, and that there is no strong correlation between the rate of total factor productivity growth and the rate of investment. These findings would tend to justify the modelling approach adopted in the present study.

5. Testing the model empirically: Republic of Korea and Mexico

5.1 Constructing an empirically testable form of the model

In order to test our model empirically, three major practical problems have to be addressed. The first is how to reduce the number of behavioral equations to be tested to the minimum of "reduced form" equations which still reflect the essence of the original model. The second is the choice of appropriate countries upon which to test these equations, countries which both possess sufficiently long continuous data series and have received significant amounts of the different types of capital flows. The third is to find appropriate empirical definitions of our analytical variables which correspond to variables reported in the official statistics.

The reduction of the equations to a reduced form was carried out in two steps. The first was to substitute for most of the identities in the model set out in Chapter 4 and the second was to test the resulting equations econometrically to see which form (and by implication macroeconomic policy regime) performed best for the period as a whole. Empirical studies of LDCs using time-series analysis are characterised by omitted variables problems, simultaneity bias, autocorrelation problems and in general, severe misspecification which makes the reported "empirical evidence" vulnerable to reservations as to the validity of the obtained estimates. A neglect of possible non-stationarity of the series in question is also another central feature of the empirical literature, thus raising doubts about the robustness of the reported empirical estimates.

The "general and unrestricted model" used here is tested against a family of "nested models" by using standard F-type statistical tests. The general to specific methodology or the encompassing principle is to commence from as general a model as is feasible – i.e. one upon which undue a priori restrictions have not been placed in terms of variables included, functional form, and systematic and error dynamics – and "test down" using "specification" tests such as the F-ratio, likelihood ratio, Lagrange multiplier or Wald test to arrive at a preferred parsimonious model. Ideally, at each in this procedure tests for misspecification should also be applied. The aim is to adopt a consistent approach to model specification that reduces the likelihood of arriving at final model forms that are misspecified.

The main constraint related to this approach is of course the lack of sufficient degrees of freedom. In some cases, given the degrees of freedom constraint, may be impossible to include all the current or lagged variables of interest in the general, unrestricted model. In these cases additional tests can be adopted for misspecification due to omission of variables. This involves adding possible omitted variables, together and one by one, to the parsimonious model and evaluating their significance using t and F tests.

In our case, it is likely that many of the explanatory variables in our equations are not truly exogenous. The application of least squares to a single equation model assumes that the explanatory variables are truly exogenous, in other words that there is one way causation between the dependent and the explanatory variables. Where, however, the equation forms part of a larger system of simultaneous equations, the explanatory variables are very likely also to be determined by the dependent variable. In this case, the assumption that the error term is independent or orthogonal with respect to the explanatory variables is violated and least squares yield biased and inconsistent estimates. It is important to test for residual orthogonality to determine if a problem of simultaneous equation bias exists. In this case, we can tackle the problem by using an instrumental variables estimator.

The choice of countries (Republic of Korea and Mexico) was determined by a number of practical considerations. First, the availability of a long series of macroeconomics data that would be strictly comparable – that is, drawn from international sources (in this case the *World Tables* and the *International Financial Statistics*), data on public and private employment (which is available for surprisingly few countries and was drawn directly from the official statistics of the two countries), and data on private investment (supplied by the IFC). These sources provided a data set covering most of the 1970-1992 period. Second, they should be countries where foreign investment in its various forms has been an important factor in the investment behaviour of the public and private sectors, so that our hypotheses could be tested. Third, there should be a reasonably stable labour market regime (in terms of institutional structure, government policy etc) over the period as a whole, so that employment would be determined by the process of capital accumulation rather than sudden changes in labour supply or contractual conditions. Fourth, the two countries should be reasonably similar in size and structure, but differ to some extent in their investment and employment behaviour, so that a valid comparison could be drawn.

Table 5.1 below sets out the structure of the labour force in the two countries towards the end of our period. The balance between waged and unwaged employment (roughly equivalent to modern and informal sectors) is remarkably similar in the two countries on a sector-by-sector basis. The main difference is the greater absorption of labour out of agriculture into industry in Republic of Korea as compared to Mexico, due as we shall see below to higher rates of private investment. The higher absorbtion into modern services in Mexico is almost entirely due, as we shall also see below, to public sector employment in Mexico being far higher than in Republic of Korea.

Table 5.1 Structure of labour force in Republic of Korea and Mexico (percentage of total)

	Republic of Korea (1991)	Mexico (1990)
Agriculture:		
Waged	1.2	9.3
Unwaged	15.5	13.3
Industry:		
Waged	30.5	23.2
Unwaged	5.1	4.6
Services:		
Waged	29.0	35.6
Unwaged	18.7	14.0
Total:		
Waged	60.7	68.1
Unwaged	39.3	31.9

Source: World Bank: *World Development Report 1995.*

The definitions of all the variables are standard, except that formal sector private employment (L_2) has had to be proxied by manufacturing employment due to lack of disaggregated data on an annual basis for formal and informal private employment in the primary and tertiary sectors

in both countries. In consequence, the residual category of employment (L_3) which should correspond to informal sector private employment – i.e. that which does not work with the private capital stock in our model – is somewhat overstated. However, if we assume that the ratio of private industrial employment to private formal employment is stable, than this should not affect the results too much.

Table 5.2 Definition of variables in the model

M:	Imports	
X:	Exports	
J:	Net factor payments depending on debt, etc.	
R:	Changes in external reserves	
Y:	Gross Domestic Product at market prices	
Z:	Domestically financed budget deficit	
T:	Government revenue	
G:	Government expenditure	
I_p:	Private investment	
I_g:	Public investment	
S_p:	Private savings	
F_1:	External capital flows to the public sector	
F_2:	Direct Foreign Investment (FDI)	
F_3:	Portfolio flows	
F:	Total external capital flows ($F = F_1 + F_2 + F_3$)	
L_1:	Employment in the public sector	
L_2:	Employment in manufacturing (private sector)	
L_3:	Other employment (private sector; $L_3 = L - L_2 - L_1$)	
L:	Total employment ($L = L_1 + L_2 + L_3$)	

5.2 The case of Republic of Korea

5.2.1 Investment and employment

The 1970s were difficult years for Republic of Korea. Exports rose rapidly in the first half of the decade, but stagnated in the second, due to the impact of oil price increases which lead to continual devaluation of the won and political instability in 1979. It was only in the 1980s that successful stabilization programmes were implemented and output began to accelerate: GDP doubled between 1970 and 1980, and tripled between 1980 and 1990.

This rapid growth of output and employment was sustained by an extremely high rate of investment throughout the two decades, averaging over 30 per cent of GDP. It is now widely agreed that it was this rapid rate of capital accumulation and the accompanying absorbtion of new technologies, rather than any "miracle" of organization or culture, which explains the Korean economic phenomenon. Public investment accounted for about one-third of the total in the 1970s, but this had declined to one-fifth by the 1980s. None the less, given the rapid rate of growth,

public investment in 1991 was still 9 per cent of GDP and ten times larger in real terms than it had been in 1970.

The financing of this investment has been primarily from domestic saving, which has also been maintained at a very high rate: it financed about two-thirds of domestic investment in the early 1970s, rising to almost nine-tenths by the late 1980s. Although the public sector has maintained positive savings rates throughout, these have only been sufficient to finance about a third of its investment, so as Table 5.3 ("domestic finance") indicates, the private sector has had to provide a high level of funding to the public sector, mainly by various forms of financial repression which channelled funds through the banking system. This does not, however, appear to have crowded out private investment at all.

Table 5.3 Republic of Korea: Investment structure (percentage of GDP)

	1971			1981			1991		
	Publ.	Priv.	Total	Publ.	Priv.	Total	Publ.	Priv.	Total
Investment (I)	8.7	16.4	25.1	7.7	21.8	29.5	9.0	30.1	39.1
Net Saving	3.7	13.1	16.8	3.5	18.9	22.4	3.3	33.1	36.4
Accum. Balance	-5.0	-3.3	-8.3	-4.2	-2.9	-7.1	-5.7	3.0	-2.7
Domest. fin. (Z)	2.7	-2.7	-	2.1	-2.1	-	5.9	-5.9	-
Extern. fin (F)	2.3	6.0	8.3	2.1	5.0	7.1	-0.2	2.9	2.7

Source: Appendix 1.

The structure of employment, following our definitions, also changed considerably over the period. Public sector employment (L_1) grew rapidly, almost doubling over the period, although its share of total employment remained stable at under 5 per cent of the total. Manufacturing employment – our proxy for modern sector private employment (L_2) grew rapidly in both absolute and relative terms as a result of the rapid investment process: tripling in absolute terms and rising from 13 to 27 per cent of total employment. Table 5.4 does not reflect other modern private employment (eg in banks) but the net result seems to have been a rapid decline in the proportion of the workforce in unskilled occupations held in agriculture or informal service activities. Total employment expanded by some 80 per cent over the period as a whole, while output expanded six-fold – so that the average increase in productivity was impressive.

Table 5.4 Republic of Korea: Employment structure

	1971	1981	1991
Employment (millions)			
Public sector (L_1)	0.44	0.67	0.85
Private sector:			
Manufacturing (L_2)	1.36	2.86	4.94
Other (L_3)	8.29	10.6	12.79
Total employment (L)	10.07	14.05	18.58
Share of total			
Public sector (L_1)	4.3	4.7	4.6
Private sector:			
Manufacturing (L_2)	13.3	20.4	26.6
Other (L_3)	82.4	74.9	68.8

Source: Appendix I.

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5.2.2 Foreign capital inflows

As Table 5.3 has indicated, external finance played an important role in financing investment in the 1970s, but less so by the end of the 1980s. Both the public and private sectors have seen large inflows, although the public sector reduced its reliance on these sources steadily and finally became a net re-payer both because the government wished to avoid excessive external indebtedness and because it could rely on domestic sources of finance.

Since the early 1960s, the Korean current account has been managed by the authorities through administrative controls: when deficits emerged, restrictions were tightened on outflows and those on inflows loosened, and vice versa. In the first half of the 1980s Republic of Korea had some difficulties in attracting foreign capital due to political instability and continued won depreciation, so the authorities allowed greater entry to foreign investors to the stock market in 1981 through investment trust funds set up for this purpose. In 1985, Korean firms were allowed to raise capital overseas by issuing convertible bonds and depository receipts. FDI, however, was licensed only for sectors where significant modernizing technology transfer was expected. In consequence, as Table 5.5 indicates, net FDI (that is, allowing for the outflows due to investment by Korean enterprises abroad) has been of relatively minor importance to Republic of Korea both as a proportion of GDP and as a share of capital inflows.

By the second half of the 1980s, the current account of the balance of payments moved into surplus as the world economy recovered and the rapid appreciation of the Japanese yen improved the competitiveness of Korean exports. Reserve levels rose sharply and the authorities reduced net capital inflows by permitting outflows again. However, by 1990 the current account again moved into deficit due to rising domestic wages as labour demand exhausted the available supply – particularly of skilled workers – and real won depreciation exacerbated a slowdown in world demand. Facing these difficulties in financing the mounting external deficit, the authorities once again liberalized capital account inflows by allowing domestic firms to issue securities abroad. At the end of the period covered by our data, Republic of Korea witnessed a fresh inflow of capital, as the industrial prospects of the economy picked up in 1991 and the interest rate differential over foreign markets rose. In fact, for 1990-94 the total inflow was some US$32 billion, ten times the level for the 1980s – although it was still relatively small in relation to the economy as a whole (4% of GDP) due to the high domestic savings rate and continued official control over capital movements. The early 1990s saw a relaxation of the restrictions of inward portfolio flows, as Korean firms were allowed to borrow and issue securities abroad. However, these new portfolio flows did not appear to be contributing to corporate capital formation and the authorities, fearing capital account instability, continue to be cautious about full capital account liberalization.

Table 5.5 Republic of Korea: Level and composition of net capital inflows

	1971	1981	1991
As percentage of GDP:			
Net inflows to public sector (F₁)	2.3	2.1	-0.2
Net inflows to private sector:			
Direct investment (F₂)	0.4	0.1	-0.1
Portfolio and loans (F₃)	5.6	4.9	3.0
Sub-total	6.0	5.0	2.9
Total net capital inflows	8.3	7.1	2.7

Source: Appendix I.

5.2.3 Testing the model

The econometric tests of the relationships hypothesised in Chapter 4 within the data trends discussed above are presented in Table 5.6 below. They were obtained by OLS methods, within the methodological procedure discussed in 5.1 above. The fit is very good for all the equations (except for private sector employment) and the coefficients are of the right sign and significant to a reasonable level. The methodology itself discards the variables that are not significant, and the most interesting result in this context is that portfolio flows and bank loans to the private sector (F_3) appear to have no effect on private investment (I_p) although GDP growth, lagged DFI (F_2) and public investment (I_g) do have strong multiplier effects by providing demand expectations, technology and infrastructure respectively.

The equations for government current expenditure (G) and public investment both indicate the expected effect of external finance to the public sector (F_1) although the low values of the coefficients seem to imply that external finance is a substitute for domestic finance of the deficit (Z) rather than a stimulus to increased fiscal expenditure.

The results for the employment equations are not as good as might be hoped, but they are significant. Public sector employment is well explained by the model, most of the variation being due to current expenditure and about half the absolute level for the period as a whole to the intercept term. Just over half of the variations in private sector employment are explained by private investment. The resulting coefficients are compared with those for Mexico in 5.4 below and then built into the simulation model so as to trace the direct and indirect effects of capital inflows.

Table 5.6 Republic of Korea: Estimation of behavioural relationships

Import equation

M = 998.23   + 0.32Y
     (0.63)   (16.67)
R^2 = 0.97   DW = 1.72

Government expenditure equation

G = -1088.07   + 0.15Y   + 0.30 F_1
     (-4.72)   (52.78)   (3.75)
R^2 = 0.99   DW = 1.73

Public investment equation

I_g = -712.78   + 0.08Y   + 0.08F_1
     (-1.50)   (11.61)   (1.00)
R^2 = 0.92   DW = 1.57

Private investment equation

I_p = -2513.25   + 0.30ΔY + 12.59 F_2(-1)   + 3.421I_g
     (-2.56)   (1.84)   (3.22)   (14.17)
R^2 = 0.96   DW = 2.05

Public sector employment equation

L_g = 385.06   + 0.02G   + 0.002 I_g(-1)
     (19.52)   (5.22)   (0.19)
R^2 = 0.96   DW = 1.61

Private sector employment equation

ΔL_p = 0.005 I_p
     (1.41)   Tax rate (t): 0.17
R^2 = 0.55   DW = 1.71   Savings rate (s): 0.23

5.3 The case of Mexico

5.3.1 *Investment and employment*

The 1970s were a period of rapid expansion for the Mexican economy, particularly in the latter half when oil revenues raised exports substantially. However, the subsequent decade was marked by the debt crisis and successive stabilization programmes which were only rewarded with a macroeconomic recovery in the late 1980s due to a heterodox "pact" between government, business and labour.

As Table 5.7 indicates, aggregate investment rates did rise during the 1970s, but this was mainly due to the increase in public invesment derived from oil revenues and external borrowing: the private sector rate changed very little. The 1980s saw a decline in the investment rate for much the same reason: the public investment rate fell sharply under the stabilization programmes and private investment recovered only very slowly at the end of the decade. The public sector had great difficulties with maintaining a minimum saving level throughout the period, and thus was forced to rely upon domestic finance to fund the larger part of its investment – through high reserve requirements on banks and excessive monetary emission. There is not evidence, however, that this led to crowding-out of private investment because private savings rates appear to have risen in response to these fiscal deficits (due to credit rationing by banks which prevented consumer expenditure from rising) and to have declined in the late 1980s as the fiscal position improved.

The low rates of private saving and investment in the Mexican economy are a source of considerable concern to the authorities, and are responsible both for the difficulties in sustaining growth and the tendency to generate large current account deficits on the balance of payments. This is one of the major contrasts between Mexico and Republic of Korea, and also helps explain their distinct employment experiences, as we shall see.

Table 5.7 Mexico: Investment structure (percentage of GDP)

	1971			1981			1991		
	Publ.	Priv.	Total	Publ.	Priv.	Total	Publ.	Priv.	Total
Investment	4.6	14.3	18.9	12.1	15.3	27.4	4.9	17.0	21.9
Net Saving	1.7	14.9	16.6	0.9	19.6	20.5	0.0	14.2	14.2
Accum. Balance	-2.9	0.6	-2.3	-11.2	4.3	-6.9	-4.9	-2.8	-7.7
Finance: internal	2.9	-2.9	-	10.4	-10.4	-	5.2	-5.2	-
Finance: external	0.0	2.3	2.3	0.8	6.1	6.9	-0.3	8.0	7.7

Source: Appendix II.

The structure of employment in Mexico reflects the severe imbalances in the economy as it expanded and contracted over the two decades. Public sector employment (L₁) tripled during the 1970s as employees were taken on at the government level and by state enterprises, partly in order to provide employment as such but also to cope with the increased level of expenditure. Despite the prolonged cris of the 1980s, public sector employment did not begin to fall in absolute terms until the 1988 - it is only after the period considered here with mass privatization in the mid-1990s that the figure declines significantly. As Table 5.8 shows, public sector employment rose from 9 per cent of the workforce in 1971 to 19 per cent in 1991.

Manufacturing employment – our proxy for modern sector private employment (L_2) – rose much less rapidly, and most of this growth was in the 1970s, during the 1980s the stagnation in output after the debt shock and the subsequent investment in labour-saving technology in the late 1980s combined to keep it stable. As a result, its share in total employment declined. As a result, our residual category (F_3) which reflects mainly unskilled employment in agriculture and informal urban services, clearly grew in absolute and relative terms.

Table 5.8 Mexico: Employment structure

	1971	1981	1991
Employment (millions)			
Public sector (L_1)	1.16	3.46	4.28
Private sector:			
Manufacturing (L_2)	1.77	2.56	2.51
Other (L_3)	10.27	15.31	16.33
Total employment (L)	13.32	21.55	23.12
Share of total			
Public sector (L_1)	8.7	16.0	18.5
Private sector:			
Manufacturing (L_2)	13.2	11.9	10.9
Other (L_3)	77.1	71.1	70.6

Source: Appendix II.

5.3.2 Capital inflows to Mexico

As Table 5.7 has indicated, external sources of finance have been important for Mexico, equivalent to 10 per cent of total investment in 1971, rising to a quarter in 1981 and over a third in 1991.

Mexico had a relatively restrictive policy on foreign capital inflows in the early 1970s, due to both limits on foreign ownership of key sectors of the economy and strict obligations on foreign firms to export (which reduced FDI), the lack of a domestic stock market and government control over firms' borrowing abroad, and a desire not to increase the debt burden. However, the advent of oil revenues in the latter part of the decade changed this stance radically. The government initiated an accelerated investment process which involved an enormous increase in the foreign debt, while the overvaluation of the exchange rate made borrowing abroad attractive for domestic firms – if only to finance the diversification abroad of their owners' portfolios.

In 1982 the external debt became unpayable, and the government was forced to negotiate with its creditors under strong conditionality, as well as initiating a radical stabilization programme combined with measures to liberalize trade, deregulate the financial system and privatize state enterprises. In the mid-1980s, all restrictions on foreign investment were removed and a domestic securities market was developed in order to attract private risk capital to both government peso-denominated debt and private sector securities.

The resulting composition of net capital inflows is shown in Table 5.9. The public sector moved towards heavy external indebtedness in the 1970s and then towards repayment in the 1980s. The private sector, in contrast, has become steadily more reliant on the external sector. However, the restrictions on foreign ownership in the 1970s and the unattractive circumstances of the debt crisis in the early 1980s meant that FDI only became relatively important at the end of the decade. The expansion was due, therefore, to bank borrowing abroad by private firms, because portfolio flows into Mexico do not become important until the end of the 1980s. It is this reliance on external borrowing which has made Mexican firms extremely vulnerable to devaluation and required extensive bailouts by the government of leading firms and their bankers in both 1983 and 1995.

The mid-1990s, a period not covered by our data, saw a continuation of the trends discussed above. The public sector maintained a reasonable balance but private sector saving continued to decline as firms and banks borrowed abroad to take advantage of the interest rate differential and the stable nominal exchange rate sustained by the capital inflows themselves. FDI rose rapidly in order to take advantage of the export base provided by Mexico's membership of the North American Free Trade Agreement, while portfolio investment was attracted by the interest rate differential on government securities and the new privatization issues. However, the Mexican authorities refused to regard the current account deficit as unsustainable as long as it was generated by the private sector, and in 1994-95 the currency collapsed as foreign portfolio funds were suddenly withdrawn. The subsequent drastic stabilization programme once again affected investment and employment negatively.

Table 5.9 Mexico: Level and composition of net capital inflows

	1971	1981	1991
As percentage of GDP:			
Net inflows to public sector (F_1)	0.0	0.8	-0.3
Net inflows to private sector:			
Direct investment (F_2)	0.7	1.1	1.7
Portfolio and loans (F_3)	1.6	4.9	6.3
Sub-total	2.3	6.0	8.0
Total net capital inflows	2.3	6.8	7.7

Source: Appendix II.

5.3.3 Testing the model

The econometric tests of the relationships hypothesised in Chapter 4 within the data trends discussed above are presented in Table 5.10 below. They were obtained by OLS methods, within the methodological procedure discussed in 5.1 above. As in the case of Republic of Korea, the fit is very good for all the equations (except for private sector employment) and the coefficients are of the right sign and significant to a reasonable level.

The econometric programme itself discards the variables that are not significant, and the most interesting result in this context is that portfolio flows and bank loans to the private sector (F_3) appear to have no effect on private investment (I_p), as is also the case for Republic of Korea. GDP growth has a strong multiplier effect, and lagged DFI (F_2) has a coefficient greater than

unity, indicating that corporate investment by foreign firms generate further investment elsewhere in the private sector. Public investment (I_g) also has a positive effect on private investment: though it is not large there is clearly net crowding in rather than the crowding out as argued by the World Bank and the IMF (as well as the Mexican authorities) as an argument for reducing public investment.

The equations for government current expenditure (G) and public investment are not entirely satisfactory, probably because Mexican expenditure decisions have been highly infuenced by short-term stabilization policies and the political cycle rather than by longer-term development criteria. However, both equations indicate the expected effect of external finance to the public sector (F_1) although the low values of the coefficients seem to imply that at least half of external finance has in fact been used to reduce the domestic borrowing requirement (Z) or perhaps to avoid increasing tax pressure - which is comparatively low in Mexico - rather than to provide a stimulus to increased fiscal expenditure as such.

The results for the employment equations are not as good as might be hoped, but they are significant. Public sector employment is well explained by the model, most of the variation being due to current and capital expenditure by the government. Only a third of the variations in private sector employment are explained by private investment, and the coefficient is rather lower than expected. These results are compared with those for Mexico in 5.5 below and then built into the simulation model so as to trace the direct and indirect effects of capital inflows on employment.

Table 5.10   Mexico: Estimation of behavioural relationships

Import equation

M = -11792.89	+ 0.19Y	
(-2.51)	(6.80)	
R^2 = 0.79	DW = 1.30	

Government expenditure equation

G = -22701.32	+ 0.29Y	+ 0.33 F_1
(-2.13)	(4.50)	(0.73)
R^2 = 0.77	DW = 1.08	

Public investment equation

I_g = 10084.09	+ 0.19ΔY	+ 0.11F_1
(5.07)	(1.73)	(0.51)
R^2 = 0.20	DW = 0.98	

Private investment equation

I_p = 8363.1	+ 0.61ΔY	+ 1.33 F_2(-1)	+ 3.421I_g	+ 12073.7 YRD
(3.43)	(3.94)	(1.08)	(2.33)	(6.12)
R^2 = 0.82	DW = 2.28			

Public sector employment equation

L_g = 903.69	+ 0.06G	+ 0.04 I_g
(2.78)	(8.33)	(1.61)
R^2 = 0.89	DW = 1.14	

Private sector employment equation

ΔL_p = 0.002 I_p		
(1.61)		Tax rate (t): 0.17
R^2 = 0.31	DW = 1.74	Savings rate (s): 0.23

5.4 Comparing the models for Republic of Korea and Mexico

Comparing two country experiences is invariably a difficult task because of the institutional and structural differences between them. None the less, a comparison of parameters from the model estimates does yield some very interesting information.

Table 5.11 shows the parameter values from the estimated behavioral equations of the model. This is the best way of comparing the employment effects of foreign investment systematically, because it allows us to distinguish clearly between the causal linkages – an approach which is very rare in comparative studies of employment.

The first major difference is in the employment coefficients (a_i) themselves. In the case of Republic of Korea, the employment coefficients for public expenditure (a_1, a_2) are much lower than in Mexico: this is undoubtedly due to the much greater administrative efficiency of the Korean public sector and possibly also to a greater tendency to adsorb civil servants for socio-political reasons in Mexico, but it also means that the employment effect of a given level of public expenditure (both current and capital) is much greater in Mexico.

However, in the case of private investment the relationship is the reverse: the marginal employment creation by private investment (a_3) in Republic of Korea is over twice as high as in Mexico. As there is no reason to believe that incremental labour productivity (i.e. the marginal labour-output ratio) in Republic of Korea is lower than that of Mexico, the answer probably lies in the greater efficiency with which capital is used in Republic of Korea – which leads to more output per unit of capital and thus more labour requirements. Moreover, while in Mexico the employment coefficient is higher for public than private investment, the reverse is the case in Republic of Korea: so that, a switch of resources from public to private use in Republic of Korea would increase employment, in Mexico it would reduce it.

The next link back up the chain of causality, so to speak, is private investment behaviour, where the coefficients (r_i) are again quite different. The accelerator term (r_1) which links changes in output to private investment, is much higher in mexico than in Republic of Korea, which may be due to Korean firms taking a longer-term view based on export prospects while Mexican firms are more sensitive to fluctuations in domestic demand. In consequence, private employment is likely to fluctuate more in Mexico than in Republic of Korea.

The effect of direct foreign investment on domestic private investment (r_2) in Republic of Korea is much higher than in Mexico, which clearly indicates a strong multiplier effect from foreign technology transfer. When this is combined with the direct employment effect (a_3) of private investment, it seems reasonable to conclude that FDI generates more employment in Republic of Korea than in Mexico; but as we have seen, this does *not* reflect a more labour intensive "choice of technique" by foreign firms but rather the combination of the higher multiplier effect on private investment as a whole and the more effective use of the capital stock. In other words, the direct and indirect employment impact of FDI is derived more from the behaviour of the private sector as a whole than from the activities of multinational firms as such.

The third determinant of private investment (and thus private employment) is the effect of public investment, where the relevant coefficient (r_3) for Republic of Korea is much higher than that for Mexico, although both are positive. In both cases this indicates a net "crowding in" effect, and thus the double contribution of public investment to employment – directly in the

public sector and indirectly (and possibly more permanently) in the private sector. The implication is that the indirect effect of public investment on employment ($r_3.a_3$) is much greater than the direct effect (a_2) in Republic of Korea, while in Mexico the reverse is true. Again, the only possible conclusion is that the difference in the dynamism of the private sector and the effectiveness of public sector are quite different in the two countries.

In both cases, as we have seen, the measured effect of portfolio purchases and bank lending (F_3) on private investment was not significant, and thus by implication it has no employment effect. This would seem to indicate that these forms of foreign capital inflows substitute for corporate savings rather than raise investment.

In contrast to the private sector experience the effect of official development assistance and public borrowing abroad (F_1) on the public sector is remarkably similar in the two cases. The impact of these flows on both current government expenditure (g_2) and public investment (h_2) is almost the same in the two countries, but it is interesting to note that: the combined increase in expenditure is less than one-half, in other words that the greater part of these capital inflows are used to reduce deficits rather than increase activities (and thus employment); and that the impact on current expenditure is greater than on public investment. If we then take into account the relative direct employment effects of current and capital expenditure ($a_1 > a_2$) this balance can be seen as quite positive for labour demand.

However, once we take into account the large difference in the indirect effect of public investment on private investment, and of private investment on private employment in the two countries, it is clear that the net employment impact of official development assistance and public borrowing abroad in Republic of Korea is much greater than in Mexico. Once again, this is due to private sector behaviour rather than that of the public sector as such.

Table 5.11 Model parameter values from the estimated equations

	Republic of Korea	Mexico
m:	0.32	0.19
a_1:	0.02	0.06
a_2:	0.002	0.04
a_3:	0.005	0.002
g_1:	0.15	0.29
g_2:	0.30	0.33
h_1:	0.08	0.19
h_2:	0.08	0.11
r_1:	0.30	0.61
r_2:	12.59	1.33
r_3:	3.42	0.40
s:	0.23	0.19
t:	0.17	0.14

Finally, two exercises were carried out by constructing separate simulation models for the two economies, using the equation forms discussed above and the parameters set out in Table 5.11. In its reduced form, the simulation model contains eight behavioral equations which determine endogenously the level of imports (M), taxation (T), government current expenditure (G), public

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investment (I_g), private savings (S_p), private investment (I_p), public sector employment (L_1) and formal private sector employment (L_2). The equation forms are set out in Table 5.12, as are the four identities which balance the model: the balance of payments, the budget balance, the aggregate savings-investment balance and the composition of employment. The simulation assumes that over the period as a whole it is the external (ie foreign exchange) constraint which binds, so that foreign capital inflows affect the level of imports and thus economic activity.

The two employment equations perhaps require some explanation. The first suggests that public sector employment is largely determined by the level of government expenditure and public investment, rather than the public capital stock as such, so L_1 is a linear function of G and I_g. This does not capture properly the determination of part of public sector employment by the level of state enterprise output, but no data was available on this. The second suggests that, in contrast, that the level of employment in the formal private sector (L_2) is a function of the private capital *stock* so that changes in this stock (ie private investment I_p) will determine the *change* in L_2. Although depreciation is implicitly captured by the "marginal capital-employment ratio" (a_3), the equation does not really allow for the effect of technological change on productivity and thus the capital/labour ratio - which is a key factor in explaining the econometric results.

Table 5.12   Structure of the simulation model

I. Behavioural equations

$M = M_0 + mY$

$T = tY$

$G = g_1 Y + g_2 F_1$

$I_g = h_1 Y + h_2 F_1$

$S_p = sY$

$I_p = r_1 \Delta Y + r_2 F_2 + r_3 I_g$

$L_1 = a_1 G + a_2 I_g$

$\Delta L_2 = a_3 I_p$

II. Identities

$X - M - J + \Sigma_{i=1 to 3} F_i \equiv R$

$(G + I_g) - (T + F_1) \equiv Z$

$S_p + F_2 + F_3 \equiv Z + I_p + R$

$L = L_1 + L_2 + L_3$

The simulated macroeconomic trends for investment and employment generated by the exogenous variables (mainly GDP) and the recorded capital inflows, were then adjusted by adding a further US$100 millions to the two forms of capital inflows (F_1 and F_2) in each year, this allows us to trace the impact of capital inflows through the economy to the employment outcomes.

Table 5.13 reports the net marginal effect of these two forms of capital inflow ("ODA" and "FDI") received by the two countries in 1971 and 1990 – the full results are in the Appendix. Three simple measures are presented: the increase in formal sector employment ($L_1 + L_2$) as a percentage of total employment (L); and the "cost per job" is obtained by dividing the inflow by the number of jobs created.

The numerical results should not be taken too literally, but they do permit an interesting interpretation. As we have already seen ODA (which includes both aid and public borrowing, net of repayments in both cases and is thus the net capital flow into the public sector) creates more jobs in Mexico than in Republic of Korea; while the reverse is true of FDI (again, net of outflows). Table 5.14 indicates the scale of the difference, and in particular the much greater catalyzing effect of FDI on private investment and thus the capital stock in Republic of Korea, which creates over ten times as much employment per dollar invested than in Mexico.

The other striking implication of our results is the way in which the employment effects have changed over time. Even after allowing for the real depreciation of the dollar over the period, the shift is dramatic and reflects two different trends. In the public sector of both countries the "cost per job" (that is, the inverse of the employment generated by public borrowing abroad) has risen several times because in both cases public sector employment growth has been deliberately restricted while public expenditure has risen in real terms, so the marginal contribution of ODA to new employment has progressively diminished. In the private sector, the marginal investment associated with a unit increase in employment (the "cost per job" in Table 5.13) has increased five-fold in Republic of Korea and three-fold in Mexico – this clearly reflects the changes in capital/labour ratios over time and is of course the main reason why formal sector private employment has risen relatively slowly in the two cases. This estimate is consistent with our global estimate of an average capital stock per MNE employee of US$50,000 in Chapter 3, but suggests that wide variations are present within this average depending on the local circumstances.

Overall, however, perhaps the most important result to emerge from these simulations is that the marginal contribution of foreign investment to employment is relatively small and declining. The main changes are due to fiscal strategy in the public sector and technological change in the private sector. Both of these are strongly affected by developments in international capital markets, of course, but the differences between the two cases indicates that domestic response is more important.

Table 5.13   Simulation of the employment impact of an extra US$100 mn in capital inflows in 1971 and 1990

	Republic of Korea	Mexico
In 1971:		
impact of extra ODA (F_1)		
as % of total employment	0.019	0.04
'000s job created	1.99	5.78
"cost per job" (US$'000s)	50	17
impact of extra FDI (F_2)		
as % of total employment	0.169	0.005
'000s job created	17.74	0.72
"cost per job" (US$'000s)	6	138
In 1990:		
impact of extra ODA (F_1)		
as % of total employment	0.002	0.008
'000s job created	0.4	1.89
"cost per job" (US$'000s)	250	53
impact of extra FDI (F_2)		
as % of total employment	0.021	0.001
'000s job created	3.91	0.24
"cost per job" (US$'000s)	26	417

Source: Appendix.

It was not possible to construct a full model of the two economies along the lines suggested in Chapter 4 because of the difficulty of modelling output and exports in a plausible manner, without appropriate estimates of the capital stock. We cannot, therefore, compare the effect of the policy constraints individually in a rigorously quantitative manner. What we can do, however, is to compare the 'multipliers' corresponding to the four constraints in order to give some idea of their "shadow price" of foreign investment for each country. In each case, the multiplier is an approximation of the direct increase in GDP resulting from a constraint being marginally released due to an appropriate capital inflow. The external multiplier (from equations [8] and [21]) captures the external constraint, released by all forms of inflow. The fiscal multiplier (from equations [9] and [22]) reflects the fiscal constraint, released by all forms of aid. The savings multiplier (from equations [14] and [23]) reflects the additional resources provided by inflows to the private sector. The capacity multiplier relates to the increased capital stock arising from higher FDI as discussed above (equation [25]).

Table 5.14 shows the estimates of these multipliers for Republic of Korea and Mexico. All the figures are drawn from our econometric estimates shown in Table 5.12, except that to estimate the capacity multiplier it was necessary to impute a standard capital-output ratio (= 3.3) for both countries. As can be seen the multipliers are highest for the fiscal constraint - which underlines the importance of understanding the public-private macroeconomic relationship in employment policy design. Comparing Republic of Korea with Mexico indicates that the multipliers are higher in Mexico for the policy constraints; but the reverse is the case for the capacity constraint. This implies that the long-term sustained impact of FDI in Republic of Korea is almost ten times greater than in Mexico – due above all to private sector behaviour.

Table 5.14   Output constraints in Republic of Korea and Mexico: Comparative output multipliers

	Republic of Korea	Mexico
External multiplier	3.1	5.3
Savings multiplier	4.3	5.3
Fiscal multiplier	5.9	7.1
Capacity multiplier	3.8	0.4

Source: see text.

Finally, lest it should still be thought that these markedly different trends in employment creation by the private sector in the two countries are due to high labour costs in Mexico as compared to Republic of Korea, it is worth bearing in mind that in Mexico wages have risen far more slowly, both in absolute terms and relative to per capita incomes for the country as a whole, than in Republic of Korea (as Table 5.15 indicates) without leading to superior levels of employment generation.

Table 5.15   Real wage trends in Republic of Korea and Mexico

	Republic of Korea (1960-78)	Mexico (1962-85)
GDP per capita	6.9	2.9
Agricultural wages	7.1	1.3
	1875	(1962-85)
GDP per capita	7.4	1.6
Manufacturing wages	9.1	-1.2

Source: World Bank: World Development Report 1995.

6. International capital flows and employment in LDCs: Conclusions and policy implications

In this study we have attempted to address the question of how foreign capital flows affect employment and wages in developing countries through their effect on investment. The answer to this question is taken for granted in the standard model of structural adjustment, but in fact it is not easy to resolve in either theory or practice.

In Chapter 2, we established the radical changes that have taken place in the level, destination and form of capital flows towards developing countries over the past two decades. It is not immediately clear whether these changes have a positive effect on employment and wages in most LDCs, because the external contribution to their resource mobilization has not increased substantially while in Latin America and Africa the level of fixed capital formation per capita has actually fallen. In particular, it appears that the changes in the composition of capital flows (from public to private, from project aid to emergency assistance, and from FDI to portfolio flows) can have negative effects on domestic capital formation and thus on employment.

In Chapter 3, we explored the literature on employment and wage trends in developing countries. It was necessary to disentangle the effects of structural adjustment programmes from those of capital flows as such but a fairly consistent picture emerged. Structural adjustment policies appear to be main explanation for the trends in urban and rural incomes (and thus wage levels) on the one hand, and fiscal stabilization for the decline in public sector employment on the other. However, the manifest failure of employment to recover after these policy shocks in Latin America and Africa, and the success of East Asia in this respect, do appear to be the consequence of the private investment response rather than labour market inflexibilities as the standard model suggests. It is widely agreed that direct foreign investment has considerable potential for both creating stable jobs and for training the workforce, but the available data indicates that these positive effects are confined to a very small minority of the workforce in relatively few developing countries.

In Chapter 4 we brought together the stylized facts derived from Chapters 2 and 3 into a formal macroeconomic model. This model can be seen as a further development of the 'two-gap' model which was originally operationalized in a policy-useful format by the World Bank and subsequently expanded to include a fiscal gap in addition to the savings and trade gaps. Our developments of this standard model has two key aspects: the disaggregation of capital flows into four distinct categories on the one hand; and the explicit definition of three types of employment - public, modern private and informal- on the other. This produces a new and surprisingly rich picture of the complex relationship between international capital markets and domestic employment. Rigorous mathematical analysis of the properties of this model revealed that in order to capture the full effect of foreign capital inflows it is necessary to trace their indirect effect on private investment through the overall macroeconomic equilibrium. By extension, this process depends upon the binding constraint experienced by the economy at any one point in time.

The last step was to test this model on two empirical cases in Chapter 5, with a dual objective: first, to test the validity of the behavioral assumptions of our model on time-series data; and second, to measure the relevant coefficients in order to gauge the order of magnitude of the direct and indirect effects of external capital flows on employment in the three sectors. The two cases chosen were Republic of Korea and Mexico, and the results of the econometric tests are of considerable interest. The fitted equations tend to confirm the assumptions of the model as

against alternative formulations, and reveal considerable similarities as far as the effects of capital flows on public expenditure are concerned, although the effect of this latter on employment in turn has been much higher in Mexico than in Republic of Korea. In marked contrast, the effects of capital inflows on private investment are much higher in Republic of Korea than in Mexico, and the consequent employment effects much more positive. A simulation model based on the estimated equations and coefficients confirmed this outcome in terms of the 'cost per job' - that is, the marginal effect of external capital flows on employment.

While we have some reason to be confident of the strength of the overall argument presented in this study, it is not easy to draw pricise policy conclusions from an analytical exercise of this scope and degree of abstraction. None the less there are some general themes which emerge from the study that do have useful policy implications. The following are the most important of these implications:

a) because the present pattern of international capital flows can only help a minority of developing countries raise their employment and wage levels significantly, in most cases these new flows should be regarded by policymakers as complementary to the raising of public and private investment rates by domestic resource mobilization and not as a substitute;

b) because the composition of foreign capital flows is more significant for positive effects on labour than their absolute amount, project and training aid should be preferred over consumption support and foreign direct investment should be encouraged in place of portfolio inflows by appropriate macroeconomic and administrative measures;

c) because the key factor which determines the effect of foreign capital flows on employment is the investment response of private firms, stable legislative and financial structures which encourage firms to take long-term decisions to expand productive capacity are more conducive to employment generation than either fiscal demand expansion or monetary stabilization programmes;

d) because private investment in the modern sector is particularly sensitive to the level and volatility of income growth, interest rates and the real exchange rate it is essential for economic policymakers to maintain real GDP growth steady, real interest rates low and the real exchange rate competitive in order to generate "good jobs";

e) because foreign direct investment is the most desirable form of capital inflow due to its embodied technology transfer, multiplier effects on domestic investment and consequences for skilling, promotion policies should be geared to this rather than other private flows and public investment should be raised for the provision of economic infrastructure and an educated workforce;

f) because short-term capital flows have a particularly destabilizing effect on macroeconomic activity and on the sustainability of fiscal policies, there is a strong case for the maintenance (or reimposition) of financial controls over portfolio purchases by non-residents and borrowing abroad by domestic corporations in order to protect private fixed investment and thus employment;

g) because declining real wages appear to have little positive employment generation effects and clearly have serious social costs (not only for those employed in the modern sector but

also for those in the informal sector who depend on their expenditure) there is no obvious macroeconomic case for further dismantling of labour protection mechanisms;

h) because cross-border investment is particularly sensitive to the "country risk" arising from policy regime instability, there are good employment reasons for pursuing regional arrangements designed to "lock in" not only trade concessions but also mechanisms for mutual investor protection, macroeconomic coordination and eventually fixed exchange rates;

i) because the Bretton Woods institutions have a key role in determining the access of developing countries to international capital markets, their policies in this respect should be geared explicitly towards employment generation - as Article I of the International Monetary Fund makes clear;

j) finally, much more research is needed into the behaviour of private investors - both foreign and domestic - in order to design more effective employment strategies for developing countries as the best sustainable means of overcoming poverty in developing countries.

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Statistical Appendix

Table 1 : KOREA - variables for modelling (Values in Korean Won (billions)/current prices, unless otherwise Indicated)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
X: exports	389.00	524.40	836.40	1601.90	2139.90	2854.80	4445.80	5848.20	7335.70	8563.50	12943.50	17340.80	18769.49	22748.39	26125.80	27937.20	36034.21	45050.70	51100.00	48810.00	53470.00	60800.00	n.a	n.a
M: imports	657.60	878.20	1030.80	1757.10	2972.50	3727.80	4621.40	5811.00	8062.20	10828.70	15774.10	19718.70	20173.60	23048.61	26038.89	28919.40	30365.40	36356.09	40570.00	44790.00	54450.00	66170.00	n.a	n.a
CAB:	-193.49	-295.27	-144.59	-121.89	-811.27	-914.28	-150.04	5.81	-525.14	-2009.08	-3232.13	-3164.00	-1037.36	-1245.85	-1105.80	-771.71	4069.65	8105.80	10358.35	3384.90	-1687.57	-6399.21	-3535.56	n.a
R:	-15.22	13.93	-55.40	-139.41	15.22	-239.10	-682.44	-650.98	-304.92	-382.52	-531.50	-203.63	-45.07	58.96	-707.65	35.87	44.07	-728.80	-6455.95	-2004.98	927.45	841.89	-2907.14	n.a
J:	75.11	58.53	49.81	33.31	21.33	-41.48	25.56	-31.39	201.36	256.12	-401.53	-785.96	-533.25	-945.63	-1192.71	-1789.51	-1599.15	-589.01	-171.65	-625.10	-887.57	-1029.21	n.a	n.a
Y: GDP	2759.80	3409.70	4193.90	5396.80	7631.30	10223.90	13095.70	17985.19	24242.51	31224.09	36041.10	47462.00	54442.80	63832.79	72844.29	80846.79	93370.89	108430.00	127960.00	143000.00	172270.00	207520.00	231180.00	n.a
S: national saving	460.00	536.00	710.00	1190.00	1570.00	1810.00	3290.00	4770.00	6800.00	6520.00	8190.00	9650.00	12230.00	16390.00	19610.00	22420.00	30230.00	39220.00	50850.00	61790.00	74240.00	n.a	n.a	n.a
Sg: public saving	117.80	126.30	47.80	120.60	144.70	308.00	537.10	596.80	911.10	1241.00	1193.00	1674.00	1688.00	2393.00	2391.00	2400.00	3011.00	4333.00	6144.00	5937.00	7441.00	6850.00	8370.00	11667.00
Sp: private saving	342.20	409.70	662.20	1069.40	1425.30	1504.00	2752.90	4173.20	5888.90	7279.00	6997.00	8276.00	10544.00	13997.00	17219.00	20020.00	27219.00	34887.00	44713.00	54349.00	67390.00	87390.00	n.a	n.a
G: government expenditure	330.00	411.80	537.30	573.90	894.00	1257.60	1789.30	2361.80	3196.80	4204.40	5441.00	6931.00	8297.00	9145.00	10213.00	11523.00	12629.00	14325.00	16746.00	20025.00	24640.00	29968.00	35435.00	39063.00
T: government revenue	447.80	538.10	585.10	664.50	1036.70	1543.60	2328.40	2954.40	4107.70	5445.40	6834.00	8605.00	9983.00	11538.00	12804.00	13923.00	15840.00	18658.00	22880.00	25962.00	32080.00	36818.00	43605.00	50750.00
Ig: public investment	256.66	266.64	272.60	289.64	373.93	582.78	727.77	1115.08	1551.52	2154.46	2067.20	3656.11	3919.88	4149.13	4721.87	5901.81	6442.50	6180.51	7037.80	8560.00	12781.28	18076.80	21400.74	n.a
Ip: private investment	425.84	560.16	598.80	1051.06	2034.17	2184.34	2817.63	3788.82	6072.48	8919.84	9104.10	10337.39	11643.02	14211.67	16844.33	17771.29	20415.90	25759.49	32172.20	39110.00	51038.72	62413.20	n.a	n.a
I: Gross domestic investment	682.50	856.80	871.40	1320.90	2408.10	2767.10	3545.40	4903.90	7624.00	11074.30	12071.30	13993.50	15562.90	16360.80	21566.20	23673.10	26858.49	31940.00	39210.00	47690.00	63820.00	81090.00	n.a	n.a
Z: Domestic Financed budget Def	77.37	93.39	134.63	50.85	130.32	78.32	-101.18	332.42	485.54	190.36	1568.28	1001.43	1363.90	770.15	1170.26	2272.47	4277.78	6503.28	2775.87	4045.88	6190.19	12321.81	13724.60	n.a
F1: Capital flows to public sector	61.49	76.85	89.97	88.39	96.91	198.44	291.85	185.86	154.88	723.10	205.92	980.88	869.98	985.98	1160.61	1229.34	-846.19	-4655.75	-1882.07	-1402.68	-849.81	-495.01	-594.86	n.a
F2: FDI	20.50	13.58	24.75	37.04	42.05	25.65	36.30	35.33	29.52	7.74	-4.25	40.86	-55.56	-44.22	58.84	174.00	266.47	343.83	528.66	304.17	-80.61	-176.74	-387.98	n.a
F3: Portfolio flows	128.71	190.81	85.28	125.87	655.10	929.28	504.33	423.86	645.66	1640.76	3561.97	2346.15	1188.00	245.14	594.01	-667.31	-3554.01	-3064.90	-2548.96	-201.44	1870.65	6229.07	7425.54	n.a
F: F=F1+F2+F3=F1	208.70	281.35	199.99	261.30	796.05	1153.37	832.48	645.17	830.06	2371.60	3763.64	3387.09	2002.43	1186.90	1813.45	736.04	-4113.73	-7376.81	-3902.39	-1299.95	740.12	5557.33	6442.70	n.a
L1(000): public sector employment	n.a	438	438	452	466	476	502	519	540	564	596	665	647	650	657	670	691	705	737	781	818	854	866	899
L2(000): employment in manufacturing	n.a	1336	1445	1774	2012	2205	2678	2798	3016	3126	2955	2859	3033	3266	3348	3504	3826	4416	4667	4840	4847	4936	n.a	n.a
L3(000): other employment	n.a	8294	8676	8913	9108	9147	9376	8612	9934	9974	10155	10524	10744	10599	10412	10761	10988	11233	11466	11890	12371	12788	n.a	n.a
L=L1+L2+L3: total employment(1000)	n.a	10068	10559	11139	11586	11830	12556	12929	13490	13664	13706	14048	14424	14515	14417	14935	15505	16354	16870	17511	18038	18578	18921	19203
ER: Exchange rate (Won/$)	310.57	348.20	392.90	399.32	400.43	484.00	484.00	484.00	484.00	484.00	607.43	681.03	731.08	775.75	805.98	870.02	881.45	822.57	731.47	671.46	707.76	733.35	780.65	802.67
GDP deflator (Local) (1981=100)	10.98	12.33	14.33	16.01	20.78	25.87	31.20	36.12	43.89	52.82	66.28	77.41	82.87	86.51	90.13	93.81	96.48	100.00	105.90	111.50	123.50	136.80	145.50	n.a

Definitions: (i) Z = (G + Ig) - (T + F); (ii) Sg = T - G; (iii) Sp = S - Sg; (iv) Ig = (Ig)!!.

Sources:

Table 2 : KOREA - variables for modelling (Values in Korean Won (billions)/real prices, unless otherwise indicated)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
X: exports	35.442	42.518	58.35	100.071	102.9312	110.3471	142.4725	161.893	167.1292	162.7577	195.2766	224.0039	227.0327	262.9691	289.8789	297.7921	373.4889	450.507	482.53069	437.75785	432.95547	444.1198	n.a.	n.a.
M: imports	59.8811	71.203	71.912	109.766	142.9800	144.0836	148.0998	160.8632	183.6811	205.81	237.9839	254.7239	244.0166	266.4396	288.9146	286.943	314.7326	363.56089	383.09728	401.70404	440.89069	483.34551	n.a.	n.a.
CAB:	-17.6191	-23.941	-10.087	-7.61424	-39.0229	-35.3397	-4.80826	0.16078	-11.9643	-38.1846	-48.7632	-40.873	-23.434	-14.402	-12.2695	-8.22589	42.181331	81.05603	97.812524	30.44755	-13.50263	-46.7437	-24.29941	n.a.
R:	-1.3857	1.1293	-3.8648	-8.7091	0.73192	-9.24182	-21.8698	-18.0208	-6.94699	-6.88997	-8.01876	-2.63044	-0.78703	0.681537	-7.85174	0.380227	0.4568051	-7.2879691	-60.96274	-18.78884	7.5097496	6.1496406	-19.98035	n.a.
J:	6.8399	-4.7452	3.4751	2.08114	1.025955	-1.60318	0.819102	-0.86898	4.587587	4.867734	-6.05796	-10.153	-6.45012	-19.075	-13.2338	-19.075	-16.575	-5.890088	-1.620904	-5.606261	-5.567407	-7.517985	n.a.	n.a.
Y: GDP	251.311	276.45	292.58	337.139	367.0727	395.1863	448.5137	497.8757	552.3171	593.4441	573.9261	613.3671	658.5312	737.9906	806.0251	861.7733	967.7745	1084.31	1208.3097	1282.5112	1398.5425	1515.851	1588.668	n.a.
S: national saving	41.887	43.458	49.532	74.3396	75.51849	69.96226	105.4331	132.0457	154.9244	161.9309	123.5625	128.533	147.9321	189.4667	217.5829	238.9824	313.3292	392.2	463.07838	454.26009	500.32389	542.29364	n.a.	n.a.
Sg: public saving	10.727	10.241	3.3347	7.53391	6.960208	11.82787	17.21219	16.52094	20.75759	23.58642	17.99879	21.62454	20.39358	27.66284	26.32935	25.58241	31.20854	43.331	58.016997	53.246637	60.251012	50.036523	57.52577	n.a.
Sp: private saving	31.161	33.218	46.198	66.8056	68.55828	58.13439	88.22091	115.5248	134.1668	138.3445	105.5637	106.9084	127.5385	161.8039	191.0535	213.41	282.1206	348.87	405.06138	401.01345	440.07287	492.25712	n.a.	n.a.
G: government expenditure	30.05	33.388	37.494	35.8517	43.00225	48.61044	57.34087	65.37507	72.82813	79.90874	85.10577	89.53387	100.3592	105.7153	113.3184	122.8276	132.9706	143.25	158.13031	179.59641	199.57895	218.90431	243.53952	n.a.
T: government revenue	40.777	43.628	40.819	43.3856	49.96246	60.43812	74.55306	81.89601	93.58572	103.4952	103.1046	111.1584	120.7527	133.3781	139.8477	148.411	164.1791	186.58	216.14731	232.84305	259.82996	268.94083	301.06529	n.a.
Ig: public investment	23.371	24.051	19.018	16.857	17.98639	22.52553	23.32251	30.36824	35.34828	40.94762	44.76615	47.22921	47.41423	47.96352	52.39153	62.90939	66.77643	61.8051	66.457035	76.950673	103.49215	136.42659	147.76454	n.a.
Ip: private investment	38.777	45.417	41.775	65.6599	97.8455	84.4317	90.29528	104.8841	138.3493	169.5303	137.3536	140.8321	164.2855	188.0059	189.4302	211.6076	257.5949	303.79792	350.76233	413.26899	455.90358	455.90358	n.a.	n.a.
I: Gross domestic investment	62.148	69.468	60.792	82.5169	115.8319	106.9572	113.6178	135.7524	173.6976	210.4779	182.1197	180.7664	188.2463	212.2491	240.3974	252.3396	278.384	319.41	370.25496	427.7131	516.76113	592.33017	n.a.	n.a.
Z: Domestic Financed budget Def	7.045	7.5718	9.406	3.17692	6.266699	3.027317	-3.24253	9.202339	11.06206	3.618054	23.66066	12.93632	16.49745	8.902876	12.98461	24.22304	44.33854	65.032552	26.212202	50.122999	90.005926	94.327115	n.a.	n.a.
F1: Capital flows to public sector	5.5995	6.23921	6.2769	6.14614	4.757482	7.670338	9.352846	5.144965	3.526631	13.74315	3.106696	12.66835	10.5232	11.39781	12.87757	13.10393	-8.770651	-46.55745	-17.77216	-12.58009	-6.881865	-3.61586	-4.088353	n.a.
F2: FDI	1.8665	1.1011	1.7268	2.31413	2.022411	0.991531	1.163289	0.978079	0.672645	0.147182	-0.064415	0.527948	-0.67207	-0.51115	0.652821	1.854768	2.959229	3.438341	4.9731669	2.7279945	-0.6527511	-1.299996	-2.66655	n.a.
F3: Portfolio flows	11.538	5.471	5.948	7.86307	31.51109	35.91963	16.16197	11.73695	14.70998	31.18425	53.73943	30.30727	14.36991	2.833759	6.59081	-7.11303	-30.64895	-36.83671	-1.806619	13.574496	45.509912	51.034658	n.a.	n.a.
F: F=Fp+Fg=(F2+F3)+F1	19.004	22.811	13.952	16.3233	38.29099	44.58151	26.6781	17.861	18.91126	45.07458	56.78197	43.50346	24.22104	13.72041	20.1212	7.845667	-36.84979	-73.76806	-11.65871	5.9928797	40.594058	44.279756	n.a.	n.a.
L1(1000): public sector employment	n.a.	436	438	452	466	478	502	519	540	564	596	665	647	650	657	670	691	705	737	781	818	854	886	899
L2(1000): employment in manufacturing	n.a.	1336	1445	1774	2012	2205	2673	2798	3016	3126	2955	2859	3033	3266	3348	3504	3826	4416	4667	4840	4847	4936	n.a.	n.a.
L3(1000): other employment	n.a.	8294	8676	8913	9108	9147	9376	9612	9934	9741	10155	10524	10744	10599	10412	10761	10988	11233	11466	11890	12371	12786	n.a.	n.a.
L=L1+L2+L3: total employment(1000)	n.a.	10066	10559	11139	11586	11830	12556	12929	13490	13664	13706	14048	14424	14515	14417	14935	15505	16354	16870	17511	18036	18576	18921	19203
ER: Exchange rate (Won/S)	310.57	348.20	392.90	398.32	400.43	484.00	484.00	484.00	484.00	484.00	607.43	681.03	731.08	775.75	805.98	870.02	881.45	822.57	731.47	671.46	767.76	733.35	780.65	802.67
GDP deflator (Local) (1981=100)	10.98	12.33	14.33	16.01	20.79	25.87	31.20	36.12	43.89	52.62	66.28	77.41	82.67	86.51	90.13	93.81	96.48	100.00	105.90	111.50	123.50	136.90	145.50	n.a.

Definitions: (i) Z = (G - Ig) - (T - F); (ii) Sg = T - G; (iii) Sp = S - Sg; (iv) Ig = I(g)*I.

Sources:

Table 3 : KOREA - variables for modelling (Percentage of GDP in real prices, unless otherwise indicated)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
X: exports	14.1%	15.4%	18.9%	20.7%	26.0%	27.9%	31.8%	32.5%	30.3%	27.4%	34.0%	36.5%	34.5%	35.6%	36.0%	34.6%	38.6%	41.5%	39.9%	34.1%	31.0%	29.3%	n.a.	n.a.
M: imports	23.8%	25.8%	24.8%	32.8%	30.0%	36.5%	33.0%	32.3%	33.3%	34.7%	41.5%	41.5%	37.1%	36.1%	35.8%	33.3%	32.5%	33.5%	31.7%	31.3%	31.5%	31.9%	n.a.	n.a.
CAR:	-7.0%	-8.7%	-3.4%	-2.3%	-10.6%	-8.9%	-1.1%	0.0%	-2.2%	-6.4%	-8.5%	-6.7%	-3.6%	-2.0%	-1.5%	-1.0%	4.4%	7.5%	8.1%	2.4%	-1.0%	-3.1%	-1.5%	n.a.
R:	-0.6%	0.4%	-1.3%	-2.6%	0.2%	-2.3%	-4.9%	-3.6%	-1.3%	-1.2%	-1.4%	-0.4%	-0.1%	0.1%	-1.0%	0.0%	0.0%	-0.7%	-5.0%	-1.5%	0.5%	0.4%	-1.3%	n.a.
J:	2.7%	1.7%	1.2%	0.6%	0.3%	-0.4%	0.2%	-0.2%	0.8%	0.6%	-1.1%	-1.7%	-1.0%	-1.5%	-1.6%	-2.2%	-1.7%	-0.5%	-0.1%	-0.4%	-0.4%	-0.5%	n.a.	n.a.
Y: GDP	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	n.a.
S: national saving	16.7%	15.7%	16.9%	22.1%	20.6%	17.7%	23.5%	26.5%	28.0%	27.3%	21.5%	21.0%	22.5%	25.7%	27.0%	27.7%	32.4%	36.2%	38.3%	35.4%	35.8%	35.8%	n.a.	n.a.
Sg: public saving	4.3%	3.7%	1.1%	2.2%	1.9%	3.0%	3.8%	3.3%	3.8%	4.0%	3.1%	3.5%	3.1%	3.7%	3.3%	3.0%	3.2%	4.0%	4.8%	4.2%	4.3%	3.3%	3.6%	n.a.
Sp: private saving	12.4%	12.0%	15.8%	19.8%	18.7%	14.7%	19.7%	23.2%	24.3%	23.3%	18.4%	17.4%	19.4%	21.9%	23.7%	24.8%	29.2%	32.2%	33.5%	31.3%	31.5%	32.5%	n.a.	n.a.
G: government expenditure	12.0%	12.1%	12.8%	10.6%	11.7%	12.3%	12.8%	13.1%	13.2%	13.5%	14.8%	14.6%	15.2%	14.3%	14.1%	14.3%	13.7%	13.2%	13.1%	14.0%	14.3%	14.4%	15.3%	n.a.
T: government revenue	16.2%	15.8%	14.0%	12.0%	13.6%	15.3%	16.6%	16.4%	16.9%	17.4%	18.0%	18.1%	18.3%	18.1%	17.4%	17.2%	17.0%	17.2%	17.9%	18.2%	18.6%	17.7%	18.9%	n.a.
Ig: public investment	0.3%	8.7%	6.5%	5.0%	4.9%	5.7%	5.2%	8.2%	8.4%	8.9%	7.8%	7.7%	7.2%	6.5%	6.5%	7.3%	6.9%	5.7%	5.5%	8.0%	7.4%	9.0%	9.3%	n.a.
Ip: private investment	15.4%	16.4%	14.3%	18.5%	26.7%	21.4%	20.1%	21.1%	25.0%	26.6%	23.9%	21.8%	21.4%	22.3%	23.3%	22.0%	21.9%	23.8%	25.1%	27.3%	29.5%	30.1%	n.a.	n.a.
I: Gross domestic investment	24.7%	25.1%	20.8%	24.5%	31.6%	27.1%	25.3%	27.3%	31.4%	35.5%	31.7%	29.5%	28.6%	28.8%	29.8%	29.3%	28.8%	29.5%	30.6%	33.3%	36.9%	39.1%	n.a.	n.a.
Z: Domestic Financed budget Def	2.8%	2.7%	3.2%	0.9%	1.7%	0.8%	-0.7%	1.6%	2.0%	0.6%	4.1%	2.1%	2.5%	1.2%	1.6%	2.8%	4.6%	8.0%	2.2%	2.8%	3.6%	5.9%	5.9%	n.a.
F1: Capital flows to public sector	2.2%	2.3%	2.1%	1.8%	1.3%	1.9%	2.1%	1.0%	0.6%	2.3%	0.5%	2.1%	1.6%	1.5%	1.6%	1.5%	-0.9%	-4.3%	-1.5%	-1.0%	-0.5%	-0.2%	n.a.	n.a.
F2: FDI	0.7%	0.4%	0.6%	0.7%	0.6%	0.3%	0.3%	0.2%	0.1%	0.0%	0.0%	0.1%	-0.1%	-0.1%	0.1%	0.2%	0.3%	0.3%	0.4%	0.2%	0.0%	-0.1%	n.a.	n.a.
F3: Portfolio flows	4.6%	5.6%	2.0%	2.3%	8.6%	9.1%	3.6%	2.4%	2.7%	5.3%	9.4%	4.9%	2.2%	0.4%	0.8%	-0.8%	-3.6%	-2.8%	-2.0%	-0.1%	1.0%	3.0%	3.2%	n.a.
F: F=Fp=(F2+F3)+F1	7.5%	8.3%	4.8%	4.8%	10.4%	11.3%	5.9%	3.6%	3.4%	7.6%	9.9%	7.1%	3.7%	1.9%	2.5%	0.9%	-4.4%	-6.8%	-3.0%	-0.9%	0.4%	2.7%	2.8%	n.a.
L1(% of L): public sector employment	4.3%	4.3%	4.1%	4.1%	4.0%	4.0%	4.0%	4.0%	4.0%	4.1%	4.3%	4.7%	4.5%	4.5%	4.6%	4.5%	4.5%	4.3%	4.4%	4.5%	4.5%	4.6%	4.7%	4.7%
L2(% of L): employment in manufacturing	13.3%	13.7%	15.9%	17.4%	18.6%	21.3%	21.6%	22.4%	22.8%	21.6%	20.4%	21.0%	21.0%	22.5%	23.2%	23.5%	24.7%	27.0%	27.7%	27.6%	26.9%	26.6%	n.a.	n.a.
L3(% of L): other employment	82.4%	82.2%	80.0%	78.6%	77.3%	74.7%	74.3%	73.0%	73.6%	74.9%	74.5%	73.0%	74.5%	73.0%	72.2%	72.1%	70.9%	70.8%	68.7%	68.0%	67.9%	68.8%	n.a.	n.a.
L=L1+L2+L3: total employment	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
ER: Exchange rate (Won$)	310.57	348.20	392.90	400.32	404.43	484.00	484.00	484.00	484.00	607.43	607.43	681.03	731.08	775.75	805.98	870.02	881.45	822.57	731.47	671.46	707.76	733.35	780.65	802.67
GDP deflator (Local) (1981=100)	10.98	12.33	14.33	16.01	20.79	25.87	31.20	36.12	43.89	52.62	66.28	77.41	82.67	86.51	90.13	93.61	96.48	100.00	105.90	111.50	123.50	136.90	145.50	

Definitions: (i) Z = (G + g) - (T + F); (ii) Sg = T - G; (iii) Sp = S - Sg; (iv) Ig = (Ig)T?.

Sources:

Table 1 : Mexico - variables for modelling (Values in Mexican Pesos (billions)/current price, unless otherwise indicated)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	199
X: exports	30.67	33.34	40.56	51.77	67.40	67.55	103.67	169.94	217.95	305.75	478.50	637.70	1502.10	3397.40	5122.40	7305.00	13655.00	37692.00	65568.00	81148.00	108299.00	120682.00	128100.00	n.a.
M: imports	43.03	42.88	50.08	65.65	95.51	106.22	135.79	189.72	258.96	383.42	580.00	792.60	1010.70	1684.40	2815.30	4897.00	10025.00	25877.00	59555.00	82045.00	116318.00	147176.00	194260.00	n.a.
CAB: current account balance	-13.35	-10.44	-11.45	-17.69	-35.95	-50.53	-42.61	-23.18	-39.64	-68.24	-134.38	-393.74	-355.73	648.87	703.88	290.26	-1023.49	5468.70	-5553.18	-9741.83	-20017.27	-41611.68	-70597.76	n.a.
R: changes in reserves	-0.38	-1.63	-2.23	-1.96	-0.93	-2.55	2.40	-5.46	-1.93	-1.94	-8.56	-28.81	189.06	-372.53	-569.11	625.74	-381.74	-8229.23	15277.51	-1334.02	-9171.89	-24612.03	-3630.32	n.a.
J: Net budget payment	-0.99	-0.90	-1.94	-3.81	-7.85	-11.85	-10.50	-3.40	1.38	9.44	-32.87	-239.84	-847.13	-1064.13	-1603.22	-2117.74	-4653.49	-6346.30	-11566.18	-8844.83	-11998.27	-15117.66	-4437.76	n.a.
Y: GDP	478.97	528.72	610.02	745.96	966.24	1179.46	1470.75	1971.59	2491.40	3255.40	4470.07	6127.63	9797.79	17878.71	29471.60	47391.99	79131.00	193311.00	390452.00	507617.00	686405.00	865167.00	1018190.00	n.a.
S: national saving	71.73	70.18	82.14	105.08	146.51	182.66	217.00	335.84	428.32	615.69	989.35	1306.10	2190.59	4399.00	6596.27	10554.00	13933.97	40013.00	69854.00	92740.00	126647.00	152523.00	160535.00	n.a.
Sg: public saving	8.21	9.19	11.23	7.50	3.09	9.83	10.32	19.22	47.33	89.75	168.57	52.06	-670.54	-438.00	-678.00	-1849.00	-7027.00	-18953.00	-29555.00	-10954.00	-5977.00	n.a	n.a	n.a.
Sp: private saving	63.52	60.99	70.91	97.58	143.42	172.83	206.68	316.62	380.99	525.94	820.78	1254.04	2861.13	4837.00	7274.27	12403.00	20660.87	58966.00	99408.00	103694.00	132624.00	n.a	n.a	n.a.
G: government expenditure	33.79	37.81	46.23	60.66	92.46	123.95	158.67	221.84	275.83	349.35	506.68	842.71	2190.72	3660.00	5451.00	9669.00	19670.00	52636.00	97031.00	103795.00	102384.00	n.a.	n.a.	n.a.
T: government revenue	42.00	47.00	57.46	68.16	95.55	133.78	168.99	241.06	323.16	439.10	675.25	894.77	1520.18	3222.00	4773.00	7820.00	12643.00	33683.00	67476.00	92841.00	96407.00	n.a.	n.a.	n.a.
Ig: public investment	31.61	24.32	37.21	55.94	73.43	106.15	120.60	153.78	209.27	332.05	487.24	741.44	999.37	1179.99	1945.15	3127.87	5143.51	10825.42	19522.60	24365.61	33633.84	39787.68	42763.88	n.a.
Ip: private investment	70.29	75.79	78.63	93.19	137.07	156.90	187.83	272.58	347.54	471.43	726.76	936.06	1245.03	2530.31	3907.65	7247.53	9345.49	26407.58	60177.40	84334.39	116638.16	153675.32	198186.02	n.a.
I: Gross domestic investment	101.90	100.11	115.84	149.13	210.50	263.05	308.43	426.36	556.81	803.48	1214.00	1677.50	2244.40	3710.30	5852.80	10375.40	14489.00	37233.00	79700.00	108700.00	150272.00	193473.00	240950.00	n.a.
Z: Domestic Financed budget Defect	23.44	15.28	26.66	48.58	64.19	91.75	96.63	121.10	157.42	244.55	309.48	639.08	1523.43	772.05	1631.27	2315.70	6993.10	24493.02	56997.08	35560.82	34545.35	n.a.		
F1: Capital flows to public sector	-0.04	-0.15	-0.68	-0.14	6.15	4.58	13.65	13.46	4.53	-2.25	8.19	50.30	146.48	845.94	991.88	2661.17	5177.41	5285.40	-7919.48	-241.21	5065.49	-2626.00	-15768.52	n.a.
F2: FDI	4.04	3.84	3.76	5.71	8.48	7.61	7.85	6.95	10.30	16.65	26.95	69.50	93.35	55.36	65.45	126.12	709.65	2475.25	1443.42	6517.52	7166.50	14313.25	16607.23	n.a.
F3: Portfolio flows	9.73	8.38	10.59	14.08	22.25	40.89	18.71	8.23	26.74	55.78	106.80	302.74	-73.15	-1177.64	-1192.10	-3703.29	-4481.83	-5000.11	-3248.26	4799.54	16957.17	54536.45	73389.36	n.a.
F=F1+F2+F3	13.73	12.06	13.68	19.65	36.88	53.08	40.211	28.64	41.56	70.18	142.94	422.54	166.67	-276.34	-134.77	-916.00	1405.24	2760.53	-9724.32	11075.85	29189.16	66223.70	74228.08	n.a.
L1(1000): public sector employment	1157.00	1277.00	1449.00	1579.00	1786.00	2029.00	2247.00	2394.00	2583.00	3180.00	3152.00	3457.00	3669.00	3944.00	4187.00	4292.00	4344.00	4374.00	4359.00	4313.00	4274.00	4278.00	4071.00	n.a.
L2(1000): employment in manufacturing	1726.00	1772.00	1831.00	1925.00	1996.00	2002.00	2046.00	2051.00	2133.00	2291.00	2441.00	2557.00	2505.00	2326.00	2374.00	2451.00	2404.00	2430.00	2432.00	2493.00	2510.00	n.a.	n.a.	
L3(1000): other employment	9980.00	10273.00	10422.00	10937.00	10865.00	11265.00	11257.00	11793.00	12118.00	12205.00	14689.00	15535.00	15309.00	14725.00	14922.00	15213.00	14892.00	15060.00	15260.00	15525.00	15752.00	n.a.	n.a.	
L=L1+L2+L3: total employment(1000)	12863.00	13322.00	13702.00	14441.00	14647.00	15296.00	15550.00	16238.00	16844.00	17676.00	20282.00	21549.00	21483.00	20995.00	21483.00	21956.00	21640.00	21864.00	22051.00	22331.00	22536.00	23122.00	23216.00	n.a.
ER: Exchange rate (Pesos/$)	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	24.51	56.40	120.09	167.83	256.87	611.77	1378.20	2273.10	2461.30	2812.60	3018.40	3094.90	3115.6
GDP deflator (Pesos)(1981=100)	0.50	0.53	0.57	0.64	0.79	0.91	1.08	1.41	1.64	1.97	2.49	3.14	5.05	9.63	15.30	23.95	41.61	100.00	199.43	250.66	324.18	394.46	452.39	n.a.

Definitions:: (i) Z = (G + Ig) - (T + Aid); (ii) Sg = T - G; (iii) Sp = S - Sg; (iv) Ig = (Ig))*.

Sources:

Table 2 : Mexico - variables for modelling (Values in Mexican Pesos (billions)/constant price, unless otherwise indicated)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
X: exports	6075.35	6232.857	7128.61	8053.292	8584.59	7449.648	9556.895	12065.12	13252.59	15544.59	19200.00	20303.81	29722.8	35294.84	33470.11	30498.17	32816.02	37692	32877.37	32374.25	33406.65	30594.28	316.03	n.a.
M: imports	8524.854	8016.042	8800.868	10211.6	12164	11714.53	12517.65	13469.23	15746.4	19493.66	22272.76	25235.69	19999.22	17498.86	18395.38	20444.84	24092.32	25877	29862.31	32732.11	35880.24	37310.47	42940.45	n.a.
CAB: current account balance	-2644.82	-1951	-2012.361	-2751.37	-4578.64	-5572.34	-3928.3	-1645.36	-2410.17	-3469.26	-5391.86	-7038.95	-12536.2	6740.945	4599.194	1211.84	-2459.68	5468.697	-2784.5	-3886.53	-6174.56	-10546.9	-15605.4	n.a.
R: changes in reserves	-74.2928	-303.749	-391.047	-305.276	-117.809	-281.236	221.2479	-387.822	-117.05	-98.5045	-343.574	-917.13	3741.014	-3870.15	-3718.61	2612.426	-917.417	-8229.23	7660.509	-532.213	-2829.22	-6239.38	-802.468	n.a.
J: Net budget payment	-195.321	-167.819	-340.099	-593.067	-999.227	-1307.45	-967.545	-241.248	83.6379	479.8123	-1319.12	-7604.311	-16762.5	-11055	-10475.6	-8841.49	-11183.4	-6346.3	-5799.56	-3528.67	-3701.07	-3832.47	-980.951	n.a.
Y: GDP	94891.73	98829.84	107212	116037.6	123061.7	130081.1	135583.6	139977.3	151490.5	165507.8	179363.6	195098.4	193873.7	185738	192569.5	197860.2	190169.5	193311	195782	202515.4	217133.2	219327.81	225067.1	n.a.
S: national saving	14210.56	13118.97	14436.53	16345.6	18659.74	20145.18	20004.59	23843.44	26044.14	31302.07	39697.95	41585.03	43346.37	45700.27	43100.48	44062.65	33486.44	40013	35026.48	36998.91	39066.39	38665.98	35485.66	n.a.
Sg: public saving	1626.518	1717.818	1973.691	1166.659	393.5467	1084.138	951.366	1364.565	2877.917	4562.981	6763.947	1657.545	-13268.3	-4550.29	-4430.1	-7719.92	-16887.5	-18953	-14819.61	-4370.13	-1843.77	n.a.	n.a.	n.a.
Sp: private saving	12584.05	11401.15	12462.84	15178.94	18266.2	19061.04	19053.22	22478.87	23166.22	26739.09	32934.01	39927.48	56614.68	50250.55	47530.58	51782.17	50373.89	58966	49846.06	41369.05	40910.1	n.a.	n.a.	n.a.
G: government expenditure	6694.279	7067.541	8124.999	9435.941	11775.83	13670.28	14627.25	15750.01	16771.94	17761.31	20330.76	26831.16	43348.87	38022.93	35617.21	40367.8	47271.41	52636	48653.68	41409.34	31582.06	n.a.	n.a.	n.a.
T: government revenue	8320.796	8785.359	10098.69	10602.6	12169.38	14754.42	15578.62	17114.58	19649.86	22324.29	27094.71	28488.7	30080.56	33472.64	31187.11	32646.28	30383.95	33683	33834.09	37039.21	29738.36	n.a.	n.a.	n.a.
Ig: public investment	6262.39	4545.956	6539.719	8701.723	9352.147	11707.15	11117.71	10917.94	12724.74	16881.76	19550.72	23606.81	19775.03	12258.65	12709.74	13058.77	12361	10825.42	9789.101	9720.737	10374.92	10089.08	9452.818	n.a.
Ip: private investment	13925.25	14167.04	13819.7	14496.29	17457.3	17304.29	17315.51	19352.69	21132.59	23968.03	29903.34	29803.33	24636.03	26286.83	25532.85	30258.23	22459.3	26407.58	30174.41	33645.47	35979	38958.11	43808.28	n.a.
I: Gross domestic investment	20187.64	18713	20359.42	23198.01	26809.45	29011.43	28433.21	30270.64	33857.33	40849.78	49454.06	53410.14	44411.06	38545.48	38242.59	43317	34820.3	37233	39963.51	43366.21	46353.921	49047.19	53261.1	n.a.
Z: Domestic Financed budget Defecit	1643.302	2856.176	4684.66	7556.452	8175.328	10118.44	8907.994	8597.579	9571.675	12433.17	12418.12	20347.61	30144.95	8020.634	10658.86	9667.972	16805.98	24493.02	28579.71	14187.1	10656.09	n.a.	n.a.	n.a.
F1: Capital flows to public sector	-7.42928	-28.03841	-118.632	-21.3888	783.2226	504.5708	1258.347	955.7993	275.1442	-114.392	368.6526	1601.661	2898.393	8788.306	6480.981	1110.32	12442.47	5285.397	-3971.021	-962.305	1562.538	-655.717	-3485.57	n.a.
F2: FDI	799.8861	717.3152	681.2656	888.6055	1079.388	839.5727	723.665	493.4303	626.2951	846.5029	1081.391	2212.82	1847.071	575.1574	427.679	526.5604	1705.455	2475.247	723.7648	2600.186	2210.629	3628.541	3670.967	n.a.
F3: Portfolio flows	1926.661	1565.476	1860.771	2189.431	2833.791	4509.429	1725.042	583.9517	1625.783	2835.657	9638.843	-1447.52	-12234.31	-7789.24	-15461.1	-10770.8	-5000.111	-1628.76	1914.79	5230.722	13825.49	16222.44	n.a.	n.a.
F: F=f1+f2+f3	2719.117	2254.753	2403.404	3056.647	4696.451	5853.573	3707.055	2033.181	2527.222	3567.768	5735.431	13453.32	-3297.941	-2870.8	-880.58	-3824.27	3377.095	2760.535	-4876.011	4418.745	9003.888	16788.321	16407.84	n.a.
L1(1000): public sector employment	1157	1177	1449	1579	1786	2029	2247	2394	2593	3180	3152	3457	3669	3944	4187	4292	4344	4374	4359	4313	4274	4278	4071	n.a.
L2(1000): private sector employment	11706	12045	12253	12862	12861	13267	13303	13844	14251	14496	17130	18092	17814	17051	17296	17664	17296	17490	17692	18018	18262	18844	19145	n.a.
L=L1+L2: total employment(1000)	12863	13222	13702	14411	14647	15296	15550	16238	16844	17676	20282	21549	21493	20995	21483	21956	21640	21864	22051	22331	22536	23122	23216	n.a.
ER: Exchange rate (Pesos/$)	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	24.515	56.40199	120.0994	167.83	256.8699	611.771	1378.21	2273.11	2461.3	2812.6	3018.44	3094.91	3115.6
GDP deflator (Pesos)(1981=100)	0.504759	0.534981	0.568985	0.642861	0.785167	0.906711	1.084756	1.408507	1.644592	1.966916	2.492184	3.140789	5.053696	9.625771	15.30441	23.95226	41.61078	100	199.432	250.656	324.184	394.463	452.394	n.a.

Definitions: (i) Z = (G + Ig) - (T + Ig); (ii) Sg = T - G; (iii) Sp = S - Sg; (iv) Ig = f(g/y)*I.

Sources:

Table 3 : Mexico - variables for modelling (% of GDP, unless otherwise indicated)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
X: exports	6.40%	6.31%	6.65%	6.94%	6.98%	5.73%	7.05%	8.62%	8.75%	9.39%	10.70%	10.41%	15.33%	19.00%	17.38%	15.41%	17.26%	19.50%	16.79%	15.99%	15.78%	13.95%	12.58%	n.a.
M: imports	8.98%	8.11%	8.21%	8.80%	9.88%	9.01%	9.23%	9.62%	10.39%	11.78%	12.98%	12.93%	10.32%	9.42%	9.55%	10.33%	12.67%	13.39%	15.25%	16.16%	16.95%	17.01%	19.08%	n.a.
CAB: current account balance	-2.79%	-1.97%	-1.88%	-2.37%	-3.72%	-4.28%	-2.90%	-1.18%	-1.59%	-2.10%	-3.01%	-6.43%	-3.63%	3.63%	2.39%	0.61%	-1.29%	2.83%	-1.42%	-1.92%	-2.92%	-4.81%	-6.93%	n.a.
R: changes in reserves	-0.08%	-0.31%	-0.36%	-0.26%	-0.10%	-0.22%	0.16%	-0.28%	-0.08%	-0.06%	-0.19%	-0.47%	1.93%	-2.08%	-1.93%	1.32%	-0.48%	-4.26%	3.91%	-0.26%	-1.34%	-2.84%	-0.36%	n.a.
J: Net budget payment	-0.21%	-0.17%	-0.32%	-0.51%	-0.81%	-1.01%	-0.71%	-0.17%	0.06%	0.29%	-0.74%	-3.90%	-8.65%	-5.95%	-5.44%	-4.47%	-5.88%	-3.28%	-2.96%	-1.74%	-1.75%	-1.75%	-0.44%	n.a.
Y: GDP	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	n.a.
S: national saving	14.98%	13.27%	13.47%	14.09%	15.16%	15.49%	14.75%	17.03%	17.19%	18.91%	22.13%	21.31%	22.36%	24.60%	22.38%	22.27%	17.61%	20.70%	17.89%	18.27%	18.45%	17.63%	15.77%	n.a.
Sg: public saving	1.71%	1.74%	1.84%	1.01%	0.32%	0.83%	0.70%	0.97%	1.90%	2.76%	3.77%	0.85%	-6.84%	-2.45%	-2.30%	-3.90%	-8.88%	-9.80%	-7.57%	-2.16%	-0.87%	n.a.	n.a.	n.a.
Sp: private saving	13.26%	11.54%	11.62%	13.08%	14.84%	14.65%	14.05%	16.06%	15.29%	16.16%	18.36%	20.47%	29.20%	27.05%	24.68%	26.17%	26.49%	30.50%	25.46%	20.43%	19.32%	n.a.	n.a.	n.a.
G: government expenditure	7.05%	7.15%	7.58%	8.13%	9.57%	10.51%	10.79%	11.25%	11.07%	10.73%	11.33%	13.75%	22.36%	20.47%	18.50%	20.40%	24.86%	27.23%	24.85%	20.45%	14.92%	n.a.	n.a.	n.a.
T: government revenue	8.77%	8.89%	9.42%	9.14%	9.89%	11.34%	11.49%	12.23%	12.97%	13.49%	15.11%	14.60%	15.52%	18.02%	16.20%	16.50%	15.98%	17.42%	17.28%	18.29%	14.05%	n.a.	n.a.	n.a.
Ig: public investment	6.60%	4.60%	6.10%	7.50%	7.60%	9.00%	8.20%	7.80%	8.40%	10.20%	10.90%	12.10%	10.20%	6.60%	6.60%	6.60%	6.50%	5.60%	5.00%	4.80%	4.90%	4.60%	4.20%	n.a.
Ip: private investment	14.67%	14.33%	12.89%	12.49%	14.19%	13.30%	12.77%	13.83%	13.95%	14.48%	16.26%	15.28%	12.71%	14.15%	13.26%	15.29%	11.81%	13.66%	15.41%	16.61%	16.99%	17.76%	19.45%	n.a.
I: Gross domestic investment	21.27%	18.93%	18.99%	19.99%	21.79%	22.30%	20.97%	21.63%	22.35%	24.68%	27.16%	27.38%	22.91%	20.75%	19.86%	21.89%	18.31%	19.26%	20.41%	21.41%	21.89%	22.36%	23.66%	n.a.
Z: Domestic Financed budget Deficit	4.89%	2.89%	4.37%	6.51%	6.64%	7.78%	6.57%	6.14%	6.32%	7.51%	6.92%	10.43%	15.55%	4.32%	5.54%	4.89%	8.84%	12.67%	14.60%	7.01%	5.03%	n.a.	n.a.	n.a.
F1: Capital flows to public sector	-0.01%	-0.03%	-0.11%	-0.02%	0.64%	0.39%	0.93%	0.68%	0.18%	-0.07%	0.21%	0.82%	1.49%	4.73%	3.37%	5.62%	6.54%	2.73%	-2.03%	-0.05%	0.74%	-0.30%	-1.55%	n.a.
F2: FDI	0.84%	0.73%	0.62%	0.77%	0.88%	0.65%	0.53%	0.35%	0.41%	0.51%	0.60%	1.13%	0.95%	0.31%	0.22%	0.27%	0.90%	1.28%	0.37%	1.28%	1.04%	1.65%	1.63%	n.a.
F3: Portfolio flows	2.03%	1.58%	1.74%	1.89%	2.30%	3.47%	1.27%	0.42%	1.07%	1.71%	2.39%	4.94%	-0.75%	-6.59%	-4.04%	-7.81%	-5.66%	-2.59%	-0.83%	0.95%	2.47%	6.30%	7.21%	n.a.
F: F=F1+F2+F3	2.87%	2.28%	2.24%	2.63%	3.82%	4.50%	2.73%	1.45%	1.67%	2.16%	3.20%	6.90%	1.70%	-1.55%	-0.46%	-1.93%	1.78%	1.43%	-2.49%	2.18%	4.25%	7.65%	7.29%	n.a.
L1(1000): public sector employment	9%	10%	11%	11%	12%	13%	14%	15%	15%	18%	16%	16%	17%	19%	19%	20%	20%	20%	20%	19%	19%	19%	18%	n.a.
L2(1000): private sector employment	91%	90%	89%	89%	88%	87%	86%	85%	85%	82%	84%	84%	83%	81%	81%	80%	80%	80%	80%	81%	81%	81%	82%	n.a.
L=L1+L2: total employment(1000)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	n.a.
ER: Exchange rate (Pesos/$)	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	12.50	24.51	56.40	120.09	167.83	256.87	611.77	1378.20	2273.10	2461.30	2812.60	3018.40	3094.90	3115.60
GDP deflator (Pesos)(1981=100)	0.50	0.53	0.57	0.64	0.79	0.91	1.08	1.41	1.64	1.97	2.49	3.14	5.05	9.63	15.30	23.95	41.61	100.00	199.43	250.66	324.18	394.46	452.39	

Definitions: (i) Z = (G + Ig) - (T + Aid); (ii) Sg = T - G; (iii) Sp = S - Sg; (iv) Ig = (Ig/I)*I.

Sources:

Table (1) Simulation of Financial Impacts on Government Expenditure, Public and Private Investments, and Employment in Different Sectors (KOREA)

Government Expenditure (G)

	base line solution	adding $100 million to the following flow			
		F1	F2	F3	F
1972	3488.97	2.350%	0.000%	0.000%	2.350%
1973	4153.4	1.790%	0.000%	0.000%	1.790%
1974	4560.74	1.260%	0.000%	0.000%	1.260%
1975	5069.83	1.100%	0.000%	0.000%	1.100%
1976	5920.22	0.780%	0.000%	0.000%	0.780%
1977	6534.41	0.610%	0.000%	0.000%	0.610%
1978	7302.54	0.450%	0.000%	0.000%	0.450%
1979	8225.89	0.330%	0.000%	0.000%	0.330%
1980	7614.02	0.360%	0.000%	0.000%	0.360%
1981	8492.48	0.310%	0.000%	0.000%	0.310%
1982	9105.59	0.290%	0.000%	0.000%	0.290%
1983	10322.3	0.260%	0.000%	0.000%	0.260%
1984	11388.6	0.230%	0.000%	0.000%	0.230%
1985	12231.6	0.220%	0.000%	0.000%	0.220%
1986	13165.4	0.200%	0.000%	0.000%	0.200%
1987	13779.7	0.170%	0.000%	0.000%	0.170%
1988	16503.4	0.120%	0.000%	0.000%	0.120%
1989	17772.2	0.100%	0.000%	0.000%	0.100%
1990	19683.6	0.090%	0.000%	0.000%	0.090%
1991	21541.2	0.070%	0.000%	0.000%	0.070%

Investment in the Public Sector (Ig)

	base line solution	adding $100 million to the following flow			
		F1	F2	F3	F
1972	1678.09	1.307%	0.000%	0.000%	1.307%
1973	2033.5	0.979%	0.000%	0.000%	0.979%
1974	2261.86	0.681%	0.000%	0.000%	0.681%
1975	2510.07	0.596%	0.000%	0.000%	0.596%
1976	2950.15	0.421%	0.000%	0.000%	0.421%
1977	3311.38	0.324%	0.000%	0.000%	0.324%
1978	3733.98	0.236%	0.000%	0.000%	0.236%
1979	4144.72	0.178%	0.000%	0.000%	0.178%
1980	3903.48	0.188%	0.000%	0.000%	0.188%
1981	4295.5	0.164%	0.000%	0.000%	0.164%
1982	4639.65	0.152%	0.000%	0.000%	0.152%
1983	5281.6	0.136%	0.000%	0.000%	0.136%
1984	5838.44	0.123%	0.000%	0.000%	0.123%
1985	6286.23	0.118%	0.000%	0.000%	0.118%
1986	6959.25	0.105%	0.000%	0.000%	0.105%
1987	7589.16	0.087%	0.000%	0.000%	0.087%
1988	8811.52	0.063%	0.000%	0.000%	0.063%
1989	9446.66	0.051%	0.000%	0.000%	0.051%
1990	10420.5	0.048%	0.000%	0.000%	0.048%
1991	11385.1	0.038%	0.000%	0.000%	0.038%

Investment in the Private Sector (Ip)

	base line solution	adding $100 million to the following flow			
		F1	F2	F3	F
1972	5095.88	1.472%	69.771%	0.000%	71.243%
1973	7952.13	0.856%	43.409%	0.000%	44.265%
1974	9033.81	0.583%	34.673%	0.000%	35.257%
1975	9460.82	0.541%	25.631%	0.000%	26.172%
1976	10424.43	0.407%	22.596%	0.000%	23.003%
1977	11757.13	0.312%	16.612%	0.000%	16.924%
1978	13121.63	0.230%	12.857%	0.000%	13.087%
1979	13742.37	0.183%	10.103%	0.000%	10.286%
1980	10436.41	0.240%	11.096%	0.000%	11.336%
1981	13279.84	0.181%	8.689%	0.000%	8.870%
1982	15373.85	0.157%	7.205%	0.000%	7.362%
1983	17084.79	0.144%	6.517%	0.000%	6.660%
1984	18854.42	0.130%	5.988%	0.000%	6.118%
1985	21480.03	0.118%	5.241%	0.000%	5.360%
1986	26802.58	0.093%	4.356%	0.000%	4.450%
1987	30675.70	0.073%	3.750%	0.000%	3.823%
1988	35671.33	0.053%	2.903%	0.000%	2.956%
1989	38281.60	0.043%	2.272%	0.000%	2.315%
1990	40040.40	0.042%	1.894%	0.000%	1.936%
1991	39121.22	0.037%	2.001%	0.000%	2.038%

Employment in the Public Sector (Lg)

	base line solution	adding $100 million to the following flow			
		F1	F2	F3	F
1972	459.65	0.358%	0.000%	0.000%	0.358%
1973	471.93	0.316%	0.000%	0.000%	0.316%
1974	479.65	0.241%	0.000%	0.000%	0.241%
1975	490.05	0.229%	0.000%	0.000%	0.229%
1976	507.97	0.183%	0.000%	0.000%	0.183%
1977	520.41	0.154%	0.000%	0.000%	0.154%
1978	537.28	0.123%	0.000%	0.000%	0.123%
1979	556.65	0.099%	0.000%	0.000%	0.099%
1980	545.53	0.101%	0.000%	0.000%	0.101%
1981	563.86	0.094%	0.000%	0.000%	0.094%
1982	576.62	0.092%	0.000%	0.000%	0.092%
1983	600.99	0.090%	0.000%	0.000%	0.090%
1984	622.43	0.086%	0.000%	0.000%	0.086%
1985	640.17	0.087%	0.000%	0.000%	0.087%
1986	660.95	0.083%	0.000%	0.000%	0.083%
1987	674.01	0.073%	0.000%	0.000%	0.073%
1988	727.49	0.057%	0.000%	0.000%	0.057%
1989	753.80	0.048%	0.000%	0.000%	0.048%
1990	794.12	0.047%	0.000%	0.000%	0.047%
1991	836.58	0.038%	0.000%	0.000%	0.038%

Employment in the Manufacturing Sector (Lm)

	base line solution	adding $100 million to the following flow			
		F1	F2	F3	F
1972	1361.48	0.028%	1.306%	0.000%	1.333%
1973	1484.76	0.023%	1.162%	0.000%	1.185%
1974	1819.17	0.014%	0.861%	0.000%	0.875%
1975	2059.30	0.012%	0.589%	0.000%	0.601%
1976	2257.12	0.009%	0.522%	0.000%	0.531%
1977	2736.79	0.007%	0.357%	0.000%	0.364%
1978	3043.61	0.005%	0.277%	0.000%	0.282%
1979	3084.71	0.004%	0.225%	0.000%	0.229%
1980	3178.18	0.004%	0.182%	0.000%	0.186%
1981	3021.40	0.004%	0.191%	0.000%	0.195%
1982	2935.87	0.004%	0.189%	0.000%	0.193%
1983	3118.42	0.004%	0.179%	0.000%	0.182%
1984	3360.27	0.004%	0.168%	0.000%	0.172%
1985	3455.40	0.004%	0.163%	0.000%	0.167%
1986	3638.01	0.003%	0.160%	0.000%	0.164%
1987	3979.38	0.003%	0.145%	0.000%	0.147%
1988	4594.36	0.002%	0.113%	0.000%	0.115%
1989	4858.41	0.002%	0.089%	0.000%	0.091%
1990	5040.20	0.002%	0.075%	0.000%	0.077%
1991	5042.61	0.001%	0.078%	0.000%	0.079%

Total Employment (L)

	base line solution	adding $100 million to the following flow			
		F1	F2	F3	F
1972	10497.13	0.019%	0.169%	0.000%	0.189%
1973	10869.69	0.017%	0.159%	0.000%	0.176%
1974	11406.82	0.012%	0.137%	0.000%	0.150%
1975	11696.36	0.012%	0.104%	0.000%	0.115%
1976	12141.09	0.009%	0.097%	0.000%	0.106%
1977	12689.20	0.008%	0.077%	0.000%	0.085%
1978	13514.89	0.006%	0.062%	0.000%	0.068%
1979	13615.36	0.005%	0.051%	0.000%	0.056%
1980	13878.71	0.005%	0.042%	0.000%	0.047%
1981	14109.26	0.005%	0.041%	0.000%	0.045%
1982	14256.49	0.005%	0.039%	0.000%	0.043%
1983	14318.41	0.005%	0.039%	0.000%	0.043%
1984	14394.70	0.006%	0.039%	0.000%	0.044%
1985	14856.57	0.005%	0.038%	0.000%	0.042%
1986	15286.96	0.004%	0.038%	0.000%	0.043%
1987	15886.39	0.004%	0.036%	0.000%	0.040%
1988	16787.85	0.003%	0.031%	0.000%	0.034%
1989	17502.20	0.003%	0.025%	0.000%	0.027%
1990	18205.32	0.003%	0.021%	0.000%	0.023%
1991	18665.19	0.002%	0.021%	0.000%	0.023%

Table (2) Simulation of Financial Impacts on Government Expenditure, Public and Private Investments, and Employment in Different Sectors

(MEXICO)

Government Expenditure (G)

Year	based line solution	\+$100M F1	F2	F3	F
1971	5950.401	1.308%	0.000%	0.000%	1.308%
1972	8351.331	0.867%	0.000%	0.000%	0.867%
1973	10942.85	0.589%	0.000%	0.000%	0.589%
1974	13245.37	0.394%	0.000%	0.000%	0.394%
1975	15189.03	0.298%	0.000%	0.000%	0.298%
1976	17033.5	0.224%	0.000%	0.000%	0.224%
1977	18207.83	0.161%	0.000%	0.000%	0.161%
1978	21322.04	0.118%	0.000%	0.000%	0.118%
1979	25258.51	0.083%	0.000%	0.000%	0.083%
1980	29436.1	0.056%	0.000%	0.000%	0.056%
1981	34406.08	0.038%	0.000%	0.000%	0.038%
1982	34478.84	0.046%	0.000%	0.000%	0.046%
1983	34063.16	0.057%	0.000%	0.000%	0.057%
1984	35282.88	0.073%	0.000%	0.000%	0.073%
1985	38344.86	0.060%	0.000%	0.000%	0.060%
1986	36554.17	0.056%	0.000%	0.000%	0.056%
1987	35103.37	0.058%	0.000%	0.000%	0.058%
1988	32765.34	0.070%	0.000%	0.000%	0.070%
1989	35996.71	0.083%	0.000%	0.000%	0.083%
1990	39217.26	0.064%	0.000%	0.000%	0.064%

Investment in the Public Sector (Ig)

Year	based line solution	\+$100M F1	F2	F3	F
1971	28858.68	0.090%	0.000%	0.000%	0.090%
1972	30441.32	0.079%	0.000%	0.000%	0.079%
1973	32128.88	0.067%	0.000%	0.000%	0.067%
1974	33551.97	0.052%	0.000%	0.000%	0.052%
1975	34855	0.043%	0.000%	0.000%	0.043%
1976	35983.39	0.035%	0.000%	0.000%	0.035%
1977	36784.91	0.027%	0.000%	0.000%	0.027%
1978	38897.55	0.022%	0.000%	0.000%	0.022%
1979	41517.99	0.017%	0.000%	0.000%	0.017%
1980	44203.73	0.012%	0.000%	0.000%	0.012%
1981	47328.97	0.009%	0.000%	0.000%	0.009%
1982	47238.92	0.011%	0.000%	0.000%	0.011%
1983	46341.02	0.014%	0.000%	0.000%	0.014%
1984	47385.2	0.018%	0.000%	0.000%	0.018%
1985	48899.66	0.016%	0.000%	0.000%	0.016%
1986	47584.97	0.014%	0.000%	0.000%	0.014%
1987	47394.57	0.014%	0.000%	0.000%	0.014%
1988	46845.86	0.016%	0.000%	0.000%	0.016%
1989	48551.43	0.021%	0.000%	0.000%	0.021%
1990	50485.28	0.017%	0.000%	0.000%	0.017%

Investment in the Private Sector (Ip)

Year	based line solution	\+$100M F1	F2	F3	F
1971	23372.67	0.044%	1.423%	0.000%	1.467%
1972	26606.78	0.036%	1.179%	0.000%	1.215%
1973	27477.75	0.031%	1.061%	0.000%	1.093%
1974	27250.44	0.026%	0.953%	0.000%	0.979%
1975	28022.52	0.022%	0.751%	0.000%	0.773%
1976	27229.61	0.019%	0.671%	0.000%	0.690%
1977	26719.7	0.015%	0.576%	0.000%	0.591%
1978	31601.43	0.011%	0.373%	0.000%	0.384%
1979	34353.82	0.008%	0.295%	0.000%	0.303%
1980	35622.48	0.006%	0.237%	0.000%	0.243%
1981	38331.15	0.005%	0.174%	0.000%	0.179%
1982	41528.35	0.005%	0.127%	0.000%	0.133%
1983	36467.04	0.007%	0.177%	0.000%	0.184%
1984	44323.06	0.008%	0.176%	0.000%	0.184%
1985	43792.81	0.007%	0.238%	0.000%	0.245%
1986	35479.79	0.008%	0.263%	0.000%	0.270%
1987	43579.2	0.006%	0.188%	0.000%	0.195%
1988	43974.53	0.007%	0.185%	0.000%	0.192%
1989	44927.35	0.009%	0.206%	0.000%	0.215%
1990	49712.02	0.007%	0.243%	0.000%	0.249%

Employment in the Public Sector (Lg)

Year	based line solution	\+$100M F1	F2	F3	F
1971	2415.06	0.236%	0.000%	0.000%	0.236%
1972	2622.42	0.202%	0.000%	0.000%	0.202%
1973	2845.42	0.166%	0.000%	0.000%	0.166%
1974	3040.49	0.126%	0.000%	0.000%	0.126%
1975	3209.23	0.104%	0.000%	0.000%	0.104%
1976	3365.04	0.083%	0.000%	0.000%	0.083%
1977	3467.56	0.062%	0.000%	0.000%	0.062%
1978	3738.91	0.049%	0.000%	0.000%	0.049%
1979	4079.92	0.038%	0.000%	0.000%	0.038%
1980	4438.00	0.027%	0.000%	0.000%	0.027%
1981	4861.21	0.020%	0.000%	0.000%	0.020%
1982	4861.98	0.024%	0.000%	0.000%	0.024%
1983	4801.12	0.030%	0.000%	0.000%	0.030%
1984	4916.07	0.039%	0.000%	0.000%	0.039%
1985	5160.37	0.033%	0.000%	0.000%	0.033%
1986	5000.34	0.030%	0.000%	0.000%	0.030%
1987	4905.68	0.030%	0.000%	0.000%	0.030%
1988	4743.44	0.035%	0.000%	0.000%	0.035%
1989	5005.55	0.044%	0.000%	0.000%	0.044%
1990	5276.14	0.035%	0.000%	0.000%	0.035%

Employment in the Private Sector (Lm)

Year	based line solution	\+$100M F1	F2	F3	F
1971	1772.75	0.001%	0.038%	0.000%	0.039%
1972	1825.21	0.001%	0.034%	0.000%	0.035%
1973	1885.96	0.001%	0.031%	0.000%	0.032%
1974	1979.50	0.001%	0.026%	0.000%	0.027%
1975	2052.05	0.001%	0.021%	0.000%	0.021%
1976	2056.46	0.000%	0.018%	0.000%	0.018%
1977	2099.44	0.000%	0.015%	0.000%	0.015%
1978	2114.20	0.000%	0.011%	0.000%	0.011%
1979	2201.71	0.000%	0.009%	0.000%	0.009%
1980	2362.24	0.000%	0.007%	0.000%	0.007%
1981	2517.66	0.000%	0.005%	0.000%	0.005%
1982	2640.06	0.000%	0.004%	0.000%	0.004%
1983	2577.93	0.000%	0.005%	0.000%	0.005%
1984	2414.65	0.000%	0.006%	0.000%	0.007%
1985	2461.59	0.000%	0.006%	0.000%	0.007%
1986	2521.96	0.000%	0.008%	0.000%	0.009%
1987	2491.16	0.000%	0.007%	0.000%	0.008%
1988	2517.95	0.000%	0.007%	0.000%	0.007%
1989	2521.85	0.000%	0.007%	0.000%	0.008%
1990	2592.42	0.000%	0.009%	0.000%	0.010%

Total Employment (L)

Year	based line solution	\+$100M F1	F2	F3	F
1971	14460.81	0.040%	0.005%	0.000%	0.044%
1972	14869.64	0.036%	0.004%	0.000%	0.040%
1973	15668.37	0.030%	0.004%	0.000%	0.034%
1974	15884.99	0.024%	0.003%	0.000%	0.027%
1975	16526.28	0.020%	0.003%	0.000%	0.023%
1976	16678.49	0.017%	0.002%	0.000%	0.019%
1977	17360.00	0.012%	0.002%	0.000%	0.014%
1978	17971.12	0.010%	0.001%	0.000%	0.012%
1979	18486.63	0.008%	0.001%	0.000%	0.009%
1980	21489.25	0.006%	0.001%	0.000%	0.006%
1981	22913.88	0.004%	0.001%	0.000%	0.005%
1982	22811.03	0.005%	0.000%	0.000%	0.006%
1983	22104.05	0.006%	0.001%	0.000%	0.007%
1984	22252.72	0.009%	0.001%	0.000%	0.009%
1985	22834.95	0.009%	0.001%	0.000%	0.012%
1986	22414.30	0.007%	0.001%	0.000%	0.008%
1987	22456.83	0.007%	0.001%	0.000%	0.007%
1988	22521.39	0.008%	0.001%	0.000%	0.008%
1989	23052.40	0.010%	0.001%	0.000%	0.010%
1990	23620.56	0.008%	0.001%	0.000%	0.009%