

# Export Incentives

## The Impact of Recent Policy Changes

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Despite improved export incentives, India's export profitability declined under the dual exchange rate regime (March 1992–February 1993). The situation reversed with the unification of the exchange rate in March 1993, and an export surge since then has been led by the sectors in which export profitability increased most.



## Summary findings

India's trade policy regime has changed dramatically since July 1991. The objective of reform has been to improve export performance by improving export incentives and eliminating discretionary controls.

Using a simple model, Kathuria sets out to examine whether export incentives actually improved as a result of policy changes. One part of the two-part model compares export profitability across regimes. The other compares the gap between domestic and export profitability across regimes. The export base is divided into eight subsectors, and several simulation exercises are applied to each of them.

The main results:

- For most export sectors, export profitability was lower under the dual exchange rate regime (March 1992–February 1993) than in the period before July 1991.

- The gap between domestic and export profitability increased in the period of the dual exchange rate regime, meaning that domestic sales, already more attractive than export sales, became even more so.

- This adverse movement in export incentives was reversed with unification of the exchange rate in March 1993.

Overall, the regime has moved closer to its eventual goal of being neutral about import substitution and export promotion, which is reflected in a significant change in the attitude of India's corporate sector toward exports.

It is more than a coincidence that the export surge in fiscal 1993–94 was led mainly by the sectors that witnessed the greatest increase in export profitability.

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This paper — a product of South Asia, Country Department II, Resident Mission in India — is part of a larger effort in the department to monitor economic developments in India and to assess their significance. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mona Haddad, room G3-113, extension 32160 (31 pages). September 1994.

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**EXPORT INCENTIVES:  
THE IMPACT OF RECENT POLICY CHANGES**

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# EXPORT INCENTIVES IN INDIA: THE IMPACT OF RECENT POLICY CHANGES <sup>1</sup>

## I. INTRODUCTION

One of the cornerstones of India's development policy has been an import - substituting industrialization strategy. It was accompanied by a heavy dose of export pessimism, which was reinforced by the poor export performance in the early years of planned development. Owing to shortage of foreign reserves, trade and industrial policies were dominated by an overwhelming concern for the likely impact of such policies on the balance of payments. Not surprisingly, effective protection rates for domestic production were much higher than for export production. This apart, domestic production was also protected by severe quantitative restrictions on imports.

An improvement in the balance of payments in the latter half of the 1970s saw the beginnings of a gradual easing of the trade regime. Export promotion policies took on a new urgency, especially in the 1980s, and were rewarded by a significant increase in the export growth rate in the second half of the decade<sup>2</sup>. Nevertheless, the totality of policies were unlikely to yield a sustained growth of exports, as we shall see below.

It is well known that export profitability is a key determinant of export success.<sup>3</sup> In spite of the export promotion drive in the 1980s, profitability in the heavily protected domestic market

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<sup>1</sup> Comments on an earlier draft were received from colleagues at a seminar organized at the World Bank in New Delhi in December 1992. These, along with very useful comments and suggestions from Pronab Sen, Fahretin Yagci, Mansoor Dailami and Helena Tang are gratefully acknowledged. I would also like to thank the participants at the Indian Econometric Society Annual Conference in May 1994 for their comments.

<sup>2</sup> Apart from specific export promotion resources, there has been, since the mid 1980s, a steady decline in the REER of the rupee, from 98 in 1985 to 69 in 1990 (1980 = 100), according to one computation by H.K. Pradhan (1992). In another study, G. Pradhan (1991) finds that in a large number of products, such as refrigerators, sewing machines, ceiling fans, motor cars and buses, electric lamps, air conditioners, paints and varnishes, woollen yarns and leather and coir products, the growth in fob price of exports (unit value of exports) over 1982-87 and 1985-87 and 1987-89 exceeded the growth in the domestic price. Thus, we could associate a decline in the REER with increasing export profitability.

<sup>3</sup> An ICICI (1985) study found, in a survey of 79 Indian companies, that availability of export incentives, recession in the domestic market, and favorable f.o.b. realizations, in that order, were the three most important motivating factors for exports.

remained significantly higher than profitability in the export market.<sup>4</sup> Also, policies were such that export incentives relied primarily on product-specific rebates and import entitlement licenses which were marketable at a premium. Moreover, export promotion policies involved a significant drain on budgetary resources, and were unlikely to be sustainable in a post-reform regime that required severe fiscal tightening. The main objective of the trade and exchange rate policies introduced since July 1991 was to enhance export profitability and eventually eliminate the difference between domestic and export profitability.<sup>5</sup> Alongwith this, budgetary support to exports was drastically reduced. The emphasis also shifted from product-specific incentives to more generalized incentives based primarily on the exchange rate. The real effective exchange (REER) of the rupee declined from 54 in the first half of 1991 to 44 in the second half of the year (1980=100) owing to the devaluation of July 1991. By April 1993, the REER had declined further to 39<sup>6</sup>.

The objective of this paper is to judge whether export incentives have in fact improved after the reforms. This cannot be done merely by looking at the REER at different points of time, since the REER does not take into account specific export incentives. In fact, some exporters claim that it was on account of these specific incentives that exports were more profitable for them in the pre-reform regime. In order to judge this, therefore, what is required is to construct export specific effective exchange rates. This is implicit in our analysis, where we estimate the

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<sup>4</sup> For example, studies at the Industrial Credit and Investment Corporation of India (ICICI) show that DP (domestic profitability) was greater than EP (export profitability) for a sample of exporting firms across different sectors. In 1986/87, DP was 13.2% and EP (with export incentives) was -0.2%. Between 1978/79 and 1980/81, DP was 12.8% and EP was 4.8%. These figures are from ICICI studies quoted in World Bank (1990), Vol. II. The two sets of figures are not comparable because the samples are different and the definitions of profitability are not identical.

<sup>5</sup> For example, the July 1991 "...exchange rate adjustment of 18 percent in the value of the rupee was designed to provide a substantial stimulus to exports" (Economic Survey, 1991-92, Part I, p. 11).

<sup>6</sup> REER data has been obtained from the IMF.

change in export profitability and the difference between export and domestic profitability in the pre and post reform period, on the basis of a comparative static analysis.

The results indicate that export profitability deteriorated for most export sectors in the dual exchange rate regime introduced in March 1992. However, this adverse movement has been reversed in most of the export sectors with the advent of the unified exchange rate regime in March 1993.

It should be noted that our attempt is only to calculate the change in profitabilities over different regimes. We cannot, for example, say whether domestic profitability exceeds export profitability in the new regime or by how much. We can, however, say that since the introduction of the unified exchange rate system, there has been a significant narrowing of the differential that undoubtedly existed in the pre-reform period between export and domestic profitability. This is supported by evidence gathered from meetings with exporters. Nevertheless, it would be useful if future studies attempted to empirically determine the difference, if any, between export and domestic profitability in different firms across various export sectors. This would be done on the basis of field surveys.

In the following sections of the paper, we will first provide in section II a chronology of the different export incentives that have characterized India's trade regime. Section III presents the analytical model, which first compares export profitability in different regimes and then analyses the issue of domestic versus export profitability. Section IV presents the results of the model in the context of the different regimes being examined. Concluding observations are offered in section V. Appendix I presents the data and data sources used in the paper, and Appendix II indicates the possible impact on the results of including import tariffs in the

domestic cost function.

## **II. CHRONOLOGY OF EXPORT INCENTIVES**

India's exporters have had to function within a highly complicated and bureaucratic trade regime. The nature of this regime is well documented in the World Bank (1990) study on trade policy reform. For an earlier account, Bhagwati and Srinivasan (1975) is an authoritative text. In this section, we will only summarize those aspects of the trade regime that deal with the various set-offs and incentives that an exporter is provided.

The biggest rebate available to exporters was in the form of the Cash Compensatory Support (CCS), introduced in August 1966. CCS was designed to compensate exporters for unrebated indirect taxes on inputs, and to provide some market promotion support for new products and markets. CCS rates were product specific, were expressed as a percentage of value of exports, and typically varied between 10-20% of fob value.

Another rebate was the Duty Drawback, which was introduced in 1954 in order to refund exporters for duties on imported inputs and for central excise duties paid on domestically produced inputs that go into export production.

While the above were in the nature of rebates, the primary incentive available to exporters was the special import license which was marketable at a premium. This Replenishment (REP) license was available to a large proportion of exported products, against which specified inputs could be imported. The REP rate was also expressed as a percentage of fob value of exports.

Apart from these, exporters are eligible to import specified materials and components free of duty under the Advance License scheme. The International Price Reimbursement Scheme



(IPRS) for steel and alloy steel products compensates exporters for the difference between domestic and international price of these products, and a similar scheme is available for natural rubber. Finally, with effect from April 1989, profits from exports were fully exempt from income tax.

This was the regime in place prior to July 1991 which, for convenience, we shall refer to as the REP regime. In July 1991, the rupee was devalued in two stages resulting in an overall appreciation of major currencies by 21-23% against the rupee. Simultaneously, CCS was abolished, and the REP license was replaced by the system of Exim Scrips, conceptually similar to REP but substantially larger in terms of scope and coverage. As compared to REP rates varying between 5 and 20% for most products, the Exim Scrip entitlement was a uniform 30% with a few exceptions. This "Scrip" regime did not last very long, and in March 1992 the Scrip was abolished and "partial convertibility" of the rupee was introduced in its place. Under this, export earnings were converted into rupees at a composite exchange rate, 60% at the market rate and 40% at the official rate. The weighted difference between the market rate and the official rate constituted an implicit tax on exporters. All imports, on the other hand, were allowed only at the market rate. The regime was further simplified in the 1993/94 Budget, and as of March 1993, the exchange rate was unified, with all imports and exports to be made at the market rate of exchange. The salient features of the different regimes are presented in the chart below.

**Chart 1: SALIENT FEATURES OF THE DIFFERENT TRADE REGIMES**

<u>REP regime</u> (.... June 1991)	<u>Dual Exchange Rate Regime</u> (March 1992-February 1993)	<u>Unified Exchange Rate Regime</u> (March 1993.....)
1. Cash Compensatory Support (CCS).	1. CCS and REP abolished in July 1991.	1. Exchange rate unified and market-determined.
2. Replenishment license (REP).	2. Devaluation of the rupee.	2. Effective devaluation of rupee for exporters.
3. Duty drawback.	3. Duty drawback.	3. Duty drawback.
4. International Price Reimbursement Scheme (IPRS).	4. International Price Reimbursement Scheme (IPRS).	4. International Price Reimbursement Scheme (IPRS).
5. Income tax exemption for exports.	5. Income tax exemption for exports.	5. Income tax exemption for exports.
6. Product-specific CCS and REP.	6. Generalized export incentives.	6. Generalized export incentives.
7. Exchange rate Rs.18/dollar.	7. Dual exchange rate, roughly Rs.28/dollar for exporters and Rs.30/dollar for importers.	7. Exchange rate roughly Rs.31.5/dollar.
	8. Fiscal burden of exports reduced drastically because of CCS and REP abolition.	

In spite of the substantial downward adjustments of the rupee, a section of exporters still want the revival of schemes like the CCS, claiming that they were better off in the earlier regime (REP). We shall analyze this claim by means of a simple model that compares export profitability (EP) as well as EP relative to domestic profitability (DP) in the REP and dual/unified exchange rate regimes across various product groups.

### III. THE MODEL <sup>7</sup>

#### Export Profitability

Let us define an incentive function  $N$  such that

$$N = f(N_1, N_2, N_3, N_4 \dots)$$

where

$N$  = the incentive to export

$N_1$  = export profitability

$N_2$  = export profitability relative to domestic profitability

$N_3$  = cost of export-related red tape (over and above that which is borne for operating domestically)

$N_4$  = relative risks of export vis-a-vis domestic sales

In this paper, we will focus on the profitability aspects of the incentive function only, i.e. on  $N_1$  and  $N_2$ .  $N$  is positively related to  $N_1$  and  $N_2$ , and negatively to  $N_3$  and  $N_4$ . It is worth remembering that since the new trade regime has led to a decline in red tape,  $N_3$  has declined, which means that by neglecting  $N_3$  we are underestimating the incentive to export in the post-reform period.

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<sup>7</sup> See Sen (1992), Gupta (1992) and Kathuria (1992, 1993) for analysis, inter alia, of the impact of the Exim Scrip regime, which has not been covered in this paper since it was an intermediate regime that survived only about eight months before being replaced by the dual exchange rate regime.

Let Export Profits in the REP regime be given by

$$P_o = R + rP + sR - C - M - gpM \dots\dots\dots(1)$$

where

- P = profits in rupees
- R = fob value of exports in rupees
- C = domestic cost of exports in rupees
- M = cost of imported inputs for exports in rupees
- r = REP entitlement (%)
- g = share of total imports obtained via REP license (%)
- p = premium on REP (%)
- s = CCS entitlement (%)

Note that we are not including schemes such as Duty Drawback and International Price Reimbursement Scheme, since we are interested not in export profitability per se but in the change in export profitability. We assume that the rates of compensation provided by such schemes adjust according to changes in duties, taxes and prices, so that there is no inter-regime variation in EP on account of duty drawback and IPRS.

With dual or unified exchange rate, Export Profits in rupees are given by  $P_1$ , and are defined with reference to the previous regime:

$$P_1 = wR(1 + E_x) - C(1 + z) - wM(1 + E_M) - I(u - Z) \dots\dots\dots(2)$$

where

- w = some index of world inflation, implying that dollar prices of Indian exports and imports rise by that amount
- $E_x$  = percentage appreciation in the Re/dollar rate for exporters
- $E_M$  = percentage appreciation in the Re/dollar rate for importers
- z = percentage increase in costs, proxied by rate of inflation
- I = interest costs
- u = percentage increase in interest rates on pre-shipment export credit.

Interest costs have been included in the equation for  $P_1$  because the rate of interest on credit increased very significantly (for example, the interest on the most important form of export credit, pre-shipment export credit, rose from 7.5% earlier to 15% in January 1992), and neglecting them would have meant an overestimate of  $P_1$ . Since interest costs are already included in domestic costs, only the increase in interest costs over and above the increase in domestic costs is included as an additional cost in the term  $I(u - z)$ .

Note that it has been assumed that the quantities of import and export remain unchanged in the two regimes.<sup>8</sup>

If we divide equations (1) and (2) by R, we get

$$\frac{P_0}{R} = 1 + rp + s - d - m - gpm \dots\dots\dots (3)$$

and

$$\frac{P_1}{R} = w(1+E_x) - d(1+z) - wm(1+E_M) - i(u-z) \dots\dots\dots (4)$$

where

- m = M/R, the import intensity of exports
- d = C/R, which we have assumed to be equal to (1-m)
- i = I/R, interest cost in total exports

Note however that P<sub>0</sub>/R and P<sub>1</sub>/R do not represent export profitabilities. Rather,

$$\text{EP in the REP regime} = \frac{P_0}{R + rpR + sR}$$

Export incentives have been included in the denominator since without these incentives R is often less than C+M, the cost of exports.

$$\text{EP in the dual/unified regimes} = \frac{P_1}{wR(1+E_x)}$$

Then, the change in export profitability (CEP) is given by:

$$\text{CEP} = \frac{P_1}{wR(1+E_x)} - \frac{P_0}{R + rpR + sR}$$

$$\text{or CEP} = \frac{P_1}{R w(1+E_x)} - \frac{P_0}{R(1 + rp + s)}$$

Substituting for P<sub>0</sub>/R and P<sub>1</sub>/R from (3) and (4), we get

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<sup>8</sup> Since Revenue = Price. Quantity, we have assumed that the change in Revenue from exports (or change in cost of imports) emanates only from change in price. This assumption is one of the limitations of this kind of static analysis.

$$CEP = \frac{w(1+E_x) - d(1+z) - wM(1+E_M) - I(u-z)}{w(1+E_x)} - \frac{1+rp+s-d-m-gpm}{1+rp+s} \dots \dots (5)$$

This is the equation we will use to estimate the change in EP.

**Domestic Versus Export Profitability**

As before, let Export Profits in the REP regime be

$$P_0 = R + rpR + sR - C - M - gpM$$

If the same goods are sold on the domestic market, profits will be

$$P_{od} = R_{od} - C - M - gpM \dots \dots \dots (6)$$

Here we have assumed that the quantity and cost of inputs that enter into domestic production is the same as those that go into export production.

Then the gap between export and domestic profits is given by<sup>9</sup>

$$G_0 = P_{od} - P_0 \\ = R_{od} - R - rpR - sR \dots \dots \dots (7)$$

Then,  $G_0 > 0$  if

$$R_{od} - R > rpR + sR$$

or  $\frac{R_{od} - R}{R} > rp + s$

i.e. domestic profits will exceed export profits if the percentage difference between domestic and export revenues exceeds the sum of CCS and REP earnings (with CCS and REP earnings expressed in percentage form).

Similarly, in the regime of dual or unified exchange rate, Export Profits are

$$P_1 = wR (1+E_x) - C(1+z) - wM(1+E_M) - I(u-z)$$

The same goods if sold domestically will fetch profits

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<sup>9</sup> The expression in equation (7) overestimates the gap between export and domestic profits, since in the equation for export profits we have not allowed for duty drawback, IPRS and also the income tax exemption on export profits. However, as in the previous section, we are not interested in the gap per se but in the change in the gap i.e.  $G_0 - G_1$ .

$$P_{1d} = R_{1d} - C(1+z) - wM(1+E_M) - I(u-z) \dots \dots \dots (8)$$

The gap between export and domestic profits is

$$G_i = P_{1d} - P_1$$

$$= R_{1d} - wR(1+E_x) \dots \dots \dots (9)$$

$G_i > 0$  if

$$R_{1d} > wR(1+E_x)$$

or  $\frac{R_{1d}}{R} > w(1+E_x)$

i.e. domestic profits will exceed export profits if the ratio of domestic revenue to original export revenue exceeds the index of increase in rupee realization of exporters.

A sound export policy must attempt to reduce anti-export bias by narrowing the differential between export and domestic profits i.e.  $G_0$  should be greater than  $G_1$ .<sup>9</sup>

$G_0 > G_1$  if

$$R_{0d} - R - rpR - sR - R_{1d} + wR(1+E_x) > 0$$

This simplifies to

$$R_{1d} - R_{0d} < wR(1+E_x) - R - rpR - sR \dots \dots \dots (10)$$

or  $\frac{R_{1d} - R_{0d}}{R} < w(1+E_x) - 1 - rp - s \dots \dots \dots (11)$

The left hand side of (10) is the increase in revenue from domestic sales, and the right hand side is the revenue increase from export sales if the same goods are sold abroad. Since we are assuming that costs are the same in both domestic as well as export sales, the condition that the profit differential should reduce is identical to the condition that the revenue differential should narrow. Ideally, we would like to be able to estimate inequality (11), which is a deflated version of (10). However, the LHS of (11) cannot be calculated since it involves a knowledge of revenues, and therefore prices. One possible solution is to assume that the increase in revenues in absolute terms is equal to the increase in costs (i.e. prices are increased by the

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<sup>9</sup> Note that we are comparing absolute values of the gaps between export and domestic profits. Owing to inflation, comparing absolute values of  $G_0$  and  $G_1$  underestimates the decline in bias: a deflated  $G_1$  will obviously be less than  $G_1$ . If  $G_0 > G_1$  is satisfied, then  $G_0 >$  deflated  $G_1$  will also be satisfied.

amount that costs increase, assuming quantities are unchanged).<sup>10</sup>

Thus, let the absolute cost increase between the REP and dual/unified exchange rate regime be given by

$$Y = C(1+z) + wM(1+E_M) + I(u-z)-(C+M + gpM)$$

$$= Cz + wM (1+E_M) + I (u-z)-M-gpM$$

Then,  $\frac{Y}{R} = dz + wm (1+E_M) + i (u-z)-m-gpm \dots\dots\dots (12)$

Based on our assumption that the revenue increase is equal to the cost increase, we can substitute the left-hand side of (11) by (12), and get a condition for narrowing of the differential between export and domestic profits i.e.

$$dz + wm (1+E_M) + i (u-z)-m-gpm < w(1+E_x)-1-rp-s \dots\dots\dots (13)$$

In (13), the left hand side is a proxy for increase in revenue on domestic sales, and the right hand side is the increase in revenue from export sales if the same product was sold abroad. Both sides are deflated by R, the original export revenue. We use equation (13) to estimate CEDP (the change in the difference between export and domestic profitability). CEDP is calculated as the left hand side of equation (13) minus the right hand side, and if CEDP is negative, it implies a decline in the anti-export bias.

As mentioned earlier, we have assumed that import costs for domestic and export sales are identical. In fact, duties have to be paid on imports for domestic production. Whether this makes a difference to total import cost (since tariff cuts are countered by rupee devaluation) and to the CEDP exercise is shown in Appendix II. As we shall see, its inclusion does not make a material difference to the results in Table 1.

#### IV. THE RESULTS

##### Simulation Assumptions

We have employed four different sets of assumptions to generate our simulation results.

##### Simulation I:

The basic data that we have used is described in the Appendix. Data details and sources

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<sup>10</sup>This assumption means that there would be a marginal decline in domestic profitability (profits/revenue), since revenue would increase while profits would remain constant.



include those for CCS and REP rates, import intensity, inflation rates, interest costs, exchange rates, world inflation and interest rates. This is used to generate the results with standard assumptions, as shown in columns 1-4 of Table 1.

#### Simulation II:

Many exporters complained that buyers wanted to share the benefits of devaluation, leading to pressure on exporters to reduce dollar export prices. While this may have happened in some cases, a more plausible assumption is that dollar prices were unchanged rather than reduced, which presumably compensated exporters for the loss of CCS and REP. All other assumptions are standard, and the results are set out in columns 5-8 of Table 1.

#### Simulation III:

We have used balance sheet data for firms. The implicit assumption is that import intensity is the same for domestic and export sales. Normally, however, exports require a higher dose of imported inputs on account of more exacting quality standards as well as variation in demand patterns. We have therefore employed higher import intensities<sup>11</sup> in the simulation exercises in columns 9-12 of Table 1, along with the previous assumption of unchanged dollar prices.

#### Simulation IV:

Finally, we focussed on domestic inflation. During our survey of exporting firms, several complained that the input cost increase they faced was much higher than indicated by the WPI. We attempted to judge the sensitivity of the results to a rate of inflation 25% higher than the one used earlier. The results with higher inflation rate are shown in columns 13-16 of Table 1. The other assumptions are all the same as in the previous simulation for columns 13 and 14, i.e.

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<sup>11</sup> The higher values of import intensity are shown in Appendix Table 1, and based on Exim Bank (1991) and Gupta (1992). Gupta's data is based on share of REP licenses in exports, which probably over-estimates the actual import intensity.

unchanged dollar prices and higher import intensity. For columns 15 and 16, we have allowed for a small dollar price rise of 5% instead of a constant dollar price, since we are looking at a much longer time span in the change to the unified rate regime.

## The Results

CEP in Table 1 refers to the difference (in percentage points) in export profitability between the REP and Dual exchange rate regime. CEDP is an indicator of the change in relative attractiveness of the domestic and export markets: a minus sign indicates that exports have become relatively more attractive.<sup>12</sup> The absolute values of CEP should be taken as indicative: we would place greater stress on the direction of change and the relative magnitudes between sectors. In the case of CEDP, we interpret the figures only in terms of their direction of change and relative magnitudes across sectors, rather than in terms of their absolute magnitudes. In each set of simulations, the first two columns refer to the move from REP to dual exchange rate regime, and the next two columns refer to the move from REP to the unified exchange rate regime. For the purpose of our analysis, we have chosen June 1991, September 1992 and June 1993 as representative months for the REP, dual exchange rate and unified exchange rate regime respectively. Thus, the shift from REP to dual exchange rate regime in our analysis is the change between June 1991 and September 1992. Similarly, the shift from REP to the unified exchange rate regime is the change between June 1991 and June 1993.

The results of Simulation I (columns 1-2) show that in the move from REP to dual rate regime, most sectors see a gain in EP, and a favorable movement (i.e. a negative sign) for CEDP. In textiles, and sub-sector (b) of engineering goods, EP declines. CEDP nevertheless

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<sup>12</sup> It is the increase in costs of selling in the domestic market minus the increase in export revenue if the same product was sold overseas i.e. the left hand side of equation (13) minus the right hand side.

is negative in the latter case, since domestic revenue increases less than export revenue; CEDP is positive for textiles, which means that domestic costs (prices) in the textile sector have risen faster than export profits. On the other hand, once the exchange rate was unified (columns 3-4), all sectors gain substantially in terms of EP, and CEDP is also large and negative. This implies significant improvement in export incentives after unification of the exchange rate.

Normally, one may expect some resistance to dollar price increases in the aftermath of a devaluation, at least for a while. With dollar prices unchanged (columns 5-6), Simulation II shows that a little over a year after the devaluation of July 1991, most export sectors with the exception of agriculture (b) witnessed a decline in EP (between June 1991 and September 1992). CEDP is negative, as expected, for agriculture (b), and also for chemicals et al and leather products. Thus with dollar prices unchanged instead of rising by 8.6% between June 1991 and September 1992, the results change dramatically. Theoretically, dollar export prices could have been reduced (in which case EP would have declined still further in the dual exchange rate regime), kept constant, or raised after the devaluation. If they are reduced or kept constant, EP would decline. We see Simulation II results as more plausible than Simulation I, at least for the move from REP to dual exchange rate regime.

As in Simulation I, the adverse movement in CEP and CEDP noticed in the shift from REP to dual rate regime in Simulation II reverses itself in the unified rate regime (columns 7-8). Only engineering (b), carpets and textiles continue to see a decline in EP, but CEDP is negative (favorable) for all but textiles.

Simulations III and IV embody stricter assumptions on most parameters than earlier. In the REP to dual rate regime shift, EP deteriorates further with these assumptions. In the REP to

unified rate regime, Simulation III shows a reversal of this decline for most sectors except engineering, plastic goods, textiles and carpets. Simulation IV results are very similar to Simulation III (the higher cost inflation assumption is neutralized by the 5% dollar price increase assumption, as compared to Simulation III).

It needs to be noted that the assumptions on inflation rates and import intensities in Simulation IV may be rather severe. If we relax the severity of these assumptions slightly (which would render them more plausible), then all sectors except engineering goods (b) would see a positive change in EP.<sup>13</sup>

The other noteworthy aspect of the results is the relative levels of change in EP across sectors. The largest increases in EP in the unified rate regime arise in agriculture, leather and chemicals, and the lowest (or negative) increases in engineering, carpets and textiles. In general, sectors which enjoyed low incentives in the REP regime gained the most in the post-reform period.<sup>14</sup> This is particularly true of a large variety of agriculture products and minerals and ores, which received very little export incentives in the pre-reform period.

Finally, it is necessary to comment on one assumption of the CEDP model. We have assumed that the increase in domestic revenue is equal to the increase in costs. In reality, however, the very low growth of industrial production in 1992/93 (1.8%) and 1993/94 (estimated at 4%) has meant that there has been a downward pressure on industrial profitability,

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<sup>13</sup> In column 15, if inflation ( $z$ ) for carpets is 22% instead of the very high figure of 34%, or if import intensity is 12% instead of the similarly high figure of 25% and  $z = 27.1\%$  instead of 34%, then change in EP is positive. Similarly, in the case of textiles, if  $z = 20\%$  instead of 33%, or if  $z = 26.6\%$  (i.e. the actual rate used in columns 3-4, 7-8, and 11-12) and  $m = 10\%$  instead of the high rate of 25%, then the change in EP is positive. For engineering goods (a), all it requires for the EP change to be positive is for  $z$  to be 20% instead of 22.3%. It is only in engineering goods (b) that the assumptions in column 15 ( $z = 22.3\%$ ,  $m = 30\%$ ,  $w = 1.05$ ) do not seem unduly unrealistic. Even if we reduce  $z$  and  $m$  to 20% each, EP change is still negative. It is only if in addition  $w = 1.09$  that EP change turns positive.

<sup>14</sup> The correlation coefficients between CEP and CCS are -0.75 (REP to dual rate) and -0.87 (REP to unified rate).

**TABLE 1: CHANGES IN EXPORT PROFITABILITY AND EXPORT RELATIVE TO  
DOMESTIC PROFITABILITY:  
SIMULATION RESULTS UNDER DIFFERENT ASSUMPTIONS**

	REP to dual		REP to unified		REP to dual		REP to unified		REP to dual		REP to unified		REP to dual	
	exchan rate		exchan rate		exchan rate		exchange rate		exchan rate		exchange rate		exchange rate	
	CEP	CEDP	CEP	CEDP	CEP	CEDP	CEP	CEDP	CEP	CEDP	CEP	CEDP	CEP	CEDP
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Engineering goods</b>														
a) Normal incentives	2.3	-7.7	10.3	-24.5	-3.9	2.8	2.4	-8.3	-8.3	8.7	-1.7	-2.0	-9.9	10.9
b) Very high incentives	-1.9	-1.5	6.0	-18.3	-8.2	9.0	-1.8	-2.1	-12.6	14.9	-6.0	4.2	-14.1	17.1
<b>Chemicals &amp; Allied Products</b>	4.6	-1.0	13.1	-27.9	-1.7	-0.1	5.4	-12.1	-5.2	4.7	1.9	-6.7	-7.0	7.2
<b>Plastic goods</b>	2.5	-7.2	10.9	-24.0	-3.1	0.2	3.9	-9.7	-7.8	8.3	-0.6	-2.7	-9.2	10.3
<b>Finished Leather &amp; goods</b>	6.0	-12.9	14.6	-31.1	-0.2	-2.3	7.0	-14.8	-1.7	-0.2	5.4	-12.5	-3.4	0.2
<b>Sports goods</b>	0.5	-4.9	10.7	-24.8	-6.4	6.1	2.3	-8.0	-7.9	8.2	0.6	-5.4	-10.9	12.2
<b>Agr. &amp; processed food</b>														
a) Higher incentives	2.2	-7.1	13.3	-28.4	-4.7	3.9	5.0	-11.6	-6.1	5.8	3.3	-9.0	-9.2	10.0
b) Low incentives	11.8	-18.1	22.9	-39.4	4.8	-7.1	14.5	-22.6	3.5	-5.2	12.9	-20.0	0.3	-1.0
<b>Textiles</b>	-4.3	2.0	4.7	-15.3	-11.2	12.6	-3.7	0.1	-13.5	15.7	-5.9	4.3	-16.1	19.3
<b>Handicrafts</b>														
a) Brassware	0.8	-5.5	12.0	-27.6	-6.0	5.5	4.0	-10.7	-9.2	9.9	0.2	-4.9	-11.4	12.9
b) Carpets	2.5	-8.1	6.2	-17.8	-4.0	2.9	-2.5	-0.9	-7.9	8.3	-5.2	3.2	-9.8	10.8

**Notes:**

- 1) CEP is change in export profitability, and CEDP is change in the difference between export and domestic profitability.
- 2) CEP figures are in percentage points (for example, CEP would be 2.3 if, say, EP rose from 15% in the REP regime to 17.3% in the dual rate regime).
- 3) CEDP figures are differences in absolute values divided by a common denominator, and the resultant value is then multiplied by 100.
- 4) For simulation assumptions, refer to text.

and domestic revenues may in fact have increased less than costs. Through our assumption, we have therefore made the domestic market look more attractive than it in fact is in the post-reform regimes. Thus, in cases where CEDP is marginally positive in our simulations, it is possible that in reality it may be negative i.e. favorable for exports.

## **V. CONCLUDING OBSERVATIONS**

**We noted an adverse movement in EP and CEDP in the dual exchange rate regime for most export sectors. This is true irrespective of the severity of assumptions on import intensity and inflation rates. As long as dollar prices are unchanged in the period between the REP and dual rate regimes (June 1991 to September 1992 in this study), export incentives are adversely affected for most sectors.**

**The dual exchange rate regime was in place from March 1992 to February 1993. Over this period, and particularly until the end of January 1993, there was an erosion in the real effective exchange rate for exporters: the composite nominal exchange rate changed very little, and inflation gradually eroded the benefit to exporters. Our analysis has shown that most exporters were worse off in September 1992 vis-a-vis June 1991, and this position would have worsened over the following months. The Government attempted to redress the situation by unifying the exchange rate as of March 1993, which, if we compare the (exporters') exchange rate of September 1992 with the unified rate of June 1993, amounts to an effective devaluation of nearly 10% in the value of the rupee.**

**As a result, the adverse movement in export incentives in the dual rate regime has reversed itself in most cases in the unified rate regime. With standard assumptions, this is**

true across all sectors. Even with rather severe assumptions on inflation rates, import intensities and dollar price increases, EP declines only in the case of engineering goods, textiles, and carpets. If we relax the severity of the assumptions slightly, then even for the cases above, the EP change would be positive. The only exception to this is engineering goods (b).

The results are generally supported by actual data collected from firms in the field. In the dual exchange rate regime, a large number of exporters in different sectors complained of a decline in EP, particularly in the case of some engineering and textile exporters. As it happened, the dual rate regime coincided with significant recession in some of India's major markets, with the result that there was great pressure on many Indian exporters not to increase and to even reduce their dollar prices. The exchange rate unification was an appropriate solution to the erosion in EP, with the effective depreciation of the rupee amounting to nearly 10%. This was confirmed in recent meetings with exporting firms, most of whom agreed that EP had increased substantially as compared to the dual rate regime and even as compared to the REP regime. The exception was some engineering exporters who said that they enjoyed higher EP under the REP regime.

Even for those exporters who have suffered a decline in EP, there is an important mitigating factor. The abolition of CCS and REP licenses has ended the extended periods that exporters had to wait in order to collect their CCS dues and REP licenses. This, as well as gradual improvement in export-related bureaucracy, lower import duties, removal of import restrictions for most inputs and capital goods, has made it easier for the exporter to concentrate on exporting and imparted greater flexibility to his functioning. To the extent that these factors are operative, they make an important contribution to reducing the bias against exporting

activity.<sup>15</sup>

Our analysis has demonstrated that there are circumstances under which a decline in EP need not result in a fall in the incentive to export. This happens when the relative decline in DP is more than the decline in EP. For example, there was a decline in EP in the case of (high incentive) engineering goods in the switch from the REP to dual rate regime, but a simultaneous decline in DP ensured that there was no decline in the incentive to export.

Moreover, although we have compared the incentives across regimes using June 1991 as a base, there is a case for using an earlier base. The export policies that were being followed in June 1991, following the onset of the foreign exchange crisis in the last quarter of 1990, were not sustainable, partly because they involved a large measure of budgetary support. If we compare the export incentives prior to the run on foreign exchange reserves, say, in September 1990, with September 1992, then there is an unambiguous increase in EP across all sectors.<sup>16</sup> Thus, if we use September 1990 as a base in our analysis, there would be an unambiguous increase in EP between the REP to dual rate regime for all sectors, and a very significant increase in the move from Rep to the unified rate regime.

To be sure, there are many influences on exports other than profitability, such as domestic and international demand, relative prices and so on. However, it is a truism that there can be no sustained export success if there is a policy bias against exports. This policy bias is reflected in the domestic market being relatively more attractive than the export market. Recent policies in India have sought to reduce and eventually eliminate this anti-export bias. Another bias that

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<sup>15</sup> See Section III where we defined the incentive function.

<sup>16</sup> For example, in the case of engineering goods (a), the increase in EP between September 1990 and June 1991 is as much as 8.5 percentage points even with no increase in dollar prices. The main source of this increase was the 16% depreciation in the value of the rupee over this period. Other sectors also show similar orders of increase (for more details on this, see Kathuria (1993)).



existed earlier was the one against primary or unprocessed goods vis-a-vis manufactured ones. The elimination of product-specific incentives has removed this bias. Overall, the regime has moved closer to its eventual goal of being neutral between import substitution and export promotion, and this is reflected in a significant change in the attitude of India's corporate sector towards exports.

The policies have received an early vindication. It is more than a coincidence that the export surge in fiscal 93/94 has been mainly led by sectors which have witnessed the greatest increase in export profitability. In April-July 1993, products with year-on-year export growth rates in dollar terms in excess of 30 percent included plantations, agriculture and allied products, minerals and ores, chemicals and gems and jewelry. As we have seen, most of these also happen to be products which witnessed the largest increase in their export profitabilities between the REP and unified rate regimes. Similarly, for April-September 1993, broad disaggregation of exports reveals growth rates of 38 percent for agriculture and allied products, 25 percent for minerals, petroleum and others, and a lower rate of 17 percent for manufactured goods, which is in keeping with the re-alignment of incentives.

A caveat is also in order. Given the stability of the nominal exchange rate at about Rs.31.4 to the dollar since March 1993, and with inflation running at 7-9%, there has been a gradual increase in recent months in the real effective exchange rate (39 in April 1993 to 41 in October 1993). Moreover, the Reserve Bank of India has had to intervene actively in order to prevent the rupee from appreciating. With exports being top priority, the REER will bear watching and monitoring by the Reserve Bank.

## APPENDIX I

### THE DATA

Appendix Tables 1 and 2 show the actual data that we have used in our calculations. We have divided all exports into eight broad sectors, based on the classification in the CCS tables. For each of these sectors, and in some cases sub-sectors, we have collected data on CCS rates, Rep rates, import intensity, inflation rates, and interest costs as a share of sales (Appendix Table 1). Apart from these, we have common variables such as the exchange rate change, index of world inflation, and interest rates (Appendix Table 2).

The data on import intensity and interest costs is in turn based on an RBI study of 622 large companies (RBI Bulletin, May 1990), see Appendix Table 3. CCS and Rep rates are based on average/modal values of these rates within each sector. For CCS, we have, in addition, data on actual disbursement rates in 1983/84, from the Husain Committee (1984) Report. This has been used wherever possible. For the inflation rate, we have in most cases used the percentage change in the Wholesale Price Index of the major input in each sector (see Appendix Table 4 for the basic data). Wherever the classification in the RBI data does not match directly with the classification we have used, we have made ad-hoc assumptions.

We have divided some sectors such as engineering and agriculture into two sub-sectors since the range of incentives within these was very high. In engineering, there was the top end category such as motor vehicles and NC and CNC machine tools which received 20% CCS and 20% REP. Most other engineering goods were eligible for a lower level of support, and we have chosen a value of 14.8% CCS (actual disbursement rate in 1983/84), and a modal rate of 15% REP. In agriculture, incentives were generally low or non-existent, and we have chosen

two CCS rates of 0 and 10%. Within handicrafts, which is a very heterogenous group of products, we have picked on the two largest categories - brassware and woollen handknotted carpets. The REP rate for brassware was 40%.

We have assumed a common Rep. premium (p) of 20%, and the share of imports obtained via the Rep. license (g) 10%. Although these rates vary across sectors, the results obtained are not very sensitive to variations in the rates. Moreover, such data is not readily available. We have therefore assumed constant values for p and g. Appendix Table 5 shows the other common variables on which Appendix Table 2 is based.

**APPENDIX TABLE 1: THE DATA**

**DATA AND ASSUMPTIONS USED IN CALCULATIONS**  
(all figures in percentages)

Sector	r Rep.rate	CCS rate	m Import intensity	m Import Intensity higher value	z Inflation, Rep to dual rate	z Inflation, Rep to unified rate	i Interest cost to total revenue
Engineering Goods							
i)	15.0	14.8	8.6	30.0	13.3	17.9	5.0
ii)	20.0	20.0	8.6	30.0	13.3	17.9	5.0
Chemicals & Allied Products							
Plastic goods	12.5	9.8	11.1	30.0	15.5	19.1	5.0
	12.5	9.6	<u>20.0</u>	45.0	15.5	19.1	<u>5.0</u>
Finished Leather & leather goods	17.5	11.3	<u>8.0</u>	15.0	11.1	14.1	<u>5.0</u>
Sports goods	15.0	12.6	<u>5.0</u>	15.0	20.5	21.9	<u>5.0</u>
Agriculture & Processed Food							
i)	15.0	10.0	<u>5.0</u>	14.5	20.9	20.8	<u>5.0</u>
ii)	10.0	0.0	<u>5.0</u>	14.5	20.9	20.8	<u>5.0</u>
Textiles	15.0	15.0	8.8	25.0	21.5	26.6	8.1
Handicrafts							
i) Brassware	40.0	10.0	<u>5.0</u>	23.5	17.2	16.2	<u>5.0</u>
ii) Carpets	20.0	14.0	<u>5.0</u>	25.0	14.3	27.1	<u>5.0</u>

**Notes:**

- 1) Figures underlined are assumptions based on related data in Appendix Table 3, Exim Bank (1991) and other information.
- 2) The rate of inflation, z, is in most cases the increase in the Wholesale Price Index for the major input in the respective sectors. These rates pertain to basic metals and alloys (for engineering goods), a weighted average of basic heavy inorganic and organic chemicals in the ratio 2:1 (for chemicals, as well as for plastic goods), footwear western type (for leather products), other rubber and plastic goods (sports goods), food articles, primary (for agriculture and processed food), cotton yarn (textiles), brass sheets and strips (brassware), woollen yarn (carpets). For leather, we have used the WPI for footwear, in the absence of a credible inflation rate for raw leather. Most carpets are woollen, so we have used the WPI for woollen yarn.
- 3) The higher values of import intensity are used as an alternative in our simulation exercises.

**Sources:** Appendix Tables 3 and 4, Hussain Committee (1984), Kumari (1991), and Gupta (1992).

**APPENDIX TABLE 2**

**VALUES OF COMMON PARAMETERS**

	REP to Dual Exchange Rate	REP to Unified Exchange Rate
$W$	1.086	1.119
$E_x$	0.350	0.493
$E_m$	0.430	0.493
$u$	1.000	0.733
$p$	0.200	0.200
$g$	0.100	0.100

**APPENDIX TABLE 3**

**SECTORAL IMPORT INTENSITIES 1988-89**

(Rs. crores unless otherwise stated)

INDUSTRY	TOTAL IMPORTS	CAPITAL GOODS	IMPORTS LESS CG	SALES NET OF EXCISE	IMPORT INTENSITY	INTEREST
Tea	15.5	0.7	14.8	1183	1.25%	3.6%
Sugar	0.9	0.5	0.4	412	0.10%	4.8%
Tobacco	7.7	1.9	5.8	628	0.92%	5.3%
Cotton/blended text	316.9	20.1	296.8	3385	8.77%	8.1%
Jute textiles	10.1	0.3	9.8	149	6.58%	2.9%
Silk and rayon text	17.8	3.5	14.3	773	1.85%	6.5%
Aluminum	30.1	7.1	23.0	692	3.32%	4.0%
Engineering of which	1153.3	103.4	1049.9	12203	8.60%	5.0%
Motor vehicles	274.4	25.8	248.6	3342	7.44%	5.0%
Elec machinery, app- liances, apparatus	250.8	19.8	231.0	2451	9.42%	4.6%
Mach. other than tpt. and elec.	335.6	30.2	305.4	3661	8.34%	5.5%
Foundries and engg. workshops	191.4	3.3	188.1	1273	14.78%	4.8%
Ferrous/non-ferrous metal products	85.6	22.1	63.5	1035	6.14%	5.4%
Chemicals of which	1071.0	49.8	1021.2	9230	11.06%	5.1%
Med. and pharm.	169.9	5.7	164.2	2059	7.97%	3.0%
Paints and varnishes	41.0	6.4	34.6	386	8.96%	3.8%
Basic indl. chem	738.9	35.4	703.5	5109	13.77%	6.7%
of which chem ferts	442.2	9.2	433.0	1888	22.93%	8.3%
Cement	36.5	17.8	18.7	1662	1.13%	6.4%
Rubber and rubber pdts	198.6	5.1	193.5	2219	8.72%	3.8%
Paper and paper pdts.	151.1	5.7	145.4	1132	12.84%	8.0%
Construction	3.0	1.9	1.1	291	0.38%	5.4%
Elec. gen. and supply	39.1	32.9	6.2	1907	0.33%	6.4%
Trading	44.4	2.5	41.9	998	4.20%	2.7%
Shipping	0	0	0	320	0.00%	10.4%
TOTAL	3630.1	320.7	3309.4	44555	7.43%	5.3%

Notes: Interest Costs are shown as a share of net sales.

Source: RBI Bulletin May 1990

**APPENDIX TABLE 4**  
**INFLATION RATES FOR SELECTED PRODUCTS**

	Wholesale Pr. Index			Change in Price (%)		Change in Price (%)		
	June91	Sept92	June93	June91- Sept92	June91- June93	increased by 25%	June91- Sept92	June91- June93
<b>ENGINEERING GOODS</b>								
Basic metals, alloys and metal pdts	229.1	257.4	266.7	12.35	16.41	15.44	20.52	
Basic metals and alloys	214.9	243.5	253.3	13.31	17.87	16.64	22.34	
Metal products	246.9	272.0	283.5	10.17	14.82	12.71	18.53	
Machinery and machine tools	197.2	227.5	232.3	15.37	17.80	19.21	22.25	
Transport equipment and parts	193.8	214.2	218.6	10.53	12.80	13.16	16.00	
<b>CHEMICALS AND ALLIED PRODUCTS</b>								
Chemicals and chemical products	157.6	184.8	202.3	17.26	28.36	21.57	35.45	
Basic heavy inorganic chemicals	210.1	250.4	259.8	19.18	23.66	23.98	29.57	
Basic heavy organic chemicals	117.4	126.9	129.0	8.09	9.88	10.11	12.35	
Dyestuffs and indigo	178.9	219.1	224.5	22.47	25.49	28.09	31.86	
Drugs and medicine	156.8	169.3	175.9	7.97	12.18	9.96	15.23	
Non-metallic mineral products	215.0	231.6	242.8	7.72	12.93	9.65	16.16	
<b>PLASTIC GOODS</b>								
Plastic products	188.3	194.4	194.2	3.24	3.13	4.05	3.92	
Other rubber and plastic pdts	163.3	196.8	199.1	20.51	21.92	25.64	27.40	
<b>FINISHED LEATHER AND LEATHER GOODS</b>								
Leather and leather products	240.1	223.5	232.5	-6.91	-3.17	-8.64	-3.96	
Sheep and goat skin	192.4	118.7	126.5	-38.31	-34.25	-47.88	-59.85	
Sole leather	251.1	253.1	264.7	0.80	5.42	1.00	6.77	
Footwear western type	283.8	315.3	323.8	11.10	14.09	13.87	17.62	
<b>SPORTS GOODS</b>								
Wood and wood products	159.3	287.1	345.1	80.23	116.64	100.28	125.35	
<b>AGRICULTURE AND PROCESSED FOOD</b>								
Food articles (primary)	227.4	275.0	274.8	20.93	20.84	26.17	26.06	
Fruits and vegetables	252.1	280.5	284.4	11.27	12.81	14.08	16.02	
Fish	241.1	267.9	291.5	11.12	20.90	13.89	26.13	
Tea	299.7	278.6	361.2	-7.04	20.52	-8.80	25.65	
Non-food articles	217.0	230.6	228.5	6.27	5.30	7.83	6.62	
Food products (manufactured)	199.6	223.0	243.8	11.72	22.14	14.65	27.68	
Packed tea	277.9	302.1	300.2	8.71	8.02	10.89	10.03	
<b>TEXTILES</b>								
Fibres	227.8	220.8	212.5	-3.07	-6.72	-3.84	-8.40	
Raw cotton	219.6	217.8	213.1	-0.82	-2.96	-1.02	-3.70	
Textiles	180.2	198.1	209.3	9.93	16.15	12.42	20.19	
Cotton textiles	189.1	212.5	222.4	12.37	17.61	15.47	22.01	
Cotton yarn	208.3	253.0	263.6	21.46	26.55	26.82	33.19	
<b>HANDICRAFTS AND CARPETS</b>								
Woollen yarn	200.9	229.6	255.4	14.29	27.13	17.86	33.91	
Brass sheets and strips	250.7	293.7	291.4	17.15	16.23	21.44	20.29	
<b>FUEL, POWER, LIGHT AND LUBRICANTS</b>								
	189.5	224.5	251.8	18.47	32.88	23.09	41.09	

Source: Derived from CMIE (1993, 1993a, 1992)

**APPENDIX TABLE 5**  
**VARIABLES COMMON ALL SECTORS**

	<u>Sept. 1990</u>	<u>June 1991</u>	<u>Sept. 1992</u>	<u>June 1993</u>
Exchange rate for exporters <sup>a</sup>	17.87	21.06	28.43 (35.0)	31.44 (49.3)
Exchange rate for importers <sup>b</sup>	17.87	21.06	30.12 (43.0)	31.44 (49.3)
World Price Index <sup>c</sup>	153.4	165.9	180.2 (8.6)	185.6 (11.9)
Interest Rate (%) <sup>d</sup>	7.5	7.5	15.0 (100.0)	13.0 (73.3)

**Notes:**

Figures in parentheses are percentage change over June 1991.

a. Rs./dollar, official rates until June 1991. The rate for September 1992 is weighted with 60% valued at the market rate, and 40% at the official rate. The June 1993 rate is the market price.

b. Rs./dollar, official rates until June 1991, market rates thereafter.

c. This is the Consumer Price Index for Developing Countries of Asia as given in the IMF's International Financial Statistics. The figure for June 1993 has been extrapolated from data available upto February 1993.

d. This is the interest rate on pre-shipment rupee export credit for a period upto 180 days.

## APPENDIX II

### INCLUSION OF IMPORT TARIFF-RELATED COSTS IN THE CEDP EXERCISE

In our simulation exercise, we have assumed that import costs for domestic and export sales are identical. In practice, duties have to be paid on imports imported for domestic production, whereas on export production such inputs are obtained duty-free (via advance license or duty drawback). Since tariff rates have come down over the three regimes (REP, dual exchange rate and unified exchange rate), one would expect a decline in costs for domestic production. However, the tariff reduction is mitigated by the fall in the value of the rupee. If we were to include the impact of tariffs on domestic costs, the re-worked equation (11) would be:

$$\frac{R_{id} - R_{od}}{R} < w(1+E_x)-1-rp-s+t_i \quad w_m (1+E_M) - t_o m \dots\dots(11a)$$

where  $t_i$  = average tariffs in the regime  $i$ ,  $t_o$  being normalized to 1.

If the average tariff in intermediate goods in the REP regime is 1, it is roughly 0.78 in the dual rate regime and 0.52 in the unified rate regime. The expression  $t_i w_m(1+E_M)-t_o m$  is equivalent to import tariff-related increase or decrease in cost of domestic production. If the expression is positive, it implies an increase in tariff-related domestic costs, and results in a corresponding increase in the RHS of (11a). This would favor EP over DP. On the other hand, if the expression is negative, it means a decline in import-tariff related domestic costs, which would reduce the RHS of (11a) and favor DP over EP.



In general, it is found that the expression is always positive in the REP to dual rate regime shift, irrespective of the value of  $m$ , and even if  $w=1$ . With  $m$  varying between 0.1 and 0.2, and  $w$  between 1 and 1.086, the expression (multiplied by 100) varies between 1.1 and 4.2. This will make little difference to the sign of CEDP in Table 1 in most cases - if CEDP is negative, it will become more negative; it is only in a handful of cases where CEDP is marginally positive (plastics, column 6, leather, column 14) that CEDP can become negative.

In the REP to unified rate regime, the calculated expression is always negative, meaning that import tariffs, which declined nearly 50%, have outweighed the effect of the fall in the rupee value. However, the value of the calculated expression, which varies between -1.3 and -4.4 for  $m$  varying between 0.1 and 0.2 and  $w$  between 1 and 1.119, is too small relative to the values of CEDP in the relevant columns in Table 1. It is only if CEDP is marginally negative in Table 1 as for carpets and engineering goods (b) in column 8, and engineering goods (a) in column 12, that the sign of CEDP can turn marginally positive.

Note, however, that this is a static analysis, and possibly admissible in the short period that we are considering. In the medium to long-run, however, there will be a decline not just in tariffs (and therefore in input prices) for domestic production, but also in output prices owing to pressure from imports. This factor will need to be taken into account before making longer-run projections from the CEDP analysis.

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