LABOUR PRODUCTIVITY

AND

UNIT LABOUR COST

PRODUCTIVITY AND UNIT LABOUR COST INDICES

Explanatory Notes

Introduction

This section relates to a new set of productivity and competitiveness indices. For each of the indices, separate series have been worked out for the Manufacturing Sector as follows:

(a) Manufacturing including sugar
(b) EOE Sector only

The indices cover all production units irrespective of size. It is recalled that in the previous issues of the digest, the indices published covered large enterprises only, that is those employing ten or more workers.

Labour productivity index

Labour productivity is conventionally measured as the ratio of real output to labour input. Although this measure relates output to the number of employees, it does not measure the specific contribution of labour as a single factor of production. Rather, it reflects the joint effects of many influences, including new technology, capital investment, capacity utilisation, energy use, and managerial skills, as well as the efforts of the workforce.

Labour productivity index shows the rate of change in output per person engaged.

$$\text{Labour Productivity Index} = \frac{\text{Production index}}{\text{Employment index}} \times 100$$

Capital productivity index

Capital productivity is the index of the ratio of real output to stock of fixed capital used in the production process. This index should be interpreted with care since partial measures can be very misleading if taken alone, as they include amongst other factors, the effects of the substitution of one resource for another, such as capital for labour.

The capital productivity index shows the rate of change in output per unit of capital.

$$\text{Capital Productivity Index} = \frac{\text{Production index}}{\text{Capital stock index}} \times 100$$

Multifactor productivity index (MFP index)

The limitation of partial productivity measures such as labour and capital productivity indices is that they attribute to one factor of production, changes in efficiency that are attributable to other factors including qualitative factors such as better management, improved quality of inputs through training and technology as well as higher quality products and economies of scale. A measure of growth in efficiency which takes account of changes in the most important factors; labour and capital is given by the **MFP** growth. MFP is calculated as the ratio of output to a weighted combination of labour and capital inputs.

$$\text{MFP index } [A(t)] = \frac{\text{Production index}}{\text{Multifactor input index}} \times 100$$

$$A(t) = \frac{Q(t)}{\{WL(t) \times L(t)\} + \{WK(t) \times K(t)\}} \times 100$$

WL(t) = Labour's input share in time t (ratio of compensation of employees to value added)

L(t) = Labour input index in time t

WK(t) = Capital share in time t (ratio of gross operating surplus to value added)

K(t) = Capital input index in time t

$$WL(t) + WK(t) = 1$$

Unit labour cost index (ULC)

Unit labour cost is the remuneration of labour to produce one unit of output. It is computed as the ratio of the labour cost index to an index of production. The index shows the rate of change in labour cost per unit of output.

$$\text{Unit labour cost index} = \frac{\text{Labour cost index}}{\text{Production index}} \times 100$$

or

$$= \frac{\text{Average compensation index}}{\text{Labour productivity index}} \times 100$$

Table 23:- Productivity, Labour cost and Unit labour cost indices, Manufacturing Sector including Sugar, 1987 - 2007

Year 2000 = 100

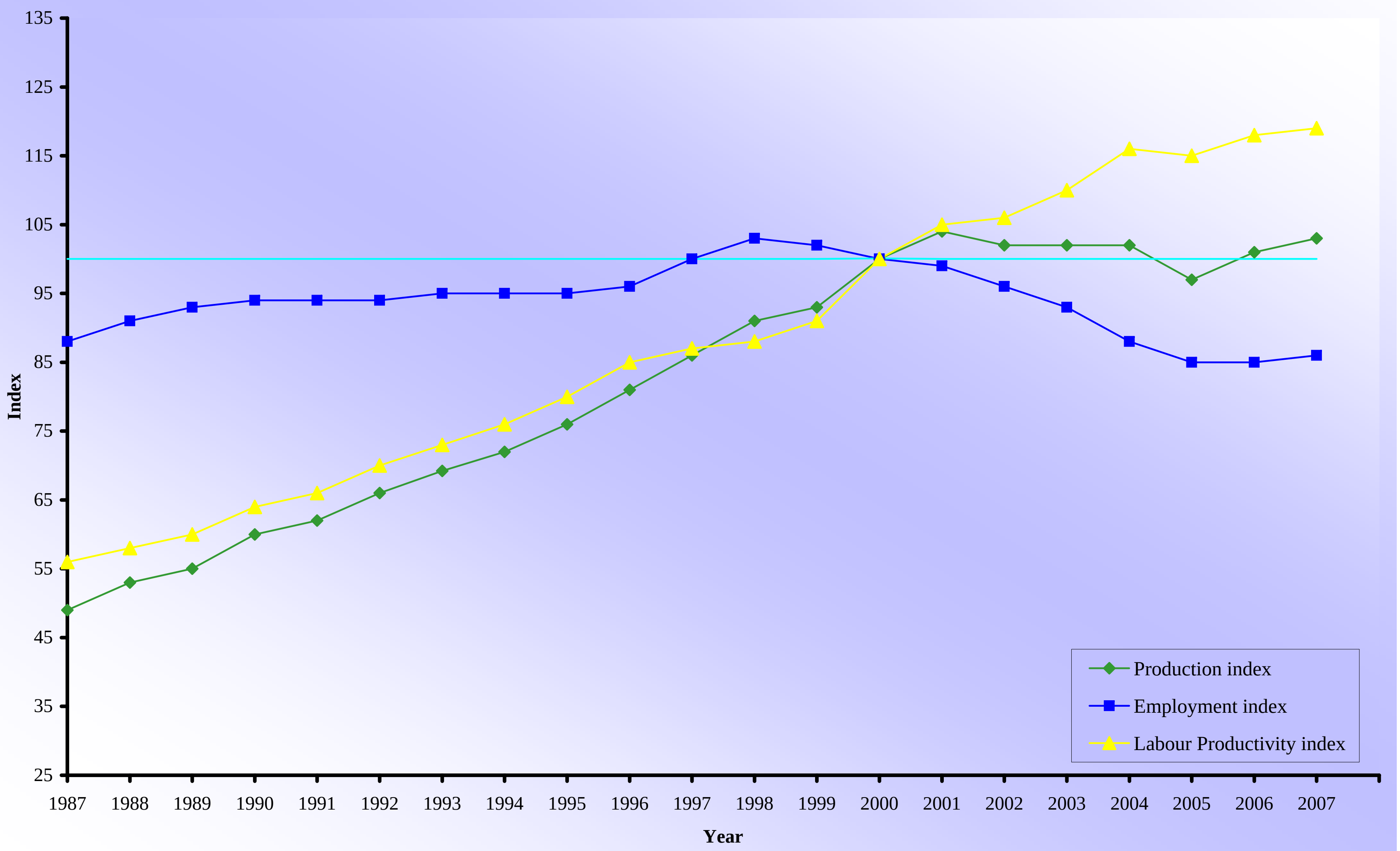
Year	Production index (A)	Employment index	Labour Productivity index	Capital Stock index	Capital Productivity index	Multi - factor productivity index	Labour cost index (B)	Unit labour cost index (B / A)
1987	49	88	56	54	91	64	20	41
1988	53	91	58	64	83	70	25	46
1989	55	93	60	73	76	68	29	52
1990	60	94	64	78	76	70	35	58
1991	62	94	66	83	75	71	41	67
1992	66	94	70	84	79	75	48	72
1993	69	95	73	86	80	77	51	74
1994	72	95	76	87	83	80	57	79
1995	76	95	80	85	90	85	63	83
1996	81	96	85	85	95	90	67	83
1997	86	100	87	85	101	94	73	85
1998	91	103	88	90	102	96	83	91
1999	93	102	91	95	97	95	92	99
2000	100	100	100	100	100	100	100	100
2001	104	99	105	104	101	103	108	103
2002	102	96	106	108	94	99	113	111
2003	102	93	110	110	93	99	117	115
2004	102	88	116	115	89	98	123	120
2005	97	85	115	119	81	92	127	131
2006	101	85	118	119	85	94	131	130
2007	103	86	119	124	83	93	149	144

Table 24:- Productivity, Labour cost and Unit labour cost indices, EOE Sector, 1987 - 2007

Year 2000 = 100

Year	Production index (A)	Employment index	Labour Productivity index	Capital Stock index	Capital Productivity index	Multi - factor productivity index	Labour cost index (B)	Unit labour cost index (B / A)
1987	45	96	47	55	81	62	20	45
1988	50	100	50	72	70	60	25	50
1989	53	99	54	83	64	59	28	53
1990	57	99	57	87	66	63	33	59
1991	60	100	60	86	69	66	39	66
1992	63	98	65	83	76	73	47	74
1993	67	94	71	83	81	78	50	75
1994	70	91	77	82	85	83	55	79
1995	73	89	82	80	92	89	60	81
1996	79	89	88	79	100	94	64	82
1997	83	94	89	83	101	94	68	82
1998	89	99	90	88	101	96	79	89
1999	94	100	94	95	99	97	93	99
2000	100	100	100	100	100	100	100	100
2001	104	101	103	104	101	102	110	105
2002	98	95	103	103	95	99	113	115
2003	92	89	104	101	91	98	113	123
2004	86	80	108	111	78	89	109	127
2005	75	73	103	116	65	81	108	144
2006	79	72	109	119	66	79	111	141
2007	85	74	115	139	61	76	126	148

FIG III - LABOUR PRODUCTIVITY INDEX (1987 - 2007)
MANUFACTUTING SECTOR INCLUDING SUGAR
(Year 2000 = 100)



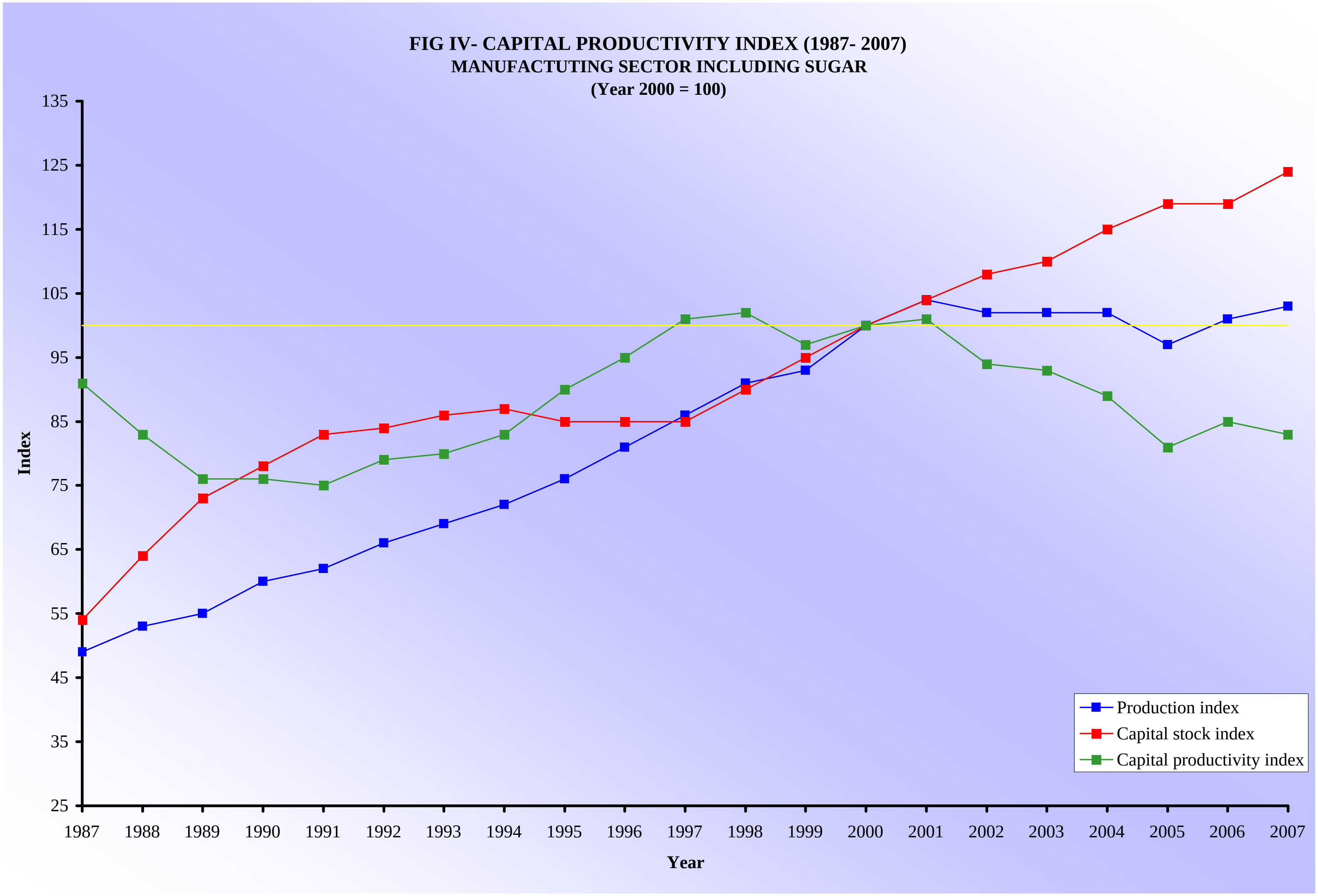


FIG IV- CAPITAL PRODUCTIVITY INDEX (1987- 2007)
MANUFACTUTING SECTOR INCLUDING SUGAR
(Year 2000 = 100)
Index
Year
Production index
Capital stock index
Capital productivity index

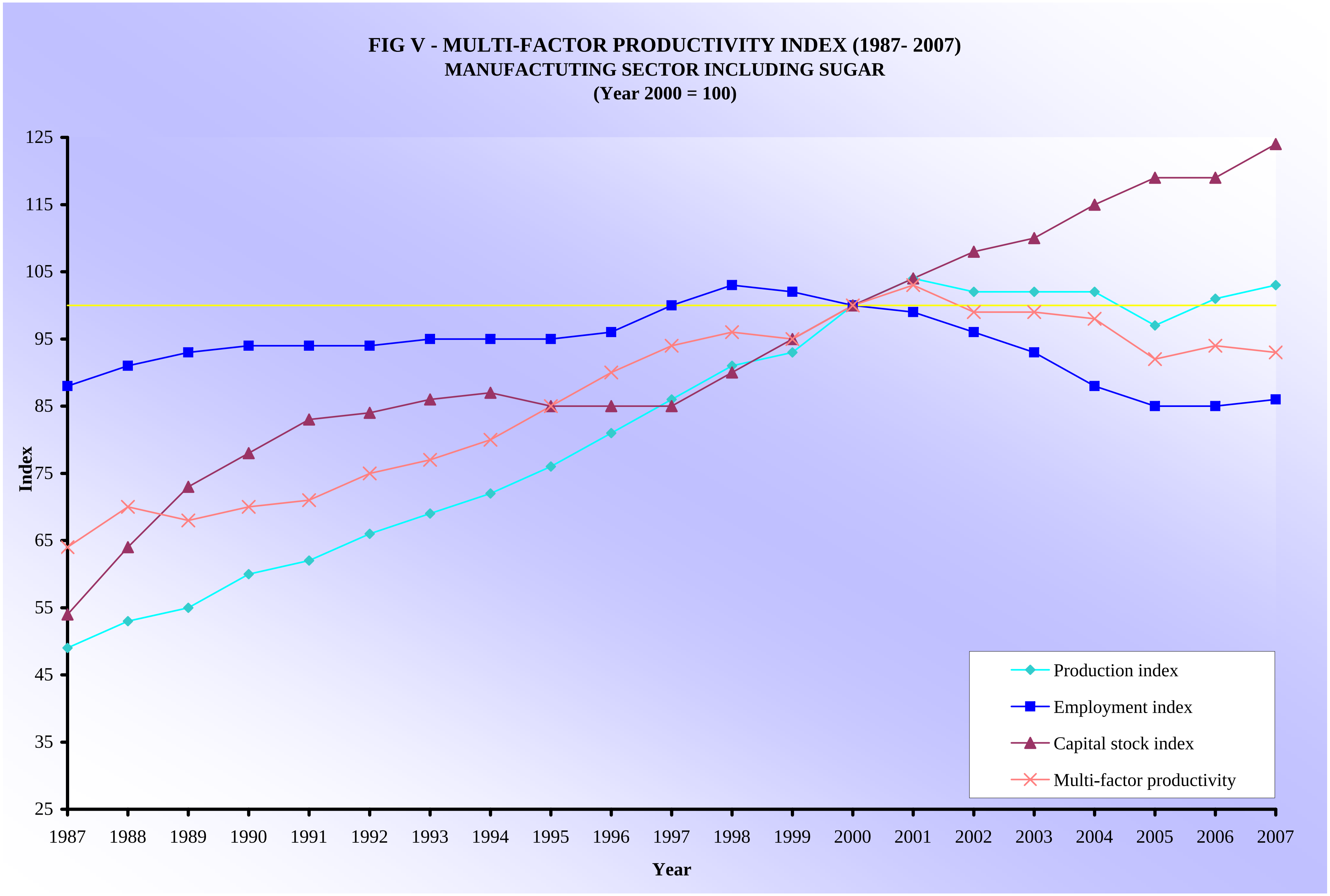


FIG V - MULTI-FACTOR PRODUCTIVITY INDEX (1987- 2007)
MANUFACTUTING SECTOR INCLUDING SUGAR
(Year 2000 = 100)
Index
Year
125
115
105
95
85
75
65
55
45
35
25
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Production index
Employment index
Capital stock index
Multi-factor productivity

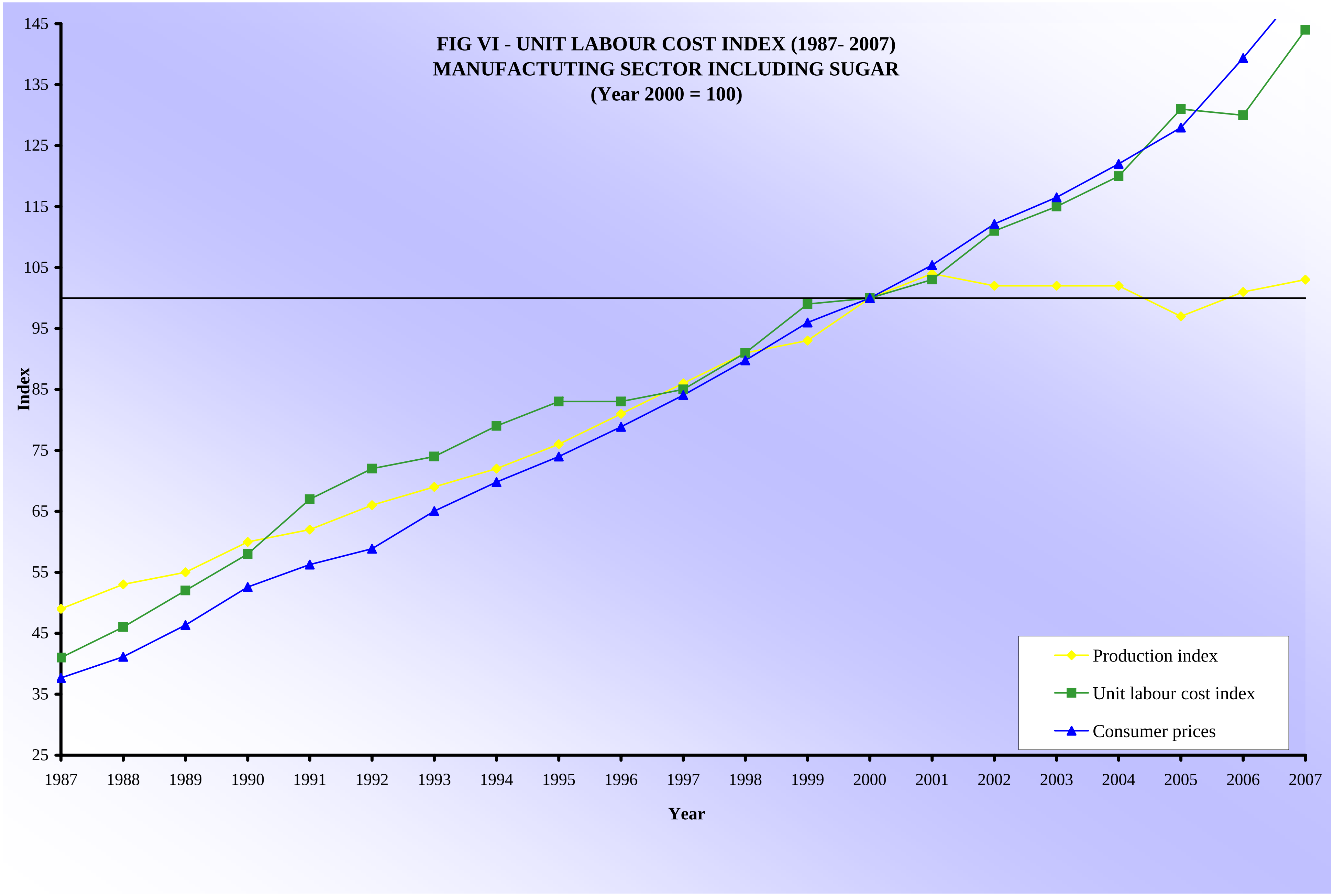


FIG VI - UNIT LABOUR COST INDEX (1987- 2007)
MANUFACTUTING SECTOR INCLUDING SUGAR
(Year 2000 = 100)
Index
145
135
125
115
105
95
85
75
65
55
45
35
25
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
Production index
Unit labour cost index
Consumer prices

FIG VII - LABOUR PRODUCTIVITY INDEX (1987 - 2007)
EOE SECTOR INCLUDING SUGAR
(Year 2000 = 100)

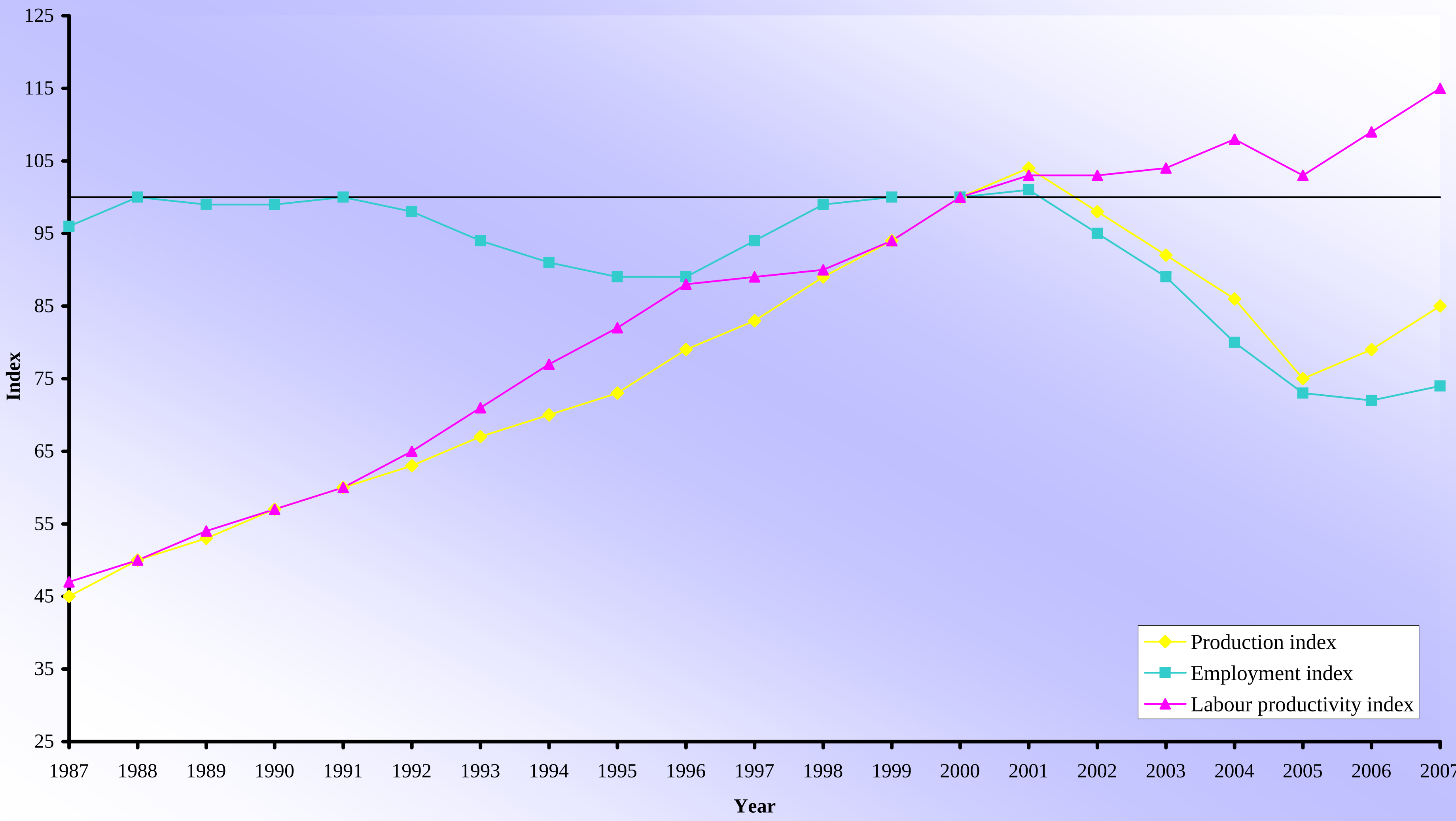
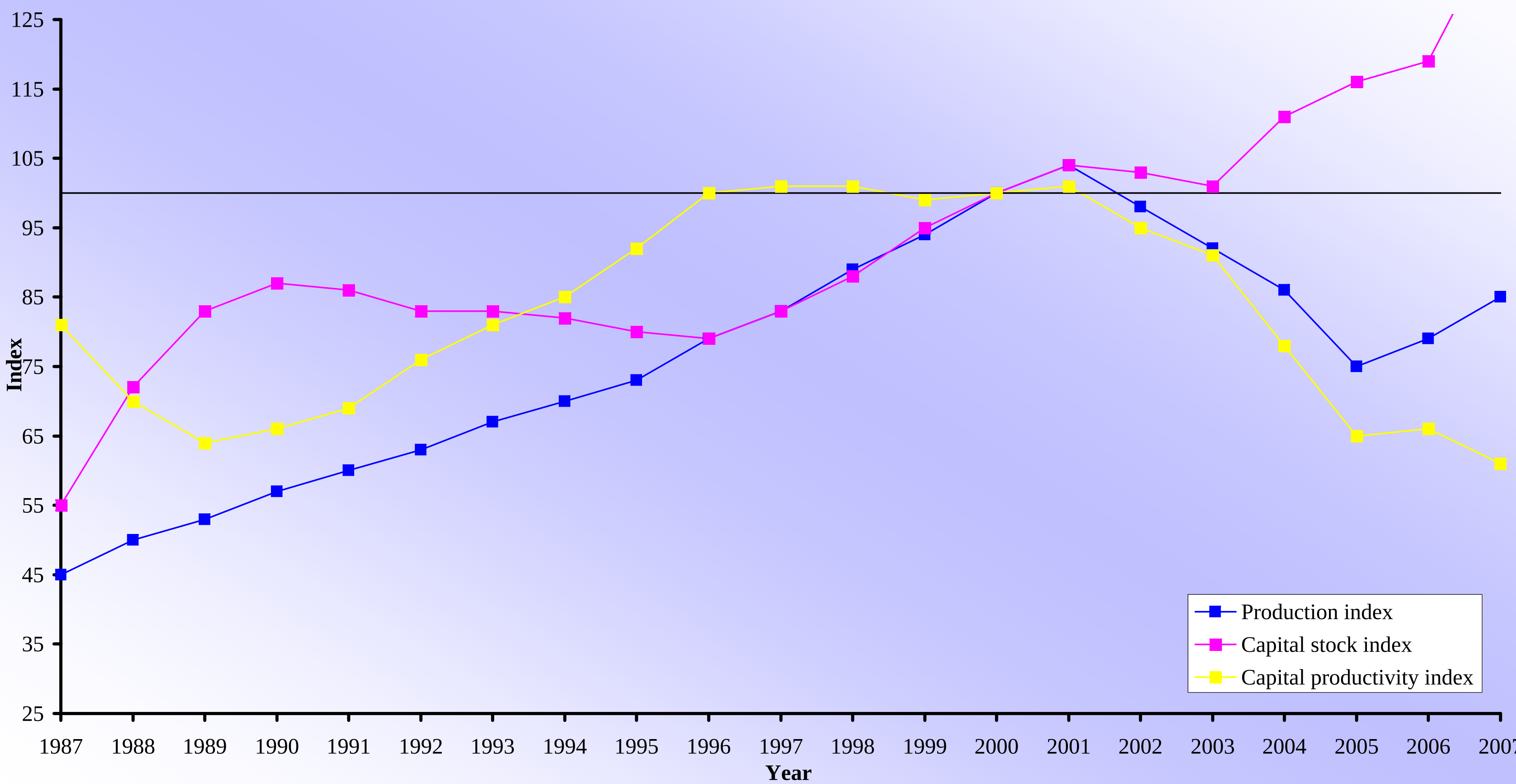


FIG VIII - CAPITAL PRODUCTIVITY INDEX (1987 - 2007)
EOE SECTOR INCLUDING SUGAR
(Year 2000 = 100)



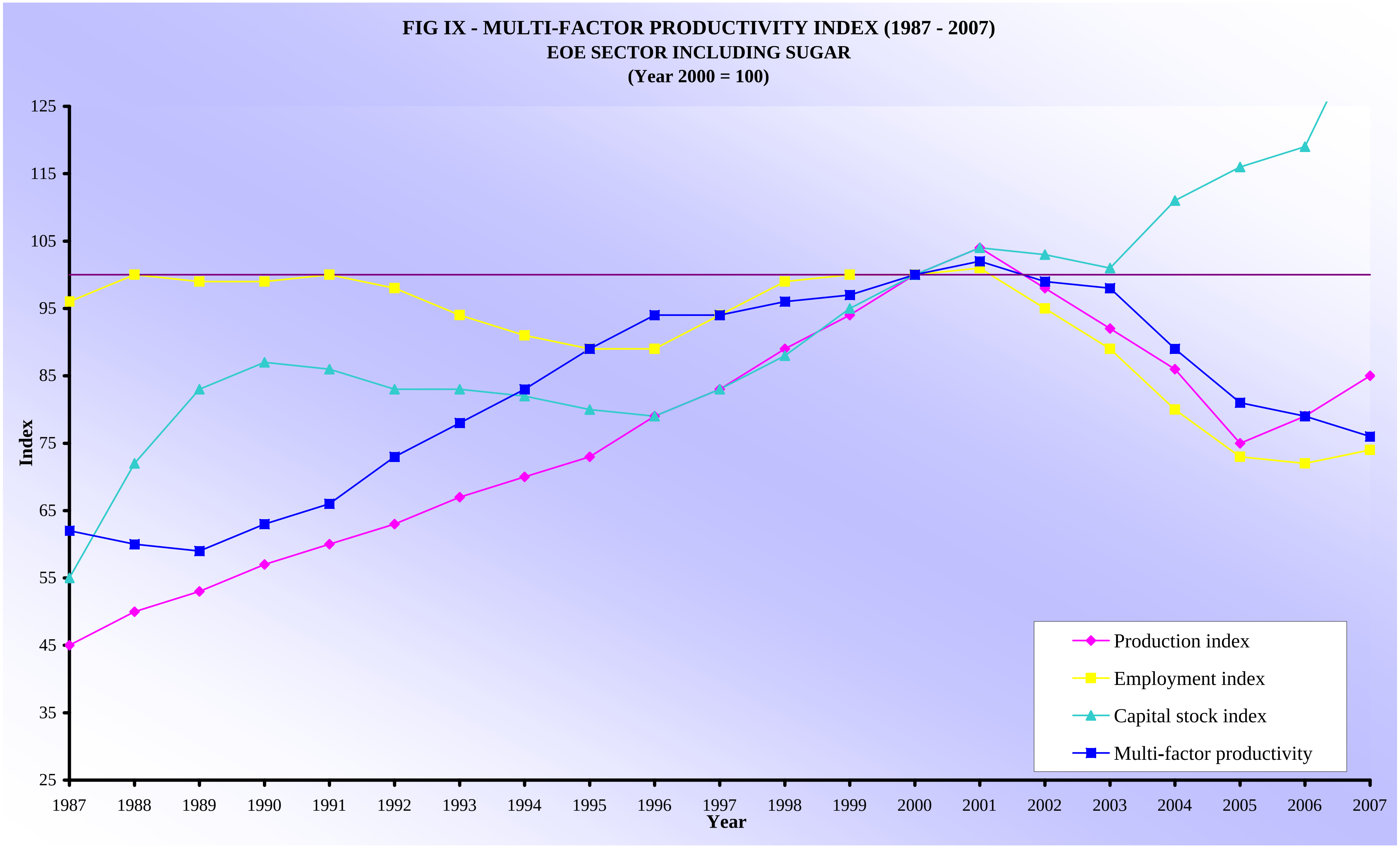


FIG IX - MULTI-FACTOR PRODUCTIVITY INDEX (1987 - 2007)
EOE SECTOR INCLUDING SUGAR
(Year 2000 = 100)
Index
125
115
105
95
85
75
65
55
45
35
25
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
Production index
Employment index
Capital stock index
Multi-factor productivity

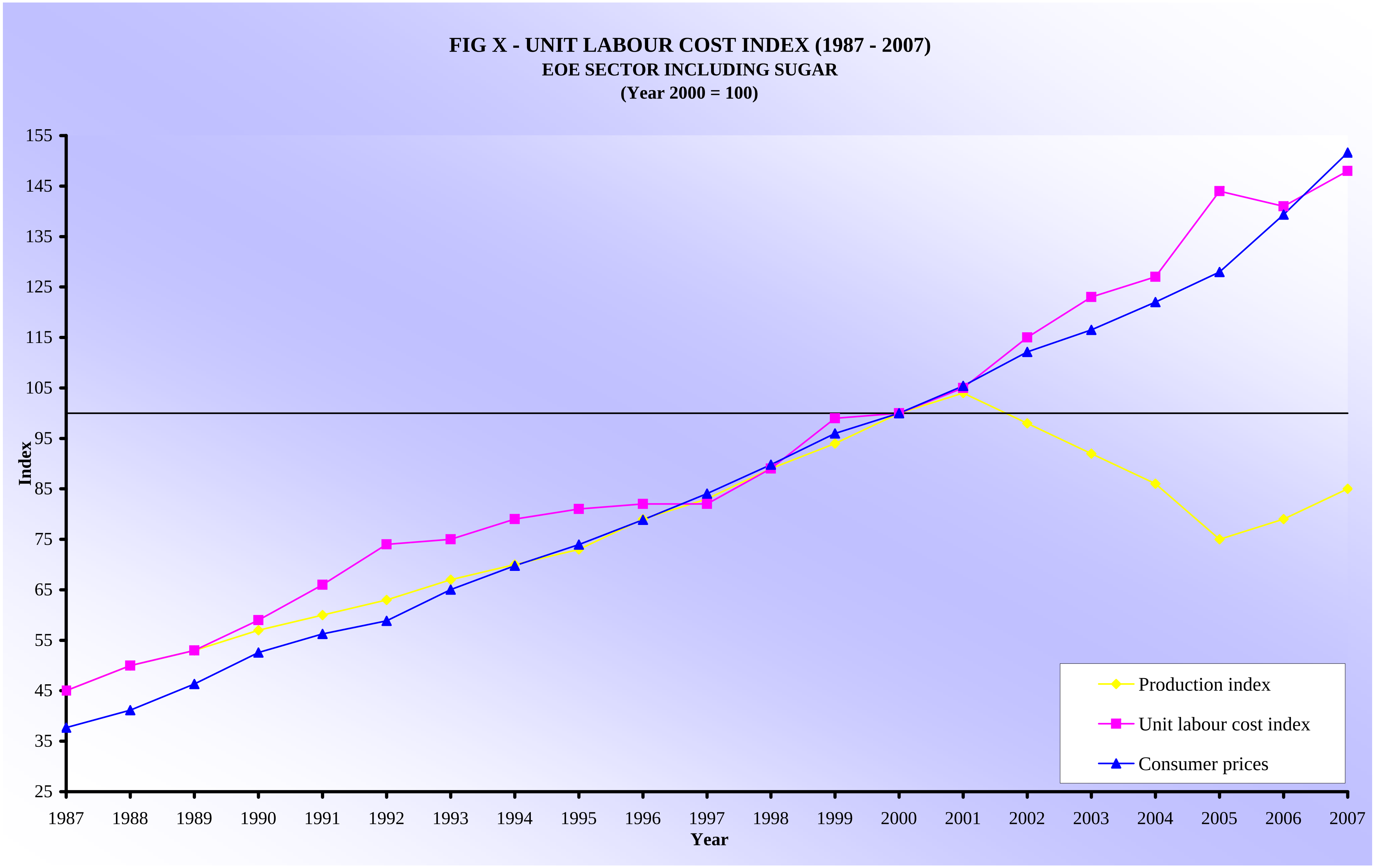


FIG X - UNIT LABOUR COST INDEX (1987 - 2007)
EOE SECTOR INCLUDING SUGAR
(Year 2000 = 100)
Index
155
145
135
125
115
105
95
85
75
65
55
45
35
25
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
Production index
Unit labour cost index
Consumer prices