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STUDY OF THE SITUATION OF THE RAILWAYS IN MEMBER COUNTRIES

Addendum 4

Transmitted by the International Union of Railways (UIC)

# RAIL FREIGHT TRAFFIC IN THE EU AND EFTA COUNTRIES (1950 – 2000)

This paper presents a series of graphs and tables designed to explore the pattern of rail freight traffic in the 17 countries now in the EU & EFTA, for the period from just after World War II to the present, in more detail than has been done in previous papers.

## Conclusions

The principle conclusions which may be drawn from these graphs and tables are as follows:

1. From the post-war period to the present, total rail freight traffic in the EU & EFTA in Tkms has increased, and traffic has increased in every country except Great Britain. In fact the total traffic for the EU & EFTA in 2000 is higher than at any other time, apart from the peaks in 1970 and 1974 (which appear to be exceptional).

2. It has often been said that the railways lost a significant amount of the "heavy" traffics (coal, iron and steel) due to the closures of mines and steelworks in the 1980's. It has not so far been possible to identify such a loss in the traffic figures (Tkms), so that if there was a loss of this kind it would appear that it must have been immediately offset by the remaining traffic travelling longer distances or an increase of traffic in other sectors.

3. The average distance travelled per tonne has increased over the period since the War.

**COMMENTARY AND NOTES ON THE GRAPHS AND TABLES**

**Graph 1** shows total rail traffic for the 17 countries now in the EU & EFTA in Tkms. This is a revised version of a graph that has been produced previously, and it now incorporates two key changes.

1. Previously the graph has been produced showing EU traffic only, but it now seems more meaningful to include Switzerland and Norway (however because of their relative size their inclusion does not significantly alter the graph).

2. The second change is more significant and is the exclusion of the former East Germany[1]. Whilst the inclusion of the country might have been correct in geographical terms in view of the re-unification of Germany, it had become obvious that, since the traffic patterns in East Germany were radically different to those of the other countries in the EU, the inclusion of the East German figures was distorting the figures and hindering interpretation of the graph. In particular the enormous East German traffic figures before the fall of the Berlin wall in November 1989 greatly inflated the graph for the whole period until then. By contrast the massive fall in East German traffic between 1989 and 1993 (58 billion Tkm in 1989 to 12.5 billion Tkm in 1993 - paralleling falls in other Central and Eastern countries) made it look as though there had been a heavy loss of traffic in all the countries of Western Europe, which was far from being the case.

The result over the whole of the period from 1950 to 2000, allowing for the three peaks in 1970, 1974, and 1979, and a low in 1994, is a flatter graph than before, showing a rising trend over the whole of the period. The figure of 248.0 billion Tkms in 2000 is then higher than at any other time, with the exception of the peaks in 1970 and 1974. The three peaks will be covered later in this paper, and the low in 1994 remains to be investigated.

**Graph 2** has been produced to compare the EU & EFTA total with the figures for the 4 countries with the largest traffics: West Germany, France, Great Britain, and Italy, to see whether the traffic in the individual countries follows the same pattern as the EU & EFTA total. From the graph as it stands it is already evident that it does not, but because of the problem of scale caused by showing a very large figure and some relatively small figures on the same graph, a further graph was produced showing only the 4 countries.

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[1] Following the re-unification of Germany the traffic figure that has been made available from 1994 on covers the whole of Germany. An amount has therefore been deducted from this figure in order to exclude traffic in the former East Germany. So far this has had to be a very crudely estimated figure - in fact no better than an amount close to the East German figure in 1993. A more accurate figure will be used if it becomes available.

**Graph 3** then shows West Germany, France, Great Britain, and Italy using a clearer scale. This graph indicates that it is West Germany and France that are mainly responsible for the "peaky" nature of the EU & EFTA graph. By comparison Great Britain shows a steady fall in traffic for almost the whole of the period, until an up-turn in the last few years (which is being attributed to the changeover from indigenous coal to imported coal to supply power stations, with the movements from the ports taking place over longer distances). Italy, by contrast again, shows a steady even rise throughout.

**Graph 4** continues the process for the 4 next largest countries: Sweden, Austria, Spain, and Switzerland, all, like Italy, showing a fairly steady even rise with only small fluctuations around the three peak years seen on the graph for the EU and EFTA.

**The claimed loss of "heavy" traffics**

So far the traffic has been examined in terms of Tkms, which is considered to be the correct guide to rail freight business since it is the basis for the freight revenues. But it has often been suggested that the railways lost a lot of their freight traffic with the reductions in the heavy industries: coal, and iron and steel, in the 1980's. If so this loss should show up in the graphs after 1981, the time when the "heavy" industries began to close. However the 4 graphs given so far show little sign of a particularly notable fall in traffic following this year. To explore this further additional graphs were produced to try to test a theory that, as the "heavy" traffics had been lost, the loss had immediately been offset by the remaining traffic travelling over longer distances. If this were the case then it would be expected that the figure for traffic in Tonnes would decrease, and this would be matched by an increase in the Tkm figures.

**Graph 5** then gives the EU & EFTA picture in both Tkms and Tonnes. This shows both figures rising up to the peak in 1974 followed by a sharp fall in 1975. After this the Tonnes figure takes a downward trend whilst the Tkms figure rises again. So it would appear that there has been some exchange of tonnes for distance, but from a much earlier date. (N.B. - the inclusion of both Tkms and Tonnes on the same graph is not very good practice because the values and the scales are not at all the same, and it is done only for the sake of illustration.)

**Graph 6** then gives the picture for the 4 largest traffic countries in Tonnes only (and therefore corresponds to the earlier Graph 3).

**Graphs 7 - 10** were then produced to examine the traffic in both Tkms and Tonnes in the four largest countries individually (West Germany, France, Great Britain, and Italy).

They are followed by **Graph 11** which aggregates the figures for the remaining 13 countries.

**The three peaks**

Reference was made above to the three peaks which appear in Graph 1 which shows the total traffic in Tkms for EU & EFTA. In previous papers it has been suggested that the peaks which occurred in 1974 and 1979, and possible also in some way the earlier one in 1970, were related to the oil crises which occurred around these years. It can be seen from the individual country graphs that the peaks were a particular feature in West Germany and France, and only appeared to a much lesser extent (or even not at all) in the other countries.

In an attempt to explore this suggestion further the price of oil for the period 1969 - 2000 (the period for which figures were available) was plotted alongside the traffic graph, and the result is shown in **Graph 12**. It will be seen that there is some correlation between the two lines, but not a particularly direct one, and future efforts will be directed at trying to find what other factors were influential.

**The beginning and the end of the period compared - a summary view**

Whilst it is very interesting to see the fluctuations in traffic over such a long period of time (or in some cases the rather surprising absence of fluctuations) it will also be useful to directly compare the differences between the beginning and the end of the period. With this in mind two tables have been drawn up which compare the traffic for each country in both Tkms and Tonnes, and also indicate the average distance travelled.

**Table 1** compares the figures for 2000 with those of 1950, and shows that:

- total traffic in the EU & EFTA in Tkms increased by 84.5 billion, and traffic in Tkms is higher in every country except Great Britain,

- in 1950 Great Britain had by far the largest number of Tonnes loaded on rail (285.9 million) and had traffic close to that of both West Germany and France in Tkms (36.2 billion),

- over the period the number of Tonnes loaded on rail in the EU & EFTA dropped, as it did in 4 of the countries (very notably Great Britain) but it also increased in the other 13 countries (notably Italy, Austria, and Switzerland),

- the average distance travelled per tonne increased in all countries, with large increases in W Germany, France, Sweden, Spain, and Denmark. (The average distance is based on total traffic and does not make a distinction between national and international traffics, an aspect which remains to be examined.)

**Table 2** compares the figures for 2000 with those of 1960, and is given in case it is felt that 1950 was still too soon after the War to act as a reference. The table does not show a radically different overall pattern however. By 1960, traffic in Tkms and Tonnes in France and West Germany had increased enormously, putting the figures for those two countries well ahead of all the others. By the same year the traffic in Great Britain in Tkms had already reduced significantly. In addition to Great Britain, traffic in France in Tkms is also slightly down in 2000 by comparison with 1960.

* * *

**Table 1**

**AIL FREIGHT TRAFFIC IN THE EU & EFTA (EXC. E. GERMANY) IN TKMS AND TONNES**
**2000 COMPARED WITH 1950**

| Country | Railway | 1950 | | | 2000 | | | 2000 c/w 1950 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Tkms billions* | Tonnes millions | Av. journey kms | Tkms billions | Tonnes millions | Av. journey kms | Tkms billions +/(-) | Tonnes millions +/(-) | Av. kms +/(-) |
| West Germany* | DB | 39.7 | 231.0 | 172 | 64.8 | 207.3 | 313 | 25.1 | (23.7) | 141 |
| France | SNCF | 38.9 | 151.7 | 256 | 55.4 | 141.9 | 391 | 16.5 | (9.8) | 134 |
| Italy | FS | 10.1 | 36.7 | 276 | 22.8 | 79.8 | 286 | 12.7 | 43.1 | 11 |
| Great Britain | BR (EWS) | 36.2 | 285.9 | 127 | 18.4 | 102.9 | 179 | (17.8) | (183.0) | 52 |
| Sweden | SJ | 8.1 | 36.2 | 224 | 17.9 | 50.1 | 358 | 9.8 | 13.9 | 134 |
| Austria | ÖBB | 5.7 | 36.6 | 156 | 16.3 | 80.9 | 202 | 10.6 | 44.3 | 46 |
| Spain | RENFE | 6.8 | 24.6 | 277 | 11.5 | 25.3 | 456 | 4.7 | 0.7 | 180 |
| Switzerland | CFF+BLS | 2.2 | 20.2 | 109 | 10.4 | 60.5 | 173 | 8.2 | 40.3 | 64 |
| Finland | VR | 3.4 | 15.8 | 215 | 10.1 | 40.5 | 250 | 6.7 | 24.7 | 34 |
| Belgium | SNCB | 5.5 | 61.5 | 89 | 7.7 | 61.3 | 125 | 2.2 | (0.2) | 36 |
| Netherlands | NS | 3.0 | 21.2 | 142 | 3.8 | 25.4 | 150 | 0.8 | 4.2 | 9 |
| Norway | NSB | 1.4 | 12.8 | 109 | 2.9 | 18.7 | 157 | 1.5 | 5.9 | 48 |
| Portugal | CP | 0.5 | 3.3 | 152 | 2.2 | 9.0 | 243 | 1.7 | 5.7 | 91 |
| Denmark | DSB | 1.1 | 7.0 | 157 | 2.1 | 7.8 | 267 | 1.0 | 0.8 | 110 |
| Luxembourg | CFL | 0.4 | 12.8 | 31 | 0.6 | 17.6 | 35 | 0.2 | 4.8 | 3 |
| Eire | CIE | 0.4 | 2.7 | 147 | 0.5 | 2.9 | 181 | 0.1 | 0.2 | 35 |
| Greece | CH | 0.1 | 0.9 | 116 | 0.3 | 2.4 | 137 | 0.2 | 1.5 | 20 |
| TOTAL | | 163.5 | 960.8 | 170 | 248.0 | 934.3 | 265 | 84.5 | (26.6) | 95 |

* American billion, i.e. 1000 million (Fr. milliards).

** The Tkm and Tonne figures for the united Germany for 2000 have been reduced by 12 billion and 80.0 million respectively to give figures more comparable with the West German figure in 1950.

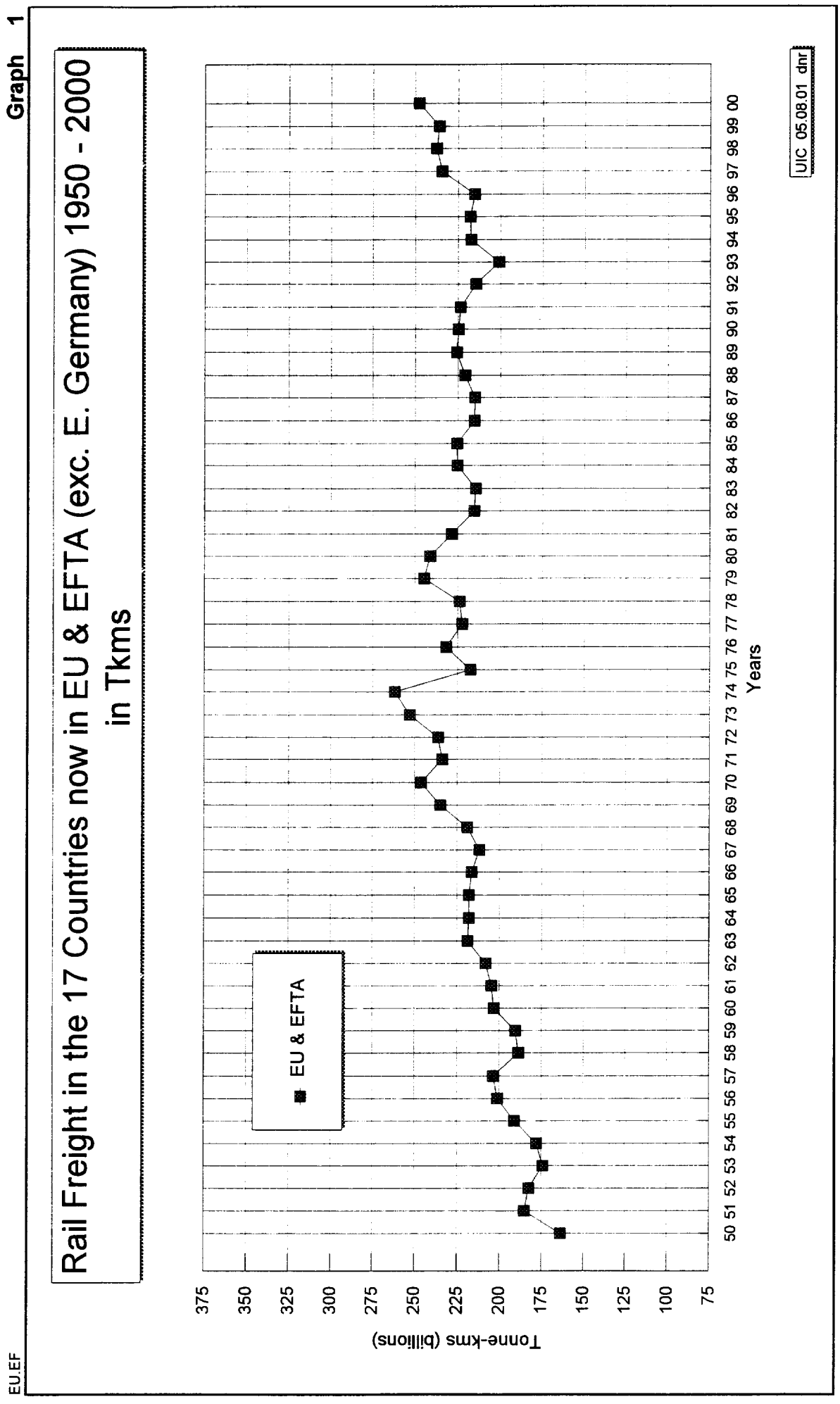
**Table 2**

**RAIL FREIGHT TRAFFIC IN THE EU & EFTA (EXC. E. GERMANY) IN TKMS AND TONNES 2000 COMPARED WITH 1960**

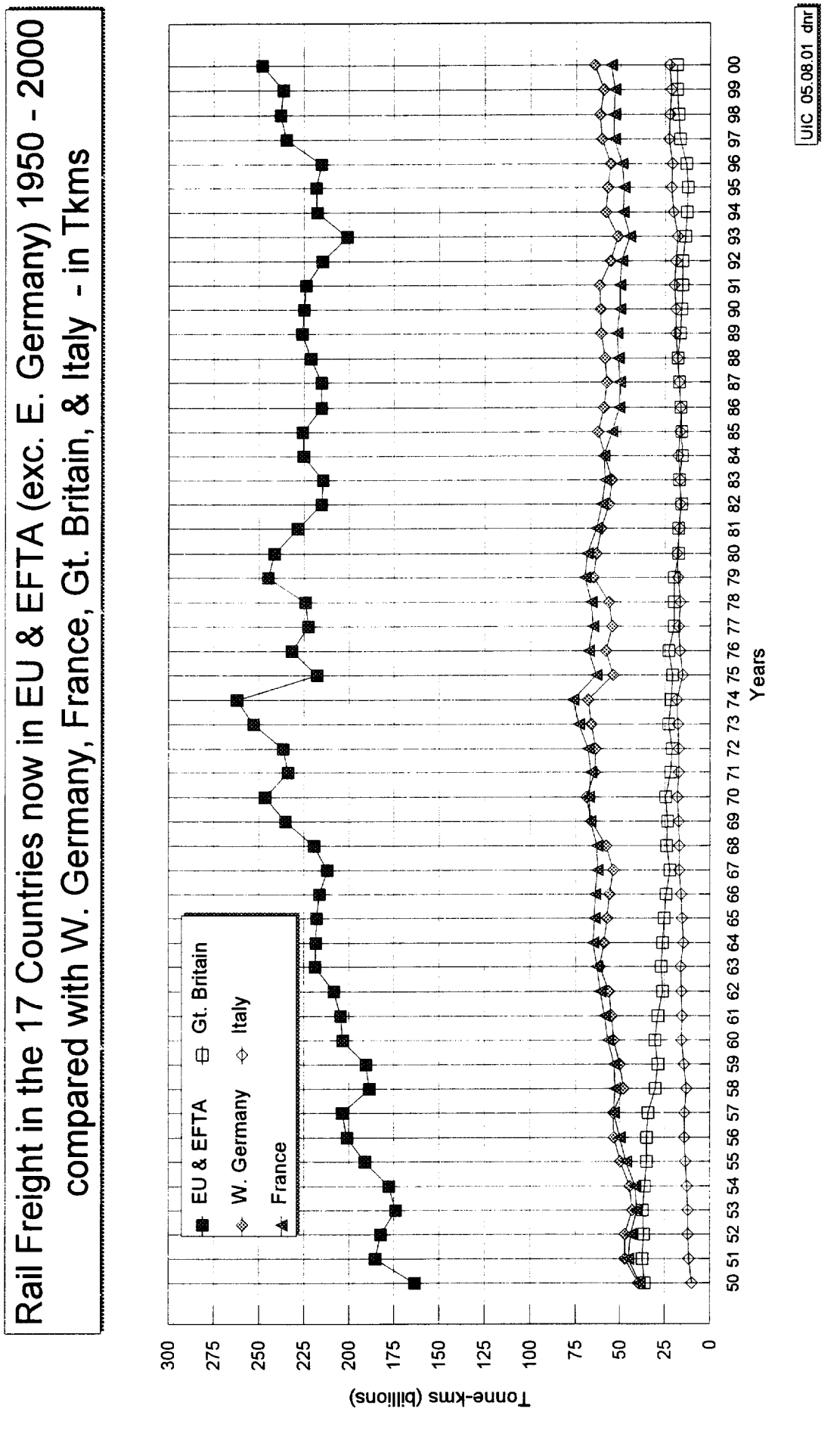
| Country | Railway | 1960 | | | 2000 | | | 2000 c/w 1960 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Tkms billions | Tonnes millions | Av. journey kms | Tkms billions | Tonnes millions | Av. journey kms | Tkms billions +/(-) | Tonnes millions +/(-) | Av. kms +/(-) |
| West Germany** | DB | 50.1 | 304.3 | 165 | 64.8 | 207.3 | 313 | 14.7 | (97.0) | 148 |
| France | SNCF | 56.9 | 226.7 | 251 | 55.4 | 141.9 | 391 | (1.5) | (84.8) | 140 |
| Italy | FS | 15.7 | 55.8 | 281 | 22.8 | 79.8 | 286 | 7.1 | 24.0 | 5 |
| Great Britain | BR (EWS) | 30.5 | 252.5 | 121 | 18.4 | 102.9 | 179 | (12.1) | (149.6) | 58 |
| Sweden | SJ | 8.7 | 41.5 | 210 | 17.9 | 50.1 | 358 | 9.2 | 8.6 | 148 |
| Austria | ÖBB | 7.9 | 46.0 | 172 | 16.3 | 80.9 | 202 | 8.4 | 34.8 | 30 |
| Spain | RENFE | 5.1 | 25.5 | 200 | 11.5 | 25.3 | 456 | 6.4 | (0.2) | 256 |
| Switzerland | CFF+BLS | 4.2 | 33.3 | 126 | 10.4 | 60.5 | 173 | 6.2 | 27.1 | 47 |
| Finland | VR | 4.9 | 19.0 | 257 | 10.1 | 40.5 | 250 | 5.2 | 21.5 | (8) |
| Belgium | SNCB | 6.4 | 61.4 | 104 | 7.7 | 61.3 | 125 | 1.3 | (0.1) | 21 |
| Netherlands | NS | 3.4 | 26.4 | 129 | 3.8 | 25.4 | 150 | 0.4 | (1.0) | 22 |
| Norway | NSB | 1.4 | 16.5 | 85 | 2.9 | 18.7 | 157 | 1.5 | 2.2 | 72 |
| Portugal | CP | 0.8 | 3.7 | 216 | 2.2 | 9.0 | 243 | 1.4 | 5.3 | 26 |
| Denmark | DSB | 1.4 | 6.2 | 226 | 2.1 | 7.8 | 267 | 0.7 | 1.6 | 41 |
| Luxembourg | CFL | 0.6 | 17.4 | 34 | 0.6 | 17.6 | 35 | 0.0 | 0.2 | 0 |
| Eire | CIE | 0.4 | 2.7 | 147 | 0.5 | 2.9 | 181 | 0.1 | 0.2 | 35 |
| Greece | CH | 0.3 | 1.8 | 169 | 0.3 | 2.4 | 137 | 0.0 | 0.6 | (33) |
| TOTAL | | 198.7 | 1,140.9 | 174 | 248.0 | 934.3 | 265 | 49.3 | (206.6) | 91 |

* American billion, i.e. 1000 million (Fr. milliards).

** The Tkm and Tonne figures for the united Germany for 2000 have been reduced by 12 billion and 80.0 million respectively to give figures more comparable with the West German figure in 1960.

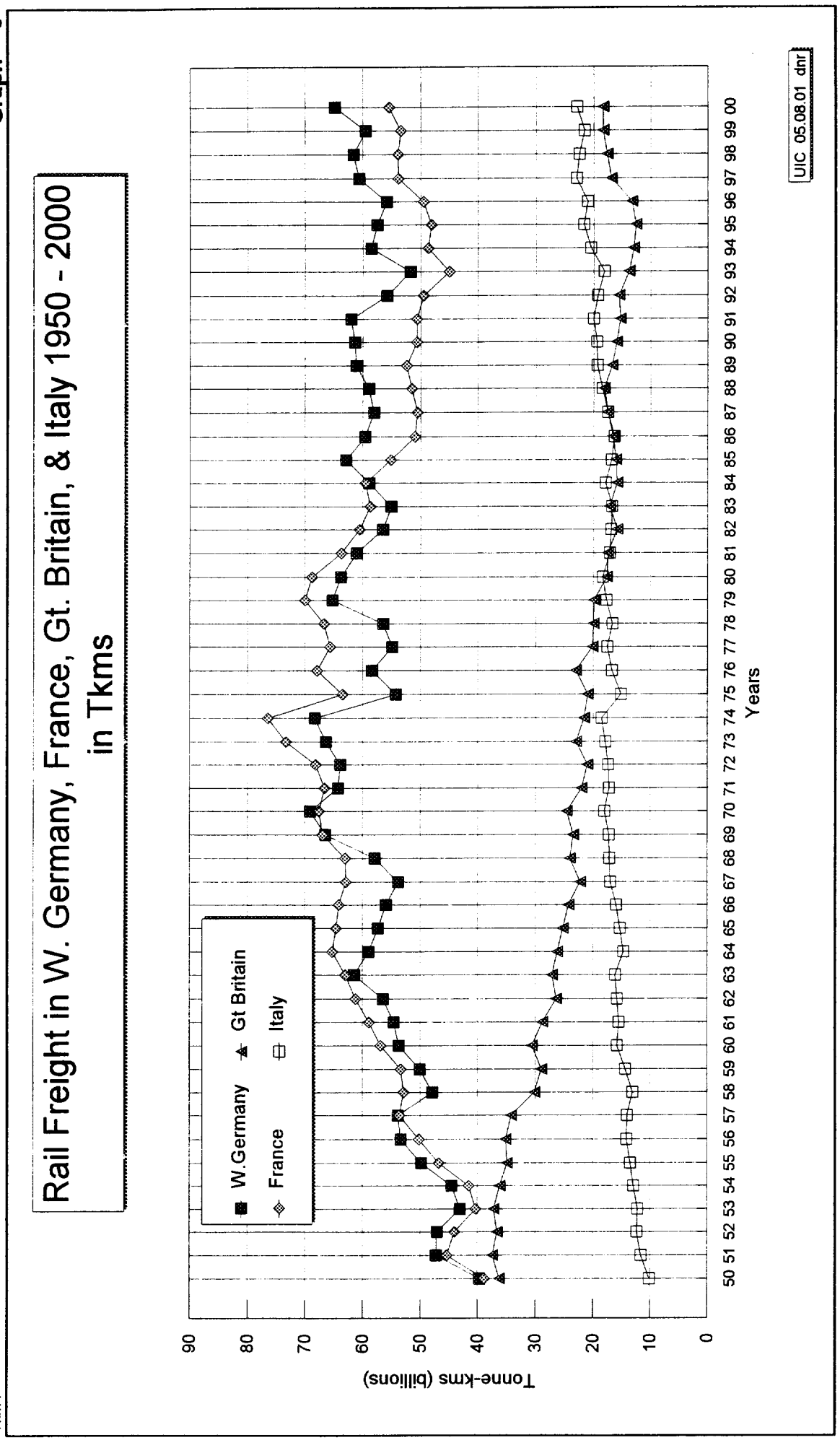

Graph 1
EU.EF
Rail Freight in the 17 Countries now in EU & EFTA (exc. E. Germany) 1950 - 2000
in Tkms
EU & EFTA
Tonne-kms (billions)
375
350
325
300
275
250
225
200
175
150
125
100
75
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00
Years
UIC 05.08.01 dnr

Graph 2

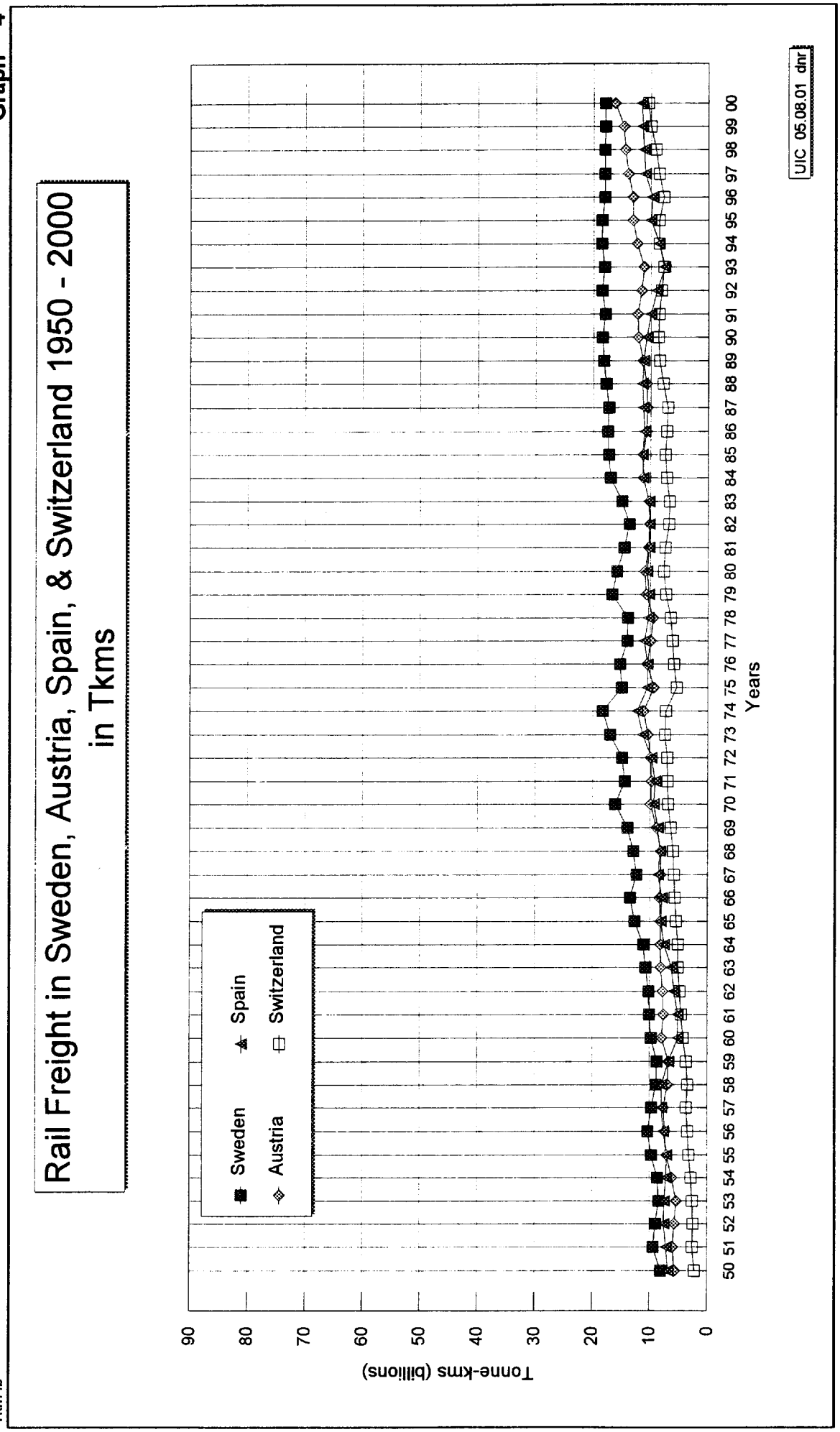



EU.EFcw4

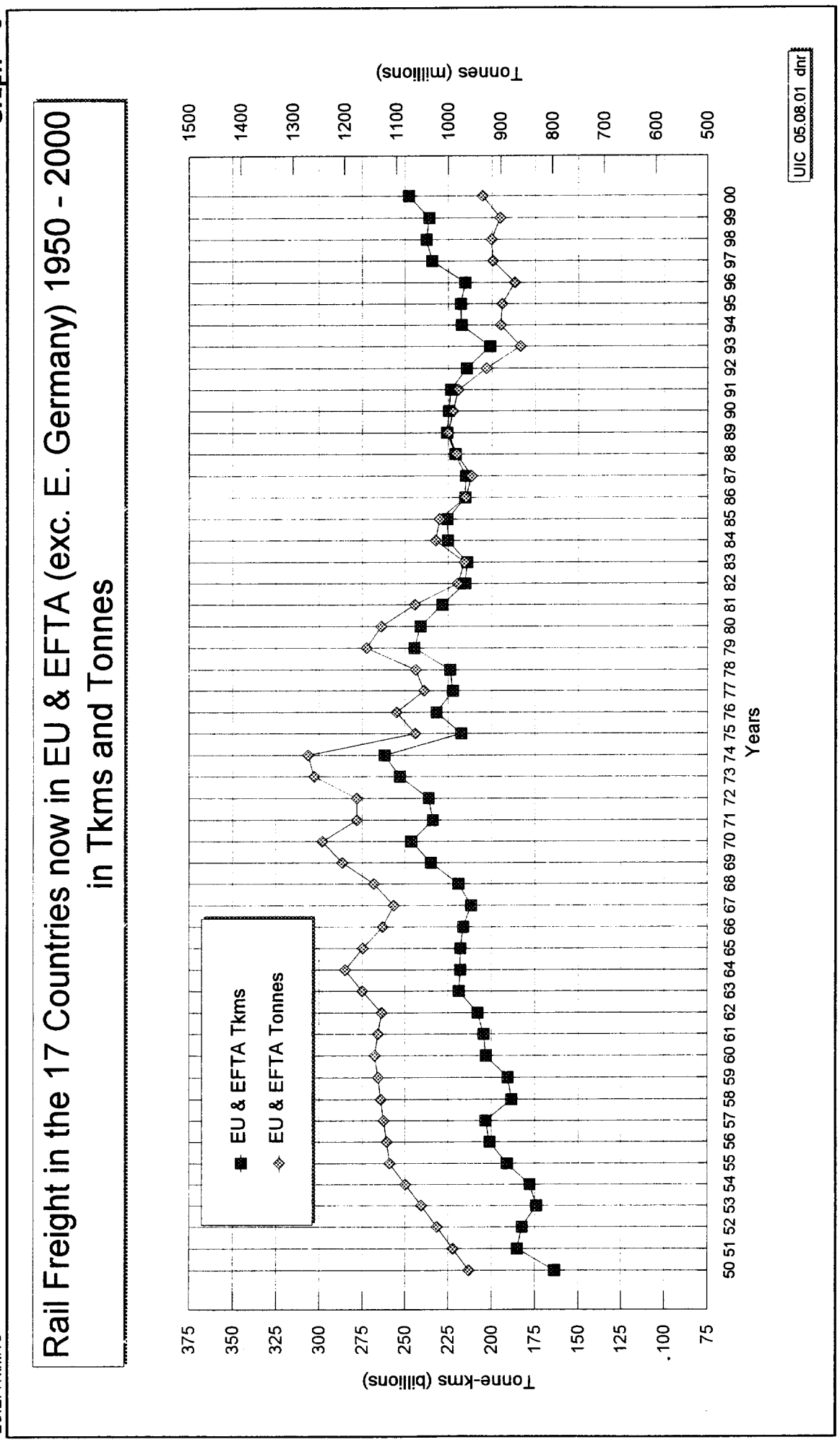
Graph 3


Rail Freight in W. Germany, France, Gt. Britain, & Italy 1950 - 2000
in Tkms
W.Germany
Gt Britain
France
Italy
Tonne-kms (billions)
0
10
20
30
40
50
60
70
80
90
Years
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00
UIC 05.08.01 dnr
Tkm4

Graph 4


Rail Freight in Sweden, Austria, Spain, & Switzerland 1950 - 2000
in Tkms
Sweden
Spain
Switzerland
Austria
Tonne-kms (billions)
0
10
20
30
40
50
60
70
80
90
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00
Years
UIC 05.08.01 dnr
Tkm4b

Graph 5


Rail Freight in the 17 Countries now in EU & EFTA (exc. E. Germany) 1950 - 2000
in Tkms and Tonnes
EU & EFTA Tkms
EU & EFTA Tonnes
Tonne-kms (billions)
Tonnes (millions)
Years
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00
75 100 125 150 175 200 225 250 275 300 325 350 375
500 600 700 800 900 1000 1100 1200 1300 1400 1500
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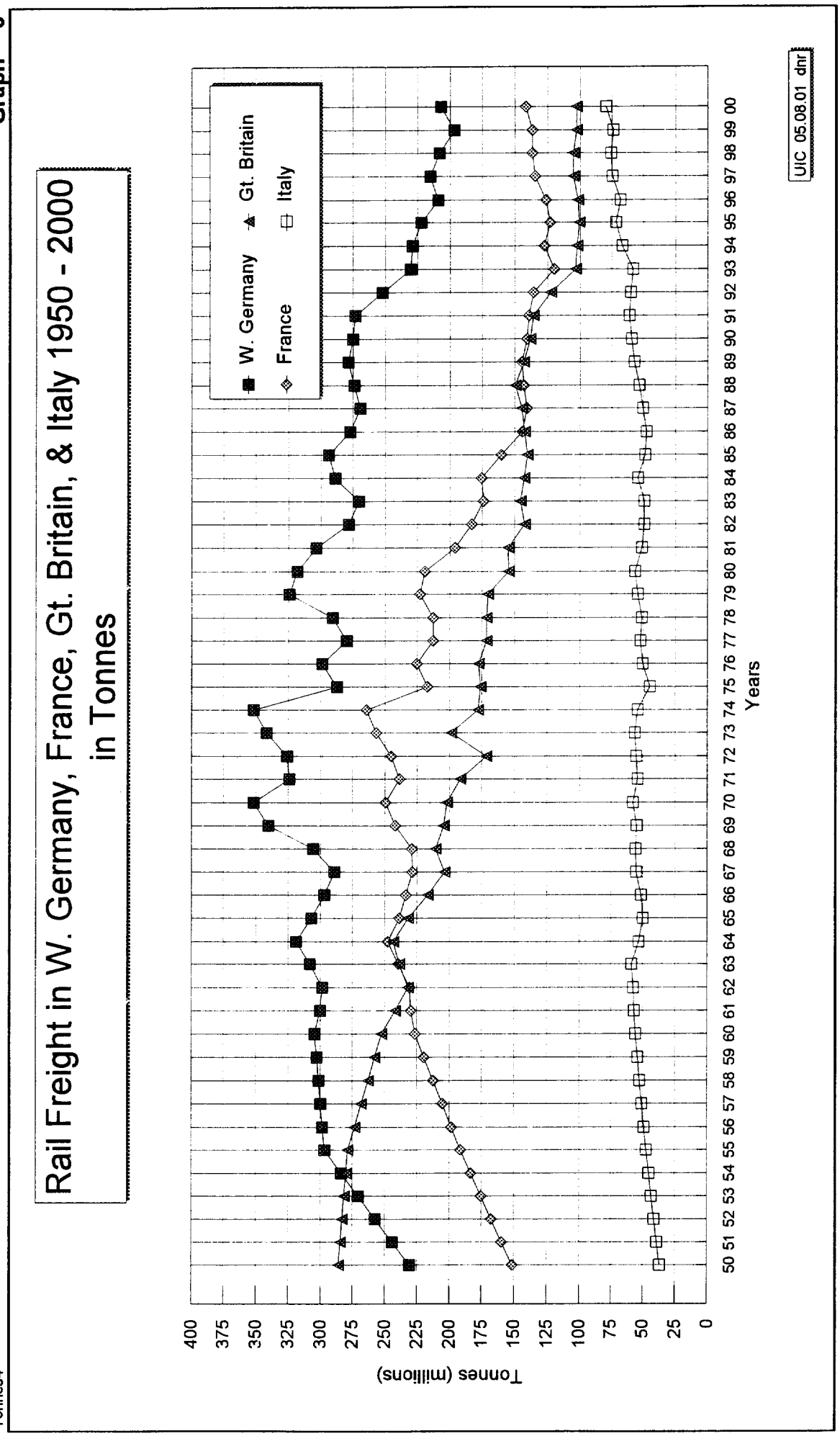
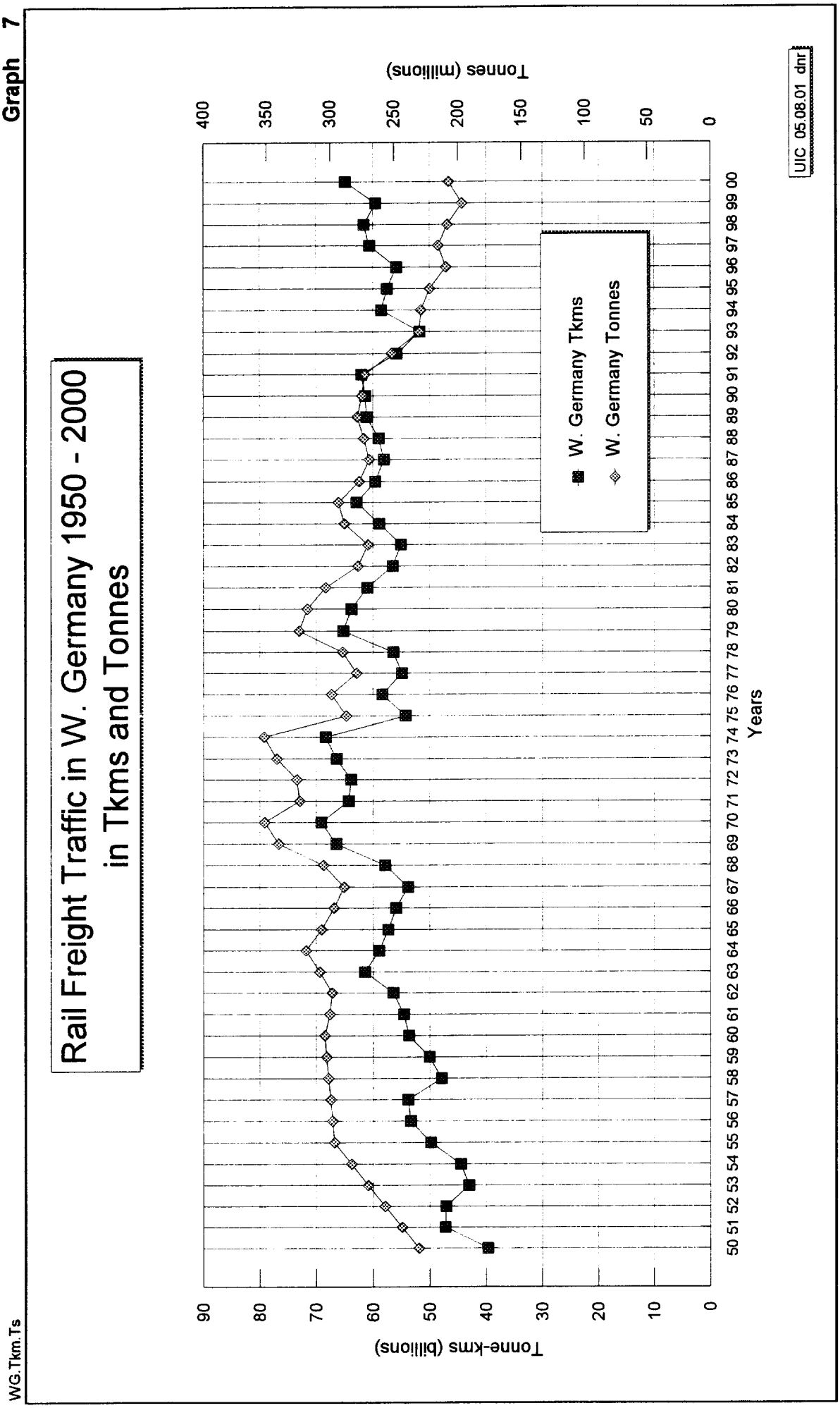
EU.EF.Tkm.Ts

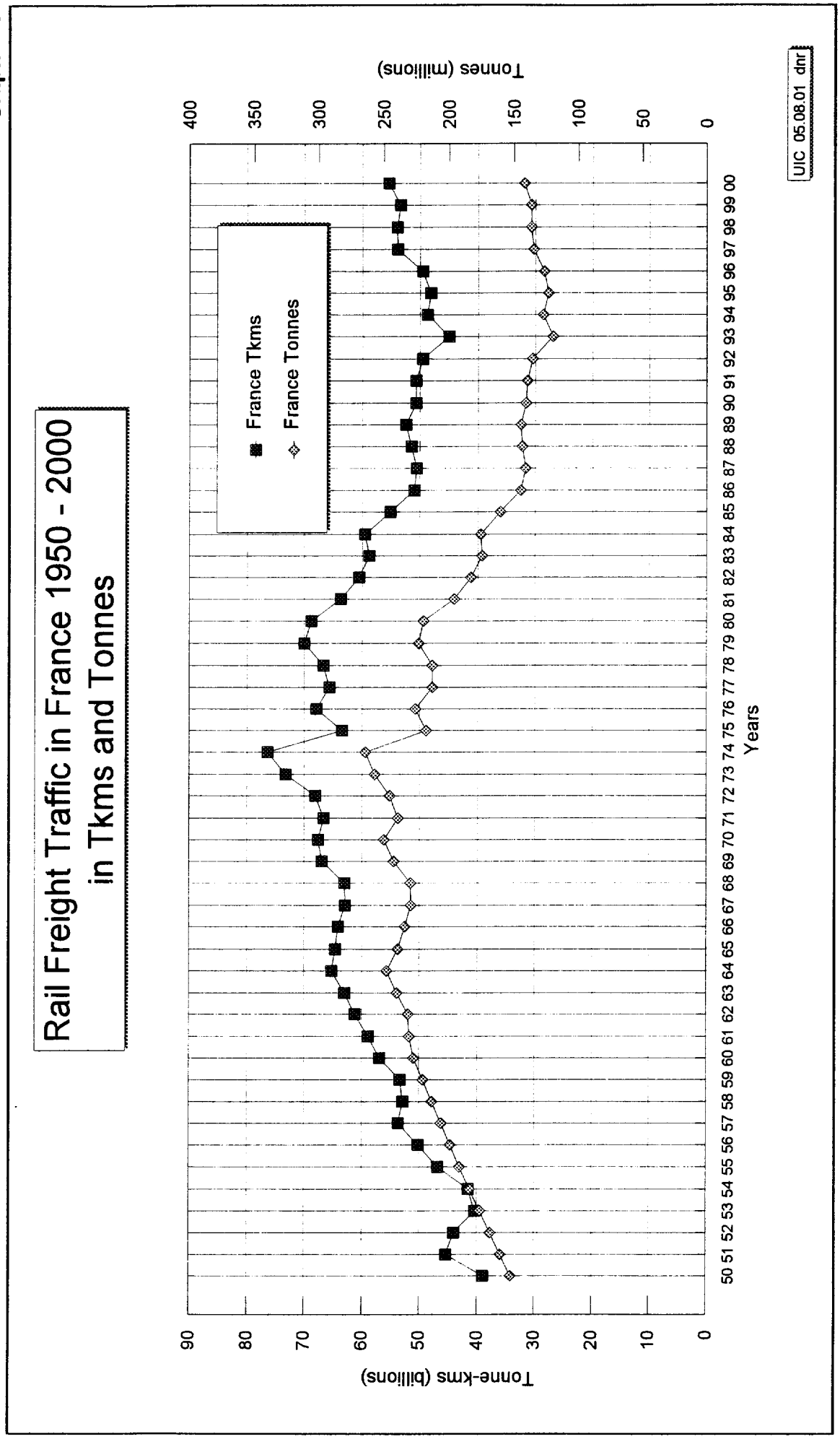
Graph 6


Rail Freight in W. Germany, France, Gt. Britain, & Italy 1950 - 2000
in Tonnes
W. Germany
Gt. Britain
France
Italy
Tonnes (millions)
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
400
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00
Years
UIC 05.08.01 dnr
Tonnes4

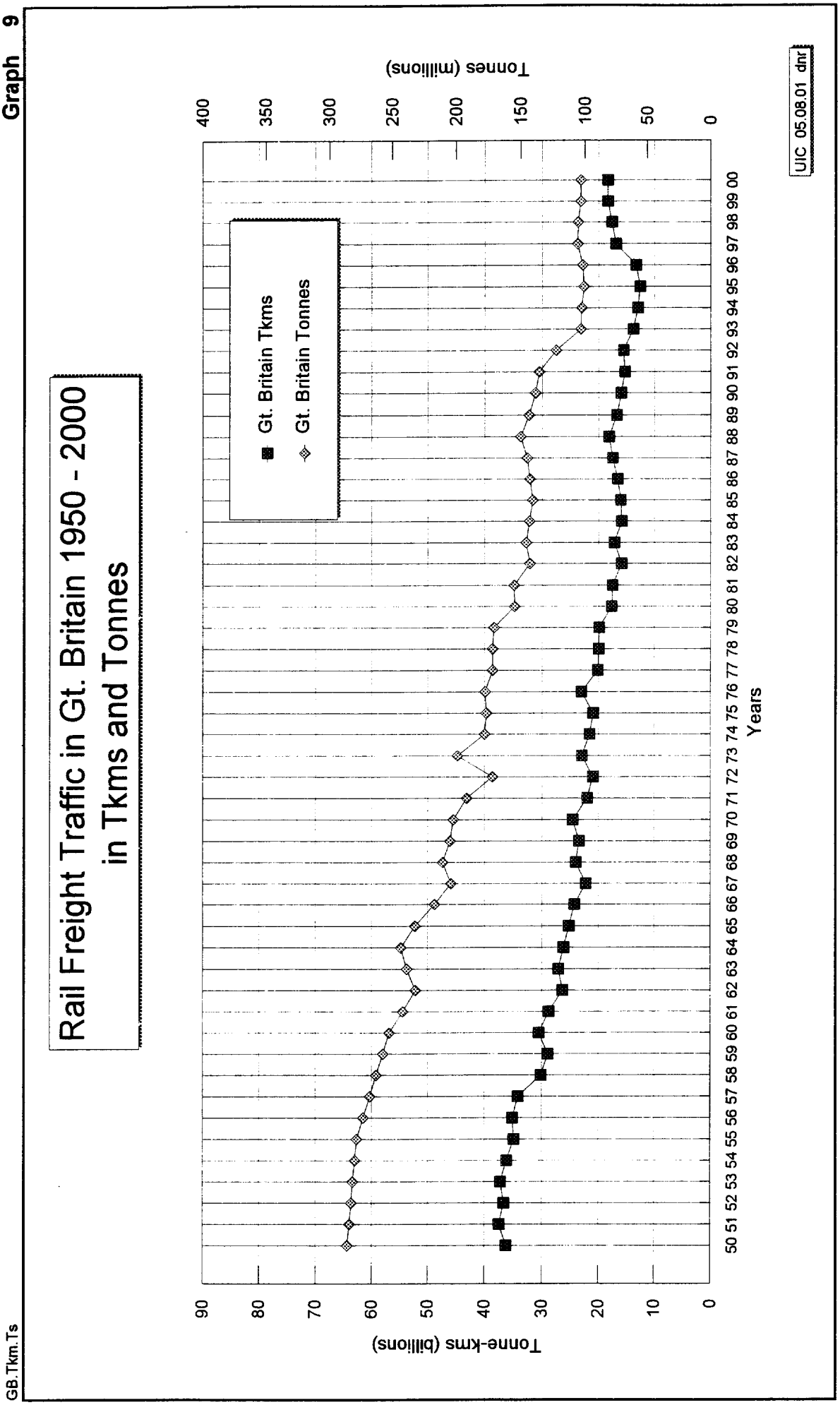
Graph 7


Rail Freight Traffic in W. Germany 1950 - 2000
in Tkms and Tonnes
W. Germany Tkms
W. Germany Tonnes
Tonne-kms (billions)
Tonnes (millions)
Years
0 10 20 30 40 50 60 70 80 90
0 50 100 150 200 250 300 350 400
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00
UIC 05.08.01 dnr
WG.Tkm.Ts

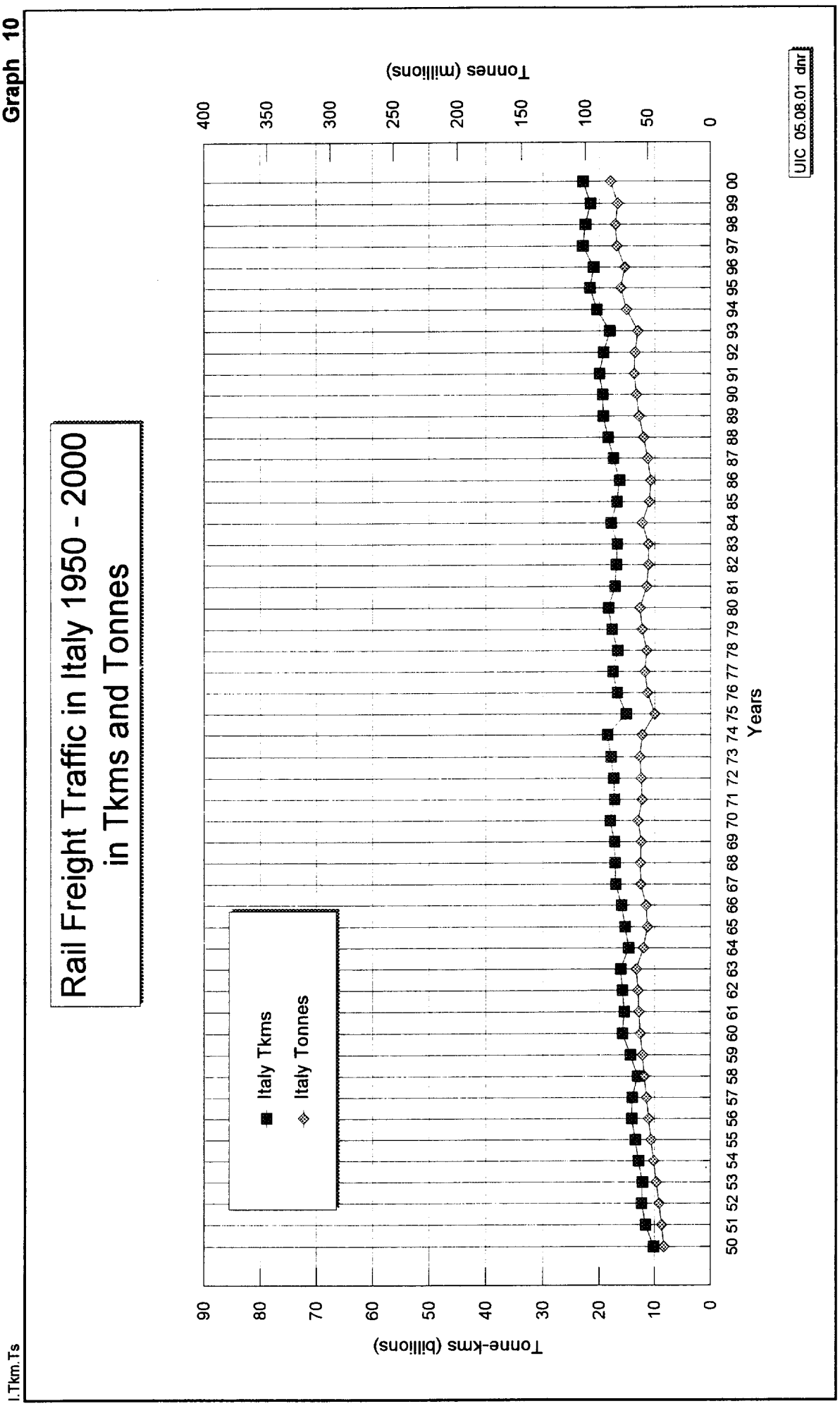
Graph 8


Rail Freight Traffic in France 1950 - 2000
in Tkms and Tonnes
France Tkms
France Tonnes
Tonne-kms (billions)
Tonnes (millions)
Years
UIC 05.08.01 dnr
F.Tkms.Ts

Graph 9


Rail Freight Traffic in Gt. Britain 1950 - 2000
in Tkms and Tonnes
Gt. Britain Tkms
Gt. Britain Tonnes
Tonne-kms (billions)
Tonnes (millions)
Years
UIC 05.08.01 dnr
GB.Tkm.Ts

Graph 10


Rail Freight Traffic in Italy 1950 - 2000
in Tkms and Tonnes
Italy Tkms
Italy Tonnes
Tonne-kms (billions)
Tonnes (millions)
Years
0 10 20 30 40 50 60 70 80 90
0 50 100 150 200 250 300 350 400
50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00
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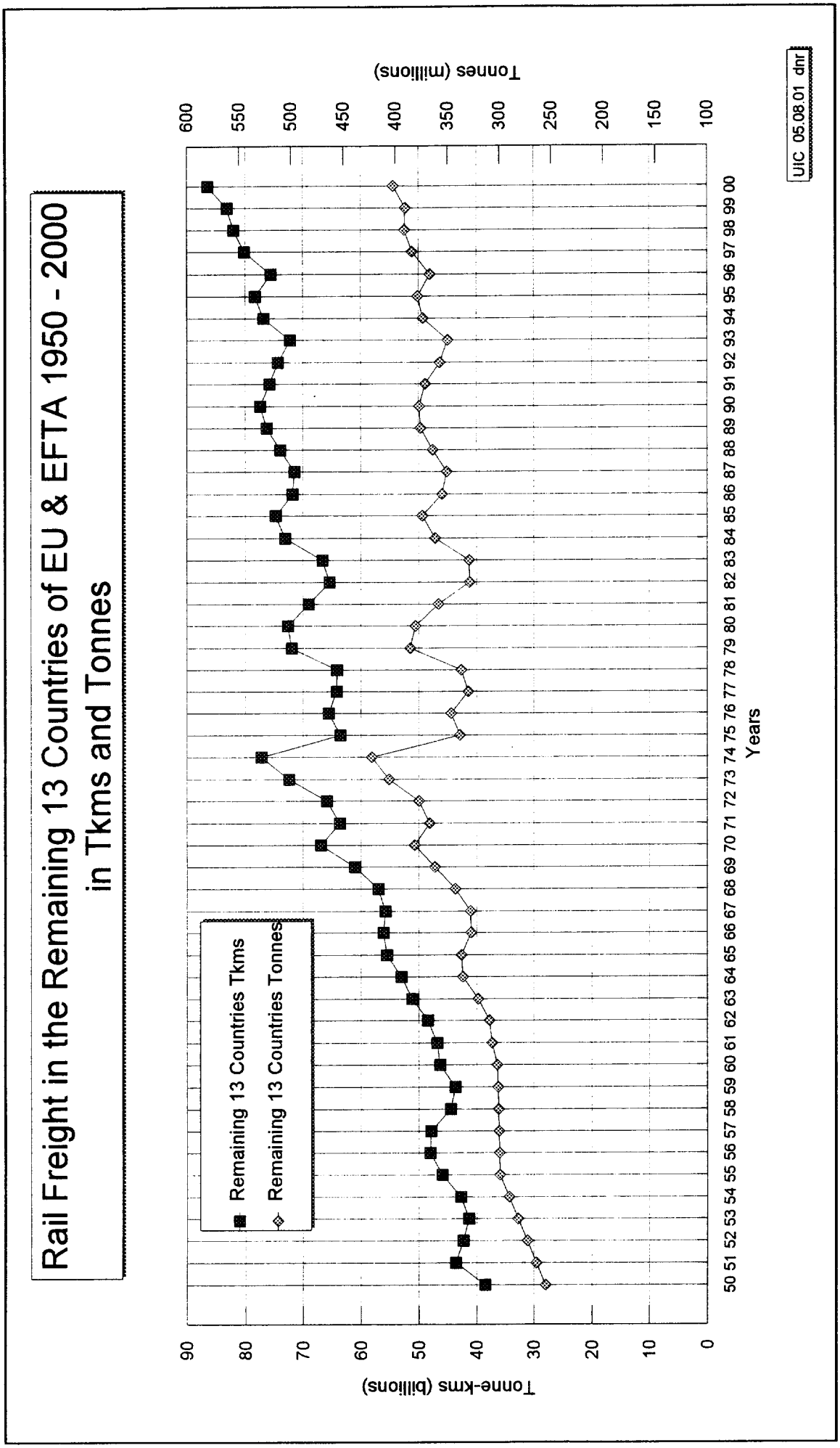
I.Tkm.Ts

**Graph 11**


Rail Freight in the Remaining 13 Countries of EU & EFTA 1950 - 2000
in Tkms and Tonnes
Remaining 13 Countries Tkms
Remaining 13 Countries Tonnes
Tonne-kms (billions)
Tonnes (millions)
Years
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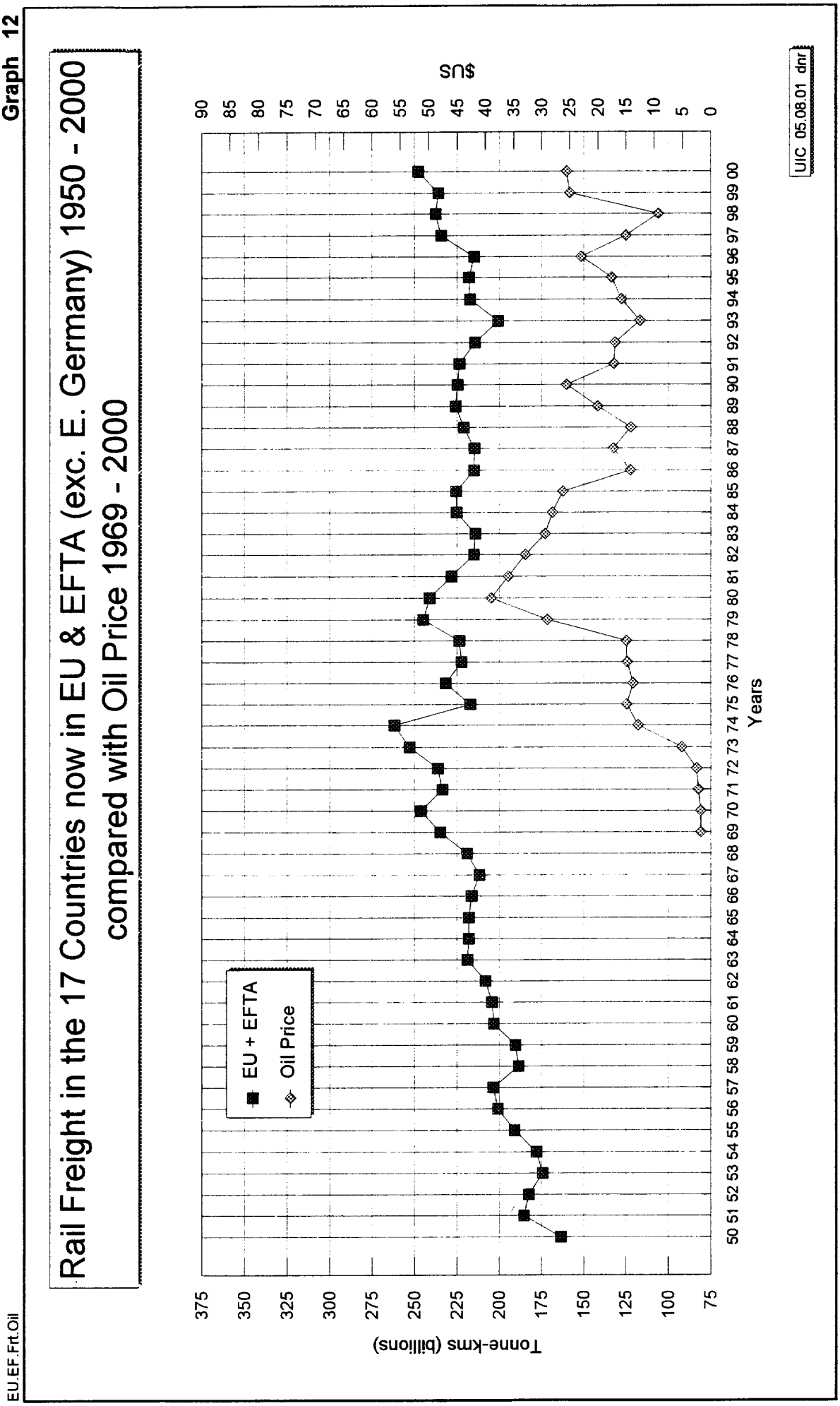
Rem13.Tkm.Ts

Graph 12


Rail Freight in the 17 Countries now in EU & EFTA (exc. E. Germany) 1950 - 2000
compared with Oil Price 1969 - 2000
EU + EFTA
Oil Price
Tonne-kms (billions)
$US
Years
UIC 05.08.01 dnr
EU.EF.Frt.Oil