

CHAPTER 7 PLANNING OF RAILWAY TRANSPORTATION

The railway revolution for new age is proceeding rapidly by the background of worldwide motorization. BDZ is in the middle way of struggling period of system change for constructing the superiority of railway itself to attract road transport and international rail transport.

The way of improving railway for next century is clear from many facts of world railways. The path of each step should be supported by precise acknowledgement of actual facilities and all improving actions should be set on the most reasonable and effective way.

(Actual Situation of Railway Transportation)

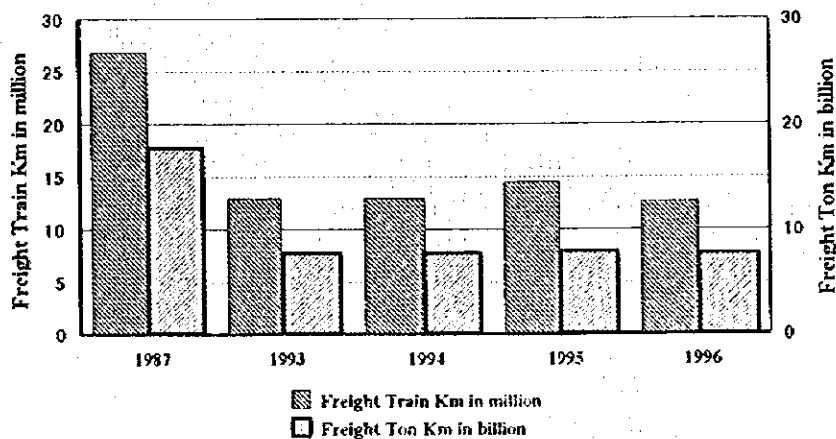
7.1 THE TRAFFIC VOLUME IN PAST 10 YEARS AND THE TRAIN OPERATION

7.1.1 Freight Traffic Volume and Freight Train Km

After the changing the structure of COMECON system, the railway freight ton km has been decreased approximately to 50 % in 10 years and the railway freight traffic maintains almost same level in these years.

The freight train km has been reduced in proportion to the freight ton km and the freight train km, nowadays, keeps approximately 50 % to that of 10 years before.

Fig. 7.1- 1 Transition of freight train km and freight ton km

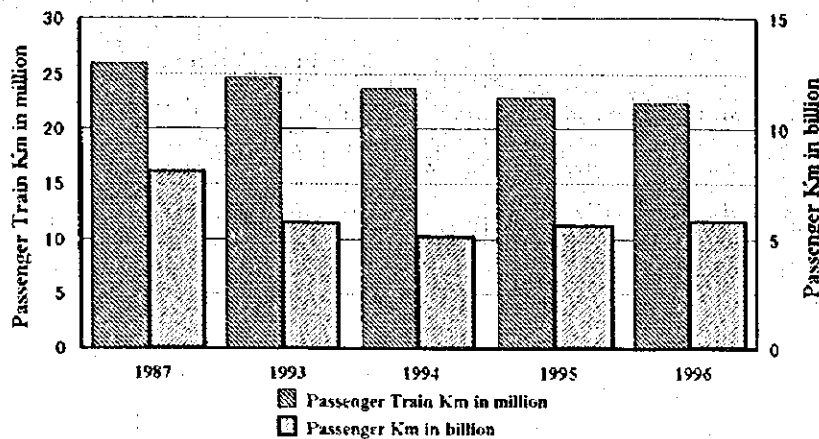


7.1.2 Passenger Traffic and Passenger Train Km

The passenger km in 1993 decreased to the 62 % level when compared to the year of 1987. The deviation of passenger train km from the rate of passenger km was admitted too abundant

at that period. The passenger km is being slightly recovered since 1994 but the endeavor of adjusting train km has been continued and the difference between passenger train km and passenger km is approaching to the reasonable zone as shown in the Fig. 7.1.2.

Fig. 7.1- 2 Transition of Passenger km and Passenger train km



7.2 TRANSPORTATION SYSTEM

7.2.1 Operation of Freight Train

The operation system of freight trains is mainly depending on the operation system to couple and disconnect wagons at intermediate yard. The freight train average travel speeds are slow and are of 30 – 39 km/h. The main cause of slow speed is arising from the stopping chance at intermediate stations.

The severe competition with highway road transport considered, the average speed should be doubled by changing to the direct block train system, etc.

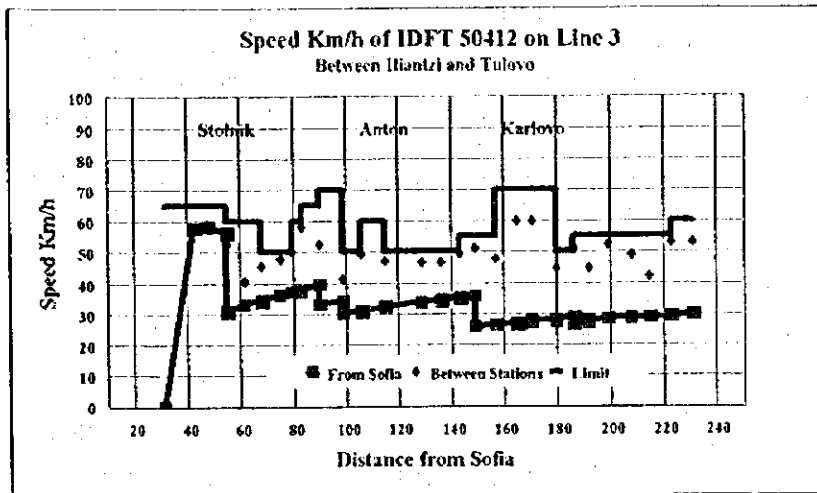
Already the heavy goods dispatched by major customers are being sent by way of direct access system without need of stopping at intermediate stations, although trains are stopped at many midway stations.

There remain many motives of hesitations for changing the transportation system because of the non mature of collecting and distributing freight goods at freight terminal stations and of the enormous capital investment to major yards in past years, etc.

The actual situation requires that the railway mass transportation system should be changed powerfully from conventional yard system to direct block train system that will pass intermediate stations.

For realizing the direct block train system, the construction of container terminals at major places, the preparation of gathering and distribution system to the terminal, etc are important. The former action of constructing terminal facilities is urgent and indispensable.

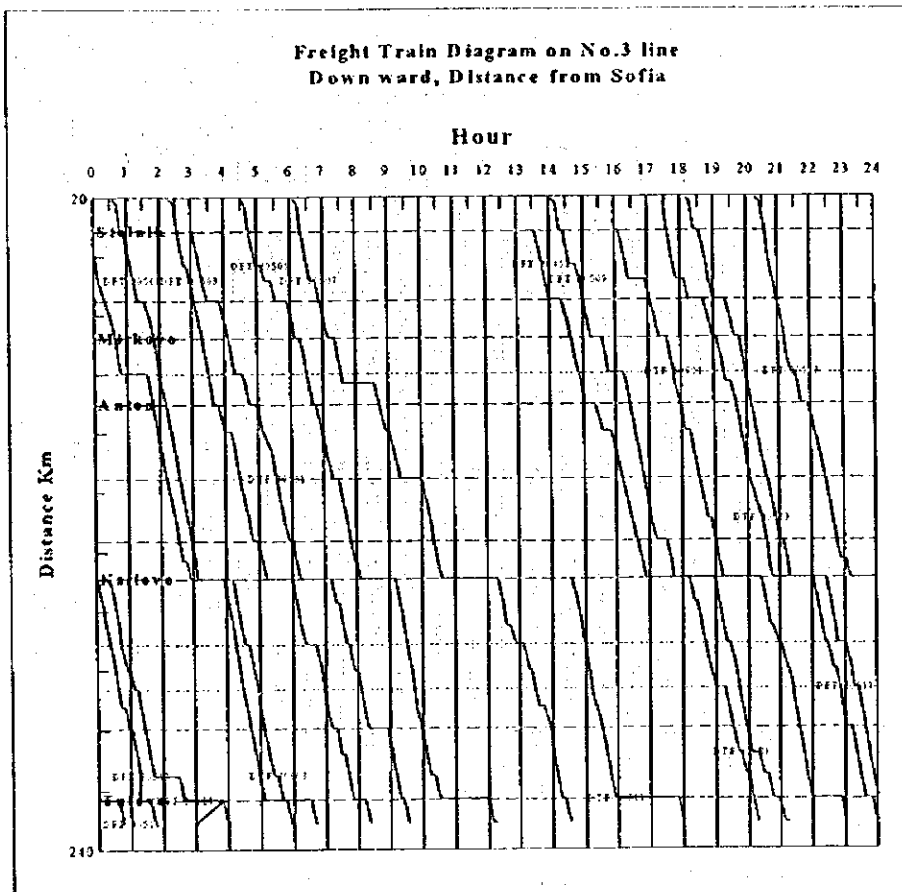
Fig. 7.2- 1 Example of freight train speed and speed limit



Note: Speed from Sofia means the average speed from Sofia.

Speed between stations means the speed between intermediate stations

Fig.7.2- 2 Example of freight train diagram prepared by computer (No.3 line)



7.2.2 Operation of Passenger Train

Passenger trains are composed of suburban trains, intercity fast trains and international trains.

The average speed of passenger trains is generally between 55 km/h and 65 km/h.

The highway construction is proceeding on main routes. The road network among cities is better than that of railway lines and the road distance is generally shorter than that of railway. Furthermore, the automobile speed on trunk roads is higher than trains.

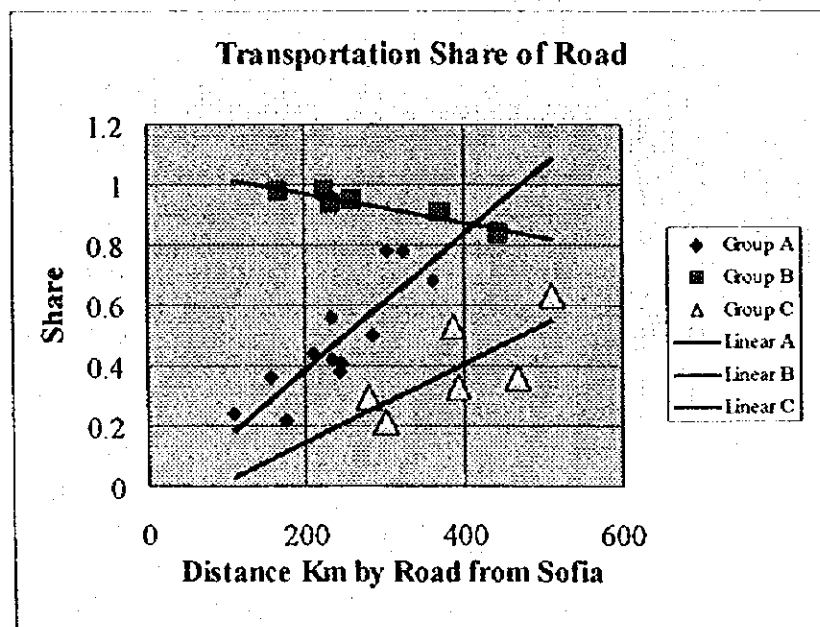
In Bulgaria, the passenger share of road is increasing in the sphere of longer distance in spite of the phenomena in foreign countries.

The railway shares among such cities with favorable train service are indicating relatively good shares but still the degree and its tendency is insufficient. The passenger share of trains should be improved by further endeavor.

The comparison of passenger fares shows that railway might be aiming to gather passenger by lower tariff than road transport.

The railway should aim the speed up of passenger trains that has the effect of gathering more passengers and of decreasing the operation cost of each train, by considering the strategy of each railway lines.

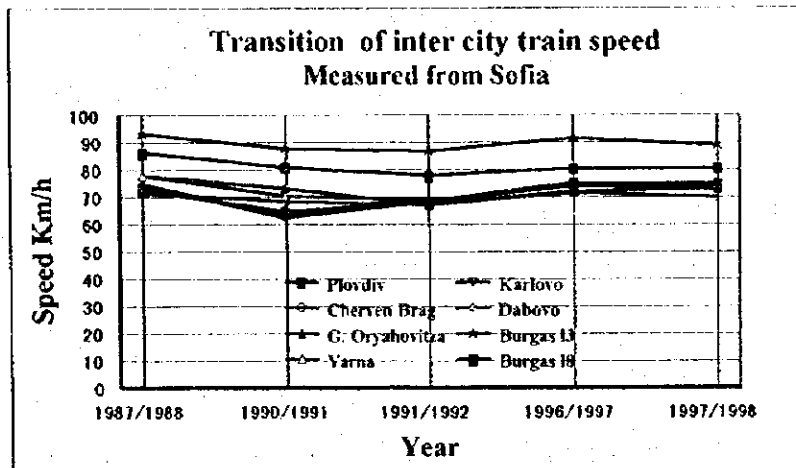
Fig. 7.2-3 Traffic Shares of Road by Convenience Groups of Railway



Note: Group A cities (marked with diamonds \blacklozenge) are equipped with normal railway service
 Group B cities (marked with squares \blacksquare) are equipped with inconvenient railway service
 Group C cities (marked with triangle \blacktriangle) are equipped with relatively convenient railway service

In the past 10 years, the travel speed of intercity passenger trains has not been improved. The actual situation of railway finance might have allowed trains to maintain the same level speed but the transportation market of Bulgaria is suppressing BDZ by severe development of highway transport, etc.

Fig. 7.2- 4 Transition of Transition of intercity train speed of each important section



The average travel speed from starting station to terminal is decreasing remarkably by midway stops of intercity trains. The speed limits of switches at stations and the special speed limits by provisory track maintenance are slowing down notably the passing trains' travel speed. The recovering or improving actions of actual track condition will bring forth a remarkable improvement of train travel speed too.

Fig. 7.2- 5 Example of intercity passenger train speeds and speed limit

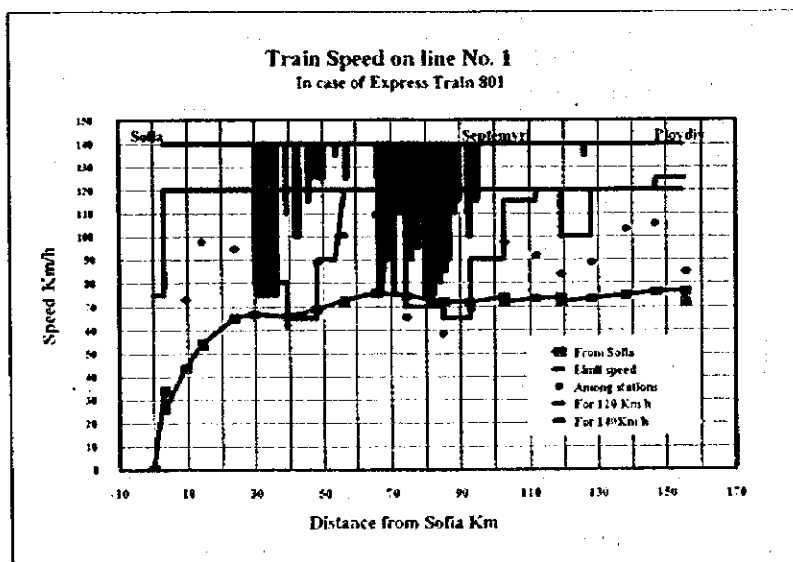
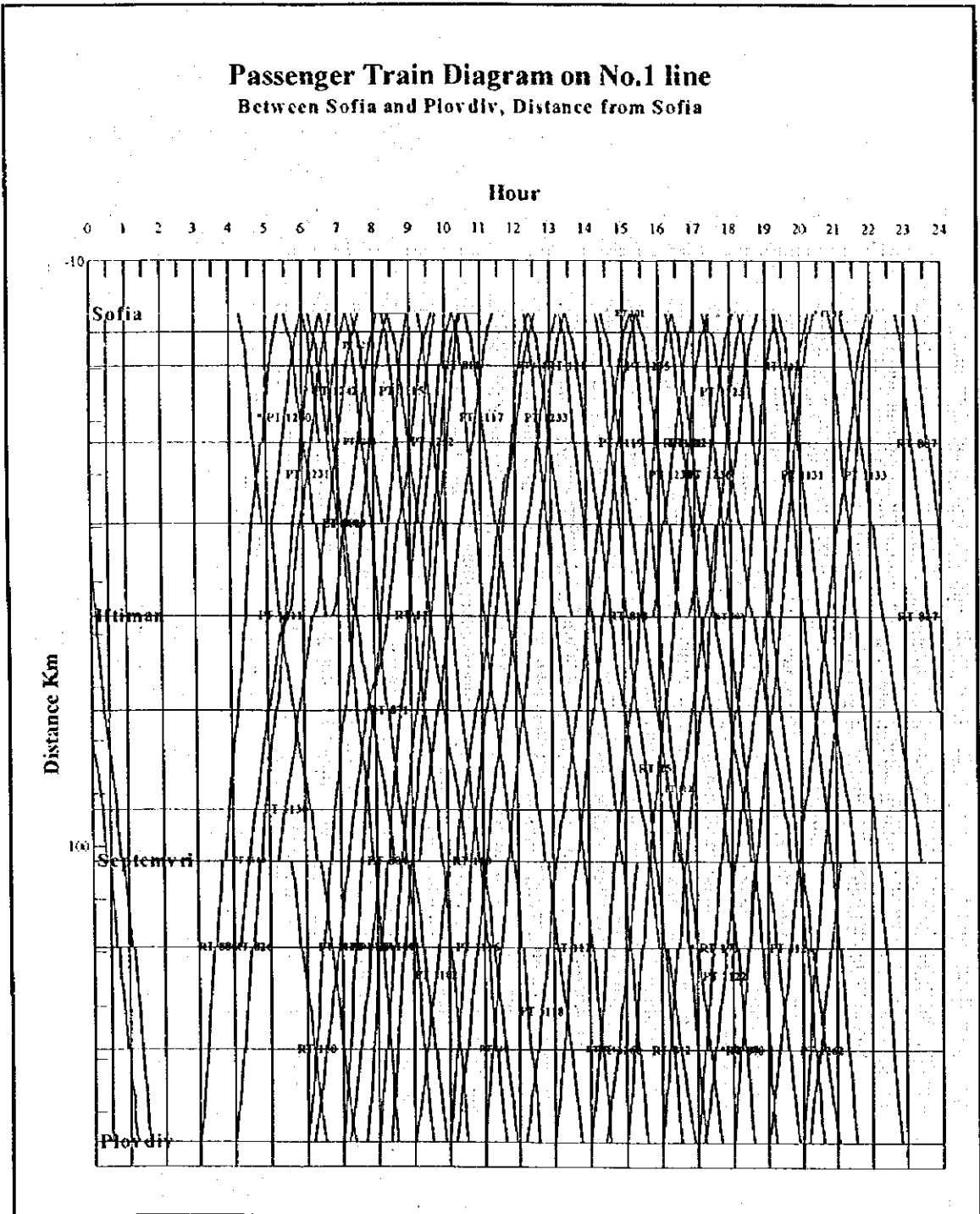


Fig. 7.2- 6 Example of passenger train diagram prepared by computer (No. 1 line)



Difference of travel time among ordinary trains, rapid trains and express trains is relatively little. The strategy how to speed up of fast trains should be introduced resolutely for improving the impression of railway transportation.

7.3 TRACK FACILITIES OF RAILWAY LINES

Railway structures, facilities and fleet of BDZ are shown below.

Table 7.3-1 Actual facilities of BDZ railway lines and operating system (1995)

Items	Current Status	Remarks	
Rolling Stock	Electric Loco. (EL)	319 units	Availability 66%
	Diesel Loco. (DL)	193 units	Availability 65%
		35 units for 760mm	
	Shunter	325 units	
	E M U	83 sets	2M2T/set
	D M U	6 sets	
	Passenger Coach	1,768 units	
Freight Wagon	29,178 units		
Structures, Facilities & Equipment	Gradient (Max.)	28%	
	Min. radius of curvature	300m (extra 150m)	
	Axle weight (design)	22.5 ton	
	Ballast thickness	330mm	Standard
	Rail	49 kg/m	Concrete sleeper 30%
	Tunnel	183 places	Aggregated lengths 47.2 km
	Bridge	982 places	Aggregated lengths 16km
	Railway crossing	955 places	
	Electrification	AC 50Hz, 25 kV	Direct feeding, Simple catenary
	Traction substation	47 places	Attended
	Train blocking	Automatic 347 km	
		Semi-auto. 3,190 km	
	A T P	164 km	Loco. : 103 units
	C T C	329 km	
	Interlocking of signals	290 stations (Regular interlocking)	
		111 stations (Key interlocking)	
	Train radio	1,595 km	
M I S	X25	The project is now on-going	
Telephone exchange	112 st.s (25,700 CHs)	Digital, Step by Step, Crossbar	
Transmission of information	Buried cable	Analogue, FDM multiplex	

The main lines of BDZ are electrified, excluding some single sections. The No.1 line between Sofia and Plovdiv and the No. 2 line between Sofia and Varna are double tracked. No.8 line between Plovdiv and Burgas is partially double tracked.

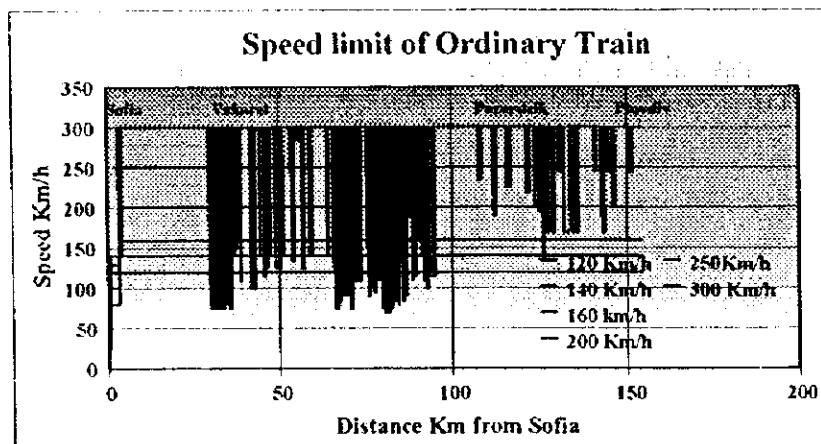
Generally they are constructed with many steep curves and gradients on mountainous sites and the train speeds are restricted severely.

The track figures on flat areas are favorable for higher speed operation. On level areas, there exist many of medium and tiny size cities. This causes the stop chances of fast trains on the favorable sections for high-speed train operation.

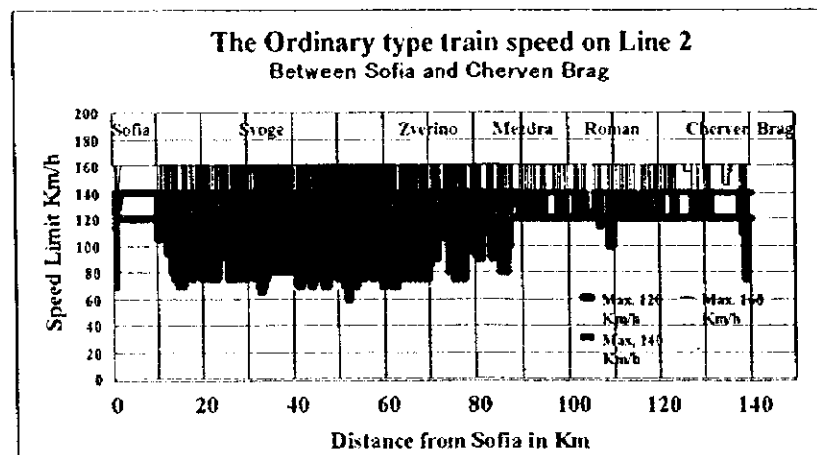
For increasing train speed, strategic consideration on the planning of train diagram is required to select stopping stations by type of fast trains.

Fig. 7.3- 1 Speed limits by curves on No.1 and No.2 lines

Speed limits by curves on No.1 in case of conventional type train

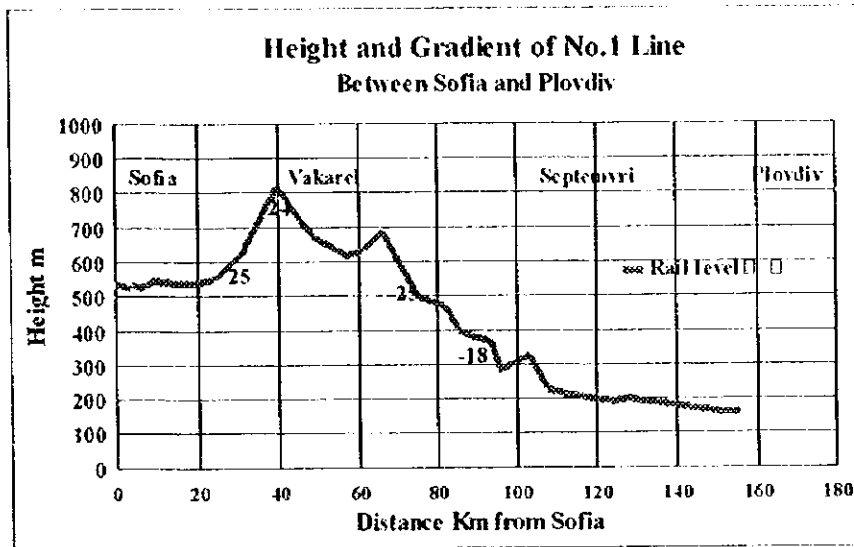


Speed limit by curves on No.2 in case of conventional type train

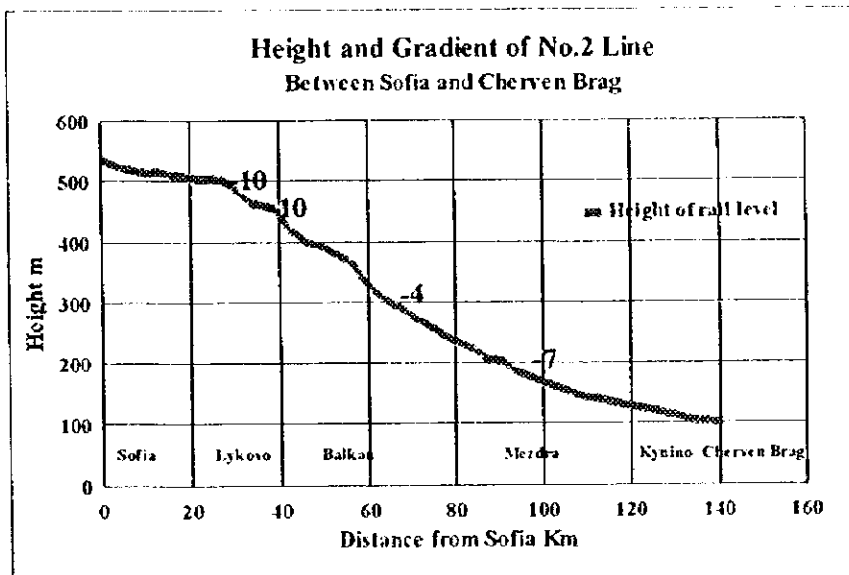


The characteristic of track gradients, which will give a fatal influence on traction capacity of train, is variable by each line. The strategy of management, including tariff system, will be required to consider the merit of each line segment. The railway management system might be aimed at the line wise supervision from the actual regional control.

Fig. 7.3- 2 Track gradient of No.1 and No.2 line sections
Track gradient of No.1 line section



Track gradient of No.2 line section



Note: The number attached to the rail level show the track gradient (1/1000)

7.4 TRAIN TIME TABLE AND TRAIN DIAGRAM

Train time table and train diagrams of BDZ are well prepared and are used by field organs. They are being prepared precisely by manual work, but the enormous procedure and the plenty of working hours are preventing quick response to the rapid change of social requirements for transport organs.

“Rapid and precise treatment by computerized working method” is being required and the BDZ laboratory is developing the computerized train operation planning system already. By the completion of this system will realize not only the rapid and precise response but also will contribute the more precise evaluation of countermeasure actions.

The fundamental designs of computerized train operation planning are already prepared and its developing stuffs are enough in BDZ.

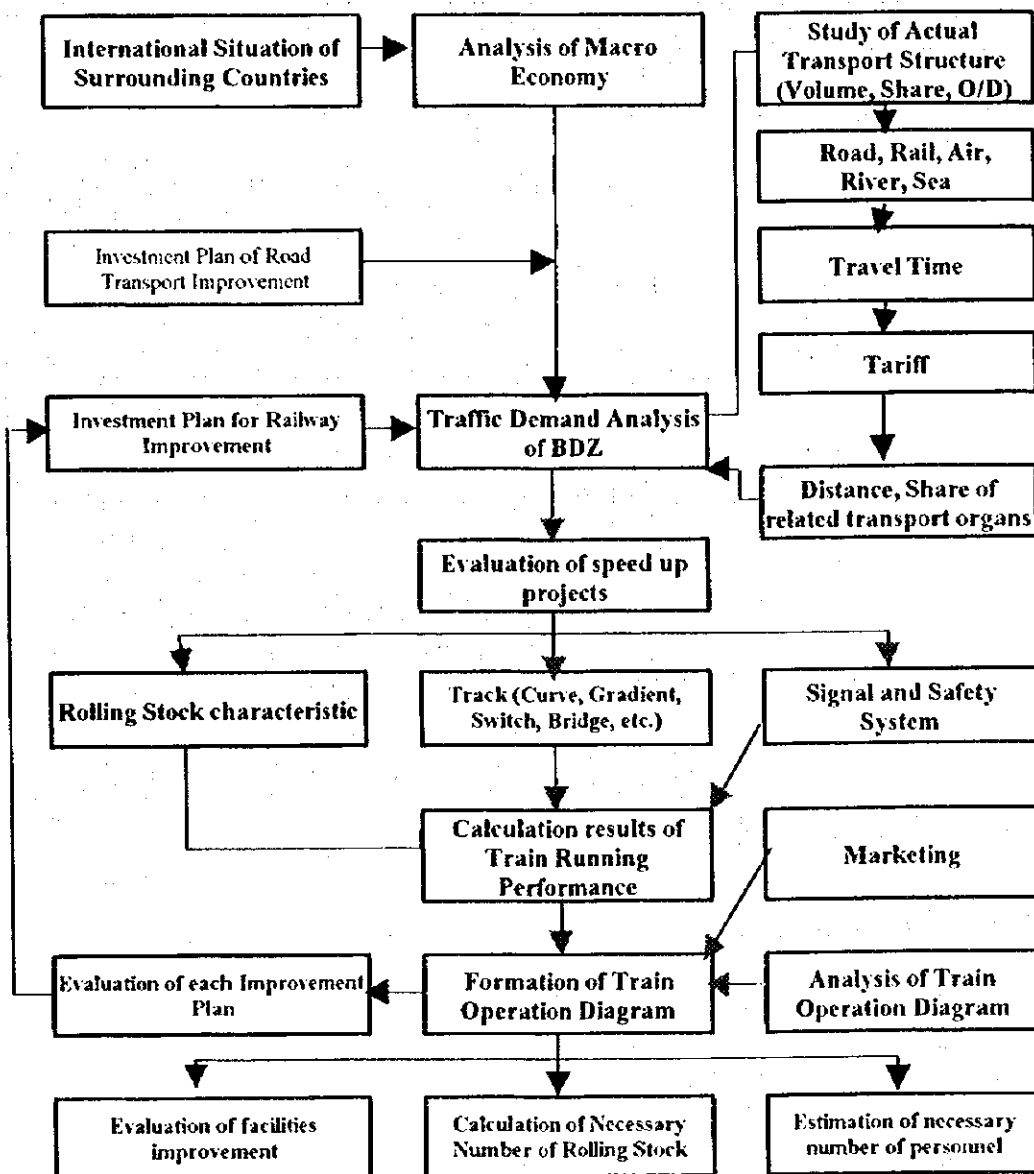
The support for the above new wave will be appreciated for sooner realization, by way of supplying new hardware of computer with enough capacity, etc.

(Future Plan of Railway Transportation System)

7.5 DEMAND FORECAST AND TRAIN KM

For coming new age of BDZ, the train planning process should be revised because of its importance of quick response to prepare suitable and improved commodity like other industry. The following flow chart shows the working process connecting train planning with the demand forecast, marketing, facilities, rolling stock, personnel, etc.

Fig. 7.5- 1 Work Flowchart of Train Operation Planning



7.5.1 Freight Traffic Demand Forecast and Freight Train Km

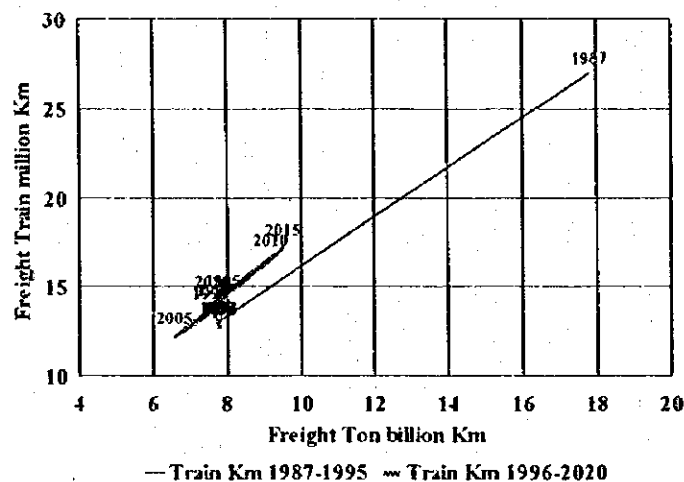
The relation between freight traffic demand forecast and future freight train km is shown in the following figure 7.5-2, prepared by the working process of the flowchart.

The transition in past time is shown by thin line and the future inclination is expressed by thick line.

The thick line is drawn at higher position than the thin line. This means that the hauling load of direct freight train will be decreased than the case of ordinary train system, but the efficiency increase and the cost decrease of block train will realize lower cost than that of the former system.

In case of direct block train, the running time will be decreased remarkably and the rotation of rolling stock and operational personnel will be improved entirely. This time reduction will cause the contraction of each train operation cost and the yard pass train operation save the enormous cost of marshalling yard.

Fig. 7.5- 2 Freight Demand Forecast and Freight Train Km



7.5.2 Passenger Traffic Demand Forecast and Passenger Train Km

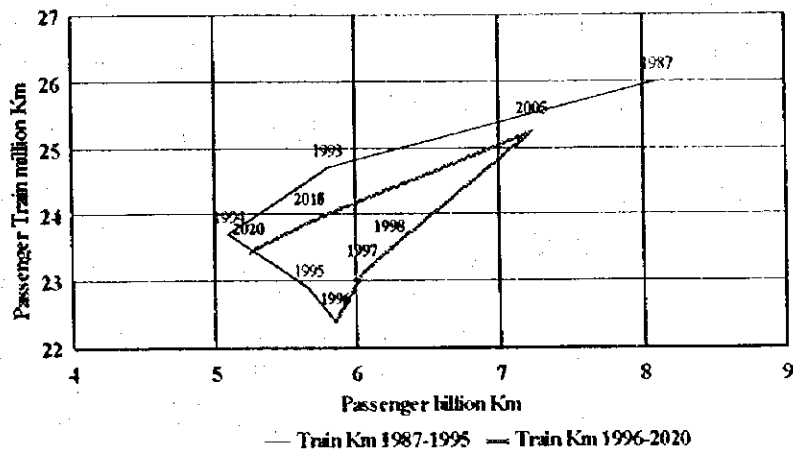
The passenger train km can not be adjusted smoothly in case of demand decrease because of the intimate relation between the social activity and the train diagram, although the capacity of a passenger train can be adjusted by decreasing the number of coaches.

For estimating passenger train km, the intermediate value is adopted in period of the recession of traffic demand by considering the difficulty of its adjustment.

The passenger traffic demand will be variable by the process of economy, tariff, the highway construction, etc. but the future train km might be kept inside of the past time range as shown

in the fig. 7.5-3 according to the JICA demand forecast work.

Fig. 7.5- 3 Passenger Demand Forecast and Passenger Train Km



(1) Multiple regression analysis and the traffic share of road and railway

The train speed improvement efforts have resulted in the recovery of intercity passengers in various countries. Actual experience tell that, if the speed increases by 5 %, the passenger volume might increase also approximately 5 %.

Although there are many factors to induce passenger volume and share, tariff and speed are two main independent factors for passengers to use transport modes.

The multiple regression analysis is applied to the share data of BDZ depending on distance, speed and tariff of road and rail.

The acquired formulas by multiple regression analysis are shown in the following formula.

$$S_{road} = - 0.61130966 \times P_{road/rail} - 0.88016712 \times T_{road/rail} + 1.989338369$$

$$S_{rail} = + 0.61130966 \times P_{road/rail} + 0.88016712 \times T_{road/rail} - 0.989338369$$

$$(S_{road} + S_{rail} = 1)$$

S_{road}: Share of road vehicle passengers

S_{rail}: Share of railway passengers

P_{road/rail}: Price rate of Road by Rail = **P_{road}/P_{rail}**

T_{road/rail}: Travel time rate of Road by Rail = **T_{road}/T_{rail}**

(2) Share and volume by speed up

Table 7.5-1 shows the results of the calculation of applying the formula for the four cases of increase of travel speed of intercity trains by +5%, +10%, +15% and +20%.

The travel time of road, the price of road and the price of rail are kept same in this calculation. This result of calculation coincides with the actual experience and with the mathematics model.

In general, when railway will realize increase of train speed, competitors will also shorten the travel time or decrease the price rate. The data in the actual transportation market is showing approximately 1% increase of passengers in case of 1% train speed up.

Table 7.5- 1 Increase of railway passenger volume by speed up

	Decrease of travel time	Increase of Share %	Increase of Passenger %
In Case of Total	95%	3.74%	6.55%
	90%	7.90%	13.83%
	85%	12.55%	21.96%
	80 %	17.78%	31.11%

7.5.3 Track capacity for international trains

The percentage of actual train km operated to the train km programmed on train diagram is 52% in case of freight trains and 70% in case of passenger trains.

The freight train diagram has enough elasticity for replying the demand of customers and the passenger train diagram has a enough capacity for absorbing seasonal international passenger trains.

The operation of international trains is important for BDZ but the above macro data shows that the track capacity and train diagram of BDZ have an enough possibility.

The problem in the future strategy is depending on the endeavor of improving quality of trains which will attract the new demand to the BDZ train service from the view point of international competitiveness in the transportation market.

7.6 FUTURE TRAIN SYSTEM

7.6.1 System Change of Freight Train

A large amount of bulky freights is being transported by automobiles on roads. It shows that the latent demand for international freight transport through BDZ might be plenty. For absorbing that, the lack of satisfactory container terminals in Bulgaria is fatal.

The construction of CT (Seamless combined transportation system) is essential to Bulgaria where concentrate many international transportation routes.

The demonstration by constructing the CT junctions, like container terminals in nuclear cities, might be indispensable for the international propaganda to show the will and capability of

doing international transportation in Bulgaria.

7.6.2 Speed up of Passenger Trains

(1) Shortening of travel time and share increase

(Pilot project and test track)

Train speed up will be realized by line wise, by execution of test and by enough investment and time.

The step wise process will help the ascertain of the effect by speed-up projects and this will result in smooth execution of investment on shortening travel time of other lines too.

The line section between Sofia and Plovdiv is selected as a pilot project of shortening the travelling time. For the beginning pilot project, it's necessary to place test track on the section between Sofia and Plovdiv.

The purpose of the test track will be the accumulation of technologies of related departments; signal, power supply, rolling stock, track etc. The accumulated technologies will enlarge the portion of domestic production of Bulgaria.

(Step of speed up)

The steps of speed-up projects until 2020 year might be classified as follows;

First step will be "shortening travel time by recovering the track condition", **second step** will be "improving the limitation of passing speed on switch from 100 km/h to 130 km/h" and **third step** will be "operation of 160 km/h pendulum train with light weight construction".

Above improvements should be executed step by step without ineffective investments.

The introducing period of 160 km/h should be selected at the appropriate period of changing deteriorated rolling stock by age.

(Way of switch improvement)

The switch improvement for realizing 130 km/h on the main line switches should be prepared 130 km/h for heavy weight locomotive trains and 160 km/h for light-weighted pendulum trains. These faculties should be ascertained on a test track section by enough tests that are not only for the design of switch but also for the design of new pendulum train.

(Simulation and travelling time)

The effect estimation of each project of speed up should be done by simulation of train running performance on the basis of the each project.

The travel time used for train time table is assumed by adding 5% to the calculated time for the sake of the necessary allowance of track maintenance, diagramming of trains and the elasticity of train control by drivers.

The travelling time is calculated for each project by simulating each performance of train running. The calculated rates of passenger share increase are introduced in the following

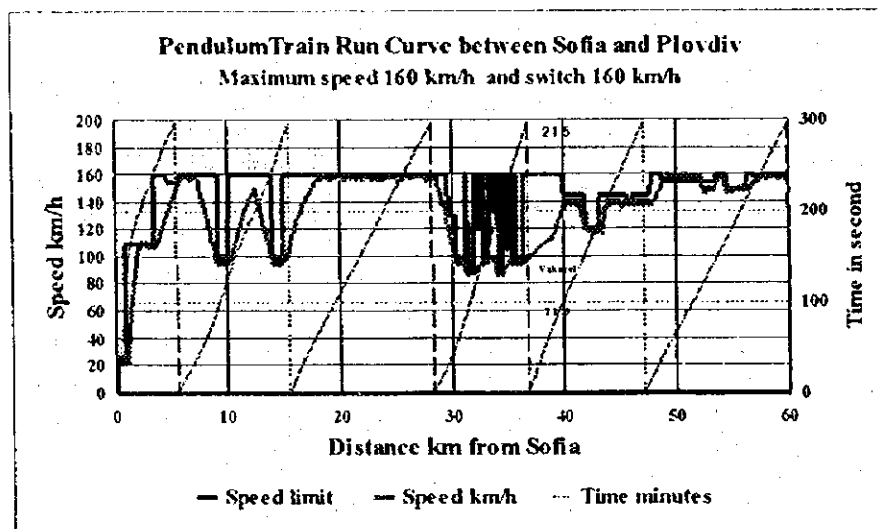
(2) Running simulation of 160 km/h Pendulum train with switch of 160 km/h

The project of 160 km/h pendulum train operation between Sofia and Plovdiv is selected in case of introducing 160 high-speed turnouts at entrance and departure main tracks.

Another big problem is the special speed restriction at 9-10 km and at 14-15 km sections. These two sections should be improved to be "without speed limitation", because the track curves are relatively good enough in these line sections.

The data in the figures of running simulation show the calculated minutes and the travel time used in the train diagram is assumed by adding 5% to the calculated time.

**Fig. 7.6- 1 Running simulation of 160 km/h pendulum train
0 Km – 60 Km section**



60 Km – 120 Km section

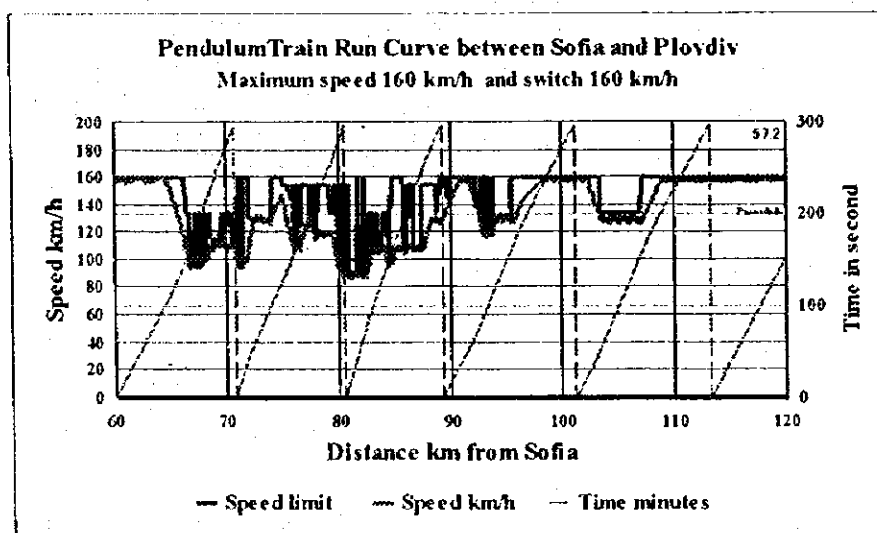


Table 7.6-1.

(Share and passenger volume)

The share estimation work is based on the travelling time used for train diagram.

The share calculation is concerning only on the share changing by travel time and by tariff rates of road and railway. The actual cases with more effective speed up should be evaluated by using "gravity model" or by more precise investigation data concerning the traffic volume.

At the cases of super high-speed train operation, the augmentation of traffic volume might realize very big effect of two or three times to the former operation.

Table 7.6- 1 Assumed Travel Time of New Express on Sofia-Plovdiv Section

Improvement of share of railway

Project name	Improvement	Improvement	Improvement	Speed	Speed	1 stop	1 stop	1 stop
	Coach	Track	Signal	Maximum	At switch	Railway speed up rate %	*Railway share	*Railway share up rate
Actual	Normal			130-120	100.00	1.00	0.71	100.00%
A	Normal	Improved		130	100.00	1.08	0.78	109.35%
B	Normal	*Partial		130	130.00	1.22	0.88	123.16%
C	Pendulum	*Partial	ATC	130	130.00	1.27	0.91	128.57%
D	Pendulum	*Partial	ATC	160	130.00	1.39	0.99	139.29%
E	Pendulum	*Partial	ATC	160	160.00	1.46	1.00	140.62%
F	Bullet light weight coach	*Partial	ATC	300	300.00	1.52	1.00	140.62%
G	Bullet light weight coach	Sofia-Septemvri	ATC	300	300.00	2.39	1.00	140.62%
H	Bullet light weight coach	All	ATC	300	300.00	2.60	1.00	140.62%

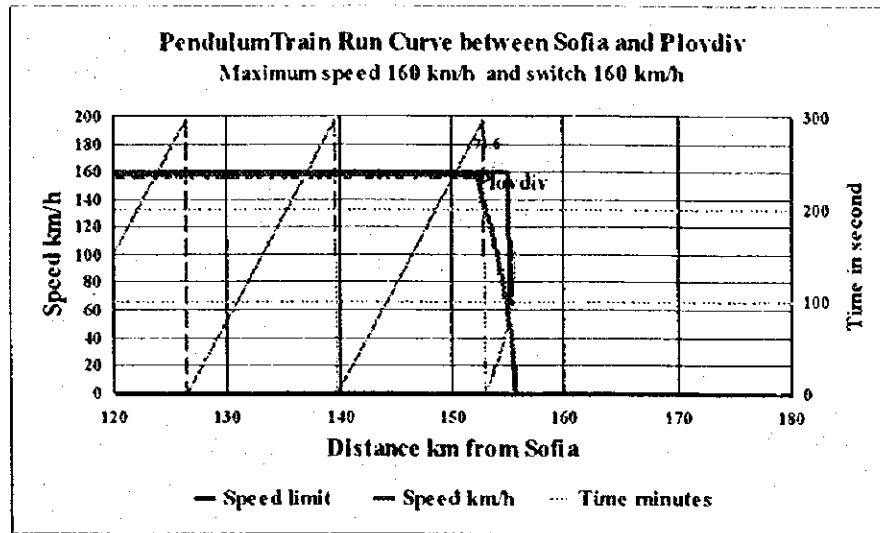
Shortening of travel time

Case	Non stop		1 stop	2 stop
	Calculated travel time	*Travel time on train diagram	*Reduction rate of time	*Reduction rate of time
Actual	-	-	1(1hr57min.)	1(2 hr 0 min)
Case A	1 hour 39 min	1 hour 44 min	0.91	0.92
Case B	1 hour 28 min	1 hour 32 min	0.81	0.82
Case C	1 hour 24 min	1 hour 28 min	0.78	0.78
Case D	1 hour 16 min	1 hour 20 min	0.72	0.73
Case E	1 hour 13 min	1 hour 16 min	0.68	0.70
Case F	1 hour 6 min	1 hour 10 min	0.63	0.66
Case G	0 hour 39 min	0 hour 41 min	0.40	0.44
Case H	0 hour 36 min	0 hour 37 min	0.37	0.41

Note: Travel time on train diagram is calculated by adding 5% to simulated running time.

Note: Stopping time at intermediate station by project is assumed to be 1 minute 30 seconds.

120 Km – 160 Km section



7.7 TRACK FACILITIES AND TRAIN OPERATION PLAN

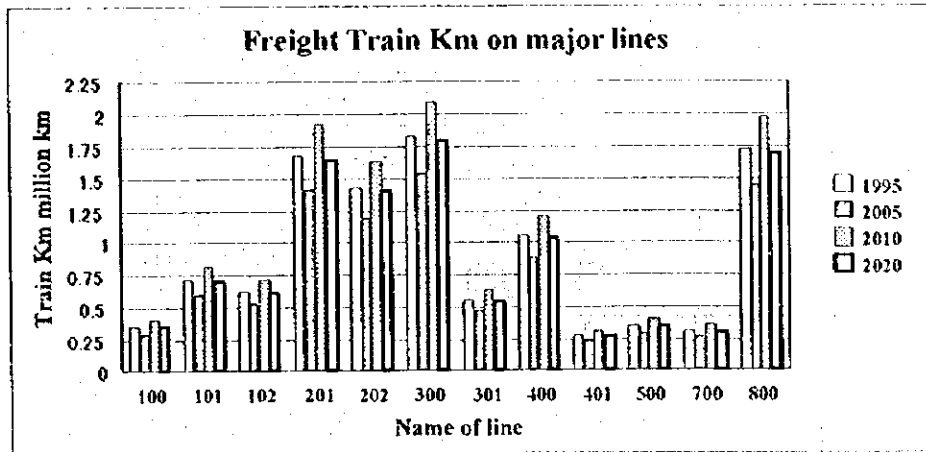
Generally speaking, all track sections of BDZ lines might be enough as for the quantity, excluding No.8 line.

For increasing the quality of competitiveness of trains, the single-track sections of No. 1 line should be double-tracked. In future, the partial double track, and the electrification of international connection line sections will become important actions.

The improvement of signal system might become necessary on all sections considering the strategy of line improvement. Anyhow it is important to avoid the ineffective investment by checking all improvement projects.

7.7.1 Train Operation Program on Major Lines

Forecast of freight train km



Forecast of passenger train km

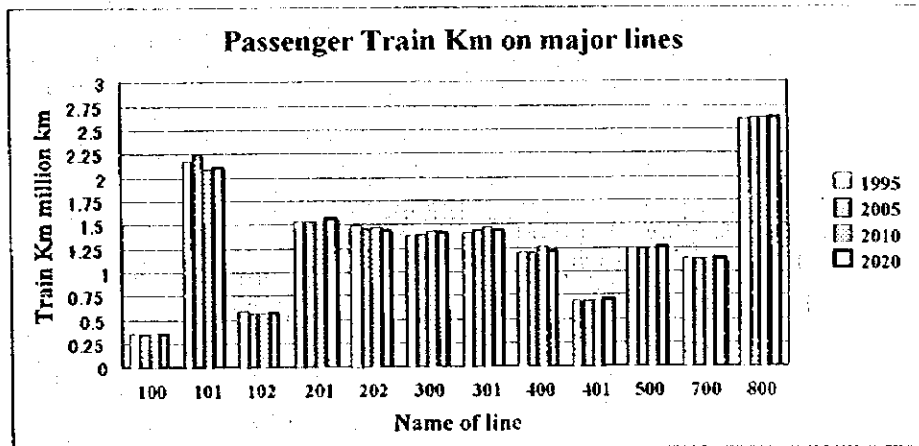


Fig. 7.7- 1 Transition of the train km of each major line

In the fig. 7.7-1, the future train km on major lines is calculated by the results of the demand forecast of freight traffic and passenger traffic volume.

2.3.2 Necessity of completing double-tracking of No.8 line

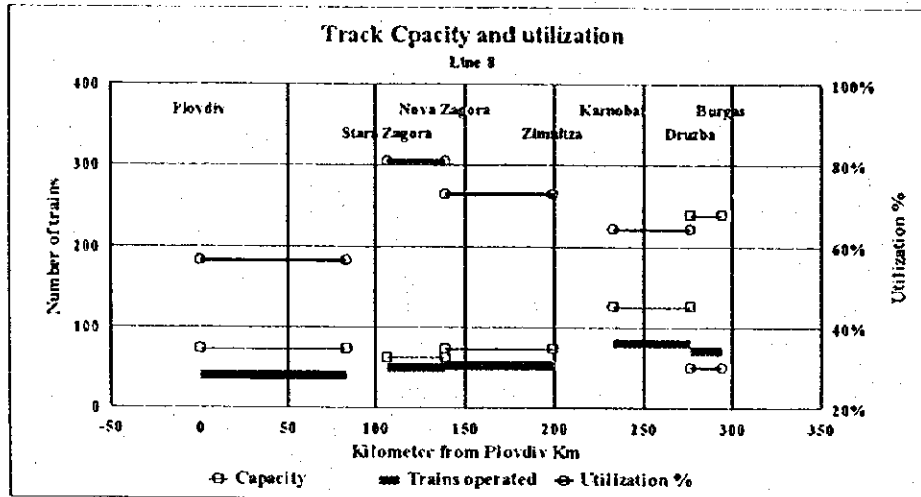
The importance of No.8 line, which connects internal cities of Sofia, Plovdiv, etc. to the important international port area at Black Sea, can be easily admitted in the Fig.7.7-1.

The No.8 line will keep its roll in future too.

The track capacity of No.8, partially single and double tracked, is saturated already. When the track capacity reaches more than 75%, the flexibility of train diagramming will be lost. The single-track sections of No.8 line reach 80% and 75% approximately.

For improving train quality, the speed up of passenger trains or introduction of direct block trains, this will require the entire double tracking the single section of No.8 line. This action will solve completely the bottleneck of related lines of No.1, No.3 and will lessen somehow the difficulty of train operation program on No.2 line too.

Fig. 7.7- 2 The sectional wise track capacity of No.8 line and the number of trains



This figure shows the saturation of track capacity at single tracked sections. The double track action will solve the total capacity of this line. The effect of improving the partial single-track sections might be highly appreciated in comparison with the inducing effect.

7.8 MAINTENANCE AND DEVELOPMENT OF FACILITIES AND ROLLING STOCK

7.8.1 Reinstatement of deferred maintenance

Proper maintenance of facilities and equipment is vital for the efficient management of railway industry. Otherwise, it is feared that it should invite disorder of train traffic as well as serious accidents, resulting in the loss of reliability of general public to the railway.

Investment for upkeep of facilities and rolling stock has been insufficient for the last decade, lagging behind the adequate timing of their renewal or replacement.

Reduced maintenance costs for the last decade are most likely to affect the regular train operation in future, which have been proved in other developing countries.

In the past, BDZ had offered comparatively good quality of train operation in terms of safety and on-time performance, and the good heritage should be maintained for future.

Therefore, the Study Team recommends that **the priority should be given to the reinstatement of deferred maintenance including strengthening or renewal of facilities in consideration of prospective lines' nature.**

This policy should be stressed also in view of the necessity to prepare for the efficient integration of the BDZ system into European railway system and for enhancement of technological levels required for it.

The Team took the liberty of picking up the following lines/sections for concentrating the investment for maintenance which account for 68% of BDZ network.

Line 1, Line 2, Line 3, Line 4, Line 5, Line 6 (excluding the section of Radomir to Gyushevo), Line 7, Line 8, Line 9, Line 82 (the section of Plovdiv to Karlovo), and Line 83.

7.8.2 Research and Development

The technical level of BDZ' staff is regarded as high and regulations are well observed.

The development and research activities have been undertaken so far despite the difficulties.

Features taken for example are "compensated chain catenary" on catenary system, testing software on rolling stock and so forth and they are proved and applied at site.

Their development-oriented mind should be kept in view of the prospective introduction of energy-saving and software-oriented equipment and facilities, especially for future high speed attempts.

RECOMMENDATIONS TO BDZ

For BDZ to comply with the Government policy intending to acquire a full membership in EU in due course, It is recommended in this concern that:

—BDZ would perform the **Accounting Separation** as soon as possible, preferably with the MIS getting ready for practical use (presumably in 2000), and shift to the **Organisational Separation** (at the latest by 2005), not only for the improved management of the railway activities (by which to proceed to the **Institutional Separation**), but also for finalising the disputes on the **Access Charge** by solid estimation of infrastructure cost of each activity of freight and passenger service. The amount of Access Charge can be decisive for the financial balance of the Railways.

—It is recommended to accelerate the implementation of the standard plan on a step by step basis, when the social/political conditions and economic growth, as well as the improvement of BDZ financial balance, evolve more favourably than planned.

BDZ should improve its financial position, not only to survive into future, but also to smoothly shift into the Institutional Separation before 2007.

It is recommended in this concern that:

1) As to the **revenue improvements**, stress should be placed on:

—Pricing:

As to the freight, rather aggressive tariff raises in earlier years before the Open Access and competition getting harder.

As to the passenger, positive fare raises in later years, according to the increase in GDP per capita;

—Increasing of Traffic:

As to the freight, strengthening of Seamless Combined Transport, while the Marketing/Sales organisation being renovated as soon as FIS is ready for practical use.

As to the passenger, shortening “end-to-end journey time” with effective use of current resources, while technical preparation for the future high speed intercity operation being made. It is advised that a pilot project put under Feasibility Study, selecting an appropriate section of a Main Line.

2) As to the **cost reduction**, stress should be placed on:

— Continued staff reduction targeting to achieve 23000 in 2020 from current 51000;

- Improvement of the incentive system and training programs;
- Efforts to reduce/abolish services on certain light density traffic lines.

3) The financial independence of passenger service should be achieved by all means, promoting profitable activities and abandoning the deficitary ones.

APPEAL TO THE GOVERNMENT

The Government is already drafting the legislation for adapting the Bulgarian transport policies to those of EU, the Open Access, to begin with.

BDZ will undergo structural changes to implement these policies, the Separation of Infrastructure and Operation to begin with.

The steps to be taken in this regard should be closely coordinated and synchronised, so that the shift of this country into the European market economy might be successful.

The timing of Bulgarian membership in EU was provisionally assumed to be in 2007, based on the discussion in Steering Committee held 24/9/97.

The EU policy to revitalise the railway mode costs expensive for the member governments, but without it, the total transport would cost the more expensive for the societies considering the external costs. This is the underlying notion of the EU policy.

The Government should clearly take this into account and implement the financial measures to activate this transport system change. It is appealed to the Government in this concern that:

- 1) The Government should, in the said legislation, to clearly stipulate:
 - The financial responsibility of the Government, from the moment of Open Access, as to the entire maintenance and development costs of the railway infrastructure, in the same manner as it has been responsible as to the road, sea/air ports.
 - The long term investment plan which should be formulated in cooperation with Railway Infrastructure Manager. The plan should include, amongst all, the reinstatement of the normal level of railway maintenance which has been suppressed during the past decade. The plan should also include governmental investments to keep the competitiveness among the modes, so that the characteristics of each mode would contribute to the total efficiency of the national transport.
 - The concept of the railway Access Charge to be imposed on the licensees.
- 2) The Government should clarify and implement the notion of the Road User Charge.

The road users should be imposed this new charge to equilibrate the burdens between the two modes. The Government would evaluate the external cost of each mode and reflect the result in determining the both charges,
- 3) The Government should pay all the efforts to make the BDZ' passenger service financially independent. The structure where the freight service cross-subsidises the passenger service, cannot be long maintained under the new regime.

Supporting the BDZ' efforts to increase the passenger revenue, the Government should:

 - Fully compensate the passenger PSO,

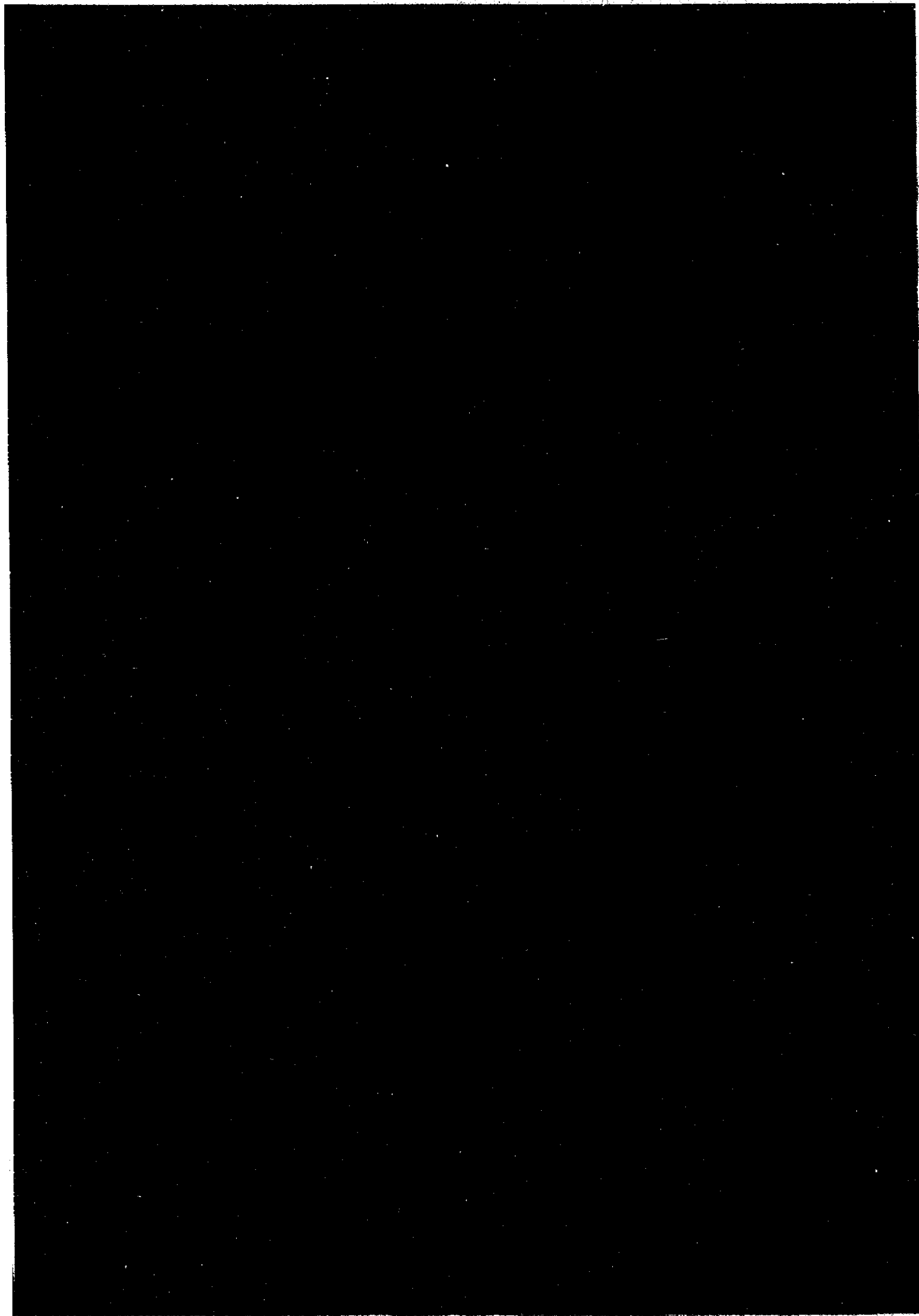
- Take initiative in reducing, abolishing the services of light density traffic lines;
- Shelve a part of the debt of the Passenger Unit/Company to the Government, prior to the Institutional Separation, and rearrange the terms and conditions of the repayment of the said debt, so that it might be less heavy for this weak Unit.

VOLUME II

DESCRIPTION

BY

SECTOR



CHAPTRE 1 SOCIO-ECONOMIC CONDITIONS

1.1 Bulgaria and Surrounding Countries

1.1.1 Overview of Surrounding Countries

Most of the countries surrounding Bulgaria are currently engaged in the difficult process of economic and political transition, with the exception of relatively developed countries such as Turkey and Greece. Radical economic and political reforms are necessary to address living standards that have dropped sharply since 1989.

Table 1.1.1 Basic Indicators

	Population ('000)	GDP (Million USD), 1995	GDP Per Capita, 1995	Unemployment Rate	Accumulated FDI/Capita USD (1989-1995)	FDI (Million USD)
Bulgaria	8,400	12,973	1,544	10.00%	36	302
Romania	22,730	35,534	1,567	18.40%	39	879
Yugoslavia	10,400	15,900	1,509	24.6%	18	38
Macedonia	1,946	1,700	790	34%	N/A	N/A
Bosnia and Herzegovina	4,380	2,105	501	53%	N/A	N/A
Ukraine	51,200	42,600	859	0.60%	11	581
Russia	148,300	3,633,881	2,461	9.10%	21	3100
Turkey	62,630	171,613	2,784	7.5%	N/A	N/A
Greece	10,500	114,300	10,910	10%	N/A	N/A

Source) Transition Report 1996 EBRD and EIU country reports

In general, the countries without war seem to have hit bottom and are beginning to recover while countries engaged in war are still unstable.

Romania is one of the succeeding countries in transition. The political situation generally seems to be stable and the economic condition is also positive thanks to FDI.

Ukraine's political condition is relatively stable with some uncertain factors. The economic situation has improved, but the economy remains in recession. Thanks to FDI, the future looks encouraging.

Macedonia, a major importer and exporter for Bulgaria, seems to be improving its political and economical performance in the medium term.

On the other hand, *FRY and Bosnia and Herzegovina* are still unstable politically and economically despite recovery from the most difficult situation during the war. As political and economical reforms have just begun, it will take time to secure a stable political situation and sustainable economic growth in these regions.

Table 1.1.2 GDP Growth

	1992	1993	1994	1995	1996	Average	1989=100
Bulgaria	-7.3%	-2.4%	1.4%	2.6%	-10.0%	-3.1%	73
Romania	-8.8%	1.5%	3.9%	6.9%	4.5%	1.6%	88
Yugoslavia	-21.1%	-8.4%	-4.0%	-1.5%	3.0%	-6.4%	56
Macedonia	-7.9%	-6.2%	-2.6%	-1.6%	1.6%	-3.3%	84
Bosnia and Herzegovina	N/A	N/A	N/A	8%	40%	N/A	50 of 1992
Ukraine	-10.0%	-14.0%	-23.0%	-11.8%	-7.0%	-13.2%	43
Russia	-14.5%	-8.7%	-12.6%	-4.0%	-3.0%	-8.6%	53
Turkey	6.4%	8.1%	-6.1%	8.0%	7.4%	4.8%	125
Greece	0.4%	-1.0%	1.5%	2.0%	2.6%	1.1%	105

Source) Transition Report 1996 EBRD and EIU country reports

Table 1.1.3 Inflation

	1992	1993	1994	1995	1996	Average
Bulgaria	82.0%	72.8%	96.0%	62.0%	95.0%	81.6%
Romania	199.0%	296.0%	62.0%	28.0%	60.0%	129.0%
Yugoslavia	1935.0%	230.0%	55.0%	9.0%	2.0%	446.2%
Macedonia	1690.0%	349.8%	121.8%	15.9%	3.0%	436.1%
Ukraine	2000.0%	10155.0%	401.0%	182.0%	55.0%	2558.6%
Russia	2318.0%	841.0%	203.0%	131.0%	25.0%	703.6%
Turkey	70.1%	66.1%	106.3%	88.1%	80.4%	82.2%
Greece	15.8%	14.3%	10.9%	8.9%	8.2%	11.6%

Source) Transition Report 1996 EBRD and EIU country reports

1.1.2 Ukraine

1) Political situation

Mr. *Kuchima*, the former PM, won the presidency in the election of 1994. He declared policies to ensure 1) the transition to a market economy, 2) no unification of the currency with Russia, 3) the promotion of tax reform and privatization.

He committed a radical IMF-approved economic stabilization program and promoted some radical reforms. However, the reform program not been slow and not entirely successful.

In recent years, significant progress has been made in resolving disputes with neighboring countries, and in May 1997, Mr. Kuchima and Russian President, Mr. Boris Yeltsin, signed a Treaty of Friendship and Cooperation, in which Russia finally recognized the current borders and an agreement was reached on the future of the Black Sea Fleet.

The forthcoming political risks to Ukraine are its relationship with Russia including the Crimea peninsula issue, the unstable structure of the parliament, and the coming parliamentary elections in 1998. As parliament is currently dominated by small parties, the lack of a Legislative and regulatory framework could be another problem.

2) Economic Situation

Although Ukraine was recognized as one of the most successful countries in transition to a market economy after the collapse of CMME for its well developed industries, strong mining industry, and abundant grains, Ukraine has suffered from one of the deepest recessions experienced by any of the transition economies. Although the official data indicate that in 1996 real GDP was only 43% of that in 1990, the economy has not seemed to hit bottom yet.

GDP fell by 7.5% in the first half of 1997 in relation to the same period of the previous year, which represents a slowing of the pace of decline. Industrial output fell by 4.5%, but important increases were observed in ferrous metallurgy and the fuel industry.

Thanks to the belt tightening policies recommended by the IMF, the rate of inflation has continued to decline steadily. The change in the consumer price index was 5.3% for the first six months of 1997. In any case, year-on-year inflation this year is expected to be no more than 25%, which was set to be the initial official forecast.

The food industry, construction/ building materials and light industry were the branches where

the output decline was largest. Agriculture contributed significantly to the poor performance of GDP with a production decline of 15.5%, a pattern which is expected to change in the second half of the year.

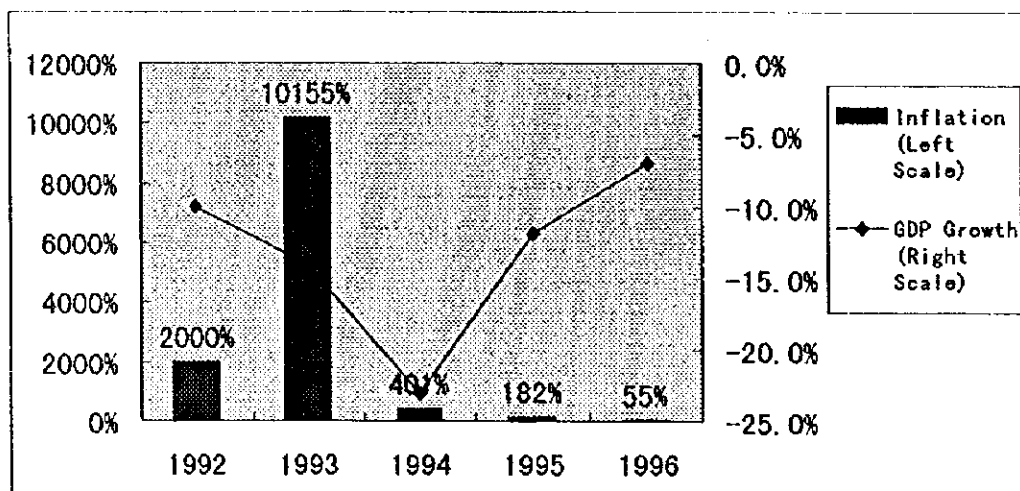


Fig. 1.1.1 Inflation and GDP Growth in Ukraine

Economic prospects depend crucially on the completion of unfinished fiscal reforms, alleviating the tax burden and easing the regulatory grip on producers. Although small scale privatization is almost complete, the restructuring and privatization of medium and large SOEs are still incomplete.

Economic recovery is not expected until 1998 (projected GDP growth of 1.0%) at the earliest, while a drop in inflation is expected (projected inflation rate in 1998 is 16.4%). It will take more time to get back to the level of 1989 (GDP/Head was almost USD 6,000).

There are positive signs coming from an increase in FDI, mainly from Germany, the United States, Russia, and England, and expanding trade with those countries and Russia. The new IMF stand-by program, which was approved in August, should reassure investors and facilitate the planned access of Ukraine to international capital markets. An improved economic performance in Russia and Germany, which are major export markets, should also help to contain the fall in output.

1.1.3 Romania

1) Political situation

Emil Constantinescu was elected president in November 1996 with 54% of the vote in a second round run-off against former president *Ion Iliescu*, who has held the president office

since the 1989. It ended the former communist ruling government which had continued since the downfall of *Ceausescu*. Now it is seemed that 70-80% of the people are positive to the new president and the political situation appears to be stable in the short term.

Romania's new government seems to support the continuance of the reform program to improve competitiveness. The new government launched a radical market-oriented economic reform package involving the removal of remaining price controls, a restrictive monetary and fiscal policy, and the liberalization of the foreign exchange regime.

Romania's exclusion from the first wave of EU and NATO enlargement (July 1997) was mentally a shock to the people but is unlikely to affect any political or economical changes. As in Bulgaria, it will take more time for Romania to take a seat in OECD, NATO, and EU.

The main political risks are the government's inexperience, possible splits within the ruling coalition, an inadequate bureaucracy and a possible negative reaction to Romania's exclusion from the first wave of EU and NATO Enlargement.

2) Economic Situation

Romania, like Bulgaria, lost its important market and business partners of the CMME and is now in the process of shifting focus to the West. The former president , *Ion Iliescu*, has promoted economic restructuring including land ownership, small scale privatization, price and foreign trade liberalization, and other market oriented reforms. However, progress has been rather slow and conservative compared with other Central and Eastern European countries.

Negative GDP growth hit bottom in 1992, and from 1993 the economy has been developing and growth reached 7.1% in 1995. Although real GDP growth is expected to be negative this year as a result of radical economic reform policies, there will be a rebound of growth in 1998, when GDP is forecast to grow by 4%. The recovery will continue as the economy is restructured. (88% of 1989 GDP in real term as of 1996)

According to the EIU, GDP growth is projected to average 4.4 % in 1998-2001 thanks to investment and exports. Inflation will continue to ease, but is unlikely to reach single digits in the projected period.

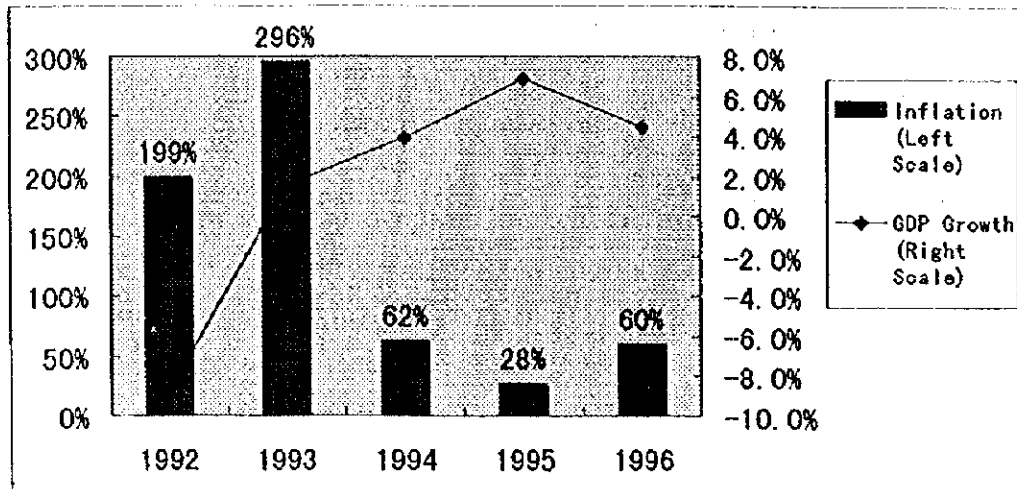


Fig. 1.1.2 Inflation and GDP Growth in Romania

There are several positive factors for the economy, including FDI inflow, expanded exports, drastic economic structural adjustments, and private sector development.

Romania experienced high FDI inflows in recent years. In July, the government approved a series of changes in foreign investment legislation to invite more foreign capital. Thanks to the open regime, increased incentives, the possibility for foreign ownership of assets, FDI is expected to increase in the coming decade. Exports and the developing private sector will also pull the economy.

The economy's long-term prospects are thus positive and renewed economic growth is expected late this year and in 1998, aided by increasing foreign investment stimulated by increased confidence and a more investor-friendly environment.

The Romanian economic risk is mostly dependent on the government's performance. The necessary radical reforms have been severe and capital is still scarce. Accelerating privatization and restructuring are key policy tasks for the current government.

1.1.4 Federal Republic of Yugoslavia (FRY)

1) Political situation

The war of Yugoslavian succession began in 1992 and continued through 1995. Slovenia and Croatia became independent from Former Yugoslavia in 1992. Then, the war broke out with Bosnia and Herzegovina in 1992 and continued until December 1995. The UN implemented an economic embargo against Yugoslavia in May 1992.

Following the suspension of UN sanctions against FRY and the signing of a peace treaty in

Paris in December 1995, the FRY has been recognized by the international community. Now FRY consists of two republics, Serbia and Montenegro.

Mr. *Milosevic*, a former Serbian president, was elected in July 1997 to serve a four year term as president of the FRY. Parliament is controlled by a coalition of the Socialist Party of Serbia (SPS) and the Democratic Socialist Party of Montenegro.

Mr. Milosevic's position seems to be safe in the short term. However, the recent result of the Montenegro Presidency election made his politics difficult and there will be a parliamentary and presidency election in Serbia soon. The political situation will therefore face many risks in the near future. At the same time, an enormous number of refugees and future economic reforms will contribute to political instability in the future.

2) Economic Situation

Within the former Yugoslavia, FRY was average in terms of economic performance. The economy is toward a transition to a market as same as East European countries.

The economy was severely damaged from 1991 through 1995 by the several wars and enormous number of refugees from Bosnia and Croatia. The consequences of UN sanctions, imposed in May 1992 were even more devastating.

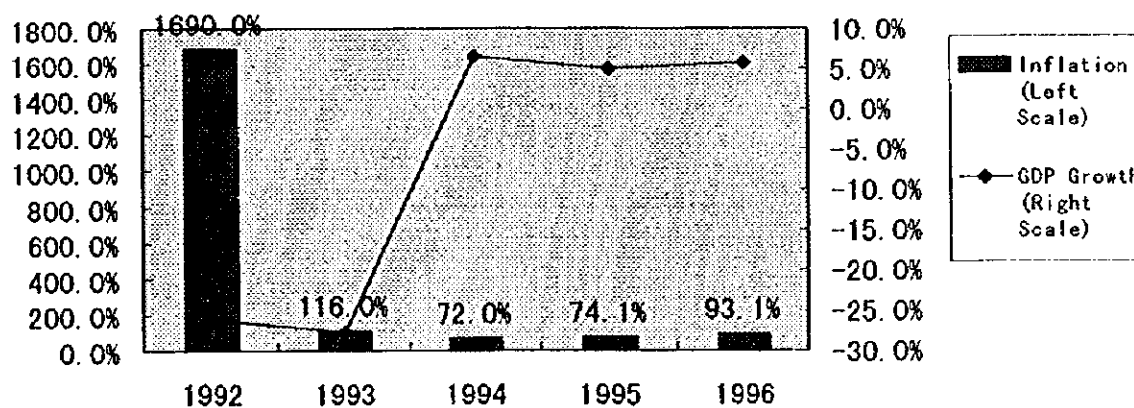


Fig. 1.1.3 Inflation and GDP Growth in Yugoslavia

After a period of Hyperinflation, a new dinar was introduced as national currency in January 1994, which is now fixed to German Mark. There were economic rebounds after the suspension of UN sanctions. Former trade partners are also slowly returning.

The projected GDP growth rate for 1997 and 1998 is 5%. The inflation rate for 1997 is

projected at 23%, for 1998 at 20%. In spite of the high GDP growth forecast this year, Yugoslavia's economic recovery is not expected immediately in the absence of a full normalization of external relations and radical economic reforms.

The delay in implementing economic reform since the suspension of sanctions at the end of 1995 has lengthened the time for FRY to catch up with the other transition economies. The unemployment rate in FRY is also severe (24.6% as of 1995). Under this situation, the privatization program will be implemented in the future making more labors lose their jobs.

1.1.5 Bosnia and Herzegovina

1) Political situation

As most Eastern European countries were separated from CMEA cooperation and some new countries became independent, Slovenia and Croatia declared independence from the former Yugoslavia. They were admitted by the UN and recognized as independent countries by international community in 1991.

Bosnia and Herzegovina were determined to become independent countries. However, the former Yugoslavia, supported by Serbian people, did not allow Bosnia and Herzegovina to be independent and the war broke out between Croats, Moslems, and Serbians. Already independent Croatia supported the Croats and the New Yugoslavia supported the Serbians, which deteriorated the war.

The horrible war continued from April 1992 to December 1995, when the Dayton peace agreement was made. The war brought enormous human casualties and material damage including the destruction of infrastructure. The war ended with the signing of the Dayton Peace Agreement at the end of 1995. According to the agreement, Bosnia and Herzegovina consists of two entities, the Federation of Bosnia and Herzegovina and the Republic of Srpska.

According to the Dayton Agreement, there is one representative for each ethnic group; *Alija Izetbegovic*, *Momcilo Krajisnik*, and *Kresimir Zubak*. Decisions are made by discussions among them.

A tentative peaceful situation seems to continue since the signing and full implementation of the Dayton Peace agreement. However, there are still conflicts between the ethnic groups and it will take some time to recover from the huge scale of damage. Political risk is still the highest in the European region.

2) Economic Situation

Bosnia and Herzegovina is also in transition to a market economy. However, transition has not succeeded because of the horrible war.

Until 1995, GDP decreased to less than one third of the level in 1991, which means 2.1 Million USD failed and GDP per Capita reached 500 USD. Economic activities almost disappeared and industrial production accounts for only 10% (90% diminished). Losses in employment were enormous, and the unemployment rate in 1995 reached 53 %.

In recent years, industrial production has increased by 90% (1996) compared with 1995. The improvement in economic activities has had a considerable impact on employment. Prices were generally stable in 1996 and the government succeeded in maintaining financial stability. The EIU forecast a GDP growth rate of 40% in 1996 and 30% in 1997.

A lot of problems for economic recovery and sustainable growth still remain: political instability, an extremely high unemployment rate, and international relations.

There is an urgent need to repair damaged housing, transport, and telecommunications infrastructure. Loans from international financial institutions are necessary for the recovery of the country and development of the economy. Also, the reconstruction program should be accelerated and extended to all regions of Bosnia and Herzegovina. However, it seems it will take more time for these programs to be completed. Therefore, for Bulgaria, the recovery of the market of Bosnia and Herzegovina and the use as the main route which Bulgaria formerly used for the transportation to Europe appears difficult in the short term.

1.1.6 Macedonia (FYROM)

1) Political situation

Macedonia declared its independence from the collapsing Yugoslav federation in September 1991. By the end of 1994 all EU and most other European countries, apart from Greece, had recognized the republic under the temporary name of the former Yugoslav Republic of Macedonia (FYROM). Since then, Macedonia has gained closer relations with the EU and the USA.

The latest presidential election was held in 1994 and Mr. *Kiro Gligorov*, aged 80, was re-elected with a resounding majority in the first round of voting. His moderate policy to foreign

counties and firm market-oriented policies have been supported by the people. However, after a remarkable recovery from serious injuries caused by the attempted assassination, he resumed his duties in January 1996 but his previously strong influence on his country's policy weakened significantly.

The relationship with Bulgaria has been pleasant because there is no transportation bottleneck and political relations are relatively good.

The main political risks are problems with Albania, the relationship with Greece and Yugoslavia, and the threat of political instability derived from ethnic polarization and the weakened influence of President Kiro Gligorov. Political instability may tend to worsen in the medium term.

2) Economic Situation

The Macedonian economy is export - import oriented and approximately 70% of the trade was within Yugoslavia. Agricultural products account for 43% of GDP and 48% in total employment.

Macedonia was one of the poorest republics of the former Yugoslavia, producing only about 5% of the federation's total outputs. As in Bulgaria, the economy has dropped sharply and suffered from the hyperinflation since the early 1990s due to the collapse of CMME cooperation and the Yugoslavia Federation. A trade blockade by Greece and cooperation with the UN sanctions against Yugoslavia also hurt the economy.

According to estimates by the Macedonian Bureau of Statistics, GDP has been reduced by 22% between 1990 and 1996.

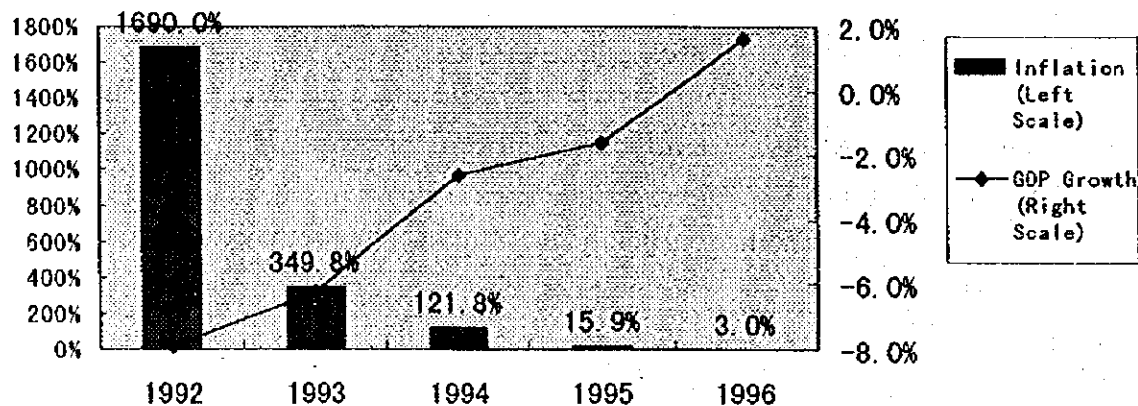


Fig. 1.1.4 Inflation and GDP Growth in Macedonia

Macedonia has recorded a significant stabilization success over the past few years, thanks to monetary and fiscal policies (inflation fell from 1690% in 1992 to only 2% at the end of 1996). The country's IMF-supported stabilization program contributed to the start of an economic recovery from 1996. According to the EIU, projected GDP growth for 1997 is 3.0% and 4 % for 1998.

The key problem for Macedonia is how to increase investment levels and saving. In addition, high interest rates are hindering investment. Another problem is unemployment. 866 firms employing 133,603 people had been sold by 1996 and another 312 firms employing 150,000 people are planned to be on sale by the agency for privatization. However, the privatization process has failed to attract foreign buyers.

The political crisis may also affect economic performance in Macedonia, where slower GDP growth is forecast in 1997.

1.2 SOCIAL FRAMEWORK

1.2.1 Political situation

Until recently, the Bulgarian Socialist Party (BSP) had been the leading party with a majority of the seats in parliament. In December 1996, the socialist government under Prime Minister Zhan Videnov resigned under growing pressure, including from within the socialist party itself. The Socialist Party tried to form a new cabinet without an election, however, as a result of mass protest against the party's dominance, a general election was called for the 19th of April 1997.

As a result of the election, a Union of Democratic Forces (UDF) coalition won a decisive victory with 57.1% of the vote. The former ruling party, BSP, came in second with 23.8% of the vote. The defeat of BSP is attributable to the poor economic policy of the former government which led to the further deterioration of the economy with hyper inflation and a still high unemployment rate. People are still losing real income, and their living standard has barely improved. Another factor could be the corruption of the officials of the BSP government.

The UDF leader *Mr. Ivan Kostov* was nominated to be the new prime minister and formed a new cabinet.

Table 1.2.1-1 The result of the parliamentary election on 19 April 1996

	% of the vote	Seats
Union of Democratic Forces (UDF)	57.1	137
Bulgarian Socialist Party (BSP)	23.8	57
Union for National Salvation (UNS)	8.3	20
Bulgarian Business Bloc (BBB)	5.0	12
Others	5.8	14
Total	100	240

Source: Bulgarian Business News

Prime Minister Ivan Kostov presented the government policy as follows;

- Prepare for the integration into the European Union (EU)
- Employ efforts to become a member of NATO
- Introduction of a currency board
- Acceleration of Privatizing SOEs
- Eradication of the crime organizations and black economy
- Prevent tax evasion

- **Economic growth and stabilization of the economy**

The election result clearly showed that the people have increasingly placed more emphasis on economic improvement, and their own income improvement in particular in real terms. In this sense, probably it is too early to conclude that the UDF has established a solid ground. There still remain destabilizing factors of the economy and people may claim economic improvement to be achieved as soon as possible. Thus at least in the short run, economic deterioration could possibly threaten the political situation.

However, it has to be born in mind that the BSP defeat is also attributable to the scandals. It could be difficult for the former ruling party to regain popularity in the short run. If this is the case, the voters may continue to be attracted by the non-BSP camp even when the new government loses popularity because of the still stagnating economy. We believe that the broad policy guidelines of UDF will be followed then.

1.2.2 Population

(1) Present State

The population in Bulgaria hit its peak at 8,981,500 in 1988 and has been decreasing since the political change. The population of Bulgaria was 8,487,317 according to the latest census conducted in December 1992, showing a 462,000 decrease compared with the previous census result in 1985. The decrease (- 5.1 % of 1985 population) is due to 1) Falling birthrate (13.3 per 1,000 people in 1985 to 9.4 in 1994), 2) Rising death rate (12.0 per 1,000 people in 1985 to 13.2 in 1994), 3) and Emigration to the foreign countries caused by the increased freedom to travel. The population density has dropped from 81 people per square kilometer in 1989 to 75.9 people in 1994.

The causes lie mainly in the various effects of economic hardship and pessimism about future economic conditions.

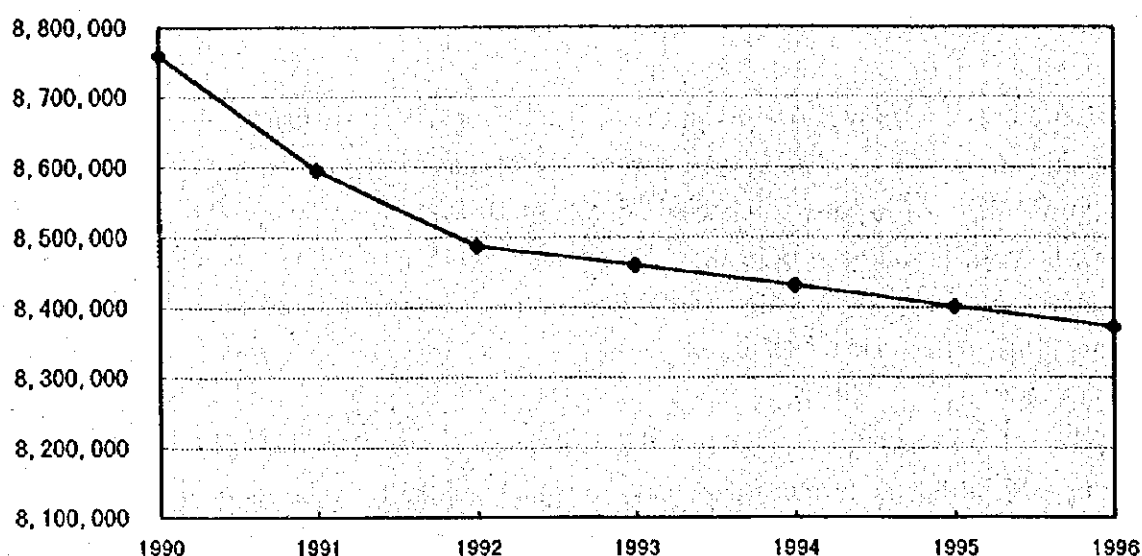


Fig. 1.2.2-1 The Population in Bulgaria

• **Birth rate**

1. Fertility rate in 1991 was 1.8 and reached 1.37 in 1994. The number of fertile women is also decreasing.
2. The share of the younger generations is decreasing, on the other hand, the population above working age is increasing
3. The marriage rate is decreasing while abortion rate is increasing

• **Death rate**

1. In 1994, the average longevity of the life was 67.2 years for men and 74.8 years for women. The causes of the downward trend in the average life expectancy is the worsened living conditions as a result of the economic crisis
2. Infant mortality has been slightly rising. (1.48% in 1990 1.63% in 1994)
3. As a result of the difficulty of receiving enough medical care, the death rate has been increasing.

• **Migrations**

1. The number of emigrants in 1992 was 70,000. The major part of the emigrating population is of the age from 20 to 35 years. Most of the potential emigrants are men.
2. The basic reasons for emigration are associated with the wish to make a better living standard and work in better conditions.
3. There is a certain accumulated immigration calculated to be 25 thousand people. These have been mostly people from Arab countries and the FSU. Some of them have the intention to emigrate to the West.

Another certain phenomenon is the *aging of Bulgarian society*. For the above reasons, the younger generation is decreasing while the rate of the people above working age is increasing. Decreasing young people means not only reducing future labor forces but also a decrease in future birth.

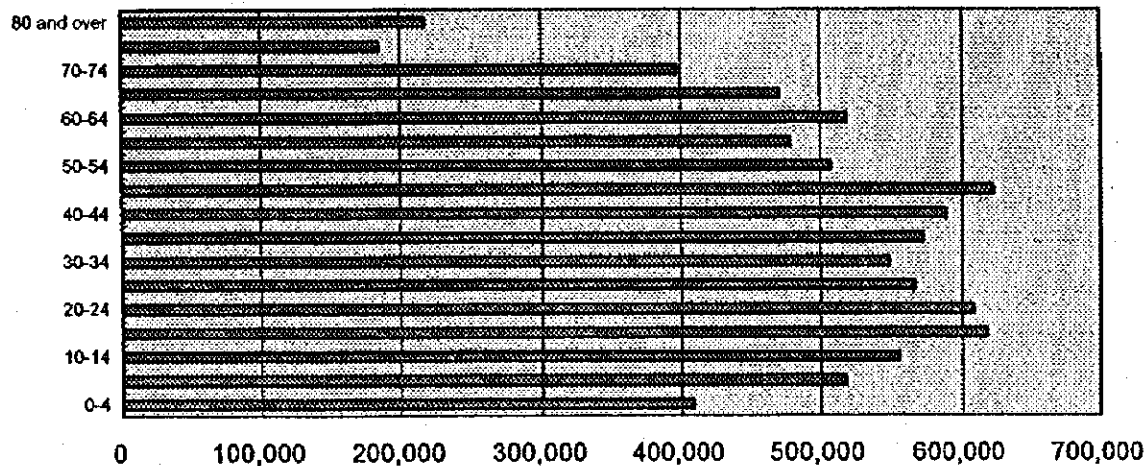


Fig. 1.2.2-2 Population by age group as of December 1995

The basic reasons of the depopulation are 1) Drop in the real incomes of most young families, 2) Rising costs of bringing up children, 3) High rate of unemployment, 4) Delay in the development of social security, 5) Difficulty in receiving enough medical care. It is expected those factors are gradually going to improve in the near future.

(2) Forecast

Population forecast is based on the study by the Ministry of Regional Development.

The forecasts are based on the following assumptions:

- **Birth rate**

1. Number of females will decrease up to the target year. The number of females between 20-29 is 577,397, 10-14 is 571,259 (98.9% of 20-29), 0-9 is 451,711 (78.2% of 20-29) as of 1996.
2. Female fertility rate has been decreasing and reached 1.37 in 1994. The figure will be moderate but still below 2.
3. Infant mortality will decrease as social welfare and the medical system develops.
4. Marriage rate will be moderate and increase in the long run.

- **Death rate**

1. In the long run, medical standards will catch up with the Western standard and contribute to a lower death rate.
2. As the social security and pension system develops and the economy recovers, the death rate will decrease slightly in the short run.
3. The average life expectancy is expected to remain at the present levels for the short time and then to the end of the forecast period to gradually start increasing.

- **Migrations**

1. It is expected that the number of the people leaving the country will be bigger than the number of the people coming the country in the short term. For the long term the number of the emigrants will be equal to the number of immigrants.

Table 1.2.2-1 Population Forecast of Bulgaria by region

	1995	2000	2005	2010	2015	2020
Sofia	1,179,683	1,158,127	1,131,295	1,102,097	1,065,739	1,024,442
Bourgas	849,656	846,905	843,865	839,392	829,528	817,497
Varna	916,063	914,272	910,136	903,455	890,685	875,380
Lovech	992,875	954,898	919,845	889,292	855,316	819,979
Montana	612,556	585,246	560,255	538,447	515,584	493,780
Plovdiv	1,212,376	1,200,308	1,188,671	1,176,467	1,154,558	1,127,139
Rousse	762,452	755,621	749,191	741,142	727,875	713,784
Sofia district	973,260	956,556	943,512	931,316	911,427	888,079
Haskovo	901,787	896,243	893,222	890,850	882,547	872,502
Total	8,400,708	8,268,176	8,139,992	8,012,458	7,933,259	7,632,582

Source : Ministry of Regional Development

It is assumed that the share of the aged people will continuously increase, on the other hand, the share of the population below working age will decrease.

Table 1.2.2-2 The future population of Bulgaria by working age

age	1995	2000	2005	2010	2015	2020
below working age	1,605,141	1,462,776	1,382,139	1,406,715	1,404,854	1,348,477
	19.11%	17.69%	16.98%	17.56%	17.93%	17.67%
at working age	4,758,293	4,768,550	4,687,985	4,485,003	4,300,572	4,168,575
	56.64%	57.67%	57.59%	55.98%	54.90%	54.62%
above working age	2,037,274	2,036,850	2,069,868	2,120,740	2,127,833	2,115,530
	24.25%	24.63%	25.43%	26.47%	27.16%	27.72%

Source : Ministry of Regional Development

For the forecast period, the outstanding phenomena of the population are described as 1) Gradual Depopulation, 2) Aging of the society, 3) The population movement to the urban cities. The impacts of those phenomena on the railway demand are mainly on passenger traffic volume, which is explained in chapter 3.

1.2.3 Employment and Unemployment

Since the economic reform, the country has faced a quite serious unemployment problem. The unemployment rate hit its peak at 20.5% in October 1994. Although the rate of unemployment has been reduced to 11.1% in October 1996, many destabilizing factors remain unsolved.

Several industrial sectors have managed to create employment opportunities even during the economic crisis. Thanks to these sectors and the slower reduction of employment in the other sectors, total employment increased slightly between 1993 and 1995. The industries which increased employment between 1990 and 1995 included finance, government, and agriculture. These economic sectors have definitely contributed to save the nose-dive in employment.

However, several destabilizing factors remain. It appears that the labor force shifted away from productive sectors to traditional and less productive sectors during this period. Particularly worrying is the agricultural sector where an increase in employment was achieved without any increase in output. Thus the sector may suffer from lower labor productivity, and is already in a situation of over-employment.

Table 1.2.3-1 Employment by Industry (Thousand)

	1990	1993	1995	1995/1990	1995/1993
Total	4,096.8	3,221.8	3,310.9	80.8%	102.8%
Industry	1,498.3	978.7	932.4	62.2%	95.3%
Construction	336.7	209.2	191.5	56.9%	91.5%
Agriculture	732.5	698.2	788.0	107.6%	112.9%
Transport	22.4	14.3	13.5	60.3%	94.4%
Communication	241.6	196.9	187.7	77.7%	95.3%
Trade	44.7	44.0	45.5	101.8%	103.4%
Material Production	29.0	30.8	32.0	110.3%	103.9
Public Utility	91.7	65.9	78.8	85.9%	119.6%
Science, Technology	90.9	36.4	28.3	31.1%	77.7%
Education	272.8	262.9	253.6	93.0%	96.5%
Culture, Art	47.2	41.5	41.8	88.6%	100.7%
Social Security	221.0	200.4	199.8	90.4%	99.7%
Finance	24.6	36.9	47.6	193.5%	129.0%
Government	54.4	67.1	89.4	164.0%	133.2%
Others	14.2	6.6	4.0	28.2%	60.6%

Source : NSI

Tertiary sector has the same problem as agriculture. Although the sector as a whole has enjoyed relative stability in total employment, it is evident that productivity has substantially fallen since 1992 as production of the sector has sharply decreased.

It is vital to industrialize the economy in order to absorb the apparent and hidden unemployment (over employment in agricultural and tertiary sectors) by creating huge employment opportunities. This is true even after taking into consideration the decreasing trend of population and work force.

1.3 ECONOMIC FRAMEWORK

1.3.1 Industrial Structure

(1) Agriculture

Agricultural land is an estimated 6,200,000 ha, 62% of the total land area. The main crops are Wheat, Maize, Alfalfa, Barley, Tomato, Tobacco and Bulgaria is a distinguished producer of processed agricultural products including Yogurt, Cheese, Wine and roses for perfume. District wide agricultural characteristics depend on the crops. In general, Varna and Rousse appear to be the most active districts for agricultural production followed by Bourgas, Plovdiv, Lovech, and Montana. Agriculture accounts for 14.1% of GDP and 24.2% of employment in 1995.

Before the political reform, Bulgaria had been a net exporter of agricultural products. However the sector's production has been decreasing sharply and Bulgaria now is a net importer of food products. The collapse is mainly due to the *Land reform* (1992) and the loss of the CMEA market. Land reform has virtually halted, with less than 65% of the property actually returned to former owners by 1995. In many cases, the former owners were no longer engaged in the agriculture business and thus much land is kept unused.

Table 1.3.1-1 Agriculture output (Thousand tons)

Year	1990	1991	1992	1993	1994	1995	1996	96/90
Wheat	5292	4497	3443	3618	3754	3435	1786	33.7%
Barley	1387	1502	1195	933	1143	1173	456	32.9%
Maize	1221	2775	1742	983	1384	1817	1089	89.2%
Grapes	731	748	787.0	482	516	699	660	90.3%
Potatoes	433	498	566	357	497	649	320	73.9%
Meat	551	313	239	180	125	130	126	22.9%
Milk	586	368	307	216	173	150	143	24.4%

Source : NSI

For those reasons, most agricultural outputs have been decreasing in recent years. From the international point of view, Bulgarian labor productivity in agriculture is about 2/3 to 1/3 that of developed countries depending on the agriculture product (Source : FAO). Nevertheless, labor costs are roughly 15 times less than those countries (Source : EBRD Transition report 1996). Thus the sector appears to have much lower unit labor cost than the other countries, and may be able to exploit the competitiveness once internal and external environments develop.

However, as the sector is supposed to be in an over employment situation, the possible production increase could be achieved without increasing labor input. If the growth rate of the

sector's production is small, then the absolute number of the agricultural population may even be able to decrease.

(2) Industry

At one time, the country had a highly sophisticated industrial structure, led by assembly industries such as machinery, electrical and electronics manufacturers. In 1990, these industries accounted for up to 30% of total industrial production. However, as these industries had been highly dependent on exports to the neighboring countries, they have been quite severely hit by the loss of the former exporting markets. The result is that the machinery sector has lost 50% in terms of production volume in 1995 compared with 1990 and the electrical and electronics sector lost almost 60% during the same period.

Another characteristic of assembly industries is that they are highly labor intensive. Thus the massive loss of production in these industries resulted in a substantial fall in employment opportunities.

Table 1.3.1-2 Industrial Output Index

	1990	1993	1995	1990	1993	1995
	1990=100			% Share		
Total	100.0	58.3	66.6	100.0	100.0	100.0
Electricity	100.0	82.7	84.5	4.6	10.2	7.8
Ferrous Metal	100.0	63.2	87.8	3.1	5.6	6.3
Non-Ferrous	100.0	81.8	86.3	2.2	5.2	4.9
Machinery	100.0	48.1	49.6	17.3	10.0	10.3
Electrical, Electronics	100.0	38.7	40.7	12.6	6.2	5.0
Chemical, Oil	100.0	59.9	95.7	12.1	19.2	25.8
Building Material	100.0	48.0	55.2	3.3	2.9	2.8
Textile	100.0	50.4	46.3	5.7	3.9	3.4
Food, Beverage	100.0	51.9	52.0	23.3	21.2	20.5

Source: NSI

Table 1.3.1-3 Characteristics of Major Industries Unit: million Leva

	Export	Import	Compensation
Electricity	557	1,214	2,634
Metallurgy	14,503	8,660	3,468
Machinery, electrical	16,029	31,044	10,668
Chemical, Oil	26,458	37,673	4,464
Building Material	1,287	749	1,330
Textile	3,494	4,929	1,866
Food, Beverage	18,364	14,163	2,325

Source: NSI

However, a careful analysis uncovers some brighter aspects which have been emerging during the past couple of years. Several industrial sectors have recorded substantial gains in production

between 1993 and 1995 including non-ferrous metal and chemical products. Also, most of the other sectors have gained, though slightly, during the same period. It may be possible to conclude from these industrial movements that the worst appears to be over.

Unlike the primary and tertiary sectors, this sector has managed to raise labor productivity between 1991 and 1995 as the business environment of the sector was the most severe and almost all the producers were urged to restructure at the earliest stage. Although the absolute level of productivity may still stand below 1990 and before, the future development of the sector is expected to be able to create employment opportunities.

(3) Foreign Direct Investments and industrial development

Foreign direct investment (FDI) is necessary for substantial economic growth. FDI makes it possible to introduce both new technologies (and global standard technologies) and capital investments at the same time.

According to the Foreign Investment Agency, the amount of the foreign direct investment in Bulgaria has been increasing since 1991, and cumulative foreign investment for 1996 (as of September) is 718 million USD, about 50 times the total received in 1991. The major investing countries are Germany (32.8%), Netherlands (9.7%), Switzerland (7.9%), Greece (6.2%), and other European countries.

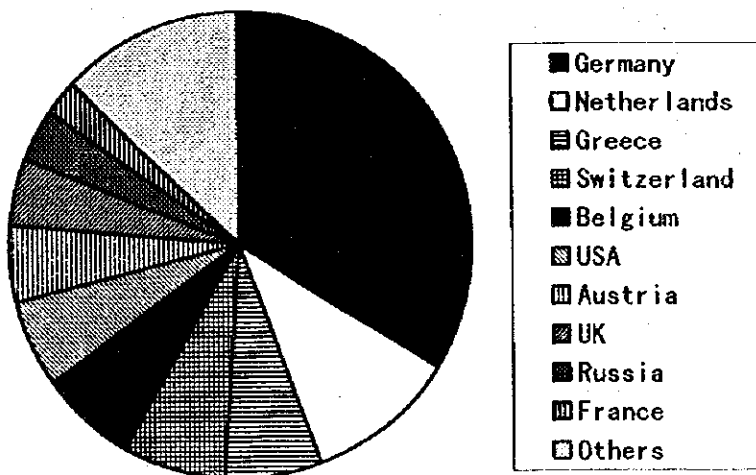


Fig. 1.3.1-1 Foreign Direct Investments by Country

Foreign companies with the conditions listed below are eligible for tax relief.

Profit tax relief is available to:

- investors acquiring 67% of a company through privatization - no profit tax during the first three years and 50% of the official tax rate in the following two years.
- companies with at least 50% foreign participation and capital exceeding \$5 million if they invest at least 50% of the capital in fixed assets.
- agricultural producers

Value added tax relief is available to :

- non-monetary contributions in Investment equivalent to at least \$100,000 in companies with foreign participation
- Transfer of ownership rights over land, lease of land, financial, insurance and other services.
- Temporary imports and re-exports.
- Export transactions

However, from the international point of view, cumulative FDI in Bulgaria has not been as active as that flowing into other Central and Eastern European Countries. FDI per capita in Bulgaria is only 1/30 compared with Hungary. Indeed, Bulgaria's FDI is low despite the relative attractiveness of the country's tax incentives, free trade zones, telecommunications and electric power infrastructures compared with other CEE countries. The reasons often cited for the lackluster interest in Bulgarian FDI are the unstable political and economical situation, the delay in the privatization program.

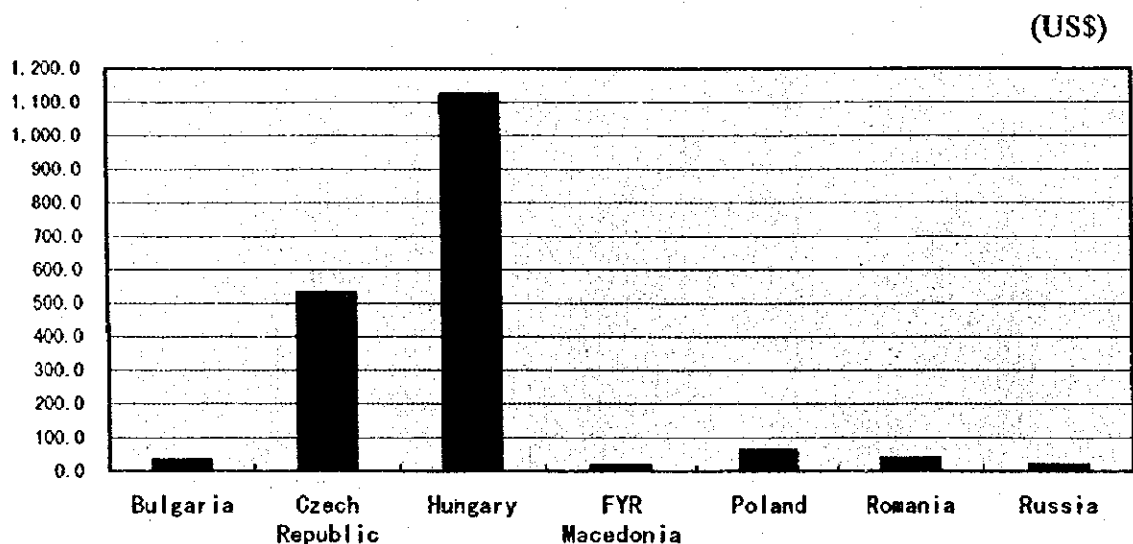


Fig. 1.3.1-2 Cumulative FDI per capita during 1989-1995

There are 6 *Free Trade Zones* in Bulgaria for the promotion of FDI: Rousse, Plovdiv, Svilengrad, Bourgas, Vidin, and Dragoman, each with tax exemption and other incentives for foreign investors in those zones. Two of them are along the Danube river at the ports of Vidin

and Rousse. The others are situated along the important corridors connecting western Europe with the Middle east and FSU.

In free trade zones, foreign companies are exempt from income tax for 5 years and profit tax for 3 years (50% payment for the next 2 years).

1.3.2 Demand Structure

The factors which led to the deterioration of the Bulgarian economy are obvious. First, one of the key components of GDP, exports, was quite severely hit by the loss of export markets such as the former CMEA countries. The most severely hit were machinery, electrical and electronics manufacturers. These industries were and still are export oriented and labor intensive. The collapse of these industries has thus caused both a loss of employment opportunities and a sharp fall in foreign currency revenues as well. As a result, investments in fixed assets and private consumption have been adversely affected. Fixed capital formation in particular was one of the components which has suffered a substantial setback.

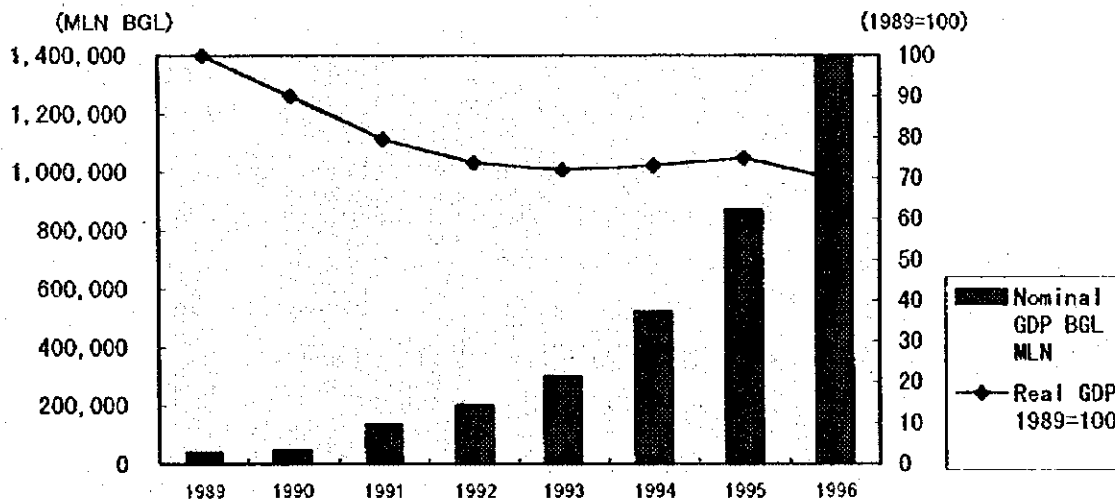


Fig. 1.3.2-1 Nominal GDP and Real GDP

The whole economy reached bottom around 1993 as the recovery began in some aspects of the economy. Exports showed a small recovery in 1994 and 1995, and the employment situation improved somewhat. But there are still a number of destabilizing factors, including persistent inflationary pressures, the expected restructuring of the state owned enterprises, and more.

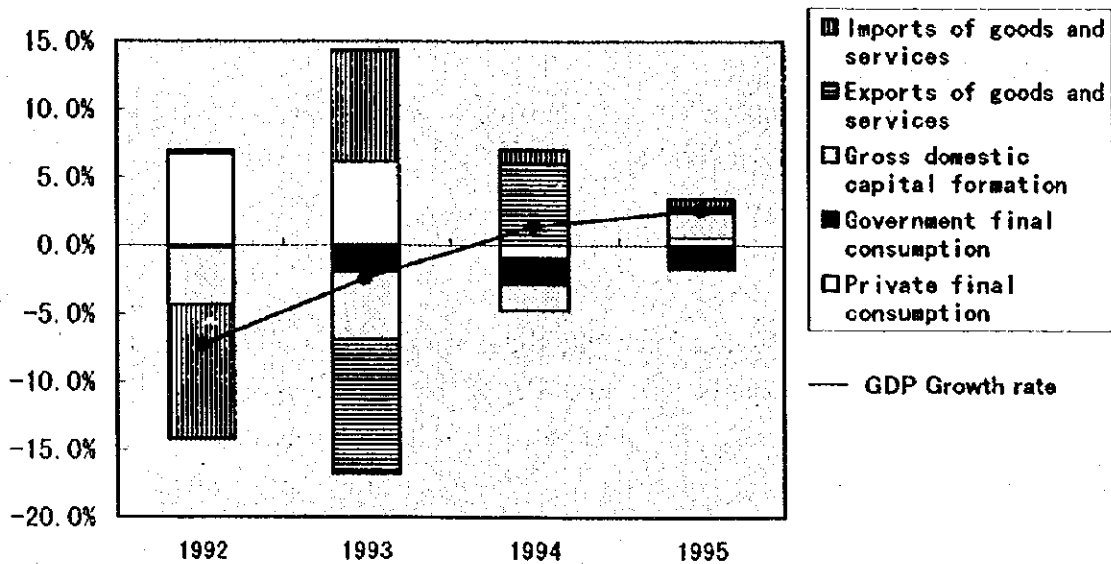


Fig. 1.3.2-2 Contribution to the economic growth

1.3.3 Income Distribution

(1) Income distribution

Income had been almost equally distributed between the household and corporate sectors back in 1991. However, the economic turbulence after that did not allow this equality to continue and income distribution has wildly fluctuated since then. Until 1993, the distribution had been much in favor of the household sector, and the gross operating surplus of the corporate sector had decreased sharply in terms of the share in GDP. Although the situation improved somewhat in 1994, the composition of the gross operating surplus has not recovered to the level achieved in 1991.

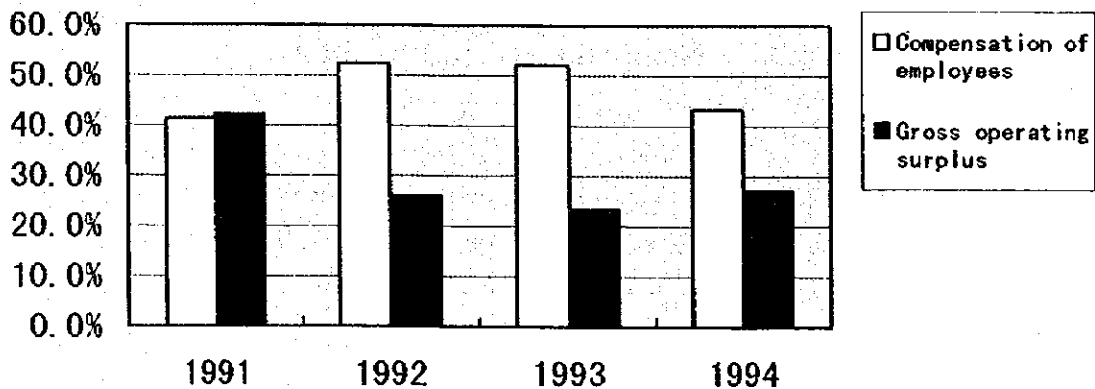


Fig. 1.3.3-1 The share of compensation of employees and the gross operating surplus in GDP

The aforementioned situation of the corporate sector recession is quite common among many

countries when the economy falls in a severe recession. Another aspect of the corporate recession in Bulgaria this time is illustrated in the figure 1.3.3-2, which shows the trend of the share of fixed capital consumption in gross national income. The share has been reduced since the beginning of 1990s, and has reached around 10% in 1994.

Less consumption of fixed capital means a lack of fresh investment. Actually at one time in 1993, the gross fixed capital formation almost equaled the fixed capital consumption. Nothing new was added to the fixed capital in that year. This is a quite serious situation particularly for the corporate sector in that productivity improvement cannot be expected without fresh investment, and economic growth can not become possible.

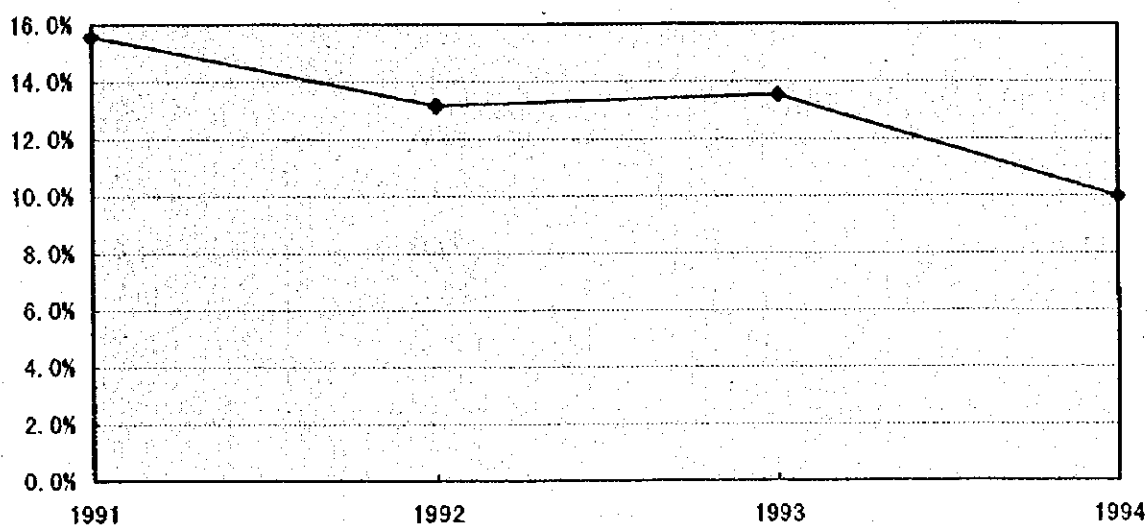


Fig.1.3.3-2 The share of consumption of fixed capital in Gross National Income

The latest pattern of income distribution suggests that the corporate sector will become the first and greatest beneficiary when the economy starts to grow and develop. At least during the initial stage of economic recovery, the corporate sector will have to compensate for the losses during the recession. Actually, there have been many cases when the recovery brings a higher share of gross operating surplus in the gross national income and that of household income tends to lose.

(2) Household Income

After 1990, the Bulgarian government has been controlling wages for the stabilization of economy and tightening government expenditure. Wages can not catch up with inflation, therefore, 1996 real wages were only 53% of the 1990 level.

Recently due to the severe political and economic crisis, the average wage in the public sector severely declined from 130 USD in December 1995 to 79 USD in September 1996.

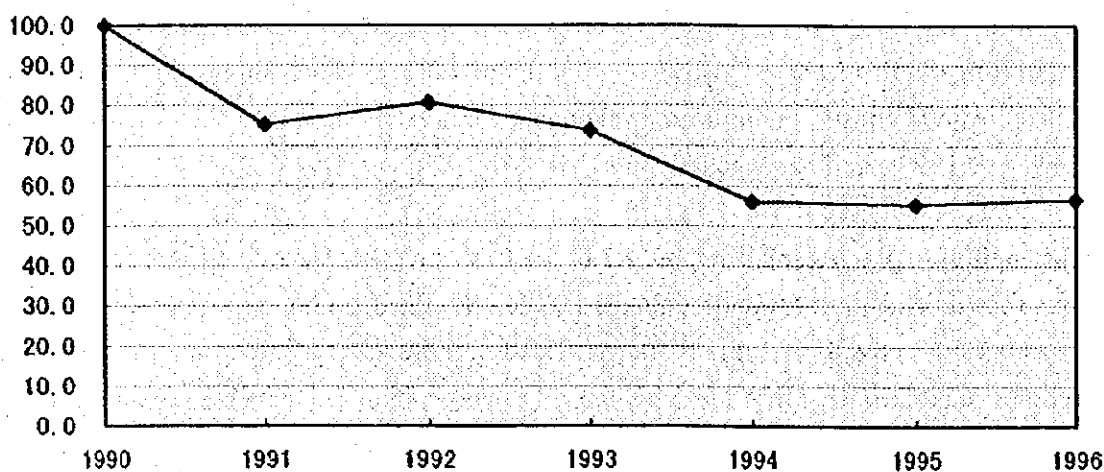


Fig. 1.3.3-3 Real Income Indicator (1990=100)

Table 1.3.3-1 Income and Prices

(1990=100)

	1990	1993	1995
Nominal Wage	100.0	895.7	2,067.9
Real Wage	100.0	73.0	55.6
Real Social Pension	100.0	N/A	40.9
CPI	100.0	1,227.5	3,722.0
WPI	100.0	784.1	2,095.7

Source : NSI

The high rate of growth in nominal earning has been much more than offset by the hyper inflation during the first half of the 1990s. The statistics prove that the real, rather than nominal, wage has been reduced by nearly half in 1995 if compared with 1990. Consequently, the people's purchasing power has been significantly eroded.

It is quite natural to see the tendency that the household sector has become defensive by allocating their expenditure more to daily necessities. The composition of food expenditure in the total rose from 43.5% in 1992 to 46.3% in 1995. The composition of some other expenditure items have been adversely affected as is illustrated by the decrease in the share of clothing and transport communication.

Table 1.3.3-2 Household Expenditure (% of Total)

	1992	1993	1994	1995
Foods	43.5	42.9	45.0	46.3
Spirits	2.3	2.1	2.0	1.8
Tobacco	1.9	2.2	2.4	2.2
Housing	3.6	4.2	4.1	3.7
Energy	4.3	4.5	4.3	4.5
Clothing	4.7	4.7	4.6	4.3
Healthcare	8.3	8.1	7.4	7.8
Education	1.9	2.5	3.2	3.7
Transport, Communication	7.7	7.9	8.0	7.1

Source : NSI

Bulgaria's social protection system has three main programs; 1) Social insurance (pensions for the elderly and disabled, benefit for accidents, illness and death, maternity benefits and child allowances), 2) Social assistance (cash and in kind assistance programs and social institutions) and 3) Unemployment insurance (unemployment benefits, labor market information, re-training of unemployed, and employment programs), all of them under the authority of the Ministry of Labor and Social Welfare. Social protection expenditures accounted for some 12.2% of GDP and 27.4 % of total government expenditure in 1995.

The social safety net is a crucial source of income for low income households. On the other hand, the expenditure on the social safety net has been rising and threatening the government budget. Expenditure on social security reached over 15.2% of GDP in 1993 and has been reduced to 12.2% in 1995. In recent years, as advised by the IMF, the government has tried to balance the budget and tighten government expenditure. The expenditure on the social benefit is not an exception and will be reduced. In addition, the performance of social security has been inefficient. The high level of income taxes, imposed to finance social protection programs, have serious adverse implications for job creation, labor markets and growth. Social security reform is therefore considered essential.

1.3.4 Foreign exchange and Inflation

Since February 1991, the foreign exchange rate has been determined by a floating system. Depreciation of the national currency, the Leva, has led to high inflation rates since then. Theoretically, currency depreciation should stimulate exports, but so far it has not as the industrial base of the country has not developed yet. As a result, the ongoing depreciation only

serves to raise domestic prices.

In 1994 and 1995, the exchange rate was relatively stable due to capital inflows and a relatively strong trade performance. However, the exchange rate sharply depreciated in 1996 again. The average monthly exchange rate to US Dollar was 70.7 Leva in January 1996 and it reached as high as 461.2 Leva in December.

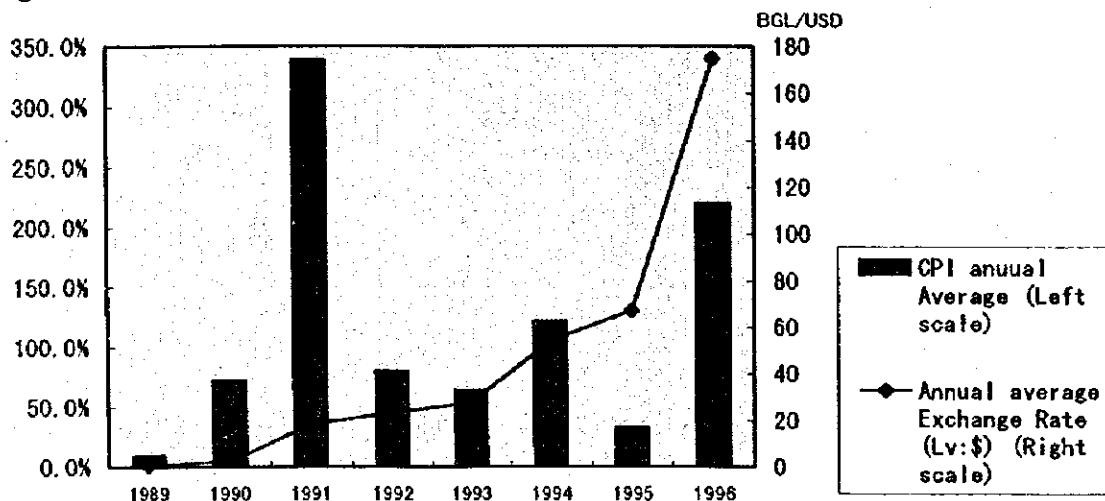


Fig. 1.3.4-1 CPI and average annual exchange rate

At the same time as currency was floated, the prices of most goods were also freed to be set by the market. As a result, the economy has long suffered from hyperinflation. The effect of the exchange rate has been substantial as the country depends on imports of materials and fuels. In 1991, currency depreciation lead to hyperinflation of 333.5%. Since then, there has been a vicious circle between currency depreciation and general price hikes. Although the situation was relatively stable between 1992 and 1995, inflation surged again in 1996 when the CPI recorded a 311% rise compared with the previous year.

It is obvious that the relationship between currency depreciation and inflation is quite high, but it is important to note that the country also suffered from a lack of any effective shock absorber to mitigate general price hikes. Theoretically economies with higher productivity gains are able to absorb some of the inflationary pressure. In the case of Bulgaria, however, productivity gains are still meager, making it difficult to achieve price stability.

In July 1997, the Bulgarian Bank Act, which will serve as the basis for the introduction of the currency board arrangement, was approved by the National Assembly, establishing fixed exchange rates as of 1 July. The German Mark (DEM) is used as the anchor currency at the exchange rate of BGL 1,000 for DEM 1. The exchange rate is expected to be around 1700 BGL to a USD.

The introduction of the currency board is a vital factor to curb inflation and expectation is that it might adversely affect the production activities in the short run. Although this is definitely a desirable method for long term economic stability and development, the people might suffer from short term repercussions.

1.3.5 Fiscal policy and subsidies

The fiscal structure has been changing dramatically since the political change of 1989. The share of both revenue and expenditure in GDP was over 50% before 1990 while all of the economic activities were dominated by the government. The share of the revenue in GDP dropped to 30.8 % and the share of the expenditure accounted for 44.4% in 1995 as the country transferred from a planned economy to a market economy.

The budget deficit hit its peak at 15.7% of GDP in 1993. Due to the introduction of the VAT, it dropped sharply to 6.6 in 1994. The budget deficit was set at 5.7% of GDP in 1996, which was higher than anticipated because of the bankruptcy of several banks. As the IMF recommended a balanced budget, the government has to reduce the budget deficit soon. The expected budget deficit is 5.8% of GDP in 1997.

However, it is not easy to cut more social security costs or to introduce more taxes, and the burden of interest payments, which account for 13.6% of GDP, make it difficult to make any progress at all.

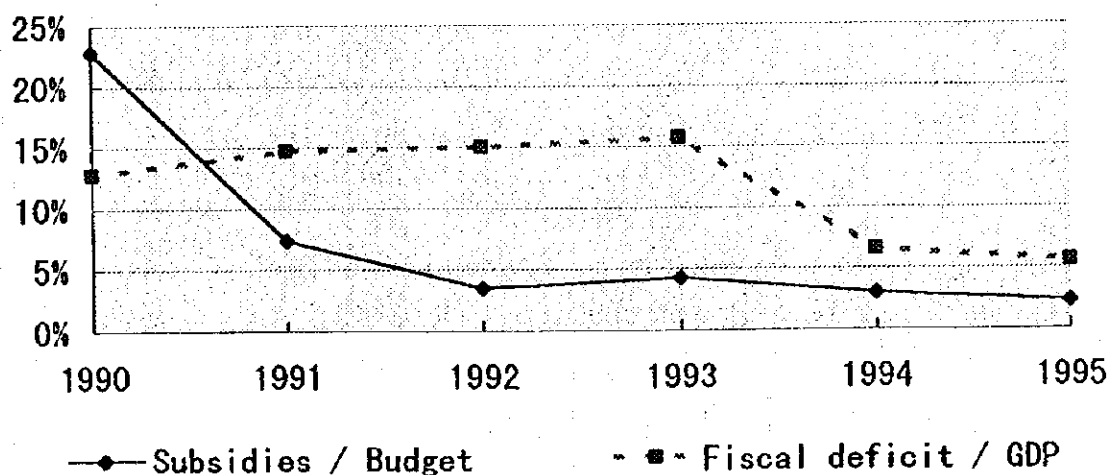


Fig. 1.3.5-1 Fiscal deficit / GDP rate and subsidies / Government budget

The share of subsidies in the budget was 15 % in 1990. As a part of the fiscal reform, it has been reduced to 1% in 1995 as many of the former SOEs moved into the private sector and the

government decided to no longer subsidize most of the government owed enterprises. In 1995, BDZ received its subsidy from the government for 1.7 billion BGL, which accounts for 19.5% of the total subsidy.

1.3.6 Exports and Imports

Before 1989, Bulgaria's main trade partners were the CMEA Countries (83% of exports and 72% of imports in 1989). In early 1990, Bulgaria suddenly lost most of the CMEA markets and proceeded to change its trade partners to European countries (36.5% of exports and 31.3% of imports in 1996). However, the CIS and Russia are still big trade partners for Bulgaria especially for natural gas, crude oil, and other raw material imports. In general, a trade trend shows the exports of manufactured products to the West with imports of raw materials from the CIS. The trade turnover accounts for 99.2% of GDP in 1996.

Table 1.3.6-1 Exports and imports by country (%)

	Exports			Imports		
	1990	1993	1996	1990	1993	1996
Former CMEA	80.2	35.1	31.7	75.9	36.6	37.7
FSU	64.0	19.3	19.3	56.5	30.5	31.7
FYR	1.0	10.4	4.8	0.9	1.9	N/A
OECD countries	9.0	43.2	48.9	14.9	44.8	39.1
EU	5.0	28.2	36.5	9.6	29.8	31.3
Arabic countries	6.1	7.2	N/A	4.3	4.5	N/A
Others	4.7	14.5	19.4	5.0	14.1	23.1

Source : BNB, NSI

In 1996, EU countries continued to be the most significant trade partners in the geographic structure. As Bulgarian exports are strongly dependent on demand fluctuation in EU, slower growth rates in EU countries resulted in a lower demand for Bulgarian goods.

It is obvious that Russia, Germany, Greece, and Macedonia are the most important trade partners for Bulgaria. It seems that some of the main trade partners are also the main investing countries (Germany, Greece, the United States, and some other western countries)

Table 1.3.6-2 Major Exporters and Importers

	Major exporters	Share %	Major importers	Share %
1	Russia	13.5	Russia	26.4
2	Macedonia	10.3	Germany	12.8
3	Germany	8.9	Italy	5.4
4	Greece	7.8	Greece	4.8
5	Italy	7.6	Ukraine	4.2
6	United state	5.2	Macedonia	3.1
7	Yugoslavia	3.6	United States	3.0
8	Ukraine	3.2	Austria	2.9
9	France	2.8	France	2.7
10	UK	2.7	United Kingdom	2.7
	Japan	0.5	Japan	0.9

Source: NSI Foreign Trade 1995

During the 1960s, the biggest share in the *export* commodities had been agriculture products, processed foods, and raw materials. As industrial policy pushed heavy industry during the 1970s and 1980s, machines and equipment occupied 60% in total exports during the same period. After the political change, those heavy industrialized products lost their international competitiveness and the share dropped to only 15.2% in 1996. Currently Chemical products account for 20% of total exports, followed by Agricultural products with 18.9 %, metals with 17.5%, and clothing and footwear with 14.8%.

Bulgarian main *imports* had been equipment, machine parts, and raw materials during the CMEA cooperation. The machines and electronics had been manufactured within Bulgaria and the completed products were exported to the CMEA. This mechanism has been broken somehow with the political change and most of traditional import products has been decreasing since then. However the raw materials from the former CMEA are still important for Bulgarian industry. In 1996, 40.7% of total imports were fuels, followed by machines with 18.4 %, and chemical products with 12.2%.

(2) Forecast

Expected significant changes in the *geographic* trading structure are listed below;

1. Recovery of the lost market of the FRY is gradually expected.
2. The economy of the surrounding countries especially FSU is expected to improve.
3. The big investors (Germany, Greece, Italy, etc.) will become the big trade partners.
4. Free Trade Agreements are being prepared with Poland, Hungary, the Czech Republic, Slovak Republic, Romania and the amount of trade with those countries seems set to increase gradually.

5. Trade agreements with the FSU and the black sea countries are being prepared and the economic relationship will be stronger than before.
6. The OECD, Arab countries and some Asian and American countries will play an important role.
7. Bulgaria can play a role as the important Hub between Arabic countries, CIS, and Europe

Expected significant changes in the *commodity structure* are listed below;

1. The current export-import structure will not undergo considerable changes.
2. Base metals, chemical products and food-processing industry will play an important role for the trade surplus.
3. The comparative advantages of the food-processing, mineral products, plastics goods, and other products of light industry will improve their importance.
4. In the long run, thanks to the FDI, the international competitiveness of the labor intensive industries will improve and the export amounts of these commodities will increase.

At the same time, the import tax of 5% will be gradually reduced and the trade amount (both exports and imports) is expected to improve. According to AECD forecast, the export amount in USD will become 174% of 1995 in 2005. The import amount will also improve by 177% of 1995 in 2005.

1.3.7 International relationship

(1) Relationship with European Unions

In Bulgaria, one of the top priorities is integration into the European Union (EU). Bulgaria became an associate member of EU in March 1993 and submitted an application to become an official member of EU in December 1995.

The advantages of the integration into the EU for Bulgaria are 1) Advantages from CAP, 2) Expected assistance from EBRD, 3) Expected FDI inflow, 4) A reduction of the export tariffs, and 5) Overall synergistic economic effects.

To become an EU member, Bulgaria has to meet the following requirements.

- meet the obligations of EU members including political and economical rule
- establishment of Democracy, Law framework, human rights, respect of minorities
- creation of a market oriented economy

If Bulgaria becomes a part of the EU, BDZ would need to follow European railway regulations. The timing of joining the EU for Bulgaria is unclear at this moment, however, experts consider

it difficult to become a member of the EU before 2005.

(2) Relationship with the Federal Republic of Yugoslavia

UN sanctions against the Federal Republic of Yugoslavia had a big impact on Bulgaria. Bulgaria started the embargo against the Federal republic of Yugoslavia as prompted by the UN Security Council in 1991. As a result, Bulgaria lost not only one of its major trading partners, but also its prime transportation routes to Western Europe via Zagreb - Belgrade.

The loss associated with the implementation of UN sanctions estimated by the Bulgarian authorities during July 1992 - December 1993 was USD 3.7 billion, which accounts for 34% of 1993 Bulgarian GDP. The embargo against the FRY was removed in November 1995 and the trade with Yugoslavia started growing, however, whole trade did not resume at once and the difficulties for the transportation through the FRY still remain.

(3) Relationship with CEE Countries

Compared with other CEE countries, the economic situation of Bulgaria is relatively poor because of the delay of the economic reform. Nevertheless most of the CEE countries overcame the worst of their economic problems in 1993, Bulgaria is still in a bad condition for a recovery.

Table 1.3.7-1 Comparison of the main economic indicators with CEE countries

	Nominal GDP 1995	Average GDP Growth 1993-95	GDP / Head 1995	CPI 1995	Budget Balance 1995	Foreign Debt 1995	Foreign Reserve 1995	Foreign Direct Investment 1995	Population	Moody's rating 1996
Unit	Mil. USD	%	USD	%	% of GDP	% of GDP	Mil. USD	Mil. USD	Million	
Bulgaria	12,973	1.5%	1,250	220.0%	-6.5	72.8	548	302	8.4	B3
Romania	35,534	4.1%	1,645	45.0%	-2.6	15.1	2,727	879	22.7	Ba3
Czech	45,650	2.2%	4,986	8.5%	0.6	36.3	16,578	5,481	10.3	Baa1
Hungary	43,758	1.3%	4,741	23.2%	-6.5	72.3	10,875	11,466	10.2	Ba1
Poland	117,951	5.3%	3,681	19.0%	-2.6	37.2	21,924	2,423	38.6	Baa3

Source : EBRD Transition Report 1996

As those countries are in the process to success in the transition, a large amount of FDI is flowing to those countries due to the success of the economical and political changes. The trade of those countries is mainly associated with EU countries especially with Germany as the biggest investor.

Although the trade amount between the region is small (1.9% of Exports, 3.1% of Imports), considering the geographic advantage and the trade agreement of CEFTA, the CEE countries

will be important trade partners for Bulgaria in the future.

(4) Relationship with the Balkan countries

The Balkan countries are very important trading partners for Bulgaria. 1996 Bulgarian exports to the Balkan countries were 496 million USD (10.5% of the total exports), imports were 153 mln USD (3.1% of total imports). The commodity turnover with Greece was more than 620 mln USD in 1995. Greece is the second biggest foreign investor in Bulgaria. The commodity turnover with Macedonia is 501 mln USD, and the commodity turnover with Turkey during the last 5 years has increased 10 times to reach 470 mln USD. Rumania's turnover is 150 mln USD.

1.3.8 Economic Forecast

In the short run, several destabilizing factors may make it difficult for the country to achieve considerable economic improvement. There will remain uncertainties on the political situation, possible repercussions of the introduction of the currency board, reform of the state owned enterprises and so forth. Under these uncertainties, it is hardly possible to foresee a marked recovery of the national economy.

In the medium term, however, there will appear some factors for economic improvement. First, economic situations of major trading partners are expected to improve, including Russia and CIS countries. Although the importance of these markets as Bulgaria's trading partners has diminished in recent years, they are still major partners and possible to affect Bulgaria.

Secondly, the expected export recovery will be able to create the environment for the political scene to stabilize. People will then be able to restore confidence in the country's future. This regained confidence, in turn, will revitalize the economy particularly through capital investment. Thus the economic recovery would be initially promoted by exports and fixed capital formation.

However, this stage is only a recovery and substantial development is still remote as the industrial structure is expected to barely change. Both because of lack of capital and technology, the country may find it difficult to undergo a notable change in industrial structure by themselves. More likely the country will have to rely upon advanced countries to modernize the structure.

The most vital factor for the country's long term economic development is thus to attract foreign capital and technology through foreign direct investment. The superiority of this foreign equity participation has been proved also by the latest experience of Mexico who relied too

much upon unstable source of finance of credits. Nevertheless, in order to achieve this goal, a concrete will and strong commitment of the government toward economic development is critical.

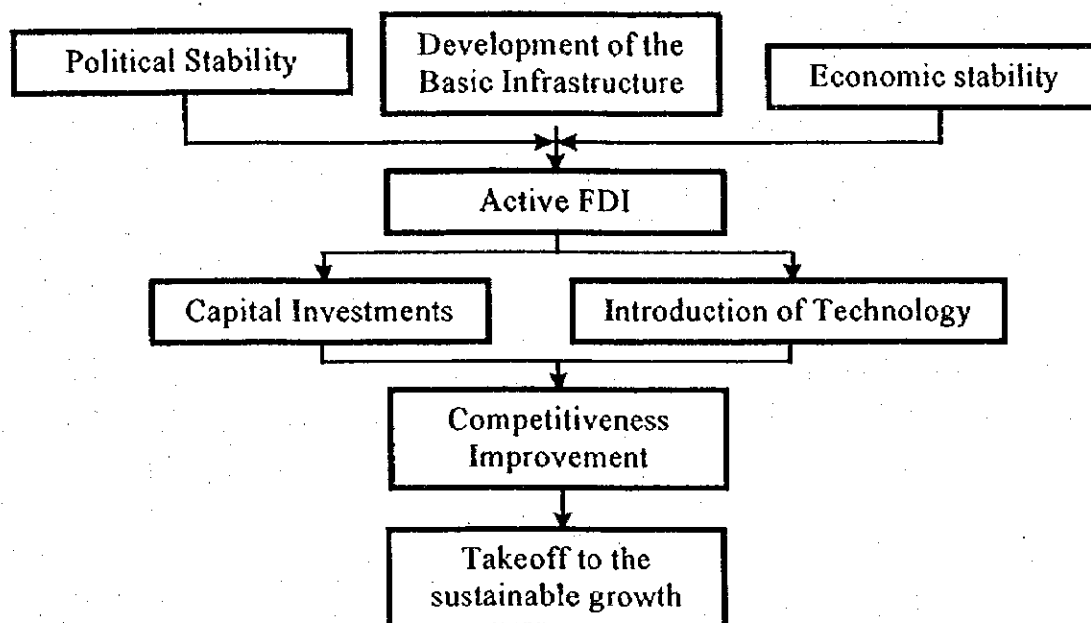


Fig. 1.3.8-1 Scenario for the future economic growth

Although the government will and commitment are critical, the other factors also have to develop in order to attract investors from foreign countries. External factors will play a vital role in promoting foreign direct investment. Here, the experience of Asian development could provide us with some precious lessons. The flows of foreign direct investment shifted from the NIES so called to other countries like Malaysia and Thailand in the latter half of 1980s, and further to much less developed countries such as Indonesia, China, and Vietnam in early 1990s. All the recipients of FDI have enjoyed acceleration in economic growth and industrial modernization. The former recipients of FDI, Taiwan and Hong Kong in particular, are now donors to the less developed economies. FDI from these countries have been added to the inflows from the traditional sources such as Japan.

The same pattern of economic development is expected to take place in Central and Eastern Europe countries through a diversification of foreign direct investment. The economic forerunners in this region, namely Poland, Czech, and Hungary, will further modernize their industrial structures, and traditional industries will have to seek for new production sites in order to raise international competitiveness. In the circumstances, the cheap labor, fiscal incentives, and relatively developed infrastructure offered by Bulgaria should work to attract foreign investors. Although some other neighboring economies may offer better conditions to

the foreign investors, Bulgaria is able to attract the foreigners through a combination of these factors.

It should be born in mind that the framework of world economy has completely changed, and a spill over effect should work to develop the neighboring countries in a region once economic development starts in a region.

As a result of the analysis, the JICA team projected the future economic situation as follows;

(1) From 1996 to 2000 (Zero Growth)

In the short run, it is hardly expected that the country will regain economic viability as various destabilizing factors are expected to survive. Broadly speaking, any substantial change is hardly expected during this period. However, the pegged foreign exchange system will contribute to the price stability, and pave the way for the forthcoming economic recovery and development.

- ◆ Flat Movement on average with some yearly fluctuations
- ◆ No change in labor market
- ◆ No change in industrial structure
- ◆ Inflationary pressure to subside
- ◆ No change in income distribution
- ◆ No change in regional development

(2) From 2001 to 2005 (3% Growth)

The expected bottoming out of some of the trading partners of Bulgaria, namely Russia, the former Yugo countries and CIS will create, though weak, an economic momentum through some recovery in exports. This will be followed by a revitalization of capital investment because of the regained confidence in the future of the country. In this stage, the economic improvement will create a solid ground for economic stability.

Of course some of the industrial sectors are able to enjoy higher level of production activities, and people will be able to increase their income level in real terms. However, this is just a beginning for economic improvement as almost no material change is expected in various structural aspects. Particular importance in this sense is the industrial structure. The country is hardly expected to achieve industrial modernization because of lack of capital and modern technology. Thus the economic modernization requires a sizable inflow of foreign direct investment. During this stage, the country is required to prepare for the rapid inflow of foreign capital.

- ◆ An average of 3% annual growth
- ◆ Weak recovery in exports and fixed capital formation
- ◆ Small growth in employment
- ◆ No change in industrial structure
- ◆ Foreign exchange rate and inflation to stabilize
- ◆ Income distribution in favor of the corporate sector
- ◆ Industrial sites to develop

(3) From 2006 to 2020 (5% Growth)

Although the labour force is expected to start to decrease during this period, foreign capital will start to flow into the country to industrialize the economy and modernize the industrial structure. Labor markets will benefit from the industrial shift.

- ◆ An average of 5% annual growth
- ◆ Exports and fixed capital formation to lead the growth
- ◆ Small employment growth with a rapid shift from the primary sector to the other sectors
- ◆ Industrial structures to shift toward assembly type ones
- ◆ Foreign exchange rate and inflation to stabilize
- ◆ Income distribution still in favor of the corporate sector
- ◆ More than average growth in industrial centers (Sofia, Plovdiv, Bourgas-Varna, and Rousse)

The aforementioned economic forecast suggests that the GDP of the country at will stand around 2.4 times greater in real terms by 2020 than it is now.

1.3.9 Economic Development by Region

Although there has not been any precise statistics on the economic situation by region, several facts appear to suggest that the urban economy becomes better off than rural areas. Population has shifted from rural to urban area, while the unemployment rate is much higher in rural areas. Also average wages are higher in the cities than in the countryside by a margin of 30%.

This past trend of economic development is expected to accelerate in the future. Particularly when industrialization starts with the inflow of foreign direct investment, urban areas will develop rapidly. Such urbanization is a natural economic and social development. As modern industries can pay higher wages and salaries because of higher productivity, people are more and more attracted by the industrial sites. On the other hand, industrial sites are developed in and around the big cities, as supply of labor force is easier than rural areas with less population density. Urban area also offers much better infrastructure for industries.

Table 1.3.9-1 Population of Bulgaria by region

	1990	%	1993	%	1996	%
Sofia	1,221,000	13.94%	1,186,845	14.03%	1,175,805	14.04%
Bourgas	861,000	9.83%	851,088	10.06%	849,026	10.14%
Varna	921,000	10.51%	916,384	10.83%	915,835	10.94%
Lovech	1,054,000	12.03%	1,008,885	11.93%	985,163	11.77%
Montana	658,000	7.51%	624,421	7.38%	606,867	7.25%
Plovdiv	1,271,000	14.51%	1,218,065	14.40%	1,209,667	14.45%
Rousse	776,000	8.86%	766,986	9.07%	760,379	9.08%
Sofia district	1,014,000	11.58%	982,151	11.61%	969,318	11.58%
Haskovo	983,000	11.22%	905,082	10.70%	900,403	10.75%
Total	8,759,000	100.00%	8,459,907	100.00%	8,372,463	100.00%

Source : NSI

Table 1.3.9-2 Population and Unemployment by district

	Population	Population Density / sq. km	Unemployed	Unemployment rate
Total	8,372,463	76	536.1	15.3%
Sofia	1,175,805	910	42.9	7.7%
Bourgas	849,026	57	60.4	17.1%
Varna	915,835	76	65	17.1%
Lovech	985,163	65	70.2	17.1%
Montana	606,867	58	53.2	22.9%
Plovdiv	1,209,667	89	66.4	13.6%
Rousse	760,379	70	64.3	20.6%
Sofia - district	969,318	51	62.7	15.6%
Haskovo	900,403	65	51	13.6%

Source : NSI

In Bulgaria, the City of Sofia and surrounding area has the highest possibility for economic development. The capital city is equipped with the aforementioned conditions. Also the location of the city will play a vital role in developing industries as the transport system is well developed. The same conditions, though to a lesser extent, will apply to the City of Plovdiv. The city is the second largest in terms of population, and some supporting industries have been developed. The government has added attraction to the city by establishing a Free Trade Zone where foreign investors are able to enjoy tax and other incentives.

There are two more possible industrial centers in the country which are expected to lead industrialization. One is Bourgas-Varna region, which has two major international ports facing the Black Sea. The function of the region is thus an interface with Russia and the CIS countries. On the other hand, Rousse also will play a vital role as an interface with the northern part of the Central and Eastern Europe countries. The planned construction of the second bridge over the River Danube could alter the function of the city, but the significant effect of the project, if any, is only expected after the period which our master plan study covers.

1.4 Economic Development and its Implications on Transport Market

The expected pattern of the social and economic development will create both opportunities and challenges to the transport market as a whole and BDZ itself. In general, all the modes will be able to benefit from the expected pattern of economic development. However, the railway company, if sticks to the former strategy of providing the low end services, may lose market share and hence may fail to benefit from the trend.

1.4.1 Freight Market

The freight market has fluctuated almost in line with the GDP, and same pattern is expected in the future. What is the most important in this particular market segment is to establish a solid ground in the most promising business field, even if this market segment stays a niche for several years.

The traditional market which the railway company has relied heavily upon, such as petroleum, ore and so forth will be dominated by the railway mode in the future as these bulk commodities can be better transported by the bulk carriers of railway freight rather than inefficient road transport. Also, these commodities are essentially produced to be marketed within the domestic market, and does not have to require international coordination. However, this is the market segment which the production growth does not exceed the average. Even if the company still has to rely on these commodities for the most of the freight income in the near future, every effort has to be paid to establish a solid ground in the growing market. Experiences in the other countries have been that the market share of these traditional commodities tends to be lost for the railway mode.

On the other hand, an important market for growth is expected to emerge as the forthcoming industrialization materializes. As the anticipated industrialization will take advantage of the nation's comparative superiority, essentially cheaper wages than the forerunners in the region, the industries which will emerge in the early part of 20th century are assembly type in nature. Various products are included in this industrial category, and bulk transport may not be necessarily needed in this market segment. The key word here is the door to door delivery service. In this sense, it is considered that the road transport has some comparative advantage over the rail transport.

However, it is still possible for the company to establish some solid ground in this market as no other mode has developed the transport system well yet. This is the market of the future in Bulgaria, and the company is able to exploit the opportunity and construct a growth centre by

strategic alliance with the other modes and necessary investment.

1.4.2 Passenger Market

There are both negative and positive factors in this market. Negative factors include the absolute decrease in the population and working force. The problem of aging society is also regarded as one of the negative factors. On the other hand, the economic development and resulted growth of the people's income creates positive factors.

It is evident that the traditional business strategy can not apply to the future market condition. In the past, the strategy of the railway company was constructed upon the principle of mass transport with cheaper fare. Under this economic circumstance, social consideration has to receive the first priority.

However, the image of future economic situation points to the necessity that the passenger business strategy has to satisfy the people who are richer and whose affordability of transport services is accordingly high. The forecast necessitates the railway business employing toward more value added business oriented approach. Thus the future strategy of the railway company has to be constructed upon the basis that carrying less people but who are willing to pay for higher fares but if they are able to receive better and more comfortable services.

1.4.3 Business Environment of BDZ

In order to exploit the future opportunities, BDZ is required to implement several investment plans. However, financial conditions of the company may make it difficult to implement such necessary investments.

In a sense, the financial difficulties facing the company arose from the past hyper inflation. Most of the cost items of the company have risen quite sharply because of the general price rises. On the other hand, fare and tariff rises tended to lag behind the cost rises, leading to the substantial financial deterioration. Under such circumstances, it was not easy both for the state government and the company itself to construct a long term plan for development.

Aside from the forecast economic development, general price situation is also expected to stabilize in the future thanks to the introduction of the currency board. Environment will thus develop for the state government and the company to concentrate on establishing long term strategy.

ABBREVIATIONS

Abbreviation	Full Name
AECD	Agency of Economic Coordination and Development
BZD	Bulgarian National Railways
BGL	Bulgarian Leva (National Currency of the Republic of Bulgaria)
BNB	Bulgarian National Bank
BSP	Bulgarian Socialist Party
CEE	Central and Eastern Europe
CIS	Commonwealth of Independent States
CMEA	Council for Mutual economic Assistance
DEM	German Mark
EBRD	European Bank for Reconstruction and Development
EFTA	European Free Trade Agreement
EU	European Union
FDI	Foreign Direct Investment
FRY	the Federal Republic of Yugoslavia
FSU	Former Soviet Union
GDP	Gross Domestic Product
GVA	Gross Value Added
IMF	International Monetary Fund
MOF	Ministry of Finance
MOI	Ministry of Industry
MOT	Ministry of Transport
NSI	National Statistical Institute
PPP	Purchasing power parity
PM	Prime Minister
SDR	Special Drawing Right
SOE	State Owned Enterprise
UDF	Union of Democratic Forces
UN	United Nations
USD	United States Dollar
VAT	Value Added Tax
WB	World Bank
WTO	World Trade Organization