An Actuarial Analysis of the Pension Schemes in the Federal Republic of Germany and the Land Berlin

Under the provisions of the German Federal Social Insurance Code¹ and the Pension Insurance Act for Salaried Employees², the Federal Minister of Labour is required to draw up every four years actuarial balance sheets analysing the financial position of the pension schemes for manual workers and salaried employees. The first post-war balance sheets concerning these schemes as in force in the Federal Republic of Germany and the Land Berlin were recently published 3 in a report of the Federal Minister of Labour.⁴ A summary of the report is given below.

The actuarial analysis of the two German pensions schemes is the first published since 1933.⁵ Actuarial balance sheets drawn up immediately before the war and (in respect of the British Zone of Germany) in 1948 were not published.

The present analysis is based on the legislation in force on 1 July 1954. An Act of 23 November 1954 concerning the revalorisation of pensions and the increase of contribution rates from 10 to 11 per cent. of wages or salaries has not been taken into account.

The actuarial calculations are made on the hypothesis that the level of wages, the level of employment and rate of unemployment and the other factors that influence the income from contributions and the expenditure on pensions (e.g. the rate of incapacity for work as a result of sickness or employment injury) and also the natality and mortality rates of the population (as established in 1953) will remain unchanged. A rate of interest equal to 3.5 per cent. is taken into account. No other assumption has been made concerning economic, social or demographic development.

The actuarial analysis included (1) an estimate of the future annual results of the operation of the schemes (receipts, expenditure and accumulation of reserves); and (2) the drawing up of actuarial balance sheets on the basis of such estimates. All details of the calculations

¹ Section 1391, as amended by the order of 17 May 1934 and the Act of 23 Dec. 1936; see *I.L.O. Legislative Series*, 1934 (Ger. 9) and 1936 (Ger. 2(c)).

² Section 172, as amended by the order of 17 May 1934 (ibid.).

³ Bundesarbeitsblatt, 1955, No. 6, 2 Mar., annex.

⁶ Bunacsarbettsotau, 1955, 100, 6, 2 mar., annex.
⁶ A similar report by the Government Actuary on the working of the British National Insurance Act was recently published. See "An Actuarial Analysis of the British National Insurance Act,", in *International Labour Review*, Vol. LXXI, No. 3, Mar. 1955.
⁶ The pre-war actuarial investigations on the German pension schemes are summarised View of Actuarial Provide Computing of Social Insurance Public Union.

in I.L.O.: Actuarial Technique and Financial Organisation of Social Insurance, by Lucien FÉRAUD, Studies and Reports, Series M, No. 17 (Geneva, 1940), pp. 271-441.

made for the purpose of such actuarial analyses are given in an annex to the report.

As a starting point the 1953 figures for receipts and expenditure were taken, and also the figure for reserves accumulated at the end of that year.

A study of the future development of the average amounts of pensions to be paid gave the results shown in table I.

TABLE	I.	AVERAGE	AMOUNT	OF	PENSIONS	PER	MON	TH
			(In D	M)				
			Ju	ne 19	53	Est	imated	for 2038 1
Densis								

	June	1953	Estimated for 20				
Pension	Manual workers' scheme	Salaried employees' scheme	Manual workers' scheme	Salaried employees' scheme			
Invalidity and old-age: Men Women Widow's Orphan's	90.80 62.90 49.20 31.80	130.60 99.70 62.80 37.70	203.80 100.90 96.50 60.20	190.90 122.90 88.60 55.30			

1 In the year 2038 the average amount of the pensions will have reached a stable maximum.

For the estimates of the future development of the expenditure on pensions, the assumption was made that the average amount of the pensions will rise equally from year to year between 1953 and 2038. Other essential factors for estimating the future receipts and expend-

Other essential factors for estimating the future receipts and expenditure of the schemes are the presumable increase in the number of insured persons on the one hand, and in the number of pensioners on the other. For this purpose a study was made of the presumable development of the total population, so far as the number of men and women and the distribution in quinquennial age groups is concerned. This study was based on the 1950 census and the mortality tables drawn up in the light of the experience of the period 1949-51. The results of this study were used to estimate the number of insured persons and beneficiaries to be expected in the future. The total number of insured persons, and consequently also the amount of receipts from contributions paid, will remain rather stable in the future. The number of pensioners, however, will presumably develop as shown in table II.

TABLE II. ESTIMATED NUMBER OF PENSIONERS

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		Manual wor	kers' schem	e	Salaried employees' scheme					
Year	Invalidity and old-age pensioners		Widows	Orphans	Invalia old-age p	lity and censioners	Widows	Orphans		
	Men	Women			Men	Women				
1953 ¹	1,308	1,000	987	1,003	407	182	430	256		
1958	1,358	1,109	1,107	553	469	209	458	148		
1963	1,443	1,216	1,233	237	530	231	492	73		
1968	1,581	1,305	1,369	235	605	251	524	72		
1973	1,678	1,358	1,501	235	652	260	556	72		
1978	1,681	1,361	1,570	234	659	259	581	72		
1983	1,574	1,331	1,568	226	611	254	595	70		

1 Actual figures.

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(1/1/1/1/10/10/11/1)											
Item	1953 1	1958	1963	1968	1973	1978	1983	1988	1993	1998	
Receipts :											
Contributions of insured persons and employers	3,272.2	3,434.7	3,398.5	3,408.7	3,384.8	3,401.5	3,436.2	3,443.9	3,421.9	3,382.5	
State subsidies and re- imbursements	1,429.4	1,811.3	1,772.1	1,915.6	2,041.8	2,090.6	2,044.5	2,041.6	2,062.0	2,132.9	
Interest	78.8	278.6	442.5	549.6	588.0	565.2	510.4	430.6	303.1	99.5	
Other receipts	16.8	6.5	6.5	6.5	6.4	6.5	6.5	6.5	6.5	6.4	
Total	4,797.2	5,531.1	5,619.6	5,880.4	6,021.0	6,063.8	5,997.6	5,922.3	5,793.5	5,621.3	
Expenditure :											
Pensions	3,557.8	3,773.4	4,150.9	4,760.0	5,307.1	5,624.5	5,653.1	5,794.1	6,013.5	6,392.7	
Other benefits	572.6	557.6	553.6	579.8	597.9	604.2	595.7	590.4	584.7	584.9	
Other expenditure	103.9	108.9	108.5	110.4	111.7	112.1	111.6	111.2	110.8	110.7	
Total	4,234.3	4,439.9	4,813.0	5,450.2	6,016.7	6,340.8	6,360.4	6,495.7	6,709.0	7,083.3	
Surplus	562.9	1,091.2	806.6	430.2	4.3						
or deficit			_			227.0	362.8	573.4	915.5	1,467.0	
Reserves at end of year	2,577.1	7,555.0	12,459.2	15,763.3	17,091.5	16,569.3	15,018.4	12,796.6	9,269.0	3,626.6	

TABLE III. ESTIMATED FUTURE RECEIPTS, EXPENDITURE AND RESERVES OF THE PENSIONS SCHEME FOR MANUAL WORKERS (Million DM)

1 Actual figures.

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(Million DM)										
Item	1953 1	1958	1963	1968	1973	1978	1983	1988	1993	1998
Receipts :										
Contributions of insured persons and employers	1,603.2	1,671.1	1,701.6	1,707.3	1,694.2	1,699.7	1,711.4	1,723.7	1,723.4	1,704.0
State subsidies and re- imbursements	408.3	664.0	625.9	632.9	629.4	619.4	585.5	567.7	555.2	560.8
Interest	39.4	153.8	254.1	333.8	387.0	422.4	458.1	501.1	545.6	582.2
Other receipts	1.7	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Total	2,052.6	2,490.0	2,582.7	2,675.1	2,711.7	2,742.6	2,756.1	2,793.6	2,825.3	2,848.1
Expenditure :										
Pensions	1,495.6	1,636.9	1,810.3	2,051.1	2,230.5	2,314.2	2,268.8	2,286.1	2,321.9	2,437.6
Other benefits	186.2	186.1	190.0	199.1	204.6	207.0	204.1	203.9	202.1	202.8
Other expenditure	39.6	42.1	42.5	43.1	43.4	43.5	43.5	43.3	43.3	43.2
Total	1,721.4	1,865.1	2,042.8	2,293.3	2,478.5	2,564.7	2,516.4	2,533.3	2,567.3	2,683.6
Surplus	331.2	624.9	539.9	381.8	233.2	177.9	239.7	260.3	258.0	164.5
or deficit		—						—		—
Reserves at end of year	1,260.3	4,158.0	7,118.8	9,512.2	11,134.0	12,190.9	13,199.4	14,436.5	15,733.6	16,843.2

TABLE IV. ESTIMATED FUTURE RECEIPTS, EXPENDITURE AND RESERVES OF THE PENSIONS SCHEME FOR SALARIED EMPLOYEES

1 Actual figures.

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On the basis of such studies the report estimates that the future receipts, expenditures and reserves of the two pensions schemes will be as shown in table III.

It follows from tables III and IV that in both schemes the contributions to be paid by the insured persons and employers are and will remain the main financial source. The receipts from such contributions are estimated on the basis of a contribution rate equal to 10 per cent. of wages or salaries; in respect of compulsorily insured persons 5 per cent. is borne by the employers; voluntarily insured persons have to pay the full contribution. As mentioned above, the increase of the rates from 10 to 11 per cent., as fixed by the Act of 23 November 1954, is not taken into account.

The state subsidies and reimbursements are relatively important for financing the two schemes, especially in respect of the manual workers' scheme. The State is legally obliged to cover—

(1) the basic pension rates in the manual workers' scheme ;

(2) certain increases in the pensions as fixed by law in 1951 and 1953;

(3) benefits to war victims;

(4) pensions to persons who before 1945 were insured under German legislation outside the Federal Republic of Germany or were insured under foreign legislation and are residing in the Federal Republic (especially refugees);

(5) pensions payable to victims of nazism and to certain ex-prisoners of war;

(6) subsidies for cures in cases of tuberculosis.

It is interesting to note that the proportion of income furnished by the interest-bearing reserves is relatively small. It covered in the manual workers' scheme 1.9 per cent. of total expenditure in 1953; when it has reached the maximum in 1973 it will cover 9.8 per cent., and in 1998 only 1.4 per cent. In the salaried employees' scheme such income covered 2.3 per cent. of total expenditure in 1953 and will cover 15.6 per cent. in 1973 and 21.7 per cent. in 1998.

cover 15.6 per cent. in 1973 and 21.7 per cent. in 1998. It follows from the figures in tables III and IV that expenditure, especially on pensions, has a rising tendency. The indices of total expenditure in 1998 (1953=100) will be 167 for the manual workers' scheme and 156 for the salaried employees' scheme.

In the manual workers' scheme total receipts will exceed total expenditure from 1953 to 1973; after that year deficits must be expected, which will rise from year to year. In the salaried employees' scheme no deficit will occur before 1998, but the surplus will be smaller each year after 1958. The report states that under this scheme a deficit is to be expected only after 50 years. If the accumulated reserves can be used to cover the expected deficits, the manual workers' scheme will remain solvent for a further 25 years and the salaried employees' scheme for a further 50 years. However, the deficit in the first scheme will by that time be 3,200 million DM and in the second scheme 800 million DM per year.

In order to determine the average and stable premium by which the future expenditure of the schemes could be covered on the basis of an accumulation system, taking into account state subsidies and reimbursements and other receipts, actuarial balance sheets have been drawn up (table V). The figures reflect the actuarial value of future receipts and expenditure calculated for 1 July 1954 as well as the reserves

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accumulated at that date. In both schemes an actuarial deficit was observed. The report points out that these deficits might be covered either by an increase in contribution rates from 10 per cent. to 11.57 per cent. of wages in the manual workers' scheme and from 10 per cent. to 10.13 per cent. of salaries in the salaried employees' scheme, or by an increase in the state subsidies of 540 million DM per year in the former scheme and 22.7 million DM in the latter.

TABLE V.	ACTUARIAL	BALANCE	SHEET	AS	AT	1	JULY	1954 ¹
		(Million	DM)					

	Ass	ets	{	Liabilities			
Item	Manual workers' scheme	Salaried employees' scheme	Item	Manual workers' scheme	Salaried employees' scheme		
Contributions of insured persons and employers State subsidies and re-	98,558.4	49,128.1	Pensions	156,860.7	62,748.0		
imbursements	59,535.5	18,343.9	Other benefits Other	16,859.8	5,768.2		
Other receipts Reserves Actuarial deficit	189.9 3,235.5 15,441.7	32.2 1,625.7 647.2	expenditure	3,240.5	1,254.9		
Total	176,961.0	69,777.1	Total	176,961.0	69,771.1		

1 Interest at 3.5 per cent.