

Role of the Contribution Ceiling in Social Security Programs: Comparison of Five Countries

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PERENNIALY the subject of a maximum on taxable earnings has been discussed in congressional hearings on the improvement of the social security system. An international comparison of how the taxable ceiling functions in certain other countries should be of interest in evaluating the United States maximum, particularly where there are features successful to some extent in coping with similar problems. This study is concerned with old-age pension programs predominantly financed through payroll taxation and using a ceiling on taxable earnings.

The 1965 Report of the Advisory Council on Social Security proposed three standards for a study of the United States system: the proportion of total earnings subject to tax, the proportion of all workers whose entire earnings are subject to tax, and the proportion of regularly employed men whose entire earnings are taxable.¹ An attempt has been made to adapt the first two measures for use in this comparison. Application of the third, however, is not currently possible because of the lack of data.

The study also covers the general principles involved in the use of a ceiling, the relationship of the ceiling and average earnings, and the mechanism for adjusting the ceiling to inflation and increasing productivity.

CONCEPT OF CEILING

The countries selected for comparison have the same concept of the ceiling—the maximum amount of covered earnings subject to social security contributions (and applicable for benefit computation purposes). Covered earnings include the basic cash wage (plus supplements differing somewhat from country to country) and the value of noncash remuneration. The four

countries—Austria, France, the Federal Republic of Germany, and Sweden—are compared with each other and with the United States. The choice was dictated solely by the possibility of working out statistics on the number of persons and the proportion of the wage bill above and below the ceiling.

Enough variety of system exists among these countries to represent several different approaches to the maximum earnings for contributions. Austria and Germany have a “dynamic” system of adjustment to inflation and growth. In France the system is “semiautomatic.” In Sweden it is fully automatic. The United States has had a series of “ad hoc” adjustments by legislative action. Sweden adjusts the ceiling on the basis of a price index, and the other European countries use wage indexes.

The advanced European systems differ considerably from that of the United States in the following ways: (1) the United States ceiling is relatively much lower than the other ceilings; (2) the other countries have developed means to keep up the value of the ceiling in terms of living costs and productivity trends on a more systematic basis; and (3) as a consequence, a greater proportion of foreign workers have all their earnings below the ceiling (that is, credited earnings and total earnings tend to be the same for most workers).

Possible Approaches

Historically, the different countries have considered or utilized at least four approaches to the ceiling: (1) exclusion from the general social security system of all persons who earn above the ceiling (as in France before 1945 and more recently in some of the less developed countries); (2) establishment of a maximum amount of earnings for contributions and hence a maximum base on which to calculate benefits (a feature of virtually all systems today); (3) no ceiling at all;

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¹ Advisory Council on Social Security, *The Status of the Social Security Program and Recommendations for Its Improvement*, 1965, page 23.

(4) use of some other limiting device (such as a maximum on the benefit amount but not on earnings subject to contributions).

Exclusion.—Under the first approach, persons who earn above a certain maximum are not eligible for social security benefits, on the theory that they can provide for themselves and need not rely on a public program.

This was the type of system in France between 1930 and 1945, under which wage and salary earners who earned more than the ceiling were altogether excluded from coverage. Instead, many salaried workers were linked to private insurance institutions, within the framework of a 1935 law that provided for the creation of retirement funds under collective contracts. When exclusion of higher earners was eliminated in 1945 and the same ceiling applied to all, the application of the new law was deferred until a national agreement was reached between employers' and salaried workers' organizations concerned. The agreement involved particularly the question of how high the ceiling should be since the private insurance financing depended on contributions on earnings above the specified maximum.²

The Federal Republic of Germany gave up a similar system at the beginning of 1968. The higher-paid, white-collar workers had been traditionally excluded from compulsory coverage for old-age, disability, and survivor pensions. This exclusion from coverage applied to white-collar workers with annual earnings above 21,600 deutsche Marks (more than double the average earnings in manufacturing), but no comparable exclusion applied to blue-collar workers, regardless of earnings. When the exclusion was eliminated as of January 1, 1968, formerly exempt employees were permitted to apply for further exemption from compulsory coverage if they were over age 50 or had equivalent private insurance coverage. Among the considerations that resulted in this change was the rise in earnings levels among white-collar workers to the extent that almost all workers in this category would, through application of the ceiling, be eliminated from the general system. Unless a change were

made to raise or eliminate the ceiling, the system would have become a compulsory system for blue-collar workers only.³

It is interesting to recall that the planners of the United States social security system initially contemplated a limited system of this type. An unpublished staff paper of the 1934–35 period shows that initially coverage was considered under the Federal old-age insurance program for manual workers only, no matter how high their earnings, because they were most in need of old-age protection. This proposal was later modified to include white-collar workers who earned no more than \$250 per month. Doubt as to the constitutionality of such unequal treatment appears to have led to further modification so that both blue- and white-collar workers with earnings up to the same \$3,000 annual ceiling would be covered under the program.⁴ The \$3,000 ceiling then included the total earnings of 97 percent of all covered workers.

In later discussions, considerable stress was placed on the extent of job mobility in the United States and the importance of covering all workers for at least a basic fraction of their earnings. The United States was also the first large country to extend coverage broadly—on the same basis—to almost all the self-employed.

The type of system with the exclusion approach has tended to disappear everywhere. It is, in a sense, at variance with the social insurance principle that implies a pooling of risks. In actual practice such systems have encountered special difficulties in some countries, particularly developing countries. Some employers, for example, have raised the wages of employees with earnings near the ceiling, thus reducing their payroll costs but depriving the employees of further coverage.

Maximum.—In the second and now most prevalent type of system, all members of the labor force (in theory) are taxed up to a fixed maxi-

³ See the *Social Security Bulletin*, April 1968, page 43.

⁴ As summarized by a Member of Congress at that time: "Under the original bill, nonmanual workers earning more than \$3,000 per annum were exempted from the tax and hence from the benefits. But in order to make the tax provisions standing by themselves less obnoxious from a constitutional standpoint, the tax was made applicable to the first \$3,000 of the annual wages of all employees, regardless of total salary. Thus, while it was not the intention of the original bill that this higher salaried class of employees be covered, they were included for constitutional reasons" (*Congressional Record*, April 12, 1935, page 5,530).

² Institut National de la Statistique et des Etudes Economiques, *Annuaire Statistique de la France 1964*, Paris, 1967, page 443; Jean-Robert Debray, ed., *Sécurité Sociale: évolution ou révolution*, Presses Universitaires de France, 1968, pages 80–81. Jean-Jacques Dupeyroux, *Sécurité Sociale*, Dalloz, 1969, pages 613–618.

imum amount of earnings. This approach represents a compromise between the interests of the highest-paid segments of the labor force and the needs of the lowest-paid. To tax the entire range of earnings is for most countries politically difficult. The contributions for the higher earnings brackets would be enormously more than the eventual benefits under almost all existing formulas, because there is generally a maximum on benefits. As it is, in most if not all of the countries, there are pressures from employer groups and from the highest earners to keep the ceiling from rising "too high." In France, for example, employer associations acquired the right to review and make recommendations on the adjustment of ceilings to increase in wages.

No maximum.—The third approach involves no ceiling at all. This method would theoretically achieve the greatest amount of redistribution, since all the earnings of the entire labor force would be taxed. If the tax were to be a fixed percentage, as in most countries, the amount of contribution paid at the top would be considerable. On the other hand, the benefits could be relatively small under a weighted benefit formula. If there were no weighted benefit formula and the old-age benefit were a direct percentage of total earnings, benefits could be extremely large.

Within the social insurance systems, special cases exist in which there actually is no ceiling. Thus in France under the health insurance program, salaries are taxed 3 percent on amounts above the regular ceiling for contributions. This charge was enacted in August 1967 to compensate for arrears in the program. (Below the ceiling, the French worker in 1970 contributed 6.5 percent of earnings and the employer was taxed 17 percent of payroll for old-age, survivor, disability, and health insurance.) Health insurance, of course, is ordinarily financed on a pay-as-you-go basis and the medical care benefits are not related to previous earnings.

Other controls.—A few countries put limitations on benefits through other methods than a contribution ceiling. Switzerland, for example, has no maximum for contributions, and wage and salary workers pay a tax on all their earnings. A ceiling is put on contributions credited for benefit purposes, however, and a maximum benefit amount is specified. Probably because the entire payroll is subject to contributions, the tax rate

(and the benefit) is low in relation to those of other industrial countries.⁵

Belgium has a ceiling on contributions for salaried employees but, currently, none for wage earners. The benefit of the latter group, however, is limited by the formula. The maximum of 60 percent of lifetime earnings, revalued, will not be attainable until maturity of the system in the year 2000. A maximum on contributions for wage earners is scheduled for 1974.

In Denmark, insured persons pay 3 percent of income subject to income tax for the universal old-age pension. For the country's earnings-related pension, a specified weekly cash amount is contributed by all covered workers and all employers. The statutory maximum benefit cannot be attained until the system matures in 1992.

Finland has no maximum amount of earnings for contributions but has a maximum cash-benefit amount for the universal pension (and an eventual maximum of 42 percent of earnings for the earnings-related pension around the year 2000).⁶ Systems without a ceiling are peripheral to this study, but details on them are presented in the accompanying chart, because of the interest in this area.

Comparison With Average Earnings

In comparing the ceiling height in the five countries, the ceiling has been related—in terms of the country's own currency—to the average earnings of men and women working in manufacturing (table 1). The earnings data are based on the International Labor Organization's series, which provides the most nearly comparable figures. The data show that in 1968 this relationship was in the same general range for Germany (179 percent), Austria (168 percent), and France (162 percent). At the extremes were Sweden, whose ceiling in that year was more than double the average earnings figure (234 percent) and the United States, whose ceiling was closest to average earnings (122 percent). The relationship

⁵ Employer and employee each pay 2.8 percent for old-age, survivors, and disability insurance. See the *Social Security Bulletin*, March 1969, page 22.

⁶ For the universal pension, the employee pays 1.5 percent of income subject to communal tax and the employer pays 1.75 percent of payroll. For the earnings-related benefit, the employer pays 5.15 percent of payroll.

varies from time to time, particularly in the United States because of the ad hoc nature of the adjustments.

In determining the actual ceiling, each of the countries uses a different method. Austria uses "average covered earnings"—a combined figure for blue- and white-collar workers calculated by the Main Federation of Austrian Social Security Carriers. To be more specific, this figure is the average monthly base of contributions of the economically active, under accident and old-age insurance. Before 1967, it was derived twice annually from the country's 38 income classes on February 1 and August 1. Since then the series has been derived each year as of January and July, with adjustment made at the beginning of the next year. This national figure has represented about 85 percent of the annual average earnings in manufacturing.

The Federal Republic of Germany uses as its national wage figure the average gross earnings of blue- and white-collar workers. The Austrian ceiling relates to average earnings in the previous year. The German ceiling represents the national average in the third, fourth, and fifth year before the year of calculation, averaged out. Thus, in table 1, the 1969 figure of DM 20,400 is about twice the average earnings for 1965, 1966, and 1967.

From the policy point of view, both Austria and Germany aim at a ceiling about twice the national average for covered earnings. Thus, for Austria, in 1969 the average of covered earnings

was 3,633 schillings a month and the ceiling for calculation of earnings was 7,200 schillings. In Germany in the same year, the national average of covered earnings was DM 9,780 and the ceiling was DM 20,400.

When the present systems of ceilings were created, the maximum in Sweden fell at two and one-half times the average earnings in industry (1959), in France at one and two-thirds times the average earnings for men in industry (1962), and in the United States at three times the average earnings of factory workers (1936). The focus was on including almost all earners, and the actual monetary amount represented an approximation of the figure needed to achieve this purpose.

In Sweden, after a decade of consideration by various committees, lengthy parliamentary debate, and a national plebiscite, legislation was enacted in 1959 that established an earnings-related pension system (on top of the universal old-age pension). The taxable range was to fall between a national basic amount at the lower end of the scale and seven and one-half times this amount at the upper end. The original basic amount was 4,000 Kronor, which, incidentally, was about half the average earnings of all Swedish workers at that time. The multiple of seven and one-half was selected because it represented an earnings maximum that would include about 90 percent of all wage and salary earners.

France has had some type of formal ceiling since about 1928, with later periodic modifica-

CHART 1.—Old-age pension systems combining no ceiling on contributions with ceilings on benefits, 4 countries

Country	Contributions of—		Maximum benefits	Remarks
	Insured person	Employer		
Belgium.....	Wage earners: 5.5% of earnings..	For wage earners: 7% of payroll.	If single, 60% (if married, 75%) of average lifetime earnings subject to maximum 15,925 francs a month.	Beginning 1974, ceiling on contributions will apply to wage-earners. Ceiling now in effect for salaried employees.
Denmark.....	Insured person: 3% of income subject to tax (universal old-age pension only).	No contribution to universal pension.	626 crowns a month if single, 943 crowns for married couple.	Insured person contributes 1.80 crowns a week, employer 3.60 crowns a week per employee.
Finland.....	Employee and self-employed: 1.5% of income subject to communal tax (universal pension only). No contribution to employer pension.	1.75% of payroll (universal pension). 5.15% of payroll (employer pension).	69 marks a month if single, 138 marks for married couple (universal pension).	Employer pension (earnings-related) is subject to a maximum: 42% of earnings (up to 60% in combination with the universal and other pensions).
Switzerland...	Employees: 2.5% of earnings (old-age and survivor pensions) and 0.3% (invalidity). Self-employed and nonemployed: 4% of income (old-age and survivor pensions) and 0.6% (invalidity).	2.5% of payroll (old-age and survivor pensions) and 0.3% (invalidity).	375 francs a month.....	

tion and innumerable adjustments. Whatever relationship between the ceiling and some earnings figure was originally intended has long since disappeared. Under the present mechanism, last revised in 1962, the philosophy is to have the ceiling rise no more rapidly than average earnings.

In the United States the Committee on Economic Security began in 1934 with a proposal that blue-collar workers be covered, no matter

TABLE 1.—Ceiling for contributions in relation to average earnings in manufacturing, 5 countries, 1960-69

Year	Ceiling (in national currency ¹)	Average earnings in manu- facturing (in national currency ¹)	Ceiling as percent of average earnings
Austria (monthly):			
1960.....	3,600	2,159	164
1961.....	4,800	2,344	205
1962.....	4,800	2,496	192
1963.....	4,800	2,647	181
1964.....	4,800	2,890	166
1965.....	5,400	3,141	172
1966.....	5,850	3,514	166
1967.....	6,300	3,781	167
1968.....	6,750	4,018	168
1969.....	7,200	² 4,374	165
France (annual):			
1960:			
Jan.-June.....	6,600	4,966	138
July-Dec.....	7,080		
1961:			
Jan.-June.....	7,200	5,382	151
July-Dec.....	8,400		
1962.....	9,600	5,760	167
1963.....	10,440	5,860	164
1964.....	11,400	6,802	168
1965.....	12,240	7,114	172
1966.....	12,960	7,592	171
1967.....	13,680	7,956	172
1968.....	14,400	8,902	162
1969.....	16,320	² 9,984	161
Germany, Federal Republic (annual):			
1960.....	10,200	6,188	165
1961.....	10,800	6,812	159
1962.....	11,400	7,488	152
1963.....	12,000	7,956	151
1964.....	13,200	8,476	156
1965.....	14,400	9,464	152
1966.....	15,600	10,086	155
1967.....	16,800	10,088	167
1968.....	19,200	10,712	179
1969.....	20,400	11,700	174
Sweden (annual):			
1960.....	31,500	11,568	272
1961.....	32,250	12,336	261
1962.....	33,750	13,428	251
1963.....	35,250	14,256	247
1964.....	36,000	15,432	233
1965.....	37,500	16,968	221
1966.....	39,750	18,552	214
1967.....	41,250	19,794	208
1968.....	43,520	18,594	234
1969.....	45,000	19,851	227
United States (annual):			
1960.....	4,800	4,665	90
1961.....	4,800	4,802	100
1962.....	4,800	5,021	96
1963.....	4,800	5,181	93
1964.....	4,800	5,354	90
1965.....	4,800	5,592	86
1966.....	6,600	5,842	113
1967.....	6,600	5,975	110
1968.....	7,800	6,371	122
1969.....	7,800	² 6,656	117

¹ Austria, Schillings; France, francs; Germany, deutsche Marks; Sweden, Kronor; United States, dollars.

² Estimated.

Sources: National legislation, official reports, and publications.

what their wage and that all white-collar workers be excluded. This proposal evolved into a recommendation that manual workers be covered up to \$50 a week, with white-collar workers still outside the system. At a subsequent point in the discussions, the possibility was considered of setting up a program in which blue-collar workers' wages would be covered without limit, white-collar workers with earnings up to \$250 a month would be covered, and white-collar workers whose earnings were above \$250 would be excluded. The rationale of \$250 was explained in a staff paper of the time:

It is proposed that insurance be made compulsory for all employed manual workers and for such non-manual workers as earn less than \$250 monthly. The inclusion of all manual workers without regard to earnings rests upon two considerations: (1) the impossibility of determining the actual earnings of many manual workers because of irregularity of employment; (2) the fact that most manual workers are in the income groups which urgently need old-age protection and that any attempt to segregate those who might not be would inevitably result in the exclusion of members of the other group. It has been tentatively decided that an upper limit of \$250 monthly for compulsory insurance of salaried workers will include the non-manual workers who belong to the economic group represented by the better paid manual workers.⁷

When a senator was questioned by another in detail on how the ceiling of \$250 per month for everyone was arrived at, he could produce no real explanation.⁸

In later years, the accepted rationale was that the \$3,000 level had been established to include the total earnings of the great majority of workers. The amount of \$3,000 was about three times the average earnings of factory workers and covered the total earnings of about 97 percent of all covered workers. A comparable relationship would call for about \$18,000 for 1970.

THE ADJUSTMENT PROCESS

Once the ceiling is established at some given level relating to the distribution of earnings

⁷ *Preliminary Report of the Staff of the Committee on Economic Security* (presented to the Committee on Economic Security and the Technical Board on Economic Security, September 1934), Appendix C, pages 3-4.

⁸ *Senate Finance Committee Hearings on Economic Security Act*, January 22, 1935, page 7.

of those covered by the pension program, the problem of adjustment arises. Because the ceiling limits the earnings creditable to the insured person's account, any ceiling fixed for an appreciable length of time soon becomes restrictive in relation to the current level of earnings and begins seriously to limit the size of the ultimate pension by lowering the proportion of total earnings that are creditable. If the ceiling is not adjusted, the only way to prevent the erosion of real benefits is to adjust or modify the benefit formula. This course is possible and in fact has been followed in the United States, but it requires a simultaneous modification of program financing. If the ceiling is not raised, the program's tax base, like the benefits, begins to diminish in real value. In periods of particularly rapid increase in price levels or of gains in real wages, the adverse impact of the fixed ceiling is even more pronounced.

Failure to raise the ceiling in keeping with the growth of wages and the rising cost of living results in an increasing share of contributions from the low-wage earner. All his earnings are taxed under this situation. In the upper wage-and-salary brackets, however, a progressively smaller proportion of earnings is taxed as total earnings grow more rapidly than the maximum for contributions. Yet the better-paid workers also suffer, since an "unduly low" ceiling on contributions places a strong limitation on their benefits—to a greater extent, of course, in a country with a weighted benefit formula. Eventually the system would pay to almost everyone a benefit unrelated to his previous earnings, because all would have earnings above the ceiling.

From the nation's viewpoint, an increasingly smaller percentage of the total payroll becomes subject to taxation to support the social security system. If the earnings base remains stationary as income continues to increase, tax receipts will be an ever-declining proportion of the country's total income. Any attempt to increase benefits would require a higher tax rate on a smaller proportion of total earnings—with a higher proportion being paid by earners at the low and middle levels. Since average and real earnings in all countries have tended to grow, the longer the periods between adjustment of the ceiling the greater will, of course, be the gap between the ceiling and average earnings. This pattern

is emphasized by the rise of new high-paying industries such as electronics, in which the percentage of earners above the ceiling may be more than in traditional industries. The increasing difference has been most striking in countries with systems having no provision for automatic adjustment—the United States, for example, and Austria and Belgium before the present mechanisms were developed.

Mechanisms for adjustment.—Each country has developed a somewhat different approach for adjustment of its maximum for contributions. This mechanism may or may not be the same as that used to adjust pensions in course of payment or for adjusting credited earnings in calculating new pensions. As explained in detail later, the four European countries adjust "periodically." In Austria and Germany, where the ceiling is a multiple of a national average earnings figure, the ceiling changes with movements in average earnings. In Sweden also, the ceiling is a fixed multiple of a national base wage figure, but the base itself is adjusted according to changes in the consumer price index. In France, movements in the ceiling are directly linked to a national wage index. The United States has adjusted from time to time by legislative action.

The Swedish ceiling is the most quickly responsive to change since it can be adjusted more rapidly and more frequently than the others. The adjustment factor is a three-point change in the consumer price index, independent of the time of year; it does not, on the other hand, reflect increases in real earnings. Austria, France, and Germany make adjustment on January 1 for each calendar year. The French adjustment has a built-in lag of 3–15 months between an index change and revision of the ceiling, and the Austrian system has a 2-year lag. The lag is about 3 years in the German system.

The adjustment systems of the three countries that base changes on fluctuations in earnings are not fully "automatic" but contain a discretionary process. The changes in indexes are reviewed by advisory bodies before being put into force. These bodies consider whether the proposed increases may be too high or too low and suggest modifications in line with what they feel the economy can bear.

The discretionary or advisory process was in-

roduced not only as a consequence of economic considerations but under pressure from national employer and higher-paid employee groups. The discretionary layer provides a certain amount of flexibility to take into consideration special situations and trends. The purely automatic process has at times proven too rigid. As a result, individual countries have had to supplement the automatic changes by ad hoc action. Thus, the Swedish ceiling rose automatically for 1970, but the 1969 base of taxation was continued—presumably because the fund had been taking in more money than originally expected. Belgium was forced to make frequent ad hoc changes in the early 1960's because of the rapid increase in wages.

Austria.—The Pension Adjustments Act, which went into effect at the beginning of 1966, provides for the adjustment of the maximum on January 1 of each year. This adjustment serves to determine the adjustment of other pension factors, particularly the extent to which past earnings are revalued for the purpose of computing new pensions. The extent to which the ceiling is adjusted each year also serves as the basis for the adjustment of pensions in course of payment by the Federal Ministry of Social Administration.

In revaluing pensions in force, the adjustment is not automatic: the Ministry may decide whether or not to increase (or theoretically decrease) pensions in force by as much as the change in the ceiling. The general economic situation and other factors—such as the proportion of beneficiaries to active contributors—are taken into account. Usually the adjustment factor applicable to pensions in force is made the same as the factor (coefficient) used to adjust the ceiling.⁹ Before it can issue the adjustment decision, however, the Ministry must consider the opinion of the Advisory Committee on Pension Adjustment and obtain the consent of Parliament and the Federal Government.

France.—The taxable ceiling is adjusted annually on January 1 for the whole year by an administrative decree, on the basis of a procedure established in 1962. The extent of change is based on movement in a national wage index—

the index of hourly earnings for workers over age 18—from October 1 of one year to October 1 of the next.¹⁰ Thus, since the wage index showed a 10-percent increase between October 1, 1966, and October 1, 1967, the 1967 ceiling was multiplied by 110 percent, rounded to the nearest 120 francs to give the 1968 ceiling, effective January 1 of that year.¹¹ The movement in the wage index provides a reference measure, but the exact amount of adjustment is determined only after consultation with management organizations that signed the national collective agreement establishing the present type of retirement system. In recent years, management has influenced the government to make smaller increases in the ceiling than those indicated by the wage-index trend.

Germany (Federal Republic).—The taxable ceiling is established for each calendar year. The height of a given year's ceiling is equal to twice the same year's general base for pension computation.¹² This base is the average gross remuneration of persons covered under the wage-and-salaried employees' pension programs, computed on the basis of the 3-year period ending with the second year preceding the calendar year for which the base applies. The general base for 1970, for example, is determined in 1969 by averaging the annual gross remuneration figures for 1966, 1967, and 1968.

As a result of the 1967 change in the formula, effective in 1968, the ceiling became slightly higher than it would have been under the old formula, since the ceiling is now twice the base raised to the next highest figure divisible by 1200.

Sweden.—The Swedish universal pension covers all citizens. Seventy percent of the cost is financed by a 4-percent income tax. The supplementary, earnings-related old-age pension is financed through a payroll tax on covered earnings (9.5 percent in 1969), paid by the employer. The ceiling is fixed at seven and one-half times a

¹⁰ See Ministère des Affaires Sociales, *Revue Française du Travail*, "Enquête sur l'activité et les conditions d'emploi de la main-d'oeuvre au 1^{er} juillet 1966," Paris, October-December 1966, page 124; Ministère de la Santé Publique et de la Sécurité Sociale, *Bulletin Mensuel de Statistiques Sociales*, selected issues. The index uses January 1, 1956, as 100.

¹¹ *Le Guide du Travail*, Cronan et Roques, selected dates, pages K22.

¹² *Bulletin of the International Social Security Association*, March-April 1962, Report III, page 68.

⁹ See Technical Note, page 30.

national base figure, determined as of January 1 of each year. This basic amount (originally set at 4,000 Kronor in September 1957) is adjusted according to changes in the cost-of-living index. Originally, it was approximately one-half the national average wage for wage-and-salary workers. The amount of taxable earnings is the portion between this base and the ceiling.

The cost-of-living index of the Central Bureau of Statistics is used in adjusting the basic amount. The index is prepared for each month, and, as provided by a 1962 law, each three-point change in the index brings a corresponding adjustment in the base (rounded to the nearest 160 Kronor). The basic amount is determined each month and incorporates a 3-month lag. The base amount for January, for example, is raised if the cost-of-living index for the preceding October has registered an increase of at least three points.¹³

The basic amount tends to become smaller in relation to the overall level of wages and salaries with the passage of time because gains in national productivity are not automatically taken into account. In the past, ad hoc parliamentary action was taken to raise the basic amount beyond the increases made because of the rise in the cost of living.¹⁴ Two points should be noted in connection with the ceiling and the basic amount from which it is calculated. First, as the amount becomes a smaller proportion of national average earnings, the height of the ceiling will decrease relatively. As a consequence, benefits at the maximum would eventually come to be paid to a much larger proportion of pensioners. Second, when the national basic pension and the earnings-related pension are considered together, the total combined pension is weighted. On maturity, it will consist of 90 percent of the basic amount, plus 60 percent of pensionable earnings (the amount between the base and the ceiling). This combination, in view of the diminishing size of the basic amount, in real terms, would lead to a lower replacement rate.¹⁵

¹³ See International Labor Organization, *Legislative Series: Sweden, 1962, Public Insurance Act No. 381*, page 2, and George F. Rohrllich, *General Report of the Sixth International Congress of Labor Law and Social Legislation*, 1966, page 45.

¹⁴ Carl G. Uhr, *Sweden's Social Security System* (Research Report No. 14), Social Security Administration, Office of Research and Statistics, 1966, pages 53-55.

¹⁵ See Technical Note, page 30.

United States.—Unlike the changes in the ceiling in the other countries, the increases in the United States have been “ad hoc” and not directly connected with wage or price indexes. Congress has adjusted the maximum on taxable earnings five times—1950, 1954, 1958, 1965, and 1967.¹⁶

Trends in Adjustment

In comparing the relationship of prices, wages, and the ceiling in these five countries, the time lag between the change in the index and the corresponding adjustment in the ceiling becomes a salient factor. As pointed out, in France the lag between the adjustment in the ceiling and the index on which it is based can be considered to be 15 months, involving changes from October to October applied on January 1 of the following year. In Austria the lag is nominally 2 years, since the change in earnings from year A to year B is applied to the ceiling in year C to create the ceiling for year D. Technically, however, this is not precisely true. The earnings base is drawn up twice a year—currently in January and July. The average January-July earnings would therefore reflect the real level of about April. From April of one year to January 1 of the second year would be 21 months—the actual lag; by the end of the second calendar year, this interval increases to 33 months.

The amount of lag in Germany is difficult to determine. Officially it is supposed to be 3 years. Actually, the determination of the 1970 ceiling, for example, would be made by averaging earnings during 1966, 1967, and 1968, and then multiplying by two. If the average for the 3 years fell at about the August 1967 level of earnings and the new ceiling became effective on January 1, 1970, the lag would be about 2 years and 5 months at first and would rise to 3 years and 5 months before a new ceiling was established. In periods of sharply rising wages the lag effect would be somewhat less, however, since the effective average would tend to occur later in the middle year of computation than during periods of decline, no growth, or slow growth.

¹⁶ For a detailed discussion of the United States ceiling, see Michael Resnick, “Maximum Taxable Earnings Under OASDHL, 1938-66,” *Social Security Bulletin*, October 1968, pages 24-28.

The United States, during the decade under study, has had an interval as long as 6 years between adjustments. Since adjustments are ad hoc, there is no lag behind a fixed standard. From 1960 to 1965 average earnings rose 20 percent, while the ceiling remained stationary.

Theoretically, the ceiling in Sweden should have the least amount of lag since it is derived on the basis of monthly movements in consumer prices (rather than annual wage average) and involves only a 3-month delay. The interval between earnings increases and ceiling adjustments could be considerable, however.

On the basis of lag, then, the United States would be expected to show the least constant relationship between the ceiling and wages or prices over a period of years. Germany should show a fair amount of disparity, Austria should show less, France should have a close relationship, and the Swedish system should show almost no lag effect.

The pattern is not quite as simple as that, as table 2 shows. The closest relationship does, indeed, exist in Sweden, but the other European

TABLE 2.—Indexes of ceiling, national earnings base,¹ earnings in manufacturing, and consumer prices, 5 countries, 1960-69

Country and index	[1960=100]								
	1961	1962	1963	1964	1965	1966	1967	1968	1969
Austria:									
Ceiling.....	133	133	133	133	150	163	175	188	200
National earnings base.....	111	122	131	141	156	166	187	200	215
Earnings in manufacturing.....	109	116	123	134	146	163	175	186	203
Consumer price.....	104	108	111	116	121	123	128	132	136
France:									
Ceiling.....	² 122	145	158	173	186	196	207	218	247
National earnings base.....	108	111	128	137	145	154	162	188	202
Earnings in manufacturing.....	108	116	118	137	143	153	160	179	201
Consumer price.....	104	108	114	117	120	124	127	133	144
Germany, Federal Republic:									
Ceiling.....	106	112	118	129	141	153	165	188	200
National earnings base.....	110	120	127	139	151	162	167	181	193
Earnings in manufacturing.....	110	121	129	137	153	162	162	173	189
Consumer price.....	103	106	109	112	116	120	121	123	126
Sweden:									
Ceiling.....	102	107	112	114	119	126	131	138	143
National earnings base.....	102	107	112	114	119	126	131	138	143
Earnings in manufacturing.....	107	116	123	133	147	160	171	² 162	² 172
Consumer price.....	102	107	110	113	119	127	132	134	² 138
United States:									
Ceiling.....	100	100	100	100	100	138	138	163	163
National earnings base.....	103	108	111	115	120	125	128	137	143
Earnings in manufacturing.....	103	108	111	115	120	125	128	137	143
Consumer price.....	102	103	104	105	107	110	114	118	² 125

¹ Changes in average of covered earnings for Austria and Germany, in hourly earnings of workers paid by the hour in France. The index of the national base in Sweden is the same as that for the ceiling. The United States has no national base.

² Estimated on basis of less than a full year.

³ Index changed twice in 1960 and 1961: for July-Dec. 1960, the index was 107; for Jan.-June 1961, it was 110.

⁴ New series.

Sources: Data on ceilings from national legislation and official reports; data on earnings from *ILO Year Book of Labour Statistics* and *United Nations Statistical Monthly Bulletin*; consumer price index derived from *ILO Bulletin of Labour Statistics* and U.S. Bureau of Labor Statistics. *Labour Developments Abroad*, selected issues; national earnings base figures from official publications.

countries are not in the expected order. For 1968, Austria follows Sweden, with a difference of 12 percentage points between the growth in the wage index and the ceiling. Germany is second with 15 points, and France has 30 points. In addition, the wage index had grown more rapidly in Austria than the ceiling. The implication of the disparity in national growth rates would be that the adjustment systems have not worked out precisely as originally intended. Several factors influence the apparent trend shown by the data—particularly the fact that the present systems were introduced in different years but, for convenience of comparison, the table uses 1960 as a base year.

Austria.—Table 2 shows a more rapid growth in Austria of average covered earnings than of the ceiling—partly because no adjustments of the ceiling were made from 1962 to 1964. Since the new system has been operating, the two elements have risen in a more related fashion and have remained fairly close to each other. The national figures make it clear, however, that the social security advisory body exerted a moderating influence that tended to curb the increase in the ceiling. The 12-percent increase in average covered earnings from 1966 to 1967 is reflected, for example, in a 7-percent rise in the ceiling in 1969.

France.—In France, the ceiling showed a somewhat irregular pattern from 1960 to 1962, with five increases in this period. Government action in the form of a 1962 law fixed the ceiling more firmly to the index of average hourly earnings of workers paid by the hour. Thereafter the growth of the ceiling followed the increase in earnings more closely. A 5.9-percent increase in earnings in 1965, for example, was followed by a 5.9-percent increase in the ceiling in 1966. In earlier years the ceiling had tended to grow more rapidly than wages—a reflection largely of the need for a broader financial base to cover increased health costs. Similar considerations led in August 1967 to the introduction of an additional, smaller tax on wages above the ceiling.

Since 1966, however, the growth in the ceiling has trailed that of the wage index. This pattern was clear in 1968, following serious national labor disputes that involved pension and wage matters, when the hourly index jumped almost 16 points. Nominally, the ceiling in 1969 could

have risen by the same percentage. However, the consultative bodies that represent the viewpoint of the organization of technical and managerial personnel felt that this proportion was too high because of its potential inflationary effect. With their advice, the Government settled on a rise of 13.3 percent.

Of the 10.3-percent adjustment of the 1970 ceiling, 7.7 percent took into account the wage increase from October 1968 to October 1969. The difference between 10.3 percent and 7.7 percent represented that portion of the previous year's increase that had not been reflected in the January 1969 ceiling adjustment. In other words, the influence of the large wage increase was spread out over 2 years in adjusting the ceiling.

Germany (Federal Republic).—The German adjustment system was inaugurated in 1957. During most of the interval since that year the country had undergone an almost uninterrupted period of prosperity, with wages increasing steadily, if not at a uniform rate. This constant increase over a longer period of time would tend to account for a parallel rate of growth of the ceiling and the national wage base (that is, the average of covered earnings). Wages rose 8–9 percent per year in 1963–68.

Sweden.—In Sweden the growth rate of the ceiling has been closely related to that of the consumer price index, on which it is based. As table 2 shows, the index for the ceiling in 1968 was 138 and for the price index it was 134. Before 1968, the ceiling and the consumer price index had risen in unison, with increases remaining within one or two percentage points of each other. Since the ceiling is a multiple of the base and since the base is adjusted to a price index, the relationship may, of course, be close.

Price and earnings indexes.—Table 2 brings the consumer price index into the picture for all the countries under consideration. The range in consumer price indexes, with 1960 used as the base year, was not great. It varied in 1968 from 118 in the United States to 123 in Germany and a very close 132–134 in the other three countries. Where earnings are the basis of ceiling adjustments, the ceiling has grown far more than prices. These statistics corroborate what is already well-

TABLE 3.—Percent of all covered persons with total earnings below taxable ceiling, 5 countries, 1960–68

Country	1960	1961	1962	1963	1964	1965	1966	1967	1968
Austria ¹	95	—	—	—	2 94	—	95	95	95
Federal Republic of Germany.....	—	3 90	—	—	—	3 88	4 88	—	—
France ²	58	67	72	73	74	75	73	—	—
Sweden ³	99	99	99	98	98	—	97	—	—
United States.....	72	71	69	68	66	64	76	75	79

¹ Based on gross monthly remuneration of all covered wage and salary employees and derived from the size distribution of earnings at the end of January of each year. Percentages rounded and subject to about ± 2 percent error because earnings classes did not coincide exactly with monthly taxable ceiling.

² A figure of 87 percent was derived from national wage and salary tax data for the entire year 1964. Gross employment earnings were tabulated according to annual wage brackets. The relevant earnings bracket was 55,000–60,000 Schillings a year and, since the ceiling for pension contributions was 57,600 Schillings in 1964, the 87 percent was based on all earners below 60,000 Schillings a year. Since coverage was not coincidental with social security coverage and earnings-bracket limit deviated more from annual ceiling than the 1964 percentage defined in footnote, the possible error is higher—that is, less reliable.

³ Based on wage tax data. Gross earnings distributed by earnings brackets.

⁴ Derived from size distribution of gross monthly earnings of wage and salary employees for October 1966.

⁵ Percentages are biased upward because they are based on *net* wages and salaries distributed by size *after* deductions for social security. Actual percentages should each be 2–4 percent higher to be comparable with other figures in table.

⁶ Derived from personal income distribution data (which include the self-employed). Size distribution is based on tax data and the time period is the tax year. Ceiling used to derive percentages is that in effect at January 1 of each year.

Sources: Official reports and publications.

known—that a wage index including both price rises and productivity improvements goes up more rapidly than a price index alone in periods of full employment. Ceilings tied to wages have thus gone up far more rapidly than those tied to prices.

In the wage-related adjustment systems of Austria, France, and Germany there is an interesting interaction between the earnings base on which the ceiling is calculated and the ceiling. In each of these countries, the national average earnings data used to work out the ceiling has increased more rapidly than the average earnings of a male worker in manufacturing. For Austria in 1968, for example, the national base earnings index was 200 and the index of earnings in manufacturing was 186. The most evident explanation for the greater growth in the former appears to be the fact that the rise in the ceiling from year to year has brought a greater amount of higher earnings beneath the ceiling.

PROPORTION OF LABOR FORCE AND PAYROLL BELOW CEILING

Up to this point in the article, the height of the ceiling has been assessed according to its relationship to national base earnings and aver-

age earnings in manufacturing. Other measures of the relative level of the ceiling are the relative number of workers with all their earnings below the ceiling and the percentage of all earnings below the ceiling. One would expect to find parallel results in these relationships.

The United States has the lowest ceiling and, logically, it should have a smaller proportion of the labor force with total earnings under the ceiling and less of the total wage bill should be under the ceiling. At the other end of the scale is Sweden, with the highest ceiling. Again, one would expect that country to have a larger percentage of the total payroll and of the entire labor force under the ceiling. In general, these expectations are borne out.

The data for the individual countries shown in table 3 do not cover precisely the same groups. For the United States, the concept used is the proportion of workers covered under the OASDHI program whose annual earnings fall below the current ceiling in each year.¹⁷ For Austria, percentages are based on the gross covered monthly remuneration of all wage-and-salary workers covered by the general system (88 percent of the economically active) and were derived from data on the number of persons in each of the country's 48 wage classes.¹⁸

For France, the data are based on surveys of the earnings of full-time workers in "industry, commerce, and the services."¹⁹ This category of worker included 10,136,600 persons in 1966 (the latest year for which information is available), or about 50 percent of the economically active; it excludes agriculture, domestic employment, the self-employed, and most of the public (government) sector. Consequently, the earnings figures for France are skewed toward higher levels in comparison with the figures for the other countries. This is, of course, because the survey includes those at the middle and higher pay levels—professional and managerial personnel and white-

¹⁷ See Michael Resnick, *op. cit.*, and quarterly statistics, *Social Security Bulletin*, March 1970, page 48.

¹⁸ Hauptverband der Osterreichischen Sozialversicherungsträger, *Erwerbstätige nach Lohnstufen*, Vienna, selected years.

¹⁹ Institut National de la Statistique et des Etudes Economiques, "Les Salaires dans l'Industrie, le Commerce et les Services en 1966, *Etudes et Conjoncture*, July 1968, pages 1-45; "Les Salaires dans l'Industrie, le Commerce et les Services en 1964," July 1966, pages 1-36; and *Annuaire Statistique de la France*, selected years.

collar workers—with the wage earners but excludes those categories that tend to be the lowest paid. The French figures represent only half the labor force; for the other countries a much larger proportion—probably at least 90 percent—is represented. The element of noncomparability cannot be eliminated but a rough estimate has been made for the entire French labor force. (See the Technical Note, page 31.)

The data for the Federal Republic of Germany were derived from wage classes reported in income-tax figures, presumably for all persons. Two different sources were used—one encompassing 33 wage classes, another covering 14 wage classes—with virtually identical results.²⁰ The Swedish statistics are also derived from income-tax data on the distribution of earnings by income class.

In the tabulation (based on tables 1 and 3) the rank order of countries by the level of the ceiling does not completely correspond to the ranking by number of wage and salary workers with all earnings completely under the ceiling. In 1966, the rankings of the five countries were as follows:

Country (ranked by ceiling-earnings ratio)	Ceiling as percent of earnings in manufacturing	Percent of workers with all earnings covered
Sweden.....	214	97
France.....	171	173
Austria.....	166	95
Germany.....	155	88
United States.....	113	76

¹ Not comparable. See page 31.

The differences may reflect the different kinds of earnings data used—covered earnings in some cases and income-tax earnings in others. Sweden, with the highest relative ceiling, also has the most persons with earnings completely under the ceiling—97 percent of all workers in 1966. The policy intent was to cover virtually the entire labor force, and the Swedish system has done so. The United States, with relatively the lowest ceiling, has the lowest percentage of persons with earnings completely under the ceiling—76 percent of the total in 1966.

²⁰ Statistisches Bundesamt, *Statistisches Jahrbuch 1968*, Wiesbaden, 1968, pages 406-407; *Wirtschaft und Statistik*, May 1967, pages 321-322; and official unpublished data.

Percent of Total Payroll Under Ceiling

Because of the disparity of sources used in developing the income breakdowns, the statistical information on the percentage of the total payroll subject to social security tax should be considered as in the general range of possibilities, on the basis of which the countries may be ranked roughly.

Germany has the largest proportion of total payroll subject to the social security tax. In 1965, the latest year for which figures can be computed, this proportion was 94 percent. The figure for France for the same year was 81 percent. The relationship could not be determined for Austria, because that country's listing of income classes omits the amounts above the ceiling for social security contributions. In the United States, the equivalent figure was 71 percent of the total payroll subject to social security contributions.

Sweden poses a serious complication in such a comparison, since it excludes from the social security tax not only amounts above the ceiling but also amounts below the annual base from which the ceiling is computed. Because both these amounts are exempted from payroll taxation, only 65 percent of the total payroll of that country was subject to tax in 1965.²¹ However, if Sweden did not excuse the lower range of earnings and thus were comparable with the other countries, then about 95 percent of earnings would fall below the ceiling and theoretically be taxable.

There are fluctuations in the proportion of payroll that is under the ceiling, particularly when long delays occur in applying the adjustment process. For example, when average earnings rise more rapidly than the ceiling (as happens even in systems with periodic adjustment, because discretionary considerations may dictate that the ceiling go up less rapidly than wages and because of the built-in lag) then the percent of payroll subject to the social security tax will decline. There is some indication that this situation has arisen and that the percent of payroll subject to tax is in a downtrend.

²¹ It is interesting to note that in the 1968 Swedish parliamentary debates, projections for pension contributions in 1968-2000 calculated the proportion of total wages subject to social security contributions in 1968 as 69 percent. (*Svenska Handelsbanken, Index*, No. 3, 1968).

TECHNICAL NOTE

Austria.—The coefficient used to update the ceiling every January 1 is found by calculating the change in average covered earnings from 2 years and 1 year before the current year. The resulting coefficient is then applied to the current year's ceiling in order to determine the ceiling that is to be effective the following January 1.²²

A comparison of the year-to-year increases in average covered earnings since 1965, when the present system became effective, indicates that the adjustment coefficient was followed in establishing the ceiling in 1966, 1967, and 1968. For 1969, however, despite a 12.1-percent jump in average earnings from 1966 to 1967, the ceiling was raised only 6.8 percent (table 2).

The coefficient used to update the ceiling every year is also used to revalue past credited earnings. The method of calculating the coefficient, however, produces a 2-year lag in revaluing the past earnings. The insured person retiring on January 1, 1968, for example, would have his basis of assessment figured on the earnings of the 5-year period 1963-67. The 1968 coefficient (based on the change in average earnings from 1965 to 1966) would be used to revalue the retiring worker's 1965 earnings.

Sweden.—Pension points are calculated and credited to the insured person's account each year by taking his earnings between the basic amount and up to seven and one-half times the basic amount (pensionable earnings) and dividing that amount by the basic amount. For example, an insured worker with employment earnings of 16,500 Kronor in 1967 would have pensionable earnings of 11,000 Kronor (16,500 — 5,500). Since the basic amount on January 1, 1967, was 5,500 Kronor, the worker would be credited with 2.0 points. In order to determine the amount of the earnings-related pension, the worker's average number of pension points must be found by adding all pension points credited to his account and dividing by the number of years involved. If the worker has more than 15 years of pension points, only the highest 15 sets of points are taken into account. The pension is computed by multiplying the average for the pension points by the basic

²² National Federation of Austrian Social Insurance Institutions, *Social Security in Austria*, Vienna, 1966, page 51.

amount in force in the month of retirement and then taking 60 percent of the result.

Once the pension is in course of payment, it is adjusted for changes in the national cost-of-living index by multiplying the average pension-point figure by the current basic amount (which is tied directly to the cost-of-living index) and then by 60 percent.

France.—The figure shown for the proportion of workers in industry, commerce, and the services with all their earnings below the ceiling in France in 1966 is 73 percent. It covered about 10 million persons in that year or approximately half the total labor force of almost 20 million. The survey from which the figure was derived excluded the self-employed (almost 70 percent of them in agriculture), agricultural workers, and those in domestic employment and in public administration. Estimates can be made, however, to make the French figures more nearly comparable with those of the other countries.

First, if the earnings pattern for the other half of the labor force is exactly like that of the surveyed group, then 73 percent of the entire labor force has earnings above the ceiling. At the

opposite extreme, if none of the other half has earnings above the ceiling, then 173 divided by two or 86.5 percent of the labor force has earnings above the ceiling. Actually, the average earnings of the “other half” are probably lower than the surveyed group: it includes domestic workers, more than one-third belongs to the agricultural sector, and it has a large percentage of persons in local government and public administration who would be likely to be in pay categories below the ceiling. Consequently, if 90 percent of the second half had earnings below the ceiling, then the combined total would be the average of 90 plus 73—81.5 percent.

The effect of this skewing of the French statistics becomes more evident when it is noted that in 1965 the ceiling for both Austria and France was 172 percent of average earnings in manufacturing. Logically, one would expect that the percentage of workers with total earnings under the ceiling would also be quite close. Instead, France shows 77 percent and Austria 94 percent. This disparity reflects the difference in distribution of earnings: the Austrian figures include agriculture and other lower-paid sectors and the French figures do not.