The Earnings Replacement Rate of Old-Age Benefits: An International Comparison

by MAX HORLICK*

HOW MUCH of the earnings of a worker with average wages does the old-age pension replace in foreign countries and how does the United States compare with other countries in this respect? The number of queries on the subject have led to this international comparison on a more detailed and uniform basis than those in previous studies dealing with the replacement rate. The questions have arisen, in part, from the feeling that the social security system in the United States pays a relatively smaller pension than do the systems of most other industrial countries. The present study finds that the average retired couple in the United States enjoys an intermediate replacement rate among the 13 countries examined. Five are significantly higher, three are about the same, two are slightly lower, and two are significantly lower. For the individual United States beneficiary the rate equals or is above that found in four of the other countries.

There has been surprisingly little study of this subject—in part, no doubt, because of the lack of comparable data and the extreme complexities of the differing national systems, most of them in process of transition. Popular discussions or political speeches in the individual countries tend to speak in terms of very high replacement percentages and neglect to mention that these rates will occur only when the systems mature in 20–30 years. The few technical reviews,[1] in their differing results, serve to point up the difficulties involved. International Labor Organization (ILO) records on the adherence to Conventions of that body tend to reflect a very high replacement rate; six possible methods of calculation are used, with the individual country authorized to submit the most favorable, if it so desires.[2]

What the replacement rate actually is in one individual country can be a matter of controversy. It becomes apparent in reading of the strikes and riots involving social security issues that occurred in a number of countries in 1968 and 1969 that a lack of mutual understanding between the contending factions was a causal factor. The planners speak of high percentages that will be achieved upon maturity of the system. The leadership of the trade unions or other public groups involved use technical terminology. It may be that the bulk of the workers think of the pension as a percentage of their earnings just before retirement. The planned figure may be 60 percent for 1990, but the worker may see that his pension is only 35 or 40 percent of his take-home pay.

THE AVERAGE WORKER

The matter of definition of concepts is, of course, a key in international statistical comparisons. The two most relevant definitions needed to carry on this study were standard descriptions of remuneration for work, on the one hand, and for cash benefits after retirement, on the other. The conclusion was reached after discussion with the Bureau of Labor Statistics of the U.S. Department of Labor and with the Wage Statistics Division of the International Labor Organization on the use of data for gross and net wages and salaries, taxable earnings, covered earnings, and

* Chief, Comparative Studies Group, International Staff, Office of Research and Statistics.

[1] Juanita M. Kreps, *Lifetime Allocation of Work and Leisure* (Social Security Administration, Office of Research and Statistics), 1968, page 30; Margaret S. Gordon, "Income Security Programs and the Propensity to Retire," *Retirement and the Individual: Hearings Before the Subcommittee on Retirement and the Individual of the Special Committee on Aging* (U.S. Senate, 90th Cong., 1st sess.), *Part I*, page 328; James H. Schulz, "Aged Retirement Income Adequacy—Simulation Projections of Pension-Earnings Ratios," *Old-Age Income Assurance, Part II: The Aged Population and Retirement Income Programs* (Joint Economic Committee Print, 90th Cong., 1st sess.), 1967, pages 250–251; International Labor Office, *Revision of Conventions Nos. 35, 36, 37, 38, 39 and 40 Concerning Old-Age, Invalidity and Survivors' Pensions*, 1965, page 104.

[2] Robert J. Myers and William M. Yoffee, "Social Security Issues: Fiftieth International Labor Conference," *Social Security Bulletin*, November 1966, pages 28–30.

the like that the ILO earnings series was the most useful in terms of comparability. The ILO figures give hourly, daily, weekly, and sometimes monthly average earnings and hours worked per week for workers in manufacturing and for workers in the nonagricultural sector of the economy of each country.[3] For the purpose of comparison with monthly or annual old-age benefits, these data were converted into computed figures for a particular period of time—specifically, one month.

The present method of comparing actual average preretirement earnings with actual pensions based on these earnings eliminates one of the most serious problems in an international comparison of pensions—the definition of covered earnings used in the formula of the individual country. National practice in determining the earnings on which the computation of benefits is based varies from country to country. Some countries include only net earnings; others base the assessment on gross earnings. Some countries include all cash elements (overtime, piece rate, housing supplements, and other fringe benefits), and others include only base pay. Some countries use actual earnings; others use earnings assessed on the basis of occupation, region, etc.[4]

As it is difficult to discern any common practice it may be of interest to note that ILO Convention No. 102 Concerning Minimum Standards of Social Security requires that, for the purpose of verifying compliance with the Convention, the earnings of the typical worker should be based on the wage rates for normal hours of work fixed by collective agreements, by or in pursuance of national laws or regulations where applicable, or by custom (with cost-of-living allowances, if any, included).[5]

Since ILO figures were used in this study, the "average" worker, of necessity, became the one whose earnings are reported by the ILO—the male worker in manufacturing. In reality, the spectrum of old-age beneficiaries in any country will include those with extremely short or extremely long working lives, consistently high or consistently low earners, white- and blue-collar workers (for which there may be separate systems), women, the employed and the self-employed, early and late retirees, as well as new and old pensioners, persons with reduced benefits, and members of special schemes (such as miners, seafarers, and farmers). ILO Convention No. 128 Concerning Invalidity, Old-Age, and Survivors' Benefits, defines a "standard beneficiary" as a male worker in the manufacturing of machinery (other than electrical machinery) whose earnings are equal to 125 percent of the average earnings of all covered persons. It is interesting to note that by the method used here, the earnings figures for the average German worker in manufacturing were about 124.5 percent of the national average utilized by the German social security system, under the country's procedure for computing pensions.[6]

For the sake of uniformity, the average worker in manufacturing is considered to be fully qualified for an old-age pension at the normal retirement age, with legislative provisions for the pertinent age group taken into account. In actuality it is not possible for the countries to get a count of persons at the average level. Other studies indicate that a substantial number of retirees are not in fact eligible for a full regular pension, simply because they were born before current systems came into force, because of interruptions in employment, because of early retirement, or other factors. Where pertinent, the number of years worked has been calculated at 30, 35, or 40 and the retirement age is considered to be the statutory one for the country—most often, age 65—with an actual career thus simulated. As noted subsequently, the benefit formulas of some countries stress length of service; in others, if minimum requirements are met, length of service may be irrelevant.

THE AVERAGE PENSION

To determine the other half of the relationship, the pension for the average worker, was far less

[3] International Labor Organization, *Yearbook of Labor Statistics, 1968*, Chapters IV and VI, supplemented by data from the United Nations Statistical Office, *Monthly Bulletin of Statistics*.

[4] For details, see Technical Note, page 15.

[5] See International Labor Office, *op. cit.*, pages 57–59, and Convention No. 102 Concerning Minimum Standards of Social Security, 1952.

[6] An Office of Research and Statistics estimate for the United States is roughly comparable: the figure for the average earnings for manufacturing used in this study—$6,370.52 for 1968—represents 126 percent of the total average income from covered employment.

simple. Since the ILO figures dealt with workers in manufacturing and represented the only really comparable earnings data, it became necessary to "work out" what the pension would be for a worker retiring from manufacturing in a given year—in this case 1968. For the earnings record on which the benefit was based, it was assumed that the worker had been at the average level for manufacturing throughout the pertinent years of coverage. The true pattern would undoubtedly show the earnings of the manual worker declining in his older years but those of the white-collar worker increasing.

Although the resultant methodology posed many problems, it was at least feasible. For some countries it was possible to calculate the figure by several methods, usually with almost identical results. It should be clear that the apparently easiest and direct method—simply to divide the total number of retirees into total expenditures for old-age (and usually survivor) pensions—is not appropriate even where it is possible, when one is concerned with the earnings replacement rate. An average old-age pension calculated by this method reflects too great a cross section of life histories and circumstances. In general the actual "average" pension tends to be very low because of the inclusion of miscellaneous groups, particularly survivors and persons receiving reduced benefits. On the other hand, since the wages of male workers in manufacturing are relatively high compared with those of the labor force in general (see table 3), it must be recognized that in countries having weighted benefit formulas or ceilings for contributions, the replacement rate for persons with relatively smaller incomes would be higher than that shown. The advantages of using the most nearly comparable earnings series seem determining, however. It can also be argued that the most significant comparison for evaluating a retirement system is the replacement rate for the great body of steady middle-earnings level workers. The social policies relating to low incomes take a great variety of forms in different countries.

THE PENSION FORMULA

Once the "average" earnings have been determined and the corresponding "average" pension has been calculated, there remains the task of comparing the figures in order to derive a replacement rate. Actually two such ratios have been used. Table 1 gives (a) the percentage relationship between the pension and earnings in the year before retirement and (b) the relationship between the pension and the earnings averaged over a period of years, as prescribed in the formula. As the table shows, the formula may base its calculations on the average earnings (total or creditable) in the 3 latest years of employment (Italy), in a period of 13 years (for a retiree in the United States in 1968), or in an entire lifetime (as in Belgium and other countries).

For the average worker, the first method is not unrealistic since it permits a comparison of the standard of living the worker enjoyed in his last year of work with that which he will have after retirement. On the other hand, there are inherent ambiguities in comparing earnings over a period of time, as the formula requires. The replacement rate by formula is higher the greater the number of years upon which the earnings record is based, as would be expected, since earnings have been increasing steadily, both in real and nominal terms.

Thus, in Italy, where the new pension formula uses the 3 last years of work, a 1968 retiree would theoretically have a replacement rate of 57 percent when his pension is compared with his average earnings during the same period. This proportion drops to 54 percent, however, when the pension is related to earnings in the last year of employment. In a pension formula based on earnings in the last 5 years of work, like the Austrian formula, the pension is 55 percent of the average earnings of the last year of work and 64.5 percent of the 5-year average—a difference of 9.5 percentage points.

For a longer period of years, the disparity would be greater except for the fact that earnings records are frequently revalued. Thus, in Sweden, where a 15-year period is involved, the total cash old-age benefit is 41 percent of earnings in the last year of work and also 41 percent of the revalued earnings over 15 years. If the earnings were not revalued, the pension would represent 60 percent of the 15-year average. The country's long-range plan calls for the pension in 1990 to be 60 percent of covered revalued earnings, averaged over the high 15 years. This

TABLE 1.—Replacement rate of old-age pension for a male worker with average earnings in manufacturing, retiring at end of 1968,[1] and pension formula, selected countries

Country	Years worked	Pension as percent of—			Pension formula		
		Earnings in year before retirement		Formula earnings, single worker [3]	Type of formula	Retirement age	Computation provisions
		Single worker	Couple [2]				
Austria [4]	30	49		57	Percent of average earnings in last 5 years (or age 45–50), time related.	65	30 percent of "basis of assessment" (average covered monthly earnings of last 5 years) plus 0.6 percent per year for 1–10 years, 0.9 percent for 11–20 years, 1.2 percent for 21–30 years, and 1.5 percent for 31 years and over.
	35	55		64.5			
	40	60		70			
Belgium	35	33	41	47	60 percent of lifetime average, revalued (45 years or all years since 1926).	65	Full benefit when system matures in year 2000.
	40	37	46	53			
Canada [5]		22	39	22	Universal pension plus 25 percent of average earning, highest 10 years.	67 [6]	Earnings-related Canada Pension Plan begins with 2.5 percent for retirement in 1967, increasing 2.5 percent per year to a maximum of 25 percent in 1976.
Denmark [5]		29	44		Universal old-age pensions, means-tested, plus supplementary pensions time-related.	67	Supplement of 60 kroner a year times number of years.
France	[7] 30	22	33	20	20 percent of average credited earnings of highest 10 years, indexed.	60	4 percent increment per year for deferral after age 60.
	35	43	68	40			
	40	65	98	60			
Germany, Federal Republic.	30	43		45	Percent of lifetime average earnings, indexed.	65	1.5 percent of "assessed wages" times years of coverage. "Assessed wages" is the ratio of the individual's earnings to the national average earnings multiplied by the national average during the first 3 of the 4 years preceding retirement.
	35	50		51.5			
	40	57		60			
Italy [8]	35	54		57	65 percent of average earnings of last 3 years.	After 40 years.	For those retiring after May 1, 1968, with 40 years under new scheme.
	40	61		65	74 percent of average earnings of last 3 years.	After 40 years.	For those retiring after June 1, 1969, with 40 years, under revised legislation.
Netherlands	[9] 49	[10] 30	43		Flat rate	65	
Norway [5]		33	45	33	Universal pension plus supplement related to average earnings of highest 20 years, indexed.	70	45 percent of a national base amount, which is roughly one-third of the national average wage, times number of average annual "pension points." Pension points are derived by dividing annual earnings (between the base amount and the ceiling) by the base amount. Revalued each year.
Sweden [5]		41	55	41	Universal pension plus supplement related to average earnings of highest 15 years; indexed.	67 [11]	60 percent of national base amount, which is roughly one-third of the national average wage, times number of average annual "pension points." Pension points are derived by dividing annual earnings (between the base amount and the ceiling) by the base amount. Revalued each year.
Switzerland	Years since 1948.	21	34	32	Old formula: Weighted, based on average earnings since 1948.[12]	65	1,000 francs a year plus 4.4 times first 400 and 2.2 times next 300 francs of average annual contribution.
					New formula: Percent of average earnings since 1948.		In 1969, 125 francs a month plus 1.25 percent per month of average annual earnings.
United Kingdom [5]		24	36	27	Primarily flat rate plus graduated pension based on percent of contributions since 1961.	65	Universal flat rate, plus small earnings-related benefit.
					Weighted formula, based on percent of average earnings (*proposed*).		60 percent of earnings up to ½ national average, plus 25 percent of remainder to the ceiling, when mature after 20 years.
United States		29	44	38	Weighted formula, based on percent of average taxable lifetime earnings since 1951, with lowest 5 years omitted.	65	71.16 percent of first $110 of average credited monthly earnings plus 25.88 percent of next $290 plus 24.18 percent of next $150 plus 28.43 percent of next $100—for a retiree in 1968 at age 65.

[1] Computed earnings from International Labor Organization, *Yearbook of Labor Statistics*, selected years; supplemented by United Nations *Monthly Bulletin of Statistics*, selected issues; where appropriate, figures were revalued on the basis of national indexes.

[2] Includes supplement for spouse in countries with such a provision.

[3] Pension as percent of average creditable earnings for the required number of years.

[4] Fourteen "monthly" earnings and pension payments included per year.

[5] Because of newness of system, earnings-related component is relatively small and the number of years worked not yet entirely relevant.

[6] In 1968.

[7] Retirement permitted at age 60 (30 years of work required), with 20-percent replacement rate. (A reading of the legislation indicates that retirees with 35 or 40 years of work would also have a 20-percent replacement rate.)

[8] Under legislation in effect May 1968–April 1969.

[9] Age 65, with contributions each year from age 16 to age 64 for full pension; 2-percent decrement for each unexcused year of noncontribution. In effect, however, the system is virtually universal.

[10] Full flat-rate pension compared with average earnings of male workers in manufacturing (the pension is actually unrelated to previous earnings).

[11] Pension calculated on the basis also of special provisions for those born before 1924.

[12] Related to average current earnings in each year. Benefits are adjusted every 3 years or when the price index rises 8 percent. Adjustments upward in recent years have tended to rise about one-third each time.

Source: *Social Security Throughout the World, 1969* (Social Security Administration), legislative provisions, and official sources.

pension amount would be in addition to the flat-rate pension. The flat-rate and the earnings-related pensions together are to reach about two-thirds of average earnings.

For the United States the proportions are 29 percent for the short-range comparison and 38 percent of taxable earnings for the long-range one—a difference of 9 percentage points.

Time also plays havoc with the comparability of past earnings records of the various countries, because each uses a somewhat different method of revaluation. Belgium, for example, in 1968 placed an arbitrary value on all earnings before 1955. Under this system, earnings between 1926 and 1954 were made equivalent to those of 1963. In France, the index for revaluation (revised annually in April) makes credited earnings for most past years higher than for the current year. The United States does not revalue directly but instead adjusts by disregarding the lowest 5 years of earnings since 1951 and by revising the benefit schedule.

Two other time-related factors in the formulas affect comparability—variations in the retirement age and in the number of years worked. The most common retirement age for the countries studied was 65 (nine countries). France permits retirement at age 60 but with a very low replacement rate—20 percent; a 4-percent annual increment for deferral tends also to make retirement less desirable before age 65 (when the replacement rate reaches 40 percent). The Scandinavian countries, which have the problem of financing universal benefits, provide for retirement at a later age—67 in Sweden and Denmark and 70 in Norway. In Italy, the matter of retirement age is somewhat more complicated because of recent shifts in provisions. In 1968, that country abolished "seniority pensions" that permitted retirement at any age with 35 years of work, but they were reinstated in 1969 as a result of strong public protest and pressure.

The effect of the pattern of years worked also varies from country to country. In Austria and Germany the pension is directly affected by the length of the working life. In other countries a time-related factor is introduced by the decrement or increment for retirement earlier than or later than the legal retirement age. Interestingly, the number of years worked is almost irrelevant in France, where a standard benefit related to average earnings is established for age 60; each year worked thereafter adds an increment. Yet for a person retiring at age 65, for example, the pension would technically be the same if he worked 35 years or 45 years.

FORMULA TRENDS

Because of the time-related factors the comparison between the pension received upon retirement and the workers' pay in the year before retirement is the most meaningful measure for international comparison. The replacement rates generally quoted in individual countries may have little meaning in real terms. During the period since World War II, the calculation of lifetime average earnings or of average contributions tends to produce an "average" wage that is exceedingly low, as the value of past earnings is eroded by inflation and rapid economic growth.

The situation in the Federal Republic of Germany can be cited as an example. Before the 1957 pension reform in that country, an insured person could theoretically count upon a pension representing 70 percent of his former earnings after 40 years of work. In practice, however, as a result of the higher value that had come to be placed on labor, the actual figure no longer represented more than about 35 percent of the prevailing remuneration in comparable categories.[7]

The individual countries have been seeking means to bolster the "real" replacement rate, by periodic adjustment of benefits, by ad hoc adjustments even in dynamic systems, by revaluing of the earnings records on the basis of indexes that are themselves periodically revised, by automatically crediting workers with a standard earnings record 25 years earlier or before World War II, by changing the basis of calculations to encompass more recent years, or by passing legislation calling for a higher replacement rate.

Because of the complications inherent in keeping up the value of pensions, there has been a trend internationally toward simplifying the re-

[7] Kurt Jantz, "Pension Reform in the Federal Republic of Germany," *International Labor Review* (ILO), February 1961, pages 137–141; Gaston V. Rimlinger, "The Economics of Postwar German Social Policy," *Industrial Relations*, University of California, Institute of Industrial Relations, February 1967.

cording and computation of benefits. Fewer countries actually make use of the average earnings of an entire working lifetime. Newer formulas usually stress shorter periods, such as the last 15, 10, or 5 years. With a view toward equity for the manual worker, some of the newer formulas permit computation on the basis of the best rather than the most recent years. The shorter period of computation, of course, reflects to a greater degree the recent earnings and thus the current level of living of the retiring worker.

Another trend toward the revision of the benefit formula involves eliminating or simplifying the weighting in order to relate the benefit more directly to a personal or national average. The British White Paper of 1969, for example, calls for abandoning the multi-tier structure—a flat-rate plus an earnings-related layer—in favor of a wholly earnings-related formula. In 1968, Italy dropped a formula involving a complicated series of computations tied to lifetime earnings to base the pension on the last 3 years of work. In 1969, Switzerland also adopted a simpler earnings-related formula.[8]

CONCEPTUAL PROBLEMS

International comparison of earnings and pensions inevitably reflects a whole series of political, social, and economic variations that make the replacement rate different for each country and for each generation of the aged within that country. First, the systems compared here have differing objectives. Those that provide universal benefits for all the aged, whether they have worked or not, may aim at a modest subsistence level. At the other end of the spectrum in a wholly earnings-related system, the replacement rate can be high.

In addition, to judge in which country retired workers have the most advantageous position one should take into account any noncash benefits or services for the aged, the degree to which private pension plans prevail, and the amount of income of the aged from sources other than the social security system. Each one of these points is a major field of study in itself and can only be dealt with briefly here. Many countries provide medical treatment, medicines, and hospital care in addition to the pension. There may be housing allowances, special recreational activities, home help for the solitary, rest homes, etc., with the individual programs differing markedly.[9]

Surveys on the total incomes or on budgets of the aged, which would be helpful in assessing the importance of the old-age pension, are relatively few in view of the significance of the subject.[10] Those that do exist tend to stress expenditure rather than income. As a consequence, in only a few instances is it possible to determine what proportion of the total income of a retired individual or couple is derived from the old-age pension. On the basis of a survey made in 1962 in Denmark, couples derived 28 percent of their aggregate money income from government benefits, single men 38 percent. A more specialized survey undertaken in France in 1966 involved retirees under the National Fund for the Retirement of Workers in Construction and Civil Engineering. For couples the percentage of income from regular pensions was about 70 percent, and for single men this proportion rose to about 75 percent. It is probable, however, that wage earners in this field would fall below the national average for industry, as far as preretirement earnings were concerned.[11] Income from sources other than earnings would also tend to be less than in the other surveys mentioned.

In the United States, about half of all aged beneficiaries have little in retirement income besides their benefits—that is, less than $150. It is

[8] *Feuille Fédérale* (Swiss weekly legislative bulletin), October 11, 1968.

[9] For descriptions and tabulations, see International Social Security Association, *Social Services Provided by Social Security Agencies, Members of the ISSA* (Ida C. Merriam, Reporter), 1965.

[10] Dorothy Wedderburn, "The Financial Resources of Older People: A General Review," in *Old People in Three Industrial Societies* (Ethel Shanas et al.), Atherton Press, 1968, page 363; Dorothy Wedderburn, "Comparing the Financial Position of the Aged in Great Britain and the United States," *Social Security Bulletin*, July 1968; Caisse Nationale de Retraite des Ouvriers du Bâtiment et des Travaux Publics, *Réalités du Troisième Age*, 1968 pages 38–48; Frede Ostergard, *De Aeldres Levevilkar: Indkomsterne, Bind I* (Socialforskniningsinstituttets, Publikationer 17), 1965, page 43.

[11] Institut National de la Statistique, *Annuaire Statistique de la France;* Ministère des Affaires Sociales, *Revue Francaise des Affaires Sociales*, April–June, 1967; Ministère d'Etat Chargé des Affaires Sociales, *Bulletin Mensuel de Statistiques Sociales*, Supplement C2, October 1968, page 109; Senate of Canada, *Final Report of the Special Committee of the Senate on Aging*, 1966, page 273.

those with the higher benefit amounts who are likely to have private pensions or significant amounts of savings

Other factors influencing the importance of the replacement rate are the existence of additional family benefits (which even an aged couple might be eligible for); whether or not a wife, by working, can earn an additional full pension; whether retirees can continue to work part or even full time; and the tax situation.

The time factor, too, poses many conceptual complications. Most of the systems have undergone several significant changes and even major reorganization over a period of time, and thus there is often a different replacement rate for each age group or for each generation. In France, for example, pensions in force are listed under legislative provisions of 1935, 1945, and 1958, as amended.[12] In Italy there are differing provisions for those retiring before May 1968, between May 1968 and May 1969, and after May 1969. In Sweden, the benefit formula computations distinguish those born before 1896, 1896 to 1913, and 1914 to 1923, and they include special rules for those in certain categories born in or before 1927.[13]

The more recent the reorganizations in a given system, and hence the shorter the period of transition, the lower the replacement may be. A country may, for example, plan by 1985 to raise its replacement rate from 40 percent to 60 percent of average earnings in the last 10 years of work. If this change were inaugurated in 1965, by 1968—the year covered in table 1—the benefit would have risen only three-twentieths (to 43 percent). A country with identical plans but in its tenth year of transition would be temporarily ahead, with 50 percent, on the average. (The actual situation in 1968 was used as the basis for calculating benefits.)

In considering the replacement rate over a period of time, it must also be pointed out that, in systems with periodic adjustment, there will be variations in the relationship between earnings and the pensions granted before and after an adjustment.

The "average" may be only a schematic concept. Yet, despite all the difficulties, it provides a simplifying tool for comparison of countries on a basis that is as close to standards as is currently possible.

[12] Fédération Nationale des Organismes de Sécurité Sociale, *Revue de la Sécurité Sociale*, May 1969, pages 87–88.

[13] The Swedish Institute, *Social Benefits in Sweden*, 1968, page 63.

WHAT THE REPLACEMENT RATE IS AND SHOULD BE

For many years a commonly quoted ideal replacement rate for the "average" worker has been at least 40–50 percent of earnings.[14] This figure has been cited, for example, in parliamentary debates in the United Kingdom, in French discussions, and in the early recommendations for the United States social security system. In 1967, when recommendations were being presented for social security amendments in the United States the figure cited by the Committee on Ways and Means of the House of Representatives as a "reasonable relationship between former wages and benefits" of a couple was at least 50 percent for a worker with average wages, retiring at age 65.[15]

The word "reasonable" crops up again in Denmark. According to a statement of the Danish Prime Minister in 1965, in planning for a supplementary pension on top of the universal national pension, the country wanted to "secure for old people a retirement pension at a level which bears a reasonable proportion to the earnings of the individual citizen during his active years."[16] The ILO Social Security Convention No. 128, of 1952, calls for the old-age benefit for a man and wife of pensionable age to be at least 45 percent of the previous earnings of the breadwinner.

Table 1, reflecting the situation in 1968, and the discussion of the aims of the various social security systems that follows quantify the current and planned (or hoped-for) relationships between pensions and the earnings record. As the figures indicate, most of the countries have established eventual targets well above the cur-

[14] These figures, though they are often used, are not usually defined and relate sometimes to the single benefit (both where there are also wife's benefit and where there are not) and sometimes to the benefit for a couple.

[15] *Social Security Amendments of 1967: Report of the Committee on Ways and Means*, House of Representatives (House Report No. 544, 90th Cong., 1st sess.), pages 6 and 22.

[16] Prime Minister's statement at the opening of Parliament, October 5, 1965, as reported by the United States Embassy.

rent status, even though few have reached a replacement rate of even 45–50 percent. However, trade unions and liberal parties in a number of countries have called for replacement rates far higher than these target figures, partly because of the disparity between the announced goals and the achieved ones, ensuing from such factors as inflation, increased labor efficiency, and increase in real wages.

As discussed below, the Government party of Belgium has aimed at an eventual 75 percent of lifetime earnings, and Italian legislation has set its goal at 80 percent of earnings in the last 3 years of work. In the United States, some social planners currently speak of an assured flow of income of probably 50 percent of the earnings of recent years—not the lifetime earnings—for a single worker and 66⅔–70 percent for a couple.

An interesting footnote to what retirees themselves may consider a necessary replacement rate is offered by a sample of French old-age retirees from work in construction and civil engineering.[17] When asked how large they would like their pensions to be, they gave figures corresponding to about a 57-percent replacement for married persons and 43 percent for single.

The benefit formulas of the 13 countries selected for study reflect the policy intentions of the individual societies in establishing old-age benefit levels. One of the countries—the Netherlands—provides a flat-rate pension, at a relatively moderate level. The retirement age is 65, and technically a very long qualifying period is required—contributions during the entire working life, from age 16 to age 64. In practice the system is virtually universal, however.

Four of the countries have a flat-rate pension with an earnings-related feature that is for the most part relatively recent in origin, provided in response to pressures for more than a basic benefit for the aged. The countries in this group are Canada, Norway, Sweden, and the United Kingdom. Norway and the United Kingdom in 1966, Sweden in 1963, and Canada in 1965 introduced earnings-related old-age benefits. In 1964 Denmark also introduced a supplementary pension, not based on earnings but related to the number of years of coverage. The evolution of the two-part formula usually represented a compromise solution in the contention between the proponents of a limited benefit for all the aged, whether in the labor force or not, and those who claimed that a pension should be related to the standard of living provided by the previous work record.

Five countries base their computations on average individual earnings, with a time factor involved—France, the Federal Republic of Germany, Austria, Belgium, and Italy.

The weighted benefit formula, once more widely used, occurs only in the United States and in the proposed new British earnings-related pension plan; formerly, it was in the plans of Switzerland (changed in 1969) and Italy (changed in 1968). Of course, the structure of old-age benefits in most of the other countries also has weighting provided through the flat-rate pension. Germany is the only one of the countries without a universal pension that does not have a statutory minimum.

When the type of formula is related to the replacement rate as here defined, it may be said generally that the countries with an earnings-based pension related to years of work—Austria, Germany, and France—tend to have the highest replacement rate. The two-layer systems tend to be among the lowest, particularly those with the most recent changes—Canada, Denmark, the United Kingdom, and Norway, for example.

As table 1 indicates, the United States holds a relatively low position with respect to the replacement rate. Five countries show significantly higher rates for a single beneficiary in 1968; there are two with somewhat higher rates, two with rates at about the same level, and three with lower percentages. For couples, the United States position is considerably better, with two of the 13 countries having a higher rate, four approximately the same, and three lower. Three countries have no special provisions for dependent spouses.

A comparison of future goals is of necessity less exact. The policymakers or discussants in many of the countries have not precisely defined the replacement rate, whether for a couple or for the wage earner alone, whether as a percentage of the earnings of the recent or high years or of a lifetime. In terms of the future, under either a general or precise definition, Italy is highest (with a rate of 80 percent of earnings in the last 3 years of work in the law); the

[17] Caisse Nationale de Retraite des Ouvriers du Bâtiment et des Travaux Publics, *op. cit.*, pages 35–48.

statutory long-range provisions in the United Kingdom and Canada are at the lower end of the scale. A goal of 50 percent for the United States for single persons would be one of the more modest among the 13 countries, but the rate of 66⅔–70 percent for couples would rank among the top six.

Austria

The Austrian pension formula is based on average earnings over the last 5 years of coverage. It is primarily time-related, providing for 57 percent of such earnings after 30 years, 64.5 percent after 35 years, and 70.0 percent after 40 years. In practice, under the present methodology, a man who retired in 1968 after 35 years of service in manufacturing would receive about 55 percent of his income in the year before retirement, aside from other benefits. Austria thus is the leader in cash income replacement for a single aged beneficiary. No supplement for a dependent spouse is provided.

Belgium

Because the Belgian system, which is based on lifetime earnings, is in the early stage of transition, the qualifying conditions for a full pension are relatively rigorous—45 years of work for men and 40 for women (or all years since 1926). In 1968, as a consequence, few could qualify for the full retirement pension and only about 25 percent of the pensioners were above the minimum level. The pension when related to the last year of earnings stood at 33 percent of average industrial earnings for single beneficiaries after 35 years and at 37 percent after 40 years. For couples, the percentages were 41 and 46, respectively.

The Belgian system matures in 1995 for women and in the year 2000 for men, with a goal of 65 percent of average lifetime earnings (revalued) and 70 percent, respectively. For most retirees, then, the relatively high replacement rate is as yet an objective, rather than an achievement. As in other countries, the current and future pension levels are under discussion by trade unions, employer groups, planning commissions, and legislatures with a view toward continued improvement. In 1968 the Socialist Party of Belgium had proposed a revision of goals on the grounds that the real value of pensions was deteriorating. It called for a retirement pension that would be 75 percent of earnings in the last 5 years or the 10 best years of the worker's career.[18]

Canada

The Canadian system is also in an early transitional phase, so that its replacement rate will be changing annually until 1976. A retiree from manufacturing would, in 1968, have received 22 percent of his last year's earnings and a couple would get 39 percent. The pension would consist largely of the country's flat-rate benefit (as adjusted) plus an amount, as yet small, from the earnings-related pension plan. The planned replacement rate for a worker retiring in 1976, the date of maturity, is about 43 percent of average lifetime earnings for single individuals and about 61 percent for couples.

Denmark

At the pension age of 67 for men, a single retiree at the end of 1968 would have a replacement rate of 29 percent of his last earnings, and a couple would have 44 percent. For the future, the Danish Minister of Social Affairs recently talked in terms of a replacement rate of 60 percent of the average "professional" income in the best 15 years of work, with a ceiling. Others on the same occasion talked of 57-percent replacement for single individuals and 70 percent for couples, at the "typical" labor income level.

France

The replacement rate in France, unlike those in the other countries studied, is seemingly higher than what the formula in the general social security system calls for. The formula provision is 40 percent of earnings in the highest 10 years at age 65, and it is 60 percent at age 70. As pointed out above, previous earnings have been revalued to such an extent, however, that the old-age benefits represent 43 percent and 65 percent

[18] *Le Peuple* (Brussels daily newspaper), June 28, 1968.

at ages 65 and 70, respectively, of average earnings in the year before retirement.

Federal Republic of Germany

The original goal of the sponsors of a 1957 reform of social security provisions was 60 percent of the "standard wage" of the individual, presumably throughout his career, after 40 years of coverage and 75 percent after 50 years.[19] The benefit formula calls for 45 percent of average earnings (as reassessed under the country's system of dynamic adjustment) after 30 years of coverage, 51.5 percent after 35 years, and 60 percent after 40 years. When the pension is related to the last year of earnings, a 50-percent replacement rate is shown for 35 years and 57 percent for 40 years of work.

Italy

At the end of 1968, under the new legislation, the replacement rate (compared with 1968 earnings) was theoretically about 54 percent for 35 years and 61 percent for 40 years. Widespread pressures for a reform of the system had led to abandonment of a weighted formula based on lifetime earnings in favor of a base of earnings in the last 3 years of work. The changes provided for a 57-percent rate after 35 years of coverage and 65 percent (after 40 years) of the average earnings in the last 3 years of work. An eventual goal of 80 percent after 40 years was scheduled for 1980. Discontent with the new provisions resulted in a general strike and riots and led to further revisions that included establishing a goal of 74 percent of the average earnings of the last 3 years of employment after 40 years' coverage, for those retiring after January 1, 1969.

Netherlands

The Netherlands has a flat-rate pension that represented 30 percent of the average preretirement earnings in manufacturing in 1967 (43 percent for couples). Technically, however, the full flat-rate pension requires 49 years of coverage.

[19] For a discussion see Paul Fisher, *Old-Age and Sickness Insurance in West Germany in 1965* (Research Report No. 13, Social Security Administration, Office of Research and Statistics), 1966, pages 6–13.

Norway

The Norwegian old-age pension, consisting of a flat-rate amount plus a graduated supplement based on average earnings and years of insurance coverage, amounted in 1968 to 33 percent of preretirement earnings (56 percent over 20 years) for a single person and 45 percent for couples. The goal of the system upon maturity (in 1987) is two-thirds of earnings in the highest 20 years, at age 70 and 40 years of coverage. Because of the flat-rate component, the replacement rate of lower incomes would be more and that for higher incomes somewhat less.

Sweden

The Swedish pension is also a universal benefit plus a supplement. The replacement rate at the end of 1968 at age 67 was 41 percent of earnings for single persons and 55 percent for couples, related both to the final year of work and to revalued earnings over the past 15 years. At maturity (in 1990) the system is expected to provide a pension that is two-thirds of average revalued earnings in the highest 15 years.

Switzerland

The pension system is relatively new, dating from 1948, and the computation of the benefit is based on average earnings since that time. Under a new formula inaugurated in 1969,[20] consisting of a flat amount plus an earnings-related supplement, the pension would be 21 percent of the previous year's earnings for a single person and 34 percent for a couple, at age 65.

United Kingdom

The current pension structure in the United Kingdom calls for a flat amount plus an earnings-related pension. In 1968 it produced a replacement rate of 24 percent for an individual and 36 percent for a couple, at retirement age. The general average replacement rate has been estimated at about one-third of earnings. A White Paper issued in January 1969 proposes a wage-

[20] *Feuille Fédérale*, op cit.

related scheme that would pay at full maturity a benefit amounting to about 42.5 percent of earnings for single persons retiring from manufacturing after 20 years of coverage and 55.2 percent for couples.[21] The weighting of the formula would tend to produce a higher rate for those with lower earnings.[22]

United States

The methodology used would indicate a replacement rate of 29 percent in the United States for a single male full-time industrial worker and 44 percent for a couple if the retiree were aged 65, with a wife aged 65, and ceased work at the end of 1968. The same pension related to average taxable earnings in the period 1956–68 would represent a 38-percent replacement.

ADEQUACY, EQUITY, AND NATIONAL GOALS

In a more general sense, variations in current replacement rates and in long-range goals must be viewed in terms of national objectives in the social field. The fact that a country's rate is extremely high or extremely low or in between reflects not only what it can afford but also its social outlook. Very early in the history of old-age benefits, the average earnings replacement rate may have tended to be extremely low, since the initial intent of the systems was often to provide some basic protection at a subsistence level. To trace the average rate over a period of time—to the extent possible—is to recapitulate the history of social security. The replacement rate has risen steadily in most countries, as has the concept of what the average level of benefits should be. In the short run there have, of course, been interruptions. In times of economic expansion and a minimum level of unemployment the tendency is toward increasing the level. Conversely, in times of slowing economic growth and employment, pensions have increased less rapidly.[23]

The general level of benefits reflects what the society is willing to pay and the level that is thought unlikely to constitute a disincentive to savings and to continued employment. In theory, in a social security system that relates benefits to previous earnings the intention is to limit benefits to less than 100 percent of such earnings. The gap between benefits and earnings is expected to encourage workers to remain on the job and obtain the higher income.[24] Yet there are also social pressures, particularly from trade unions in some countries, to make old-age benefits approach the level of basic wages or at least net take-home pay (allowing for the reduction in income taxes and the stoppage of expenses such as social security contributions and transportation, purchase of clothing, and other job-connected outlays). These pressures are evident also in developing countries with social insurance system.[25] Many of them already tend to schedule higher replacement rates than most of the developed countries. From the point of view of social adequacy, very high benefits become necessary since the stage of economic development in these countries may mean that, for significant segments of the labor force, wages are near the subsistence level.

In addition, it should be noted that the oldest systems tend to have the highest replacement rates. These systems also tend to have higher goals with respect to the replacement rate upon maturity. For single pensioners, under the measures in the present methodology, four of the systems with the lowest replacement rates (Norway, the United States, Switzerland, and Canada) have been established since 1934 and three countries among those with the highest rates (Austria, Federal Republic of Germany, and France) were set up before 1911. Two systems with rates at the intermediate level (Sweden and the Netherlands) were set up from 1913 to 1919. The

[21] This figure is based on the proposed wage-related scheme, fully mature, illustrated at the April 1968 earnings level for workers in manufacturing (Department of Health and Social Security, *Pensions the Way Forward*, H. M. Stationery Office, 1959, page 11).

[22] See "British White Paper on Social Security Reform," *Social Security Bulletin*, May 1969, numbered paragraphs 172 and 173, page 14.

[23] See international comparisons in such works as Margaret Grant, *Old-Age Security*, Committee on Social Security, Social Science Research Council, 1939; and *Social Security in America*, Social Security Board (for the Committee on Economic Security), 1937.

[24] Eveline M. Burns, *Social Security and Public Policy*, McGraw-Hill Book Company, 1956, pages 59-64.

[25] Robert J. Myers, *The Role of Social Security in Developing Countries*, Agency for International Development, 1963, page 11 and pages 52–55.

systems of the United Kingdom, Belgium, and Denmark, all of which are old, are exceptions to this generalization. In the case of the United Kingdom, the wage-related part of the system is, of course, very recent.

PENSION SPREAD

Since frequency distribution figures are available for few if any countries, some means was sought to measure the relationship of the pension, for retired workers with average earnings in manufacturing, to old-age pensions in general. One of the devices used was calculating for selected countries the relationship between the pension for the man with average earnings in manufacturing and the minimum and maximum pension amounts in 1968 (table 2). The most significant finding was the proximity of the "average" pension, as here defined, to the maximum pension in five of the 10 countries for which it was possible to establish such a relationship. For Canada, Denmark, Norway, and the United Kingdom the explanation is that in the current stages of maturity of the individual system, the earnings of workers in manufacturing entitle them to virtually the highest pension currently possible. The benefit consists mainly of a fixed amount, with an earnings-related supplement, as yet small. The data on contributions in table 3 show why the benefit in the United States was so close to the maximum. The ceiling for contributions in the United States was 122 percent of the average earnings in manufacturing in 1968—the lowest relationship of any country except Canada.[26] Actual average earnings were above the ceiling in 7 of the 13 years used for calculation. Thus, if the United States worker in manufacturing had earnings at the average level during the entire period 1956–68, he would have had a pension of $156 at the end of 1968, very close to the maximum of $164.

An interesting relationship exists between tables 2 and 3. The former reflects historical events in that the pensions involved are calculated on the basis of an earnings record for a period of time. The latter is a cross section at one point in time, showing average earnings as a proportion of the ceiling for contributions at the end of the one year selected for study. This percentage relationship is not constant over time. In the United States, for example, just before the ceiling is raised, average industrial earnings, as calculated here, will have crept up to or risen higher than the ceiling, particularly if a long period of years is involved. On the other hand, just after an adjustment has been made, the ceiling will be further away from average earnings. In addition, the average pension is based, of course, on earnings over an extended period and is thus not directly related to the ceiling at the end of a particular year. Nevertheless, it is of interest to note how close to or how far above the manufacturing average for 1968 is the maximum for contributions in each of the countries in that year. In eight, the ceilings range from 150 percent to 176 percent of average earnings; in Norway and Sweden they are well over double. Denmark and Italy have no ceilings for contributions.

The differences shown in table 2 in the relationship between the average pension and the minimum pension reflect various factors. One is the high level of earnings in manufacturing. Another is the fact that some of the systems still mainly provide flat-rate amounts, as in the United Kingdom and Canada. In France, Norway, and

TABLE 2.—Minimum and maximum pension amounts as a percent of pension of average male worker in manufacturing,[1] retiring at end of 1968, selected countries

Country	Minimum [2] as percent of pension of average worker	Maximum [3] as percent of pension of average worker
Austria	31	212
Canada	71	100
Denmark	31	105
France	48	(4)
Germany, Federal Republic	50	235
Italy	60	152
Norway	85	107
Sweden	70	161
Switzerland	74	160
United Kingdom	82	106
United States	35	105

[1] Based on data in table 1.
[2] The minimum pensions on which the table figures were calculated exclude means-tested supplements. The calculations were made as follows: Germany and Austria on basis of minimum years of coverage; France on basis of retirement at age 60; for Canada, Norway, Sweden, and the United Kingdom, only the basic pension was used; for Denmark the basic and earnings-related pensions were used; Italy, Switzerland, and the United States have statutory minimums.
[3] Actual current maximum, not maximum when system matures.
[4] No maximum.
Source: *Social Security Programs Throughout the World, 1969* (Social Security Administration), and legislative provisions.

[26] A special situation exists in that country. The ceiling cited in the table applies only to the earnings-related portion of the Canadian pension. There is also a taxable base of $3,000 a year for the flat-rate universal pension.

TABLE 3.—Ceilings on OASDI contributions as a percentage of average earnings of male worker in manufacturing, retiring at end of 1968, selected countries

Country	Average monthly industrial earnings [1]	Ceiling on contributions	
		Amount per month [2]	As percent of earnings
Austria (schillings)	4,249	7,200	169
Belgium (francs)	9,070	[3] 15,925	176
France (francs)	789	1,360	172
Germany, Federal Republic (Deutsche mark)	953	1,600	168
Netherlands (guilder) [4]	797	1,350	169
Norway (kroner)	1,785	[5] 4,267	239
Sweden (kronor)	[6] 1,621	[7] 3,625	224
		[8] 2,500	154
Switzerland (francs)	[9] 1,153	[10] 1,750	152
United Kingdom, proposed (pounds)		[5 11] 158	150
Canada (dollars)	[5] 484	[12] 433	([12])
United States (dollars)	531	650	122

[1] Based on International Labor Organization, *Yearbook of Labor Statistics*, 1968; United Nations *Monthly Bulletin of Statistics*, August 1969. Earnings of male workers in manufacturing.
[2] *Social Security Programs Throughout the World, 1969.*
[3] Salaried employees only—blue-collar workers included from 1974.
[4] Flat-rate benefit not related to earnings.
[5] 1969 data.
[6] Computed on the basis of average hours worked during December 1968, based on data in Swedish National Bureau of Statistics, *Statistical Reports*, February 27, 1969.
[7] Includes employer contributions to the supplementary pension only, which in 1968 amounted to 9.5 percent of employee wages under 43,500 kronor. Employees do not contribute.
[8] Includes employee contributions to the basic pension only, at the rate of 5 percent of assessed income but limited to a maximum of 1,500 kronor. Employers do not contribute.
[9] 1967 data.
[10] Maximum earnings for benefit purposes.
[11] *National Superannuation and Social Insurance*, London, January 1969. A ceiling is here proposed equal to 1½ times the national average earnings of male adults in manufacturing, £1,900 as of April 1969.
[12] Ceiling applies to the earnings-related Canada pension plan only. In addition there is a taxable base of $3,000 a year for the flat-rate universal pension. In a sense, then, the ceiling may be regarded as $633 a month.

Sweden, the relatively high level of the minimum represents the degree of development of means-tested supplementary benefits, which bring up the otherwise low amount of pensions.

TECHNICAL NOTE

A more detailed discussion of the methodology than is possible in the body of the article, on the derivation of the figures used in table 1, may serve to clarify the degree of comparability between the countries and also to give a better understanding of what the figures mean. In this table the replacement rate is considered to be the pension of a male worker in manufacturing, who retired at the end of 1968—the latest year for which comparable data were available—as a percentage (a) of his earnings in 1968, the last year of employment, and (b) of his average creditable earnings over the period of time required by the formula. It is assumed that he had average earnings in each year up to the date of his retirement.

Since the ILO data for the various countries represent average hourly earnings (and number of hours actually worked), per day, week, or month, the resultant figures were converted here to average monthly or annual earnings to make them parallel with data for old-age benefits, which are normally paid by the month in most countries.

The ILO definition of earnings in manufacturing is "total remuneration, including all premiums, bonuses and gratuities (e.g., payments for overtime, annual vacation, public holidays, housing allowances, value of payments in kind, etc.)." The definition of average earnings is as follows:

> usually cash payment received from employers (before deduction of taxes and social security and other types of contributions payable by workers), such as remuneration of normal working hours, overtime pay, incentive pay, earnings of piece workers; remuneration for time not worked (annual vacation, public holidays, sick leave and other paid leave); bonuses and gratuities. In addition, data frequently include the value of payments in kind; family allowances are mostly excluded from the statistics.[27]

The advantage of the ILO data lies in the fact that they are the most comparable, internationally. There are of course problems involved in the use of gross earnings figures, which may differ somewhat from country to country. In addition, though most of the data are from establishment surveys, some come from social insurance records, which usually yield lower averages than payroll data because overtime payments, incentive pay, and, in particular, wages above the ceiling for contributions may not be included.

Once the record of earnings was obtained from the ILO figures, then, the annual averages had to be revalued, where appropriate, for calculating benefits according to the country's own system. Several illustrations may serve to clarify this procedure.

Belgium: All years from 1926 to 1954 are given a synthetic value of 77,583 francs, roughly the equivalent of average earnings in 1963; the years 1955–57 are used at par value; earnings in 1958–67 are multiplied by 110 percent per year. Earnings in 1968 are at par value.

France: Each year on April 1 an index, the "coefficient of revaluation," is adopted. Since the worker whose pension is illustrated in table 2 is assumed to have retired at the very end of the year, his average weekly earnings (in francs) would have been as follows:

Year	Actual average	Index	Adjusted average
1959	87.8	2.313	203.1
1960	95.5	2.152	205.5
1961	103.5	1.866	193.1
1962	112.7	1.607	181.1
1963	122.7	1.438	176.4
1964	130.9	1.296	169.6
1965	136.8	1.213	165.9
1966	146.0	1.46	213.2
1967	153.0	1.0852	166.0
1968	171.2	1.0	171.2

A pattern of this type would tend to benefit particularly the older blue-collar worker engaged in piecework who might normally be expected to have a declining income.

[27] International Labor Office, *Technical Guide*, descriptions of series published in the *Bulletin of Labor Statistics*, February 1968.

United States: The earnings record used—annual averages, actual and taxable—was as follows:

Year	Total earnings	Taxable earnings
1956	$4,096.56	$4,096.56
1957	4,242.68	4,200.00
1958	4,300.92	4,200.00
1959	4,589.52	4,589.52
1960	4,665.44	4,665.44
1961	4,801.68	4,800.00
1962	5,021.16	4,800.00
1963	5,180.76	4,800.00
1964	5,354.44	4,800.00
1965	5,591.56	4,800.00
1966	5,841.68	5,841.68
1967	5,974.80	5,974.80
1968	6,370.52	6,370.52

These are the figures prepared by the U.S. Bureau of Labor Statistics and used by the ILO. They represent the average weekly gross earnings of full-year production workers in manufacturing, multiplied by 52. In calculating the benefit the adjustment for inflation and increased productivity is achieved by dropping the lowest 5 years of earnings since 1951.

The average pension figure used for the relationship to earnings applies to the general social security system of each of the countries. It has been developed with detailed legislative provisions and special and transitional features for 1968 taken into account, as well as detailed national explanations of the working of the individual formulas. In addition, reports from United States labor attachés on parliamentary debates, national changes, and other items were used.

The calculations for Sweden may be given as an example. For a worker retiring in 1968, 30 years of work were required. The formula takes into consideration earnings in the best 15 years. Since, however, the present system came into effect in 1960, the best 7 years must be considered. The worker is assumed to have had the average earnings of male workers in manufacturing in each of these years. The formula relates individual earnings to a national base amount.

Earnings in 1968, for example, would be 19,824 kronor. From this amount is subtracted the national "base amount"—5,700 in 1968. Thus, his "pension-bearing" income (in kronors) was 19,824 minus 5,700 or 14,124 for that year. The "pension-bearing income" divided by the base gives 2.47 "pension points." It is assumed that his earnings were at 2.4 pension points each year since 1960. Upon maturity of the system, the worker would receive a theoretical 60 percent of the pension-bearing income. (The formula would be 2.4 × base × .60.) But, since the system was operating for only 7 years by 1968, he would, under a transitional provision, receive 7/20 of 60 percent at his particular age level or 247 kronor a month. This sum plus the flat rate of 435 kronor gives a monthly pension of 683 kronor—arrived at by the short-cut method of computation. More complicated methods yield an almost identical result.

When this Swedish pension is compared with average preretirement earnings in the year before retirement (actually in 1967), the replacement rate is 40 percent. The earnings are not revalued directly, as they are in France or Belgium. The same effect is achieved, however, by (a) raising the national base amount according to the consumer price index and (b) calculating pension points for each year. The pension points are derived by dividing the difference between the base and the personal average by the base, as illustrated above. The pension points are averaged over the years. The net effect is much like that of the German system—that is, the worker's position in relation to the rest of the labor force is retained.

For each of the countries, the worker whose pension is being calculated is assumed to be fully qualified for a regular old-age retirement benefit: He has paid contributions for the required period; where pertinent, he has the required number of years of work; the correct number of years of residence in the country; adherence to one occupation if so required, etc. In theory, it would be possible to calculate figures for early retirement in those countries with systems that have a retirement age of 65 or over. Such computation cannot, however, be done merely by allowing for decrements for each year below the legal retirement age, since most of the systems are in the early transitional stages.

RESULTS OF EARLIER COMPARISONS

Earlier comparisons[28] relating to the replacement rate of old-age pensions on an international basis have used the following approaches:

(a) Margaret Gordon related the average benefit of retired men to average annual earnings and to national income per capita for selected years around 1950;

(b) Juanita Kreps used the concept of average old-age benefits for all workers as a percentage of average wages in manufacturing for selected years, 1962–65;

(c) James Schulz used average nonagricultural earnings as a basis for comparison with the benefits of all workers;

(d) For the ILO data, individual countries may calculate the figures in a number of ways and they are permitted to submit the set they regard as most favorable.

The ranking of the countries and the replacement rates developed differ according to the method used. For Sweden, for example, the replacement rates under the approaches described above were: 16 percent under (a); 22.4 percent under (b); 58 percent under (c); and from 70 to 85 percent under (d). For Germany, the rates were somewhat less divergent: 17 percent under (a); 31.4 percent under (b); 45 percent under (c); and 45 percent under (d).

[28] See footnote 1, page 3.