Payroll Taxes Under Social Security Programs: Cross-National Survey

by MARTIN B. TRACY*

Most social security programs are financed primarily by payroll tax deductions. A survey that focused on the payroll tax characteristics of all social security programs in five industrial countries and on old-age, invalidity, and survivors insurance in seven industrial countries found that combined employee-employer contributions range from about 10 percent of covered earnings to a high of more than 70 percent. The wide disparity reflects differences in social objectives and benefit levels and a variety of program and payroll tax patterns. In industrial countries where benefits are designed to replace a high percentage of earnings, payroll taxes are high but are leveling off. Where benefits were originally intended to provide a subsistence level of income, payroll taxes are lower but rising.

RECENT DISCUSSIONS of the social security payroll tax on employers and employees in the United States have prompted questions on how contributions in this country compare with those of other industrial nations having advanced social security programs. Any direct comparison must take into account program differences. The term "social security" itself has no universal definition but usually includes five major types of programs: old-age, invalidity, and survivors insurance; sickness and maternity insurance (medical and hospital insurance, cash sickness payments for temporary disability, and cash maternity benefits); work-injury compensation; unemployment insurance; and family allowances (cash payments for families with children).[1] A national social security system may include a combination of some or all of these programs. The revenue source for the programs varies from country to country, with the method of financing depending on the system's approach to the providing of benefits—that is, whether they are employment-related, universal, or means-tested.

The role of the payroll tax in each of the types of systems is examined here, with particular attention to the application of the tax in five representative foreign countries. The focus of the article, however, is basically on old-age, invalidity, and survivors insurance. Seven countries were selected for special analysis related to that program. The choice of the countries studied—both those for the more general discussion of social security systems and those for the analysis related to old-age, invalidity, and survivors insurance—was determined by the amount of technical information available.

SOCIAL SECURITY SYSTEMS

"Social security" refers here to programs established by government statutes that insure individuals against interruption or loss of earning power and for certain special expenditures arising from marriage, birth, or death. Of the three broad approaches used in providing social security benefits, the employment-related is most dependent upon the payroll tax for financing and that will be discussed here primarily.

Employment-related systems base eligibility for pensions and other periodic payments directly or indirectly on length of employment or self-employment, or, for family allowances and work injury insurance, on existence of the employment relationship itself. The amount of individual benefit is usually related to the level of earnings before any of these contingencies caused the earnings to cease. Such programs are financed entirely or largely from the payroll tax by employers, employees, or both, and are usually compulsory for expressly defined employee and employer categories. Such systems are generally referred to as social insurance systems.

In 1973, a total of 105 countries had some kind of old-age, survivors, and invalidity insurance program. The scope and organization, size of benefits, and type of financing are far from uni-

* Comparative Studies Staff, Office of Research and Statistics, Social Security Administration.

[1] See Social Security Administration, Office of Research and Statistics, *Social Security Programs Throughout the World*, 1974 (Research Report No. 44), 1973. (1975 edition in preparation.) Data in this article are based largely on the 1973 edition.

form among them. In the major earnings-related pension plans, the source of funds is primarily or exclusively the payroll tax for the regular pension. In addition a government subsidy may make up for deficits or more often help pay for means-tested benefits, for exemption of low-income earners from the payroll tax, and for other special categories.

The extent of the general system in these countries varies considerably. Even in the more advanced industrial ones, some segments of the population such as agricultural and domestic workers may be more difficult to bring under social insurance than are those in industry and commerce. Separate systems for blue-collar and white-collar workers exist in some countries, operating side by side but usually with somewhat different rules and contribution rates or ceilings. Workers in important industries—seafarers or miners, for example—may have separate systems set up for them.

Countries with a unified national system that covers almost the entire labor force are in the minority. They include Israel, Japan, the Netherlands, Switzerland, the United Kingdom, and the United States. Particularly in industrial countries with younger systems, such as Switzerland and the United States, the establishment of separate industrial or agricultural funds that characterizes older systems was bypassed.

The administration of programs providing old-age, invalidity, and survivor protection differs from one country to another in a way that influences the payroll contribution pattern. In Belgium, for example, disability is covered under the health insurance program and is separated from old-age and survivors insurance. The United Kingdom has no specific disability program but provides coverage for disabled persons under the health insurance program. In the Netherlands, the three short-term income-replacement elements of disability, cash sickness, and work injury have been unified.

The differing benefit levels are also important to consider in comparing payroll tax rates. The pension may vary from 20 percent of final earnings in one system to almost 70 percent in another.

Sickness and maternity programs provide for short-term cash benefits that compensate for the loss of income resulting from non-work-related illnesses or injuries and from maternity. In 1973, 70 countries had both cash sickness and maternity benefits. In addition, 15 countries had only maternity insurance, and 9 offered only one or more limited types of sickness benefits. The main if not exclusive source of funds is the payroll contribution. A government subsidy may cover maternity benefits, health care for the aged in a few cases, administrative costs, and deficits. Cash sickness benefits are typically paid up to 26 weeks and represent about two-thirds of the average wage in manufacturing. Cash maternity benefits —usually paid for a total of 12–14 weeks—are payments made to insured working mothers (or even fathers, in Sweden) before and after confinement. Coverage for medical care services is much the same as that for cash benefits in the many countries where both types of benefits are provided through social insurance. Usually 90 percent or more of the population is covered.

In 1973, a total of 125 countries had work-injury compensation programs, the oldest and most widespread type of social security measure. These programs provide compensation for persons whose income is terminated because of injury or disability incurred on the job. In most countries, the program is financed by employer contributions. Exceptions are the United Kingdom, where the worker also contributes, and the Netherlands, where the employee-employer contributions to pension and sickness insurance also cover work injury. Benefits for temporary work-related injuries typically are paid for a maximum of 26–52 weeks. If incapacity continues beyond the short-term limit, temporary benefits are usually replaced by permanent disability pensions. Temporary benefit amounts range from 33 percent to 50 percent of the employee's earnings in the previous year; permanent benefits vary from 66⅔ percent to 75 percent of earnings.

The work-injury programs of the more highly industrialized countries cover practically all workers. Many countries, however, either exclude all agricultural employees from coverage or cover only those whose work involves the operation of power-driven machinery. Often the self-employed are excluded.

Unemployment insurance programs provide cash payments to employees involuntarily laid off from work. Financing is usually through employer-employee contributions, although in Italy only the employer pays and in the United

Kingdom the regular social security contributions cover unemployment insurance. Most frequently, benefits are paid for 26 weeks, although the duration ranges from as few as 8 weeks to 36 weeks or longer. They replace from 40 percent to 75 percent of wages paid at the time employment ceases. Thirty-seven countries had unemployment insurance programs in 1973.

Family allowance programs provide cash payments to families with children, until the children reach a specified age—normally age 18. Generally, benefits are paid only when there are two or more children in the family. In 1973, family allowances were paid in 65 countries, including most of the industrial countries. The allowances are of two general types—universal and employment-related. The first, in principle, provides allowances to all resident families with a specified number of children. The second category provides allowances to all wage and salary workers and in some cases to the self-employed. The difference in type of program tends to be reflected in the method used for financing. In universal systems, the entire cost is customarily covered by general revenue. In countries linking eligibility with employment, the cost of allowances is met entirely or in considerable part from contributions paid by employers.

FIVE-COUNTRY COMPARISON OF PAYROLL TAX RATES

The wide variety of programs from country to country produces great variation in payroll taxes (table 1). Several of the European systems have a combined employee-employer payroll tax that goes as high as 50 percent of earnings. Some developing countries may also approach this level (Chile and Uruguay). At the other end of the scale is Canada, with a total average contribution rate of about 10 percent of earnings. The combined total employee-employer payroll tax in the United States is 14.60 percent for all social security programs.

It should be pointed out that to say that one country has a 10-percent payroll tax and another has a 70-percent rate may have little meaning, unless the programs financed by the taxes are equivalent. Each country may have a different mix of programs. One system, for example, may

TABLE 1.—Employee-employer payroll tax rates (percent), by type of program, selected countries, 1973

Country	For all social security programs			For old-age, invalidity, and survivors insurance[1]		
	Total	Employee	Employer	Total	Employee	Employer
Austria	34 80	13 40	21 40	17 70	8 75	8.75
Belgium	39 85	10 40	29 45	14 00	6 00	8 00
Canada	10 00	4 70	5 30	3 60	1 80	1 80
Federal Republic of Germany	31 20	14 35	16 85	18 00	9 00	9 00
France	39 15	6 64	32 51	8 75	3 00	5 75
Italy	54 16	7 05	47 11	20 65	6 90	13 75
Japan [2]	17 59	7 35	10 24	6.40	3 20	3.20
Netherlands	51 40	24 00	27 40	19 80	14 55	5 25
Norway [3]	25.90	9 20	16 70	25 90	9 20	16 70
Spain	70 82	10 05	60 77	19 00	5 00	14 00
Sweden [2]	23 70	9 65	14 05	16 18	5 68	10 50
Switzerland	24 32	6 75	17 57	8 60	4 30	4 30
United Kingdom [2]	13 46	6 57	6 89	12 47	6 00	6 47
United States	14 60	5 85	8 75	9 70	4 85	4 85

[1] Includes financing for some programs in addition to old-age, invalidity, and survivors insurance in the Netherlands, Norway, Spain, and the United Kingdom Excludes financing for certain programs in Belgium and France that are covered by separate taxes under other programs.

[2] Includes rates based on a percentage of average earnings in manufacturing

[3] Includes 3 8-percent tax on income and 5.47 percent of pension-producing income

Source Based on *Social Security Programs Throughout the World, 1973*, U S Department of Health, Education, and Welfare, Social Security Administration, 1973; and *Yearbook of Labour Statistics*, International Labor Organization, Geneva, 1973, pp. 482–483 and 577–582

have a costly family allowance program and national health insurance; another may not have these programs but includes an extensive national program of means-tested benefits in its social security system.

The relative size of the total payroll tax, whether in the upper or lower range, depends basically on how many programs a country has and how extensive they are. The systems of five countries—Italy, Japan, the Netherlands, Spain, and Switzerland—are examined here to show program differences and the payroll tax structure (table 2). As the table footnotes indicate, the actual totals in several of the countries are higher than those shown, because the contributions cannot always be expressed as precise rates—particularly for family allowances in Japan and work-injury compensation in Switzerland, where the employer bears part or all of the total program cost.

Old-Age, Invalidity, and Survivors Insurance

The payroll tax rates for old-age, invalidity, and survivors insurance programs are closely related to the extent and amount of benefits provided. The modest portion of previous earnings replaced by pensions in Switzerland and

TABLE 2.—Maximum employee-employer payroll tax rates (percent), by type of program, 5 countries, 1973

Country and program	Payroll tax rates		
	Total	Employee	Employer
Spain	70 82	10 05	60 77
Old-age, invalidity, and survivors insurance	19 00	5 00	14 00
Sickness and maternity	20 65	4 00	16 65
Work-injury compensation [1]	14 77	0	14 77
Unemployment insurance	3 90	55	3 35
Family allowance	12 50	.50	12 00
Italy	54 16	7 05	47 11
Old-age, invalidity, and survivors insurance	20 65	6 90	13 75
Sickness and maternity	15 61	15	14 46
Work-injury compensation [1]	3 90	0	3 90
Unemployment insurance	2 50	0	2 50
Family allowance	12 50	0	12 50
Netherlands	51 40	24 00	27.40
Old-age, invalidity, and survivors insurance [2]	19 80	14 55	5 25
Sickness and maternity	18 60	5 45	13 15
Work-injury compensation [3]	------	------	------
Unemployment insurance	8 00	4 00	4 00
Family allowance	5 00	0	5 00
Switzerland	24 32	6 75	17 57
Old-age, invalidity, and survivors insurance	8 60	4 30	4 30
Sickness and maternity [4]	2 00	2 00	0
Work-injury compensation [1,5]	10 27	0	10 27
Unemployment insurance	45	.45	0
Family allowance	3 00	0	3 00
Japan	17 59	7 35	10 24
Old-age, invalidity, and survivors insurance	6 40	3 20	3 20
Sickness and maternity	7 00	3 50	3 50
Work-injury compensation [1]	.65	0	.65
Unemployment insurance	1 30	65	.65
Family allowance [6]	2 24	0	2 24

[1] Estimated average rate, actual rates vary with the industry.
[2] Employees contribute 12 00 percent of wages for old-age and survivors benefits and 2.55 percent for invalidity benefits Employers contribute 5 25 percent of payroll only towards invalidity benefits
[3] Financed by revenue from contributions to pension and sickness funds
[4] Estimated average rate, actual rates vary with insurance fund
[5] Employer pays 100 percent of program cost—about 10 27 percent of average wage in manufacturing per beneficiary.
[6] Employer pays 70 percent of program cost—about 2 24 percent of average wage in manufacturing per beneficiary
Source. See table 1.

Japan, for example, is paralleled by a low tax in both countries.

In Switzerland, reliance on private pensions to provide benefits to supplement those of the Federal program led to relatively low social security benefits and correspondingly low payroll tax rates. In Japan, private pension programs also play a role in compensating for the low level of the benefits payable under the national programs; specifically, they take care of the interim period between 55—the traditional retirement age—and age 60 when Federal pensions become payable.[2]

Higher tax rates are usually found in systems where benefit amounts are designed to replace a high proportion of previous earnings. In Italy, for example, because of the relatively low wages the program provides ultimately for an income-replacement rate that goes as high as 74 percent of the average earnings of the highest 3 of the latest 5 years worked. A high payroll tax rate is necessary, in turn, to meet the cost of the replacement rate in the absence of other major sources of revenue.

Another major reason for high payroll tax rates is the use of old-age, invalidity, and survivors insurance contributions to finance the sickness, work-injury, or other benefits. This practice is common in systems where cash benefits for disability resulting from work-related or non-work-related accidents or illnesses are lumped together, as in the Netherlands and Spain. In some cases the size of the payroll tax rate is also affected by the use of Government subsidies to help finance all or various provisions of the program.

Sickness and Maternity Programs

Payroll-tax variations are greater in the health area than in any other. The list of possible differences is long. In most industrial countries the major component of sickness and maternity programs is national health care that covers the cost of medical services and hospitalization. Where health care is provided directly through Government-owned-and-operated hospital facilities and salaried medical practitioners, the rates tend to be high, generally because this type of system is funded entirely (Spain) or primarily (Italy) by payroll taxes. Where the program is financed chiefly through Government subsidies, low payroll taxes prevail.

When most or all hospital and medical care fees are covered by federally controlled, semi-independent insurance funds, the size of the tax varies with the degree of Government subsidization. That is, in countries financing comprehensive health care programs almost exclusively through compulsory contributions (the Netherlands), the tax rate is high. In Switzerland the sickness insurance funds are heavily subsidized and, in general, do not assess a high premium from their members.

The payroll tax rate is also related to the degree to which health care costs are shared by the patients and the insurance program. Italy, the Netherlands, and Spain—the countries requir-

[2] See Paul Fisher, "Major Social Issues: Japan, 1972," *Social Security Bulletin*, March 1973, pages 3–15.

ing the least amount of cost sharing (coinsurance) by the patient—have the highest tax rates. To increase revenue intake and help reduce program expenditures by discouraging overuse of available services, Japan and Switzerland require the patient to pay most or some of the services covered. Such cost sharing is usually in the form of a fee for service or a percentage of the actual cost for medicines, appliances, or laboratory tests.

The type and extent of medical services covered by a program also affect the size of the tax rate. Countries that pay for full dental care, health-spa treatment, or drugs require additional revenue to cover their cost. Conversely, excluding such items as laboratory tests, appliances, or transportation to medical facilities reduces the cost of the program and the need for revenue.

An additional factor in the size of the payroll tax may be the use of the tax revenue to fund other programs. A significant portion of the tax revenue under the sickness and maternity program in the Netherlands and Spain, for example, is used to finance short-term work-injury payments.

The duration of the benefits, both for health care and the cash allowances, must also be considered. Health care coverage ranges from 6 months in Italy to no limit at all in the Netherlands, Japan, and Switzerland. Cash sickness benefits range from 6 months in Italy and Japan to 24 months in Switzerland for some of the insurance funds. The duration of cash maternity benefits ranges from 10 weeks in Switzerland to 31 weeks in Italy.

Table 2 reflects these various factors. The data show that Switzerland and Italy, both of whom have been debating for some years the need to reorganize their health care benefits into a unified national system, are the only countries in which the payroll tax rate for sickness and maternity programs is lower than that for old-age, invalidity, and survivors insurance. The rates in the other three countries, which do have national systems of health care, are highest in this field, followed by those for old-age, invalidity, and death.

Work-Injury Compensation

Differing levels of payroll tax rates for work-injury programs usually reflect variety in the size of benefits provided. Temporary work-injury benefits represent, as a percent of earnings, 60 percent in Italy and Japan, 75 percent in Spain, and 80 percent in the Netherlands and Switzerland.

Japan's average rate, for example, is largely attributable to its relatively modest replacement rate for both temporary and permanent work-injury benefits. The ceiling on the benefit level or maximum amount payable—does not appear to have substantial effect on tax rates, particularly if the benefit is low. Spain has a high tax rate with no ceiling, Japan has a low tax rate and a high ceiling, and Switzerland has a high tax rate and low ceiling. The tax-rate variations are primarily a result of differences in replacement rates.

Inclusion of provisions for survivor benefits and for funeral or death grants under work-injury programs also affect payroll tax rates through the need for increased expenditures. Excluding a particular provision for benefits from the program means that the program cost and tax rate will be lower than otherwise. Such is the case in Japan where orphans' benefits are not provided under the program.

The tax for work-injury compensation for a particular country was designed to provide sufficient revenue to cover program expenditures for normal risk occupational injuries. The rates (for employer only) shown in table 2 represent the average rates assessed on earnings. The actual tax rates paid, however, range from 1 percent or less up to 17 percent. In some cases, as in Switzerland, the employer pays the whole cost of the program, but at rates that also vary with the risk involved.

Unemployment Insurance

Payroll tax rates for unemployment insurance differ in these five countries primarily because of the differences in the size of benefits and the waiting period before payments are made. Benefits as a percent of earnings are 60 percent in Japan and Switzerland, 72 percent in Italy, 75 percent in Spain, and 80 percent in the Netherlands. Waiting periods vary from 1 day in Italy and Switzerland to 7 in Japan. Countries replacing the highest portion of past earnings also have the highest payroll tax rates (table 2). Those

with the lower tax rates provide more modest benefit levels. In addition, countries requiring a long waiting period (Japan) or providing brief periods of payment (Switzerland) thus reduce their expenditures and, consequently, the payroll tax rates.

Other factors reflected in the size of the tax include significant Government subsidies where they exist (Japan) and income-tested provisions that reduce the amount of the benefit for employees whose average income exceeds a specified limit (Switzerland). Rates are higher when special benefits are payable to those who are only partly unemployed (Spain).

Family Allowances

The contribution rates for family allowances in the five countries studied range from 12.5 percent of payroll in Spain and Italy to 3.0 percent or less in Switzerland and Japan. Country-to-country differences in the tax rates result primarily from the variance in benefit levels, duration of payments, and number of children covered. The countries with the highest tax rates, Italy and Spain, provide the highest benefits (7.4 and 7.8 percent, respectively, of the average monthly wage in manufacturing) for the first child. The Netherlands and Switzerland, with lower tax rates, provide comparable benefits in relation to average wages (5.9 and 6.4 percent, respectively). Japan has the lowest tax rate and the lowest benefits as a proportion of average wages (3.2 percent).

The duration of benefits and extent of coverage help explain why the tax rate in the Netherlands exceeds that of Switzerland although the benefit levels appear less. First, benefits are payable to age 27 if the child is a student in the Netherlands and to age 21 if he lives in Switzerland. Second, the Netherlands benefits are graduated in amount up to the eighth and each additional child, rising to 11 percent of the average monthly wage, but equal benefits are paid to each child in Switzerland.

Countries With High Payroll Tax

The question arises as to whether some countries have high contributions for all their programs or whether they attempt to control the total tax rate by keeping down the size of the contribution in some programs. For the most part, it appears that countries with high rates are high in all programs except unemployment insurance. Each program has evolved separately, and the contribution rate for each has generally been independent of the other. In most systems, no central coordination exists.

In the countries with high total contribution rates, the employer bears the greater share, as table 2 shows. Among the four[3] systems with earnings-related benefits, the total employee contribution varies from 6.75 percent in Switzerland to 10.05 percent in Spain, with the highest one and one-half times the lowest. The employer contribution ranges from 10.05 percent in Japan to 60.77 percent in Spain.

One reason is that the employer provides all or almost all of the tax for some of the programs—work-injury insurance, unemployment insurance, and family allowances. These and other programs reflect the evolution of industrial relations in Europe and are to some extent an outgrowth of the employer "paternalism" that preceded the compulsory social security systems. It should be remembered, in addition, that in many countries the cost of fringe benefits, social programs, canteens, medical service, and the like (the so-called "social costs") add to the employer contribution.

OLD-AGE, INVALIDITY, AND SURVIVORS INSURANCE

Who Pays?

Old-age, invalidity, and survivors insurance is one of the most thoroughly established social security programs throughout the world. It provides the greatest area of comparability with the social security program in the United States and offers the most appropriate comparison of payroll tax characteristics here and abroad.

Wage and salary workers.—The payroll tax, assessed on the covered earnings of virtually all wage and salary workers in industrial countries,

[3] The Netherlands provides a nominally flat-rate amount for old-age and survivor pensions.

is the primary source of financing. Normally, one standard formula is used for taxing workers under the general system. For certain special groups such as the self-employed and low-income earners there may, however, be somewhat different provisions and rates. In addition, separate systems may be provided for certain occupational groups such as casual, domestic, and family workers; agricultural workers; miners; transportation workers (including seamen and pilots).

The self-employed.—When the self-employed are covered under the general system, they usually pay the equivalent of the combined employee and employer rate. In Germany, for example, the rates are 9 percent each for the employee and the employer and 18 percent for the self-employed. In other industrial systems (Switzerland and the United States, for example) the amount is less than double, however. Frequently, the self-employed are covered by one or more special systems, each with its own contribution rate—the separate systems, for example, for independent farmers and for the nonagricultrual self-employed.

Low earners.—Some countries either reduce or eliminate contributions by workers in the lowest wage categories. This arrangement is usually achieved by fixing a minimum wage base below which the low earner either pays a reduced contribution or none at all. In virtually all instances, however, the minimum amount is so low that only a small percentage of the labor force is involved. In the developed countries the low level of the floor would tend to exempt only part-time and casual workers and apprentices or trainees. In the developing countries, extremely low-paid rural workers or part-time and unskilled workers in covered industry would tend to benefit from exemption. In systems with a liberal retirement test or none, workers receiving an old-age benefit may also qualify for payroll-tax exemption or reduction if they engage in low-income or part-time work.

Two examples may illustrate how these exemptions work. In Germany before 1974 a worker earning less than 10 percent of the maximum amount of earnings subject to contributions did not have to pay the payroll tax but was eligible for a benefit. In this case, the employer paid both the employee and employer contributions. Presumably, because of the tight labor-market conditions, the need for apprentices, and the very low amounts involved, the employers were willing to absorb the entire cost. In the Netherlands, where workers earning less than about 14 percent of the average wage in manufacturing are exempt from contributions, the Government covers the cost.

As explained later, the contribution rate for low-income workers may also be reduced through the method of assessment. Where the tax is applied in graduated steps, the lower wage bracket the lower the payroll tax rate.

Hazardous occupations.—Hazardous or arduous occupations such as mining present a high insurance risk, and they are usually covered by special systems. A higher contribution rate than that under the general system is required in order to fund the higher benefit levels, the earlier retirement (often 5 years before retirement in the general system) and the more frequent deaths and disabilities. The employee and employer tax rate in these special systems may each be as much as 14 percent greater than those for workers in jobs with lower risks.

Benefit type and source.—Old-age, invalidity, and survivors insurance is usually lumped together in one package, with one payroll contribution paying for the three types of protection. Some systems, however, consider them separately and provide for different contribution rates. In Denmark, for example, the employer pays an additional and different rate for invalidity than for old-age and survivor protection. In the Netherlands the employer contributes for invalidity pensions but not for old-age and survivor pensions. In Switzerland, the employee and the employer both pay for invalidity benefits, separately from the contribution for old-age and survivor protection.

Generally, the payroll contribution for old-age, invalidity, and survivors insurance is paid by both the employer and the employee, with the proportion paid by each varying from country to country. In the 14 leading industrial countries shown in table 1, the sharing of the tax falls into three general patterns: Employers and employees pay the same rates in Austria, Canada, the Federal Republic of Germany, Japan, Switzerland, and the United States; the employer

pays more in Belgium, France, Italy, Norway, Spain, Sweden, and the United Kingdom; in the Netherlands, the employee pays a higher tax rate.

The specific proportion in each of the countries is usually determined by historical patterns of labor-management relations or in some instances by the continuation of a tradition, carried on from the early days of the industrial revolution, of employer financing. In some of the newer systems unaffected by these traditions the tendency is toward equal payments by the employee and the employer. Where there is only one contribution, some special situation may have led to this decision. In Sweden, for example, the employer does not contribute to the universal pension, which is financed from earmarked personal income taxes and Government contribution, but the earnings-related pension is financed by the employer contribution alone. In the developing countries the employer usually pays more than the employee, particularly where the prevailing wage is relatively very low.

How Tax Is Assessed

In the United States, the payroll tax for old-age, survivors, and disability insurance is a specified percentage of earnings paid equally by all covered employees and by the employer. In 1973, the rate was 4.85 percent for each or a total tax of 9.70 percent. This assessment at a single rate for all contributors to the old-age, invalidity, and survivors insurance program is used in several advanced foreign social insurance systems (table 1).

Uniform tax rates.—A uniform rate provides for a certain simplicity of administration. In various instances it has also proven easier for workers to understand than some more complicated arrangement. Moreover, in a political sense, uniformity has historically been more popular, or at least more salable, since all the insured are seemingly assessed the "same amount." In the past, the regressivity or progressivity of a uniform tax rate had not become an issue.

Multiple tax rates.—Some systems have more than one rate—differentiating, for example, between blue-collar and white-collar workers or between men and women workers. Austria and Belgium differentiate between wage and salary workers in the belief that salaried workers are better able to meet the contingencies of old-age, invalidity, and death than manual workers. Some systems have excluded from coverage either all white-collar workers or those earning above a certain ceiling, considering them already protected by private pensions or insurance and more likely to have savings. Although the contribution rates for blue- and white-collar workers may differ, the benefit formula is generally the same.

A few countries provide for a lower contribution rate for women. Separate rates, for example, exist for men and women in Japan where the tax rate for men is a third higher. Typically, this difference in rates has been related to a lower retirement age and traditionally lower pay for women. In part it also reflected the fact that men were the main source of family income and that women, supposedly, did not require as high a pension. If the women were wives, their benefit was considered a supplement to the husband's; if they were single, it was thought they could get along with less since they would have no dependents. Most commonly, however, the same contribution rate prevails for both sexes. The statutory retirement age is usually 5 years earlier for women, however, and the same benefit formula applies to all.

Some countries also have geographic variations in tax rates that recognize the different income levels of individual areas. Separate rates, for example, are applied to different regions and districts in Yugoslavia. More recently, Norway is lowering payroll tax rates in economically depressed districts. In Panama a higher tax rate is imposed in the banana-growing regions, where average wages are above those in other agricultural zones.

Progressive tax rates.—A number of systems have progressive tax rates—that is, the higher the wage category the greater the contribution percentage. One system (Hungary) assesses 3 percent of earnings per month in the lowest of 10 categories with the rate rising by an additional 1 percent for each 1,000 forints to a maximum of 10 percent; the employer's contribution varies from 10 percent to 14 percent. In Singapore the worker pays nothing under 200 Singapore dollars

a month; for earnings between S$200 and S$220, he contributes one dollar for each dollar earned above S$200; above S$222, he pays 12 percent up to a maximum contribution of S$180.

Seven-System Review

The programs for providing old-age, invalidity, and survivor protection for earners in Belgium, Canada, France, the Federal Republic of Germany, Italy, the United Kingdom, and the United States have been studied in some detail, with respect to payroll tax deductions to finance such protection. All but one of these countries have systems that are primarily social insurance systems: Canada has a dual system, with both a universal and an earnings-related program. The social insurance systems are, of course, financed chiefly if not exclusively by payroll contributions. The universal systems normally are financed through income tax.

Variations in systems.—The social insurance systems that provide old-age, invalidity, and survivor benefits, though alike in general approach, differ considerably, among the countries examined, in the amount of payroll tax, ranging from 9.70 in the United States to 20.65 in Italy (table 3). For the most part, the variations reflect the size of benefits and the use of the funds for additional programs.

Variations may also be due in part to structural differences in the programs. Some of these countries do not have unified national systems like those in the United States and the United Kingdom.[4] Separately administered funds may be established for blue-collar and white-collar workers with differing contribution rates (Belgium) or the same rates (Germany). The general system may cover only a portion of the labor force (France), with specialized funds covering agriculture, miners, public-utility employees, seamen, and the self-employed. The systems excluding the high-risk employees (mining) or low-paid employees (agricultural workers) should, in theory, be able to afford a lower payroll tax rate. This effect is difficult to measure, however, because the specialized funds often also provide health care coverage and other benefits in the same framework. Another differentiating factor is the existence of specialized types of benefits such as paid vacations and constant-attendance allowances in some of the systems. These benefits, like the other features, are financed by the payroll tax.

The tax rates examined here are generally designed to finance programs categorized as old-age, invalidity, and survivors insurance, but not all countries group these three programs together. As noted earlier, contributions for invalidity programs in Belgium and France, for instance, are combined with those for sickness and maternity.

The actual payroll tax for old-age, invalidity, and survivor protection in the United Kingdom is higher than the rate shown in table 3 because no invalidity program funds are included in the 12.47 percent figure given there. The United Kingdom does not have a specific invalidity program but provides benefits for this contingency as long-term disability payments under the cash

TABLE 3.—Employee-employer payroll tax rates (percent) for old-age, invalidity, and survivors insurance, selected countries and year

Country	Payroll tax rates		
	Total	Employee	Employer
Belgium:			
1958	8.50	4.25	4.25
1964	11.00	5.00	6.00
1969	12.50	5.50	7.00
1973	14.00	6.00	8.00
Canada:[1]			
1958	----------	----------	----------
1964	----------	----------	----------
1969	3.60	1.80	1.80
1973	3.60	1.80	1.80
Federal Republic of Germany			
1958	14.00	7.00	7.00
1964	14.00	7.00	7.00
1969	16.00	8.00	8.00
1973	18.00	9.00	9.00
France[2]			
1958	16.00	6.00	10.00
1964	20.25	6.00	14.25
1969	8.50	3.00	5.50
1973	8.75	3.00	5.75
Italy			
1958	11.80	3.85	7.95
1964	20.00	6.65	13.35
1969	20.65	6.90	13.75
1973	20.65	6.90	13.75
United Kingdom[3]			
1958	5.51	2.82	2.65
1964	8.54	4.27	4.27
1969	12.04	5.88	6.16
1973	12.47	6.00	6.47
United States.			
1958	5.00	2.50	2.50
1964	7.26	3.63	3.63
1969	8.40	4.20	4.20
1973	9.70	4.85	4.85

[1] From 1958–72, employee subject to income tax of 2 percent *plus* 4 percent of earnings—up to $3,000 for 1964–68 and up to $6,000 for 1969–72, employer subject to corporation tax of 2 percent for 1958–63 and of 3 percent for 1964–72

[2] Excludes contribution to invalidity program

[3] Lump-sum and payroll taxes combined and converted to a percentage of average wages in manufacturing (Until 1975, employees and employers paid a flat-rate amount *plus* a percentage of earnings within a specified range)

Source See table 1

[4] See Martin B Tracy, "Proposed Pension Reform in United Kingdom," *Social Security Bulletin*, August 1973.

sickness program. On the other hand, the total contribution rate for the United Kingdom (even though it is an average rate) is too high if it is considered as representing old-age and survivor protection since the one contribution also covers sickness and maternity insurance and unemployment insurance.

Ranking of rates.—With respect to their total payroll tax, the seven countries studied rank as follows in ascending order: Canada, France, the United States, the United Kingdom, Belgium, the Federal Republic of Germany, and Italy. The low Canadian rate refers only to the wage-related pension plan. In that country, insured persons also pay for the universal pension through income tax. Before 1972, the rate was 4 percent on earnings up to a ceiling of $6,000 a year (well under the average wage in manufacturing). In addition the universal pension was financed by a 3-percent tax on corporate income. In 1972 the earmarked-tax mechanism was dropped, and an equivalent amount is now drawn from general revenue.

To achieve greater comparability among the countries, the French rate would actually have to be increased by that share of the combined sickness and invalidity tax that finances disability benefits. In Belgium, also, invalidity benefits are handled separately from old-age and survivor protection, so that the Belgian figure, too, should be increased somewhat. When these differences, and those for the United Kingdom mentioned earlier, are taken into account the new ranking in ascending order becomes: The United States, Canada, the United Kingdom, France, Belgium, the Federal Republic of Germany, and Italy.

The interesting point is not so much which rank order is the closest to accurate, but rather why there is a range of 10–20 percent in the rate of payroll contribution to finance a program benefiting the aged primarily. One way to find the answer may be to look at the systems of Italy and the Federal Republic of Germany (with the two highest contribution rates) and at those of Canada and the United Kingdom (with two of the lowest rates). Size of the payroll tax is connected with the social objectives and the philosophy of the entire program. A country intending to provide relatively high benefits must, of course, provide relatively high funds to pay for these benefits. These funds must normally in a social insurance system come from the payroll tax, unless the society decides to add a Government contribution. If, on the other hand, the intention is to provide relatively low benefits or universal flat-rate benefits then relatively low payroll contributions are usually scheduled.

Italy.—The high contribution rate in Italy reflects the need to finance a high replacement rate. The payroll tax has almost doubled since 1958, rising from about 11 percent to more than 20 percent by 1974. A sizable portion of this growth is attributable to ad hoc increases in pension amounts in 1958 (28 percent) and 1962 (30 percent). To cover the additional costs brought about by these increases, the rate rose about 4 percent each time. In 1968 a new benefit formula was adopted that relates the pension amount to the average earnings in the latest 3 years of work instead of the latest 5 years. The effect of this revised formula was to provide eventually, for a worker with 40 years' contributions, a pension equal to 65 percent of his average earnings. Projections were made to achieve an eventual 80-percent replacement rate. At that time, an automatic cost-of-living adjustment was also introduced that aimed at helping pension amounts to keep pace with inflationary trends.

Federal Republic of Germany.—The German system was reorganized in 1957, with a total contribution rate of 14 percent and the expectation of eventually achieving a 75-percent earnings-replacement rate. Within a decade, however, a number of short-range and long-range factors led to higher contribution rates (15 percent in 1968, 16 percent in 1969, 17 percent in 1970, and 18 percent in 1973) in order to sustain the aim of a high replacement rate. Among the short-term causes for the increases was a recession in the 1960's, which for a time stopped the expansion of the labor force and slowed the growth in total payroll contributions. A long-term consideration was the development of an increasingly unfavorable demographic picture: The number of active contributors was shrinking in proportion to the number of beneficiaries. This pattern, which was expected to continue into the 1980's, was in large measure due to the effects of two wars on the population pyramid. In 1971, the Federal Republic of Germany had a replacement rate of about 50 percent for the average worker in

manufacturing—the second highest replacement rate among the seven countries studied. The percentage of gross national product devoted to old-age, invalidity, and survivors insurance was 7.6 percent, the highest among the seven countries.

Canada and the United Kingdom.—A simplified explanation for the ranking of Canada and the United Kingdom at the lowest range of contribution rates is that their replacement rates (combined flat-rate and earnings-related) are also relatively low—about 29 percent for single persons in the United Kingdom and about 33 percent in Canada. Put another way, the proportion of the gross national product devoted to these programs is also somewhat lower than it is in the other countries—3.55 percent in the United Kingdom and 2.36 percent in Canada. Historically, both countries first set up flat-rate systems intended to provide modest pensions—a minimum income—primarily for those who had few other resources for old age. Both countries subsequently introduced a second, earnings-related layer that was designed to provide a higher amount. In each case, however, the pensions had not yet reached the status of full payment in 1973. Even with the earnings-related second layers, these pensions were not intended to replace a high portion of the worker's previous income. In the United Kingdom, for example, it must be noted that the social security program is comprehensive and provides separately financed health care and other benefits for pensioners.

In essence, then, the systems with high payroll taxes have intended the pension to be the main if not the only source of income for retirees. The lower payroll tax systems sought originally to provide a subsistence minimum and later aimed at replacing a greater portion of lost income.

Rising rates.—The contribution rates have shown rises in all seven countries from 1958 to 1973. The increases range from about 29 percent in the Federal Republic of Germany to 126 percent more in the United Kingdom (table 3). They reflect primarily new programs and program improvements. Canada and the United Kingdom introduced additional layers in their social security programs, Italy improved its benefit formula, and the Belgian system underwent reorganization. The Federal Republic of Germany sought to cope with an unfavorable demographic pattern. In the United States a main factor in the rise in the contribution rate has been the sizable ad hoc benefit increases.

It is interesting to note that in France the contribution rate appears to have fluctuated. From 1958 to 1964 the rate rose and showed a seeming drop by 1969 and then another small rise. The drop reflected, however, only the transfer of the invalidity program to the sickness and maternity program. When the effect of this action is excluded, the rate actually shows a slight increase at that time.

Covered earnings.—In all of the countries studied, earnings for employed persons represent basically wages and salaries from work. Covered earnings are the wages and salaries falling below a fixed maximum on the amount that is subject to tax. All but a few of the developed countries place a limit on the amount of taxable earnings. This limit is usually so high that the average worker is not affected since the average maximum equals about one and one-half times the current average earnings in manufacturing. The maximum therefore affects the higher paid, usually white-collar, managerial, and technical employees.

Payroll tax ceiling.—Among the seven countries discussed in the preceding section, several systems do not have ceilings. Belgium, with its separate programs for blue- and white-collar workers, has somewhat different rules for each. The blue-collar fund has no ceiling. In 1974 the ceiling in the white-collar fund was almost double the average earnings of blue-collar workers in manufacturing. In Italy, contributions to the old-age, invalidity, and survivors insurance program are paid on the total wage. Switzerland has no ceiling on contributions but does have a ceiling on benefits.

Payroll tax floor.—Some countries also have a floor on earnings for contribution purposes—that is, amounts below some specified figure are not taxed. In countries with a 2-tier system consisting of a uniform and a wage-related benefit—Sweden's earnings-related system, for example—a tax is paid by the employer on amounts between a national base and a ceiling that is seven times this base, and amounts below the base are

not taxed. In Canada's earnings-related system, similarly, only amounts between the base and the ceiling are taxed. In fact, those workers whose earnings fall below the base are not covered by the earnings-related system at all and have to depend on the universal pensions.

Wage classes.—Some countries break up earnings into a specified number of wage classes, instead of contributions to individual wages. The wage class is a device set up as a means of simplifying recordkeeping and benefit calculations. Instead of recording individual amounts of earnings for every covered employee, the system credits each one with earnings at the midpoint of his wage class. If class I covers wages up to $100, for example, every worker in that class pays contributions on $50.

The lower half of the class thus pays more than if the tax were assessed on actual earnings and the upper half pays less. This effect is somewhat mitigated by reducing the interval and having many more classes. Austria, for example, in 1974 had 70 wage classes, representing much smaller steps than would be possible with only 10 classes as other countries do.

Inclusion of fringe benefits.—Generally, covered earnings include current and periodic work-related wages or salaries plus other fringe benefits paid by the employer. The wage or salary represents 50–85 percent of taxable earnings, varying according to country. The most common type of cash supplement covered by social security programs is the "13th-month payment" or bonus required by law in some European countries. Other types of covered cash payments are vacation bonuses, overtime pay, commissions, tips, severance pay, payment in lieu of notice, profit-sharing income, and, in Belgium, cash payments for work incapacity. Covered noncash remuneration usually includes subsidized meals and employee education provisions.

Excluded earnings.—Certain fringe payments made while the employee is working are not counted as wages and are frequently excluded from payroll taxes: Employer contributions to social security programs, certain payments made by court order, and reimbursements for expenses (travel costs, meals). Similarly, certain other income not derived from current work is generally also excluded from covered earnings of employed persons: social security benefits received after the termination of employment are excluded (for sickness, disability, work injury, unemployment, and old-age). More specific categories of compensation excluded from coverage are military pay, irregular bonuses, income earned by youths, business supplies, and cash payments below a specified minimum.

Benefits-in-kind.—Most divergence in the types of earnings covered for contribution purposes in the seven countries studied exists in the coverage of benefits-in-kind. Four distinct approaches to the treatment of this type of benefit are apparent: Comprehensive coverage, exclusion of specific job-related benefits, exclusion of certain occupations, and total exclusion from coverage.

The most comprehensive view of benefits-in-kind is found in the Federal Republic of Germany and Italy, both of which consider the value of all noncash, work-related payments as taxable earnings. Belgium, France, and Canada include most benefits-in-kind as covered earnings but exclude specific income for contribution purposes. In these countries excluded benefits-in-kind usually refer to clothing and equipment supplied for use on the job. The United States, like those three countries, considers the value of most benefits-in-kind as covered earnings and excludes equipment and business supplies; it excludes, in addition, such broadly defined sectors as agriculture and occasional labor. The United Kingdom is the only one of the seven countries surveyed that excludes all benefits-in-kind in determining earnings for contribution purposes under its earnings-related program. (Such payments were, however, considered as earnings with respect to an employment test used to determine if a worker had sufficient earnings to assess the flat-rate contribution in effect before April 1975.)

CONCLUSION

This type of payroll tax comparison has not been made before. Obviously, all aspects of the subject have not been covered in the survey. Much still remains to be done in analyzing the experience with and economic effects of progressive,

proportional, regressive, flat-rate, and other payroll tax approaches on growth and income distribution. Payroll tax incidence and payroll tax burdens are also subjects for future study.

SOURCES

The list that follows gives the primary sources for the information on payroll taxes used in the survey.

Annuaire Statistique de la France, Ministère de l'Economie et des Finances, Paris, 1973.

Belgium: National Social Security and Additional Company Plans, G. Van Overwalle, Dart Industries, Belgium, 1974.

Canadian Employment Benefits and Pension Guide Reports, Commerce Clearing House, Inc., 1974, pp. 886–890 and 4414–4417.

Employeurs et Sécurité Sociale, Supplement No. 6230, Liaisons Sociales, Paris, 1971.

Italy, *Law No. 153* of April 30, 1969, Article 12.

National Insurance Leaflets, Numbers 20 (March 1973), 40 (June 1973), and 116 (March 1970), Department of Health and Social Security London.

Office National de Sécurité Sociale XXVII Rapport Annuel, Office National de Sécurité Sociale, Bruxelles, 1972.

Social Security Programs Throughout the World, 1973, U.S. Department of Health, Education, and Welfare, Social Security Administration, 1974.

Statistisches Jahrbuch fur die Bundersrepublik Deutschland, Statistisches Bundesamt, Wiesbaden, 1972

Total Remuneration in the European Economic Community, Japan, and the United States, Towers, Perrin, Forster, and Crosby, Philadelphia, Pa., 1973.

Yearbook of Labour Statistics, International Labor Organization, Geneva, 1973.