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11 Taxation of Income from Foreign Capital in Korea

Kun-Young Yun

11.1 Introduction

11.1.1 Foreign Capital and the Economic Growth of Korea

During the past three decades, foreign capital played an important role in the economic development of Korea. In particular, in the 1970s, when the government placed a high priority on the development of heavy and chemical industries, foreign capital was essential in financing major investment projects. Table 11.1 shows that, in 1975, foreign savings financed as much as 22.0% of total national investment. However, with economic growth the national savings rate increased and the gap between national savings and investment began to close. By 1986, national savings were more than sufficient to finance national investment. As a result, the importance of foreign savings in financing national investment diminished. In 1989, foreign savings supported less than 3% of national investment.

Even though the inflow of foreign capital was essential for the rapid growth of the Korean economy, the government was careful not to attract too much foreign capital in the form of equity. Most of the foreign capital was either government borrowings or government-guaranteed commercial loans. Foreigners were not allowed to participate directly in the capital market, and foreign direct investment accounted for a very small fraction of total foreign capital in Korea.

With the decline in the importance of foreign capital as a source of national investment financing, the composition of foreign capital inflow changed substantially. In the late 1970s, when the government was emphasizing invest-

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Table 11.1 **Foreign Capital and Economic Growth** (in millions of U.S. dollars, %)

Year	GNP (A)	National Investment (B)	National Savings (C)	Foreign Savings: Government Borrowings (D)	Foreign Savings: Commercial Loans (E)	Foreign Savings: FDI (F)	Foreign Savings: D+E+F (G)	B/A	C/A	G/A	G/B
1972	10,890	2,337	1,903	—	—	—	—	21.4	17.5	—	—
1973	13,501	3,460	3,097	—	—	—	—	25.6	22.9	—	—
1974	17,237	5,579	3,552	317	616	124	1,057	32.2	20.6	6.1	18.9
1975	20,941	6,122	3,854	482	805	62	1,349	29.1	18.4	6.4	22.0
1976	28,745	7,802	7,130	711	843	86	1,640	27.1	24.8	5.7	21.0
1977	36,790	10,677	10,365	638	1,241	102	1,981	28.9	28.2	5.4	18.6
1978	49,590	16,656	15,146	817	1,913	100	2,830	33.5	30.5	5.7	17.0
1979	63,640	23,323	18,447	1,089	1,578	126	2,793	36.6	29.0	4.4	12.0
1980	59,278	19,492	14,037	1,516	1,402	96	3,014	32.8	23.7	5.1	15.5
1981	66,933	20,612	15,690	1,689	1,247	105	3,041	30.7	24.4	4.5	14.8
1982	72,010	21,605	18,025	1,868	913	128	2,909	29.8	25.0	4.0	13.5
1983	80,096	23,939	22,506	1,493	973	122	2,588	29.7	28.1	3.2	10.8
1984	86,544	26,811	25,927	1,424	858	193	2,475	30.9	30.0	2.9	9.2
1985	91,113	27,738	26,880	1,024	964	236	2,224	30.3	29.5	2.4	8.0
1986	103,760	30,504	34,462	880	1,620	976	3,476	29.2	33.2	3.4	11.4
1987	128,748	39,187	47,413	1,109	1,558	625	3,292	30.1	36.8	2.6	8.4
1988	171,684	53,531	66,199	891	988	894	2,773	31.0	38.6	1.6	5.2
1989	210,107	73,653	76,496	475	859	812	2,146	34.8	36.4	1.0	2.9

Sources: Bank of Korea. *Economic Statistics Yearbook* (various issues), and *National Accounts* (1989); Ministry of Finance, *Fiscal and Financial Statistics* (various issues).

Note: FDI = foreign direct investment in Korea.

ment in heavy and chemical industries, foreign borrowings accounted for most of the capital inflow. During the 1980s, however, the share of foreign borrowings in total capital inflow declined, while that of foreign direct investment increased.

11.1.2 Internationalization of the Capital Market

Since 1981, Korea has been pursuing internationalization of its capital market, although the process has been slow. As of 1990, foreigners are not allowed to participate in the Korean capital market directly. Foreign portfolio investors can participate only through indirect channels such as investment funds for foreigners[1] and convertible bonds issued overseas. However, most of the restrictions on foreigners' participation in the capital market will be removed in the next few years.

In December 1988, the government put forward a long-term plan for the internationalization of the capital market. According to this plan, foreign securities companies will be allowed to open branch offices in Korea by 1991. They will also be allowed to join Korean companies in establishing new se-

1. Investment funds for foreigners include investment trusts (beneficiaries certificates since 1981), Korea Fund (1984), and Korea Europe Fund (1987).

curities companies. By 1992, foreigners will be able to participate directly in the Korean stock market.

While working on the internationalization of the domestic capital market, the government has allowed Korean financial investors to participate in the world capital market. Since 1988, Korean financial investors such as securities companies, insurance companies, investment trusts, etc., were allowed to invest in foreign securities. Beginning in 1991, Korean securities companies will also be allowed to open branch offices and establish subsidiaries abroad.

As the Korean capital market matures and its participants become more experienced, the government will be able to pursue more aggressive policies for the internationalization of the capital market. At the same time, it will also encourage Korean investors, securities companies, and other financial institutions to participate actively in the world capital market.

Opening the capital market directly to foreign portfolio investors will affect the composition as well as the level of foreign capital inflow. It will also affect investment financing of the firms by allowing them to choose from a richer menu of financial instruments in a larger capital market. Perhaps even more important is that internationalization of the capital market will change the way savings and investment respond to tax policies, and other economic policies. For example, it may affect the optimal size of the tax burden on capital. Furthermore, the relative tax burden on corporate and individual capital income may affect national savings and investment.

In light of these tax-policy implications, opening of the capital market requires a careful reexamination of the tax treatment of capital income. In order to derive practical tax-policy implications of the opening of the capital market, we need a comprehensive model of the tax system as well as information on the behavioral response of the savers and investors to tax policy. The purpose of this paper, however, is a modest one. I focus on the narrow issue of the taxation of income from foreign capital in Korea. In particular, I describe Korean tax policies pertaining to income from foreign capital in Korea and estimate the effective tax rate of investment financed with foreign capital.

In section 11.2, I describe the tax treatment of income from foreign capital in Korea, in particular, the provisions of the tax laws, tax treaties, and the Foreign Capital Inducement Law. In section 11.3, I first estimate the effective rate of the corporate income tax for investments financed with foreign capital. I then consider the comprehensive effective tax rate, taking account of both the corporate and the nonresident withholding taxes on interest and dividends. In section 11.4, I consider some implications of my findings for tax policy.

11.2 Tax Treatment of Income from Foreign Capital

11.2.1 The Individual and the Corporate Income Tax Laws

The Individual Income Tax Law and the Corporate Income Tax Law provide the basic framework of tax policy pertaining to income from foreign cap-

ital in Korea. According to these laws, income from foreign capital is either taxed on a global basis or taxed separately by income category, depending on the tax status of the taxpayer.

Nonresident Taxpayer

If a taxpayer has permanent establishments[2] or draws income from real estate in Korea,[3] all of the taxpayer's income originating within Korea, with the exception of capital gains on land and buildings, pension and retirement income, and timber income, are lumped together in a single category of global income. Global income so defined is then taxed in accordance with a progressive rate schedule. For taxpayers without a permanent establishment or real estate income, each category of income is taxed separately. Capital gains on land and buildings, pension and retirement income, and timber income are taxed separately for all taxpayers regardless of the existence of permanent establishments or real estate income.

The marginal tax rate for global income is graduated from 5 to 50%. For retirement income and timber income, the rate schedule is the same as that which applies to global income. The tax rate for capital gains on land and buildings is also graduated, but the marginal tax rates are much higher, ranging from 40 to 60%. The taxation of nonresidents without a permanent establishment or real estate income distinguishes three categories of capital income with the following withholding tax rates:

1. Business income and rental income from vessels, airplanes, motor vehicles, heavy machinery, and equipment: 2%.
2. Interest, dividends, and royalties: 25%.
3. Capital gains on securities: 10% on transaction or 25% on capital gains, whichever is smaller.

Corporations

If a foreign corporation has either a permanent establishment, real estate income (including capital gains on land and buildings), or timber income, it is taxed like a resident corporation. The tax rate for corporate income is 20%, for the first 80 million won of the adjusted taxable income and 30% for the remainder. For other foreign corporations, income taxes are withheld at the source, with the tax rates the same as those for nonresident individuals.

11.2.2 Defense Tax and Inhabitant Tax

In addition to the income tax, the defense and inhabitant taxes are levied on individuals and corporations. The tax base of the defense and inhabitant taxes

2. "Permanent establishment" includes branch offices, business offices, stores and other fixed sales places, factories, warehouses, construction sites, places for installation or assembly work, places for direction or supervision, places for provision of technological services, mines, quarries, and places for exploration or gathering of natural resources.

3. "Real estate income" includes rental income, income from operation of real properties, capital gains on real estate other than land and buildings, and capital gains on property rights such as the right for mining, oil exploration, and quarrying.

is the income tax liability of individuals and corporations. The defense tax is levied on individuals and corporations with real estate income other than capital gains on land and buildings or with permanent establishments. For individuals, the tax rate is 10% if the total adjusted taxable income is not more than 8.4 million won per year, and 20% otherwise. For corporations, the tax rate is 20% if the adjusted taxable income is not more than 500 million won per year, and 25% otherwise. The inhabitant tax rate is 7.5% for both individuals and corporations.

11.2.3 Foreign Capital Inducement Law

As amended extensively in 1983, the principal objective of the Foreign Capital Inducement Law is to protect and provide incentives for foreign capital inflow. The law places special emphasis on those foreign direct investments that contribute to the development of the Korean economy and help improve the balance of payments. Specifically, the law provides generous tax incentives for foreign direct investments in the following areas:

1. Investments with substantial contributions to the improvement of balance of payments.
2. Investment projects that employ advanced technologies or require a large amount of capital.
3. Investments by overseas Korean residents.
4. Investments by firms in the export free zones.
5. Other foreign direct investments that require tax incentives.

Tax incentives for foreign direct investment include a five-year tax holiday for individual business income, corporate income, and royalties; accelerated depreciation; exemption from the acquisition tax, property tax, and global land tax; reduction of import duties, special excise tax, and value-added tax (VAT).

Specifically, eligible foreign direct investors can take either the 100% special depreciation, which doubles the speed of tax depreciation, or the tax holiday for corporate income and dividends for any five consecutive years within the first ten taxable years after the registration of the business. Since the taxpayer decides when to take the five-year tax holiday within the first ten taxable years, with appropriate tax planning the taxpayer may be able to reduce his or her tax burden substantially for the first ten taxable years.

The acquisition tax, property tax, and global land tax are exempt for the first five years after the registration of the business. Similarly, royalties based on the agreement for technology transfer, as reported to the minister of finance, are tax exempt for the first five years after the agreement is reported. Finally, import duties, special excise tax, and VAT are reduced by 70% for capital goods that are imported as an equity investment of the foreign investor. The same tax preferences are extended to the import of capital goods if they are paid for with dividends received by the foreign investor or with foreign currency paid in by the foreign investor.

In addition to the tax preferences for foreign direct investment in Korea, the

Foreign Capital Inducement Law provides tax exemptions for interest on government borrowing and commercial loans. The law provides a variety of tax incentives for foreign direct investment, but tax exemption of interest income is the only incentive for foreign borrowing. Since the value of outstanding foreign borrowing is much larger than that of foreign direct investment, however, tax exemption of interest income has been a crucial element of tax policy for income from foreign capital.

11.2.4 Tax Treaties

As of January 1, 1990, Korea has concluded tax treaties with twenty-eight countries, including Japan, the United States, the United Kingdom, Germany, Canada, France, Australia, Sweden, Norway, Thailand, and Indonesia. In all of the tax treaties, the maximum withholding tax rates for interest, dividends, and royalties are in the 10–15% range, which is substantially lower than the corresponding tax rates for domestically owned capital income. It is also true that the withholding tax rates are lower than the regular income tax rates in the home country of the capital. This feature of the tax treaties reflects a compromise between the host and the home countries that collect taxes from the same source.

The Individual Income Tax Law and the Corporate Income Tax Law also define the nonresident withholding tax rates. For dividends, interest, and royalties, the withholding tax rate as defined by the domestic laws is 25%, which is higher than the maximum withholding rates allowed under the tax treaties. Since virtually all of the foreign capital in Korea is covered by the tax treaties, the nonresident withholding tax rates for dividends, interest, and royalties are determined by the tax treaties, and the provisions of the domestic tax laws that define the withholding tax rates for these categories of income are practically meaningless.

11.2.5 Tax Revenues

Table 11.2 presents statistics on tax collections from foreign corporations with permanent establishments in Korea. It is evident from the table that the

Table 11.2 **Taxation of Foreign Corporations with Permanent Establishment or Real Estate Income**

Year	Number of Corporations	Total Income (billion won)	Tax Revenue (billion won)	Average Tax Rate (%)
1985	353	204.5	52.5	25.6
1986	408	163.6	44.7	27.3
1987	457	207.4	57.3	27.6
1988	609	244.9	69.1	28.2

Source: Ministry of Finance.

number of foreign corporations investing in Korea has been steadily increasing in recent years along with the total income generated by them and the total amount of tax paid. Note that the average tax rate faced by the foreign corporations shows a slightly rising trend, which may be attributed to the graduation of the tax rate and the lack of indexation of the tax brackets.

Table 11.3 presents similar information on tax collections from the taxpayers without permanent establishments. Of total income, royalties account for the largest share and the remainder is accounted for by business and real estate income, dividends, and interest income.[4] Table 11.3 also shows that business and real estate incomes are the most favored by the tax policy. The average tax rate for business and real estate incomes has been only 2.0% as opposed to 7.6–25.0% for other categories of income. Until 1987, royalties and interest were taxed more heavily than dividends, but in 1988 the differences among the average tax rates of royalties, dividends, and interest narrowed substantially.

11.3 Effective Tax Rate of Foreign Investment

11.3.1 Effective Tax Rate and the Cost of Capital

The taxation of corporate income or personal business income is complicated due to the difficulties of measuring taxable income, differential tax treatment of debt and equity, and the various provisions for tax incentives. Because of the complexity of the capital income tax system, it is practically impossible to figure out from the tax laws the tax burden imposed on investment.

If the taxation of income from domestically owned and operated capital is complicated, even more complicated is the taxation of income from foreign capital. For foreign capital, the home country also levies taxes on foreign investment income after the host country has taken its share. For example, in the case of foreign corporate investment, the host country levies corporate income taxes and nonresident withholding taxes on dividends, interest, royalties, etc. The home country then levies its own corporate and individual income taxes.

For a reliable analysis of the effect of taxation on foreign investment, it is convenient to have a summary measure of the overall tax burden on investment. One such measure is the effective tax rate on investment. The effective tax rate condenses the effects of various provisions of the tax laws and the behavior of the taxpayers into a single number that represents the total tax burden on investment. In this section, I discuss the effective tax rate of corporate investment that is financed with foreign capital.

4. The fact that royalties account for the largest share of capital income may be related to the fact that, like interest payments, royalties are deductible for corporate income tax purposes and that royalties are eligible for tax preferences that are similar to those applicable to dividends.

Table 11.3 **Taxation of Foreign Taxpayers without Permanent Establishment: Individuals and Corporations** (billion won)

Type of Income	1984	1985	1986	1987	1988
Business and real estate					
Income	17.84	17.72	15.43	40.46	82.08
Tax revenue	0.36	0.36	0.31	0.81	1.63
ATR (%)	2.00	2.02	2.00	2.00	1.98
Interest					
Income	8.60	3.03	3.98	3.07	7.21
Tax revenue	2.15	0.42	0.49	0.48	0.95
ATR (%)	25.00	13.88	12.22	15.71	13.11
Dividends					
Income	9.41	29.79	51.68	39.85	40.75
Tax revenue	1.38	3.41	3.90	3.91	5.64
ATR (%)	14.70	11.45	7.55	9.82	13.85
Royalties					
Income	20.36	48.38	58.30	95.34	109.81
Tax revenue	3.60	6.30	7.84	11.57	17.37
ATR (%)	17.69	13.02	13.45	12.13	15.82
Human services					
Income	13.02	10.59	11.05	13.69	20.42
Tax revenue	2.60	2.10	2.16	1.97	3.88
ATR (%)	19.96	17.79	19.58	14.42	19.01
Other					
Income	8.07	2.84	4.32	3.21	17.41
Tax revenue	1.68	0.71	1.08	0.56	2.04
ATR (%)	20.78	25.00	24.95	17.37	11.72
Total					
Income	77.29	112.36	144.76	195.61	277.67
Tax revenue	11.77	13.30	15.78	19.30	31.51
ATR (%)	15.22	11.83	10.90	9.87	11.34

Source: Ministry of Finance.

Note: ATR = average tax rate.

We start with the effective corporate tax rate on investment, which is defined by

$$(1 - E_c) F_k = r_c \tag{1}$$

where E_c is the effective corporate income tax rate, F_k is the marginal productivity of capital net of depreciation, and r_c is the corporate after-tax rate of return on investment. Eq. (1) may be rewritten as

$$E_c F_k = F_k - r_c. \tag{2}$$

Eq. (2) implies that the effective burden of income tax on one unit of investment is equal to $E_c F_k$, which is the difference between the marginal productivity of capital (or the social rate of return) and the after-tax rate of return.

Eq. (1) or (2) can be modified to define other effective tax rates on investment. In particular, we can define a comprehensive effective tax rate that encompasses both the corporate and the withholding taxes by

$$(1') \qquad (1 - E_a) F_k = r_p,$$

where E_a is the comprehensive effective tax rate and r_p is the rate of return on investment after the corporate and withholding taxes.

In order to measure the effective tax rate, we need to know the marginal productivity of capital and the after-tax rate of return on investment. Measuring the latter is relatively straightforward. However, it is difficult, if not impossible, to obtain a direct measure of the marginal productivity of capital. Thus we assume that the producer is in equilibrium in the sense that the cost of capital is equalized to the marginal productivity of capital.

11.3.2 Financial Behavior of the Firm

In measuring the effective tax rate on investment, we need to be specific about the assumptions concerning dividend behavior and capital structure of the firm. There are two competing views on the dividend behavior of a firm. One is the so-called traditional view that implies that firms pay out a fixed fraction of the after-tax profits. Under this view, the marginal source of equity finance is new share issues. The alternative view, which is known as the new view or the trapped equity view, implies that the firm adjusts dividend payments according to the need for investment funds. Under this view, the marginal source of equity finance is retention of profits. It may be noted that the traditional view does not rule out retention; neither does the new view preclude new share issues altogether. The two competing views differ in the way in which marginal equity funds are raised.

In reality, the marginal source of equity finance can be either new share issues or retention, depending on the firm's financial condition. For a new or a fast-growing firm, the marginal source of equity finance is likely to be new share issues. In contrast, a mature firm with stable cash flow may choose retention, which is the cheaper method of equity finance. It is difficult to identify the pattern of financial behavior of individual firms however, or even to determine the proportion of the firms that can be classified under either view of dividend behavior.

Under the traditional view, the marginal withholding tax rate on equity income is a weighted average of the withholding tax rates for dividend and capital gains. Under the new view, the marginal withholding tax rate is the withholding tax rate on capital gains. In this paper, I take the traditional view. Since the withholding tax rates for dividend and capital gains are similar, however, the results are not sensitive to the assumption on dividend behavior (see section 11.3.4).

Regarding the capital structure of the firm, we assume that the firm has a maximum debt capacity and takes advantage of the tax deduction of interest

payment by maintaining the debt/capital ratio at the maximum level, where "capital" refers to the total value of debt and equity claims on the firm. It follows that the firm borrows a fixed fraction of the investment funds and raises the remainder by issuing new shares and/or retaining profits.

11.3.3 Effective Corporate Tax Rates

Under the above assumptions about the firm's financial behavior, maximization of the shareholder's wealth yields the following expression for the cost of capital:[5]

$$F_k + \delta = \frac{1 - k - t_c(z + y)}{1 - t_c}[R + \delta] + t_p, \tag{3}$$

where

$$R = (1 - \beta)r_e + \beta[(1 - t_c)i - \pi]. \tag{4}$$

The notations in (3) and (4) are δ = rate of economic depreciation; k = rate of investment tax credit; z = present value of tax depreciation; y = present value of tax deduction due to the tax deferral of investment reserve; β = debt/capital ratio, or debt/(debt + equity) ratio; t_c = corporate income tax rate; t_p = property tax rate; r_e = corporate after-tax rate of return on equity; i = nominal interest rate; and π = rate of inflation.

In order to determine the cost of capital for corporate investment, we allocate the after-tax rate of return on corporate capital, as reported in the corporate income statement, between the returns to debt and equity. Within the accounting framework of corporate income statement, the real return to debt is $\gamma i - \beta\pi$, where γ is the ratio of interest-bearing debt/capital ratio. The remainder of the after-tax rate of return is allocated to equity according to

$$r_{np} = (1 - \beta)r_e + \gamma i - \beta\pi, \tag{5}$$

where r_{np} is the after-tax rate of return reported in the income statement.

It is clear from (5) that r_{np} is smaller than the real after-tax rate of return on corporate capital by the amount of implicit interest on the non-interest-bearing debts. We assume that the implicit interest on non-interest-bearing debts is the same as that on interest-bearing debt, and add the implicit interest on both sides of (5). The result is

$$r_{np} + (\beta - \gamma)i = (1 - \beta)r_e + \beta(i - \pi). \tag{5'}$$

We refer to the right-hand side of (5') as the real after-tax rate of return on corporate capital and denote it by r_c. Thus

$$r_c = (1 - \beta)r_e + \beta(i - \pi). \tag{6}$$

5. See Jorgenson and Yun (1991) for derivation.

In the calculation of the cost of capital, we set the debt/capital ratio and the nominal interest rate of corporate debt at their 1977–86 averages in the manufacturing sector, i.e., $\beta = 0.79$ and $i = 14.7\%$, respectively. In order to establish a point of reference for the calculation of the various rates of return and the effective tax rates, we hold the real after-tax rate of return on corporate capital, before adjustment for the implicit interest on non-interest-bearing debts, at its 1977–86 average, that is, $r_{np} = 8.4\%$.

Eqs. (5) and (6) are used to calculate the real after-tax rate of return on equity, r_e, and the after-tax rate of return on corporate capital (debt + equity), r_c. The nominal interest rate on corporate debt is held constant to reflect the insensitivity of nominal interest rate with respect to the rate of inflation.[6]

The corporate tax rate, t_c, is calibrated to reflect the effects of the defense tax and the inhabitant tax as well as corporate income tax. Specifically, t_c is set equal to the statutory tax rate for corporate income multiplied by 1.325, reflecting that the defense and inhabitant taxes are 25% and 7.5%, respectively, of the corporate income tax. Using the statutory corporate tax rate of 30%, we set t_c at 39.75%.

We do not have any estimates of the economic depreciation rates of capital assets employed in Korea. We take the economic depreciation rates of the various categories of assets estimated by Hulten and Wykoff (1981) for the United States, then calculate the weighted averages for machinery and equipment and for buildings and structures. The shares of each category of assets in the net national capital stock from the National Wealth Survey of Korea (Economic Planning Board 1977) are used as the weights. We obtain $\delta = 13.07\%$ for machinery and equipment, and $\delta = 3.3\%$ for buildings and structures.

For tax depreciation, the taxpayer can choose either the straightline method or the declining balance method. Under the current law, the depreciation rate for the declining balance method is calibrated so that 10% of the capital cost remains undepreciated after the tax life of an asset. Since the declining balance method results in a larger present value for the tax deduction, we assume that the taxpayer chooses the declining balance method. Using the same weights used in the economic depreciation calculation, we estimate the depreciation rate for tax purposes to be 21.69% for machinery and equipment and 5.9% for buildings and structures.

Once the cost of capital, which is equated to the marginal productivity of capital, and the after-tax rate of return are calculated, the effective corporate tax rate can be estimated according to

6. With the nominal interest rate constant, holding r_{np} constant is equivalent to holding r_c constant. To see this, subtract (5) from (6) and rearrange the terms to obtain

$$r_c = r_{np} + (\beta - \gamma)i.$$

$$E_c = \frac{F_k - r_c}{F_k}. \tag{7}$$

I considered eight tax incentives and calculated the effective corporate tax rates under each of them. To provide a reference of comparison, I also calculated the effective tax without any tax preference. In order to test for sensitivity, I repeated the calculations for three different rates of inflation. Table 11.4 presents the estimated effective corporate tax rates for machinery and equipment (see the three rows with E_c). Similarly, table 11.5 presents the effective tax rates for buildings and structures.

The effective corporate tax rates are negative in all the cases considered both for machinery and equipment and for buildings and structures. In particular, the effective tax rates have large absolute values when a generous tax preference, such as 100% special depreciation, 50% expensing, 10% investment tax credit, or 15% investment reserve, is available. It follows that the corporate income tax in Korea effectively serves as an incentive system for investment.

It should be emphasized that the effective tax rates in table 11.4 and 11.5 are estimated under the assumption that the firm is eligible for at most one category of incentives for a given investment. The tax laws indeed have provisions that prohibit taxpayers from taking more than one tax preference for the same activity. In practice, however, there are cases in which firms are eligible for more than one tax preference. For example, a firm that finances an investment project with the funds from investment reserve may be eligible for investment tax credit, expensing, or special depreciation for the same project. In such a case, the effective tax rate must be lower than tables 11.4 and 11.5 indicate.

Since nominal interest payments are deductible, the effective corporate tax rate decreases with the rate of inflation. The real after-tax rate of return on equity, r_e, is very sensitive to the rate of inflation. In particular, r_e is as high as 44.7% when the rate of inflation is 10% per year. Underlying these phenomena are the high debt/capital ratio in the firms' capital structure and the insensitivity of nominal interest to inflation.

In interpreting the estimated effective tax rates, two caveats are in order. First, my estimate of the debt/capital ratio is likely to be an overestimate of the true value because my figures are based on book values, rather than the replacement cost, of the corporate assets. Since interest payments are tax deductible while dividend payments are not, to the extent the debt/capital ratio is overestimated, the effective tax rate is underestimated. Second, my estimates of the economic depreciation rates are also problematic. One may easily argue that the economic depreciation rates of the assets in Korea are higher than those in the United States. Unfortunately I do not have any solid evidence as to the direction and magnitude of the biases in my calculation.

Table 11.4 Effective Tax Rate: Machinery and Equipment (%)

		Special Depreciation			Expensing		Investment Tax Credit		Investment Reserve
π	No Incentives	30	50	100	30	50	3.0	10.0	15.0
0.0									
F_k	12.1	11.5	11.2	10.7	11.0	10.2	11.1	8.7	9.5
E_c	−8.0	−13.9	−17.0	−22.6	−19.2	−28.3	−17.0	−49.9	−37.3
E_a	5.2	0.3	−2.4	−7.2	−4.2	−12.4	−3.3	−31.8	−20.7
	r_e = 7.1			r_p = 11.5			r_c = 13.1		
6.0									
F_k	11.9	11.3	11.0	10.4	10.8	10.0	10.9	8.5	9.3
E_c	−10.4	−16.5	−19.6	−25.4	−21.9	−31.4	−20.6	−53.8	−40.8
E_a	9.9	5.1	2.5	−3.1	0.7	−7.2	1.6	−26.1	−15.3
	r_e = 29.7			r_p = 10.7			r_c = 13.1		
10.0									
F_k	11.7	11.1	10.8	10.3	10.6	9.8	10.7	8.4	9.2
E_c	−12.0	−18.2	−21.5	−27.4	−23.8	−33.5	−22.5	−56.6	−43.1
E_a	12.7	8.0	5.4	0.8	3.7	−4.2	4.6	−21.6	−11.0
	r_e = 44.7			r_p = 10.2			r_c = 13.1		

Parameters: δ = *13.07*, d = 21.69, α = 34.0, β = 79.0, γ = 47.0, i = 14.7, i^e = 18.0, r_{np} = 8.4, t_c = 39.75, $t_d = t_g = t_i$ = 12.5, t_p = 0.0

Notes: π = rate of inflation; F_k = marginal productivity of capital, net of depreciation; E_c = effective corporate tax rate; E_a = comprehensive effective tax rate, corporate and withholding taxes; r_c = real rate of return on capital (equity + debt), after corporate tax; r_e = real rate of return on equity, after corporate tax; r_p = real rate of return on capital (equity + debt), after corporate and withholding taxes. δ = rate of economic depreciation; d = rate of tax depreciation; α = dividence payout ratio; β = debt/capital ratio, where capital = debt + equity; γ = interest bearing debt/capital ratio; i = nominal interest rate on corporate debt; i^e = present value of income deduction for new share issue; r_{np} = after-tax rate of return on corporate capital as reported in income statement; t_c = corporate income tax rate; t_d = withholding tax rate on dividend; t_g withholding tax rate on capital gains, accrual based; t_i = withholding tax rate on interest income; t_p = property tax rate.

11.3.4 Comprehensive Effective Tax Rate

I have estimated the effective corporate tax rate of investment. From a foreign investor's point of view, however, a more comprehensive measure of effective tax burden would be desirable, possibly encompassing all the taxes levied by the host and the home countries. Incorporating the home country taxes in my measure of effective tax rate is beyond the scope of this paper. Instead I estimate the effective burden of all the income taxes imposed in Korea.

The real rate of return on corporate capital after withholding taxes is a weighted average of the returns to equity and debt, both after withholding taxes, i.e.,

Table 11.5 **Effective Tax Rate: Buildings and Structures (%)**

		Special Depreciation			Expensing		Investment Tax Credit		Investment Reserve
π	No Incentives	30	50	100	30	50	3.0	10.0	15.0
0.0									
F_k	12.8	12.3	12.0	11.4	11.5	10.6	12.2	10.9	9.9
E_c	−2.6	−6.9	−9.4	−14.7	−14.3	−23.8	−7.2	−19.9	−33.0
E_a	10.4	6.8	4.4	−0.6	0.3	−8.2	6.0	−5.2	−15.8
	r_e = 7.1			r_p = 11.5			r_c = 13.1		
6.0									
F_k	12.5	12.0	11.7	11.2	11.2	10.3	11.9	10.7	9.6
E_c	−5.0	−9.5	−12.1	−17.5	−17.1	−27.0	−9.8	−22.9	−36.4
E_a	14.2	10.7	8.4	4.3	4.3	−4.1	9.9	−0.2	−11.7
	r_e = 29.7			r_p = 10.7			r_c = 13.1		
10.0									
F_k	12.3	11.8	11.5	11.0	11.0	10.2	11.7	10.5	9.4
E_c	−6.8	−11.3	−14.0	−19.5	−19.1	−29.1	−11.6	−24.9	−38.8
F_a	17.0	13.5	11.2	7.2	7.2	−0.1	12.7	2.7	−8.6
	r_e = 44.7			r_p = 10.2			r_c = 13.1		

Notes: Parameters: $\delta = 3.3$, $d = 5.9$. For other parameters and notes, see table 11.4.

$$r_p = (1 - \beta)(r - \pi) + \beta[(1 - t_i)i - \pi], \tag{8}$$

where r_p is the real rate of return to corporate capital after the withholding taxes, r is the nominal rate of return on equity after withholding tax, and t_i is the marginal withholding tax rate on interest income. Notice that the expression in the brackets represents the real rate of return to debt, after withholding tax.

In order to measure the comprehensive effective tax rate we need to calculate r_p. For this purpose we need to distinguish the sources of equity finance. Under the traditional view, the marginal source of equity finance is new share issues and the relevant marginal withholding tax rate for equity income is a weighted average of the withholding tax rates on dividends and capital gains. Under the new view, the marginal source is retention and the corresponding marginal tax rate is the withholding tax rate on capital gains.

Specifically, under the traditional view

$$r_e = \frac{r - \pi(1 - t_g)}{1 - (\alpha t_d + (1 - \alpha)t_g)}, \tag{9}$$

where t_d and t_g are the marginal withholding tax rates on dividend and capital gains, respectively. Under the new view,

$$(9') \qquad r_e = \frac{r - \pi(1 - t_g)}{1 - t_g}.$$

Making use of (1′), (8), and (9) or (9′), we can calculate the comprehensive effective tax rate on corporate investment, encompassing both the corporate and withholding taxes.

In the above discussion, the tax rate for capital gains is accrual based. In practice, however, capital gains are taxed on a realization basis, and the statutory tax rate on capital gains is defined accordingly. Thus we need to convert the realization-based tax rate into an accrual-based one. A rule of thumb for the conversion is to cut the realization-based tax rate by one-half to obtain an accrual-based tax rate. This is roughly equivalent to assuming that the holding period of equity is ten years and the appropriate discount rate is 7% per year.

Since the statutory withholding tax rate is 25% on realized capital gains, it is reasonable to assume that the accrual-based withholding tax rate is in the range of 10–15%, which is the same as the range of withholding tax rates on dividend and interest incomes. In estimating the comprehensive effective tax rate, we set the withholding tax rates on dividends, interest, and accrued capital gains at 12.5%, i.e., $t_d = t_g = t_i = 12.5\%$. With the withholding tax rates the same for dividends and capital gains, the comprehensive effective tax rates are the same under either view of dividend behavior.

The estimated effective tax rates are reported in tables 11.4 and 11.5. Since all the withholding tax rates are set at 12.5%, the comprehensive effective tax rates are substantially higher than the corresponding effective corporate tax rates. In particular, the comprehensive effective tax rates are substantially closer to zero than the effective corporate tax rates. In the central case of 6% inflation, the comprehensive effective tax rates are between −26.1 and 9.9% for machinery and equipment and between −11.7 and 14.2% for buildings and structures.

Since nominal interest and nominal capital gains are taxed at the withholding level, the differences between the effective corporate tax rates and the corresponding comprehensive effective tax rates increase with inflation. The value of interest deduction at the corporate level increases with inflation, while the tax burden increases with inflation at the withholding level. The comprehensive effective tax rates in tables 11.4 and 11.5 suggest that, on balance, tax burden increases with inflation.

In the calculation of the comprehensive effective tax rates, we assumed that the government collects 12.5% of withholding tax on foreign capital income. Although this assumption provides a useful benchmark, it is not realistic. As I discussed in section 11.2, in accordance with the Foreign Capital Inducement Law, the government exempts most dividends and interest income from taxation. Since government borrowing and commercial loans are the principal forms of foreign capital in Korea, tax exemption of interest on foreign debt is

particularly important. For foreign direct investment, the firm can choose either the 100% special depreciation or the five-year tax holiday for corporate income and dividends. If these tax preferences are taken into account, the actual comprehensive effective tax rates must be similar to the effective corporate tax rates in tables 11.4 and 11.5.

11.4 Policy Issues

11.4.1 Are the Current Tax Preferences Excessive?

A natural question at this point is whether Korea's current tax treatment of income from foreign capital is appropriate. This question cannot be answered definitively without knowing the optimal effective tax rate. However, my analysis suggests strongly that Korea's tax policy is too generous for the income from foreign capital. In order to justify the current tax policy, we need a convincing argument such as that foreign capital generates large positive external effects.

Many of Korea's tax treaties with its trading partners include tax-sparing provisions for capital income. One implicit assumption underlying the tax-sparing provisions is that lowering the overall tax burden, including the tax burden of the home country, on foreign capital attracts more foreign capital into Korea. It may be true that the supply of foreign capital is indeed responsive to the after-tax rate of return. However, the fact that a tax-sparing provision prevents the tax preference provided by the host country from being offset by home country taxes is not sufficient to justify the substantially negative effective tax rates. With the national savings rate well above 30% and higher than the national investment rate, it would be difficult to find convincing evidence in support of the current negative effective tax rates.

If the current tax policy is excessively generous to foreign capital, what are the necessary policy changes? The most obvious approach is to eliminate the tax preferences for foreign capital. It is especially worth considering the abolition of the tax preferences provided by the Foreign Capital Inducement Law, such as the five-year tax holidays, 100% special depreciation, tax exemption of interest, reduction of special excise tax, exemption from property tax, etc.

One of the main reasons the effective corporate tax rates are negative is that interest payments are deductible at the firm level while investments financed by debt are eligible for all the tax preferences that apply to equity-financed investment. Given the tax treatment of debt-financed investment at the firm level, the exemption of interest income from withholding tax guarantees a negative comprehensive effective tax rate for debt-financed investment. In this situation, the abolition of tax exemption for interest on foreign loans would be of particular importance.

One might consider increasing the tax burden on foreign capital at the firm level. However, this approach is less attractive than eliminating the tax pref-

erences specific to foreign capital. Because of the nondiscrimination clauses of the tax treaties, increasing the tax burden on foreign capital at the firm level will increase the tax burden of domestically owned capital as well. If the overall tax treatment of domestically owned capital is excessively generous, there are no difficulties. Otherwise, my analysis cannot be relied upon to justify such a policy.

11.4.2 Internationalization of the Capital Market

Foreign portfolio investors are not eligible for the tax preferences provided by the Foreign Capital Inducement Law. As a result, it seems reasonable to assume that the comprehensive effective tax rates on foreign portfolio investments are close to those presented in tables 11.4 and 11.5. If 6% inflation is assumed, all of the comprehensive effective tax rates I consider for buildings and structures are not far from zero. A similar pattern is observed for machinery and equipment, with the exception of the cases with the 10% investment tax credit and 15% investment reserve.

The above analysis suggests that the current framework of Korean tax policy need not be modified in any fundamental way to accommodate internationalization of the capital market. The main tax policy issue appears to be in tax administration. For example, since the capital gains on financial assets owned by resident individuals are exempt from taxation, it might be difficult to tax effectively the capital gains on financial assets owned by foreign investors. The issue of tax administration becomes particularly serious because financial assets can be traded among residents under pseudonyms.

The issue of taxing capital gains on financial assets has long been debated in Korea. Similarly, the abolition of financial transactions under pseudonyms has been on the government agenda for about a decade. At present, the consensus is that the capital gains should be taxed and financial transactions under pseudonyms should be abolished. With internationalization of the capital market, the issues of taxing capital gains on financial assets owned by nonresident individuals will become more important. Internationalization of the capital market adds new reasons for going forward with the reforms in tax policy on capital gains and the practice of financial transactions under pseudonyms.

11.5 Conclusion

I have described the tax treatment of income from foreign capital in Korea and estimated the effective tax rate of corporate investment financed with foreign capital. The analysis of section 11.3 shows that the effective rates of corporate income tax are negative under realistic assumptions and that the absolute values of the effective tax rate are large when generous tax preferences are available. Without further tax preferences, especially at the withholding level, the comprehensive effective tax rates are not far from zero. With the tax exemption of interest and the five-year tax holidays for corporate

income and dividends, however, the comprehensive effective tax rates are negative and close to the effective corporate tax rates.

The overall tax preferences for foreign capital in Korea are excessive, and the tax preferences need to be curtailed. The obvious approach is to reduce or eliminate the most generous preferences, such as tax exemption of interest income, 100% special depreciation, and the five-year tax holidays for corporate income and dividends. In addition to these changes in the income tax policy, the exemption of the acquisition tax, property tax, and global land tax and the reduction of the special excise tax, VAT, import duties, etc., may also be reconsidered.

The basic framework of Korean tax policy need not be changed to accommodate the internationalization of capital market. However, unless the capital gains on domestically owned financial assets are taxed and the practice of financial transactions under pseudonyms is abolished, it would be difficult to tax effectively the capital gains on financial assets owned by nonresident individuals. In this sense, internationalization of the capital market has salutary effects on the development of the Korean economic system.

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Comment

Toshihiro Ihori

Kun-Young Yun's paper provides a framework for the analysis of the impact of taxation of income from foreign capital on a small capital-importing country, Korea. In contrast with much of the earlier work in this area, an attempt is made to ground some of the equations on standard microtheory. I think the paper is useful in that it attempts to explain the Korean tax policy from the optimal taxation perspective. I have a few comments and questions for the author.

This paper estimates the effective tax rate of corporate investment financed with foreign income. It would be useful to estimate the effective tax rate of corporate investment financed with domestic income as well. If the former tax rate is less than the latter, it would mean that the tax preferences for foreign capital in Korea are excessive. If both rates were almost the same, it would imply that Korea's tax policy is not necessarily generous for the income from foreign capital.

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It would be useful to discuss the normative aspects of tax policy on the whole capital income, domestic or foreign, in Korea. In order to stimulate economic growth, it might be necessary to reduce capital income taxes.[1] If so, the generous treatment of foreign capital in Korea may be justified.

Equation (3) assumes that foreign capital can move freely into Korea, so that the optimal marginal condition is satisfied. Is such an assumption realistic in Korea? Were there any restrictions on importing capital in the 1970s?

International capital movements are crucially dependent on the tax system. In a territorial system capital income tax burdens depend on where the income is earned, but not on the consumer's country of residence. Conversely, under a residence system, tax burdens depend on the country of residence, not on where income is earned. Hence, if the residence system is realistic, the generous tax treatment of foreign capital in Korea may be offset by the tax treatment in the rest of the world, so that the supply of foreign capital may not be responsive to the after-tax rate of return.

Overall, this is a very useful paper investigating taxation of income from foreign capital. I hope that the normative aspects of tax policy in Korea will be explored more fully in future research.

Comment

Toshiaki Tachibanaki

The paper by Kun-Young Yun investigates the tax treatment of income from foreign capital in Korea and examines the effect of tax policy on capital inflow. The paper is a useful application of neoclassical economic theory, providing us with an interesting policy implication for Korea. My comments are concerned with an overview of foreign capital in Korea and the empirical results obtained in this paper.

First, section 11.2 gives an overview of foreign capital in Korea. The paper does not show in detail what percentage of all capital is foreign. Moreover, it would be useful to describe from what countries capital is imported and in what form, say direct investment or financial investment. That information would be helpful to understand and judge the usefulness of the theoretical and empirical parts of the paper.

Second, related to the first point, the utility of the maximization of the tax revenue from foreign capital is doubtful. If the share of the tax revenue from foreign capital in Korea were negligible, it would not be effective for the government in Korea to use the maximization principle; other behavioral principles would be more useful.

1. See, for example, R. J. Barro, "Government Spending in a Simple Model of Endogenous Growth," *Journal of Political Economy* 98: S103–25.

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Third, the theory part neatly develops the neoclassical growth and tax model. Although several stringent assumptions are imposed, it would be unfair to fault Yun for that. I am impressed with the Jorgensonian neoclassical approach throughout the paper.

Fourth, it is quite impressive to see the negative effective tax rates for investment in the empirical part. This implies a subsidy. The paper does not present in detail the reasons for the negative rates; it would be useful to have a decomposition analysis to draw some conjectures for rates, or a sensitivity analysis to confirm that the negative values are right. I would guess that the reasons are a very high debt/equity ratio in Korea or generous depreciation allowances. These were quite effective for promoting high investment activity in postwar Japan and are supposed to be very effective in the process of industrialization. It is impressive to see that two countries, namely Korea and Japan, had the common policy tools for strong industrialization.

Comment

Twatchai Yongkittikul

Kun-Young Yun's extremely well-organized paper formulates a very elaborate theoretical framework for an evaluation of the tax policy, and then painstakingly measures the effective tax rate in Korea. The empirical results are compared with the theoretical conclusions to draw the policy implications. I have just a few general comments.

First, since the theoretical framework is quite elaborate, Yun inevitably discovered a considerable gap between the theoretical and the empirical data. He therefore found it necessary to make a number of assumptions in order to bridge this gap. He thus noted that his estimate of the effective tax rate was only as good as the assumptions made in the calculation. Since the policy implications were drawn from these empirical results, one could not help but wonder how sensitive these results were regarding the assumptions made. The readers might feel a bit more comfortable if some of these assumptions were varied to ascertain the sensitivity of the results.

Second, Yun found that, although the overall tax burden levied by the Korean government on foreign capital is reasonable, the extremely generous tax treatments provided by the Foreign Capital Inducement Law for foreign direct investment in Korea are not justified. In the presence of the foreign tax credit system in the home country, the tax exemption provided by the law merely benefits the treasury of the home country without affecting the effective tax burden of the investor. This conclusion is quite relevant for the small developing countries that are competing with each other to attract foreign capital

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by providing excessively generous incentives. A better-coordinated tax policy among the developing countries in this regard would clearly increase their benefits from foreign investment.

Third, this paper focused on taxes as the only policy instrument affecting capital flows. I believe that there are a number of factors that would encourage or discourage foreign capital, the major ones being interest rates and foreign exchange rates. These have been used extensively in many countries as policy instruments, and they have played an important role in attracting foreign capital. In Korea's case, the won was kept undervalued up to the first half of the 1980s, and the exchange rate policy clearly played as important a role as taxes in promoting export as well as capital inflow.

Finally, Yun stated in the first part of his paper that Korea has pursued internationalization of its capital market since 1981. He did not mention the reasons why this policy was being pursued. Foreign investment has always been looked at with wariness in Korea, and this attitude has changed very slowly. Why is Korea so interested in liberalizing its capital market now? What is the impetus for this recent change? Is it driven by internal forces—such as the prevalence of excess liquidity—or is Korea yielding to external pressure to open its capital market? Are there any preconditions that must be achieved before a country can internationalize its capital market? The answer to this last question would be useful for other developing countries in deciding when they would be in a position to open up their capital market.