

UTILIZATION OF TAX ALLOWANCES*

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Swedish tax-paying firms have systematically failed to take full advantage of the allowances granted by the government. The average utilization level varied between 62 and 86 percent in the years 1979–1993. The Swedish tax-cut cum base-broadening tax reform in 1991 meant that the amount eligible for appropriation to untaxed reserves was much reduced. Our results show that the proportion of firms that fully utilize the allowances has increased since the reform. One interpretation of this is that the importance of the tax system for the incentive to invest has increased, since the user cost of capital is unaffected by the corporate tax if firms have unutilized tax allowances. Contrary to what is commonly believed our results suggest that dividend payments are not the main reason for abstaining from tax allowances.

I. Introduction

During the entire post-war period, corporate taxation in Sweden combined high statutory tax rates with generous opportunities of deferring taxes by the means of acceleration of depreciation allowances and contributions to various untaxed reserves. As a result of this, the average effective tax burden, that is, tax payments as a share of economic profits, has been considerably below the statutory tax rate. However, casual observations indicate that many firms have not taken full advantage of the available tax allowances. Södersten (1978) reported that differences between firms' average effective tax burden could largely be explained by differences in the utilization of tax allowances. Interest in the effects of unutilized tax allowances

grew during the 1980s in conjunction with the debate about the detrimental effects of corporate taxation. Bergström and Södersten (1984) questioned the effectiveness of tax allowances as an investment incentive because of the widespread underutilization of such allowances. The first comprehensive study of the utilization of tax allowances was published in 1989 by the Corporate Tax Commission (Utredningen om reformerad företagsbeskattning, URF). URF examined all manufacturing firms with more than 50 employees, and reported that from 1979 to 1985, on average unused allowances (regular depreciation allowances, and contributions to inventory reserves and investment funds) amounted to no less than 66 percent of available allowances.

Kanniainen and Södersten (1994) demonstrated that the underutilization of tax allowances has far-reaching implications for the incentive effects of the corporate tax system. They showed that neither the tax rate nor the

¹ I am indebted to Sten Hansen, Hovick Shanazarian, Jan Södersten, and Erik Zetterström for comments on earlier drafts. The advice by the referee is also appreciated.

definition of the corporate tax base has any impact on the cost of capital if a firm has unutilized tax allowances. The intuition behind this result is that a firm with unutilized tax allowances has predetermined its taxable income. A marginal increase in profits (say from a marginal investment project) will therefore not alter taxable income, since this can be reduced by additional appropriations to untaxed reserves. This means that firms with unutilized tax allowances pay no tax on their marginal income and their investment incentives are independent of the corporate tax system. This insight has inspired investigations of the usage of tax allowances in the other Nordic countries. Aarbu (1994) and Kröger, Myhrman and Rauhanen (1996) present results that suggest that firms in Norway and Finland have abstained from maximizing their use of tax allowances.

The most obvious reason for a firm to abstain from tax allowances is insufficient profitability. Imperfect loss-offset provisions eliminate or at least reduce the incentive to claim additional tax allowances when the firm becomes tax-exhausted. The results presented by URF (1989), indicating dramatic underutilization, should be interpreted in the light of this: URF made no attempt to eliminate tax-exhausted firms. In fact, no study has yet centered on firms in a tax-paying position. The purpose of this paper is to make a descriptive analysis of the utilization of tax allowances by Swedish tax-paying firms between 1979–93. We focus on deductions for the depreciation of machinery, appropriations to untaxed reserves (e.g. undervaluation of inventories), and contributions to investment funds. Our results show that a large proportion of firms both paid taxes and abstained from tax allowances. The average total utilization varied between 62 and 86 percent. After the 1991 tax reform the share of firms that fully utilize tax allowances has increased. From this we conclude that the new tax legislation may make the corporate sector more sensitive to taxation. Furthermore, our findings suggest a pecking order between different tax allowances. First of all, firms tend to take advantage of fiscal depreciation, and thereafter, of contributions to untaxed reserves. Firms appear to have been reluctant to contribute profits to investment funds.

As a side issue, we also examine to what extent firms have made withdrawals from their investment funds to finance investments. Our result shows that only a minor part of firms' investments in machinery has been financed by means of IF withdrawals. Firms investing in buildings used IF withdrawals to a greater extent.

The paper is organized as follows: In *section 2* we describe the corporate tax system and the main tax allowances. In *section 3* we define the utilization variables. Our empirical findings are reported in *section 4*. *Section 5* gives some tentative reasons why a firm should abstain from tax allowances. *Section 6* present conclusions. The *Appendix* presents data and describes the sample selection.

II. The corporate tax system

During most of the post-war era, Swedish corporate firms were subject to local as well as national income taxation. In 1979, which is the first year covered in this study, the national statutory corporate income tax rate was 40 percent. The local income tax rate varied between different municipalities but was on average 29 percent. In 1984 the national corporate tax rate was reduced to 32 percent and a surcharge known as the profit sharing tax (PST) was introduced, adding some 5 percentage points to the statutory tax rate.¹ In 1985, the local corporate tax was abolished and to offset this, the national statutory tax rate was raised from 32 to 52 percent. Even though the form of the corporate tax system was changed, the average statutory tax rate, including PST, was approximately 57 percent throughout the 1980s. This high tax rate was combined with generous opportunities to reduce taxable income through depreciation deductions and appropriations to various forms of untaxed reserves.

Two kinds of depreciation allowances for machinery and equipment were available. According to the declining balance method, a firm

¹ The profit sharing tax was based on after-tax profits. The PST so determined was deductible from the regular corporate tax base the following year.

was allowed to make a depreciation deduction of up to 30 percent of the accounting value of its capital stock. The accounting value of the capital stock is defined as the accumulated acquisition cost of investments net of fiscal depreciation. A supplementary rule allowed the firm to report an accounting value that was the result of a five-year straight-line depreciation. The fiscal depreciation allowance was then set to the amount needed to bring the remaining accounting value down to this level.

An additional feature of the Swedish corporate tax system was the option of appropriating profits to untaxed reserves. Since inventories were valued according to the first-in-first-out principle (FIFO), the real tax burden tended to increase with the rise in the general price level. To offset this, a firm was allowed to write down the value of its inventories by up to 60 percent and to deduct the corresponding amount from its taxable income. The inventory write-down took the form of an appropriation to an inventory reserve (Lagerreserv, LR). The deduction deferred tax payments until the following year, when the appropriation was brought back for taxation.²

In 1980, a complementary rule was introduced to benefit firms in the service sector. A firm was allowed to defer taxes on the basis of its labor costs by appropriating an amount equal to 20 percent of its wage bill to a profit equalization fund (Resultatutjämningsfond, RUF). The appropriation to the profit equalization fund was also brought back for taxation the following year. A firm was in principle free to choose the most favorable reserve option. However, some restrictions applied to firms within a group of companies.³

For a long time, the investment fund (IF) system was the most important countercyclical component of corporate taxation. The system was designed to induce firms to reserve profits during boom years to be used for investments

in times of low economic activity. It entitled a firm to reduce its tax base by up to 50 percent of adjusted taxable income by the means of contributions to an investment fund (which existed purely as an entry in the balance sheets). Part of this contribution had to be deposited in an interest-free account at the central bank. The government attempted to influence the timing of investments by controlling the use of this fund. The announced policy was to allow firms to withdraw money from their funds during recessions. During these *release periods*, firms were allowed to write off new investments against their investment funds and in conjunction with this, to withdraw an amount equal to 50 percent of their investment purchases from the central bank. One exception to this policy was the so-called free sector. Outside release periods a firm could freely use 30 percent of funds that had been contributed more than five years ago to finance investments.

Investments financed by IF withdrawals were considered fully written off for tax purposes. The subsidy obtained from an IF withdrawal therefore depended on the generosity of the rules for regular fiscal depreciation. Investments with long fiscal lifetimes benefited more from the use of the IF system than investments with significant tax deferral possibilities due to accelerated depreciation.

The 1991 tax reform

The principles of the corporate tax system were much discussed during the 1980s. In 1985, a Corporate Tax Commission (URF) was authorized to outline new legislation as part of a major reform of the Swedish tax system; see Agell, Englund and Södersten (1997). The new tax system, which was fully enacted in 1991, reflected a radical change in the objectives of Swedish corporate taxation.⁴ The earlier objective of stimulating fixed capital investment by levying a high statutory corporate tax rate while offering generous tax allowances was aban-

² In 1983, this type of reserve provision was introduced for firms with "inventories" in the form of buildings held for resale and/or construction in progress.

³ To prevent a group of companies from unduly reducing tax payments by intra-group transactions, some firms within a group had to use the same method for appropriating money to untaxed reserves.

⁴ The transition to the new tax system started in 1989 with a reduction of the statutory corporate tax rate from 52 to 40 percent. At the same time the maximum appropriations to inventory and payroll-based reserves were reduced.

Table 1. Tax and appropriation rates in operation between 1979 and 1993

| | 79 | 80 | 81 | 82 | 83 | 84 | 85–87 | 88 | 89 | 90 | 91–93 |
|--------------------------------|------|------|------|------|------|------|-------|------|------|------|-------|
| National corporate tax rate | 40 | 40 | 40 | 40 | 40 | 32 | 52 | 52 | 40 | 40 | 30 |
| Local corporate tax rate | 29 | 29 | 30 | 30 | 30 | 30 | | | | | |
| Profit sharing tax rate | | | | | | 20 | 20 | 20 | 35 | 20 | |
| Total corporate tax rate | 57.4 | 57.5 | 57.7 | 57.8 | 58.1 | 57.6 | 57.1 | 57.1 | 54.7 | 47.8 | 30 |
| Fiscal depreciation: | | | | | | | | | | | |
| Declining balance | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Untaxed reserves: | | | | | | | | | | | |
| Inventory reserve (LR) | 60 | 60 | 60 | 60 | 60 | 60 | 50 | 50 | 40 | 40 | |
| Profit equalization fund (RUF) | | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 15 | 15 | |
| LR combined with RUF | | 45 | 45 | 45 | 45 | 45 | 35 | 35 | 30 | 30 | |
| K-SURV | | | | | | | | | | | 30 |
| L-SURV | | | | | | | | | | | 15 |
| IF contribution | 40 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | | | |
| IF deposit requirement | 46 | 50 | 50 | 50 | 50 | 50 | 75 | 100 | | | |

done. According to the new view, investments should be based on their own profitability and not on tax breaks granted by the government. The new policy limited the possibility of deferring taxes by means of various tax allowances, and lowered the statutory corporate tax rate. The statutory national corporate tax rate was reduced to 30 percent and the profit sharing tax was abolished. To keep the revenue from the corporate sector unchanged, the tax base was broadened by the elimination of the inventory reserves and the investment fund system.

Another purpose of the new tax system was to reduce the discrimination against equity as a source of finance. The deductibility of debt-interest payments in combination with a high statutory tax rate was believed to promote high debt levels. This distortion was to be mitigated not only by the cut in the statutory tax rate but also by a new equity-based reserve option, called the tax-equalization reserve (Skatteutjämningsreserv, SURV). The new scheme allowed a firm to reduce its tax base by 30 percent of its equity. As a supplement a firm could still defer taxable income on the basis of its labor costs by appropriating funds to a payroll-based tax-equalization reserve.⁵ These tax-equalization reserves postponed taxation one

year at a time, in the same manner as the old inventory reserves. The inventory reserves, and appropriations based on the value of the corporate equity and on labor costs, will be referred to as *untaxed reserves* throughout this paper. Table 1 presents the main tax and appropriation rates in operation between 1979 and 1993.⁶

III. Utilization

To measure the utilization of tax allowances, we divide the deductions actually claimed, according to the income statements and balance sheets, by the maximum deductions consistent with the tax legislation.⁷ We present estimates of the utilization level for the fiscal depreciation of machinery and equipment, untaxed reserves, and IF contributions, as well as a measure of total utilization. We also examine to what extent firms have made withdrawals from their investment funds to finance investments. Utilization levels are calculated conditionally on a

⁶ Skatteförvaltningen, RSV 331, annual publications. The total corporate tax rate is calculated as $\tau_l + \tau_n(1 - \tau_l)$, where τ_l is the local corporate tax rate and τ_n is the national tax rate. The total corporate tax includes the PST. This tax rate is more difficult to calculate due to complicated provisions for the deductibility of the regular corporate tax and to adjustments for changes in the general price level and for certain tax allowances.

⁷ If the deduction claimed exceeds the maximum allowance, the maximum allowance is set equal to the actual deduction.

⁵ The tax-equalization reserve based on equity was called K-SURV. The earlier profit-equalization fund was now called L-SURV, where L indicates that contributions were based on labor costs.

firm's history. Each year a new calculation is made, measuring the extent to which tax allowances are utilized.

Fiscal depreciation

We have considered only the declining balance method, since the straight-line method limits the number of firms that can be included in the study. The straight-line method requires information about the purchase values of machinery and equipment for the current and the three previous years. The maximum depreciation allowance cannot be calculated if the firm is missing once during such a four-year period. Excluding the straight-line method is a minor restriction, since unutilized depreciation allowances according to the declining balance method are a sufficient condition for a firm to have unutilized depreciation allowances.

Untaxed reserves

We focus on the untaxed reserves that are based on the value of a firm's current inventories, the value of its equity, and on labor costs.⁸ Since appropriations to these untaxed reserves were brought back for taxation the following year, it was possible for the net appropriation to be positive or negative regardless of whether or not the firm abstained from untaxed reserves. Hence, we measure the utilization of untaxed reserves as the stock of untaxed reserves reported in the balance sheet relative to the maximum amount of untaxed reserves consistent with the tax code.⁹

⁸ The study includes appropriations based on "inventories" in the form of buildings held for resale and/or construction in progress.

⁹ We ignore the rule that required firms within a group of companies to appropriate money to the same type of untaxed reserve. We made some calculations where these rules were taken into account. The results did not differ significantly from the ones presented. We disregard these rules since the information required to make these calculations reduces the number of observations. In calculating the maximum K-SURV allocation, we ignore the restrictions that applied to corporate groups with both Swedish and foreign subsidiaries engaged in cross-ownership; see Forsling (1996) for further discussion.

The investment fund

The IF contributions turn out to be negative for some companies. This can occur when money in the fund was used for purposes other than investments. The part of the fund that was not used according to government regulations had to be brought back for taxation. Since the IF contribution enters the income statement net of the amount brought back, the reported contribution can be negative. In these cases the actual IF contribution is set to zero.¹⁰ We assume that companies do not contribute and bring back money at the same time. The utilization of IF contributions is then defined as the actual contribution divided by the maximum contribution.

The total utilization level

The total utilization level is measured by dividing the sum of the actual deductions by the maximum deductions consistent with the tax code. Since the IF contribution is not independent of fiscal depreciation or the appropriation to untaxed reserves, we cannot obtain a measure of the firm's maximum deduction by simply adding these deductions. An increase in fiscal depreciation or in the untaxed reserves reduces the annual income and thereby the maximum IF contribution. We therefore assume that the firm first uses all available fiscal depreciation and untaxed reserves. Thereafter, it makes use of available IF contributions. In order to calculate the maximum IF contribution we define a new annual income based on the maximum usage of these deductions. The total utilization level is then defined as actual deductions claimed relative to the sum of the maximum fiscal depreciation, appropriations to untaxed reserves, and IF contribution consistent with this new income.¹¹

¹⁰ Prior to 1982, IF contributions could also be negative due to the fact that contributions to old IF funds had to be brought back for taxation. The observations that are negative represent less than 0.6 percent of the selected sample.

¹¹ This procedure is used only when the total utilization level is calculated.

Investment fund withdrawals

The IF system was designed with the purpose of stimulating investments when the economy was approaching a recession. The IF release worked as an investment subsidy and was intended to lower the marginal cost of capital and hence increase investment activity. A necessary condition for this result is that the fund release is sufficient to finance the firm's marginal investment.¹² If a firm only financed part of its investments using IF withdrawals, the use of the IF system may have worked as a subsidy for investments that would have been made anyway. In order to analyze whether the IF releases sufficed to finance the firm's marginal investment, we examine the amount of investments financed by IF withdrawals relative to the total amount of investments for which the IF could potentially be used.¹³

IV. Empirical results

Firms that do not pay taxes generally have a lower incentive to maximize the use of tax allowances than firms in a tax-paying position. It can however still be rational for a tax-exhausted firm to make full use of depreciation allowances (with a view to future tax payments). Only 30 percent of a postponed depreciation allowance can be recouped the following year, and only 30 percent of the remainder the year after that, and so on. An accumulated loss, on the other hand, can be carried forward in full and therefore used to offset taxable income at a later stage. However, up until 1991, Swedish tax legislation imposed a time limit of ten years on loss offsets. It is therefore not clear that it is rational for a tax-exhausted firm to maximize the use of its depreciation allowances. Furthermore, it is often believed that a reported loss might send negative signals about the firm's future earnings potential. This can make it rational for a firm to abstain from claiming further depreciation allowances when it is tax-ex-

hausted. We therefore exclude firms that were not in a tax-paying position.¹⁴

Even if a firm pays taxes and has unused tax allowances, it is not obvious that it can increase the utilization rate to unity and still pay taxes. In order not to give a misleading picture of the extent of underutilization the possibility that a firm might be tax-exhausted before using all available tax allowances must be considered. We therefore compute the utilization level at which the firm is tax-exhausted, and we denote this the firm's *utilization ceiling*.¹⁵ For example, a firm that uses half of the tax allowances actually available has a utilization level of 50 percent. If the firm would become tax-exhausted if it increased its usage by 5 percentage points, its *utilization ceiling* is then 55 percent. Furthermore, we define the *adjusted utilization level* as actual utilization relative to the rate of utilization that would exhaust tax payments, in this case 91 percent ($100 \cdot 50/55$). If the firm could use all available tax allowances without becoming tax-exhausted, the adjusted utilization level coincides with the original measure of the utilization level.

We examine the utilization of tax allowances using a sample of 6668 firms contributing a total number of 40,007 observations between 1979 and 1993. The annual number of observations is shown in the appendix, table 1A. During the entire time period about 22 percent of these observations represent firms in a non-tax-paying position. Our actual estimates are based on 5989 firms contributing 31,369 observations. The utilization levels presented below are calculated by letting each firm contribute one observation for each year it appears in the

¹⁴ Since we do not have access to tax return data, we have used the tax payment reported in the income statement to distinguish between firms that pay taxes and firms that do not. In some cases this tax payment includes tax arrears and restitution of taxes from previous years. The reported tax payment can therefore differ from the actual tax payment made by the firm. Furthermore, profit sharing tax payments are excluded from our definition of tax payments, because firms were unable to eliminate these tax payments by the use of untaxed reserves.

¹⁵ The utilization ceiling is defined as: $\{allowance\ claimed + tax\ payments / tax\ rate\} / maximum\ allowance$. If the utilization ceiling exceeds unity, i.e. the firm could use all tax allowances and still pay taxes, the utilization ceiling is set to unity.

¹² Södersten (1989).

¹³ Only firms with positive investment are considered.

sample. A firm that is in a tax-paying position during the entire time period therefore contributes 15 observations. To account for differences in size, we have weighted each firm's utilization level by the value of its total assets.

The total utilization level

Our results indicate clearly that a large number of firms have not used all available tax allowances. Figure 1 presents the average annual total utilization levels. The middle curve (the utilization ceiling) shows the utilization level where firms on average had eliminated their tax liabilities. We find that the average total utilization varied between 62 and 86 percent and the utilization ceiling varied between 66 and 91 percent during 1979–93. The average firm could increase its utilization level by between 3 and 11 percentage points before hitting the utilization ceiling. These figures should not be interpreted to mean that such an increase would eliminate all tax payments in the corporate sector. The utilization ceiling is firm-specific and indicates the utilization level at which a firm becomes tax-exhausted. One can therefore not draw any quantitative conclusions about how aggregate tax payments would be affected by an increase in the average utilization level. However, the narrow gap between the average utilization level and the utilization ceiling indicates that much of the underutilization is due to insufficient profitability. More than half of the observations represent firms

that would have been tax-exhausted before they had used all available tax allowances.

The utilization level roughly mirrors the general business cycle. There was a gradual increase in the average utilization level during the first half of the 1980s. In the peak years 1989–90, the business cycle was at its height and the profit level in the corporate sector was extremely high. Moreover, the rules for inventory reserves were made less generous and the IF system was eliminated. The reduction of tax allowances made it possible to increase the rate of utilization without decreasing reported income. An additional reason for the high utilization level is most likely the forthcoming tax reform. By increasing appropriations prior to the tax reform, untaxed reserves could be brought back for taxation at a substantially lower tax rate. In 1991, when the tax reform was fully enacted, the utilization level dropped sharply. This observation is somewhat surprising, since both the amount that was eligible for appropriation to untaxed reserves and the corporate tax rate were reduced. However, a possible explanation is the deep economic downturn that followed the tax reform in 1991.

This study concerns firms in a tax-paying position. However, as a side issue we have also made some calculations including tax-exhausted firms. The overall picture is generally the same as in figure 1. The inclusion of firms with zero taxable income reduces the average total utilization level by between 1 and 10 percentage points. Moreover, we have made some calculations where the utilization level is not weighted by the value of total assets, that is, we compute the arithmetic mean. This does not affect the results significantly. The main difference compared to figure 1 is that the fluctuations are less pronounced, especially the downturn in 1991.

Components of the total utilization level

Decomposing the measure of total utilization shown in figure 1 reveals that the usage differs considerably between different kinds of allowances. Figure 2 presents the annual average utilization level for depreciation allowances. The utilization level for fiscal depreciation varied

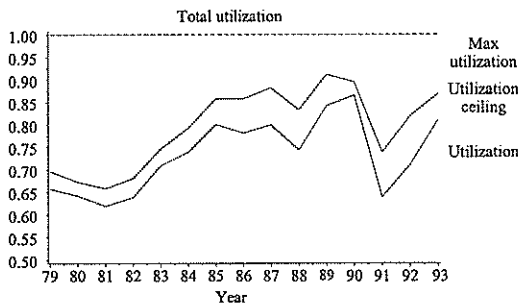


Figure 1. The dotted curve shows the utilization level when all tax allowances granted by the government were used. The middle curve shows the utilization where firms on average had eliminated their tax liabilities. The bottom curve shows the average total utilization level.

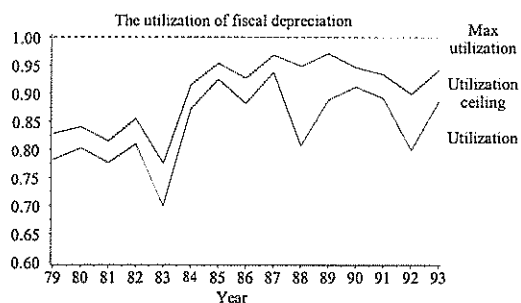


Figure 2. The utilization level of fiscal depreciation according to the declining balance method.

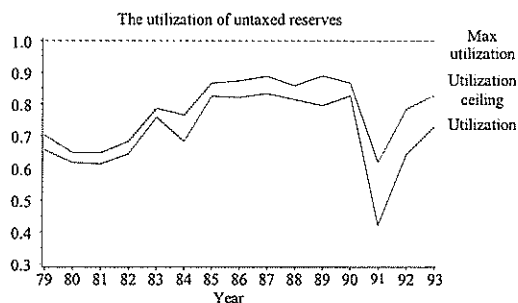


Figure 3. The mean utilization of untaxed reserves.

between 70 and 94 percent. The drop in 1983 may be caused by the approaching introduction of the profit sharing tax (PST). Since firms were allowed to reduce the base for PST by fiscal depreciation, they may have chosen to postpone depreciation allowances until 1984 when PST was enacted. The downturn in 1988 can be explained along the same lines. Since the profit sharing tax was temporarily raised in 1989, firms may have postponed their depreciation allowances to this year.

Figure 3 shows the annual average utilization level for untaxed reserves, that is, the appropriations based on inventories, labor costs and equity. The pattern is similar to the one presented for the total utilization level. The downturn in 1984 coincides with the introduction of PST which made IF contributions relatively more attractive. The reason is that the base for PST was reduced by IF contributions, but not by appropriations to untaxed reserves. When the deposit requirement for the IF system was raised in 1985, the utilization of untaxed reserves increased again. When the inventory reserve was replaced by the tax-equalization reserve (SURV) in 1991, utilization dropped sharply. The share of firms that abstained completely from using untaxed reserves increased from around 8 percent in 1990 to 31 percent in 1991. The high proportion of firms that abstained from SURV allocations suggests that this may have been a transitional problem: adaptation to the new rules seems to have been quite sluggish.

Figure 4 shows the utilization of IF contributions. The average usage decreased from

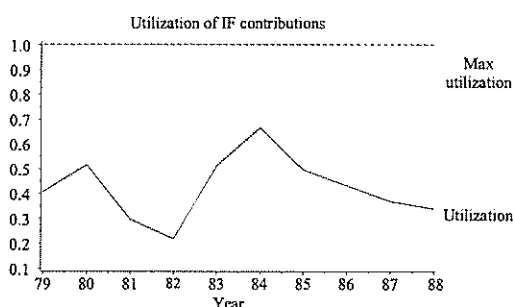


Figure 4. The mean utilization of IF contributions.

around 50 percent in 1980 to 22 percent in 1982. The utilization level then increased to reach a peak of 67 percent in 1984. Following the increased deposit requirement in 1985, IF contributions gradually declined. The low utilization level suggests that IF contributions were considered quite unattractive.

Overall, our results suggest a clear pecking order among different types of tax allowances. Fiscal depreciation shows the highest utilization level. This is an expected result given that only 30 percent of a postponed depreciation allowance can be recouped the following year, 30 percent of the remainder the year after, and so on. The deferred usage of untaxed reserves, on the other hand, could be recouped in full the succeeding year and was therefore not as costly to abstain from. An unutilized IF contribution could not be retrieved, since this contribution was based on annual income. However, the deposit requirement makes it reasonable to expect the IF contribution to be utilized last.

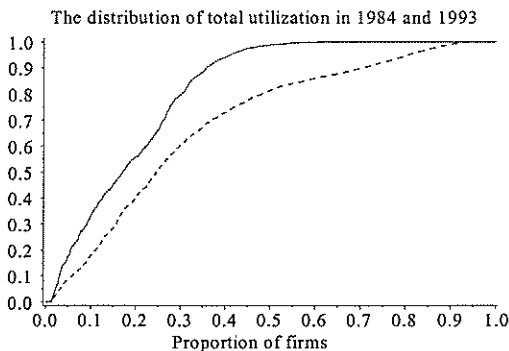


Figure 5. The dotted curve shows the distribution of the total utilization level in 1984 and the solid curve shows the distribution in 1993.

The distribution of the utilization level

Even though the annual average utilization level is quite low, a large number of firms did use all available means to reduce taxable income. In 1984 the median value for the total utilization level was 82 percent. Moreover, we find that 19 percent of the firms had a utilization level exceeding 95 percent this year. In the last year of the study, 1993, the median utilization level was as high as 99 percent, and as many as 59 percent of the firms used more than 95 percent of all tax allowances available. Figure 5 presents the distribution of the total utilization level in 1984 and in 1993.

The reductions in the various reserve options brought by the tax reform in 1991 therefore appear to have raised the utilization level.¹⁶ A comparison between the years before and after the tax reform also shows a significant increase in utilization. The median usage of tax allowances increased from 81 percent during 1979–88 to 97 percent during 1990–93.

The results presented in figure 5 tell us nothing about how *much* firms could increase their usage without becoming tax-exhausted. To clarify this point we present the distribution of the *adjusted utilization level*, that is, we measure the actual utilization relative to the utilization ceiling, as defined above. Figure 6 depicts the

¹⁶ This increase between 1984 and 1993 reflects an increase in the unweighted average utilization level from 69 to 81 percent.

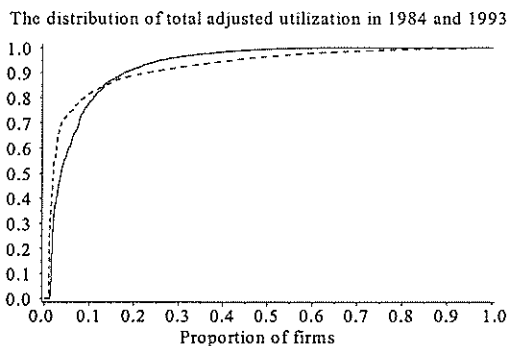


Figure 6. The dotted curve shows the distribution of the total adjusted utilization levels in 1984 and the solid curve shows the distribution in 1993.

distribution of the adjusted utilization levels for 1994 and 1993.

The utilization level increases significantly if we measure it relative to the utilization rate that exhausts tax payments. However, 44 percent of all firms in 1984 had an adjusted utilization level of less than 95 percent. In 1993, only one fourth of all firms used less than 95 percent of the adjusted utilization level.

Investment fund withdrawals

The investment fund system (IF) was first enacted in 1938 but the system did not gain any real importance until 1955, when the rules were changed. The objective was to stimulate firms to invest in times of low economic activity. Starting with the IF release in 1958, the system came to be the most important countercyclical instrument in the corporate tax legislation. It is generally believed that the IF system worked quite successfully throughout the 1960s.¹⁷ However, at the beginning of the 1970s the IF system started to lose its role as a countercyclical instrument. Permission to use the funds was given so frequently that it would be more accurate to regard the IF system as a permanent stimulus to investment.¹⁸ In 1980 the IF system was further changed: Both the contribution limit and the deposit requirement were raised, and it was now explicitly stated that the IF system

¹⁷ Taylor (1982).

¹⁸ Södersten (1989) and Auerbach et al. (1995).

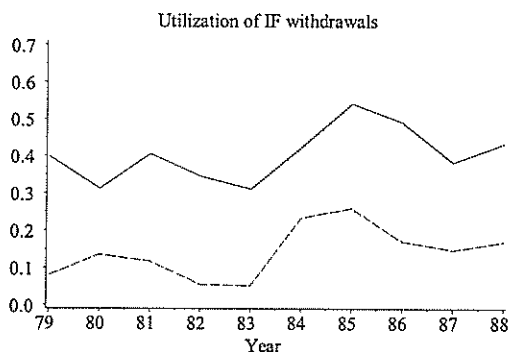


Figure 7. Withdrawals from the IF fund as a share of investments in buildings (top curve) and in machinery (bottom curve).

was to be used to stimulate investments even in non-recession years. In 1985 the deposit requirement was raised once again, in order to prevent firms from escaping the profit sharing tax (PST) by excessive IF contributions. As a first step towards phasing out the IF system, the deposit requirement was further raised in 1987. Figure 7 shows the average share of investments in buildings and in machinery financed by IF withdrawals between 1979 and 1988.¹⁹

During the first half of the 1980s, the investment funds were released for all kinds of investments (with some minor restrictions). In 1985, the use of the IF system for investments in machinery was restricted to certain regions. Firms investing in buildings were entitled to use their funds without restrictions until 1987. After this point releases only were made for investments in regions with high unemployment or for environmental improvements. The high numbers from 1987 onwards reflect the provision that allowed firms to freely use 30 percent of fund contributions made more than five years ago. The overall usage between 1979 and 1988 was 24 percent for investments in buildings and 9 percent for investments in machinery and equipment. In the peak year 1985, the average utilization level for IF withdrawals was 26 percent for investments in machinery and 54 percent for investments in buildings. The higher

¹⁹ The use of IF withdrawals did not reduce taxable income. We therefore include firms that did not pay taxes in this part of the analysis.

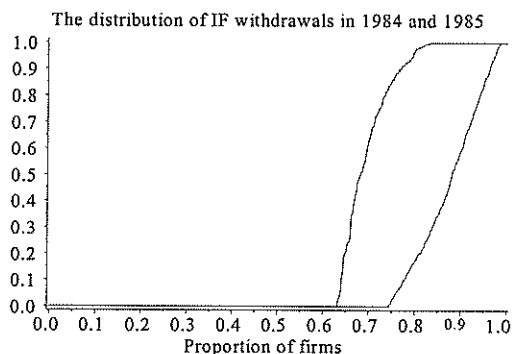


Figure 8. The left-hand curve shows the distribution for IF withdrawals for investment in buildings. The right-hand curve shows the cumulative distribution for IF withdrawals for investments in machinery.

usage for investments in buildings reflects the fact that the subsidy from IF releases was greater for these investments than for investments in machinery.

Figure 8 shows the distribution of the average use of IF withdrawals. The left-hand curve shows the usage for investment in buildings in 1985 and the right-hand curve shows the usage for investments in machinery in 1984.²⁰

From figure 8 it is clear that even in the years when the average IF withdrawals were relatively high, only a minority of firms financed all their investments by means of the IF system.

We have also made some calculations of how large a part of aggregate investments was financed by means of the IF system. 44 percent of aggregate investment in buildings was financed by IF withdrawals from 1979 to 1988. The corresponding figure for machinery was 14 percent. During the peak years of IF usage, 1985–87, IF withdrawals financed 56 and 17 percent of investment in buildings and machinery respectively.

The aim of the IF releases was to increase investment activity. If a firm only financed part of its investments by IF withdrawals, the releases may have worked as a subsidy for invest-

²⁰ We have chosen 1984 for investments in machinery because firms were entitled to use their funds without restrictions during this year. Before 1984 there was rivalry between temporary investment deductions for investments in machinery and IF withdrawals. Similar rivalry existed until 1985 for investments in buildings. See Forsling (1996) for further discussion.

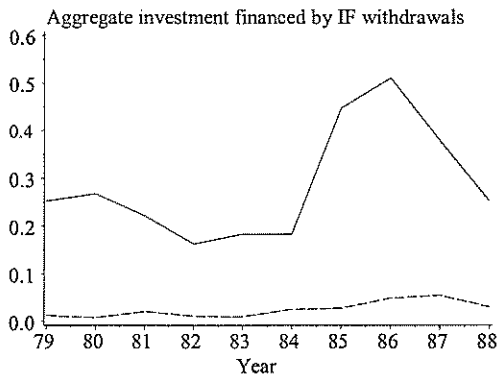


Figure 9. The top curve shows the share of aggregate investment in buildings that was financed more than 90 percent by IF withdrawals. The dotted line gives corresponding figures for investment in machinery.

ments that would have been made anyway. An interesting question is therefore how large a part of aggregate investments was financed mainly by IF withdrawals. Figure 9 shows the share of aggregate investment in buildings and machinery that was financed more than 90 percent by IF withdrawals.

We find that between 1979 and 1988 roughly 31 percent of the aggregate investment in buildings was financed more than 90 percent by funds from the IF system. For investments in machinery and equipment this figure was as low as 3 percent. A possible interpretation of these numbers is that at least 97 percent of aggregate investment in machinery and 69 percent of the investment in buildings was not financed on the margin by IF withdrawals. During 1985–87, 44 percent of aggregate investment in buildings was financed more than 90 percent by IF withdrawals. The corresponding figure for the aggregate investment in machinery was 4 percent.

V. Reasons for leaving tax allowances unexploited

It is not clear why tax-paying firms leave tax allowances unexploited. However, a few tentative explanations have been put forward, which originate in the uniform reporting convention used in Sweden. According to Swedish corporate tax legislation, the profit reported to the fis-

cal authorities has to coincide with the profit presented to the shareholders. This creates a conflict between minimizing tax payments and reporting high profits net of taxes. Corporate law also puts a legal restriction on the amount paid out in the form of dividends. A firm cannot pay dividends in excess of its after tax profits. Since tax allowances reduce reported profits, the firm can increase the amount it can pay in dividends by abstaining from tax allowances. The fact that a firm cannot distribute means in excess of its profit net of taxes implies that the use of tax allowances, H , is limited by

$$(1) \quad H \leq \pi - \frac{D}{1 - \tau}$$

where π is the corporate profit before tax allowances, D is dividends and τ denotes the corporate tax rate.²¹ A firm with a large profit can use more tax allowances and still send positive signals about its earnings potential, by reporting high profits or paying high dividends. If this restriction makes firms abstain from tax allowances, we expect firms with large profit margins, as defined by the right hand side of equation (1), to have higher utilization than firms with low profit margins. To shed some light on this hypothesis we divide the firms (observations) into quartiles based on their profit margin, normalized by the maximum deduction, and calculate the average utilization level for each industry and level of normalized profit margin (where Q1 is the quartile with the lowest normalized profit margin).²²

Table 2 shows that firms with high normalized profit margins generally have a higher utilization level than firms with low profit margins. This tendency is the same in all industries.

The next question is of course whether it is large dividend payments or low corporate profits that make firms abstain from tax allowances. We investigate this by looking at the components of equation (1). Table 3 presents the mean utilization for different dividend levels and profits. Firms are divided into quartiles

²¹ Given that the firm has no accumulated profits. The dividend from current operations must fulfill the following restriction: $D \leq (1 - \tau) [\pi - H]$.

²² In this section all observations have equal weight.

according to their profits (π). Further, firms are divided into four groups based on their dividend payments. Since the majority of all observations represent firms with zero dividend payments, these are put into one group, *D1*. The remaining observations are divided into three equally sized groups, where *D2* denotes the group of firms that have the lowest adjusted dividends. The firms' profits (π) and their adjusted dividend payments, $D/(1 - \tau)$, are normalized by the maximum deductions.

Table 3 indicates that underutilization is related to insufficient profitability. Firms in the top profit quartile show significantly higher utilization levels than firms in the lower profit classes. However, there is no clear evidence that firms with high dividend payments have a lower utilization level than other firms. Nevertheless, we can see slightly lower utilization levels among those firms in the second and fourth quartile (Q2, Q4) that have the highest dividend payments (*D4*).

It could be the case that firms paying high dividends have a tendency to abstain from tax allowances during recessions. We therefore examined how the average utilization level evolved over time. Our calculations suggest that firms that do not pay dividends have the lowest utilization level. However, among the firms that pay dividends, firms in the top dividend group (*D4*) have the lowest utilization, except for 1990 and 1993. This suggests that the influence of dividend payments is less when activity in the economy is high. Another interpretation is that the rivalry between dividend payments and tax allowances became less pronounced when the tax and appropriation rates were reduced during the 1990s.

In a theoretical contribution, Kanniainen and Södersten (1994) demonstrated that it can be rational for a firm to abstain from tax allowances if external financing is associated with positive side effects. The key assumption is that a firm adhering to uniform reporting and facing a binding dividend constraint cannot increase its use of tax allowances unless it simultaneously reduces its borrowing. Kanniainen-Södersten argue that the use of regular debt obtained through financial intermediaries is associated with non-tax benefits. Financial interme-

Table 2. Average utilization for different industry groups and profit margins

| Industry | Profit margin | | | |
|----------|---------------|------|------|------|
| | Q1 | Q2 | Q3 | Q4 |
| ISIC 2 | 0.44 | 0.66 | 0.81 | 0.77 |
| ISIC 3 | 0.48 | 0.74 | 0.83 | 0.85 |
| ISIC 5 | 0.60 | 0.75 | 0.80 | 0.76 |
| ISIC 6 | 0.55 | 0.74 | 0.82 | 0.82 |
| ISIC 7 | 0.38 | 0.63 | 0.83 | 0.82 |
| ISIC 8 | 0.53 | 0.71 | 0.80 | 0.80 |

ISIC is the 1968 version of the International Standard Classifications of All Economic Activities. ISIC 2 denotes mining and quarrying, 3 manufacturing, 5 construction, 6 retail and trade, wholesales, hotels and restaurants, 7 transportation and Communication, and 8 business services.

Table 3. Average utilization for different levels of dividend payments and profit margin

| $D/(1-\tau)$ | Profit before taxes | | | |
|--------------|---------------------|------|------|------|
| | Q1 | Q2 | Q3 | Q4 |
| D1 | 0.48 | 0.72 | 0.80 | 0.81 |
| D2 | 0.64 | 0.81 | 0.87 | 0.90 |
| D3 | 0.67 | 0.83 | 0.87 | 0.89 |
| D4 | 0.67 | 0.78 | 0.90 | 0.82 |

diaries monitor the firm and reduce various managerial inefficiencies. If external financing has this kind of positive side effect, it might be rational for a firm to substitute interest-bearing debt for tax allowances. It can be argued that firms noted on the stock exchange suffer most from these agency problems. Closely held firms are in less need of monitoring from the capital market and are therefore expected to utilize tax allowances more than firms noted on the stock exchanges (*Stock*). In table 4 we present annual average utilization levels for different owner categories.

There are no clear differences in utilization levels between different owner categories. However, firms noted on the stock exchanges have slightly lower utilization levels than closely held firms after the 1991 tax reform. Before the tax reform, these firms do not seem to have abstained more from tax allowances than firms with other kinds of ownership.²³

²³ Table 3 is based on the years 1985 to 1993, because ownership information is limited to this time period.

Table 4. Annual utilization in different owner categories

| Year | Government | Cooperative | Stock | Foreign | Others |
|------|------------|-------------|-------|---------|--------|
| 1985 | 0.66 | 0.75 | 0.78 | 0.72 | 0.78 |
| 1986 | 0.69 | 0.68 | 0.78 | 0.73 | 0.78 |
| 1987 | 0.67 | 0.70 | 0.77 | 0.72 | 0.76 |
| 1988 | 0.66 | 0.68 | 0.78 | 0.71 | 0.75 |
| 1989 | 0.81 | 0.78 | 0.88 | 0.83 | 0.84 |
| 1990 | 0.81 | 0.80 | 0.89 | 0.82 | 0.82 |
| 1991 | 0.65 | 0.78 | 0.60 | 0.74 | 0.76 |
| 1992 | 0.71 | 0.68 | 0.65 | 0.78 | 0.79 |
| 1993 | 0.73 | 0.75 | 0.74 | 0.85 | 0.82 |

It is often suggested that agency problems are less severe among small firms. The detailed information needed to calculate the utilization variables has limited this study to firms with more than 50 employees. However, in order to investigate whether or not there exist differences in the average utilization level due to size, we have made some calculations among smaller firms.²⁴ Our results do not suggest that these firms have higher utilization levels than firms with more than 50 employees. If anything, firms with less than fifty employees tend to have lower utilization levels.

VI. Conclusions

This study has examined in some detail the use of tax allowances by Swedish corporate firms. The results demonstrate widespread underutilization, which is not limited to tax-exhausted firms. Even though tax payments could be reduced by appropriations to untaxed reserves, many companies failed to take advantage of these possibilities. The generous range of tax allowances granted by the government has created an excess supply of means of reducing taxable income.

Our estimates suggest a pecking order among different tax allowances. First of all, firms tend to take advantage of fiscal depreciation, and thereafter, of contributions to untaxed reserves.

²⁴ Firms with less than 50 employees do not always specify the value of construction in progress and/or real estate held for resale. This tends to overstate the utilization level among these firms.

Firms appear to have been reluctant to contribute profits to investment funds, especially after 1984, when the deposit requirement was raised above the statutory corporate tax rate. Only a minor part of firms' investments in machinery has been financed by IF withdrawals. Firms investing in buildings used IF withdrawals to a greater extent. The share of aggregate investment in buildings that was financed more than 90 percent by IF withdrawals was roughly 44 percent in 1985–87.

The base-broadening that followed the 1991 tax reform increased the proportion of firms that fully utilized all available tax allowances. The share of firms that used more than 95 percent of all available tax allowances rose sharply between 1984 and 1993. Consequently, and somewhat paradoxically, given the aims of the tax reform, the new tax rules may have made the corporate sector more sensitive to taxation, since more firms now may be expected to pay taxes on their marginal income. To summarize, our findings indicate that underutilization is largely due to insufficient profitability. Dividend payments do not appear to be the main reason for firms to abstain from tax allowances. A substantial number of firms that do not pay dividends have not used all the tax allowances granted by the government.

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Table 1A. Number of observations in the data

| Year | Original data base | Sample selection | Tax-paying firms |
|------|--------------------|------------------|------------------|
| 79 | 8356 | 2559 | 2338 |
| 80 | 8451 | 2739 | 2462 |
| 81 | 8329 | 2741 | 2431 |
| 82 | 8504 | 2712 | 2415 |
| 83 | 8824 | 2568 | 2276 |
| 84 | 8708 | 2672 | 2415 |
| 85 | 9007 | 2642 | 2018 |
| 86 | 8974 | 2686 | 2012 |
| 87 | 9500 | 2651 | 1958 |
| 88 | 9772 | 2603 | 1942 |
| 89 | 11472 | 2554 | 1896 |
| 90 | 11255 | 2713 | 1877 |
| 91 | 11601 | 2752 | 1836 |
| 92 | 11032 | 2782 | 1798 |
| 93 | 10983 | 2633 | 1695 |

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Appendix

Data

The data used in this analysis is taken from the database *Enterprises (Finansstatistiken)* and covers the years 1979–1993. The information was collected by Statistics Sweden (SCB) and includes companies, i.e. legal entities, located in Sweden. The database consists of the information reported in the annual accounts from corporations and economic associations. The material excludes financial companies, firms within agriculture sector (ISIC 1), firms in ISIC 8 other than those in ISIC 832, and firms in ISIC 9 other than those in ISIC 95. Furthermore, firms owned by the local government are excluded. ISIC is the 1968 version of the International Standard Classifications of All Economic Activities.

Allowing for the exceptions described above, the data set includes all firms with more than 50 employees. In addition, all firms in the mining and manufacturing sectors with more than 20 employees are included. The database also covers a stratified sample of small firms.²⁵ The stratified sample of small firms and the fact that some firms disappear from the material due to bankruptcies and organizational changes im-

plies that many firms contribute incomplete time series. In order to determine firms' conglomerate identity, the base has been merged with a part of SCB's corporate group register. This information covers the years 1984–93.

Sample selection

The study concerns corporate firms with more than 50 employees. The reason for this is that the detailed information needed to calculate the utilization variables is not always available for smaller firms. We have excluded firms that have undergone large organizational changes and firms classified by SCB as non-normal. The latter category includes for example holding companies without any real business activity. Further, firms with a fiscal year not equal to 12 months are eliminated in order to facilitate the calculation of the utilization variables. Finally, corporations in the electricity, gas and water sector (ISIC 4) and the social and personal service sector (ISIC 9) are omitted. Altogether, this procedure reduces the number of observations by approximately 72 percent. The great part of this reduction is due to the size of the firms. The firms included in the sample contributed more than 79 percent of the aggregate value-added in the database. Table 1A presents the annual number of firms.

²⁵ For more information about *Finansstatistiken*, see the annual reports on *Enterprises by Statistics Sweden*.