Business Taxation, Rates of Return and the Allocation Process

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1 Introduction

The topic of business taxation and firm behavior has been covered extensively in literature over the years. The problems have been explored in many directions. The diversity of the subject matter is mirrored in this volume. The term business taxation is understood here in a broad sense to include the taxation of capital income by way of the corporation income tax, the taxation of shareholders' dividends and capital gains, as well as the taxation or subsidization of the firms' wage costs.

An important aim of this conference was to frame a set of relevant problems from the point of view of important policy issues. Paramount among those discussed was the allocation and efficiency effects of traditional schemes of business taxation. Several approaches to this problem appear in this volume. Four papers, ranging from the Feldstein, Green and Sheshinski general equilibrium analysis on a high level of abstraction to Rolf Rundfelt's down to earth calculations of effective rates of return on the Swedish stock market, represent the time-honored approach of analyzing the rate of return effects of existing (and possible) tax structures. Contributions by McLure, Lodin, and Carlson and Hufbauer explore efficiency aspects from the point of view of different institutional arrangements.

A novel "experimental" third approach is outlined in the paper by Eliasson and Lindberg. Here tax induced effects on allocation, stability and economic growth are studied in an explicit micro market context. Quantification is made possible through the use of the IUI micro-to-macro simulation model of a Swedish-like economy. These problems link directly to those of Ysander, who brings up important

and so far largely overlooked questions of how various taxation regimes affect the stability properties of an economic system.

Policy issues of different kinds are raised in the papers by Bishop and Haveman, and Holmlund. These contributions provide theoretical and empirical appraisals of recent schemes to stabilize and promote employment by subsidizing the firms' wage costs.

The rapid growth of international trade during the post-war period and the emerging importance of the multinational corporation and an international credit market in linking the industrialized economies together have made the international side of business taxation important both as a real economic factor and as a matter of economic and political debate. This development is indeed reflected in the papers presented in this conference volume. Our brief review in the following sections of this introduction makes it quite clear that an international theme runs through most of the papers. As a consequence we have chosen to pay special attention to a particular aspect of the international side of business taxation, namely the importance of international markets in determining the rate of return requirement for domestic investments.

2 Taxation and the rate of return

Basic in received theory is the notion that private investment decisions are taken so as to equate the marginal rates of return for alternative uses of capital and that the supply of savings to the economy may depend on the rate of return received by savers. Hence, a large part of the literature on capital income taxation has been devoted to the rate of return effects of taxation. Four papers directly address this issue—how do tax wedges affect the cost of capital and how is this effect transmitted through the investment and financing decisions to the owners of equity and debt?

Feldstein, Green and Sheshinski (III:4) restrict their general equilibrium analysis to an economy that grows at an exogenously given fixed rate and with a fixed savings rate—implying a constant marginal productivity of capital. All business activity is assumed to take on a corporate form, using debt and equity as financial instruments. Assuming the costs to firms of debt and equity financing to be increasing functions of the debt-equity ratio, there is in this model world a unique debt-equity ratio minimizing the cost of capital. They introduce a corporation income tax, a personal income tax and a preferential tax treatment of capital gains. The corporate income tax of course reduces the net yield on equity. Less obviously, however, is that the net rate of interest received by bondholders falls.

The implication is that the burden of the corporation income tax

will be borne by both debt and equity investors. This tax structure, furthermore, is shown to substantially distort the financial behavior of firms, inducing them to substitute debt for equity and to reduce the dividend payout rate.

The F, G & S (III:4) study, albeit based on several restrictive assumptions, provides a good starting point for further analysis. The authors touch upon the possibility of introducing a variable (interest elastic) savings rate and a non-corporate sector. The corporation tax within such a framework is expected to reduce net yields on both equity and debt and to distort intersectoral as well as intertemporal resource allocation.

Bergström and Södersten (III:5) start from a somewhat different end. They assume market yields on equity and debt to be determined exogenously in world capital markets open to firms—but not to individual investors. For a small, open economy with the particular, regulatory set up of Sweden this assumption is appropriate.

Changes in the corporation tax rate, therefore, do not affect these exogenous market returns. After tax returns to owners of equity and debt, however, are reduced by the personal income tax. Individual investors by assumption have no alternatives, national or international, to avoid a general personal income tax that applies to all sources of household income.

Some effects of double taxation of corporate source income on the capital cost and the tax differentials between the corporate and non-corporate sectors of the economy implied are analyzed by Bergström and Södersten (III:5). They choose to derive the tax burden on corporate source income directly from the cost of capital of the firm, defined as the lowest pre-tax rate of return on new investment that maximizes stockholders' wealth. The total effective marginal tax rate on capital income from the corporate sector is determined simply by comparing stockholders' after tax yield on equity investment with the firm's cost of capital.

The Bergström and Södersten analysis provides a framwork for appreciating the allocation effects of the classical system of double taxation. Firstly, the tax differential between the corporate and non-corporate sectors of the economy turns out to be a somewhat ambiguous concept, varying in sign and size according to the income levels of the "representative" shareholder. Secondly, it is clear that the present preferential tax treatment of capital gains makes it considerably more expensive—on the average—to use new share capital rather than retained earnings as a source of finance.

A common feature of earlier attempts to determine the differential tax burden on corporate income, is the *ad hoc* assumption that retention of corporate profits gives rise to capital gains on a one-for-

one basis. By this assumption—appearing, i.e. in the F, G & S (III:4) paper in this volume—the tax burden on retained earnings has been identified with the tax on capital gains.

B & S (III:5), however, demonstrate that this one-to-one assumption is not tenable in view of the preferential tax treatment of capital gains. In fact, it may be quite rational for a management to undertake investments that produce less than a dollar's worth of capital gains for the marginal dollar of retention.

These theoretical conclusions by B & S are supported by the empirical findings in Rundfelt's paper (IV:10). Rundfelt shows that the market value of equity for major Swedish engineering companies quoted on the Swedish stock exchange corresponds to roughly one half of its replacement value in the mid 1970's. This figure may be compared to the "marginal rate of substitution of dividends for capital gains" as derived by B & S (III:5). Given a marginal individual income tax rate of 60% and a capital gains tax rate of 20%—not unreasonable for Sweden—plow back would be worth-while from the point of view of the owners of equity even if the marginal dollar of retention produced as little as 50 cents worth of capital gains. This is one way of demonstrating the static misallocation effects inherent in the business taxation systems of most industrialized countries. The dynamic side of this allocation effect including as well the total growth effect of keeping labor locked up in inefficient low profit plants as long as current costs are covered will be discussed below in the context of Eliasson's and Lindberg's (IV:11) paper.

Market and replacement values in Rundfelt's calculations appear to have developed in Sweden along roughly parallel paths from the beginning of the 1950's till the mid 1960's. From this time, however, replacement values have grown at a considerably faster rate than market values. Whether changes in the tax rates on dividend income and capital gains—which are the crucial parameters in the B & S (III:5) analysis—over this period have contributed to this development remains an open question. Rundfelt rather emphasizes the combined effect of inflation and the predominantly nominal individual and corporate tax systems when explaining the poor performance of the stock market in Sweden during the 1970's. We will return to this issue below.

Inflation and capital cost is also the theme of the second paper by Bergström and Södersten (III:7). They assume, as before, exogenously given market yields on equity and debt but add the assumption that market yields in real terms are invariant of inflation. The conclusion is that inflation affects the real cost of capital through several counteracting factors. Capital cost is (1) raised because depreciation allowances are based on historical costs and because shareholders are

taxed on nominal gains on corporate stock, and (2) lowered when the firm is allowed to deduct the nominal cost of debt and when shareholders are fully taxed for the nominal rate of return on alternative financial investments. The net outcome is an empirical question. For reasonable assumptions, total real capital cost will fall as a result of inflation.

It is interesting to note that Rundfelt (IV:10) comes to the opposite conclusion, namely that capital cost will rise as a result of inflation. Rundfelt's discussion is, for one thing, limited to the cost of financing through equity capital. Secondly, he introduces the crucial assumption that the *after tax* real rate of return required by the shareholders remains unaffected by inflation (and taxation). Bergström and Södersten, on the other hand, assume the *market* yield on equity to be constant in real terms. The combined effect of inflation and the nominal system of individual income taxation is then to lower real after tax returns to equity. Which of these alternative assumptions—producing different results as to the effects of inflation on capital cost—is the most reasonable one is of course an empirical question. In section 4 of this introduction, we shall deal explicitly with this critical issue.

Several of the papers appearing in this volume present ways of eliminating the distorting effects on resource allocation brought about by inflation—via the tax system—and by the double taxation of corporate source income. Bergström and Södersten (III:7) point out that different norms can be used to eliminate such effects. Governments in many countries, e.g. Sweden, consciously intervene in the market resource allocation process to promote industrial investment in particular by various schemes of accelerating depreciation allowances. B & S begin their analysis from a capital cost norm calculated at zero inflation. If investment incentives are to be unaffected at the zero inflation standard both the corporate and the personal tax systems would have to be changed. On the corporate taxation side, the book value on which depreciation charges are calculated must be adjusted for price changes and the deductability of interest costs restricted to the real rate of interest. For personal taxation, stockholders must be taxed only for the real rate of return on alternative investments and for real capital gains on corporate stock. In short, all the stock and flow accounts on the corporate and the personal side would have to be adjusted for inflation. In return, capital costs and investments would still be a function of the tax system, but it would be independent of the rate of inflation.

The efficiency problems raised by Feldstein et al (III:4) and B & S (III:5) with regard to the double taxation of corporate source income provide the starting point for the paper by McLure (II:2) on tax

integration. Writing against the background of current US debate McLure presents the case for integrating the personal and corporate income taxes to obtain equity and economic neutrality of taxation. He warns, though, that there is little direct evidence on just how integration will affect vital issues like capital accumulation, the financial policies of firms and the behavior of financial investors of various kinds.

Full integration, under which corporate source income would be taxed only to the shareholders, is pointed out to suffer from severe practical difficulties. Some of its advantages could be realized through dividend relief, McLure argues. At the firm level, dividend relief can be accomplished by granting a deduction for dividends paid or through the use of a lower corporate tax rate on distributed earnings. At the shareholder level, there is the alternative possibility of allowing a dividend-received credit for corporate taxes imputed to have been paid on shareholders' behalf.

In his appraisal of the feasibility of integration McLure pays particular interest to the problems posed by tax preferences, i.e. provisions reducing the effective rate of tax on the economic income of firms below the statutory rate. At the heart of the matter is the question whether tax preferences should be passed through to the shareholders or be nullified when preference income is distributed. The logic of full integration according to McLure, would seem to require that corporate shareholders receive the same benefit from the preferences as they could realize on the same income obtained through e.g. a partnership. It appears, however, that the countries that currently provide dividend relief, largely for administrative reasons, rather have chosen to nullify tax preferences for distributed earnings.

3 Tax discrimination and differentiation—international aspects

Most industrialized countries have adopted very similar taxation schemes for business income. This is an important notation when we are interested in the overall functioning of the industrialized economies. There is, however, enough country to country variations between the taxation schemes, to allow observation of differential effects between countries. From this we can both learn how to improve the systems and gather more empirical knowledge about the overall tax effects. e.g. on investment. Not least important are the political and equity issues raised by different tax schemes in a world economy that is now very integrated in the investment, production and financial dimensions.

As noted by Lodin (II:3) it is very important to spell out one's

concern before starting the investigation. One important question is whether we are worried about the real (investment, trade, production) effects of the tax regimes or whether the "fairness" problem is the one discussed. The equitable distribution of profits within, say a multinational corporation, is by definition an arbitrary thing. One may observe the actual distribution via open rearrangements in financial structure and in cash flows. The distribution is, however, also affected by the actual internal price system used. What is fair here and what is rational from a management point of view is quite arbitrary and it depends on the situation of the firm. Hence these systems often differ between firms (Eliasson, 1976a) and there is no objective way to assess the effects on the distribution of profits.

On the whole, and leaving aside that particular and odd tax rules in some countries are often mirrored in the company accounts, Lodin finds little cause for concern. Tax planning seems to have influenced the pattern of financial flows with international companies to a limited extent only.

Even though common sense argument coupled with reported experience suggest that more important real effects on investment and production should be even smaller, the problem is still there to be investigated. Heavy and/or discriminatory taxation may affect the investment decision. However, and this would be one argument, the investment decision will not be altered to secure an uncertain, a minor and perhaps temporary tax advantage. This is at least the results often reported from studies on the effects of regional investment incentives.

The effects of taxation upon international resource allocation are discussed also in McLure's (II:2) paper on tax integration. McLure argues that in an international setting, tax integration, for instance dividend relief, must be based on the rate of tax in the country of residence of the corporation paying dividends across national borders. This is so in order not to distort the international allocation of capital. This result is achieved automatically when dividend relief is accomplished at the corporation level. Using the imputation credit system, i.e. placing the reduction of the tax burden on dividends at the shareholder level, is more complicated internationally. In order not to affect investors' decisions on where to invest, gross up and credit must then be based on the source country's tax rate. If it is not, relief would be given for taxes not paid or be less than taxes paid; hence recource allocation would be affected. This is actually one theme of Carlson and Hufbauer (II:1).

Carlson and Hufbauer (II:1) commence their paper by explaining how nations have come to adopt border adjustment rules to address both the threat of international double taxation and of fiscal avoid-

ance. They begin by bringing the problems associated with the border adjustment rules currently in use to the surface. They then proceed to discuss the formula apportionment principle by which a portion of a multinational corporation's total taxable income is assigned to a particular jurisdiction (nation, etc.) based on some measure of the corporation's activity in that particular jurisdiction. On balance they come out strongly critical of the formula apportionment method both on grounds of fairness and the real effects. Formula apportionment may erode the tax revenues of a nonformula tax credit country, Carlson and Hufbauer argue, and may force other countries to retaliate by adopting the formula scheme.

The real effects of formula taxation may be substantial. Competing firms in the same industry may be subject to quite different rates of taxation on their income, depending e.g. on the position of their sister firms located in other jurisdictions. Carlson and Hufbauer also note that formula appointment interferes with the disciplinary mechanism inherent in Tiebout's (1956) famous principle, i. e. firms and individuals can vote with their feet vis-à-vis public bodies and leave the jurisdictions if they are better structured to their preferences elsewhere. A corporation established in a formula jurisdiction may find, e.g., as it acquires affiliates in other jurisdictions, that its tax liability in the formula jurisdiction increases, although income earned there is unchanged.

From an equitability point of view the effects of formula apportionment are not in conformance with principles of fairness generally applied in the context of taxation. One can argue, however, (Eliasson, 1972) along traditional, theoretical lines that the formula apportionment principle, albeit unfair, may be an efficient and beneficial device for both the national economy and the global economy, since it helps to drive inefficient firms out of business. Furthermore, the idea of formula taxation in fact implies that tax assessment and taxation of the entire multinational corporation is the task of an international institution, authorized by the national tax bodies, leaving the problem of dividing up the total tax cake to the participating countries and the multinational company alone.

4 The rate of return requirement—an international pivot variable?

The choice of discount rate for the investment decision is crucial to the theoretical and empirical results on business behavior in general and responses to taxation in particular. Where and how is this rate of return requirement determined? To what extent does the discount rate represent an internationally determined reference criterion interfering with national ambitions to redistribute income, through the

dependence of investment decisions on the after tax rate of return?

The papers which we reviewed in section 2, differ in their assumptions on this issue. The framework of a closed, all corporate economy with a fixed supply of savings, set up by Feldstein-Green-Sheshinski (III:4), precludes any adjustments in the volume and composition of real investment on the part of the owners of capital in response to lowered after tax rates of return. In our terminology, this may be phrased as an assumption that the owners of capital—for lack of alternatives—react to taxation by reducing their (after tax) rate of return requirements enough to keep the rate of real investment unchanged.

In Bergström and Södersten (III:5), on the other hand, market rates of return on equity and debt are exogenous and independent of the domestic corporate tax rate. The effect of corporate taxation, hence, is to raise before tax rate of return requirements—the cost of capital—on equity financed real investment. B & S, furthermore, assume that household investors (as in Sweden) have no alternatives, national or international, to avoid the individual income tax. Though reducing the net return on corporate shareholdings, the individual income tax reduces the after tax returns on alternative investments as well, and therefore the after tax required rate of return. With unchanged tax differentials between dividends and capital gains, changes in the individual income tax then have no effect upon the firm's before tax cost of capital.

A third set of assumptions on the determinants of the rate of return requirements appears in Rundfelt's paper (IV:10). He emphasizes that households invest in a wide range of assets including as well real estate, consumer durables, art and antiques. It is thus reasonable, Rundfelt argues, to assume a given after tax rate of return requirement. The firm's before tax cost of capital is then inflated by corporate as well as personal income taxation.

How to choose between these last two alternative assumptions on the relationship between taxation and rate of return requirements is of course an empirical question.

For a small open economy, like Sweden, much may be said for the assumption that after tax rate of return requirements are largely unrelated to changes in the corporation income tax. There are several reasons for this. Even though capital flows across Swedish borders are subject to formal controls, current practice of the currency authorities is such that foreign direct investments by Swedish firms may be carried out practically unhindered. Firms, furthermore, are allowed to repatriate profits in foreign operations with ownership shares exceeding 25%, without being taxed. Hence, it is reasonable to assume that firms do compare the rate of return after corporation

income tax on new investment in Sweden with the rate of return on the same investment if carried out abroad.

Admittedly, the real and financial flows that are affected by international direct investment are quite small relative to the total Swedish economy. The point is, however, that Swedish firms operating under international competition must require approximately the same rate of return on their investment as their competitors in order to be able to keep on investing and growing on par with their competitors in the long run.

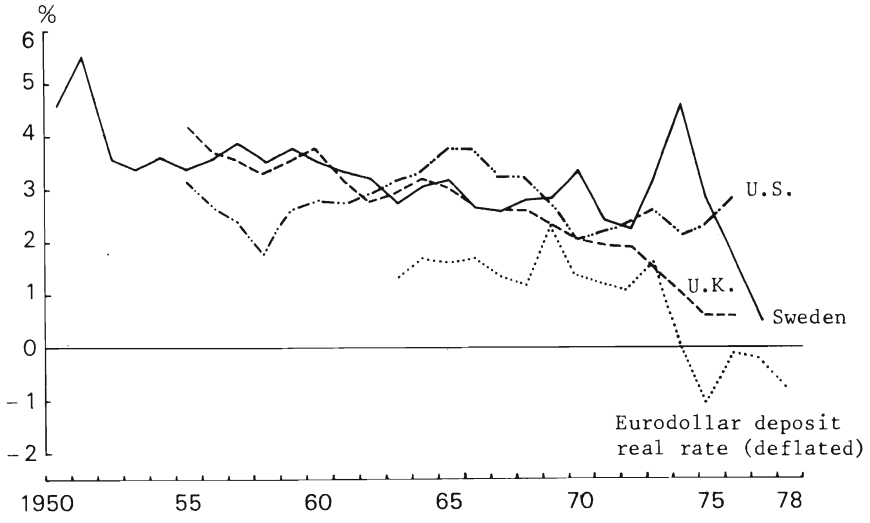
A second important factor, forcing an international rate of return standard on Swedish firms has to do with the increased financial integration of the Swedish economy with the rest of the world. Reliance upon long term foreign borrowing has increased. Interest sensitive short term credit transactions (largely associated with the financing of trade) have grown rapidly throughout the postwar period. Through the postwar development of an international credit system, the handling of credit transactions in massive volumes have been made extremely efficient. This makes the credit markets of most industrialized countries part of the international credit system, rather than individual, isolated markets, as many policy authorities would like them to be.

The combined effect of adjusting the domestic interest rate to internationally determined costs of finance in general and of the possibility to choose alternative—foreign or domestic—locations for real investment in particular, provides strong arguments for the view that after tax rate of return requirements of Swedish firms are largely unrelated to variations in the Swedish corporation tax.

Empirical verification of the notion of an internationally determined rate of return reference obviously is difficult. The usual approach to this issue has been to compare *ex post* profitability between industries and between individual firms in different countries, though there are several problems involved in this. For one thing, an *ex ante* rate of return concept is needed, while actual data on profitability refer to the outcome of past performance. Secondly, there is the problem of measurement. Valuation standards and tax motivated accounting practices vary between countries in a way that complicates comparison.

Figure 1 presents some results of recent comparative work on profitability performance in the US, UK and Sweden. With due reservations for the difficulties of principle and measurement involved, there is a clear indication of a common trend in the development of profitability. If the rate of return on capital has in fact followed a downward trend for the last 20 years, it has been a common feature

Figure 1. Real rates of return on total assets before tax in US, UK and Swedish manufacturing



Source: Eliasson (1972 and 1976 b) and Hill (1979), and later updatings within IUI.

among the industrialized nations.[1]

As pointed out, Rundfelt (IV:10) bases his work on the strong assumption that the household's after tax yield on corporate equities is given independently of the tax system. The before tax cost of equity capital in his analysis is then inflated to allow for both corporate and personal income taxation.

Rundfelt's assumption would seem to require the existence of a sector of the economy where the return on capital accrues to the investors untouched by taxation and where investment opportunities are completely elastic in supply. Alternatively, one might think of the households as responding to lower prospective, after tax yields by increasing consumption.

Actual tax regimes seem to cluster somewhere between Rundfelt's extreme position which actually implies that capital income cannot be taxed at all and the position held by Bergström and Södersten, namely that the (nominal) return on alternative investments is fully taxed as income.

The Swedish tax system provides a good illustration to the difficulties that may be involved when trying to generalize about the tax treatment of the return on alternative investments. When investing in

[1] This downward trend is, however, not empirically established beyond doubt. See for instance Nordhaus (1974), Feldstein and Summers (1978), and Bergström and Södersten (1979).

assets other than corporate equity, households are faced with a wide variety of effective tax rates ranging from full taxation of nominal rates of return to no taxation at all. The spread of effective tax rates, furthermore, has increased dramatically with the surge of inflation during the 1970's reflecting the existing mix of nominal and real rules of taxation.

In summing up, it seems reasonable to conclude that the after tax rate of return requirements face by firms in a small open economy like Sweden are invariant with respect to changes in the domestic corporation income tax. By way of foreign direct investment and the international credit system the international rate of return reference steps right into domestic investment decisions. It moves investments throughout the world economy (not only the small fraction invested by international firms) in accordance with a similarly determined standard and so tends to equalize real rates of return across countries as well (cf Figure 1). It also forces the domestic interest spectrum closer to the international one, and this is probably what has forced many European countries to abandon immediate postwar "low interest policies" during the 60's, parallel to the development of an international credit system.

The role played by household taxation for the before tax cost of capital is harder to appreciate. The broad range of alternatives to investment in corporate equities with varying tax treatment available to the household implies, on the one hand, that the close link between income taxation and the required after tax yield on equities—as assumed by B & S—is relaxed.[2] On the other hand, it would certainly be going too far to overlook completely the existence of such a link by assuming the after tax required yield to be given independently of personal—as well as corporate—income taxation.

5 Taxes on and subsidies of wage costs

Profitability is a critical variable in the growth process of a firm. Capital costs and prospective returns are matched in the investment decision and profits appear again as a flow of financing. However, before that, profits can be broken down into components among which wages play a crucial role. Wages are nor independent of the investment decision in the long term, neither is the investment decision in the short term independent of wages and various taxes that apply to wages.

[2] While constituting a reasonable norm of comparison for the high level of abstraction chosen for their analysis, Bergström and Södersten point out that this assumption obviously may be questioned, bearing in mind, e.g., that capital gains on alternative investments open to households often receive a preferential tax treatment.

With the rising ambitions of economic policy during the 1970's and the demands for financing public setor growth the tools of public policy have been increasingly more diversified. The process of diversification has encompassed, as well, the area of business taxation. Going beyond traditional endeavors to promote capital formation by various schemes of investment incentives different forms of negative payroll tax arrangements by way of subsidizing wage costs have been used to stabilize and promote employment.

Payroll taxes in various shapes have been used extensively and for a long time in many countries to curtail private demand to "finance" growth of the public sector. Relying upon the notion of an inelastic supply of labor, taxes on the wage bill are believed—at least in the long run—not to affect total labor costs. That total labor costs to the firms remain unaffected, implies, of course, that the burden—or incidence—of the payroll tax is on the wage earners. No effects on employment and profits would then be expected in the long term.

Fairly dramatic increases in unemployment have taken place during the past decade throughout most of the industrialized market economies. These practical experiences, together with persistent and sometimes aggravated inflationary problems have occurred simultaneously with new developments in the theory of inflation and unemployment. The new theoretical results, corroborated by numerous econometric tests, have—*inter alia*—implied a rejection of the naive Phillips curve hypothesis. The mainstream view in the late 70's considers the long run Phillips curve to be vertical—or at least much steeper than the short run relationship.

These developments in theory and practice have produced increased scepticism against traditional demand management programs and caused awakened interest in selective employment policies. The persistence of significant sectoral unemployment differences—among regions or demographic groups—have reinforced this interest. Several Western governments have undertaken various programs of employment subsidization in recent years. Among the schemes considered are *marginal* employment subsidies, where subsidies are paid for increases in employment only. Most of the programs in operation are temporary in nature, introduced as contracyclical devices. There exist, however, also permanent schemes, e.g. the Swedish regional employment premium. They all represent attempts to find means to reduce employment without increasing inflation.

In this volume Bertil Holmlund (III:8) examines the effects of marginal employment subsidies in a partial microeconomic setting. The question is how the recruiting behavior of a profit maximizing firm is affected over time when adjustment costs with respect to labor

are assumed. The basic message is that a rising subsidy leads to a higher equilibrium level of employment regardless of whether the firm is on a growing or a contractive path. Some characteristic institutional details of subsidy programs are studied as well, including in particular the effects of subsidy thresholds.

Bishop and Haveman (IV:9) in their study of targeted wage subsidies for the US economy, commence by examining the rationale for such policies. Two aspects are emphasized: The subsidy of production costs may be passed on to consumers in lower prices and this temporary reduction in inflation may lower subsequent rounds of wage increases, thus curtailing long run price development. The second component stressed by Bishop and Haveman is the possibility to concentrate employment stimulus to groups of workers in relatively elastic supply.

The empirical part of the Bishop-Haveman contribution deals with a particular wage subsidy scheme for the US economy, namely the New Jobs Tax Credit (NJTC). By way of time series analysis the authors examine the assumptions that this scheme stimulates employment, decreases hours worked per week and reduces product prices for the construction, retailing and wholesale industries.

By reducing labor costs at the margin, price pressures will be reduced and the temporary reduction in inflation may lower the next round of wage increases. Furthermore, a targeted subsidy confined to particular types of labor might be used to stimulate employment for workers that are in relatively elastic supply. Such targeting would increase the total supply of factors of production and therefore potential GNP.

The US NJTC-scheme from 1977 offered a tax credit of 50% of the first $ 200 of wages per employee for increases in employment of more than 2% over the previous year.

A priori expectations were that such credits should stimulate employment, decrease hours worked per week and reduce product prices of the subsidized industries. The time series analysis of the construction, retailing and wholesailing industries contained in the final section of the paper strongly supports these hypotheses. The results of Bishop and Haveman suggest that the NJTC was responsible for between 150,000–670,000 of the more than one million increase in employment that occurred between mid-1977 and mid-1978 in the construction and retailing industries. Similar analyses indicate that by June 1978, NJTC had produced roughly a 1 percentage point reduction in the margin between retail and wholesale prices of commodities.

6 Economic systems stability and taxation

The built-in stabilizing effects of public budgets have been treated extensively in literature. The possible destabilizing effects of taxes and subsidies in individual markets have received practically no attention. To some extent lack of suitable analytical tools is the reason. The strong tendency towards higher taxing ambitions and fast growing public sectors throughout the industrialized world has made the actual policy problems acute. A new economic situation has accentuated the need for better and more relevant theory.

Ysander (III:6) approaches these problems through a single market analysis. He observes that practically all literature on the effects of taxation hinges on the implicit assumption that rules of taxation are determined once and for all, while many of the important problems associated with taxes occur because the rules are changed frequently or because factors like inflation change the economic content of the tax rules in unpredictable ways.

The starting-point for Ysander's argument is that stability problems have gradually taken on serious proportions in the real world around us. This hurts the predictive power of received theory.

The common approach to systems stability analysis in literature has been in the Walrasian-Arrow-Hahn tradition. A Walrasian economy has a rubber band quality when forced to deviate from its equilibrium (fix) point. The model economy is assumed to be such that it returns to this same equilibrium point without moving the point in the process. Alternatively the analysis consists in ascertaining the conditions under which this same result occurs. Most models of the Walrasian type specify market price movements as functions of excess demand. Stability or convergence back to the equilibrium fix point, requires that agents each point in time accept prevailing disequilibrium prices as if they are equilibrium prices or believe them to be. A second requirement is that the adjustment step size be small enough not to generate excessive overshooting of the equilibrium point.

Third, some links across markets are needed to ensure that the adjustment (convergence) process in one market does not blow other markets out of equilibrium. Obviously the analytical problem can take on formidable proportions and there are various analytical "devices" to enforce stability, like disregarding other markets or across market linkages or assuming no endogenous price adjustment to the policy parameter change. The problem, however, is that one can easily stage a case for tax induced market instability for several relevant problems related to this volume. One such problem, that we return to in the next section has to do with the relative rate of return spectrum in the Swedish economy. Tax wedges between the stock

market and the property market and inflation in combination can affect stock prices in an erratic fashion and disturb the investment allocation mechanism.

While Ysander (III:6) deals with the stability issue at grass root levels, Eliasson and Lindberg (IV:11) bring the problem from the micro level all the way up to the macro "systems" level.

With discretely formulated theories and micro agents operating in markets, as in the micro to macro model used by Eliasson and Lindberg, the total macro stability problem, even though more complex, can be quantified and placed in a grid of good quality micro statistical information.

A unique equilibrium point does not exist in this model, but rather a bounded multidimensional region of convergence. What Arrow-Hahn (1971) call stability in Liapunov's sense (or maybe even more adequately what La Salle-Lefschetz (1961) call "practical stability") prevails if the economy stays within a bounded region. Within the domain of the micro to macro model the uniqueness of the equilibrium point is removed allowing for an endogenous relative and absolute price adjustment (due to structural change as well as short term cyclical factors) and having structural change in turn depend endogenously on relative price change. From a pure mathematical point of view systems of such dynamic complexity do not generally have one unique (stable) optimum to move around. Hence, interest focuses on how the system behaves relative to a Liapunov type of stability region. The factors determinating systems behavior relative to that region, however, are the same as those treated in the earlier static equilibrium approaches to disequilibrium analysis; namely the way agents (1) interpret recorded market prices (expectations side) type of (2) across market interdependence, adjustment (3) step size and (in addition) (4) speed of response. Eliasson and Lindberg (IV:11) have found here that certain structural specifications of the economy may be extra sensitive to price shocks of a certain size and type under some market characteristics in the four senses above. This is so, if the Salter structure of one large market, or several markets, is too flat, or if markets are very integrated through a speedy arbitrage mechanism (like the labor market) with a tendency to large and/or fast step adjustments in response to outside price shocks. If biased in favor of one or a couple of industries and negatively to the rest a whole sector can suddenly collapse, with a dramatic change in supply conditions that throws prices into a state of disequilibrium, i.e. out of the Liapunov region, if narrow enough. Return to the same stability region may not occur or take a long time, since erroneous investment and supply reactions on the part of firms in the short term may keep moving the economy in the wrong direction for years.

Under such disequilibrium circumstances it has proved difficult (even in the fairly simple micro to macro modelling world) to design policies to remedy the situation faster and better than simply sitting back and allowing the model economy to adjust on its own. Policy devices to smooth the transition by slowing down structural change may even prolong and worsen the agony of adjustment, especially if the origin of the problems is of the built-in tax wedge kind.

7 Allocation through markets

The efficiency aspect of taxation focuses attention on how current practice of taxing capital income inserts various "tax wedges" between the costs of finance to the investors and the return received by savers, affecting the financial decisions of firms and biasing the rate of return between firms and between different sectors of the economy. Most papers in this volume are directly or indirectly related to these aspects of the allocation process.

Several studies reveal that possibilities of deferring tax payments to some degree characterize corporate tax systems in most industrialized countries. In Sweden at least, this possibility has been used mainly by firms reporting large profits on their existing stocks of capital. Hence, a conservative trait is built into the system. Historically well-performing firms benefit from lower capital costs and greater financing resources. One cannot know for sure that superior *ex post* performance guarantees good future performance, especially in times of great structural economic changes, when current relative prices may be bad predictors of long run future relative prices. Eliasson and Lindberg (IV:11) elaborate this observation by concluding that it may not matter so much from an efficiency point of view if firms invest in the wrong markets. The large misallocation effects stem from the fact that they keep producing in the misallocated investment facilities by tying up labor and maintaining artificially high wage levels, that make it difficult for expanding firms to pull out locked in labor through wage offers.

The extreme and inflationary market situation created under such circumstances by a progressive income taxation system is addressed by Ysander (III:6). One would suspect by analogy that the wage subsidy and maintenance programs discussed by both Bishop and Haveman (IV:9) and Holmlund (III:8) further aggravate this situation and even more so the extreme individual firm subsidization programs now so prevalent in Europe.

Locking-in effects of the corporate income tax are reinforced by the double taxation of corporate source profits discussed by McLure (II:2), and Bergström and Södersten (III:5). Since the total tax

burden on corporate source income varies, depending on how profits are used by the firms—for retention or dividends—there is a strong incentive for firms to "withhold" some of their internal resources in the form of retained earnings rather than having them routed 100 percent through a capital market screening process. Putting it differently, the preferential tax treatment of capital gains makes it considerably less expensive to finance investments through retained earnings than through new issues of equity capital.

Capital gains, income and corporate income taxation combined constitute powerful and differentiated tax wedges, that discriminate between household investments in nominal bank deposits, shares and property. These wedges have been further enlarged by inflation and especially so in a country like Sweden where exemptions from full taxation of household interest income on bank accounts, Government bonds etc. are few and minimal, capital gains taxation on shares is not generous and capital gains tax rules on real estate are indexed. The dichotomy in capital gains taxation between shares and real estate (see Rundfelt, IV:10) means that the higher inflation the more profitable for private investors to allocate resources to property investments *even though* relative real, before tax returns to investments do not change. Eliasson and Lindberg (IV:11) demonstrate in addition that the higher inflation the more difficult for firms to maintain normal, before tax rates of return to investments due to disturbances in the market pricing mechanisms. The two effects together may contribute to an overall allocation of resources that is strongly detrimental to economic growth and even destabilizing (see Ysander, III:6).

Few empirical studies have been made but indirect evidence supports a strong tendency of households towards inflationary hedging in property as far as their long term investments go. The large number of summer houses in the Swedish country side and the absence of a working venture market for share capital may be more due to tax wedges that make this type of consumption relatively inexpensive than to particular Swedish consumer preferences. A bias towards property investments reduces both incentives and credit market resources available for investments in industry. The importance of the stock market as an allocator of venture capital is correspondingly reduced.

The tax wedge problem turns acute when very steep progressive income scales on earned income and a sudden and permanent change in the international market situation combine, as during the second half of the seventies for Swedish companies. Attempts to reallocate labor through after tax wage incentives become very costly indeed, when expressed on a before tax basis. Reallocation of capital is

hampered by a generous business taxation system that favors indigenous plow back of profits. Tax discrimination against traditional household saving in banks and shares, as argued, both in Ysander (III:6) and in Eliasson and Lindberg (IV:11), indirectly affects the stability of the entire economy. The total tax wedge effect is a flow of investment resources out of the manufacturing sector. This hurts export performance in particular and contributes towards an external balance problem, much as it has already, for instance in Sweden.

Provided that the promotion of economic growth is politically desirable and that it requires an effective allocation of savings within and between different sectors of the economy, there is an obvious need to eliminate "locking-in" effects of the kinds discussed above. There are several possible and simple remedies within the domain of business taxation that could be indicated already at this stage. During the first half of the 1970's the effective corporate tax burden for manufacturing industry in Sweden averaged about 20%. Clearly, the same effective tax burden could be accomplished by combining less favorable rules of fiscal depreciation with a sufficient cut in the statutory corporate tax rate. Such a reform would even out the effective tax burden between different firms, making it less expensive to reallocate profits within the corporate sector and between different sectors of the economy.

The current discussion on integrating the corporate and personal income taxes may be thought of as motivated by the same desire to improve the mobility of savings in the economy. Different schemes of partial integration are thoroughly explained by McLure (II:2) and Bergström and Södersten (III:5). Again, reducing the total tax burden on distributed earnings would make it more attractive to find alternative investments outside the firm—for internally generated profits.

In short, the whole problem centers around how to impose a uniform rate of return requirement on the economy that is compatible with the rate of return standard set in international markets.

That the dynamic allocation mechanisms matter for the entire economy is clearly illustrated in Eliasson and Lindberg (IV:11) where various corporate income taxe wedges are allowed to impede the reallocation process forced on the Swedish economy through a sudden, unpredicted and permanent change in relative export prices. The results indicate that the economy eventually settles down to oscillate around some steady state growth rate in a typical, cyclical fashion. This new growth rate, however, depends significantly on how the reallocation process is policed through the corporate income tax system. For instance, the actual scenario played by Swedish policy makes the years 1972 through 1978 look like one of the worst possible

scenarios that were available at the time. The extreme relative price change in favor of heavy base industries and strong overall inflation in 1972–74 was allowed to run through the economy unimpeded. Investment and wage drift soared in the wrong industries, stimulated by generous fiscal rules. Firms met the following recession with dramatically lowered prices compared to expectations, overly inflated wages and an enlarged capacity to produce in very modern facilities that were productive in a technical sense but commercially obsolete.

When the scenario was reenacted with a tighter fiscal policy package and the extreme but temporary raw material boom 1973/74 removed long term economic growth and cyclical stability improved. Reallocation of resources (capital and labor) from declining to expanding sectors was faster and more efficient. The circumstance that a fairly large number of raw material firms had to close down in fact stimulated investment and growth in engineering industries through a favorable effect on factor prices and labor mobility. The effects on unemployment were negligible, at least in the simulations.

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