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ABSTRACT

The pre-1990 Swedish tax system strongly disfavored younger, smaller and less capital-intensive firms and sectors and discouraged entrepreneurship and family ownership of businesses in favor of institutional ownership. Credit market regulations, the national pension system, employment security laws and centralized wage setting in Sweden reinforced the distortionary impact of the tax system. We describe the relevant Swedish policies and institutional arrangements, and explain why attendant distortions are likely to have hampered the efficient allocation of resources, reduced productivity, and retarded economic growth and recovery.

We also develop evidence on the consequences of these distortions for the size structure and industrial distribution of employment. Taking the U.S. industrial distribution as a benchmark that reflects a comparatively neutral set of policies and institutions, Sweden's employment distribution is sharply tilted away from lower wage industries, and industries characterized by greater employment shares for smaller firms and establishments. Compared to other OECD economies, Sweden has the lowest rate of self-employment, a dominant role for larger firms, and highly concentrated ownership and control of private sector economic activity.

1. Introduction

Sweden has experienced slow economic growth during the past quarter century compared to its historical record and compared to the average performance of other OECD countries. From 1970 to 1992, Swedish output per capita grew at only 60 percent of the OECD average (*Table 1*), and Sweden's relative PPP-adjusted income per capita fell from third to seventeenth among OECD countries. This dismal post-1970 growth performance stands out in especially sharp relief when set against Sweden's remarkable record of economic growth during the previous one hundred years. From 1870 to 1970, Swedish output per manhour rose seventeen-fold, the highest growth rate among sixteen OECD countries for which comparable data are available (*Table 2*).[1]

Table 1

Table 2

While output growth has been slow in recent decades, a casual inspection of the data suggests that – until recently – Sweden's relative employment performance looked attractive: unemployment rates were very low, labor force participation rates rose secularly, and private sector employment grew strongly in the late 1980s. But the 1991–93 economic crisis triggered unprecedented job losses, and employment contracted by approximately 15 percent in three years. In fact, a closer scrutiny of the data points to long term problems in Swedish employment performance. We return to this matter below, but here we simply highlight one of our most important observations: from 1950 to 1992 all net job creation in Sweden took place in the public sector.

Slow output and productivity growth during the past quarter century, forty-odd years of stagnation in private sector employment, and a profound economic contraction during the early 1990s – these are some unpleasant facts, and they cry out for an explanation of what went wrong. We consider one set of factors that may constitute an important part of the answer. In particular, we consider whether tax policy and other important features of Swedish economic policy and institutions hampered

[1]Henrekson *et al.* (1995) provide a detailed discussion of Sweden's record of economic growth.

economic growth and efficiency by distorting the industrial, employer size and employer age structure of employment and output.

It will be helpful to briefly set out the main elements of our thesis:

1. Several aspects of Swedish tax policy disfavor smaller, younger and less capital-intensive firms. Tax policy also discourages entrepreneurship and family ownership in favor of institutional forms of ownership. As a consequence, tax policy retards entry by new firms, distorts the size structure of employment within industries, and distorts the industrial distribution of employment and output.

2. Other important aspects of the Swedish system – including credit market policy, employment security laws, and a system of centralized wage bargaining that compressed wage differentials – also disfavored smaller, younger, and less capital-intensive firms and distorted the industrial distribution of employment.

3. These policy-induced distortions in business ownership patterns and in the distribution of employment and output by industry and by employer size and age hamper the efficient allocation of resources, reduce productivity, and retard economic growth.

4. The adverse growth and efficiency effects of these policy-induced distortions have been exacerbated by exogenous changes in the economic environment related to the widespread shift from goods-producing to service-producing industries and the downsizing of production units in many goods-producing industries.

The weight and nature of our evidence differ greatly among the elements of our thesis, and we note at the outset that the available evidence is incomplete on key points. Our aim here is to build a plausible case for our thesis, recognizing that the evidence is largely suggestive. For this reason, we regard our research as an exploratory investigation rather than an exhaustive study of distortions in the structure of Swedish employment and their adverse economic consequences.

To more fully set the stage for our analysis, we review several noteworthy aspects of the postwar Swedish employment record in section 2. The subsequent two sections describe how tax policy and other key features of

the Swedish system disfavor younger, smaller and less capital-intensive employers and distort the industrial distribution of employment.

Next, in section 5, we offer several reasons why unfavorable policy treatment of younger, smaller and less capital-intensive employers undermines productivity and growth. Reflecting a paucity of evidence in the literature, we can say little about the magnitude of these productivity and growth effects. Instead, section 6 develops evidence of significant employment distortions by relating U.S.–Swedish differences in the industrial distribution of employment to a variety of industry characteristics such as capital intensity, the distribution of workers by establishment and firm size, the structure of wages, and the pace at which jobs are reallocated among establishments within an industry.

The pattern of U.S.–Swedish differences in the industrial distribution of employment conforms well to the implications of our thesis, and a plausible reading of the evidence attributes much of U.S.–Swedish differences in the industrial distribution of employment to distortions associated with the tax, regulatory and wage-setting policies and institutions described in sections 3 and 4. After developing this evidence, we review some international trends in the industrial and size distribution of employment. These trends are indicative of exogenous changes in the economic environment that probably exacerbate the adverse economic consequences of the employment distortions induced by Swedish policies and institutions. We conclude in section 8 with a few remarks about the policy implications of our findings.

2. Noteworthy Aspects of the Postwar Swedish Employment Record

Figure 1 shows the secular increase in Sweden's employment rate, which rose from slightly above 70 percent of the working-age population in the early 1950s to a peak of 84 percent in 1990. Remarkably, more than 100 percent of this development is accounted for by increased employment among women. From 1970 to 1990, the female employment rate increased by 22 percentage points, whereas the male rate declined by 1.5 percentage points.[2] As of 1992, the male employment rate exceeded the female rate by

[2]According to Silenstam (1960) the female participation rate was 44.8 percent in 1950. By 1970 and 1990 it had increased to 58.3 percent and 80.3 percent, respectively.

only 2.2 percentage points, in striking contrast to the gap of 27.6 percentage points in 1970.

Figure 1

The rise in the ratio of female-to-male employment is a ubiquitous phenomenon among OECD economies in recent decades. In part, this development reflects common and pronounced changes in the structure of labor demand, as evidenced by the widespread shift in employment from goods-producing to service-producing sectors and the relatively rapid growth of public sector employment in many countries, two trends that increase the relative demand for women workers.[3] But, as emphasized in Rosen's (1995) analysis, major components of Swedish economic and social policy have accentuated shifts in the structure of labor demand and contributed strongly toward the rise in female employment and participation rates. Indeed, Rosen reports that almost all Swedish employment growth between 1963 and 1992 is accounted for by the growth of female employment in the local public sector.

Indeed, public sector employment growth is a central feature of Swedish economic policy in recent decades. As *Figure 2* shows, the public sector accounts for all of Sweden's net employment growth after 1950. Between 1950 and 1992, public sector employment grew by 1.1 million, whereas private sector employment actually shrank by roughly 200,000 jobs.[4] Even at the peak of the most recent employment boom in 1990, private sector employment exceeded the 1950 level by only 40,000 jobs despite an increase of 820,000 persons in the population of working age (16–64 years). Private sector jobs as a fraction of the working-age population fell from 67 percent in 1950 to 53 percent in 1992. Seen in this perspective, the employment performance of the private sector in Sweden is weak indeed, and the employment expansion during the long boom in the second half of the 1980s appears far less impressive.

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[3]In this respect, we note that women account for 72 percent of Swedish public sector employment in 1991 as compared to only 34 percent of private sector employment.

[4]Lindh (1994) argues that the employment figures used here underestimate the employment level for the 1950s. Using Lindh's estimate of the employment level in the 1950s as a point of departure, the private sector employment contraction would be roughly 100,000 less. However, this does not change any of the conclusions. Furthermore, it may be noted that private sector employment fell by an additional 169,000 in 1993.

Figure 2

Another noteworthy trend – also partly driven by rising public sector employment – is the secular decline in Sweden's rate of self-employment.[5] *Figure 3* shows that self-employment fell from 19 percent of total employment in 1950 to only 7 percent in 1991. Virtually all of this decline occurred between the late 1950s and the early 1980s. The continual, albeit slower, decline throughout the 1970s is chiefly explained by a drop in agricultural employment. In recent years, the self-employment rate has stabilized at a low level relative to Sweden's historical experience and relative to the contemporaneous situation in other countries. Indeed, a recent OECD study reports that, since the early 1970s, Sweden has exhibited the lowest ratio of nonagricultural self-employment to civilian employment among all OECD countries. See *Table 3*.[6] Another recent study finds that Sweden has a lower self-employment rate in 1992 than a dozen member countries of the European Community (EC) for which data are available. The Swedish self-employment rate is less than one-half the EC average. See *Table 4*.

Figure 3

Table 3

Table 4

A low self-employment rate is but one aspect of broader differences between the structure of employment in Sweden and other countries. For example, large firms account for a disproportionately high fraction of employment in Sweden. *Table 5* illustrates this point by drawing on a recent SOU-study that compares the distribution of employment by firm size among several European countries. In 1986, firms with at least 500

[5]Sweden's growth in public sector employment contributed to the decline in self-employment both by drawing workers into a sector with no scope for self-employment and by publicly providing services such as child care and medical care with potentially high self-employment rates in a system of provision by the private sector.

[6]Strangely enough, OECD finds an increase in the Swedish self-employment rate of 67 percent between 1986 and 1990. However, a corresponding increase is not detectable in Figure 5, which casts serious doubt on this figure. Between 1986 and 1987, there is an increase of 109,000 or 63 percent in the number of self-employed in the OECD data for Sweden. Apparently, some mistake has been made in the data collection process, possibly that the self-employed in the agricultural sector are accidentally included after 1986. According to the 1995 Annual report put out by the European Observatory for SMEs, Swedish self-employment (including agriculture) amounted to 6.8 percent of the labor force in 1990.

employees account for 60.4 percent of total employment in Sweden as compared to only 30.4 percent in the European Community as a whole. Even in the much larger economies of Germany, France and the United Kingdom, the largest firm size class accounts for less than 40 percent of employment. At the other end of the size distribution, firms with fewer than 10 employees account for only 9.5 percent of employment in Sweden, less than half the employment share of very small firms in the European Community.[7]

Table 5

Table 6

Table 6 presents complementary evidence on the relatively small role of small firms in Sweden. Among 16 European countries, Sweden shows the largest value for mean enterprise size in 1990. Average enterprise size is thirteen in Sweden, more than twice the corresponding average value for the 16 European countries.[8]

The interpretation of these cross-country comparisons of average firm size and the employment distribution by firm size is clouded by ambiguities in the economic concept of a firm, by differences among countries in the legal definition of a firm, and by differences in measurement procedures. But there seems little doubt that Sweden's reputation as a land of big business is well founded. If anything, the figures in Tables 5 and 6 fail to fully convey the extent of concentrated ownership and control in Sweden. In this regard, Fölster and Peltzman (1995) note that in 1985 "the five biggest final owners held some 44 percent

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[7]Table 5 probably overstates the relative importance of large firms in Sweden, because the public sector accounts for such a large fraction of Swedish employment. With few exceptions, public sector employees are categorized as working in very large firms. However, even if we restrict attention to the construction, extraction and manufacturing sectors (for which public employment is very small), the share of Swedish employment accounted for by large firms (≥ 500 employees) is still unusually high. There is only one exception among the set of countries included in Table 5: For NACE 2–4 (extraction and manufacturing), the UK share in the ≥ 500 category is .9 percentage points higher than in Sweden. This fact may reflect the inclusion of British coal mines, which were still operating in 1986.

[8]Although not directly addressing the question whether most jobs are created in large and old firms, it may be noted that Davidsson, Lindmark and Olofsson (1994) found that out of the 207,903 jobs that were created net in the period 1985–89 in the private sector, only 16 percent were created in firms consisting of only one establishment. Note that 1985–89 is the only reasonably sustained post-war period when there is any employment growth in the private sector.

of the total voting rights in companies with more than 500 employees, while the ten biggest had more than half." In addition, they write that "these final owners tend to hold shares through intermediaries, such as investment companies, which in turn are linked through joint ownership. Fourteen such 'empires' dominate the corporate sector, with three major ones alone controlling companies that account for some two-thirds of employment, sales and total assets of the 270 largest corporations in Sweden." Coupled with the figures in Tables 5 and 6, these remarks highlight the dominant economic role of large corporate organizations in Sweden.

Figure 4

Finally, while available data are limited, there is evidence to suggest that Sweden experiences low rates of new firm formation. Drawing on the recent study by Braunerhjelm and Carlsson (1993), *Figure 4* displays annual entry rates from 1920 to 1991 of new manufacturing firms with more than one employee. The figure shows that rates of new firm formation in the Swedish manufacturing sector became quite low by the 1950s. The entry rate fell to 1.5 percent in the 1970s, and the average entry rate was even lower in the 1980s and early 1990s.[9]

To summarize, Sweden has undergone an extended period of stagnation in private sector employment during the past four decades. Since 1950 all net job creation occurred in the public sector. The strong secular growth in public sector employment during recent decades probably generated much of the impetus behind other important employment trends in recent decades including the absolute and relative rise of female employment and the decline in the Swedish self-employment rate. In comparisons among OECD countries, Sweden stands out as having the highest ratio of public sector to total employment, the lowest rate of self-employment, a dominant role for larger firms, and highly concentrated ownership and control of private-sector enterprises. The available evidence also points to low entry rates of new Swedish firms in recent decades. In section 6 below, we develop new evidence of distortions in the industrial structure of

[9]On the other hand, using data from the late 1980s, Lundström *et al.* find that the rate of new firm formation in Sweden is at a level comparable to several other European countries. However, we do not know how sensitive this finding would be to the exclusion of new firms with no employees.

Swedish employment related to capital intensity, establishment size, the wage structure and other factors.

3. Tax Policy and the Structure of Employment

This section outlines several features of the pre-1990 Swedish tax system that disfavored younger, smaller and less capital-intensive firms and that discouraged entrepreneurship and family ownership in favor of institutional forms of ownership. International comparisons indicate that these tax-induced distortions were more severe in Sweden than in other countries.

Several important distortions stem from high statutory rates of corporate income taxation coupled with other policies that led to much lower effective tax rates. *Figure 5* shows that the statutory corporate income tax rate was very high throughout the period until 1990. The level was consistently in the 50–62 percent interval, until it was almost halved from roughly 55 to 30 percent in the 1991 tax reform. But these high statutory rates tell only part of the story. Until the late 1950s the difference was slight between statutory and effective tax rates, but beginning in 1958 a large gap between the two emerged, and this gap widened considerably over time. These observations lead us to a discussion of the main sources of the discrepancy between statutory and effective tax rates and to some remarks about implications for the structure of employment.

Figure 5

The low effective corporate income tax rates resulted from the introduction of tax-reducing depreciation rules, inventory valuation rules, other more *ad hoc* tax reductions,[10] and the so-called investment fund system. Bergström (1982) and Södersten (1984, 1993) describe the rules in detail, but what is crucial here is that these low effective tax rates reflect behavioral responses by firms to the rules in place. The rules that enabled firms to attain effective tax rates well below the statutory rates had powerful effects on the allocation of capital and other resources.

[10]Typically, these *ad hoc* rules implied that firms were allowed a total depreciation of more than 100 percent of the investment cost.

Two of the most important types of rules involve liberal provisions for accelerated depreciation and the Swedish investment fund system. Since the 1950s, Swedish firms have been able to switch freely between two options for depreciating the acquisition cost of machinery and equipment for tax purposes. One option is to depreciate at a rate of 30 percent per annum on a declining balance basis. The second option is five-year straight-line depreciation of the historical acquisition cost. For a single investment, it is profitable to calculate depreciation under the first option in years one and two and to switch to the second option in the third and subsequent years. But for a growing firm with many young vintages of capital, it is more profitable to use the 30 percent rule. These generous depreciation allowances provide ample opportunities for fast-growing firms that are, at the same time, capital intensive in machinery and equipment to reduce their tax load. Similar tax-avoidance opportunities are less available for stagnant firms and for firms that are capital intensive in other dimension such as human capital, structures, financial capital and intangible capital.

The claim that the depreciation rules have benefited fast-growing firms is also subject to an important qualification: Because of other impediments to growth at the early stages of the life cycle of a firm, newly-formed firms may find it difficult to exploit tax avoidance provisions. A fast-growing firm benefits from certain features of the tax system, but there is no mechanism inducing a firm to become fast-growing.

The investment fund (IF) system gained in importance after 1955, and it was effective until the end of 1990. The purpose of the system was to induce firms to change the timing of investments from booms to recessions. The details of the system have varied somewhat over time, but typically a firm was allowed each year to deduct up to 50 percent of taxable profits by transfering that amount to its IF. However, 50 percent (roughly) of the total allocation had to be deposited in a non interest-bearing account at the central bank.[11] The other half could be used for any purpose. Thus, as long as the statutory corporate tax rate exceeded 50 percent, which it did from 1955 to 1990, it was always profitable to make maximum

[11]The release of IF funds on deposit with the central bank required explicit government decisions. Over time, releases became more and more frequent. Beginning in the latter half of the 1970s, this change enabled firms to use IFs continuously during a ten-year period (Södersten, 1993).

allocations to the IF-system, even if the funds were never used for investments.

In addition, firms were often granted an additional 10 percent allowance against current profits on funds drawn from their IF for investment purposes. For example, a firm with profits of 100 and an allocation of 50 to its IF in year $t-1$ would be eligible to draw 25 for investment purposes in year t. If it did so, it would receive an additional deduction of 2.5 against profits in year t. Investments financed by IF were considered to be fully written off for tax purposes. Since IF-financing of investments was also possible for buildings, which enabled immediate tax write-offs of structures instead of the usual 28–36-year straight-line depreciation, a tax-minimizing firm would use its IF for investments in buildings rather than machinery.

These features of the Swedish corporate tax system had a number of implications. The most crucial one is summarized by Bergström (1982, p. 20) as follows: "The system has a built-in conservative mechanism giving lower capital costs and greater financing possibilities for firms which have, historically, been performing well." But as shown in the early studies by Little (1962) and Cragg and Malkiel (1968), growth in the past is not a good predictor of growth in the future. Moreover, the system does not necessarily favor firms with a high level or growth rate of total factor productivity. Firms that are stagnating in terms of investment requirements and employment growth may nevertheless have higher than average productivity levels or even higher than average productivity growth rates. Bailey *et al.* (1995), for example, find that among U.S. manufacturing plants experiencing positive productivity growth during the 1980s, a large fraction experienced employment declines.

Through discretionary releases of funds on deposit with the central bank, the IF component of the corporate tax system also encourages firms to make investments in recessions, which is probably more attractive for older firms in mature industries that face a comparatively predictable future. Firms or sectors that, during recessions, confront greater uncertainty about the returns to sunk investments were less able to take advantage of the cyclical investment incentives offered by the IF system.

As a distinct consideration, high statutory tax rates strongly favor debt financing over equity financing of investments. To the extent that debt financing is less costly and more readily available for larger, more established firms, high statutory tax rates coupled with tax-deductible interest payments work to the disadvantage of smaller firms and potential entrants. Debt financing is also more easily available to firms with ready forms of collateral. Hence, firms and sectors that more intensively use physical capital reap greater benefits from tax code provisions that favor debt financing. In practice, this aspect of the tax system favors the capital-intensive manufacturing industries relative to other industries.[12] In hindsight, it is not obvious that it was a growth-promoting strategy to favor manufacturing relative to other industries, since manufacturing has declined in relative importance in virtually all industrialized countries subsequent to the mid 1960s.

To sum up the discussion thus far, several features of the Swedish corporate tax system distort the structure of employment and output, because their usefulness as tax avoidance mechanisms differs greatly across industries and types of firms. On the whole, the tax system favors large, well-established, capital-intensive firms.[13]

To provide a sense of the magnitude of the distortions introduced by the Swedish tax system, *Table 7* presents effective marginal tax rates for different combinations of owners and sources of finance. Three categories of owners and sources of finance are identified, and the effective marginal tax rate is calculated assuming a real pre-tax rate of return of 10 percent. A negative number means that the real rate of return is greater after tax than before tax.

The table highlights several important aspects of the Swedish tax system. First, debt financing consistently receives the most favorable tax

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[12]Södersten (1984) shows that during the 1960s the effective marginal tax rate on manufacturing was considerably lowered relative to that of other industry and commerce.

[13]The Wage Earners' Funds instituted in 1984 meant, among other things, the introduction of a "profit-sharing tax" (PST) that was operated parallel to the regular corporate tax system. The PST rate was 20 percent, but on a base that differed substantially from the regular corporate tax base. In effect, this resulted in fairly small overall PST payments. But how the introduction of the PST influenced firm behavior, and whether it had differential effects on expanding and contracting firms, or on firms of different sizes is unknown. The PST was abolished in the 1991 tax reform.

treatment and new share issues the least favorable treatment. Second, the taxation of households as owners is much higher than for other categories, and their rate of taxation increased during the 1960s and 1970s, whereas the reverse took place for insurance companies and tax exempt institutions. From some point in the 1960s until the 1991 tax reform, more than 100 percent of the real rate of return was taxed away for a household buying a newly issued share. Third, tax-exempt institutions benefit from a large tax advantage relative to the other two categories of owners, and this advantage increased strongly during the 1960s and 1970s. It is particularly noteworthy that tax-exempt institutions have a substantial relative tax advantage throughout when investing in newly issued shares. Fourth, insurance companies are always in an intermediate position in terms of tax burden.[14]

Table 7

The calculations for households in Table 7 are based on an average household, but for a household owning a successful SME the tax rate was often higher. The main reason was the combined effect of wealth and income taxation. Until 1993, the wealth tax was levied on 30 percent of the net worth of a family-owned company, incorporated or not. In the mid 1980s the maximum wealth tax rate was 3 percent (for all household wealth exceeding SEK 1.8 million). But, since the wealth tax was not deductible at the company level, funds required to pay the wealth tax were first hit by the income tax and the mandatory payroll tax.[15]

Gandemo and Lundström (1991) provide evidence consistent with the view that this feature of the tax system altered business ownership patterns in Sweden. In their study of manufacturing firms with 100–499 employees they found that "family-owned firms decreased from 38 percent in 1978 to 26 percent in 1986. Most were acquired by other Swedish firms. Apart from owner retirement, firms were sold to secure financial resources for continued development, and because of the high wealth tax in Sweden" (p.

[14]The figures in Table 7 show that in 1980, a real rate of return of 10 percent before tax for a tax-exempt institution investing in a debt instrument became 18.3 percent after tax, whereas for a household investing in a newly-issued share 10 percent before tax became –3.7 percent after tax.

[15]In practice, the wealth tax was not, or only to a limited degree, paid on boats, artwork, condominiums, etc. This was a further factor that decreased the relative attractiveness of investment in the owner-managed and small business sectors.

72). Another piece of evidence consistent with this view is developed in McLure and Norrman (1995), who show that direct household ownership of publicly listed stock went from 75 percent in 1950 to 16 percent in 1992.

These remarks and the entries in Table 7 make clear the extraordinary extent to which the Swedish tax system favored institutional ownership and discouraged direct household ownership of firms. The structure of taxation summarized in Table 7 encouraged the strong postwar trend towards an increased share of institutionalized ownership of firms and the increased importance of debt financing. The preferential tax treatment of debt over equity and of institutions over individual ownership benefited larger, publicly traded and more established firms.

As direct evidence on this point, *Table 8* reports effective rates of corporate taxation for family-owned and other corporations during the 1984–87 period. Smaller family-owned firms typically show a higher effective rate of corporate taxation than larger firms, and family-owned firms show a higher rate than other firms.

Table 8

Major reasons for this result are that other firms had a larger proportion of profits in forms that were taxed at reduced rates (capital gains, dividends from subsidiaries), and they also had greater opportunities to take advantage of loss deductions. Also, large corporations (consisting of many legal entities) are able to lower the overall rate of taxation by transferring profits from high-profit to low-profit units within the group. This observation implies that a large corporation can more easily take initial losses in new activities than an individually owned firm (Familjeföretagens skatteberedning, 1988, 1989).

How do these distortions in the Swedish tax system compare to other countries? To partially address this question, *Table 9* reports corporate tax wedges for investments in machinery, buildings and total business capital (an aggregate of machinery and buildings) in several OECD countries as of 1985.[16] According to the table, the tax wedges are

[16]The tax wedge equals the difference in percentage points between the before-tax and after-tax real cost of capital. Because of major changes in their corporate tax codes

invariably negative, which means that after-tax rates of return exceed pre-tax rates of return. Among all listed countries, Sweden exhibits the largest negative wedges and, hence, the largest corporate-tax bias towards capital-intensive firms and industries.

Table 9

Table 10

For a smaller set of countries, *Table 10* reports effective total tax rates (capturing both corporate and personal income taxes) by ownership category. Here we see that Sweden was the only country where more than 100 percent of the real return was taxed away in 1980 for households making corporate investments. This high figure comes about even though it may be presumed that, within each country, owners choose an asset distribution that is reasonably optimal relative to the tax system they face. Note that Sweden also exhibits the most favorable treatment of tax-exempt institutions.

While strongly discouraging direct household ownership of businesses, the Swedish tax system has generously subsidized investment in the housing stock. On this point, *Table 11* reports the estimated tax wedge for housing investment in 1985 at a 5 percent real interest rate for eight countries. The table shows that housing investment received preferential tax treatment in all countries, but more so in Sweden. Investment in the housing stock was especially favored in the asset draw down case, in which the housing investment is financed by the liquidation of other assets. Given the generous tax subsidies for investment in the housing stock and the truly punitive treatment of direct business ownership by households, it is surprising that Swedish households undertake *any* direct business investments.

Table 11

Finally, high marginal tax rates on personal income – another outstanding and extreme feature of the pre-1990 Swedish tax system – also discourage employment in smaller and less capital-intensive firms

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around 1985, the table reports wedge values for both old and new tax systems in the United States, Canada and the United Kingdom.

and thereby distort the industrial distribution of output and employment. As a generalization, economic activities that are highly substitutable between market and home production sectors (cooking, laundering, landscaping, home repairs, etc.) offer greater than average scope for self-employment, employment in small firms, start-ups, and family-owned businesses. Thus, in addition to the distortions described above, high marginal income tax rates alone work against a vibrant entrepreneurial and small-firm sector.

In summary, we have identified several features of the pre-1990 Swedish tax system that strongly disfavored less capital-intensive firms, smaller firms, entry by new firms, and individual or family ownership of businesses. Many of these features are present in other tax systems as well, but international comparisons indicate that tax wedges are larger, often much larger, in Sweden. The magnitude of the tax wedges points to the Swedish tax system as a major source of distortions in the industrial distribution of employment and in the structure of employment within industries.

4. Other Policies and Institutions that Disfavor Younger and Smaller Employers

These features of the tax structure were not the only aspects of the Swedish system that disfavored smaller and younger employers. We now briefly describe four other aspects of economic policy and institutional arrangements that disfavored smaller, younger, and less capital-intensive firms: credit market regulation, the mandatory national pension system, employment security laws, and a centralized wage-setting institution associated with highly compressed relative wages.

Throughout the postwar period until the late 1980s, the Swedish credit market was highly regulated. Inspired, among other things, by Gunnar Myrdal's 1944 paper on "high taxes and low interest rates", Swedish credit market policy was for a long time aimed at low interest rates for favored sectors of the economy. In a situation of full employment, rapid economic growth and a long-lasting boom in construction, the government felt compelled to extend credit market regulations in several steps. These developments continued until the early 1980s, when a rapid process of

deregulation began. The process was completed in 1989, when the remaining foreign exchange controls were lifted.[17]

Lending to the construction and government sectors received priority over other sectors until the mid 1980s. Typically, the government imposed a ceiling on lending increases to other sectors by banks and other financial intermediaries. At the same time, interest rate ceilings were imposed in these other sectors, which led to a great deal of credit rationing. This set of regulations clearly favors credit access by larger, older, better established firms and by capital-intensive firms with ready sources of collateral. Human capital and knowledge, on the other hand, are of less value as collateral. Data presented in Ashgarian (1993) regarding the financing structure of different firms give some indication that knowledge and human capital intensive firms have lower debt/equity ratios.

The development of Swedish net saving is indicated in *Table 12*. Net saving rose between the 1950s and the 1960s, and thereafter declined sharply. For our purposes, the most noteworthy feature is the extremely important role of the government sector for net saving in the 1960s and 70s. Close to two thirds of net saving took place there, and a large part of these funds had to be channelled to the private sector. But, as long as the government shunned ownership of industry, this pattern of national saving presupposed lending on a massive scale to the private sector.

In particular, saving in the social insurance system increased from zero in 1959 to 4.7 percent of GDP in 1972. This saving took place within the mandatory national pension scheme, the ATP-system, which was introduced in 1959.[18] It accumulated large surpluses for a long time, so that in the early 1970s the AP fund system accounted for 35 percent of the total supply of credit. The AP fund lent to industry primarily through intermediate credit institutions. At the end of 1976, it accounted for 69 percent of the long-term liabilities of these institutions.[19] This fund has been (and still is) subject to politically determined rules concerning the composition of its portfolio, and priority has been given to the housing sector and the government sector. Generally, only one third or less of the

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[17]See Jonung (1993) for an overview of regulations.
[18]Originally, there were actually three funds; later, two more funds that invest in the stock market were added.
[19]Pontusson (1992).

financial assets in the AP fund have been invested outside the government, construction and real-estate sectors. A very small fraction of AP fund lending has been directly to firms.[20]

In order to channel all the public saving back to the private sector, it was logical, and perhaps even necessary, to favor debt over equity financing to a great extent. However, it appears that the negative side effects of this policy, which have been stressed here, were largely ignored at the time. In any case, the national pension system reinforced the distorted pattern of credit allocation in the Swedish economy.

Table 12

The Swedish Employment Security Act (*Lagen om anställningskydd* or LAS) provides employees with extensive protection against unfair dismissal. Notably, Sweden is the only country where the order of dismissal is laid down in law (Kazamaki Ottersten, 1994), and where the probationary period before automatic tenure is a mere six months – very short by international comparison.[21] Furthermore, it seems that in most countries other than Sweden unfair dismissal regulations are not extended to small firms (Commission of the European Communities, 1993).[22]

Under LAS the only legal grounds for worker dismissal are gross misconduct and redundancies. Moreover, LAS stipulates the "last in – first out" principle in case of dismissals caused by redundancy. The principle also applies to situations where a firm expands employment

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[20]E.g., in 1980 7 percent of total assets constituted direct lending to firms. This lending was mainly so-called "lending back" (*återlån*) based on the rule that employers were allowed to borrow up to half the amount they had paid in to the fund during the previous year. The potential for using this credit channel was therefore proportional to the wage bill of the firm. This type of lending was abolished in 1987. It should also be noted that banks acted as intermediaries and determined credit conditions under the lending back system. Thus, in practice this type of lending constituted cheap refinancing for the banks rather than a direct source of funds for firms.

[21]In many instances, the probationary period has been shortened even further through collective agreements, and the trade union can in several industries veto temporary employment and the use of probationary periods. Storrie (1994) finds that the probationary period is less than 6 months for about one third of the blue-collar workers in the private sector (the LO-SAF area).

[22]Given how large the employment security issue looms in the public debate, we were surprised to learn that no good cross-country survey of collective agreements and legislation and their *de facto* application seems to be available.

following an employment contraction. A worker laid off because of redundancy is guaranteed to get the job back if the firm fills the position within one year from dismissal.[23] This principle may be overruled through special agreements between the local labor union and the employer. To our knowledge, there is no study quantifying the importance of this possibility. In general, there is scant evidence available on the application of the last-in – first-out principle in different countries, but Rasmussen (1993) argues that it is followed more strictly in Sweden than in the other Nordic countries.

In a survey study, Agell and Lundborg (1993) find that LAS leads to increased recruitment costs, and to a lower propensity to expand employment in an economic upturn.[24] Holmlund (1978) evaluates econometrically whether the introduction of LAS in 1974 had any effect on the hiring frequency. He found that the hiring frequency was lowered, *ceteris paribus*, by 5–10 percent as a result of the introduction of LAS. Holmlund (1986) also found some evidence of a reduction in new recruitments resulting from an increased wariness on the part of firms.

Several international studies have examined the effect of labor security legislation on unemployment and employment variations across countries (see OECD (1993) for a survey). The results are ambiguous, although it may be noted that there appears to be a significant positive relationship between the labor security laws and long-term unemployment. We also note here that employment security legislation is on average stricter in Europe than in North America and Japan (Bertola, 1990).

However, none of these studies shed light on the issue of whether strict employment security provisions are more harmful for smaller employers. In fact, there are good reasons to think that LAS imposes greater costs on smaller businesses. One reason involves the gains from efficiently matching heterogeneous workers to a variety of tasks and positions. As an employer learns about a worker's abilities over time, or as those abilities evolve with the accumulation of experience, the optimal assignment of the

[23]There is anecdotal evidence that firms delayed employment expansion in the manufacturing sector after the 1992 devaluation in order not to be restricted by this rule.
[24]Kazamaki (1991, Ch. 3) presents theoretical evidence that the introduction of labor security legislation of the LAS type results in stricter quality requirements of applicants and increased recruitment costs.

worker to various tasks is likely to change. The scope for task reassignment within the firm is likely to rise with firm size. In an unfettered labor market, optimal task reassignment often involves mobility between firms, and such mobility is more likely when the initial employment relationship involves a small business. Thus, any inefficiencies induced by LAS in the assignment of workers to tasks are likely to be more severe and more costly for smaller firms. Furthermore, the law of large numbers in combination with risk aversion leads to the same conclusion and for an obvious reason: one bad recruitment is proportionately more costly to bear for a small firm.

The only direct evidence we know of on this matter is an interview study by Kazamaki Ottersten (1994). She found that LAS is mostly a restriction for medium-sized firms. Large firms have typically either found ways to circumvent the rules or have learnt to live with them, or have made special agreements with the trade union that remove the costly effects. In small firms, it is often the case that the importance of firm survival is perceived so tangibly by all employees and the trade union alike that, at least in times of hardship, it is fairly easy to agree on measures that do not strictly adhere to LAS stipulations. Nevertheless, many companies report that LAS restricts them in detrimental ways, leading to increased wariness in recruitment. Such firms cite the rigid order of dismissal and the increased cost caused by the employment protection. In addition, it has to be emphasized that if LAS has impeded the formation of new firms and not just the growth of existing firms, this aspect cannot be uncovered in an interview study (selection bias).

Other evidence is also consistent with the view that the employment security provisions fall more heavily on smaller firms and some other classes of firms. In the United States, both the rate at which workers separate from jobs and the rate at which employers destroy job positions decline with the size, age and capital intensity of the employer (Brown and Medoff, 1989 and Davis *et al.*, 1995). These patterns in worker separation and job destruction rates suggest that any costs imposed by a regulation similar to the LAS are likely to fall more heavily on younger, smaller and less capital-intensive employers and to distort the distribution of employment towards industries characterized by more stable establishment-level employment and longer job tenures.

Finally, Swedish labor organizations successfully pursued egalitarian wage policies from the mid 1960s until the breakdown of centralized wage bargaining in 1983 (Hibbs, 1990 and Edin and Holmlund, 1995). The strength of Swedish labor organizations and the centralized nature of the wage-setting institutions appear to have facilitated a remarkable compression of the wage structure during this period, judging by cross-country comparisons of wage inequality trends (Davis, 1992). To the extent that Swedish wage-setting developments drove wages up in the lower tiers of the distribution relative to outcomes under other institutional arrangements, they reinforced the concentration of Swedish economic activity in larger, older and more capital-intensive employers. This inference follows from the ample evidence that wages rise with the age, capital intensity and – especially – the size of employers (e.g., Brown and Medoff, 1989 and Davis and Haltiwanger, 1991).

Indeed, in the 1950s, the LO economists Gösta Rehn and Rudolf Meidner advocated a solidaristic wage policy and centralized wage setting, in part, to promote a restructuring of the economy. Rehn and Meidner "knew that efforts to raise the pay of low-wage workers would affect employment outcomes. Low-wage industries would be forced to contract, and the workers would have to go elsewhere" (Edin and Topel, 1995). Edin and Topel provide evidence that this restructuring occurred after 1960. High-wage industries did have greater growth in Sweden than in the U.S., absorbing the workers who left low-wage industries. The contraction of low-wage industries seems to have been fueled by increased relative wages in those industries. Hence, there is good reason to believe that the solidaristic wage policy reinforced the concentration of economic activity to large and more capital-intensive firms, since these firms, relatively speaking, benefit from a high average wage in combination with a compressed wage distribution.

In summary, this section identified several features of the Swedish institutional set up during most of the postwar period that, in addition to the tax system, contributed to an excessive concentration of economic activity in large, old and capital-intensive firms. Credit market regulation, the national pension system, employment security laws and the successful pursuit of a compressed wage structure all played a role in this regard.

5. Adverse Consequences of Policies that Disfavor Younger and Smaller Employers

The two preceding sections identify several aspects of the Swedish model that favored institutional forms of business ownership and that disfavored younger, smaller and less capital-intensive businesses. This section considers how and why these aspects of the Swedish model impair productivity and welfare and retard economic growth. We do not quantify the various effects we discuss or adduce any hard empirical evidence. Our more modest ambition is simply to advance several points in favor of the proposition that the policies and institutions described in sections 3 and 4 lower productivity and welfare and reduce the potential for economic growth.

To start with a basic point, certain goods and services are more efficiently produced by smaller, owner-operated enterprises. This proposition is difficult to deny, for in looking across countries we see systematic industry-level patterns in ownership and in the size distribution of employment. Restaurants, specialty retail outlets and many personal services tend to be organized into smaller, owner-operated firms and production units. In contrast, the manufacture of durable goods is typically organized into larger establishments and larger firms with considerable separation of ownership and control. The ubiquity of these employer size and ownership patterns across countries with widely varying levels of economic development and often quite different regulatory environments indicates that they reflect strong and pervasive cost-saving motives.

It follows that policies and institutions that penalize direct business ownership and smaller organizational units carry adverse economic consequences. Such policies and institutions harm productivity by distorting business enterprises away from the most efficient organizational forms. They harm consumer welfare by raising the cost of goods and services that are most efficiently produced by the disfavored organizational forms. And they retard growth by limiting the economy's capacity and incentives to respond to changes in the economic environment, some of which will call for a redirection of resources towards disfavored organizational forms.

What are the cost-saving motives that underlie the efficiency advantages of smaller organizational forms in some sectors? Articulating a full and precise list of motives is beyond the scope of our discussion, but a few observations help convey the larger point. For instance, smallness facilitates concentrated ownership. In turn, concentrated ownership mitigates adverse selection and moral hazard problems that undermine efficient allocation and utilization of assets. Hence, policies that hamper the organization of economic activity into smaller enterprises exacerbate incentive and informational problems, thereby undermining productivity and welfare. Morck, Shleifer and Vishny (1988), for example, provide empirical evidence that concentrated ownership mitigates agency problems.

Policies that disfavor labor-intensive sectors and techniques of production also cause productivity and welfare losses. Since certain goods and services are more efficiently produced by labor-intensive techniques, policies that disfavor such techniques will harm welfare and productivity for reasons parallel to the ones identified above in the context of business size and ownership patterns.

Thus far, our discussion stresses static efficiency and welfare losses induced by policies that disfavor direct business ownership, smaller organizational forms and less capital-intensive production techniques, but several observations point to potentially large dynamic efficiency and welfare losses as well. For example, the successful development of markets for certain new products may require a form of flexibility that is best provided by smaller, newer companies. The history of the market for personal computers seems to fit this hypothesis. IBM started with a huge lead in this market, but over the course of a few years experienced a rapid erosion of market share and profitability. IBM's dismal performance in the market for personal computers and work stations seems linked to a reluctance to substitute away from its, at one time, hugely profitable main-frame computer business. Obviously, new firms that entered the personal computer business had no such reluctance to encourage the substitution away from main-frame computers. As an example of another and distinct effect, the small business sector may provide a low-cost mechanism for identifying and developing managerial and entrepreneurial talent. Since fewer assets are at stake, managerial

blunders or simple ineptitude are less costly when they occur in smaller firms.

Two closely related hypotheses involve ease of entry by new firms rather than smallness per se. First, it is seldom obvious *ex ante* exactly which variation of a new technology, a new marketing or distribution tool, or a new organizational form is most efficient. Consequently, the most efficient innovation process may entail "planting a thousand seeds" to see which ones develop successfully. When market participation is effectively limited to only a handful of large firms, inadequate variety and experimentation may occur, slowing the growth process. Second, ease of entry facilitates competition; in turn, entrants are frequently small, especially in younger, less mature markets. While economists lack convincing formal models of the phenomenon, many believe that competition facilitates innovation and productivity growth, and entry is often an important aspect of competition.

Returning to the matter of enterprise size, largeness hampers the external market for corporate control, especially in economies that lack financial institutions and regulatory structures that facilitate corporate takeovers or reorganizations of poorly performing companies. The market for corporate control is one tool for aligning the interests of shareholders and managers and overcoming agency problems (Jensen, 1993). Government policies that undermine the market for corporate control, directly or indirectly, are likely to lead to more severe agency problems, especially when other mechanisms for aligning the interests of managers and shareholders are absent or relatively ineffective.[25]

Finally, throughout the OECD economies, recent decades witnessed a shift in employment away from goods-producing to service-producing industries. Since smaller and less capital-intensive businesses play a relatively more important role in service-producing industries, the Swedish system impeded this transformation and probably slowed the growth of private sector output and employment.

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[25]Perhaps because of compressed compensation structures and high marginal tax rates, direct forms of incentive pay may be relatively ineffective in Sweden in aligning the interests of managers and shareholders. Hence, government policies that favor the organization of economic activity into large firms might create more severe agency problems in Sweden than in other countries.

The preceding discussion only scratches the surface of a broad and complicated set of issues, but it suggests how various aspects of the Swedish model may have reduced productivity and welfare by distorting the structure of employment and the organization of market activity. Our discussion of potential dynamic efficiency losses associated with Swedish policies and institutions suggests that their adverse consequences may have cumulated over time. Our discussion also suggests how the consequences might be more severe in periods that require intense restructuring of the economy.

6. Evidence of Distortions in the Swedish Industrial Distribution of Employment

We now relate U.S.–Swedish differences in the industrial distribution of employment to measures of employer size, capital intensity, the wage level and other industry characteristics. Our interpretation of the evidence rests on the premise that the U.S. industrial distribution reflects a much more neutral set of economic policies and institutions. For this reason, we take the U.S. industrial distribution as a benchmark against which to evaluate the extent of distortions in the Swedish distribution.

Of course, not all U.S.–Swedish differences in the industrial distribution of employment arise from the distortionary policies and institutions that we highlight. Natural comparative advantage undoubtedly plays an important role as well (see Leamer and Lundborg, 1995). But the U.S. industrial distribution can serve as a suitable benchmark for identifying and quantifying systematic distortions in the Swedish distribution, even though factor endowments and other determinants of the industrial distribution differ between the two countries. The key issue is whether omitted determinants of U.S.–Swedish differences are correlated with the variables we consider. To gauge whether an omitted variables problem underlies our regression results, we consider the impact of omitting from our regressions certain industries in which Sweden or the United States plausibly has a pronounced comparative advantage. We also group our data in such a way as to minimize the impact of U.S.–Swedish differences in the extractive industries (mining, forestry, fishing), where natural comparative advantage is likely to play the largest role.

Table 13 highlights U.S.–Swedish differences by listing industries with large absolute values of the log of the ratio, (industry share of U.S. employment/industry share of Swedish employment). The listed industries are ordered by ascending values of this ratio, as reported in the rightmost column. Inspection of the table yields four impressions:

1. Relative to the United States, Swedish employment is concentrated in basic manufacturing industries that are typically dominated by larger firms and production units.

2. Sweden exhibits a much larger share of employment in Health, Education and Social Services. In large part, this difference reflects public provision of and other subsidies for child care, elderly care and related social services in Sweden.

3. Except for items in the Health, Education, and Social Services category, the United States has a larger employment share in most service sectors.

4. The industries with relatively large U.S. employment shares appear to be drawn disproportionately from the extremes of the human capital and wage distributions: (i) Personal and Household Services, Retail Trade, Textiles and Apparel, and Restaurants and Hotels rely heavily on low-skill labor and pay relatively low wages (at least in the United States); (ii) Business Services, Instruments, Aircraft and Missiles, and Financial Institutions rely heavily on high-skill labor and pay relatively high wages.

This last pattern fits nicely with the view that Sweden has a more compressed skill distribution and more compressed skill prices than most other OECD countries, especially the United States. More generally, the impressionistic evidence garnered from Table 13 points to distortions in the Swedish industrial distribution along the lines predicted by our characterization of tax policy and other aspects of the Swedish system.

Table 13

We turn now to a more detailed investigation of U.S.–Swedish differences in the industrial distribution of employment. Two considerations prompt us to consider the manufacturing and nonmanufacturing sectors

separately in our investigation. First, industry-level data are available in more disaggregated form for the manufacturing sector. Second, we have at our disposal a much richer set of covariates for manufacturing industries.

With one exception, we carry out our analysis at the most disaggregated level allowed by our data, bearing in mind the requirement to match U.S. and Swedish industries and to construct industry-level covariates for the regression analysis. The exception involves the extractive industries. Employment shares in these industries are largely determined by natural resource endowments and are probably not closely related to the factors emphasized in our earlier discussion. For this reason, we lump all extractive industries into a single industry group. It turns out that the U.S.–Swedish employment share ratio is close to one for this industry group, even though it differs greatly from one for particular extractive industries.

We begin with the connection between employer size and the industrial distribution of employment. For fourteen broad nonmanufacturing industries and two broad manufacturing industries (durables and nondurables), we computed the establishment *coworker mean* – i.e., the number of employees at the average worker's place of employment.[26]

Figure 6 illustrates the 1987 empirical relationship between the Swedish establishment coworker mean and U.S.–Swedish differences in the industrial distribution of employment.[27] The figure conveys a clear message: Relative to the United States, the Swedish industrial distribution of employment is tilted away from industries with relatively high fractions of employment in smaller establishments. This pattern holds for

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[26]The coworker mean equals the size-weighted mean of employer size; it is the first moment of the distribution of employees by employer size. Tables 14 and 15 below provide summary statistics for various measures of the coworker mean.

[27]The log ratios plotted in Figure 7 are constructed from Swedish data for 1987 and U.S. data for 1987 and 1988. The Swedish establishment coworker statistics plotted in Figure 6 are constructed from 1984 data, and the Swedish firm size statistics used below are constructed from 1987 data. The U.S. size distribution summary statistics draw on data for 1985 and 1987. For the U.S. manufacturing sector, the firm and establishment size distribution summary statistics are computed directly from the establishment-level and firm-level data described in Davis, Haltiwanger and Schuh (1995). In all other cases, the size distribution summary statistics are estimated from data on the number of employees and establishments by employer size class using the algorithm described in Davis (1990).

the sample of sixteen major industry groups, and it holds even more strongly in a 14-industry sample that excludes the manufacture of durables and nondurables.

Figure 6

Table 14 reports several bivariate regressions that relate U.S.–Swedish differences in the industrial distribution of nonmanufacturing employment to simple summary measures of the distribution of employees by employer size. Column (2) reports regression results corresponding to the dashed line in Figure 6. Rather remarkably, the Swedish establishment coworker mean accounts for 47 percent of the variation in U.S.–Swedish differences in the industrial distribution of nonmanufacturing employment. The point estimate implies that the Swedish employment share is 68 log points lower than the U.S. share for an industry group with a value of the coworker mean two standard deviations below its mean value.

Table 14

The goodness of fit for the nonmanufacturing regression is unaffected when we replace the Swedish establishment coworker mean with the corresponding U.S. measure. In contrast, the Swedish firm coworker mean has much less explanatory power.[28] The inferior performance of the firm-based measure probably arises for several reasons: conceptual ambiguities in defining the scope of a firm, practical difficulties in measuring firm size, and the exclusion of a large fraction of public sector employees in Sweden (relative to the U.S.) when measuring the firm size distribution.

While Figure 6 and Table 14 indicate that Swedish employment is tilted towards industries dominated by larger establishments, we found no evidence that Swedish employment is more concentrated in large establishments than U.S. employment. On the contrary, the U.S. establishment coworker mean exceeds twice the corresponding Swedish value, even though U.S. employment is more heavily concentrated in industries dominated by smaller production units. Perhaps this

[28]The available data do not enable us to construct a measure of the U.S. firm coworker mean for several nonmanufacturing industries.

difference reflects smaller product market size in Sweden, but the same pattern holds in the manufacturing sector, which is presumably dominated by tradable goods. The difference may reflect different criteria in the two countries for defining the scope of an establishment, but we can offer no evidence on this score. In any case, the difficulty of interpreting comparisons of size distribution measures between countries argues in favor of the industry-based focus of our analysis.

We constructed a more disaggregated matched industry-level data set and a richer set of covariates for the manufacturing sector. The disaggregated manufacturing data also show higher shares of Swedish employment in industries dominated by larger employers, but the effect is weaker and less consistent than in the nonmanufacturing sector. *Figure 7* shows a scatterplot of the log employment share ratio against the Swedish establishment coworker log.[29]

Figure 7

Table 15 reports bivariate regressions of the log employment share ratio on several alternative summary measures of the employer size distribution. Unlike for the nonmanufacturing sector, the results show little relationship between the log employment share ratio and summary measures of the U.S. size distribution. For the full sample of manufacturing industries, the U.S. establishment coworker mean actually shows a positive relationship to the log employment share ratio, contrary to the implications of our thesis. This anomalous result disappears when we exclude the Aircraft and Missiles industry, a major outlier in terms of both U.S.-based measures of employer size and the log employment share ratio.[30]

Table 15

Taken as a whole, we interpret the results in Figure 7 and Table 15 as supportive of the hypothesis that Sweden's distribution of employment is

[29]The coworker log equals the size-weighted mean of log employer size. It equals the expectation of log employer size taken with respect to the distribution of workers by employer size.

[30]The U.S. Aircraft and Missiles industry is dominated by large firms and plants that engage in much large-scale production for the U.S. military. There is no comparable source of demand for military aircraft and missile products in Sweden. In this respect, the Aircraft and Missiles industry is a special case, and we often report separate results for samples that exclude this industry. Our regression results are typically similar, but stronger and better fitting, when we exclude the Aircraft and Missiles industry.

tilted towards industries with larger employers, as compared to the United States.[31] Our results for the nonmanufacturing sector in Figure 6 and Table 14 strongly support this hypothesis. Thus, if one accepts our premise that the U.S. industrial distribution reflects a comparatively neutral set of policies and institutions, the evidence pushes one to the view that Swedish policies and institutions distorted employment and productive activity away from industries in which smaller businesses play a greater role. Although not speaking directly to the matter, the evidence also suggests that Swedish policies and institutions have distorted employment and productive activity away from smaller businesses within industries.

Table 15 also reports regressions of the log employment share ratio on industry-level measures of capital intensity, energy intensity, productivity growth, exposure to international trade, average production worker wages, and job reallocation intensity.[32] *Figures 8* and *9* plot the log employment share ratio against the capital intensity and hourly wage measures, respectively.

Figure 8

Figure 9

These bivariate regressions and scatterplots for the manufacturing sector identify the following additional patterns of U.S.–Swedish differences in the industrial distribution of employment:

1. Sweden exhibits relatively high employment shares in capital-intensive and energy intensive industries. The point estimate in Table 15 implies that the Swedish employment share is 66 log points higher

[31]This conclusion is not much affected, if we exclude the six manufacturing industries in the Wood and Paper Products sector from the regressions in Table 15.

[32]The import penetration ratio in Table 15 equals the value of imports divided by imports plus domestic shipments. The export share equals the value of exports as a fraction of total domestic production. Excess job reallocation measures the extent of simultaneous plant-level job creation and destruction within an industry. It is measured as gross plant level job creation plus gross job destruction minus the absolute value of the net industry employment change, all expressed as a percentage of industry employment. The wage and factor intensity variables that appear in Table 15 are averages of 1987 and 1988 industry level values. The other variables are averages of annual industry-level values over the 1973–88 period. Data on wages, factor intensity, productivity growth and international trade are constructed from the NBER data files described in Abowd (1991). Job reallocation data are from Davis, Haltiwanger and Shuh (1995).

in an industry with a log capital per worker value two standard deviations above its mean.

2. Sweden exhibits relatively low employment shares in manufacturing industries that experienced rapid total factor productivity growth over the 1973–88 period. The opposite effect holds with respect to labor productivity growth. For both productivity growth measures, the statistical relationship is weak, and the point estimates imply small effects. These results provide no support for the view that Swedish industrial policy directed resources to high productivity growth industries.

3. There is also weak evidence that Sweden's distribution of employment is tilted away from manufacturing industries that exhibit higher rates of excess job reallocation. This finding fits with the view that LAS employment security provisions penalize sectors characterized by less stable establishment-level employment. The effects are moderate in size but imprecisely estimated. The point estimate implies that the Swedish employment share is 32 log points lower in an industry with an excess job reallocation rate two standard deviations above the mean.

4. Trade exposure, as measured by either U.S. import or export intensity, is unrelated to U.S.–Swedish differences in the distribution of employment.

5. Sweden exhibits higher employment shares in high-wage industries. The effects are fairly large and tightly estimated. For an industry with a mean hourly wage two standard deviations above the overall U.S. mean (4.92 in 1982 dollars), the point estimate implies that the Swedish employment share is 72 log points greater.

Statistically and quantitatively significant effects of capital intensity, energy intensity, employer size, and wages carry over to multivariate regression specifications as well. See *Table 16*. The multivariate regression results differ from the bivariate results in two main respects. First, the sign of the coefficient on the capital intensity variable switches. That is, once we condition on the other regressors in Table 16, Sweden's

employment distribution is actually tilted away from capital-intensive manufacturing industries.[33]

Second, the coefficient on the Swedish establishment coworker mean also switches sign. In this regard, note that the estimated effects on the Swedish firm and establishment coworker means are of the same magnitude. Note, also from Table 15, that the mean and standard deviation are roughly twice as large for the firm coworker mean as for the establishment coworker mean. Thus, the multivariate specifications also indicate that, on net, the Swedish distribution of employment is tilted away from industries in which smaller employers play a greater role.

Table 16

Our multivariate regression analysis also reveals an interesting nonlinearity in the relationship between the industry wage structure and U.S.–Swedish differences in the industrial distribution of employment. In particular, if we think in terms of low-wage, medium-wage and high-wage industries, Sweden's distribution of manufacturing employment is sharply distorted away from low-wage industries and towards higher wage, but especially, medium-wage industries. To state the point more precisely, consider three industries. Suppose that industry 1 pays a mean wage five dollars (about two standard deviations) below the overall mean manufacturing wage, industry 2 pays a mean wage equal to the overall mean, and industry 3 pays a mean wage five dollars above the overall mean. Then, the estimated wage effects in column (3) of Table 15 imply that the U.S.–Swedish employment share ratio is 322 log points higher in industry 1 than in industry 2 (conditional on the other regressors). But the implied employment share ratio is only 123 log points higher in industry 2 than in industry 3. These are enormous effects, and the nonlinearity is a sharp one. Thus, the regression results confirm that the Swedish distribution of employment is tilted towards higher wage industries, but this tilt primarily reflects small employment shares in low wage industries and only secondarily reflects large employment shares in high wage industries. See Edin and Topel (1995) for complementary evidence that Sweden's centralized wage-setting system tilted employment away from low-wage industries.

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[33]No single covariate accounts for the reversal in the coefficient sign of the capital intensity variable.

We examined the sensitivity of the regression results in Tables 15 and 16 to the exclusion of the six manufacturing industries in the Wood and Paper Products sector. Leamer and Lundborg (1995), for example, argue that relatively high Swedish employment shares in these industries reflect natural comparative advantage. Our results are not greatly affected by excluding these industries, except for results that pertain to the factor intensity measures. In both the bivariate and multivariate specifications, the effects of the capital intensity and energy intensity variables are greatly attenuated when we exclude these industries. In many specifications, the factor intensity variables are statistically insignificant. The overall goodness of fit of the regressions deteriorates somewhat when we exclude the six industries. For the multivariate specifications in Table 16, the adjusted R^2 values decline by 7 to 12 percentage points.

Finally, we investigated whether the industrial distribution of Swedish employment became more or less distorted (relative to the U.S. distribution) between 1984 and 1992. See *Figure 10*. While changes in the Swedish distribution occurred over this period, they were unrelated to the U.S.–Swedish differences and (in unreported results) to any of the regressors in Tables 15 and 16.

Figure 10

In summary, we uncovered systematic and quantitatively important U.S.–Swedish differences in the industrial distribution of employment. For the most part, the pattern of these differences fits well with the distortions we anticipated from our characterization of Swedish economic policies and institutions. In particular, Sweden's industrial distribution of employment is tilted sharply away from lower wage industries and industries in which smaller employers play a greater role. In terms of a bivariate relationship, Sweden's employment distribution is also sharply tilted away from less capital-intensive manufacturing industries. The connection between capital intensity and U.S.–Swedish differences in the industrial distribution of employment reverses, however, when we condition on other variables that we considered.

On balance, we conclude that tax policy, credit policy, employment security provisions and Sweden's system of centralized wage bargaining

probably caused large distortions in the industrial distribution of Swedish employment. It stands to reason that these aspects of the Swedish system also seriously distorted the structure of employment within industries, although the limitations of our data preclude a direct assessment of this hypothesis. While we are not in a position to evaluate the overall productivity, employment, growth and welfare consequences of these distortions, we think our analysis lends credence to the proposition that the consequences were large and adverse. Further study of the costs of Swedish industrial policy seems highly warranted.

7. International Trends in the Employment Structure

This section recounts three trends in the structure of employment common to many or all OECD countries in recent years. We mention these trends, because they suggest the operation of exogenous economic forces that are likely to have amplified the costs of the distortions in the structure of Swedish employment induced by Swedish policies and institutions.

We have already remarked upon the most important and widespread trend: the large, ongoing shift in employment from goods-producing to service-producing industries. This trend cuts sharply against those sectors of the economy that have traditionally been dominated by larger firms, larger production units and more capital-intensive production processes.

A second trend, less pronounced and consistent, is the movement away from employment in larger production units within industries. Loveman and Sengenberger (1991) examine changes in the distribution of employment by establishment and firm size in the six largest OECD countries. Only in the manufacturing sector are the available data adequate for drawing a clear picture. The data indicate that the secular trend away from employment in smaller manufacturing plants reversed or at least ended by the 1970s or 1980s in the countries under study.

Regarding a third and related trend, more open to measurement and interpretation problems, Loveman and Sengenberger also report evidence

of a tendency toward employment in smaller firms in manufacturing and in the economy as a whole for the largest OECD economies.

These pieces of evidence suggest that the aspects of the Swedish system that disfavored smaller firms and establishments and less capital-intensive production processes cut against some important changes in the economic environment that occurred during the 1970s and 1980s. Consequently, and aside from any endogenous dynamics in the evolution of the Swedish welfare state, it seems likely that the distortions induced by the Swedish model worsened over the course of the past two decades.

8. Concluding Remarks

This paper builds a plausible case for the thesis that Swedish economic policies and institutions seriously distorted the distribution of employment and output between and within industries and – as a consequence – reduced productivity, welfare, and economic progress.

If one accepts this thesis, then several recent economic policy reforms offer some grounds for optimism that Sweden will gravitate towards a less distorted, more efficient structure of employment with favorable consequences for productivity and growth.

The sharp reduction from 55 to 30 percent in statutory rates of corporate taxation mitigates several of the tax-induced distortions identified in section 3. On this point, OECD (1991) shows that estimated corporate tax wedges in Sweden became comparable in size to many other OECD countries after the 1991 tax reform. Termination of the investment fund system in 1991 removed another aspect of the tax system that favored established firms over entrants. Reductions in top marginal income tax rates facing individuals diminish the incentive to substitute socially inefficient forms of home production for goods and services that are more efficiently produced in the market sector. The introduction of a flat 30 percent rate of taxation on individual capital income greatly diminishes the harsh treatment of direct investment in businesses that prevailed under the old tax system. Moreover, since the late 1980s Swedish credit markets have been substantially deregulated, eliminating another policy instrument that disfavored younger, smaller and less capital-intensive

firms. And finally, the demise of centralized wage bargaining has been associated with an uncompression of relative wages that, over time, is likely to contribute to a less distorted distribution of employment between and within industries.

"The leveling of the playing field" for different types of owners and sources of finance was not complete following the 1991 tax reform (Table 7). Further measures were taken in 1993–94, notably the abolishment of taxation of dividends both at the corporate and investor level, and the lowering of capital gains taxation to 12.5 percent. These measures strongly increased the relative attractiveness of direct household ownership of businesses and they reduced the relative cost of equity financing. However, effective from 1995 these measures have to a large extent been undone through the reintroduction of double taxation of dividends and a doubling of the tax rate on capital gains. These changes reverse the previous movement towards a more neutral treatment of debt versus equity as sources of finance. The most recent changes also benefit foreign investors at the expense of domestic investors. In particular, it is noteworthy that the marginal effective tax rates for households buying a newly issued share almost doubled between 1994 and 1995 (McLure and Norrman, 1995).

Thus, despite several favorable developments in the early 1990s, economic policy choices continue to generate incentives that seriously distort the structure of Swedish employment and business ownership. To a certain extent, tax-induced distortions in employment patterns are inevitable in an economy with such a large public sector. But, even given the size of the Swedish public sector, there is ample room for improving the design of the tax system in terms of the aspects discussed in this paper.

References

Abowd, J.M. (1991), "Appendix: The NBER Immigration, Trade and Labor Market Data Files". In Abowd, J.M. and Freeman, R.B. (eds.), *Immigration, Trade, and the Labor Market.* Chicago: University of Chicago Press.

Agell, J. and Lundborg, P. (1993), "Theories of Pay and Unemployment: Survey Evidence from Swedish Manufacturing Firms". IUI Working Paper No. 380, Stockholm.

Ashgarian, H. (1993), "Inter-industry Differences in Capital Structures". Department of Economics, University of Lund. Mimeo.

Bailey, M.N., Haltiwanger, J. and Hulten, C. (1995), "Downsizing and Productivity Growth: Myth or Reality?". *Small Business Economics* (forthcoming),

Bergström, V. (1982), *Studies in Swedish Post-War Industrial Investments.* Dissertation. Department of Economics, University of Uppsala.

Bertola, G. (1990), "Job Security, Wages and Employment". *European Economic Review* 34(4), 851–879.

Braunerhjelm, P. and Carlsson, B. (1993), "Entreprenörskap, småföretag och industriell förnyelse 1968–91". *Ekonomisk Debatt* 21(4), 317–328.

Brown, C. and Medoff, J. (1989), "The Employer Size Wage Effect". *Journal of Political Economy* 97(5), 1027–1059.

Commission of the European Communities (1993), *Employment in Europe.* Luxembourg: Official Publications of the European Community.

Cragg, J.G. and Malkiel, B.G. (1968), "The Consensus and Accuracy of Some Predictions of Growth of Corporate Earnings". *Journal of Finance* 33.

Davidsson, P., Lindmark, L. and Olofsson, C. (1994), *Dynamiken i svenskt näringsliv.* Stockholm: Almqvist & Wiksell.

Davis, S.J. (1990), "Size Distribution Statistics from County Business Patterns Data". Unpublished manuscript.

Davis, S.J. (1992), "Cross-Country Patterns of Change in Relative Wages". *NBER Macroeconomics Annual Vol. 7,* 239–292.

Davis, S.J. and Haltiwanger, J. (1991), "Wage Dispersion between and within U.S. Manufacturing Plants". *Brookings Papers on Economic Activity: Microeconomics,* 115–180.

Davis, S.J., Haltiwanger, J. and Schuh, S. (1995), *Job Creation and Destruction.* Cambridge, MA: MIT Press, forthcoming.

Edin, P.A. and Holmlund, B. (1995), "The Swedish Wage Structure: The Rise and Fall of Solidarity Policy?". In Freeman, R. and Katz, L. (eds.), *Differences and Changes in Wage Structures.* Chicago: Chicago University Press.

Edin, P.A. and Topel, R. (1995), "Wage Policy and Restructuring – The Swedish Labor Market Since 1960". Forthcoming in Freeman, R.B, Swedenborg, B. and Topel, R. (eds.), *The Welfare State in Transition.* Chicago: University of Chicago Press.

Familjeföretagens skatteberedning (1988, 1989), "Nyckeln till familjeföretagen". Mimeo.

Fukao, M. and Hanazaki, M. (1987), "Internationalization of Financial Markets and the Allocation of Capital". *OECD Economic Studies*, No. 8, 35–92.

Fölster, S. and Peltzman, S. (1995), The Social Cost of Regulation and Lack of Competition in Sweden". Forthcoming in Freeman, R.B, Swedenborg, B. and Topel, R. (eds.), *The Welfare State in Transition*. Chicago: Unversity of Chicago Press.

Gandemo, B. and Lundström, A. (1991), *Medium-sized Industrial Firms. Financial Performance – Growth and Change*. B 1991:3. Stockholm: NUTEK.

Henrekson, M, Jonung, L och Stymne, S (1995), "Economic Growth and the Swedish Model". Forthcoming in Crafts, N.F.R. & Tonniolo, G. (eds.), *Economic Growth in Post-1945 Europe*. Cambridge: Cambridge University Press.

Hibbs, D.A., Jr (1990), "Wage Compression under Solidarity Bargaining in Sweden". In Persson-Tanimura, I. (ed.), *Generating Equality in the Welfare State: The Swedish Experience*. Oslo: Norwegian University Press.

Holmlund, B. (1978), "Erfarenheter av Åmanlagarna". *Ekonomisk Debatt* **6**(4), 236–246.

Holmlund, B. (1986), "A New Look at Vacancies and Labor Turnover in Swedish Industry". Stockholm: Trade Union Institute for Economic Research, FIEF (mimeo).

Jensen, M.C. (1993), "The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems". *Journal of Finance* **48**(3), 831–880.

Jonung, L. (1993), "Riksbankens politik 1945–1990" In Werin, L. (ed.), *Från räntereglering till inflationsnorm*, Stockholm: SNS Förlag.

Kazamaki, E. (1991), *Firm Search, Sectoral Shifts, and Unemployment*. University of Stockholm, Swedish Institute for Social Research **17** (Dissertation).

Kazamaki Ottersten, E. (1994), "Yrkeskompetens och rekryteringskrav". In Eliasson, G. and Kazamaki Ottersten, E., *Om förlängd skolgång*. Stockholm: Almqvist & Wiksell International.

King, M.A. and Fullerton, D. (eds.),(1984), *The Taxation of Income from Capital. A Comparative Study of the United States, the United Kingdom, Sweden and West Germany*. Chicago: Chicago University Press.

Leamer, E.E. and Lundborg, P. (1995), "A Heckscher-Ohlin View of Sweden Competing in the Global Marketplace". Forthcoming in Freeman, R.B, Swedenborg, B. and Topel, R. (eds.), *The Welfare State in Transition*. Chicago: University of Chicago Press.

Lindh, T. (1994), "Privat sysselsättning under 50-talet". *Ekonomisk Debatt* **22**(5), 557–561.

Little, I.M.D. (1962), "Higgledy, Piggledy Growth". *Bulletin of the Oxford Univcersity Institute of Statistics* **24**.

Loveman, G. and Sengenberger, W. (1991), "The Reemergence of Small-Scale Production: An International Comparison". *Small Business Economics* **3**(1), 1–37.

Lundström, A. *et al.* (1993), "De nya och små företagens roll i svensk ekonomi". Report No. 18 to the Government Commission on Economic Policy. *SOU 1993:16.* Stockholm: Allmänna Förlaget.

Maddison A. (1982), *Phases of Capitalist Development.* Oxford: Oxford University Press.

McLure, C.E., Jr and Norrman, E. (1995), "Tax Policy in Sweden". Forthcoming in Freeman, R.B, Swedenborg, B. and Topel, R. (eds.), *The Welfare State in Transition.* Chicago: University of Chicago Press.

Morck, R., Schleifer, A. and Vishny, R.W. (1988), "Management Ownership and Market Valuation: An Empirical Analysis. *Journal of Financial Economics* **20**(1/2), 293–315.

Myrdal, G. (1944), "Höga skatter och låga räntor". In *Studier i ekonomi och historia tillägnade Eli F. Heckscher.* Uppsala: Almqvist & Wicksell.

OECD (1991), *Taxing Profits in a Global Economy. Domestic and International Issues.* Paris.

OECD (1993), "Long-term Unemployment: Selected Causes and Remedies". *OECD Employment Outlook,* July, 83–118.

Pontusson, J. (1992), *The Limits of Social Democracy. Investment Politics in Sweden.* Ithaca: Cornell University Press.

Rasmussen, P.-H. (1993), *Stillingsværn: Virkninger for ungdom.* SNF-rapport 79/93. Bewrgen: Stiftelsen for samfunns- och næringslivsforskning.

Rosen, S. (1995), "Public Employment and the Welfare State in Sweden". Forthcoming in Freeman, R.B, Swedenborg, B. and Topel, R. (eds.), *The Welfare State in Transition.* Chicago: University of Chicago Press.

Silenstam, P. (1960), *Arbetskraftsutbudets utveckling i Sverige 1870 – 1965,* Stockholm: Almqvist & Wicksell.

SOU 1992:19, *Långtidsutredningen 1992.* Stockholm: Allmänna Förlaget.

Storrie, D.W. (1994), "Regleringar av visstidsanställningar i kollektivavtal". Konsekvenser av 1994 års lagstiftning". Report No. 30 from EFA, Arbetsmarknadsdepartementet, Stockholm.

Södersten, J. (1984), "Sweden". In King, M.A. and Fullerton, D. (eds.), *The Taxation of Income from Capital. A Comparative Study of the United States, the United Kingdom, Sweden and West Germany.* Chicago: Chicago University Press.

Södersten, J. (1993), "Sweden". In Jorgenson, D.W. and Landau, R., (eds.), *Tax Reform and the Cost of Capital. An International Comparison.* Washington D.C.: Brookings.

Table 1 Average Annual Growth Rate of GDP, GDP per Employed and GDP per Capita 1970–92 (per cent).

	GDP	GDP per employed	GDP per capita
Sweden	*1.7*	*1.2*	*1.2*
OECD	2.9	1.9	2.0
OECD Europe	2.4	2.0	1.8

Source: OECD.

Table 2 Growth in GDP per Man-hour in 16 OECD Countries, 1870–1970.

Country	1870–1970	1870–1950	1870–1913	1913–50	1950–70
Australia	1.36	1.07	0.63	1.59	2.52
Austria	2.25	1.34	1.73	0.89	5.97
Belgium	1.87	1.32	1.25	1.40	4.10
Canada	2.31	2.14	2.03	2.27	2.95
Denmark	2.23	1.79	1.93	1.63	4.02
Finland	2.70	2.06	2.10	2.01	5.30
France	2.49	1.87	1.79	1.97	5.01
Germany	2.40	1.49	1.86	1.05	6.15
Italy	2.26	1.43	1.15	1.75	5.63
Japan	2.84	1.57	1.83	1.27	8.08
Netherlands	1.97	1.41	1.19	1.67	4.22
Norway	2.51	2.05	1.68	2.48	4.38
Sweden	*2.89*	*2.56*	*2.32*	*2.84*	*4.20*
Switzerland	2.08	1.75	1.42	2.14	3.40
U.K.	1.69	1.38	1.22	1.57	2.92
U.S.A.	2.32	2.28	2.04	2.56	2.50
Unweighted average	2.26	1.72	1.64	1.82	4.46†

†Unweighted average excluding Japan and Germany = 4.08.
Source: Maddison (1982, p. 212).

Table 3 Non-agricultural Self-employment as a Proportion of Civilian Employment in OECD Countries, 1973, 1979, 1986 and 1990.

Country	1973	1979	1986	1990
Australia†	9.5	12.4	12.7	12.4
Austria	11.7	8.9	6.1	6.4
Belgium	11.2	11.2	12.6	12.9
Canada†	6.2	6.7	7.2	7.4
Denmark	9.3	9.2	7.0	7.2
Finland	6.4	6.1	6.8	8.8
France†	11.4	10.6	10.5	10.3
Germany	9.1	8.2	7.6	7.7
Greece	n.a.	32.0	27.5	27.2‡
Ireland	10.1	10.4	11.3	13.3
Italy	23.1	18.9	21.6	22.3
Japan†	14.1	14	12.7	11.5
Luxembourg	11.1	9.4	8.4	7.1
Netherlands†	n.a.	8.8	8.2	7.8
New Zealand†	n.a.	9.5	13.3	14.6
Norway†	7.8	6.6	6.5	6.1
Portugal	12.7	12.1	16.9	18.5
Spain	16.3	15.7	17.9	17.1
Sweden	*4.8*	*4.5*	*4.2*	*7.0*
Turkey	n.a.	n.a.	n.a.	27.6
United Kingdom†	7.3	6.6	10.0	11.6
United States†	6.7	7.1	7.4	7.6

†Excluding owner-managers of incorporated businesses (in the U.K. data this category is partly included).
‡1989.
Source: OECD Employment Outlook, July 1992, p. 158.

Table 4 Self Employment as a Share of the Labor Force in the 12 EC Countries and Sweden in 1992 (%).

Country	*%*	*Country*	*%*
Belgium	14.1	Luxembourg	8.9
Denmark	8.0	Netherlands	9.6
France	11.2	Portugal	22.9
Germany	8.1	Spain	17.4
Greece	32.6	UK	11.3
Ireland	19.0	EU-12	13.8
Italy	23.2	*Sweden*	*6.8*

Source: The European Observatory for SMEs, *Third Annual Report 1995*.
Note: No data were available for Austria, Finland and Norway. Figures include agriculture.

Table 5 The Distribution of Employment According to Firm Size in Selected European Countries, 1986.

	Number of Employees			
	1–9	10–99	100–499	500–
Sweden	*9.5*	*17.3*	*12.6*	*60.6*
EC	20.9		48.7†	30.4
Germany	18.2	27.3	18.7	35.8
France	15.1	28.6	16.7	39.6
U.K.	23.2	23.9	22.9	30.0
Netherlands	14.0	27.7	17.1	41.3
Denmark	16.8	42.4	23.2	17.6

†10–499.
Note: Firms with no employees and firms in the primary sector are excluded. The public sector is included.
Source: SOU 1992: 19, p. 308.

Table 6 Average Enterprise Size in 16 European Countries in 1990.

Country	*Size*	*Country*	*Size*
Belgium	6	Austria	12
Denmark	9	Finland	12
France	7	Norway	10
Germany[a]	9	*Sweden*	*13*
Greece	3		
Ireland	8	EFTA–4	12
Italy	4		
Luxembourg	10		
Netherlands	10		
Portugal	5		
Spain	4		
UK	8		
EU-12	6	Europe-16	6

[a]Only western Germany.
Source: The European Observatory for SMEs, *Third Annual Report 1995*.
Note: Concerns non-primary private enterprises.

Table 7 Effective Marginal Tax Rates for Different Combinations of Owners and Sources of Finance, 1960, 1970, 1980, 1985 and 1991 (real pre-tax rate of return 10% at actual inflation rates).

	Debt	New share issues	Retained earnings
1960			
Households	27.2	92.7	48.2
Tax exempt institutions	–32.2	31.4	31.2
Insurance companies	–21.7	41.6	34.0
1970			
Households	51.3	122.1	57.1
Tax exempt institutions	–64.8	15.9	32.7
Insurance companies	–45.1	42.4	41.2
1980			
Households	58.2	136.6	51.9
Tax exempt institutions	–83.4	–11.6	11.2
Insurance companies	–54.9	38.4	28.7
1985			
Households	46.6	112.1	64.0
Tax exempt institutions	–46.8	6.8	28.7
Insurance companies	–26.5	32.2	36.3
1991			
Households	31.7	61.8	54.2
Tax exempt institutions	–9.4	4.0	18.7
Insurance companies	14.4	33.3	31.6

Note: All calculations are based on the actual asset composition in manufacturing. The following inflation rates were used: 1960: 3%, 1970: 7%, 1980: 9.4%, 1985: 5%, 1991: 5%. The calculations conform to the general framework developed King and Fullerton (1984). The average holding period is assumed to be 10 years.
Source: Jan Södersten.

Table 8 The Effective Rate of Corporate Taxation for Firms of Different Size and Ownership, 1984–87.

	Employment	1984	1985	1986	1987
Family-owned firms	0–19	20	24	27	30
	20–49	16	24	24	27
	50–199	16	20	22	26
	200–	19	14	19	17
Other firms		14	19	18	21

Source: Familjeföretagens skatteberedning (1989).

Table 9 The Estimated Tax Wedge at 5 Percent Real Interest Rate and 1985 Inflation Rate for Business Capital (percentage points).

	Machinery	Buildings	Total Business Capital
U.S. Old	–5.26	–2.41	–3.25
New	–2.32	–0.68	–1.16
Japan	–1,67	–0.81	–1.08
Germany	–2.37	–2.40	–2.38
France	–3.45	–3.29	–3.35
U.K. Old	–5.55	–3.21	–4.58
New	–3.03	–1.67	–2.46
Italy	–3.85	–3.95	–3.91
Canada Old	–3.61	–2.22	–2.77
New	–1.53	–1.28	–1.38
Australia	–7.98	–2.31	–4.78
Belgium	–6.95	–4.39	–5.51
Netherlands	–4.52	–2.17	–3.20
Spain	–6.21	–4.64	–5.32
Sweden	*–9.11*	*–5.09*	*–7.05*

Source: Fukao and Hanazaki (1987).

Table 10 Actual Effective Tax Rates for Four Countries in 1980 (at 10% real pre-tax rate of return and actual inflation rates).

	U.K.	Sweden	Germany	U.S.
Households	42.0	105.1	71.2	57.5
Tax-exempt institutions	–44.6	–51.8	6.3	–21.5
Insurance companies	–6.7	35.6	48.1	37.2

Note: The figures in the table constitute the averages for each category, given its specific investment pattern in the respective countries.
Source: King and Fullerton (1984).

Table 11 The Estimated Tax Wedge at 5 Percent Real Interest Rate and 1985 Inflation Rate for Housing Investment by a Household in 1985 (percentage points).

	Borrowing case	Asset draw down case
U.S. Old	–5.26	–2.41
New	–2.32	–0.68
Japan	–1,67	–0.81
Germany	–2.37	–2.40
France	–3.45	–3.29
U.K.	–5.55	–3.21
Canada	–3.61	–2.22
Australia	–7.98	–2.31
Sweden	*–9.11*	*–5.09*

Source: Fukao and Hanazaki (1987).

Table 12 Net Saving as a Percentage of GDP, Annual Averages 1950–92.

	1950–59	1960–69	1970–79	1980–92
Total	11.9	14.7	11.5	4.3
Household	4.5	3.6	2.1	0.9
Corporate	4.0	2.6	3.0	3.7
Consolidated government	3.4	8.4	6.4	–0.4

Source: National Accounts.

Table 13 Differences in the Industrial Distribution of Employment, Sweden[a] and the United States,[b] Selected Industries.

	Percent of Employment			*Log Ratio*[c]
Country	Sweden	Sweden	USA	
Year	1987	1992	1987/88	1987/88
Industry[d]				
Motor Vehicles	2.6	2.2	1.1	−.89
Fabricated Metals	3.0	2.6	1.3	−.85
Primary Metals	1.4	1.0	.6	−.79
Wood and Paper Products	3.6	3.2	1.8	−.71
Ships and Rail Equip.	.4	.3	.2	−.63
Machinery and Equip.	5.7	4.6	3.3	−.55
Health, Education, Social Services and Community Org.[e]	30.8	33.0	19.8	−.44
Food and Drink	2.0	1.9	1.4	−.34
Transportation and Public Utilities	9.4	9.4	6.8	−.33
Construction	5.9	6.3	4.7	−.23
Personal and Household Services[f]	1.0	1.0	1.4	.34
Real Estate ad Business Services	5.2	6.4	8.5	.49
Insurance	1.1	1.1	1.9	.55
Retail Trade	6.6	6.5	12.0	.60
Financial Institutions	1.6	1.7	3.0	.62
Textiles and Apparel	1.0	.5	1.8	.65
Instruments	.4	.4	.9	.94
Aircraft and Missiles	.2	.2	.8	1.09
Restaurants and Hotels	1.9	1.9	7.1	1.34

Notes:

[a]The Swedish employment data are tabulated by Statistics Sweden and cover all economic sectors.

[b]The U.S. industry-level data are from the 1988 County Business Patterns data (nonmanufacturing) and the 1987 Longitudinal Research Data Base (manufacturing). Together, these two data sets cover the population of tax-paying private business establishments with one or more paid employees, excluding agricultural production, railroad and household employment. We supplemented these private-sector data with 1988 BLS Establishment Survey data on public sector employment in hospitals, education, transportation, public utilities, and the postal service. The industry-level U.S. data exclude self-employed persons, but employment shares are calculated as the ratio of industry employment to total civilian employment including self-employed persons.

[c]The log of the industry's U.S. employment share minus the log of the industry's Swedish employment share. The industries are ordered by ascending values of this quantity in the table.

[d]Industrial classifications are based on the authors' concordance between the 1987 U.S. Standard Industrial Classification (SIC) system and the Swedish Standard Industrial Classification of All Economic Activities (SNI). The document on the Swedish SNI is dated 1985.

[e]The U.S. data do not include all public sector social service employees and, hence, understate the relative U.S. employment share in this category.

[f]Because the U.S. data do not include domestic household workers and self-employed persons, they substantially understate the relative U.S. employment share in this category.

Table 14 U.S.–Swedish Industry Employment Share[a] Ratio Regressions: Summary Statistics[b] and Regressions[c] for Nonmanufacturing Industries.

Dependent variable: $\log\left(\frac{\text{U.S. Industry Employment Share}}{\text{Swedish Industry Employment Share}}\right)\times 100$

Mean: 3.07 Standard Deviation: 12.76

Regressor[c]	*Mean (St. Dev.)*	*Regression Slope Coefficients (Standard Errors)*			
	(1)	(2)	(3)	(4)	(5)
Swedish Establ. Coworker Mean	199.2 (72.3)	–.471 (.1329			–.267 (.199)
Swedish Firm Coworker Mean	710.6 (542.2)		–.011 (.029)		
U.S. Establ. Coworker Mean	460.0 (327.4)			–.118 (.033)	–.067 (.050)
Adjusted R^2		.473	–.072	.473	.506

Notes:
[a]There are fourteen industry-level observations for each variable.
[b]All summary statistics are computed as employment-weighted quantities.
[c]All regressions include a constant and are weighted by the U.S.–Swedish average value of the industry employment share.
[d]The Swedish firm coworker mean and the U.S. establishment coworker mean are computed from private sector data only. The Swedish establishment coworker mean is computed from data that covers the public and private sectors.

Table 15 U.S.–Swedish Industry Employment Share Ratio Regressions: Summary Statistics[a] and Bivariate Regressions[b] for Manufacturing Industries.

Dependent variable: $\log\left(\frac{\text{U.S. Industry Employment Share}}{\text{Swedish Industry Employment Share}}\right)\times 100$

Regressor[c]	*Mean*	*Std Dev.*	*Regr. Coeff.*	*Std Error*	*Sample Size*[d]	*Adj.* R^2
Swed. Est. Coworker Mean[e]	703.8	781.7	–.029	.01	66	.094
Swed. Est. Coworker Log	5.25	1.064	–41.7	39.9	67	.046
Swed. Est. Coworker Log[e]	5.22	1.041	–26.5	7.14	66	.165
Swed. Firm Coworker Mean	1338.4	1255.5	–.025	.006	66	.21
Swed. Firm Coworker Log	5.76	1.33	–16.9	6.03	67	.094
Swed. Firm Coworker Log[e]	5.79	1.32	–22.4	5.54	66	.19
U.S. Est. Coworker Mean	1510.1	2452.6	.0087	.0041	67	.05
U.S. Est. Coworker Mean[e]	1029.4	1122.5	–.004	.007	66	–.012
U.S. Firm Coworker Mean[e]	25537	41223	–.00029	.00017	66	.029
U.S. Log(Capital/Worker)	2.96	.71	–46.8	10.4	65	.23
U.S. Log(Energy/Worker)	.578	.864	–33.8	8.29	65	.196
U.S. Excess Realloc. Rate	.141	.03	539.2	263.5	65	.048
U.S. Labor Prod. Growth	.073	.011	–1492	675	65	.057
U.S. TFP Growth Rate	.0018	.0091	2078	900	65	.063
U.S. Export Share	.086	.077	12.7	117.2	65	–.016
U.S. Import Penetr. Ratio	.075	.054	–67.4	165.5	65	–.013
U.S. PW Hourly Wage	10.5	2.63	–11.15	2.88	65	.18
U.S. PW Hourly Wage	10.26	2.46	–14.57	2.53	64	.338

Notes:
[a]All summary statistics are computed as employment–weighted quantities.
[b]All regressions include a constant and are weighted by the U.S.–Swedish average value of the industry employment share.
[c]The Swedish firm coworker mean and the U.S. establishment and firm coworker means are computed from private–sector data only. The Swedish establishment coworker mean is computed from data that covers the private and public sectors.
[d]The sample size varies because of missing observations on some variables.
[e]Excludes the Aircraft and Missiles industry.

Table 16 U.S.–Swedish Industry Employment Share Ratio Regressions: Multivariate Regressions for Manufacturing Industries.

Dependent variable: $\log\left(\frac{\text{U.S. Industry Employment Share}}{\text{Swedish Industry Employment Share}}\right)\times 100$

Regressor	*Regression Coefficients (Standard Errors)*					
	(1)	(2)	(3)	(4)[a]	(5)	(6)[a]
U.S. Establishment Coworker Mean	0.0105 (.0083)					
U.S. Firm Coworker Mean	–.0000 (.0002)					
Swedish Establishment Coworker Mean		.0354 (.0145)	.0368 .0141	.0442 (.0161)	.0381 (.0141)	.0454 (.0155)
Swedish Firm Coworker Mean		–.0323 (.0091)	–.0398 (.0094)	–.0403 (.0108)	–.0418 (.0100)	–.0443 (.0106)
U.S. Log(Capital/Worker)	–2.18 (21.96)	53.14 (22.49)	70.08 (23.15)	52.36 (26.16)	62.7 (23.87)	40.9 (25.85)
U.S. Log(Energy/Worker)	–10.7 (15.0)	–34.66 (12.72)	–45.53 (13.31)	–50.69 (15.21)	–43.99 (13.32)	–46.8 (14.83)
U.S. Excess Reallocation Rate	–481 (347)	–646.8 (312.6)	–506.2 (309.7)	–632.6 (353.9)	–403 (320.4)	–409.2 (357.2)
U.S. Production Worker Hourly Wage	–17.5 (5.5)	–22.55 (5.21)	–22.21 (5.05)	–17.28 (5.65)	–18.37 (5.96)	–10.59 (6.25)
U.S. Absolute Deviation from Mean Wage[b]			9.94 (4.58)	12.15 (5.23)	8.37 (4.75)	8.7 (5.3)
U.S. Total Factor Productivity Growth					1021 (853)	2000 (908)
Observations	64	64	64	65	64	65
Adjusted R^2	.35	.451	.484	.395	.488	.433

Notes:

[a]Includes the Aircraft and Missiles industry. The other regressions reported in this table exclude Aircraft and Missiles.

[b]This variable equals the absolute deviation from the employment–weighted mean hourly wage for production workers in the U.S. manufacturing sector. It has a weighted mean value of 2.118 and a weighted standard deviation of 1.563.

See also notes *b* and *c* in Table 15.

Figure headings

Figure 1 Total Employment as a Share of Population Aged 16–64, 1950–92.

Enclosed

Note: Public employment is defined as average number of employees in local and central government incl. social security funds.
Source: Statistics Sweden.

Figure 2 Cumulative Change of Private Employment, Government Employment and Population in Sweden, 1950–92 (thousands).

Enclosed

Source: Statistics Sweden.

Figure 3 Self-employment as a Share of Total Employment in Sweden, 1950–91.

Note: Due to the inclusion of the agricultural sector the level of self-employment is consistently higher than in *Table 3*.
Source: National Accounts.

Figure 4 Newly Started Manufacturing Firms Relative to the Total Number of Manufacturing Firms, 1920–91 (percent).

Enclosed

Note: Only firms with more than one employee are included.
Source: Braunerhjelm and Carlsson (1993).

Figure 5 Statutory and Effective Corporate Tax Rates in Swedish Industry, 1954–91 (percent).

Enclosed

Note: The statutory tax rate includes the profit-sharing tax, which was part of the wage-earner fund system, effective in 1984–90. In 1977 the effective tax rate exceeded 100%, which was due to the fact that aggregate profits were negative, while firms which despite losses wanted to pay dividends had to show book profits.
Source: Jan Södersten.

Figure 1. Total Employment as a Share of Population Aged 16–64, 1950–92.

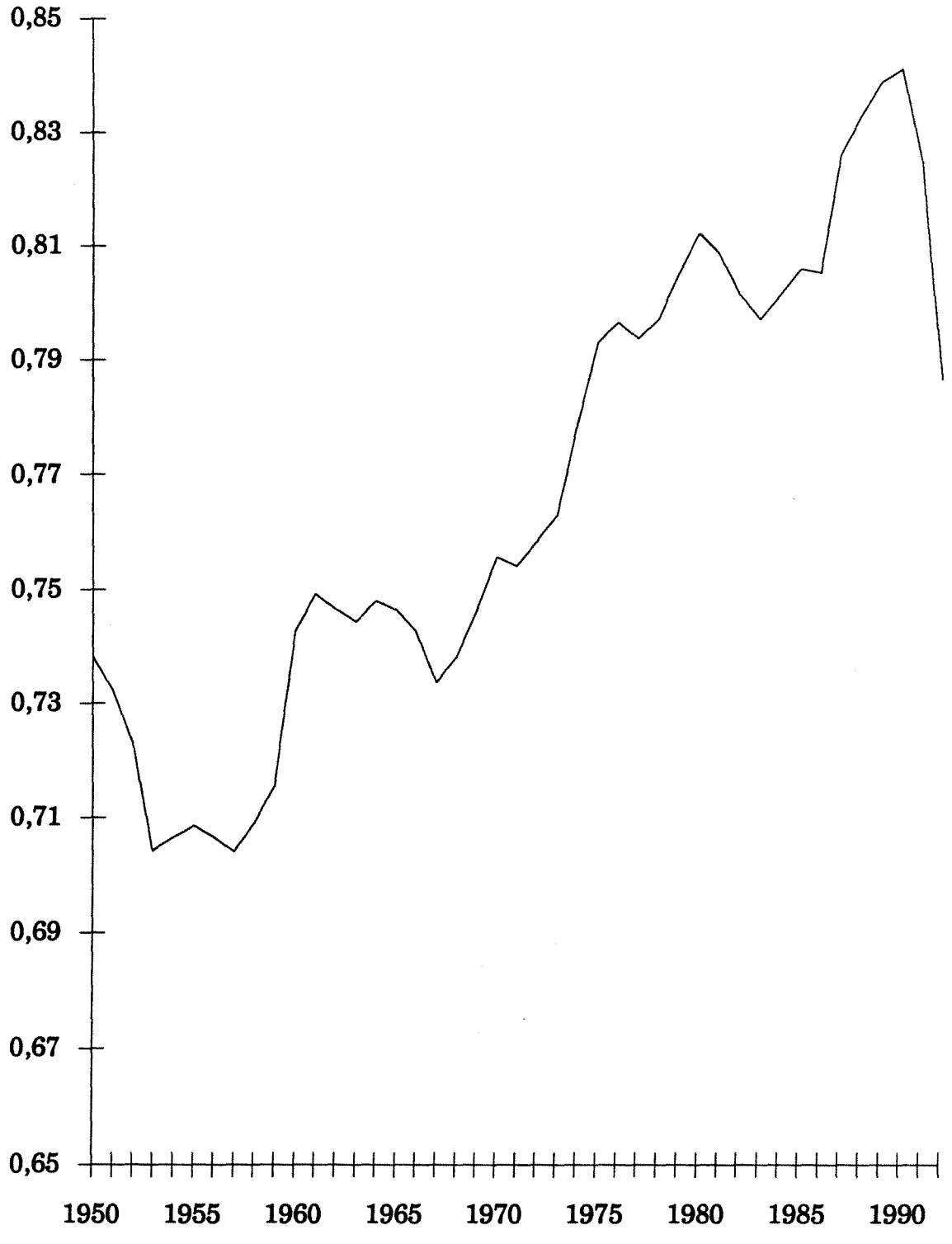


Figure 2. Cumulative Change of Private Employment, Government Employment and Population in Sweden, 1950–1992 (thousands).

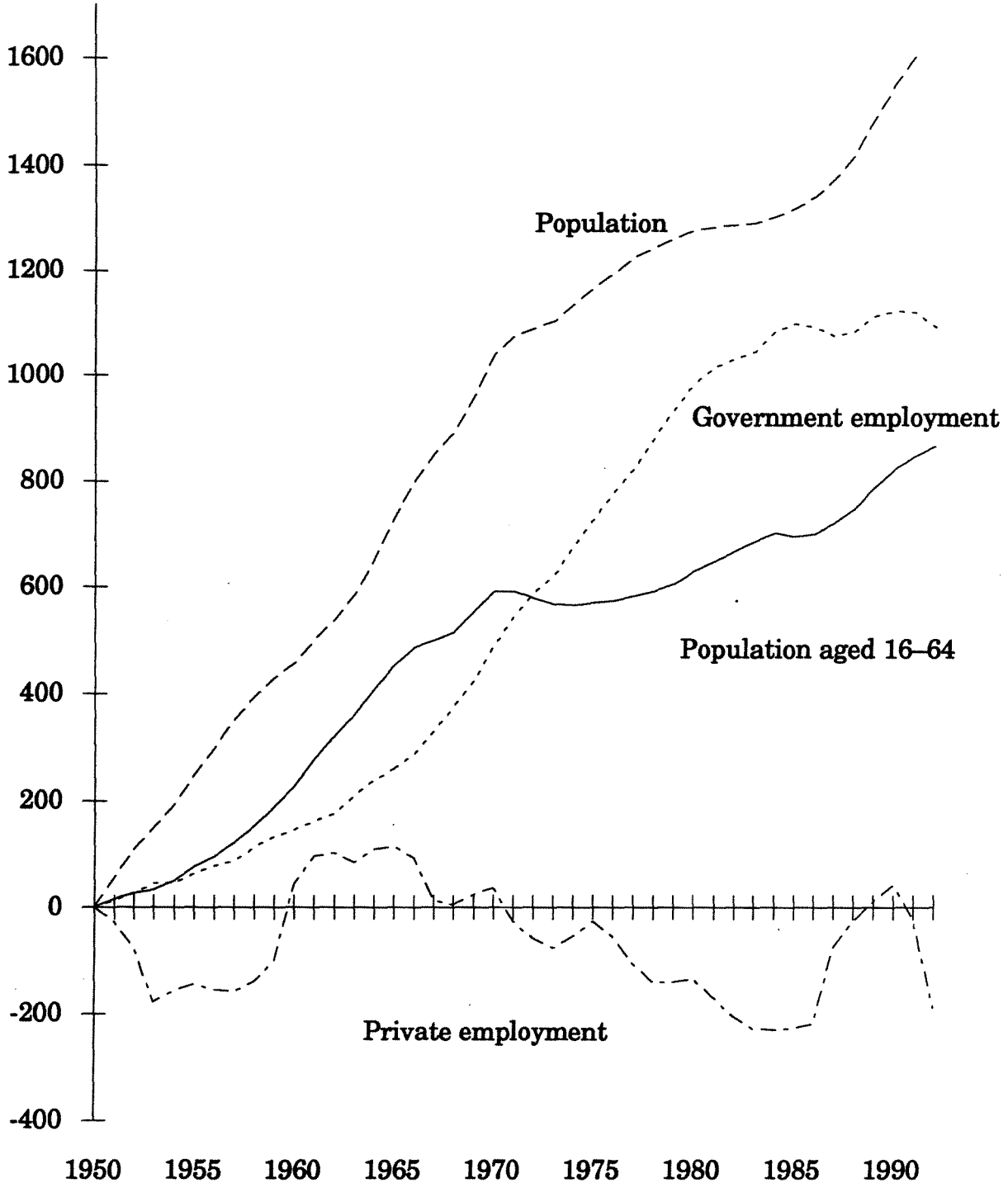


Figure 3. Self-employment as a Share of Total Employment in Sweden, 1950–91.

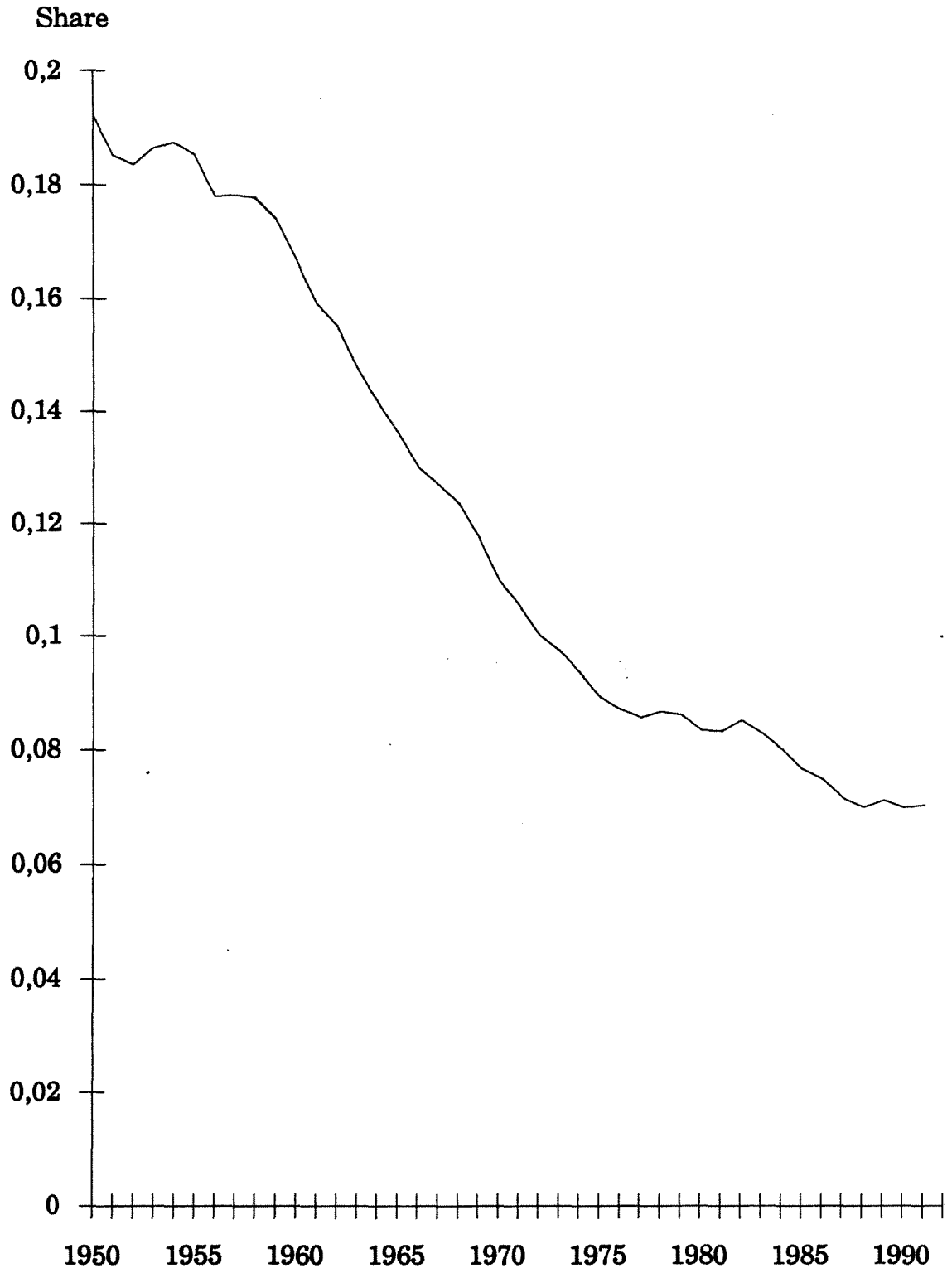


Figure 4. Newly Started Manufacturing Firms Relative to the Total Number of Manufacturing Firms, 1920–91 (percent).

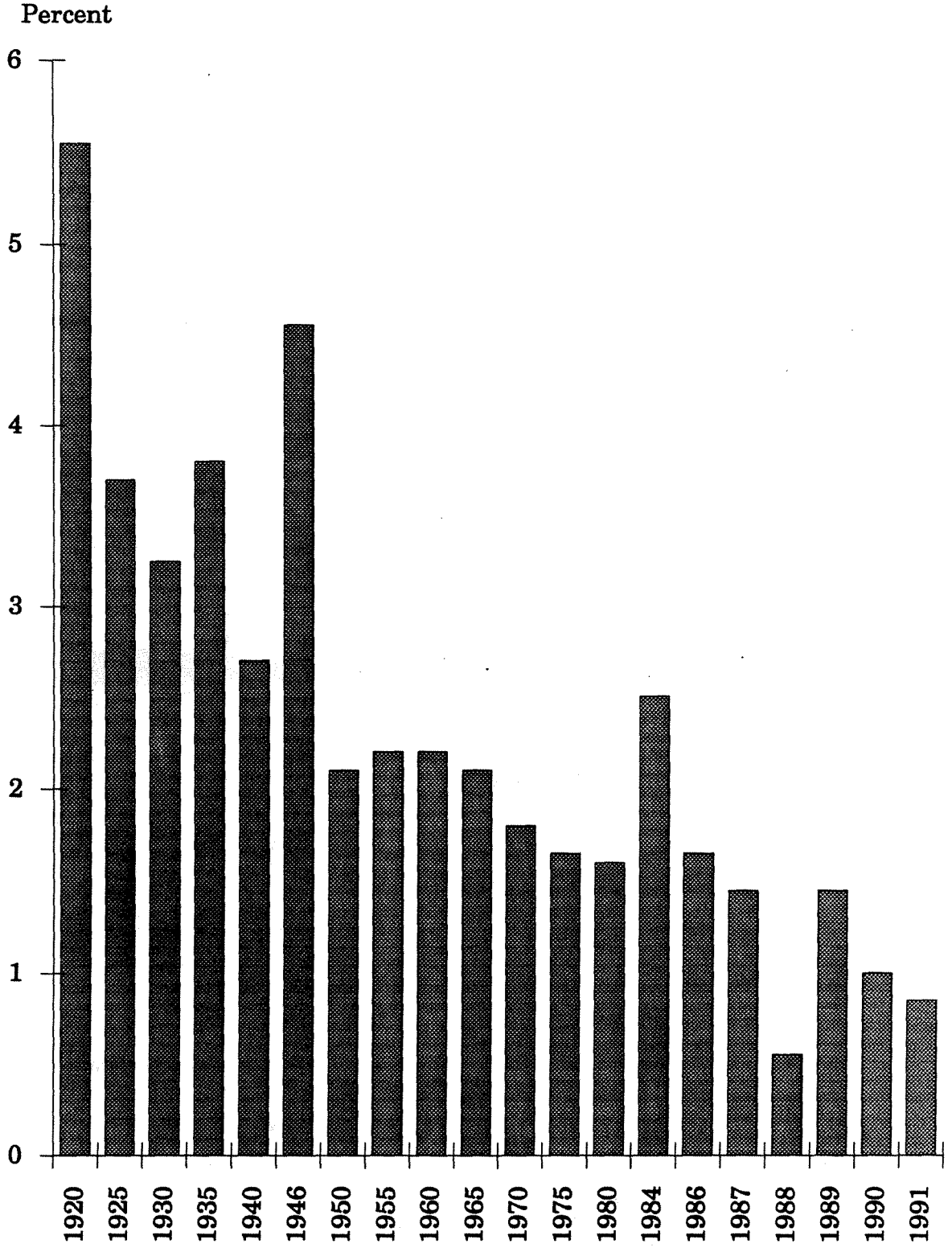


Figure 5. Statutory and Effective Corporate Tax Rates in Swedish Industry 1951–91 (percent).

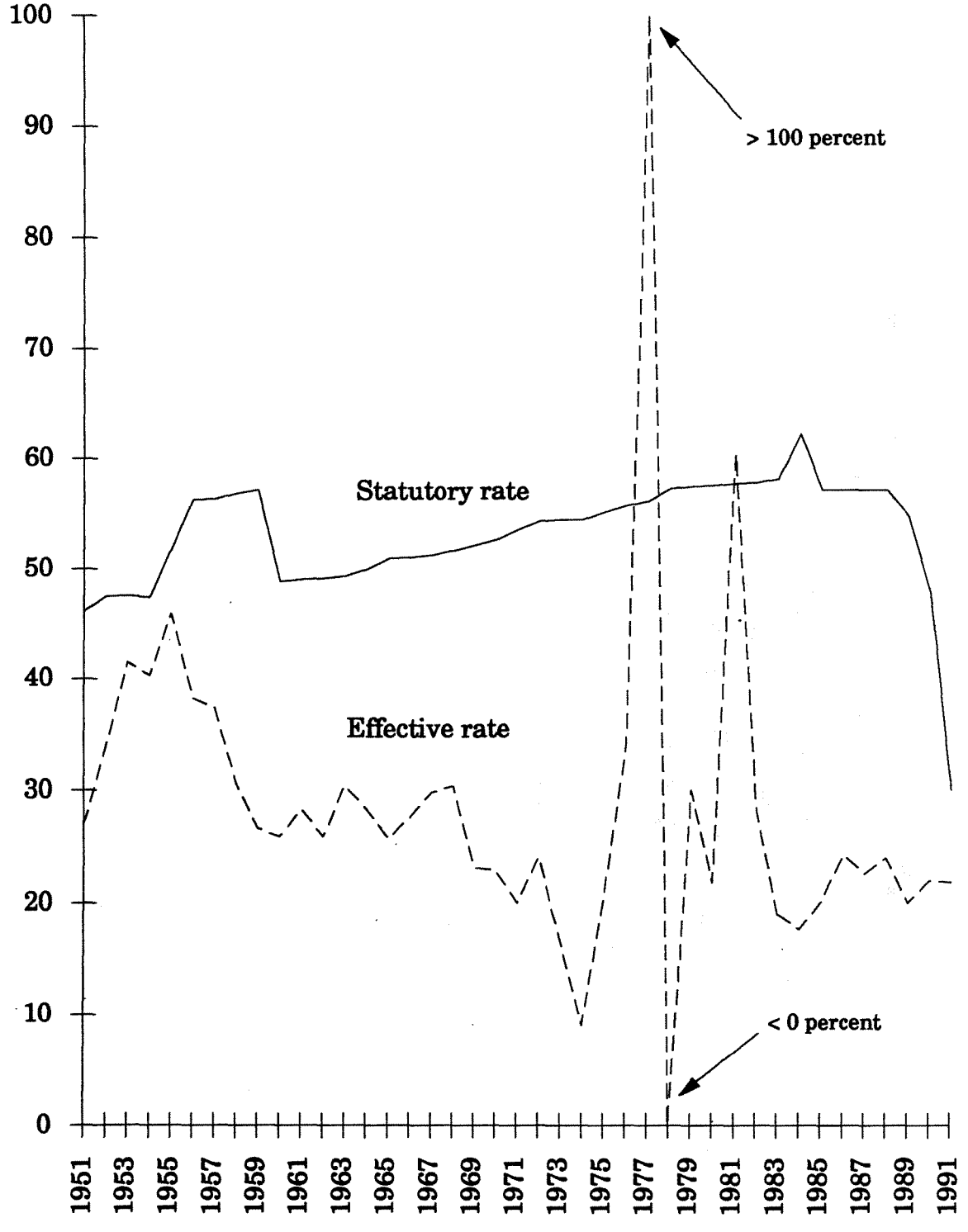
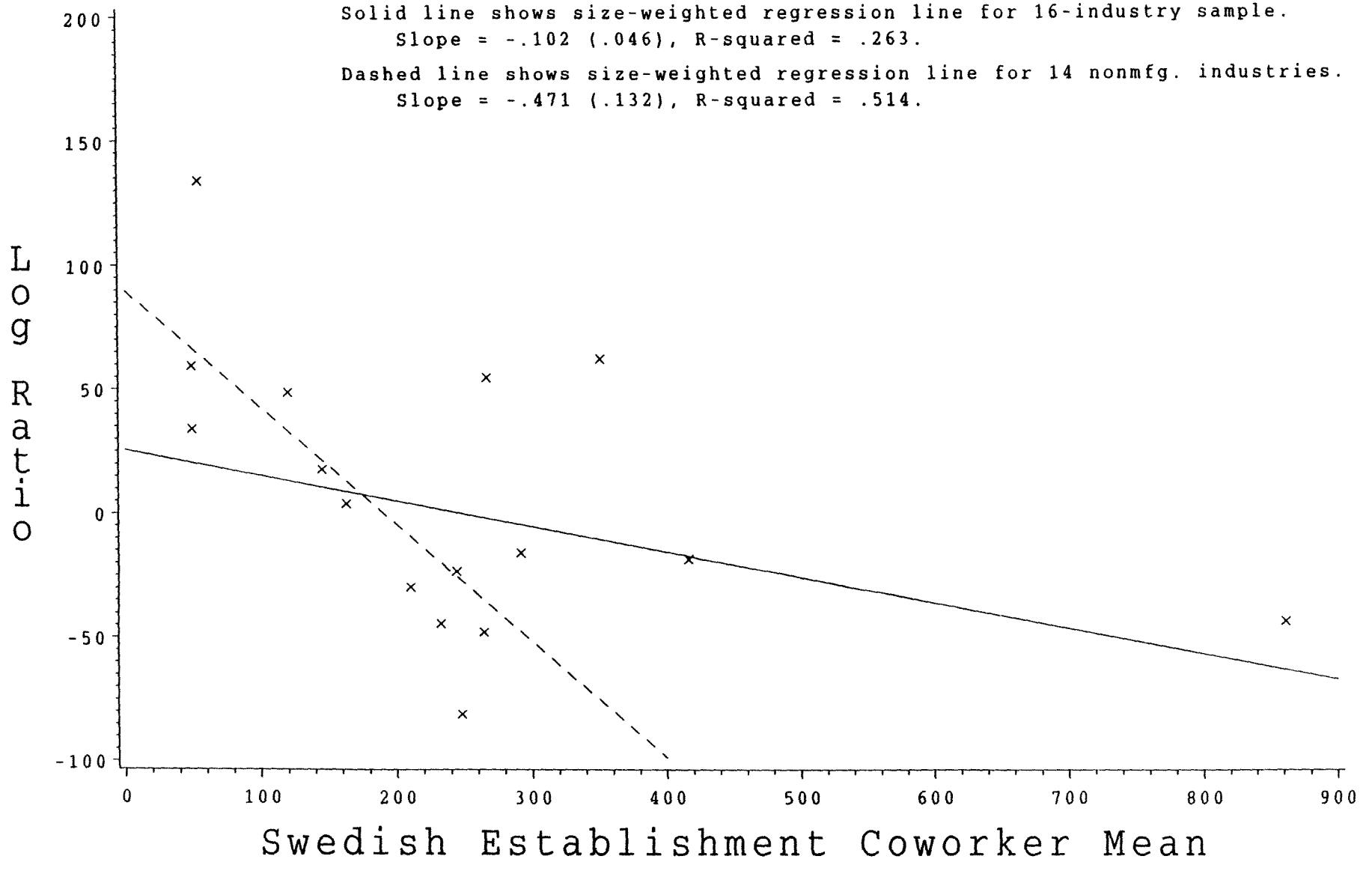


Figure 6.

Log(Employment Share Ratio) versus Swedish Establishment Coworker Mean
Sample of Sixteen Major Industry Groups



Note: The log ratio equals 100 times the log of the ratio,
(industry share of U.S. employment)/(industry share of Swedish employment).

Figure 7.

Log(Employment Share Ratio) versus Swedish Establishment Coworker Log
67 Manufacturing Industries

Figure 8.

Log(Employment Share Ratio) versus U.S. Log(Capital/Worker)
65 Manufacturing Industries

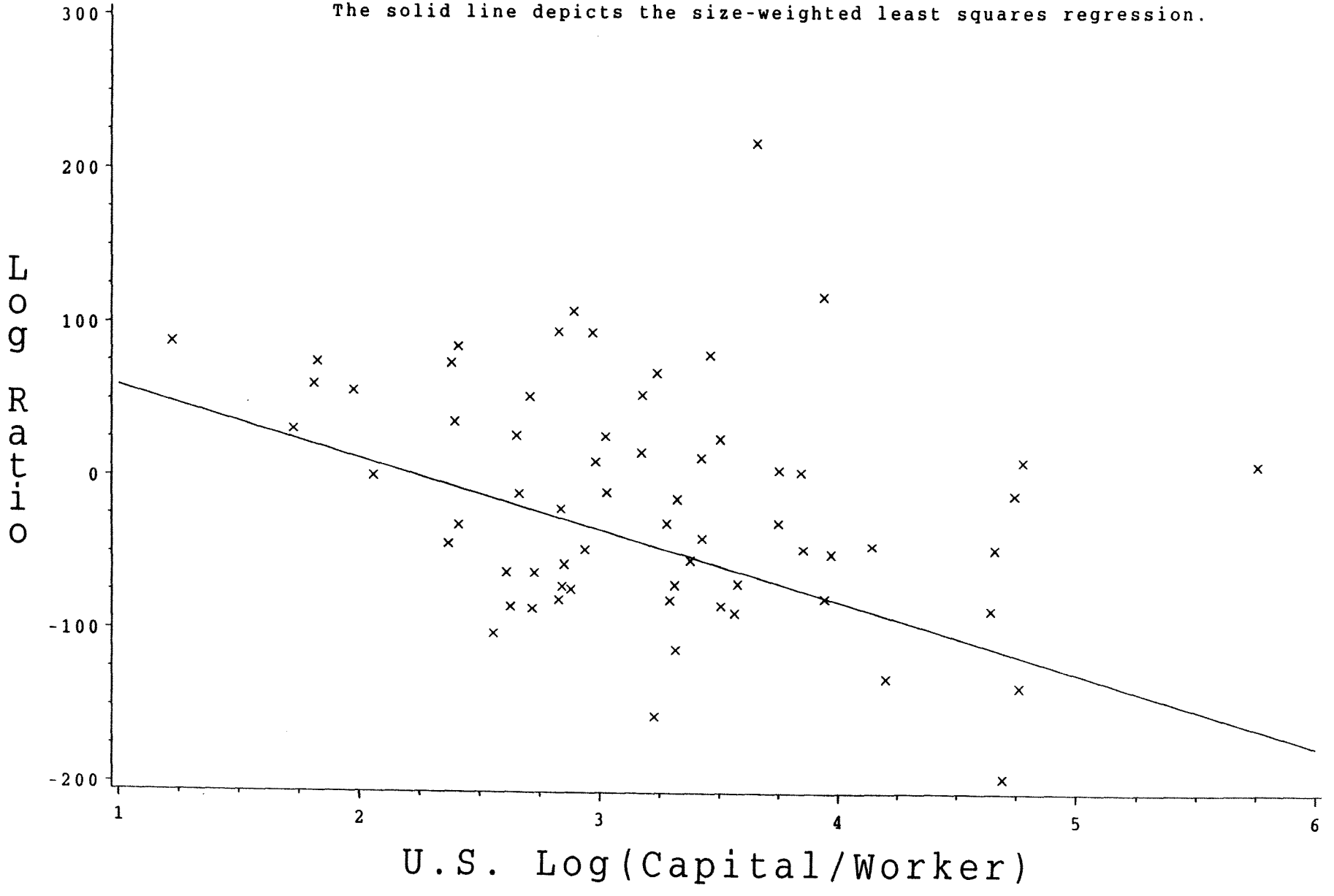


Figure 9.

Log(Employment Share Ratio) versus U.S. Production Worker Hourly Wage
65 Manufacturing Industries

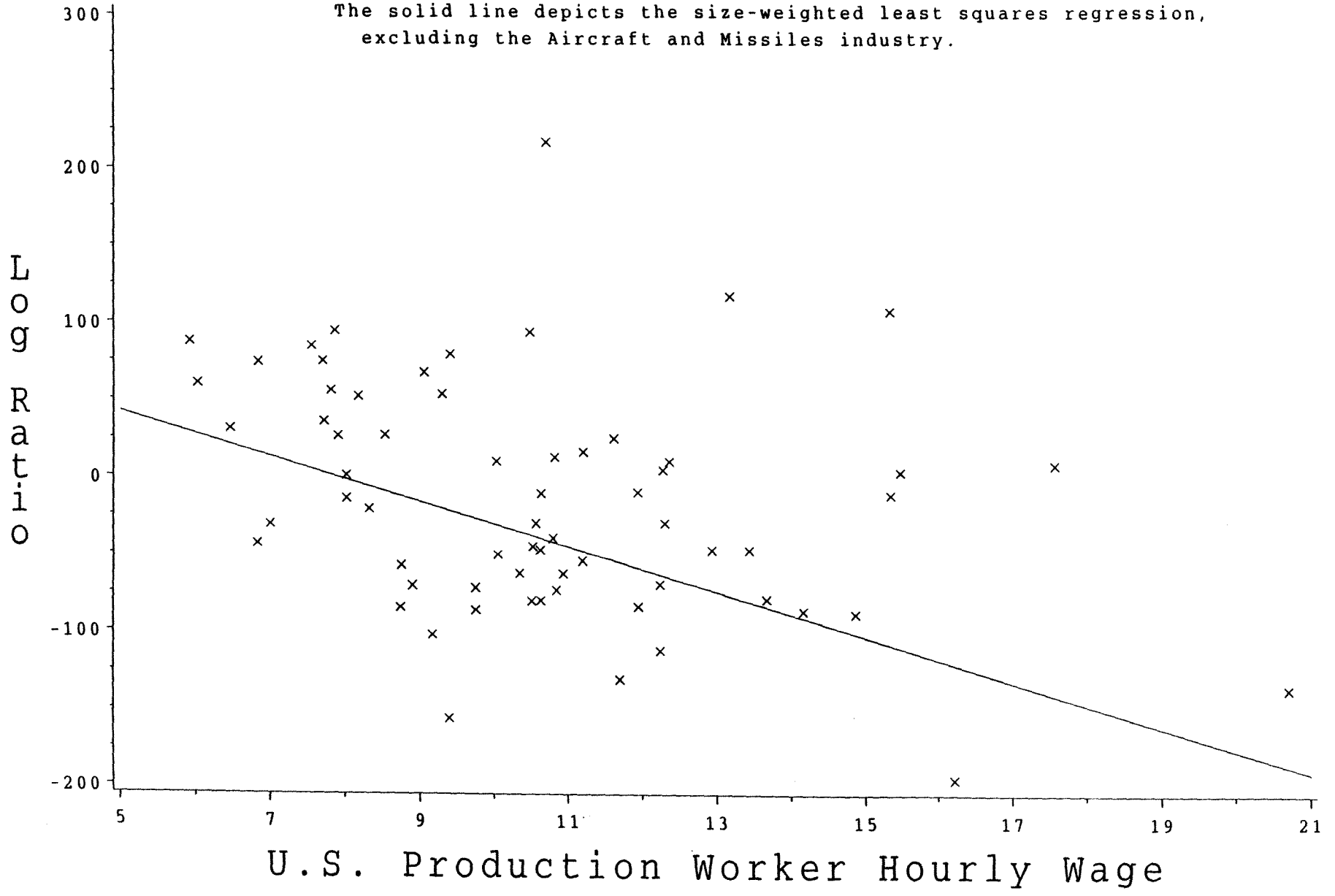


Figure 10

1984–1992 Change in Swedish Employment Share versus Log(Employment Share Ratio)
67 Manufacturing Industries