The Employment Effects of Different Regimes of Welfare State Taxation: An Empirical Analysis of Core OECD Countries

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Abstract

Among policy-makers and academics there is a controversial discussion whether the tax mix influences labor market performance in advanced industrialized countries. Many economists argue that the total tax burden rather than the tax-mix matters for aggregate employment, whereas neither the burden nor the mix play major roles in determining unemployment in the long run. This paper aims at combining this literature with an analysis informed by comparative welfare state analysis. It starts with a discussion of standard economic accounts – the "incentives literature" – and looks for cases where tax-mixes affect labor markets. Then the analysis shifts to a comparative point of view. Contemporaneous welfare states not only differ in terms of social expenditures, but also in the ways they fund these expenditures by various forms of taxation. The paper shows some of the linkages between the "tax regime" on the one hand, and the regime for social expenditures, and namely social transfers, on the other hand. The tax regime is, however, an imperfect "mirror image" of social expenditures and has the capacity to shape labor market outcomes. In particular, countries with high payroll and indirect taxation pose more problems for (low-wage) private sector employment than countries relying predominantly on income taxation. Moreover, since all countries have opened up their goods and capital markets, taxation these days should matter more for labor market outcomes than in times when markets were still national in nature. The paper attempts to judge the empirical plausibility of these claims. The empirical estimations generate three tentative results: First, there is some evidence that payroll and indirect taxation is more harmful for labor markets than income taxation. Second, this is particularly true for non-tradables sectors with a low degree of productivity. Third, there is some evidence that the impact of taxation has increased in the last decades. Taken together, the three results add to an explanation why some welfare states in continental Europe have both low employment and high unemployment rates.

Zusammenfassung

Unter politischen Entscheidungsträgern und Wissenschaftlern wird immer wieder darüber diskutiert, ob die Mischung unterschiedlicher Steuerarten („Steuer-Mix") Arbeitsmarktergebnisse beeinflusst. Viele Ökonomen behaupten, dass lediglich die Gesamtsteuerhöhe für die Arbeitsaufnahme relevant ist. Für die Höhe der Arbeitslosigkeit sei weder der Steuer-Mix noch die Steuerhöhe entscheidend. Das vorliegende Diskussionspapier hat zum Ziel, diese Diskussion in den Rahmen der vergleichenden Wohlfahrtsstaatenforschung einzubetten. Zunächst werden ökonomische Anreizmodelle diskutiert, in denen Steuern einen Einfluss auf Arbeitsmarktergebnisse ausüben. Zudem zeigt der Vergleich von Wohlfahrtsstaaten, dass sich Länder nicht nur bezüglich der Sozialausgaben unterscheiden, sondern auch bezüglich des Steuer-Mixes. Des weiteren werden einige Verbindungslinien zwischen dem Steuerregime und dem Regime von Sozialausgaben, insbesondere von sozialpolitisch motivierten Transfers, gezogen. Allerdings sind Steuer- und Transferregime keine perfekten „Spiegelbilder" voneinander. Daher lohnt es sich für die Wohlfahrtsstaatenforschung zu untersuchen, welchen Einfluss das Steuerregime auf den Arbeitsmarkt ausübt. Besonders bedeutsam ist hierbei die These, dass Länder mit hohen Sozialversicherungsbeiträgen und indirekten Steuern den privaten (Niedriglohn-)Sektor stärker belasten als Länder mit hohen Einkommenssteuern. Zudem sollte dieser Effekt heute stärker sein als noch zu Zeiten, in denen die Länder Barrieren zwischen Güter- und Kapitalmärkten aufrecht erhielten. Diese Thesen werden durch empirische Schätzungen evaluiert, welche drei wesentliche Ergebnisse liefern: Erstens scheinen Sozialversicherungsbeiträge und indirekte Steuern schädlicher für den Arbeitsmarkt zu sein als Einkommenssteuern. Zweitens gilt dies vor allem für den Sektor nicht handelbarer Güter mit geringer Produktivität. Drittens zeichnet sich ab, dass der Zusammenhang zwischen Steuern und Arbeitsmarktergebnissen in den letzten Jahrzehnten zugenommen hat. Alle drei Punkte zusammen tragen zu einer Beantwortung der Frage bei, warum einige kontinentaleuropäische Länder derzeit von hohen Arbeitslosen- und geringen Beschäftigungsraten gekennzeichnet sind.

Contents

1 Introduction

Contemporary scholarship about welfare state analysis argues that there is a trade-off between the size of public redistribution and economic efficiency in terms of employment and growth (Iversen/Wren 1998). This trade-off is mediated through a system of institutions that enhances or neutralizes undesirable consequences (Garrett 1998; Scharpf 1993; Iversen 1999). In this context we should ask ourselves two key questions: Which institutions should we evaluate, and how should we measure them? Leaving wage-bargaining institutions aside, a prime avenue taken in the course of investigation is the use of social expenditure data. However, attempts of finding an employment effect of social benefits show only moderate results on the aggregate level (e.g. Kemmerling 2001: 25). One of the reasons is that the expenditure side of the public budget only shows a part of the national social policy programs. For instance, it does not cover taxation of social benefits or tax allowances with social purposes (Adema 1999). Since it is difficult to account for a total net government budget, the analysis of the effects taxation has on employment is an interesting alternative to approaches concentrating on government outlays.

Of course, this discussion is far from new. For quite some time, economists have modeled the impact of taxation on unemployment or employment.[1] The major conclusion they reach is twofold: First, unemployment is only moderately influenced by taxation in the long run. Second, it is the total tax burden that matters for employment, but not necessarily the mix of different forms of taxation. Both ideas are somewhat at odds with the resurgent discussion about the apparent "under-performance" of low-wage sectors in European economies. The usual suspect is the taxation of labor, be it in the forms of income taxes or social security contributions. But how do consumption taxes fit into this picture? *Prima facie*, they should be particularly harmful for these sectors because they reduce both the demand and supply for low-wage labor (e.g. Scharpf 2000a).

This discussion paper aims at bridging the gap between economic approaches and macro-institutional approaches to welfare state regimes. Different regimes of welfare state taxation should lead to different economic outcomes in terms of (un)employment. Four key questions come to the fore. First, how harmful is taxation in industrialized countries for employment? Taxation should be linked to different types of welfare states, on the one hand, and shape labor market outcomes, on the other. Second, how do these effects vary in a temporal and cross-country

I thank Fritz Scharpf, Bernhard Kittel, Steffen Ganghof, and Christian Albrecht Larsen for their comments on previous drafts.

1 For related surveys see Bean (1994), Daveri (2001), or Nickell and Layard (1999).

dimension? This leads to the search for structural breaks and different institutional settings governing the "tax-employment link." Third, which are the sectors that suffer most from high taxation? It has to be shown whether low-wage jobs are particularly prone to tax-induced crowding out and whether this shows up on an aggregate level. Finally and most importantly, is there an optimal tax-mix that mitigates the trade-off between efficiency and redistribution? This discussion paper intends to deliver some cautious analytical and empirical insights into these questions.

The focus of the paper lies in analyzing different strategies of contemporary welfare states to fund social expenditures. With a growing dependent population, advanced welfare states depend more and more on high levels of taxation. This is the driving force behind the growing demand for increasing overall tax revenues in OECD countries. Growth of taxation decelerated only marginally in the 1990s, and hence, on average, taxes rose to 37.2 percent of GDP in 1997 (OECD 1999: 18). For the 18 countries analyzed in this paper, the average was even slightly higher, namely 40.9 percent.[2] At the same time, unemployment rates remained at unabatedly high levels: the OECD-18 average for 1997 was 8.2 percent, ranging from 3.4 percent in Norway to 12.7 percent in Belgium. Similarly, employment levels are low in most continental European economies and high in Scandinavia and the Anglo-Saxon world.[3]

It seems reasonable to argue that high tax burdens can be partially blamed for the increasing tightness of labor markets in many industrialized countries. Simple economic analysis of comparative statistics indicates that higher tax rates should lead to lower net wages and a smaller labor supply. On the demand side, higher taxation is supposed to lead to higher unit labor costs that, in turn, crowd out employment in sheltered sectors with low levels of productivity (Scharpf 1986) and decrease overall competitiveness in exposed sectors. The latter argument has received a lot of attention in the wake of increasing globalization (e.g. Saeger 1997, Wood 1994).

However, conventional wisdom says that these claims have to be evaluated cautiously. Some welfare states – Denmark, for instance – have relatively high tax burdens and yet quite low unemployment rates, as well as high levels of employment. Empirical research of labor supply on a microlevel has shown that the

2 The 18 countries are Australia (AUL), Austria (AUT), Belgium (BEL), Canada (CAN), Denmark (DEN), Finland (FIN), France (FRA), Germany (GER), Ireland (IRE), Italy (ITA), Japan (JAP), Netherlands (NET), New Zealand (NEW), Norway (NOR), Sweden (SWE), Switzerland (SWI), United Kingdom (UK), United States (US).

3 Total employment as a percentage of the working age population in 1997 was lowest for Italy (50.6) and highest for Switzerland (79.3).

impact of taxation has to be differentiated for various social groups and for different tax systems (Blundell 1995; Laisney / Pohlmeier / Staat 1995). Similarly, critical arguments could be made for labor demand (Hamermesh 1993) and the "globalization hypothesis" (Rowthorn / Ramaswamy 1999).

Scholars of comparative welfare state analysis have, on the whole, neglected the efficiency effects of taxation. Instead, they have focused on the revenue side and debated the link between redistribution and growth or employment (Iversen / Wren 1998; Kenworthy 2001). Recently, however, more and more research has been done on the funding of welfare states (e.g. Steinmo 2002; Swank 1998; Hallerberg / Basinger 1998). Scharpf (2000a, 2000b) has explained cross-national and cross-temporal variation in employment performance. He decomposes both the independent variable "taxes" and the dependent variable "employment." This allows him to point out specific parts of taxation and their impact on sectors that are particularly sensitive to taxation. Analyzing cross-sectional data for 13 OECD countries, he finds that some types of taxation, namely social security contributions and indirect taxes, are harmful to private sector employment. Among different sectors, services with a low to intermediate input of skills are susceptible to the perils of taxation (2000a: 206), whereas internationally exposed sectors such as manufacturing are not very sensitive to taxation.

This discussion paper picks up this line of reasoning and analyzes in more detail whether the evidence Scharpf offers is robust once it is controlled for context variables. Specifically, it elaborates the relationship between employment and taxation with the help of empirical estimations for core OECD countries in the period from 1970 to 1997. Are some forms of taxation eminent in continental European welfare states, i.e. social security contributions and consumption taxes, more harmful to employment than others? Has this effect increased over time because it is being driven by increasing levels of globalization, as Scharpf argues?

To a certain degree, the empirical results of this paper corroborate the idea that tax-mixes matter. The importance of taxation, especially of social security contributions and consumption taxes, accounts for a deceleration of employment growth in OECD countries. Moreover, the structure of taxation also matters for the number of unemployed people. There is some evidence that sectors not (directly) exposed to world market competition are particularly sensitive to the tax-mix. Finally, a direct, albeit crude, control for international competition does not yield very promising results. The empirical results show temporal variation in the impact of taxation, though the evidence for a clearly increasing trend is mixed.

The remainder of this paper is organized as follows: Section 2 will review the economic and comparative welfare state literature on taxation and employment. It will show how tax and social transfer schemes are related and will scrutinize

the argument that it makes a difference how welfare states tax labor. Of special analytic interest is whether there are differences in three major forms of taxation, namely income taxes, social security contributions, and indirect taxes. Section 3 will introduce the data and perform separated time-series and cross-sectional analyses. The time-series analysis will be restricted to a comparison between the US, Sweden, and Germany. Section 4 will present some pooled cross-sectional models for estimating the impact of taxes on labor market outcomes. As a first step, models are presented for overall private sector employment and unemployment. Then the effects of tax-mixes on two sectors, manufacturing and services, are analyzed. Finally, the section discusses whether the impact of taxes has increased in the last few years. A concomitant issue – the role of increased international exposure – is also briefly addressed. Section 5 summarizes the main points of the discussion paper.

2 Comparing Economic and Comparative Accounts of the "Tax–Employment Link"

2.1 A Brief Overview of Economic Approaches

The basic framework for an analysis of the incidence of taxation is the standard microeconomic approach to labor supply. Taxation leads *ceteris paribus* to a substitution effect: work is either replaced by more leisure, by other sources of income, or by an increased amount of work in the future (Gustafsson 1996: 822; Blundell / MaCurdy 1999). It may also lead to the consumption of goods that are less labor-intensive. The main causal mechanism is a "wedge" between gross and net wages. A lower net wage leads to a smaller supply of labor. Only if the income effect (IE) of taxation surpasses the substitution effect (SE) does the labor supply increase. Microeconometric studies have shown that, indeed, for some social groups such as single mothers, IE dominates SE (e.g. Blundell 1995: 19). We would expect a more traditional scenario on an aggregate level for whole sectors of an economy or even for the entire labor market. In other words, the labor supply should be elastic. However, this may serve as a caveat of the gendered pattern of economic sectors across countries, a pattern that could distort empirical results.

Various "real world characteristics" (ibid.: 13) make a textbook-styled analysis of labor supply difficult. For example, fixed costs of work differ between countries. Among others, costs of childcare are much higher in continental Europe than in North America or Scandinavia (Esping-Andersen 1999: 66). This implies that the particularities of a welfare state even affect a simple version of economic modeling.

Probably the most important factor of all is the specific nature of the tax system itself. National income tax regimes differ in terms of progressiveness and the number of tax "kinks," both of which dilute the explanatory power of average tax rates in international comparisons (Gustafsson 1996: 827; Nickell / Layard 1999: 3037). Similarly, different national treatments of the issue of joint taxation for married couples make comparisons truly difficult. If Sweden, for instance, were to apply the German system of joint income taxation, female labor force participation would – according to Gustafsson (1996: 833) – drop from 80 to 60 percent.

Within the same national system, different forms of taxation differ in at least three ways: a) different tax bases, b) different functional forms with respect to income, and – if social security contributions are included – c) a different degree of entitlements for expected future returns. All three dimensions have pronounced consequences for economic incentives experienced by individuals. For example, a VAT taxes consumption instead of income at a flat rate, independent of the individual's income. There is no linkage to entitlements for the individual. This reduction of the incentives supplying labor may be offset by a "fiscal illusion" caused by the failure of people, at times, to realize that real consumption wages are falling (OECD 1995: 10). Typical income taxes use personal income as the tax basis, rise progressively with increasing income, but do not grant further entitlements. Finally, in most countries, social security contributions use wages as the only tax basis. Commonly, there are no thresholds for low income, but individuals earn entitlements for future social benefits like pensions or medical assistance. Hence, social security contributions may have distorting effects once they are conceived as "forced savings" (OECD 1995: 11). Nevertheless, they are earmarked for specific (private) purposes. These institutional characteristics imply that economic incentives of the three types of taxation may shape labor market outcomes differently.

Switching to a macroperspective of the labor market, the analytical framework becomes much more complex even for the case of a closed economy. Supposed wages are flexible; the increase of a payroll tax, for instance, will depend on the elasticity of the labor supply. Inelastic supply will lead to lower net wages, whereas totally elastic supply will lead to lower levels of employment (Gustafsson 1996: 836). Reviewing a large body of empirical literature, Hamermesh (1993: 172) concludes that the greatest burden of taxation lies on wages. On the aggregate level, employers are able to roll over additional labor costs onto labor itself. In a similar vein, Bauer and Riphahn (1998) argue that a cut of payroll or general taxation would only modestly improve German labor market performance rates in both employment and unemployment.

A further complexity arises when social security contributions are split between employees and employers. Theoretically, there is no difference for the real econ-

omy between increasing one of the two shares, an observation that has been labeled "Invariance of Incidence Proposition" (OECD 1990: 153). It is not very astonishing, therefore, that huge differences among European welfare states in their distribution between employers' and employees' shares of social security contributions do not account for differences in the (static) macroeconomic performance of these countries (Schmid 1999: 10).[4] Nevertheless, the empirical evidence for employment-increasing shifts from employers' payroll taxes to income taxes is rather inconclusive (OECD 1995: 68) and will not be developed further in the empirical sections of this paper.

The general mechanism of tax incidence holds only for the assumption of competitive labor markets. If wages are downwardly sticky, higher taxes will lead to higher nominal wages and to higher product prices. This will, ultimately, result in lower real wages. Temporal lags in the reaction functions can allow for a temporary decrease in the overall demand for labor. The OECD (1990: 173; see also Nickell / Layard 1999: 3058) argues that, even though the Invariance Proposition holds true from a long-term perspective, there are significant short-term aberrations from equilibrium values.

The existence of unemployment in a labor market is closely related to this problem. Structural unemployment, such as qualitative mismatch, slows the responsiveness of employment to tax cuts or increases. Further, in neoclassic approaches to labor markets, unemployment benefits, which are the only form of "reservation wages" in these models, are directly linked to taxation. Thus a change in taxation does not alter the level of unemployment by the mechanism of wage bargaining (Nickel / Layard 1999: 3050). The problem with these models is, however, that many social security systems contain elements of redistribution. Not all social transfers are linked to taxation. In such cases, an increase of total taxation can lead to both lower rates of employment and higher unemployment.[5] Alternative economic explanations for unemployment, such as the "efficiency-wage" model, argue that payroll taxes do have a negative indirect impact on employment as they drive the equilibrium wage rate further away from the point of market clearing (Phelps 1994: 155; Pissaridis 1998; Goerke 2002).

Finally, a dynamic perspective suggests that a high tax burden leads to lower economic growth and to higher capital-to-labor ratios in the long run. This, in turn, reduces employment (Nickell / Layard 1999: 3052). Similarly, Daveri and

4 There are, however, empirical studies showing that employers' social security contributions do exert a negative impact on employment (OECD 1995: 83).

5 Take a basic insider-outsider model as an example: as long as both the wage and outside options are indexed on net-of-tax wages, taxation does not lead to additional wage pushes. If there is redistribution, however, then taxation does hurt the inside option (wage) much more than the outside option (transfers).

Tabellini (2000) argue that taxation has an impact on unemployment beyond the short-term perspective. The authors assume differing wage-bargaining institutions to be of primordial importance. For this reason, the negative impact of taxation on employment is strongest in continental Europe, where taxation enhances the push to increase real wage. They conclude that high labor costs induced by labor taxes are an important source of unemployment in these countries (Daveri / Tabellini 2000; Daveri 2001).

Table 1 Selective Overview of Studies on Taxation and Employment / Unemployment

		Impact of Taxation		Policy Implications	
		TOTTAX	Tax Mix	Overall Cut	Revenue-neutral Shift
Employment	Blundell / MaCurdy 1999	substantive	–	yes	–
	OECD 1995	substantive	marginal	yes	ambiguous
	Scharpf 2000	–	substantive	–	cut PAYTAX & INDTAX
	Bauer / Riphahn 1998	–	marginal	–	irrelevant
Unemployment	Nickell / Layard 1999	marginal	short-run effect	marginal effect only	cut PAYTAX
	Daveri / Tabellini 2000	substantive	substantive	yes	cut PAYTAX
	Pissaridis 1998 Goerke 2002	substantive	substantive	yes	ambiguous
	OECD 1995	?	marginal	ambiguous	irrelevant

Table 1 gives a selective overview of economic studies dealing with the topic. In general, microeconomic analyses (e.g. Blundell / MaCurdy 1999) usually focus on the relation between taxes and employment. They find causal pathways explaining potentially negative effects. But they usually consider the total tax burden to be of much more importance than different forms of taxation. The policy conclusion of such studies frequently amounts to overall cuts in taxation or in smoothing kinks in net taxation. Similarly, macroeconomic analyses – dealing with the link between unemployment and taxes – emphasize the role of total tax burdens. While there is evidence somewhat favorable to the assertion that the total tax burden matters for unemployment, at least in the short run, the literature on tax-mixes is much more cautious. If they matter at all, labor taxes are commonly assumed to be most problematic (Daveri 2001), while consumption taxes are generally considered to be less harmful, with income taxes ranging somewhere in between (OECD 1995: 69).

Most of these accounts deliver valuable insights into the mechanisms of taxes and the labor market. They are less capable, however, of explaining the success or failure of different strategies to fund welfare states. Since taxation and social transfer systems may be treated as "twin institutions" of a larger welfare state regime, taxes should be of crucial importance in shaping the accompanying labor markets. The integration of tax regimes into the comparative analysis of welfare states adds to an understanding of these processes. It is for this reason that the paper now focuses on some macroinstitutional aspects of taxation.

2.2 A Macroinstitutional Approach of "Tax Regimes"

The aim of this section is to fuse the economic discussion of tax-mixes with an analysis inspired by comparative research on welfare states. It proceeds in three steps, the first of which is to discuss the links between both sides of the public budget, meaning revenues and expenditures. The underlying idea of this step is that the welfare state regime consists of both a tax and a social transfer (sub-) regime. Hence, even if we do not account for social expenditures directly when analyzing the tax–employment link, social expenditures loom large in the causal mechanisms between taxation and the labor market. While on a quantitative level, the best initial option would be to "net out" taxes and social transfers – thereby gaining reliable information about individual incentives – this is problematic for other reasons. On the one hand, this would assume away an interesting feature of welfare states: high rates of "tax churning" in the provision of public goods (OECD 2001: 163). Welfare states do redistribute significant amounts of money between an individual's own "pockets," for reasons that are not always easy to grasp.[6] On the other hand, the construction of net government budgets is a fairly cumbersome empirical procedure (Adema 1999). This paper therefore follows a different strategy. It deals with taxation only, but first tries to relate tax systems to the social transfer system.

The second step is to scrutinize the tax structures in OECD countries across time. This will reveal some of the significant differences between countries that share similarly high tax burdens. It also prompts us to ask how differences in tax structures are related to the three welfare state regimes or clusters.

The last step is to embed the tax regime back into labor markets and to derive the impact of different tax regimes on labor market outcomes. Some strategies of funding the welfare state are harmful to employment and may also increase un-

6 "Intra-personal" redistribution is still a neglected, underdeveloped field of research. Some notable but cautious exceptions are Korpi / Palme (1998), Estevez-Abe et al. (1999), and Iversen / Soskice (2001).

employment. The discussion also points at the distinction between exposed and sheltered economic sectors and, more specifically, between manufacturing and low-skilled service sectors. In conclusion, it deals with the temporal evolution of the "tax–employment link."

2.2.1 The Relation between Tax and Social Transfer Regimes

A stylized framework for the analysis of linkages between the tax and social transfer systems is sketched in Figure 1. It shows a stylized balance sheet of public revenues and outlays for a "prototypical" welfare state. On the revenue side – which neglects other sources of public income – three important forms of taxation are listed: income taxes (INCTAX), indirect taxes (INDTAX), and payroll taxes (PAYTAX). To each form, three properties are attributed: the functional relationship between income and amount of taxation (progressiveness), the comprehensiveness of the tax basis in terms of the number of people affected, and the existence of some form of discrimination between individuals, predominantly between married couples and single earners.

Figure 1 Relation between Tax and Social Transfer Systems

<table>
<tr><td colspan="4">Prototypical Public Accounting System</td></tr>
<tr><td>Revenues (Taxes)</td><td>Properties
Functional Form
Tax Base
Discrimination</td><td>Outlays
(Social
Expenditures)</td><td>Properties
Status-preservation
Conditions
Familialization</td></tr>
<tr><td>INCTAX</td><td>Progressive
Semicomprehensive
Family-oriented</td><td>Child Benefits</td><td>Individualistic
Children
Family-oriented</td></tr>
<tr><td>INDTAX</td><td>Flat-rate
Comprehensive
Individualistic</td><td>Social Assistance</td><td>Individualistic
Income, Wealth
Family-oriented</td></tr>
<tr><td rowspan="3">PAYTAX</td><td>Linear</td><td rowspan="2">Unemployment Benefits</td><td rowspan="2">Status
Unemployment
Family-oriented</td></tr>
<tr><td>Semicomprehensive</td></tr>
<tr><td>Family-oriented</td><td>Pensions</td><td>Status
Previous Work
Family-oriented</td></tr>
<tr><td></td><td></td><td>Health</td><td>Individualistic
Sickness
Family-oriented</td></tr>
<tr><td>Others</td><td></td><td>Others</td><td></td></tr>
</table>

On the expenditure side, some of the major forms of (passive) social transfers are enumerated. Once again, other categories of social transfers and, more importantly, other forms of government expenditures are omitted. The five major forms of social transfers typically consume more than two-thirds of the social budget, which is more than 60 percent of the entire public-spending total. According to standard comparative welfare state analysis, three major properties associated with these transfers may be encountered (e.g. Esping-Andersen 1990 and 1999). The first one is the differentiation between "status-preserving" and "status-reversing" social transfers. Prominent examples for the transfers that ensure individuals equivalent amounts of money during both the working and non-working periods of their lives are public pension systems and unemployment benefits. The second property deals with the criteria of eligibility that are attached to certain social transfers. Sometimes this is captured by the distinction between means-tested vs. universalistic benefits. The conditions for eligibility are not the same among the five classes of social transfers. Health benefits, for example, are usually connected to illness, whereas unemployment benefits are linked to job-loss and job-search activities. The third property relates to the question concerning how families are treated under different social transfer mechanisms. Many public pension systems, for instance, discriminate between singles and married couples.

Of course, national policy strategies are highly diverse, even in the case of income taxation (Ganghof 2000, 2001). In some countries, income taxation is traditionally rather family-oriented and uses a joint-taxation system, whereas in others, married couples are taxed separately. More significantly, some countries tax social transfers, thereby increasing the tax basis. As a consequence, the differences between apparently benevolent welfare states such as Denmark or the Netherlands and neoliberal welfare states are not really very pronounced once these countries are compared on a net basis (Adema 1999). Moreover, in countries like the US or UK, some social policies are achieved by various forms of negative income taxation, whereas other countries utilize more "traditional" means such as direct income subsidies. In short, the system of taxation is as much part of the welfare regime as it is part of the social security system. The distribution of properties and proportions for both taxes and social transfers may differ from one country to another. This is the reason why this balance sheet has a simplified and "prototypical" design.

Some parallels between taxes and social transfers are worth noting. First of all, there is a major distinction dividing these into two categories. In the one category are direct and indirect taxes as well as child benefits and social assistance. These are not status-preserving since they redistribute money. In the other category is payroll-tax financed spending on unemployment benefits and public pensions. Both are indexed to previously earned income and hence guarantee equivalence

between taxes and entitlements. Somewhere in between there is public health insurance, which is usually linearly associated with income but frequently offers equal in-kind benefits for all.

A second parallel exists between the principle of joint taxation and family-oriented social benefits. Both policies sustain the male breadwinner type of welfare provision. Family-oriented welfare states differ sharply from systems that treat individuals (approximately) equally.

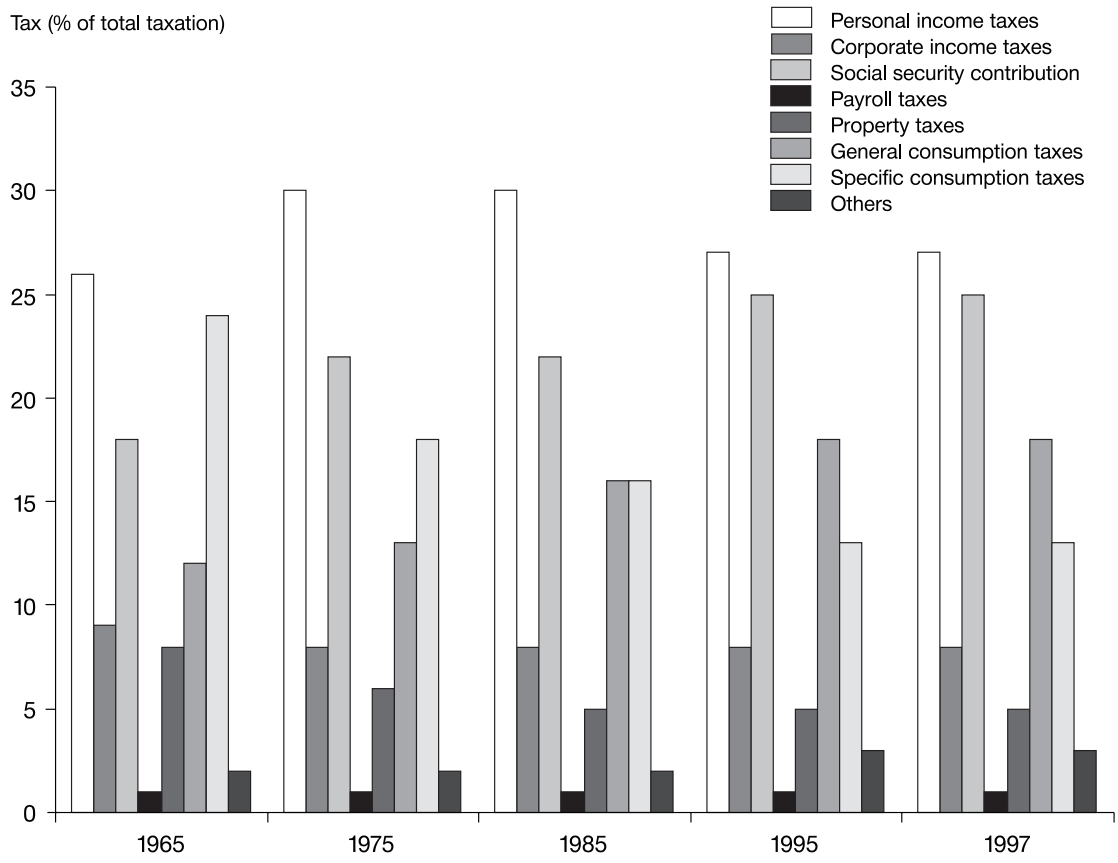
Finally, means-testing and other forms of conditioning seem compatible with both very high and low levels of top-down redistribution. They are usually not compatible with status-preserving transfers. The prime example here is public pensions, where governments all across the OECD world are desperate to constrain early retirement and constantly have to redefine the conditions for receiving transfers. Unemployment benefits seem to be a deviant case, as they are at the same time status-preserving and yet dependent on the condition of job-searching. Again, internal tensions between both principles are legendary and lead to notorious debates about how to activate people in their search behavior.

Such a framework for tax–transfer mechanisms incorporates issues otherwise neglected in the analysis of welfare states. It explicitly takes into account the direct and indirect taxation of wages *and* "reservation wages." Besides, it includes social policy programs that are entirely financed through the revenue side of the government budget. Tax breaks and allowances for social purposes are the most important in this area. An entirely different issue, however, is social policy that is merely publicly mandated (Adema 1999). To a large extent, these forms of social policies follow the logic of non-monetary regulations of labor markets and cannot be easily subsumed into the tax and social transfer system (Nickell / Layard 1999; Saint-Paul 1996).

2.2.2 The Evolution and Differences of National Tax Regimes

As mentioned in the introduction, tax-to-GDP ratios have risen considerably in the last 40 years. Today, the average ratio for OECD countries is close to 40 percent of GDP. At the same time, the tax structure has not remained stable either, since some forms of taxation have increased faster than others (Figure 2). Whereas payroll, corporate income, and property taxes have not changed in relative terms, social security contributions increased at a rate of nearly 40 percent between 1965 and 1997. Personal income taxation has clearly dropped from the highpoint reached in the 1980s, which shows the impact of a series of income tax reforms in most of the OECD countries (Blundell / MaCurdy 1999). Correspondingly, a clear shift in the tax bases from mobile capital to immobile labor is obvious

Figure 2 Evolution of the Tax-Mix in OECD Countries between 1965 and 1997



Source: OECD 1999; own graph.

(Daveri 2001; Ganghof 2000). A second major shift occurred between specific and general consumption taxes. This implies that, although the total amount of consumption taxes has barely changed, the nature of such taxation definitely has. Specific consumption taxes typically include taxes on international trade and single commodities such as oil. The shift to general consumption leads to a larger tax base and to a "diffuse" redistribution instead of an explicit redistribution, as in the case of taxing specific goods.

The average across countries conceals large and persisting differences between them. To this end, three forms of taxation are further analyzed here: INCTAX consists of both personal and corporate taxes, PAYTAX includes all social security contributions, and INDTAX refers to specific and general consumption taxes. Table 2 shows these three broad categories as a percentage of total taxation (TOTTAX) in 1995, as well as two different measures for the overall amount of public provision of social transfers. Traditional gross public social expenditure as a percentage of GDP (GSER) is closely related to total taxation ($r_{Pearson} = 0.94$).

Table 2 Indicators of Taxation and Social Expenditures for 1995

	Social Expenditures		Tax Revenues				Tax Wedge[c]
Country	GSER[a]	NSER[a]	TOTTAX[a]	INCTAX[b]	PAYTAX[b]	INDTAX[b]	
AUT	26.2	–	42.3	26.7	42.8	27.7	27.2
AUL	17.8	18.4	30.4	55.3	6.9	29.3	16.1
BEL	28.8	23.9	46.0	38.5	33.0	26.1	40.3
CAN	18.6	18.3	36.0	46.7	16.4	25.3	21.7
SWI	21.0	–	33.5	37.3	37.0	18.5	18.9
GER	27.1	24.7	39.2	30.1	39.5	27.8	37.3
DEN	30.5	20.9	51.4	60.3	3.5	32.5	30.9
FRA	30.1	–	44.6	17.5	45.7	27.4	39.5
FIN	31.9	23.0	46.1	40.1	27.6	29.7	42.1
ITA	23.7	20.0	41.3	35.1	32.0	27.4	44.9
IRE	19.4	16.6	33.8	39.1	15.7	40.8	26.8
JAP	13.8	–	28.5	36.5	36.5	15.1	15.1
NOR	27.6	19.7	41.5	35.2	23.6	38.6	24.4
NET	26.8	22.3	43.8	26.3	41.8	27.4	34.9
NEW	18.8	–	37.9	60.7	1.0	33.3	22.4
SWE	33.0	24.5	49.6	41.3	31.3	24.2	42.2
UK	22.4	22.6	35.6	36.5	17.7	35.4	26.1
USA	15.8	22.5	27.9	45.9	25.1	17.9	24.4
Mean	24.1	21.3	39.4	39.4	26.5	28.0	29.7
Std. Dev.	5.8	2.6	7.0	11.4	13.8	6.7	9.6

a In percent of GDP.
b In percent of total taxation (TOTTAX).
c In percent of gross labor costs.

Note: GSER = OECD Gross Social Expenditure Ratio; NSER = Net Social Expenditure Ratio (Adema 1999: 30–31), TOTTAX = Total Tax Revenues; INCTAX = Total Income Tax Revenues; PAYTAX = Total Social Security Contribution and Payroll Tax Revenues; INDTAX = Total Indirect Tax Revenues (OECD 1999); Tax Wedge = Total personal income taxes and social security contributions for average production worker (OECD 1998).

The second measure – net social expenditure (NSER) – broadens the definition of the public provision of social transfers. It includes several kinds of privately organized social security contributions that are either publicly mandated or subsidized to a significant extent (Adema 1999: 28). The low and insignificant coefficient of correlation ($r_{Pearson} = 0.44$) between TOTTAX and NSER alludes to the fact that Adema's definition is clearly deviating from the traditional understanding of social policy. It shows that the use of both taxes and social expenditures as indi-

cators for the size of welfare states always presupposes the selection of a specific notion of social policy.

Table 2 also shows that it is not straightforward to allocate advanced welfare states to the three traditional clusters of welfare state regimes as advocated by Esping-Andersen (1990). Although all four Scandinavian welfare states have high overall tax burdens, some of the continental European economies – e.g. Belgium and France – also exhibit high levels of taxation. If these "average" tax rates are compared with effective tax wedge data (last column of Table 2), Italy becomes the welfare state with the highest overall tax burden. Similar problems arise for the tax-mix. It is true that continental European countries rely heavily on payroll and consumption taxes, as opposed to income taxes dominant in Scandinavia. But the pattern is far from being perfect. A third of British tax revenues and some 40 percent of Norwegian ones consist of payroll taxes. A concise, empirical clustering on the basis of tax burdens and tax-mixes is a tricky endeavor.[7]

Bearing this caveat in mind, different welfare state strategies are useful images to characterize tax structures. Nordic welfare states are based on a universalistic tax regime, with a high overall tax burden as well as high rates for both the top and marginal of income taxation. "Bismarckian-type" continental European welfare states stress the role of social security contributions, as social security systems are heavily based on the public insurance system. In addition, the tax–transfer mechanism explicitly favors family incomes against single earners – it is "familializing" (Esping-Andersen 1999). Anglo-Saxon welfare states, finally, provide the least public resources for social expenditures of all three clusters. There, the tax system is similar to Nordic taxation, but some countries make heavy use of tax breaks and other social policies that are based on the revenue side.

2.2.3 Employment Effects of Tax Regimes

How are the aforementioned cross-country and temporal differences in the tax-mix related to employment? As the economic literature and the suggested macroinstitutional balance sheet imply, different forms of taxation affect employment differently. For sectors with low productivity, consumption taxes and social security contributions are particularly painful as they form a major part of overall labor costs. Such sectors may either be crowded out by market forces or by high reservation wages that make it unattractive to take up work. The opposite of this is income taxation (Scharpf 2000: 80–82). Since income taxation usually begins

7 Cluster analysis for 1995 values did not show any consistent ways of aggregating countries into three groups. Results are available from the author on request.

rather moderately at a certain minimum threshold, it harms sectors with a low degree of productivity less than do social security contributions that do not exempt a minimum cash flow. Similarly, consumption taxes can hurt these sectors rather dramatically as they lower profit margins for the self-employed or small enterprises. This contrasts with standard (macro)economic policy recommendations that usually prefer consumption to labor taxation. Moreover, qualitative differences between tax regimes do exert a huge influence on employment levels. The "familialization" of tax systems, for instance, leads to "nested" decision-making between couples.

In addition, the "tax–employment" link has not remained stable. The conventional argument about internationalization, taxation, and employment implies that high taxation is a competitive disadvantage compared to other economies. Increasing taxation thus forces non-wage labor costs up and ultimately drives firms out of the market, given that there is international competition in goods markets. This effect need not arise if highly productive firms can roll over the costs on their workforces by lowering the net wage (Scharpf 2000a: 207). One of the difficulties in assessing this argument is that levels of labor productivity might be themselves endogenous to taxation. If this is the case, high levels of taxation make internationally exposed firms reduce their workforce more than firms in sheltered sectors. If the competitive sectors therefore appear *ex post* to be insensitive to taxation, this might only reflect a higher *apriori* sensitivity.

An interesting question about economic integration or globalization is whether it has changed "the rules of the game" for modern welfare states. Scharpf (2000b: 21) argues that the crisis of the 1970s was mainly fought and resolved on the grounds of wage policy between central banks, employers, and trade unions. He contrasts this with the situation of the 1990s, in which the problems that welfare states face are different because the degree of market integration for capital and goods is irreversibly higher than it was 20 years ago. Therefore, variation in the welfare state regime should matter nowadays much more than in the period of the oil crises.

If the idea is valid that institutions now matter, then the introduction of tax and welfare regimes is a possible guiding principle for further analysis. According to Scharpf (2000a: 215), Scandinavian welfare states have a comparatively "employment-friendly" tax structure that partially reduces the negative impact of a high tax burden. With Anglo-American welfare states sharing very low levels of total taxation, the worst performers in terms of employment creation are continental European welfare states with high levels of "employment-harming" taxation.

To evaluate the employment-friendliness of different categories of taxation, Scharpf decomposes total employment into different sectors. Total private or

business employment can be split into a sheltered sector and an internationally exposed one (2000a: 197). The sheltered sector mainly contains consumer-oriented services like wholesale and retail trade, restaurants, or social services. The exposed sector consists of manufacturing, utilities, and production-oriented services such as financial services. These distinctions are helpful in that they differentiate between varying levels of international competition and predominant skill requirements. If only sectors with a higher average level of qualification among their workforce are indeed capable of transferring higher taxes to consumers, then taxes are particularly harmful for non-tradable sectors with a high concentration of low skills and low productivity (ibid.: 210).[8] In the same vein, not all three main categories of taxation have the same negative impact on employment in these low-skill sectors. If the globalization hypothesis holds, the general impact of taxation on employment should have increased. A closed economy was able to protect sectors via trade barriers and could therefore maintain high tax differentials in relation to other economies.

2.3 Summary and Main Hypotheses

The general claim of an analysis inspired by microeconomic theory is that the total tax burden should exert a negative influence on employment. Although it is not the key question for this paper, it nevertheless merits some elaboration because it is intertwined both theoretically and empirically with the issue of an optimal tax-mix.

The tax-mix, so the main research question of this paper, should matter. Consumption taxes and social security contributions should be rather harmful for private sector employment in advanced welfare states. Because (personal) income taxes have "smaller" tax bases – in terms of people being affected – their impact on employment should be substantially less vigorous.

The tax-mix should be of special importance for sectors with a low-skill and low-pay profile. Both consumption taxes and payroll taxes directly punish workers with low wages: these taxes are neither progressive nor do they exempt these workers. Similarly, the tax-mix should be decisive for sheltered sectors in the economy more than for exposed ones. International competition has already "crowded" out vulnerable segments of the labor market. The employment performance of economies thus hinges upon the ability of sheltered sectors to adjust when they are suffering from excessively high levels of taxation.

8 But see Freeman and Schettkat (2000) for an opposing view.

Finally, the relationship between taxation and employment should have become noticeably stronger in the last few decades. Due to globalization, national welfare systems are nowadays less capable of neutralizing exogenous shocks. Exit-options of mobile factors hamper private sector employment both on the demand and supply side of labor markets through the tax system.

3 Time-Series and Cross-Sectional Analyses of OECD Countries

3.1 Data Sources and Descriptions

Data on taxation stem from "OECD Revenue Statistics." Employment data are taken from the OECD "Labor Force Statistics" and the "OECD Economic Outlook." Most of the other data comes from a set that was compiled at the Max Planck Institute for the Study of Societies.[9] Data on trade with non-OECD countries come from the IMF "Direction of Trade Statistics." For a subsection of the country sample, wage data (compensation of employees) exist for levels of digit one, ISIC. The source is the "OECD International Sector Data Base" and contains no entries for AUT, IRE, NEW and SWI.

The term "taxation" follows the general OECD definition of "taxes" used in the Revenue Statistics and includes social security contributions (OECD 1998: 30). The variable "INCTAX" contains all taxes with the OECD label "1000," i.e. taxes on income, profits, and capital gains. "PAYTAX" combines two categories: "2000" consists of compulsory social security contributions and "3000" consists of any additional taxes on payroll and workforce. Finally, "INDTAX" corresponds to the category "5000" of the OECD, i.e. taxes on goods and services like VAT, excises, and sales taxes. The three tax variables are percentage values of GDP.

As the OECD (1999: 28ff.) states, tax-to-GDP ratios have to be analyzed with caution. First, there are several problems linked to economic cycles and the lags between accruals and receipts of taxes. Second, constant revisions of GDP lead to structural breaks in the times series for some countries. As most countries have not extended their GDP revisions into the past, the pooled time series exhibits several structural breaks. To account for these problems, tests of robustness and alternative tax measures, namely tax wedge data, have been used in addition to revenue data.[10] Finally, since the data are tax revenues relative to GDP, they are

9 I thank Martin Schludi and the MPIfG for making the data available to me.

10 The general practice of using "effective tax rates" (Mendoza et al. 1994) is of limited use for this paper as the temporal scope is too broad to compute these rates for all countries. Tests for subsamples, however, have not revealed much of a difference to the tax-to-GDP ratios.

prone to problems of endogeneity. A decrease (increase) in employment leads to a decrease (increase) in revenues and will automatically induce a positive sign for regressions with employment or unemployment as the dependent.

The data for the dependent variables are defined as employment rates. The actual dependent variable generated for each sector is "Total Employment" divided by the working age population. If productivity levels for the sectors are allowed for as a proxy for human capital, sectors 3 and 8 seem to belong to the highly qualified part of the workforce, whereas sector 6 is markedly lower in its skill inputs, leaving sectors 7 and 9 somewhere in the middle (Kemmerling 2000). However, the average levels of productivity hide a considerable degree of within-sector variation. Once again, the data are riddled by structural breaks, not all of which seem to be tractable via the data descriptions in the Labor Force Statistics.[11] In addition, standard unemployment rates are used as dependent variables.

3.2 Time-Series Analysis for Germany, Sweden, and the United States

A first step in analyzing the tax–employment link is to look at the individual time series for some countries. For the sake of simplicity, the analysis will focus on the three "role models" in comparative welfare state analysis: Germany, Sweden, and the United States (Esping-Andersen 1991). Recently, economists have used the same sample countries in order to analyze institutional differences in the tax system (Blundell / MaCurdy 1999).

A model for the relationship between taxes as a percentage of GDP and private sector employment shows pronounced differences in the tax parameters (cf. Table 3).[12] The set of exogenous variables consists of the three forms of taxation and two variables to control for differences in the evolution of the labor markets: unemployment and the wage.

The tax variables show a considerable variation across countries, although the overall effect is rather limited. In the case of the United States, only indirect taxation exhibits a weakly negative impact on private employment. Taken together, the tax variables do not seem to drive private employment in this model.[13] In

11 For most of the cases, the OECD variable "Number of Employees" contains entries. Thus, the rates of annual changes of these data have been used to fill in missing values for each of the variables. In one case (SWI from 1980 to 1985), this procedure was not possible. In order to retain this country in the sample, a simple trend estimation accounting for missing values produced a continuous series.

12 The model is specified in an ARDL(1,1)-structure.

13 An F-Test comparing the model with tax variables and a model without them could not reject the hypothesis that the tax coefficients are jointly zero.

Table 3 Time-Series Analysis for Germany, Sweden, and the United States

	Business Sector Employment (Level)		
	GER	SWE	US
Intercept	40.573***	38.682***	6.921
	(8.109)	(5.925)	(12.385)
Lag BUSEMP	0.489***	0.397***	0.806***
	(0.100)	(0.092)	(0.209)
Unemployment	–0.853***	–0.885***	–0.939***
	(–0.066)	(0.104)	(0.067)
Lag Unemployment	0.310*	–0.002	0.714***
	(0.139)	(0.175)	(0.179)
Wage	0.135	–0.012	0.043
	(0.086)	(0.014)	(0.189)
Lag Wage	0.073	0.021	–0.062
	(0.097)	(0.015)	(0.193)
Income Taxes	0.107	0.037	0.113
	(0.101)	(0.044)	(0.094)
Lag Income Taxes	0.056	0.154**	0.034
	(0.101)	(0.056)	(0.105)
Payroll Taxes	0.064	–0.092	0.332
	(0.247)	(0.054)	(0.408)
Lag Payroll Taxes	–0.811***	–0.158***	0.507
	(0.251)	(0.051)	(0.407)
Indirect Taxes	–0.197	–0.481***	–0.146*
	(0.178)	(0.087)	(0.079)
Lag Indirect Taxes	–0.279	0.083	0.011
	(0.181)	(0.081)	(0.458)
Adj. R^2	1.000	0.998	0.998
Nobs.	27	27	27
F-Test restricted vs. full (6, 15)	4.5***	8.75***	1.25
DW-h	–1.16	–1.235	–2.558***
ADF-Test	–2.771	–3.399***	–4.101***
(Intercept, Trend)	(1, 1)	(– , –)	(1, –)

Notes: Levels of significance: * < 0.10, ** < 0.05, *** < 0.01.
F-Test restricted vs. full: F-test that compares models with and without tax regressors.
DW-h: Durbin-Watson h-statistic for autocorrelation in AR-models (Gujarati 1995: 605).
ADF-Test: Augmented Dickey-Fuller test for nonstationarity. Brackets contain information whether a trend variable and/or an intercept was included in the test.

general, the US tax-mix rests primarily on income taxation. Since public institutions of social security play a much smaller role in the United States than in Germany or Sweden, payroll taxes are quantitatively less relevant in the US tax-mix.

Sweden is, in many respects, a case opposite to that of the US. Taxation adds to the explanatory power of the model. More interestingly, coefficients for payroll and indirect taxation are negative, whereas income taxation enters with a positive coefficient. This difference corroborates the idea that the tax-mix may matter. Whether or why income taxation bears a positive sign is difficult to tell. Since it is the lag of income taxes that matters, it may be more than pure endogeneity created by economic growth. One argument in the literature deals with the capacity of states to provide necessary infrastructure and factor endowments that have a positive impact on employment via additional growth (Garrett 1998). This discussion, however, goes beyond an analysis of the revenue side of the public budget. For the purpose of the argument followed here, it is safe to say that income taxation seems to be less harmful than other taxes. In terms of policy reform, it is also interesting to note that Sweden shifted taxes from indirect to income taxes (Steinmo forthcoming) in the mid-1990s, while its labor market performance improved considerably at the same time.

Like in Sweden, German taxation shapes labor market outcomes according to Table 3, though the effect is predominantly derived from payroll taxation. If taxation of the previous period increases by one percent, private sector employment drops by nearly the same amount. Given these results, attempts of German policy-makers to contain social security contributions may be seen as a form of labor market policy. In general, Germany is a prime example for countries that have tried to shift the tax-mix from income and payroll to both general and specific forms of indirect taxation (Ganghof 2000).

The control variables in Table 3 show that labor market reactions differ between the three countries. Wages seem to be insignificant, a possible hint that the model is not correctly specified. Unemployment is the most important explanatory variable in all three cases, but differs in its temporal structure. Since potential endogeneity between unemployment and employment cannot be excluded, the results of all three cases are of limited explanatory power. In addition, nonstationarity is a serious problem in one of the cases. Unit-root tests show nonstationarity for German data, whereas first differences are stationary in all three cases. Moreover, the US series shows a significant amount of autocorrelation, so much so that the results for Sweden turn out to be the most reliable compared to the other two cases.

A further source of empirical distortions is also theoretically highly relevant: the possibility for high correlation between the overall tax burden and indirect

taxes.[14] Supplementary time-series analysis (not shown) suggests that the overall tax burden is positively associated with employment only in the Swedish case – because it is somewhat weaker than for the three different forms of taxation. Hence, there is some danger of confusing the impact of tax-mixes with the impact of overall excessive tax burdens, but the danger should not be overrated. A final note also needs to be made regarding the goodness accuracy of the model. Residual analysis shows that the model used so far performs worse during economic downturns.[15]

Those caveats notwithstanding, the results have important consequences for the subsequent discussion. First, country-specific effects are crucial in understanding the link between taxation and employment. Taxation alone cannot resolve this problem, even though tax forms differ in their impact on the various labor markets. Second, an important source of country-specific effects is plainly clear: labor market regimes differ between these three countries. As expected by Daveri and Tabellini (2000), tax effects are presumably smaller in the "atomistic" and flexible US labor market and higher in continental and northern European countries.

3.3 Cross-Sectional Results for All Countries

Given the results of previous time-series analyses, cross section models have to be treated with caution. Nevertheless, the following results may, tentatively, probe into the two problems of tax-mixes and their temporal evolution. This is achieved by a consecutive analysis of cross-country comparisons.

In the following, simple cross-sectional estimates for six years are shown (cf. Table 4). Differences in unemployment are significant in the explanation of private sector employment and imply that the traditional wage–employment nexus might be distorted in cross-sectional analyses. Correspondingly, wages show negative parameters for the subgroup of continental European welfare states. Evaluating the regressions, most of the explanatory power comes from unemployment, and the presence of heteroscedasticity could not be rejected (White-tests in Table 4).

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14 Correlation – all countries from 1970 to 1997 – is high for TOTTAX with INDTAX (0.73***) and intermediate for TOTTAX with PAYTAX (0.50***) and INCTAX (0.48***).

15 Plots of residuals show a "sluggish" behavior of predicted values for all three countries and different lag structures for GDP growth. The first oil crisis as well as the beginning of the 1990s are biased upwardly and are then neutralized by downward biases in the following years.

Table 4 Cross-Sectional Analysis for 17 OECD Countries

	Business Sector Employment (Levels)					
	1971	1976	1981	1986	1991	1996
Intercept	63.11***	35.38**	56.75***	51.25***	56.04***	50.27***
	(10.12)	(15.31)	(10.99)	(9.45)	(8.49)	(10.73)
Unemployment	–3.10***	–2.03***	–1.62**	–1.31***	–1.42***	–0.82**
	(0.55)	(0.54)	(0.32)	(0.27)	(0.27)	(0.28)
Wage	0.29	0.69*	0.36	0.49***	0.46***	–0.54**
	(0.24)	(0.34)	(0.21)	(0.15)	(0.14)	(0.19)
Income Taxes	–0.51	–0.53	–0.53*	–0.47**	–0.21	–0.26
	(0.32)	(0.32)	(0.25)	(0.21)	(0.20)	(0.21)
Payroll Taxes	–0.99***	–0.66*	–0.64**	–0.73***	–0.72***	–0.61***
	(0.27)	(0.31)	(0.21)	(0.14)	(0.17)	(0.18)
Indirect Taxes	–0.09	0.16	–0.04	–0.09	–0.57	–0.67**
	(0.26)	(0.34)	(0.30)	(0.21)	(0.28)	(0.32)
Adj. R^2	0.75	0.23	0.77	0.91	0.93	0.89
F-Test	10.04**	3.88**	7.38***	22.48***	30.19***	18.73***
White Chi^2(12)	15.37***	12.39***	16.95***	13.02***	13.27***	17.42***

Notes: Levels of significance: * < 0.10, ** < 0.05, *** < 0.01. White Chi^2: White's test of heteroscedasticity.

Income taxation is of significant importance for employment levels in two cases (years 1981 and 1986). As far as the other two sources of taxation are concerned, a temporal pattern seems to be suggestive: throughout the periods investigated, payroll taxes exert a negative influence on private employment; in the 1990s, indirect taxes also show a negative impact on employment for the first time. This implies that payroll taxes are a constant source of concern for the labor market, whereas income and indirect taxes have changed sides.

The model is limited in its robustness. Finland and Japan are important outliers because the model underestimates their employment performance. Australia and New Zealand are significantly below the average of the model. Additional variables do little to improve the situation. Wage inequality as measured by the OECD (1993, 1996), for instance, is not of great help to account for these outliers.[16] Nevertheless, it is interesting to note that antipodean welfare states perform worse than the average, although both rely on income taxation as the most im-

16 Cross-sectional models that include wage inequality as an additional independent variable do not show any significant relationship between wage compression and employment.

portant source for funding their welfare states. Clearly, this deviation cannot be explained by the tax-mixes. New Zealand and Australia both share high levels of targeting (Korpi / Palme 1998) as well as a comparatively low degree of progressiveness in income taxation. In New Zealand, in particular, personal income tax does not exempt low-wage workers (Ganghof 2001: 9). This would imply that the incentives of income taxes in these countries are more akin to those of payroll taxes in other countries.

Several tests on a cross-sectional basis have been performed to control for the overall tax burden. Pairs of regressors of both TOTTAX and individual tax forms have been tested simultaneously. This could explain the deviant position of Japan – which is indeed the country with the lowest overall tax burden in the sample – but not that of other outliers. More importantly, regressions with relative tax shares, i.e. individual tax forms as a percentage of total taxation, reveal equal or even stronger results for payroll and indirect taxes.[17] It seems plausible, therefore, to assume that relative tax-mixes matter – even once they are controlled for the overall tax burden.

4 Pooled Cross-Sectional Estimations

4.1 Tax Structure, Aggregate Employment and Unemployment

This part of the paper analyses the impact of the three forms of taxation on aggregate business sector employment and unemployment. Two transformations of the data have been performed. Due to problems of business cycles, annual observations have been replaced by five-year averages.[18] First differences of the new observations have been computed in order to account for the problem of nonstationarity. The set of control variables includes GDP growth and gross wages, i.e. total compensation of employees relative to GDP. The two variables catch effects of variations in output and the wage sum. This should eliminate the problem of endogeneity in tax revenues. Since unemployment poses both theoretical and empirical problems, it has been dropped as an independent variable.[19] Instead,

17 Across time, all three major forms of taxation appear significant, but the relationship with private employment is much stronger for PAYTAX and INDTAX.

18 Daveri and Tabellini (2000) recommend this method for the use of unemployment rates. Note that the problem of endogeneity is particularly relevant for regressions between taxes and unemployment.

19 The reason for this is that they act as highly endogenous variables and result in a "hidden" lagged dependent structure with typically disturbing consequences (Achen 2000; Kittel / Winner 2001).

Table 5 Tax Structure, Employment and Unemployment

First Difference	Business Sector Employment (First Difference) FixTwo (OLS/PCSE)	Unemployment (First Difference) FixOne (OLS/PCSE)
Intercept	−2.986***	2.673***
	(0.917)	(0.576)
GDP Growth	0.700***	−0.231
	(0.165)	(0.178)
Wage	0.025***	−0.044
	(0.007)	(0.054)
Income Taxes	−0.069	0.076
	(0.152)	(0.127)
Payroll Taxes	−0.511*	0.470**
	(0.313)	(0.266)
Indirect Taxes	−0.574***	0.534***
	(0.202)	(0.221)
MSE	3.266	2.537
Adj. R^2	0.48	0.31
Nobs.	85	85
Fixed Effects	Time, Country	Time
F-Test (no FE)	2.87***	4.35***
DF (Num/Den)	(20/59)	(4/75)
Condition Index	8.79	12.699
LM(CC), Chi^2(136)	282.72***	233.35***
AR(1), N(0,1)	1.32	0.37

Notes: Significance: * < .1, ** < .05, *** < .01.
Observations are first differences of 5-year averages; 17 countries, 5 periods.
Coefficients of Fixed Effects (FE) not shown.
OLS/PCSE = ordinary least squares with panel-corrected standard errors (Beck/Katz 1996).
Condition Index for Multicollinearity
LM(CC), Chi^2(136): Breusch-Pagan LM Test for cross-sectional correlation (Green 2000: 601).
AR(1), N(0,1): Asymptotic Test for serial correlation in residuals, corrected for panel data (Gujarati 1995: 425), test-statistic with normal distribution.

unemployment features as a new dependent variable in separate regressions in order to account for cross-national differences explicitly.

Table 5 shows econometric results for a) business sector employment relative to the working-age population and b) the unemployment rate. Whereas in the case for employment, both fixed time- and country-effects were necessary, the equation with unemployment as the dependent only includes fixed time-effects. Multicollinearity does exist in both equations, but only to a limited degree. First-differ-

encing did indeed eliminate autocorrelation. Cross-sectional correlation, finally, could not be rejected according to the test statistics.

The signs of the tax coefficients follow the expected pattern. Payroll and indirect taxes reduce private sector employment and increase unemployment. A change of one percent in indirect taxation, in particular, decreases employment by half a percent and raises unemployment by another half a percent. No significant negative impact of income taxation can be derived from these results.

According to Table 5, growth and wages are only relevant for private sector employment. Unemployment, in turn, is not affected by either of the two. This is in line with the research of labor economists who have shown the sluggish behavior of unemployment in relation to growth (e.g. Bean 1994). An exception to this rule may be the case of Ireland, an important outlier in both regressions due to the strong recovery of the Irish labor market in later periods. Nevertheless, Ireland does not contradict the argument proposed here. Although Ireland has a high proportion of indirect taxation, the tax-mix has been shifting towards income taxes in recent decades. In general, sensitivity analyses show that the three tax forms maintain the differences of their patterns but not the size of their impact.[20] It is important to stress that the two equations presented here measure first-round effects only (cf. section 2.1). Little is said about indirect effects via lower GDP growth, changes in the capital-labor ratio, or the general effects of the demand side.[21]

All things considered, the idea that payroll and indirect taxes matter more than income taxes is justified on the grounds of these models. Income taxes exert an only moderate influence on both employment and unemployment. Payroll and indirect taxes do matter for the performance of labor markets much more drastically.

4.2 Tax Structure and Sectoral Employment

The second question of major interest is whether there are significant differences between sectors of the economy that are exposed to international competition and sectors that produce non-tradable goods and services. For this reason, two sectors

20 For business employment, coefficients of payroll taxes range from –.33 (AUL) to –1.02 (SWE) and coefficients of indirect taxes range from –.43 (JAP) to –.75 (SWE). In brackets is the name of the excluded country.

21 Auxiliary regressions with growth as the dependent variable confirm the suspicion that tax-mixes are also important in the long run. Only payroll and indirect taxes pose a significant threat to long-term growth.

Table 6 Tax Structure and Employment in Manufacturing and Services

	Employment in Manufacturing (First Difference, ISIC3)	Employment in Trade and Restaurants (First Difference, ISIC6)
	FixOne	none
First Difference	(OLS/PSCE)	(OLS/PSCE)
Intercept	–2.002***	–0.070
	(0.775)	(0.255)
GDP Growth	0.559**	0.239***
	(0.261)	(0.088)
Wage	0.311	0.468**
	(0.264)	(0.246)
Income Taxes	–0.061	–0.018
	(0.117)	(0.053)
Payroll Taxes	0.260	–0.145***
	(0.179)	(0.059)
Indirect Taxes	0.124	–0.127
	(0.325)	(0.143)
MSE	4.21	1.95
Adj. R^2	0.64	0.45
Nobs.	56	56
FE	Time	none
F-Test (no FE) F-Value	2.407*	..
Condition Index	10.34	6.82
LM(CC), Chi^2(91)	145.71***	121.11***
AR(1), N(0,1)	1.49	0.82

Notes: Significance: * < .1, ** < .05, *** < .01
see table 5; 14 countries, 4 periods (5-year averages).
.. not applicable.

on the ISIC-level of digit one are compared. On the one hand, manufacturing (ISIC3) represents an exposed sector where the impact of taxation should be markedly lower. On the other, trade, restaurants and hotels (ISIC6) exemplify a sector almost exclusively producing services for markets with limited geographical scope. According to section 2.2.3, in this sector the impact of high taxes should be much higher than in the former case.

Table 6 replicates the model for private sector employment of the previous table for these two sectors. Compared to Table 5, the test statistics in the bottom half of Table 6 exhibit a similar structure of error terms. In particular, cross-sectional correlation is still present. However, the inclusion of fixed effects is less justified than

in Table 5. Fixed time-effects are only weakly significant for ISIC3 and not significant for ISIC6.

Employment in both sectors is driven by growth, whereas wages only matter for ISIC6. This could imply that a strategy of competitiveness and high productivity indeed resulted in a form of insulation of ISIC3 against labor costs. As has been suggested above, this finding would also make it clear that employment in manufacturing is – *ex post* – not very sensitive to taxation.[22] Not one of the three tax forms seems to harm this sector. This proposition does not hold for ISIC6. Rather, ISIC6 depends not only on wages in a typical supply-side manner, but also on payroll taxation. The higher this form of welfare-state funding is, the less employment there is in ISIC6.

Several other empirical tests have been performed to evaluate these findings. The use of total taxation or tax wedges corroborates the thesis that taxation only matters for ISIC6. However, results for ISIC6 do not hold for all non-tradable sectors. If ISIC6 is replaced by ISIC9, for instance, the sign of the tax coefficients changes but maintains its significance.[23] ISIC9 consists of social and personal services such as health or education services. Therefore it is plausible to assume that tax variables such as payroll taxes are directly related to these kinds of public expenditures. ISIC6, on the contrary, should not be affected by those expenditures.

To conclude, the results of this section moderately sustain the idea that the problem of taxation differs across economic sectors. Non-tradable sectors that usually coincide with sectors of lower overall demand for human capital and low-pay seem to suffer somewhat more from labor taxes, namely from high social security contributions. The causality, however, remains unclear, since such effects may be due to either differentials in productivity or international competitiveness, or both. One way of dealing with this problem is to model internationalization explicitly. According to the "globalization thesis," internationalization also accounts for temporal variation in the employment effects of taxation.

4.3 Total Taxation, Trade, and Temporal Variation

The third major question posed in this paper was whether the (overall) impact of taxation has increased in recent decades. Section 3.2 hints that there might be

22 Empirical evidence on ISIC3, however, nourishes the suspicion that taxation plays an important role in explaining cross-country variation in capital-to-labor ratios (Summers cited in Kemmerling 2000: 82).

23 This even holds when the number of government employees is subtracted from ISIC9 in order to account for private employment only.

some truth in this claim. In successive cross sections, the impact of payroll taxes was weaker in the 1970s than in the 1980s, but the reliability of the empirical results was clearly limited. In the same vein, the impact of indirect taxes increased from the 1980s to the 1990s. Here an additional problem arises: This effect may be due to international forces or to the fact that most countries shifted from specific to general consumption taxes.

In the following, two strategies attempt to elaborate these questions further. One way to account for increasing world market competition is to control for the "usual suspects" directly. By the use of an indicator of North-South trade, the tax effect should be purified from temporal variation. A second way to account for temporal variation is to interact tax variables with dummies for each period. Table 7 shows the results for the relationship between total taxation and business sector employment and unemployment, respectively.

The second and fourth columns replicate Table 5, but also include an indicator for North-South trade in the equations. North-South trade is operationalized as the amount of imports from less developed countries in relation to total imports from all countries. Correspondingly, this indicator does not deal with the general trend of internationalization, which has ambivalent effects on total employment in OECD countries. Instead, it focuses on trade in presumably labor-intensive goods, seen as a direct "threat" to employees in developed countries.

Table 7 shows that this kind of trade seems to be relevant for unemployment, but not for employment. In fact, the results for employment do not differ strongly from the results derived in Table 5. Payroll and indirect taxes, in particular, maintain their negative impact on employment. For unemployment, the situation is different in as much as North-South trade not only increases unemployment, but also changes some of the coefficients of other variables (cf. Table 7, column 4). The prime example is growth, which now reduces unemployment, whereas in Table 5 no such effect existed. Coefficients of payroll and indirect taxation are somewhat reduced in their explanatory power.

Hence, North-South trade seems to matter for unemployment, but does not really improve an understanding of the "tax–employment" link. One way to deal with this problem is to look for the sources of North-South trade as a dependent variable. This is, of course, a theoretically and empirically demanding issue that is frequently investigated by trade economists. However, a very simple regression of North-South trade on different forms of taxation suggests that high taxation may indeed be a stimulus for trade. Hence, taxation may also increase unemployment indirectly since it increases imports from less developed countries (Wood 1994).

Table 7 Temporal Variation, Trade, Employment and Unemployment

	Business Sector Employment (First Difference)		Unemployment (First Difference)	
First Difference	FixTwo (OLS/PCSE)	FixTwo (OLS/PCSE)	FixOne (OLS/PCSE)	No fixed (OLS/PCSE)
Intercept	–2.944*** (0.892)	–3.145*** (1.106)	2.944*** (0.501)	2.347*** (0.934)
GDP Growth	0.688*** (0.164)	0.780*** (0.198)	–0.254 (0.162)	–0.287** (0.162)
Wage	0.025*** (0.008)	0.025*** (0.008)	–0.674 (0.505)	–0.403 (0.445)
North-South Trade	–0.183 (0.332)	–0.302 (0.283)	0.115*** (0.040)	0.133*** (0.038)
Tax100	–0.070 (0.151)	–	0.076 (0.123)	–
Tax200	–0.504* (0.305)	–	0.417** (0.245)	–
Tax500	–0.537*** (0.237)	–	0.319** (0.187)	–
TotTax 73–77	–	0.048 (0.255)	–	0.148 (0.217)
TotTax 78–82	–	–0.403** (0.242)	–	0.304* (0.189)
TotTax 83–87	–	–0.250 (0.255)	–	0.395* (0.240)
TotTax 88–92	–	–0.355*** (0.171)	–	–0.050 (0.25)
TotTax 93–97	–	–0.336*** (0.141)	–	0.356*** (0.105)
Adj. R^2	0.51	0.54	0.39	0.32
F-Test (R^2)	3.74***	3.21***	6.34***	3.86***
FE	Time Country	Time Country	Time	–
Nobs.	85	85	85	85
F-Test for TT73–97	..	4.57***	..	2.23**
DF (Num/Den)		(4/56)		(4/76)
Condition Index	9.87	20.83	15.95	18.37
LM(CC), Chi^2(136)	290.27***	272.34***	238.66***	232.41***
AR(1), N(0,1)	1.28	1.04	0.36	0.48

Notes: see Table 5;
Significance: * < .1, ** < .05, *** < .01
.. not applicable

If internationalization does not change the "tax–employment" link, temporal variation in the link may be modeled directly. Columns 3 and 5 in Table 7 show the results for total taxation interacted with dummies for each period analyzed. For both dependent variables, coefficients are different across time. This finding is broadly in line with the results of the consecutive cross sections (cf. section 3.3). However, the impact does not simply increase in a linear fashion. Taxation in the period after the second oil crisis (1978–82) is at least as harmful for employment as the last two periods (1988–92 and 1993–97). An F-test indicates that the coefficients for each interacted tax variable indeed differ significantly in both regressions.[24]

The results for payroll and indirect taxes (not shown) are more convincing. Especially for the case of payroll taxes, the coefficients of latter periods are larger and the levels of significance are higher than for previous periods. Similarly, the impact of indirect taxation has increased. Under the condition that globalization is operationalized correctly as North-South trade,[25] this finding adds plausibility to the idea that broadening the basis of indirect taxes has also increased its impact on employment.

For the case of unemployment, the results point in the same direction. The inclusion of a trade variable makes the coefficient of total taxation lose its significance. Only one of the tax period variables (total taxation of 1983 to 1987) is significant. If the interacted variable of total taxation is replaced by its equivalent for payroll taxes, there is a strong difference between the first two periods and the latter three. In the 1970s and early 1980s, the coefficient is insignificant, whereas from the 1980s onwards it increases in size and significance.

In summary, it is obviously difficult to establish any direct impact of trade on the tax–employment link. The impact of total taxation on both total employment and unemployment has also not increased in a linear and easy-to-interpret way. There is some evidence that the effect of payroll taxes has continuously increased in the last couple of decades, which is broadly in line with the argument proposed in this paper.

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24 This comes at a price, however, since multicollinearity becomes stronger in comparison with a model containing a non-interacted variable for total taxation. The other test statistics are similar to previous tables in suggesting no autocorrelation, but cross-country correlation.

25 A number of alternative measures, such as the degree of openness of the capital account, have been used instead, none of which produced significant results.

5 Conclusion

The main idea of this paper has been to argue that tax systems are an important ingredient of the welfare state regimes in OECD countries. They are linked to other institutions of the welfare state, such as the social transfer system, but reveal additional sources of variation both across countries and across time. The tax-mix in particular, as one of the major characteristics of the tax regime, exerts an impact on labor market outcomes.

In the overview, the argument was made for an integrated approach of measuring the impact that taxes and social benefits have on employment. From an economic perspective, taxes affect the incentives to work according to the standard microeconomic theories of labor supply. Through their impact on equilibrium wages, they also affect employment indirectly by enhancing unemployment. Standard economic analysis usually focuses on overall tax burdens or underlines the pernicious role of taxing labor. In this literature, tax-mixes play a subordinate role.

A macroinstitutional account of welfare states in advanced economies advocates a different view. It emphasizes the issue of tax-mixes and their impact on employment rates in economic sectors. The most obvious difference lies in the tax-mix of income, payroll, and indirect taxation. Each of these forms of taxation has unique characteristics in terms of progressiveness, relation to income, and the conditioning of entitlements. As a consequence, their impact on employment should differ in strength. A focus on tax-mixes enables the evaluation of variation over time, because tax-mixes have been changing in numerous ways during the last three decades. Accordingly, the impact of income, payroll, and indirect taxation should matter across countries and should become stronger across time.

The empirical results showed several key findings. First, tax-mixes do matter. The overall impact of income taxation is considerably lower than those of social security contributions and indirect taxes. This is true for both employment and unemployment ratios. Even when controlled for the impact of overall tax burdens, the magnitude of the three forms of taxation remains markedly different.

Second, taxation has a stronger effect for sheltered sectors with low productivity. Low-wage services are particularly vulnerable in that respect, whereas internationally exposed sectors such as manufacturing are insensitive to taxation.

Third, the hypothesis that globalization has increased the harmful impact of taxation on employment could not be substantiated. The evidence for a relationship between trade and the tax–employment link is rather limited. Empirical

analyses suggest that the impact of taxation increases over time, but the estimations were not very robust.

Finally, a couple of additional problems may be relevant for future research. In general, on the level of international comparison and with special hindsight to economic sectors, the quality of data is still a major obstacle to better estimations. For example, the degree of part-time work provides an invisible variation in the dependent variable that has led all models to be biased for such countries as the Netherlands. Other relevant features of the tax system, such as the familialization, may also account for major differences in the performance of national labor markets.

The way causality was modeled in the previous sections was necessarily limited. For example, high taxation also may induce trade. This puts labor markets indirectly under pressure. This is even more relevant, since labor market structures and institutions differ dramatically across countries. Future research could make the claims about the "tax–employment link" contingent on different institutional settings governing labor markets (Daveri / Tabellini 2000).

With these caveats in mind, an analysis of tax regimes still has the ability to point out crucial differences in the ways taxes influence employment both across time and countries. In terms of policy conclusions, what plays a significant role is not only the overall tax burden, but also the mix of different forms of taxation. Shifting taxes away from mobile sources, such as income, comes at a cost of lower levels of employment participation. Indirect taxes, frequently seen as the "lender of last resort" for finance ministers fighting tax erosion, are an important source of sluggish job growth in many continental European countries.

References

Achen, Christopher H., 2000: *Why Lagged Dependent Variables Can Suppress the Explanatory Power of Other Independent Variables*. Political Methodology Working Papers 2000. The Society for Political Methodology and the Political Methodology Section of the APSA. <http://web.polmeth.ufl.edu/papers/00/achen00.pdf>

Adema, Willem, 1999: *Net Social Expenditure*. OECD Labor Market and Social Policy Occasional Papers, No. 39. Paris: OECD.

Bauer, Thomas / Regina T. Riphahn, 1998: *Employment Effects of Payroll Taxes – an Empirical Test for Germany*. IZA Discussion Paper No. 11. Bonn: IZA – Forschungsinstitut zur Zukunft der Arbeit.

Bean, Charles R., 1994: European Unemployment: A Survey. In: *Journal of Economic Literature* 32(2), 573–619.

Beck, Nathaniel / Jonathan N. Katz, 1996: Nuisance vs. Substance: Specifying and Estimating Time-Series-Cross-Section Models. In: *Political Analysis* 6, 1–36.

Blundell, Richard, 1995: *The Impact of Taxation on Labor Force Participation and Labor Supply*. The OECD Jobs Study Working Paper Series 8. Paris: OECD.

Blundell, Richard / Thomas MaCurdy, 1999: Labor Supply: A Review of Alternative Approaches. In: Orsley Ashenfelter / David Card (eds.), *Handbook of Labor Economics, Volume 3*. Amsterdam: Elsevier, 1559–1730.

Daveri, Francesco, 2001: *Labor Taxes and Unemployment: A Survey of the Aggregate Evidence*. Conference paper. 2nd Annual CERP Conference on Pension Policy Harmonization in an Integrating Europe, Moncalieri, Turin, 22–3 June 2001.

Daveri, Franceso / Guido Tabellini, 2000: Unemployment and Taxes. Do Taxes Affect the Rate of Unemployment? In: *Economic Policy* 30, 48 –104.

Esping-Andersen, Gøsta, 1990: *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.

——, 1999: *The Social Foundations of Postindustrial Economies*. Oxford: Oxford University Press.

Estevez-Abe, Margerita / Torben Iversen, et al., 1999: *Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State*. Conference paper. 95th American Political Science Association Meeting, Atlanta, 2–5 September 1999.

Freeman, Richard / Ronald Schettkat, 2000: *Low Wage Services: Interpreting the US–German Difference*. NBER Working Paper Series 761. Cambridge, MA: National Bureau Of Economic Research.
<http://papers.nber.org/papers/w7611.pdf>

Ganghof, Steffen, 2000: Adjusting National Tax Policy to Economic Internationalization. Strategies and Outcomes. In: Fritz W. Scharpf / Vivien Schmidt (eds.), *Welfare and Work in the Open Economy, Volume II: Diverse Responses to Common Challenges*. Oxford: Oxford University Press, 597–645.

——, 2001: *Global Markets, National Tax Systems, and Domestic Politics: Rebalancing Efficiency and Equity in Open States' Income Taxation*. MPIfG Discussion Paper 01/9. Cologne: Max Planck Institute for the Study of Societies.
<http://www.mpi-fg-koeln.mpg.de/pu/mpifg_dp/dp01–9.pdf>

Garrett, Geoffrey, 1998: *Partisan Politics in the Global Economy*. Cambridge: Cambridge University Press.

Goerke, Laszlo, 2002: *Taxes and Unemployment*. Boston: Kluwer Academics.

Greene, W.H., 1993: *Econometric Analysis*. New York: MacMillan.

Gujarati, Damodar N., 1995: *Basic Econometrics*. Third edition. New York: McGraw-Hill.

Gustafsson, Siv, 1996: Tax Regimes and Labor Market Performance. In: Günther Schmid / Jaqueline O'Reilly / Klaus Schömann (eds.), *International Handbook of Labor Market Policy and Evaluation*. Cheltenham: Edward Elgar, 811–839.

Hamermesh, Daniel S. , 1993: *Labor Demand*. Princeton, NJ : Princeton University Press.

Iversen, Torben / Thomas R. Cusack, 2000: The Causes of Welfare State Expansion: Deindustrialization or Globalization? In: *World Politics* 52, 313–349.

Iversen, Torben / David Soskice, 2000: An Asset Theory of Social Policy Preferences. In: *American Political Science Review* 95(4), 875–894.
<http://www.people.fas.harvard.edu/~iversen/PDFfiles/SocialPreferences.pdf>

Iversen, Torben / Anne Wren, 1998: Equality, Employment, and Budgetary Restraint: The Trilemma of the Service Economy. In: *World Politics* 52, 507–546.

Kemmerling, Achim, 2000: Wohlfahrtsstaatsregime und Dienstleistungsbeschäftigung. Politikinstitutionelle Determinanten des Wachstums unterschiedlicher Dienstleistungssektoren im internationalen Vergleich. Unpublished master thesis. Berlin: Free University, Department of Political Science.

——, 2001: *Die Messung des Sozialstaates. Beschäftigungspolitische Unterschiede zwischen Brutto- und Nettosozialleistungsquote.* WZB Discussion Paper FS I 01–201. Berlin: Social Science Research Centre.

Kittel, Bernhard, 2001: *How Bargaining Mediates Wage Determination: An Exploration of the Parameters of Wage Functions in a Pooled Time-Series Cross-Section Framework*. MPIfG Discussion Paper 01/3. Cologne: Max Planck Institute for the Study of Societies.

Kittel, Bernhard / Hannes Winner, 2001: *How Reliable is Pooled Analysis in Political Economy?* MPIfG Discussion Paper 02/3. Cologne: Max Planck Institute for the Study of Societies.

Korpi, Walter / Joakim Palme, 1998: The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries. In: *American Sociological Review* 63, 661–687.

Laisney, Francois et al., 1995: Estimation of Labor Supply Functions Using Panel Data: A Survey. In: Laszlo Matyas / Patrick Sevestre, *The Econometrics of Panel Data. A Handbook of the Theory with Applications*. Dordrecht: Kluwer, 733–770.

Nickell, Stephen / Richard Layard, 1999: Labor Market Institutions and Economic Performance. In: Orley Ashenfelter / David Card (eds.), *Handbook of Labor Economics,* Volume 3. Amsterdam: Elsevier 3029–3083.

OECD, 1990: Employer versus Employee Taxation: The Impact on Employment. In: *OECD Employment Outlook 1990*. Paris: OECD, 153–176.

——, 1993: Earnings Inequality: Changes in the 1980s. In: *OECD Employment Outlook 1993.* Paris: OECD, 157–184.

——, 1995: *Taxation, Employment and Unemployment*. Paris: OECD Publications.

——, 1996: Earnings Inequality. Low-Paid Employment and Earnings Mobility. In: *OECD Employment Outlook 1996*. Paris: OECD, 59–110.

——, 1997: *Making Work Pay: Taxation, Benefits, Employment and Unemployment*. Paris: OECD Publications.

——, 1998: *The Tax / Benefit Position of Employees 1997*. Paris: OECD Publications.

——, 1999: Tax Revenue Trends, 1965–1998. In: *Revenue Statistics 1965–1998:* 17–39.

——, 2001: Forces Shaping Tax Policy. In: *OECD Economic Outlook 2001*. Paris: OECD, 157–169.

Phelps, Edmund, 1994: *Structural Slumps*. Cambridge, MA: Harvard University Press.

Pissarides, Christopher A., 1998: The Impact of Employment Tax Cuts on Unemployment and Wages. The Role of Unemployment Benefits and Tax Structure. In: *European Economic Review* 42, 155–183.

Quinn, Dennis, 1997: The Correlates of Change in International Financial Regulation. In: *American Political Science Review* 91(3), 531–551.

Rowthorn, R.E. / Ramana Ramaswamy, 1999: Growth, Trade, and Deindustrialization. *IMF Working Papers* 46(1).
<http: / / www.imf.org / external / pubs / ft / staffp / 1999 / 03–99 / pdf / rowthorn.pdf>

Saeger, Steven S., 1997: Globalization and Deindustrialization. Myth and Reality in the OECD. In: *Weltwirtschaftliches Archiv. Review of World Economics* 133, 579–608.

Saint-Paul, Gilles, 1996: Exploring the Political Economy of Labor Market Institutions. In: *Economic Policy* 23, 265–315.

Scharpf, Fritz W., 1986: Strukturen der postindustriellen Gesellschaft, oder: Verschwindet die Massenarbeitslosigkeit in der Dienstleistungs- und Informationsökonomie? In: *Soziale Welt* 37, 4–24.

——, 1993: *Crisis and Choice in European Social Democracy*. Ithaca: Cornell University Press.

——, 2000a: The Viability of Advanced Welfare States in the International Economy: Vulnerabilities and Options. In: *Journal of European Public Policy* 7, 190–228.

——, 2000b: Economic Changes, Vulnerabilities, and Institutional Capabilities. In: Fritz W. Scharpf / Vivien A. Schmidt (eds.), *Welfare and Work in the Open Economy. Volume I: From Vulnerability to Competitiveness*. Oxford: Oxford University Press, 21–124.

Schmidt, Manfred G., 1999: *Why Financing Social Protection Differs. Cross-National Comparisons of EU-Member States and Industrialised Countries outside the European Union.* Conference paper. Conference on Social Protection in Europe, Helsinki, 22–23 November.

Schütz, Holger / Stefan Speckesser / Günther Schmid, 1998: *Benchmarking Labor Market Performance and Labor Market Policies: Theoretical Foundations and Applications*. WZB Discussion Papers FS I 98–205. Berlin: Social Science Research Centre:

Steinmo, Sven, forthcoming: *Globalisation and Taxation: Challenges to the Swedish Welfare State*.

Wood, Adrian, 1994: *North-South Trade, Employment and Inequality: Changing Fortunes in a Skill-Driven World*. Oxford: Clarendon Press.