Taxation - Financing the welfare state in a more globalized world

Torben M. Andersen
and
Allan Sørensen
Department of Economics and Business
Aarhus University

Comments at a seminar at ETLA in November 2013 and by Tarmo Valkonen are gratefully acknowledged.

1. Introduction

A pertinent question in policy debates is whether globalization curtails the scope for maintaining an extended tax-financed welfare state of the Nordic type. The primary concern is the nexus between taxes and competitiveness. Globalization makes it easier and less costly to relocate production across nations, which in turn loosens the link between production and consumption. Will high tax countries lose "competitiveness" in this process, implying that production and employment relocate, which in turn erodes tax bases and thus the financial viability of the welfare model? In short, if globalization makes tax financing more distortionary, retrenchment of the public sector must follow (for given political preferences). This may even lead to a race to the bottom where countries in an effort to gain competitiveness undercut each other in terms of taxes to obtain a competitive advantage.

There is indeed a large body of literature building on an extensive tradition in trade and open macroeconomics supporting the notion that higher taxes or a higher level of public sector activities may harm competitiveness. Empirical analyses also support the hypothesis that taxes harm competitiveness via the cost channel. But does this immediately support the retrenchment view? The abovementioned mechanism is only one of several links through which globalization affects the economy. In particular, globalization is associated with gains from trade, which under standard assumptions lead to higher income and private consumption, which increase tax bases and also affect the marginal social costs and benefits of public sector activities. The benefit side of globalization has to be considered on par with the cost side to assess the implications for tax-financed welfare arrangements. Related is the point that the role of taxes cannot be seen independently of what they are financing, and "active" spending on e.g. education may be more important in a more globalized world.

The key purpose of this paper is to discuss how globalization affects the scope to tax finance an extended welfare state. Since the predominant part of tax revenue accrues from the direct and indirect taxation of earned incomes (about 90 % in the case of the Nordic countries), it is natural to focus on the effects of labour income taxation. If labour income taxation becomes more costly due to globalization, the potential implications are large for high tax countries. Our framework for discussing these issues is based on modern theories of trade explicitly allowing an analysis of further integration between countries and the implications for production levels and structures. The focus is on product market integration and thus the trend increase in trade and specialization. In this setting we consider the implications of tax-financed public activities and how they interact with further product market integration.

Within the space of this paper there are some important tax and globalization issues which cannot be addressed. Race-to-the-bottom problems in taxation of capital and corporate income arise from non-coordinated policies[1], and it is an important policy issue whether policy coordination or cooperation can be established to reduce some of these problems[2]. We do not discuss the scope for further coordination of

[1] See e.g. Lassen and Sørensen (2003).

[2] One example is the EU Savings Directive applying to the taxation of capital income which stipulates information exchange between EU member countries (and a number of other countries having joined the agreement) or the imposition of a withholding tax where the revenue is distributed to the country of origin of the capital owner. The possibilities for coordination on corporate taxes have been discussed for a long time without any significant progress in the area.

corporate taxation. Important aspects in relation to globalization are innovation and structural changes where taxes may play an important role. This applies not least to the taxation of small and medium-sized firms. This raises an issue of the need for special tax treatment of (new) SMEs, which we do not discuss. Globalization may be associated both with more risk and new forms of risk which in turn may affect the demand for social insurance (see e.g. Rodrik (1998)), which is not discussed. Finally, labour migration may have different effects than job mobility, especially for high tax countries with generous social arrangements[3]. This is a topical issue which, however, falls outside the scope of this paper.

The plan of the paper is as follows. In Section 2 we provide a brief overview of taxation in the Nordic countries. In Section 3 we present the basic theoretical arguments on the relation between taxation and competitiveness when product markets become more tightly integrated. This section also considers possible race-to-the-bottom mechanisms. Empirical evidence on the importance of taxes in open economies is discussed in Section 4. In Section 5 we discuss the scope for financing welfare state activities in less distortionary ways than by general income taxation. Finally, Section 6 provides a discussion of some policy implications and open questions.

2. Tax structures in the Nordic countries

The Nordic countries have been front-runners in applying the dual income tax system; that is, a system with a separation between labour income and capital income taxation, where the former is progressively taxed and the latter is proportionally taxed (with a tax rate at the level of the lowest labour income tax rate). One key argument in support of this tax system is that it reconciles low capital income tax rates to avoid capital mobility with the possibility of maintaining higher and more progressive labour income tax rates, cf. Sørensen (2010). The dual income tax system is not applied purely in Denmark since positive net-capital income above a threshold level is taxed on par with labour income (Finland has also recently introduced a moderate progressive element in capital income taxation).

As is well known, gross tax rates are high in the Nordic countries by international comparison, cf. Figure 1a. The tax level has remained fairly constant in Denmark and Norway[4] since the late 1990s, while a weakly declining trend can be observed for Finland and Sweden. Care should, however, be taken in such cross-country comparisons for several reasons including different tax treatment of social transfers. In some countries social transfers are taxable income, in others they are not (or partly), and this makes comparisons based on gross rates problematic. This is particularly so since the Nordic countries tend to apply the gross principle, implying that the gross tax burdens are inflated in international comparisons[5].

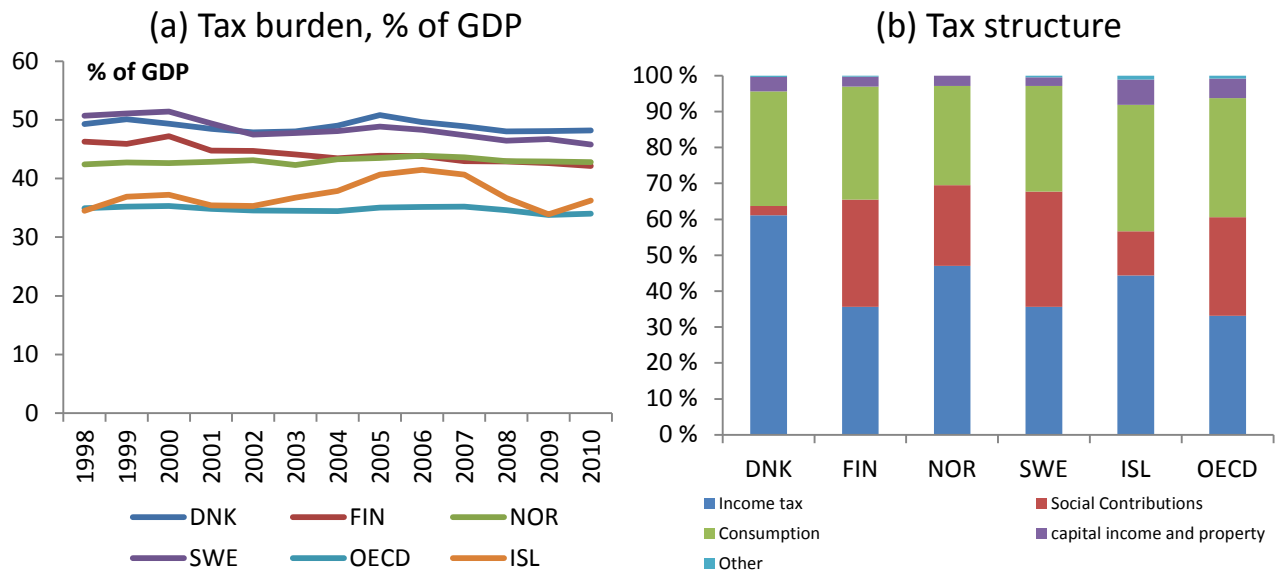
[3] This may affect the scope to maintain the universal principle in the design of the welfare state due to the selection mechanisms migration may create. This applies if emigration tends to be concentrated among highly educated and immigration among less skilled, which in turn will erode tax bases and increase social expenditures.

[4] Note that for Norway the return on the Pension Fund is an additional source of public funding. The allocation rule for the Fund stipulates that an amount corresponding to an average return of 4 % can be used annually. The flip-side of this is a structural budget deficit (before this transfer) which currently amounts to 5 % of (mainland) GDP.

[5] Adema and Ladaique (2009) find for 2005 that the taxes on social transfers constitute about 4 % of GDP in the case of Denmark and Sweden, 2.5 % in the case of Finland and 1.5 % in the case of Norway.

Interestingly there are significant variations in tax structures across the Nordic countries, cf. Figure 1b. Denmark and Iceland are outliers with only a small part of tax revenue accruing from social contributions[6] and with a much larger part coming from direct income taxation. Finland and Sweden are more like the OECD average, while Norway holds an intermediate position.

Figure 1: Gross tax burden and tax structure

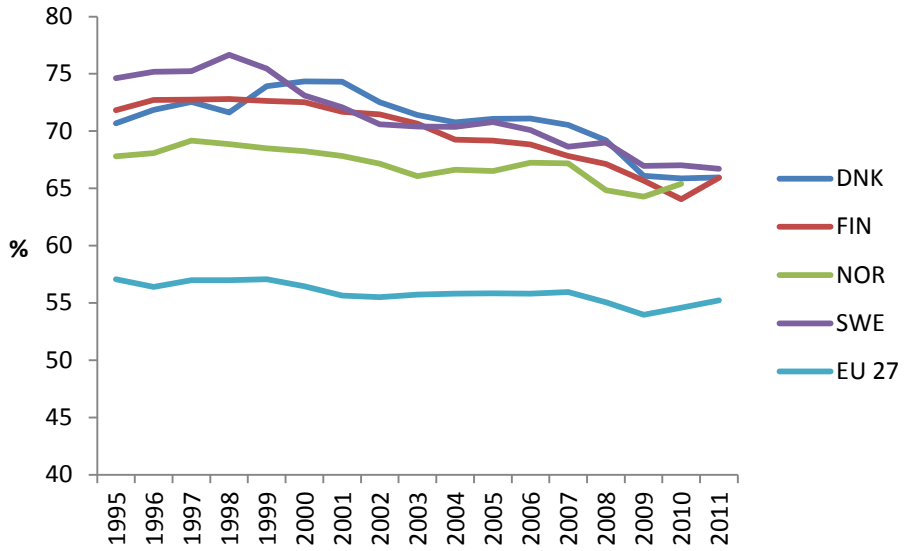


Note: Data for tax structure applies to 2010.
Source: www.oecd-ilibrary.org

This brings up an important point in relation to the implications of taxation for labour markets. Basic insights from economic theory teach us that taxation may be distortionary due to the wedge created between the compensation for work received by workers and the costs of workers to employers. The cost of labour to firms is the wage including social contributions, while for the worker the wage net of direct taxes, social contribution and indirect taxes is the relevant measure of the compensation for work. The total tax wedge is thus the sum of social contributions paid by employers and employees, direct taxes and indirect taxes. The composition of single parts does not matter, the sum does. Figure 2 shows that the total tax wedge on labour is high for the Nordic countries compared to the EU27, but also that it has a clear declining trend and the gap to other EU countries has been declining.

Figure 2: Total tax wedge on labour, 1995-2011.

[6] We discuss mandatory pension contributions in Section 5.



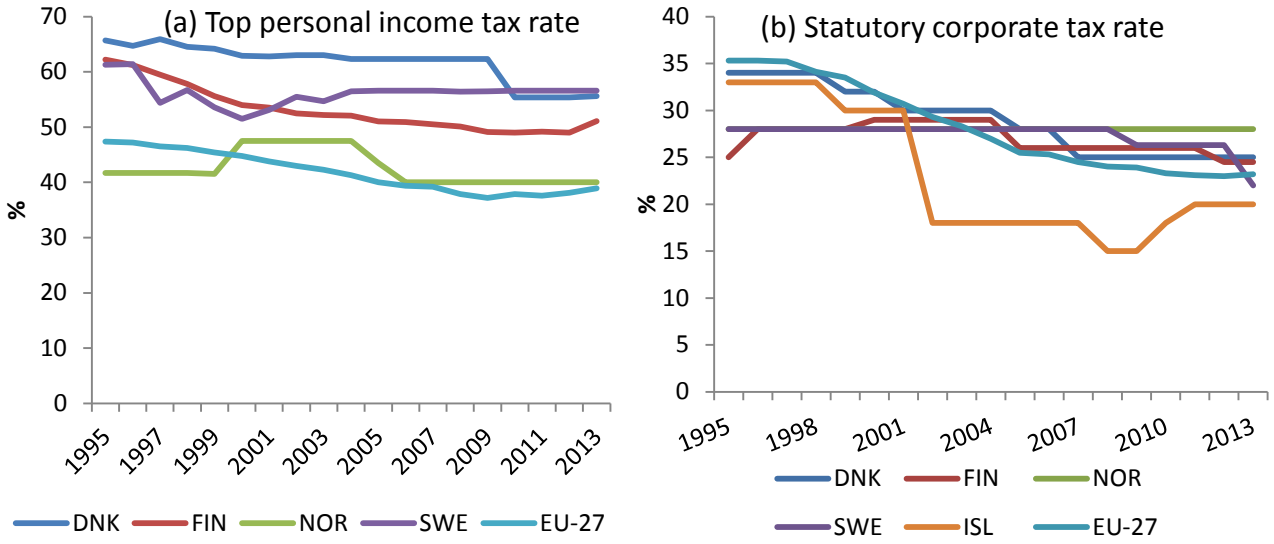
Note: Total tax wedge given as the sum of the implicit tax on labour income and the implicit consumption tax. Data not available for Iceland.
Source: Computed based on Eurostat (2012)

The declining trend in the tax wedge reflects tax reforms with the aim to strengthen the incentives to work and thus increase labour supply both along the intensive (lower marginal tax rates) and extensive margin (making work pay)[7]. For the latter earned income tax credits have been introduced (except in Norway), and particularly Sweden has used this instrument actively in recent years.

It is also a general trend to reduce marginal tax rates and broaden tax bases to reduce tax distortions and to ensure efficiency in taxation as well as to simplify the tax system (although this has turned out to be difficult). Top personal income tax rates have thus been declining, cf. Figure 3a. Statutory corporate tax rates also display a declining trend (in particular in Denmark and Finland) reflecting a concern for mobility of corporations, cf. figure 3b. The declining trend is continuing since Sweden has lowered the corporate tax rate from 26.3 % to 22 % in 2013, Finland from 24,5 % to 20 % in 2014 and Denmark is decreasing the rate from 25 % in 2013 to 22 % in 2016. Note that despite declining tax rates, tax revenue has not been declining to the same extent due to effects of tax base broadening.

Figure 3: Top personal income tax rate and statutory corporate tax rate

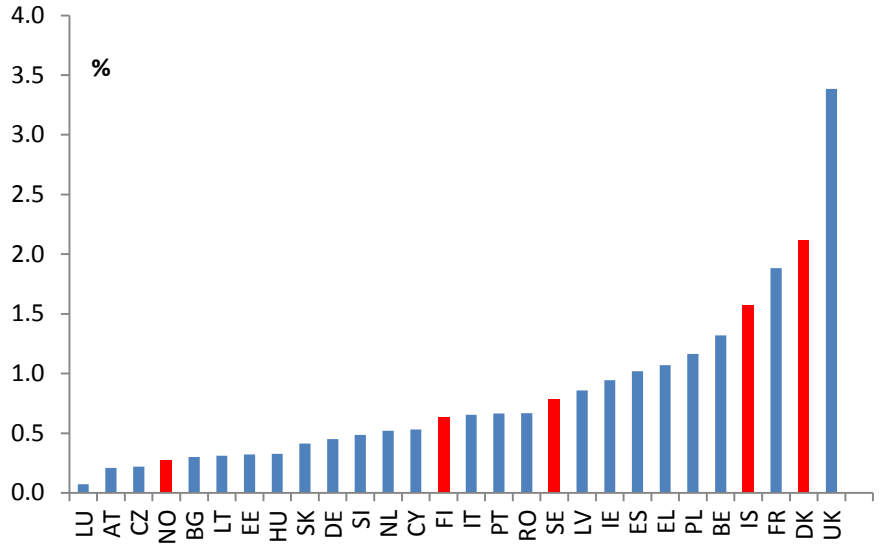
[7] This is also reinforced by labour market reforms and reforms of the pension system to delay retirement. On the later see Chapter x? in this volume on pension reforms.



Note: The corporate tax rate includes the non-targeted top rate. Some countries apply special rates to specific types of companies or activities. Data on the top personal income tax rate is not available for Iceland.
Source: Eurostat (2012)

The logic of globalization is to shift taxes from mobile to less mobile tax bases. Financial capital and corporations are usually deemed to be very mobile, while natural resources and real estate are among the least mobile. In perspective of this and the general high level of taxation, it is worthwhile to note that recurrent taxes on immovable property[8] contribute relatively low tax revenue in the Nordic countries, especially in Norway, Finland and Sweden, cf. discussion below

Figure 4: Recurrent taxes on immovable property, % of GDP



[8] It is often argued that such taxation is ideal in a globalized economy since it is an immobile tax base. While there are arguments in favour or higher taxation of property (see Section 5), it should be noted that taxes on immovable property are still relevant for the tax wedge affecting the labour market since the costs of housing matter for the real consumption value of wages.

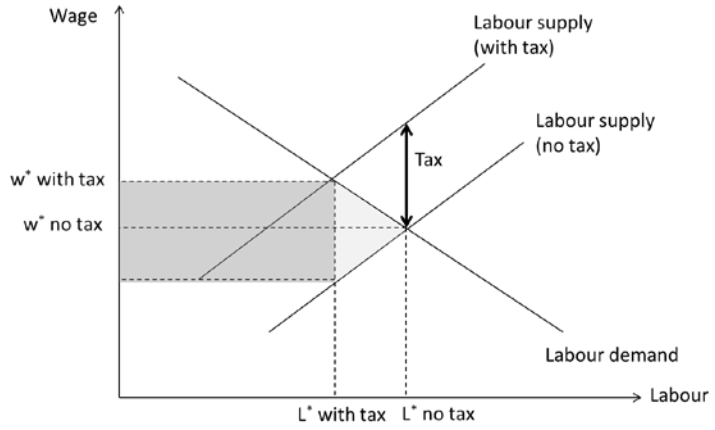
Source: Eurostat (2012)

3. Costs of financing the welfare state through taxation of labour

Financing the welfare state through direct and indirect taxation of labour income is costly due to the distortionary effects of taxation. Taxation of income and consumption creates a wedge between the costs of labour to firms and the remuneration of workers in terms of consumption possibilities. This tax wedge distorts incentives and thus behaviour, which implies efficiency losses. Through a simple example we illustrate these efficiency costs and explain how they may interact with globalization. In order to keep the analysis simple and transparent we focus on a single tax instrument, namely a tax on labour income paid by the workers. See Box 1 for a more general description of the tax wedge.

The basic understanding of the efficiency costs from labour income taxation is presumably obtained most easily by considering the effects of a tax in a standard supply and demand diagram for the labour market. In the diagram below we have displayed the empirical relevant case with an upward-sloping labour supply curve; i.e. the case where the substitution effect dominates the income effect, which also implies that the tax (or a higher tax) reduces labour supply.

Figure 5: Effects of labour taxation[9]



The tax shifts up the labour supply curve as workers (and/or unions) require a higher gross wage in order to earn the same net wage as without the tax for a given supply of labour. The direct implications are that the gross wage, i.e. the labour costs for the firms, increases whereas both the net wage and employment fall. The reduction in the employment level causes an efficiency loss as the marginal benefit to society of an extra work hour (measured by the labour

Box 1: The tax wedge

The tax wedge (TW) measures the difference in labour cost to the firms and the purchasing value of the wage to the worker when taking taxes into account. Let w denote the wage rate, let t>0 denote the tax rate paid by workers (this also includes VAT, other consumption taxes, and social security contributions paid by the workers), and let s>0 denote the employer's social security contribution. The tax wedge can then be expressed as

$$TW = \frac{w(1+s) - w(1-t)}{w} = t + s$$

In the graphical analysis we set s=0, and the tax wedge is thus given by the direct and indirect taxation of workers (t>0).

[9] The graphical analysis is simplified for illustrative purposes. We treat the tax as a tax per hour worked and not as a tax rate on wage income; i.e. the wage received by the worker is the gross wage (w) minus the tax per hour and not the gross wage minus an income tax payment which varies with the wage level as would have been the case under a proportional income tax. This assumption implies that the labour supply curve with the tax is parallel to the curve without the tax, whereas the formulation with a constant tax rate on income implies that the labour supply curve with the tax is steeper than that without it and therefore the distance between them depends on the wage.

demand curve) exceeds the marginal costs to society of supplying the extra hour (measured by the labour supply curve without the tax) at the level of employment prevailing in equilibrium. The efficiency loss is given by the light-shaded area (triangle) in the diagram and this is the distortionary cost of taxation. The dark-shaded area (rectangle) is the tax revenue.

3.1. Globalization and the costs of taxation

Next we turn to how globalization affects tax distortions and thus the costs of financing the welfare state through taxation of labour income. It turns out that several forces are released; some tend to increase and some tend to decrease the distortionary costs of taxation.

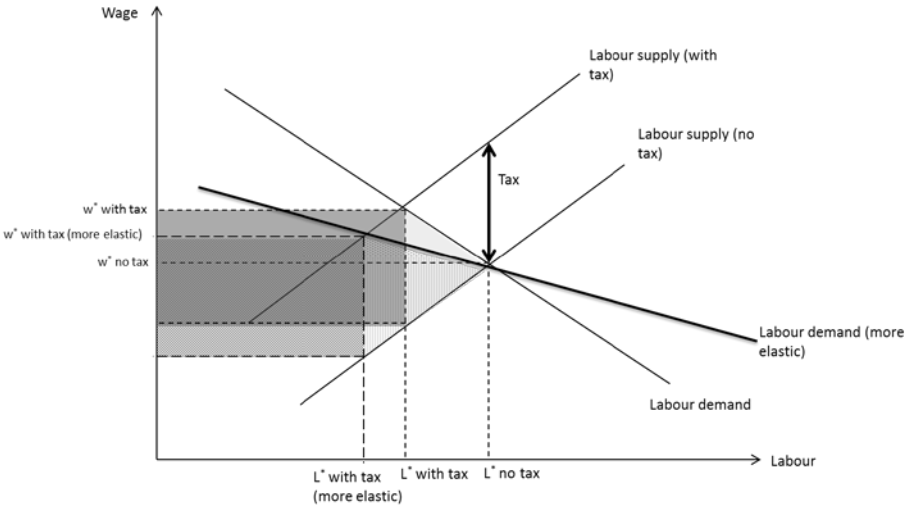
Globalization reduces the costs of moving goods, jobs and workers. This can be interpreted in terms of the sensitivity (elasticity) of labour demand to wage and tax rates; i.e. how strongly labour demand responds to changes in economic conditions. However, globalization may also change the level of labour demand. In the following we examine separately how globalization through these channels impacts efficiency costs of income taxation and thereby the costs of financing the welfare state. We continue with graphical analyses to strengthen the understanding of basic and central mechanisms.[10]

Elasticity effect

Globalization increases the mobility of goods and jobs. Both political factors, such as reductions in or removals of tariffs, non-tariff trade barriers, regulations, etc., and technological factors, such as reduced transport costs and improved information technology, have significantly reduced the costs of moving goods across borders. Increased mobility of goods implies tougher competition on the global markets and that production of both final and intermediate goods becomes more footloose[11] in the sense that production can more easily move to destinations with lower production costs. Consequently, production and therefore labour demand and jobs become more sensitive to local costs including local gross wages; i.e. the labour demand curve is getting flatter. We illustrate this in Figure 6 below.

Figure 6: Effects of taxation with a more elastic labour demand

[10] An appendix containing a more formal/mathematical analysis is available from the authors upon request.
[11] Improved information/communication technology has also made it easier to manage global value chains. This has spurred a wave of off-shoring of particular labour intensive tasks in high wage countries such as the Nordic countries.



It is evident from Figure 6 that a more elastic labour demand, and thus a flatter labour demand curve, magnifies the distortionary effect of taxation on employment. The efficiency loss increases from the triangle shaded in light grey to the dotted triangle. Another implication which can be seen from Figure 6 is that the tax revenue obtained is reduced (from the dark grey-shaded rectangle to the hatched rectangle) for a given tax rate. Hence, a more elastic labour demand ceteris paribus increases the costs of financing the welfare state through labour taxation as the distortionary employment effect increases at the same time as the revenue obtained from the tax is reduced.

In the presence of several tax bases the arguments is not as straight forward. The more elastic labour demand implies that a tax rate increase has a larger (negative) effect on employment and a smaller (positive) effect on wages and thus a larger (negative) effect on total wage income. However, the lower wage increase implies less negative effects on the return to other factors (e.g. capital) and thus on other tax bases which have counteracting effects (see Andersen and Sørensen (2011)). Taking mobility of goods and jobs as well as competition in the global markets to the limit, we have a small open economy operating in a perfectly competitive environment with given world market prices. This is often how globalization is portrayed in public debates. In this case the labour demand curve becomes entirely flat, i.e. horizontal. See Figure 7 below for an illustration.

Figure 7: Effects of taxation in a small open economy in perfect competition

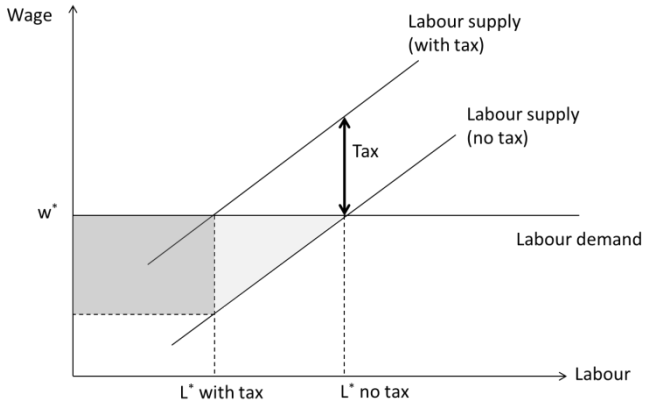


Figure 7 delivers a clear and important message. Although the tax does not affect labour costs to the firms and thus competitiveness (in equilibrium), there are still costs from financing the welfare state through taxation of labour. In fact costs (the light-shaded triangle) are at their maximum in this case as there is no wage increase to counteract the distortionary effect of the tax on the labour supply. Moreover, there are no gains from improved terms-of-trade (see below). Note that in this case the employment level depends entirely on labour supply, and thus policies reducing labour supply translate directly into lower employment.

At first it seems obvious that globalization increases the sensitivity of labour demand to the gross wage due to jobs being more footloose, but there is more to the story. In fact firms' employment of domestic labour may become less sensitive to domestic wages at higher levels of globalization, since firms at higher levels of integration may out-source larger parts of their production to foreign (low wage/low cost) countries. This, in turn, implies that firms´ costs and thus production and thereby domestic employment become less sensitive to local wages as the cost share of local labour has been reduced (see e.g. Skaksen and Sørensen (2001)).

The preceding arguments are partial in the sense of considering only the direct effects on the labour market disregarding effects arising at the economy-wide level. An example of such a counteracting effect comes through imported goods in the consumption basket. At higher levels of globalization foreign goods have a larger weight in the consumption basket and accordingly the consumer price index responds less to the local wage rate. An increase in the nominal wage thus has a larger impact on the real wage and therefore labour supply responds more to the local wage. A higher tax rate which increases the nominal wage will also increase the consumer price index, which tends to have a negative impact on labour supply. However, this second round negative impact on labour supply is muted by globalization due to the larger weight to foreign goods in the consumption basket.[12]

Level effect

Globalization will not only affect the sensitivity of labour demand to the wage but also its position or the level.

Although often ignored in the public debates on globalization and tax-financed welfare states it is well-documented in the economics literature that globalization brings substantial gains. These gains partly manifest themselves through a lower price index (driven by more varieties and/or lower prices due to tougher competition) and thus a higher real wage for a given nominal wage. Moreover, globalization, e.g. in the form of lower trade frictions, brings gains from increased specialization, see e.g. Figure 8 below, which in turn increases real wages. Higher real wages increase the real tax base both directly (through the higher real wage) and indirectly through an increase in the labour supply and thus employment. The direct effect is neutralized (only partly if part of public consumption is goods from the private sector) by higher public expenditures due to higher real wages to public employed workers. However, the indirect effect via the higher labour supply ensures that public consumption can be financed with a lower tax rate. The lower tax rate in turn reduces the efficiency costs of financing the welfare state as the distortionary effects from

[12] This mechanism is not included in the graphical analysis.

taxation increase with the tax rate (see Andersen and Sørensen (2012) for a complete analysis of this argument) [13].

3.1.1. Taxation, competitiveness, and international specialization

The concern in relation to globalization is that the tax (or for that matter a tax increase) increases the gross wage and thus the labour costs of the firms; i.e. the competitiveness of the domestic firms deteriorates relative to foreign competitors. To explore this issue further we consider a framework capable of capturing an essential element of globalization, namely, a tighter integration of product markets. Such integration implies that domestic firms can more easily penetrate into foreign markets, and foreign firms into the domestic market. We capture this in a setting relating product market integration to the production structure and trade flows.

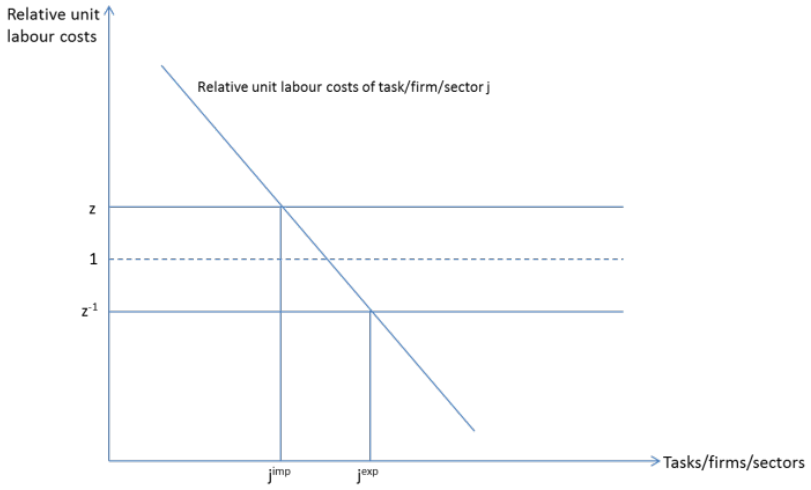
Consider Figure 8 (below) in which sectors/goods/tasks are ranked according to their comparative advantage[14] (in increasing order) on the first axis and relative costs - determined by relative gross wages and relative productivities at the task level - are displayed on the second axis. The downward sloping locus represents the relative unit labour costs which decreases as we move rightwards as the comparative advantage increases in that direction. Production takes place where it is cheapest after correcting for trade frictions (z), so that trade frictions shield countries from international competition and generate a set of non-tradeables. Trade frictions are modelled as iceberg trade costs, implying that z>1 units must be shipped in order for one unit to arrive on the foreign shore. Tighter product market integration corresponds to a lower value of the friction driven by technological changes and political decisions to integrate markets. The country specializes according to comparative advantage and thus exports tasks for which its comparative advantage is sufficiently large (to the right of j^{exp} in the left panel of Figure 8), import tasks for which its comparative advantage is sufficiently low (to the left of j^{imp} in the left panel of Figure 8), and tasks with intermediate levels of comparative advantage (between j^{imp} and j^{exp} in the left panel of Figure 8) are non-traded due to trade frictions. A lower trade friction will lead to more trade and specialization. The home country will export more goods and also import more goods, and the non-tradeable sector will shrink.

Figure 8: Specialization structure: Imports, exports and non-tradeables

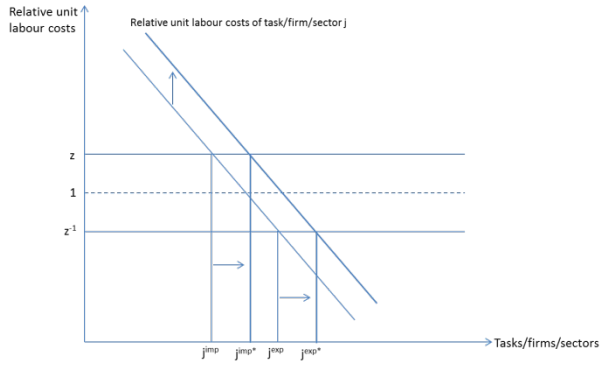
(a) Determination of specialization structure

[13] It is a well known result that the distortionary effects of a marginal increase in the tax rate increase with the level of the tax rate.

[14] One may think of this as the ratio of the productivity level in domestic firms to the productivity level in foreign firms.



(b) Effetcs of a tax increase



We are now able to analyse the implications of a tax increase. Graphically the higher gross wage rate due to the tax increase shifts up the relative-unit-labour-costs locus and thus changes the specialization structure. This can be seen in the right panel of Figure 6. After the tax increase the country only exports tasks to the right of $j^{exp*} > j^{exp}$, imports tasks to the left of $j^{imp*} > j^{imp}$, and tasks in-between are non-traded. The tax induced wage increase has thus changed the specialization structure such that the country to a larger extent specializes in production in tasks in which it has comparative advantages (the tasks where the country is still competitive despite the higher gross wage). This highlights that a loss of competiveness not only implies job-losses due to declining market shares but also that domestic production of some tasks/goods ceases.

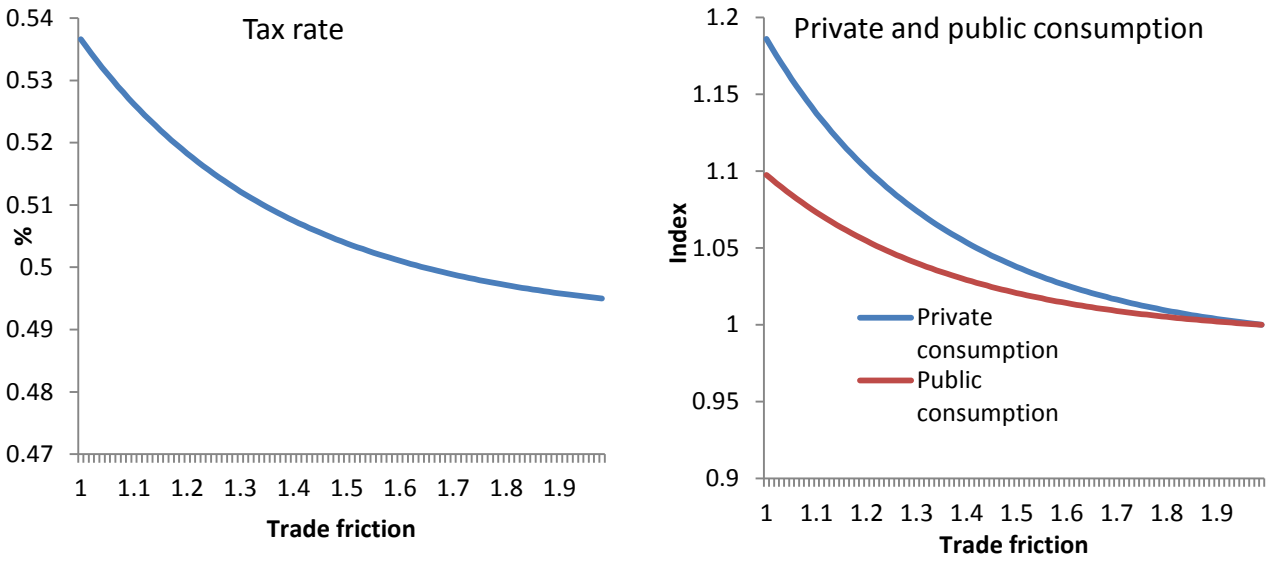
However, the deterioration in competitiveness brings some positive effects which are often ignored in the public debate. It tends to increase the real wage through the following two channels. The economy specializes in tasks where it has larger comparative advantages. Hence, a higher tax rate implies a specialization gain that manifests itself through a higher average productivity as labour reallocates to more productive activities.[15] Moreover, the increase in the relative wage implies that one unit of domestic labour indirectly buys more units of foreign labour through trade in goods and services. This is known as a terms-of-trade improvement. The terms-of-trade effect has a zero-sum game property since the terms-of-trade

[15] Reallocation of labour is both costly and time consuming. The present analysis focuses on structural, i.e. long-run, implications of taxation and globalization (product market integration).

improvement is matched by a terms-of-trade loss for the trading partners. Hence, this suggests that there are gains from international coordination of labour taxation. We elaborate on this below.

In Figure 9 below we present numerical solutions to a model[16] (see Andersen and Sørensen (2013)) which captures many of the above-mentioned effects, including the effect of taxes on wages and thus competitiveness, gains from specialization/trade in terms of both more private consumption and a broader tax base, effects on specialization of both globalization and taxes, and the effects of taxes on the terms-of-trade. Figure 9 shows in the left panel the unilateral optimal tax rate on labour under the assumption of a utilitarian social welfare function. With lower trade frictions (more integrated product markets) the optimal tax rate increases, although in the particular illustration shown here the increase is small. The reason for the increase is that there are gains from trade, and therefore private consumption increases which lowers the marginal utility of private consumption and thus an element in the opportunity costs of public consumption. Moreover underlying the increase in private consumption is an income increase which also increases the tax base and thus tax revenue. The net result of this is that public consumption also increases with more tightly integrated product markets. In an absolute sense there is no retrenchment of the public sector, both the tax rate and public consumption increase. In fact due to the increasing tax rate public expenditures increase relative to private expenditures. However, productivity improvements due to increased specialization only apply to the private sector and therefore private consumption increases by more than public consumption (= public employment), and in this sense there is a relative decline in public consumption.

Figure 9: Integrating product markets – tax rate, private and public consumption



Note: The tax finances public consumption. Figure based on Andersen and Sørensen (2013).

What is the tax revenue used for?

[16] The results arise from a model economy consisting of two countries which are symmetric at the aggregate level and only differ with respect to the tasks/goods/sectors in which they have a comparative advantage. In Figure 11 below a case of asymmetric countries is considered.

In order to assess the costs of tax-financed public revenue it is crucial to know what the revenue is spent on. It matters whether the revenue is spent on public consumption or transfers. This is important because public consumption requires labour and therefore also has a labour demand effect. An increase in public consumption may thus directly crowd out private employment, an effect which does not arise if taxes finance transfers. Adding to this it should be noted that some expenditure items like child- and old-age care, but also education and health expenditure more generally, may strengthen labour supply both in the qualitative and quantitative dimension. These welfare arrangements may in particular be important for a high female labour force participation rate.

The abovementioned effects also interact with globalization. Consider e.g. the choice between spending revenue on transfers and spending revenue on public employment and thus public services. Spending on public employment increases demand for domestic labour directly, whereas transfers do so only indirectly through private consumption. When the economy trades with other countries the spending on public employment distorts the consumption pattern towards goods/services produced by domestic labour as public employment is more intensive in domestic labour than private consumption. Hence, the relative wage of domestic labour increases with public employment, which induces a terms-of-trade improvement (see e.g. Epifani and Gancia (2009) and Andersen and Sørensen (2012)). The more integrated the economy is in the world economy, the larger effect it has on the terms-of-trade whether revenue is spent on transfers or public employment. This stems from the fact that the implied domestic labour demand from private consumption and thus transfers is falling in the import share (integration of product markets). Although important, a further analysis is beyond the scope of the present work.

Finally it should be noted that the above is touching on the issue of difference in productivity growth between the private and public sector. The analysis above has productivity changes in the private sector due to specialization induced by product market integration, but unchanged productivity in the public sector. If there is a systematic higher rate of productivity growth in the private sector, the issue of Baumol's cost disease arises making services with low productivity growth relatively more expensive over time (for a discussion see SNS (2014)). The pressure this creates on public financing depends on the scope for increasing productivity in public service production e.g. via outsourcing.

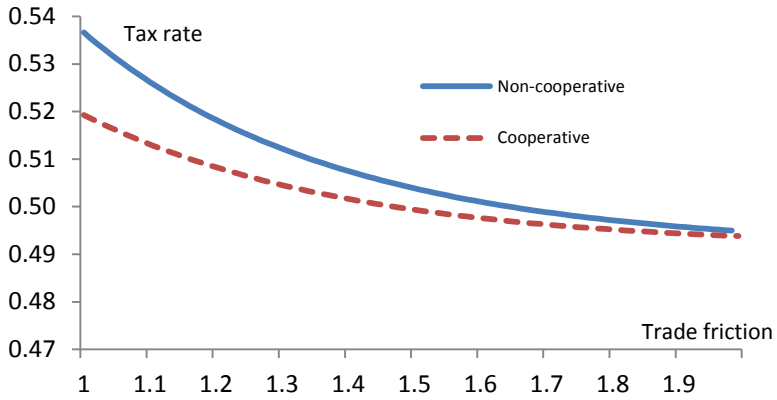
3.2. Coordination of tax policies

In policy debates it is a widespread belief that if taxes harm competitiveness, it is to be expected that countries acting non-cooperatively choose too low taxes (a race to the bottom) and thus the level of public sector activities is too low. However, a very robust result from explicit general equilibrium models is that countries acting non-cooperatively tend to choose too high levels of public activities and thus taxes. The reason is that countries perceive that they can affect the terms-of-trade to their advantage by tilting demand towards domestic labour. This effect is not present in the case of coordinated policies, and therefore there is an upward bias in taxes determined non-cooperatively (see e.g. Chari and Kehoe (1990), Devereux (1991), Turnovsky (1988), van der Ploeg (1987, 1988), and Andersen et al. (1996)). Epifani and Gancia (2009) build on this literature and show in a model with specific functional forms, exogenous labour supply and exogenous production/specialization structures how globalization may increase public sector activity, and they present empirical evidence in support of this finding. In Andersen and Sørensen (2012) we showed in a rather general setting with endogenous labour supply and production/specialization structure that this non-cooperative bias not only applies to public consumption but also to transfers. Moreover we

showed that countries have incentives to increase relative wages through both increasing demand for domestic labour (public consumption/employment) and by reducing supply of domestic labour (distortionary taxation).

Figure 10 illustrates this by means of the same model underlying the simulations in Figure 9. The case is one with two symmetric countries, and it is seen that both the non-cooperative and the cooperative tax rates are increasing with more product market integration (lower trade friction). It is also seen that the difference between the two is monotonously increasing the further product markets are integrated. Hence, there is no race-to-the-bottom and no downward bias in fiscal policy. In fact there is an upward bias which increases with further product market integration.

Figure 10: Non-cooperative and cooperative tax rates



The difference between the coordinated tax rate and the uncoordinated tax rate appears because countries have incentives to increase both tax rates and public employment in order to achieve a terms-of-trade improvement. However, the terms-of-trade improvement obtained in the home country by the home fiscal policy is counteracted by the corresponding foreign fiscal policy, and in a symmetric equilibrium no terms-of-trade improvement is achieved. Accordingly, countries suffer from tax rates and levels of public employment/consumption being too high. Hence, there are gains from policy coordination, and these gains increase with the degree of market integration as the gap between the cooperative and the non-cooperative tax rates increases with market integration. However, it should be noted that for the particular simulation shown the difference between the non-cooperative and the cooperative tax is not large.

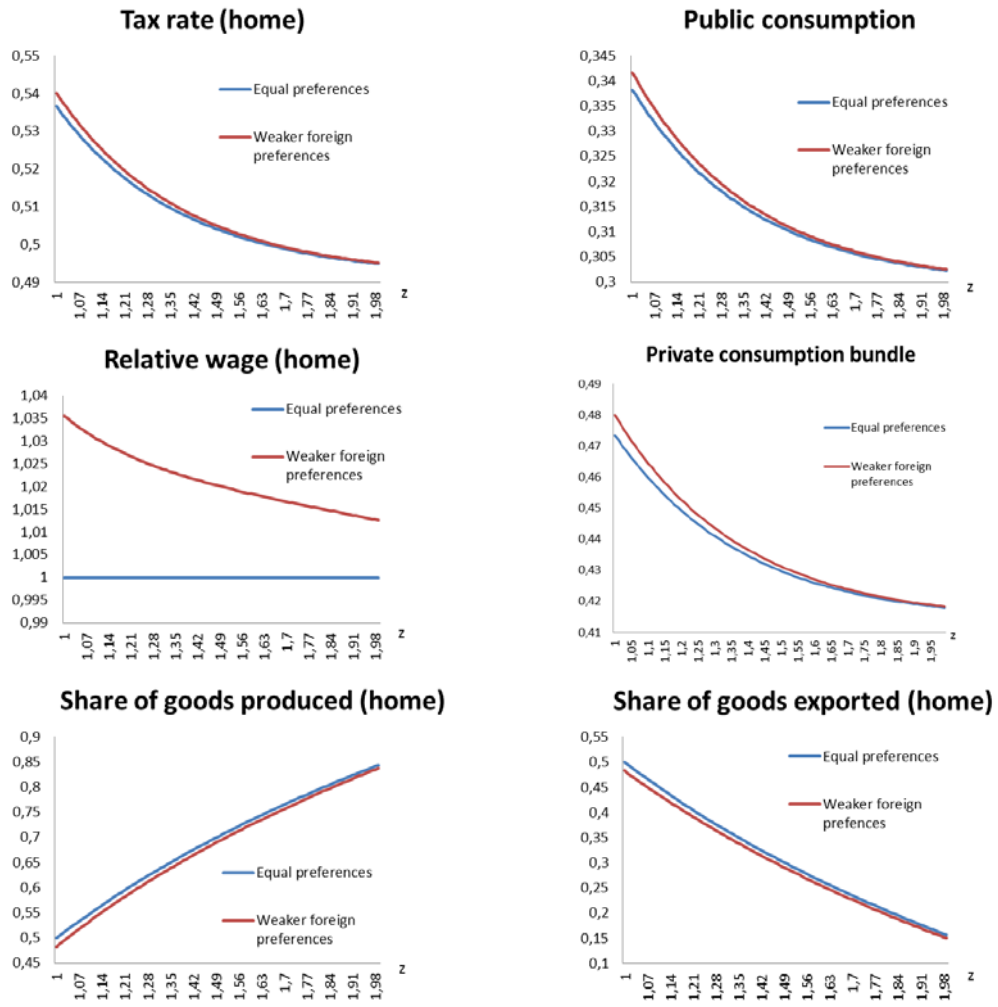
3.3. Nordic countries: Small open economies with large public sectors

It is a wide-spread view that product market integration is more problematic for countries with large public sectors. The view is that countries with a leaner public sector have a competitive advantage, which in turn puts more pressure on countries with a larger public sector when their markets integrate. If true, this may constitute a substantial challenge for the Nordic countries, all of which have large public sectors in an international context, and which as small open economies are deeply integrated into the world economy and highly dependent on external linkages.

This conjecture is not supported by the analysis in Andersen and Sørensen (2013). In fact the reverse holds in a model with an endogenous specialization structure similar to the one illustrated in Figure 8 and where

competitiveness depends negatively on the tax rate/size of public sector. Figure 11 below is based on the same model as Figures 9 and 10 and illustrates what happens when a country with strong preferences for public consumption integrates with a country with a weaker preference for public consumption. One may interpret this as what happens to the Nordic countries when they integrate into the world economy (or EU for that matter). Lower trade frictions, z, are the driver behind market integration; i.e. we move left-wards in the sub-figures as the economies become more closely integrated.

Figure 11: Economy with strong preferences for public consumption integrating with the world economy



Weaker foreign preferences for government consumption turn out to imply a larger tax rate and a higher level of public consumption in the home country. Why is that the case? A weaker preference for public consumption in the foreign country leads to a lower foreign wage due to a lower tax rate (supply-side effect) and due to a lower public labour demand (demand-side effect). The lower foreign wage improves the competitiveness of the foreign firms and therefore reduces the competitiveness of the home firms. However, the lower foreign wage benefits the home economy through two channels. First a direct terms-of-trade effect where the lower foreign wage reduces the prices that home consumers pay for foreign goods. Second a specialization effect. The specialization effect appears as the lower foreign wage improves

the competitiveness of the foreign economy, and the foreign economy accordingly takes over production of some tasks/goods that were otherwise produced in the home country. In Figure 11 the effect of weaker foreign preferences for public consumption is thus similar to that of a higher tax rate in the home country; see the right panel of Figure 8. Hence, the home country specializes in goods/tasks where it has larger comparative advantages and this specialization increases average productivity. Both channels have positive effects on the real wage and thus private consumption in the home economy. The higher private consumption lowers the opportunity costs of public consumption in the home country, which therefore may increase. The more integrated the economies are, the larger are the gains running through these two channels. In fact the gains from market integration are larger for the home country when the preferences for public consumption in the foreign country are weaker.

Similar results arise when a small country integrates with a large country. Hence, there is not unequivocal theoretical support for the view that small economies with large public sectors are necessarily exposed to race-to-the-bottom effects when product markets are integrated.

In this section we have focused on the structural (long-run) effects of taxation and ignored transition and adjustment issues. Both globalization and tax changes imply changes in the production/specialization structures of the economy, cf. Figure 8. The presumption has so far been that fired workers in contracting or closing firms/sectors immediately find new jobs in expanding firms/sectors. However, this reallocation process may be both long lasting and costly, and displayed workers may suffer during the adjustment period. Reallocations take time due to search frictions in the labour market and due to potential mismatches between the skill set of the fired workers and the skill set required by the expanding firms. The length and costs of adjustment processes thus depend on the flexibility of the labour market and on the policies surrounding the labour market including educational policies. Although adjustment costs are non-trivial we have chosen to focus solely on the structural (long-run) implications of taxation.

4. Empirical evidence

Various types of empirical evidence are of relevance to the discussion above. It is natural to start with the labour supply elasticity, which in general is crucial and, in the case of a small open economy, is pivotal. There is a vast empirical literature assessing elasticities of labour supply (recently surveyed by e.g. Evers et al. (2005), Meghir and Phillips (2008) and Bargain and Peichl (2013)). As is well known, estimated labour supply elasticities are not large and mostly significantly below one. A common finding is that labour supply is more responsive along the extensive (participation) than along the intensive (hours) margin. Labour supply elasticities are also usually found to be larger for women than men, especially for single mothers. An interesting finding (see Evers et al. (2005) and Bargain and Peichl (2013)) is that labour supply elasticities tend to be falling in the overall employment rate. This is suggesting that the role of economic incentives matters less in increasing labour supply along the extensive margin, the larger the employment rate. Since the Nordic countries have relatively high employment rates, this is an important finding. In the same vein there seems to be a declining time trend in labour supply responses which may be attributed to a change in work preferences, including a stronger attachment of women to the labour market (which in turn may also be related to social preferences and gender issues, also reflected in child care institutions). These general findings do not preclude potential large responses for specific groups, e.g. due to high implicit tax rates or a clustering of individuals around thresholds in the tax system. Tax reforms addressing such problems are thus important to reduce distortions of labour supply decisions.

In an open economy context it is of crucial importance whether the small open economy assumptions are met. Very few empirical studies address this question directly. The empirical important implication of this assumption is that the incidence of tax changes is falling entirely on wage earners (since the wage cost employers can pay is determined exogenously from international markets), cf. Figure 7. Studies of the wage incidence of tax changes thus provide some indication on this assumption. Bennmarker, Calmfors and Seim (2012) present a study based on Swedish micro data of the effects of the earned income tax credit recently introduced and expanded in Sweden (see Section 2). They find that the elasticity of the wage with respect to the net replacement rate or the retention rate (one minus the tax rate) is about 0.1-0.2; i.e. a change in the tax rate does have a (small) effect on the wage, suggesting that the small open economy assumption is not fully met. Note that the estimated elasticity provides a short-run effect, and it does not take into account any possible economy-wide repercussions (general equilibrium effects).

There are surprisingly few empirical studies exploring the link between taxation and wage competitiveness. Alesina and Rodrik (1997) consider how relative unit labour costs depend on labour taxation focusing on the role of wage setting institutions. They find that taxes increase relative unit labour costs, in particular in countries with intermediary levels of centralization, whereas there is only a small effect with more centralized bargaining. Daveri and Tabellini (2000) find that taxes increase wages in continental European countries, but do not find significant effects for the Anglo-Saxon and Nordic countries. Lane and Perotti (2003) focus on how the transmission from taxes to wages depends on the exchange rate regime. In flexible exchange rate regimes they do not find any effect, while there is a small wage-driving effect in countries with a fixed exchange rate. In conclusion there is thus evidence that taxes may affect wage competitiveness, but the effects are small. More research is needed on these issues. The abovementioned studies can be criticized on various grounds,[17] and they are all somewhat dated. In particular, there is a need for studies explicitly taking into account the globalization process.

5. Scope for making financing less distortionary

The discussion above took a very general perspective on both the labour market and the taxation system. In the following we consider specific issues related to both, and ask whether there is some scope to make the financing of the welfare state less distortionary and thus less costly.

5.1 Making work pay

It is a well-known fact that the Nordic countries are characterized by both high tax burdens on labour and high employment rates, cf. Figure 12. This is suggesting that the distortionary effects of labour income taxation have been countered. One crucial factor is the design of the social safety net. On the one hand, the social safety net is relatively generous in international comparison, but, on the other hand, it is very employment focused. By the latter we mean that there are various employment conditionalities associated with eligibility to ensure that recipients of social benefits have a strong incentive for active job search. These conditions include requirements for active job search and various compulsory activation measures (active labour market policy); see e.g. Andersen (2013). This may also be phrased in the way that relatively generous transfers are combined with non-pecuniary incentives to be actively searching for jobs, and the

[17] The study by Alesina and Perotti (1997) estimates an equation for the relative unit labour costs of a given country depending on the level of taxes in the same country. However, relative costs would in general depend not only on the country-specific tax, but also the tax rate in the competing countries, cf. e.g. the relative wage equation in Andersen and Sørensen (2012).

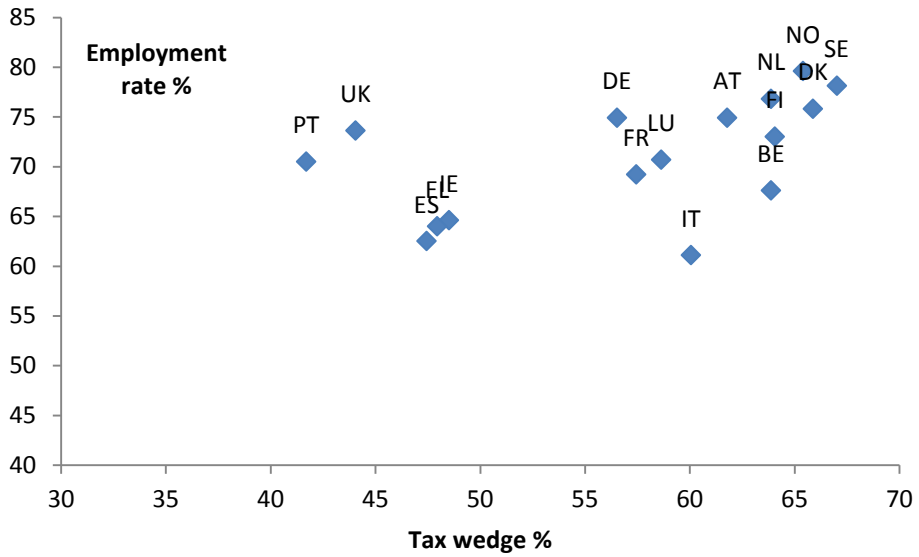
social safety net is thus not an unconditional alternative to work. This procedure may have the advantage that incentives for employment can be reconciled with relatively generous transfers to those who are involuntarily without work. To this could be added that there are tax-financed activities– most notably care – which may serve to strengthen labour supply, in particular for women (see e.g. Jaumotte (2004)).

The effects of activation are most relevant to individuals with low wage options in the labour market. Incentives for these groups to be active in the labour market may thus be strengthened via both the activation requirements and making work pay either by adjustments of benefits[18] or by tax rebates like the earned-income-tax-credits. As noted above the latter has recently been introduced in the Nordic countries (except Norway).

It should also be noted that the activation approach is more effective in the extensive dimension than the intensive dimension of labour supply. It is noteworthy that the Nordic countries have relatively low average working hours per worker. This has motivated tax reforms focusing on top marginal tax rates.

Even though tax distortions to some extent have been countered via the design of the social safety net, the question is whether this has reached a limit. If so, a further tax increase will be more distortionary (marginal consequences much larger than the average consequences at present levels of taxation) because the scope for counteracting distortions has been reached. It follows that tax financing of the welfare state may have reached a limit.

Figure 12: Labour income taxation and employment rate, EU countries, 2010



Note: Tax wedge as in Figure 2. Employment rate for age group 20-64. Data applies to 2010.
Source: Tax wedge as Figure 2, www.oecd-ilibrary.org

[18] There are some attempts in Finland to allow the low productivity employees to participate in labour markets and earn a restricted amount, which does not imply loss of unemployment benefits or disability pensions.

5.2 Property taxation

As noted in Section 2 property taxation constitutes a relatively low share of tax revenue in general and in particular in the Nordic countries. This is surprising since there are several arguments in favour of a higher tax burden on property in all three classical dimensions: efficiency, distribution, and stabilization. Moreover, since property is a so-called immobile tax base, the basic globalization logic implies that it should carry a larger tax burden when economies integrate.

For all the Nordic countries analyses (see e.g. Danish Economic Council (2011), Swedish Fiscal Policy Council (2008), OECD (2012 a,b) on Finland and Norway) document that current taxation systems distort property markets by taxing the return to owner occupied housing (including imputed rents) at a lower rate than other forms of capital income. It is hard to see general arguments for subsidies going to housing since social concerns can be addressed by other means. Moreover subsidies to housing tend to benefit high income groups more than low income groups both because the incidence of private ownership is strongly correlated with income, and because subsidies may be larger for very expensive houses. Finally, having property taxation respond to price developments in the housing market works to strengthen automatic stabilizers both with respect to public finances and reducing volatility in housing prices (see e.g. Dam et al. (2011)).

5.3. Alternative modes of financing

It is a general principle of the Nordic welfare model that welfare services and the social safety net are financed by general taxation. That is, access should be free and equal for all depending on need rather than ability to pay. This has attractive properties in terms of equal opportunities, distribution, etc. However, it also introduces common pool or incentive problems since there is no relation between contributions and entitlements. As a consequence the private return to work becomes less than the social return, which in turn distorts the economy leading to lower employment and production, etc. In a forward perspective this raises particular issues. The need and demand for welfare services are likely to increase due to general improvements in material well-being, new options (not least within health) and demographic changes, see SNS (2014). If these trends are driven by preferences and demand by citizens, there must also be a willingness to pay, and it may seem straightforward to let taxes increase to ensure the financing capacity. This argument is deceptive since it does not take into account that demands are not linked to payments via taxation, and hence tax distortions remain.

This raises the question whether other and less distortive means of taxation are available. One example of this is mandatory insurance and pension arrangements[19]. By making these mandatory the welfare state objective of ensuring that all relevant citizens are included and covered is maintained[20], but the mode of financing is changed. If these schemes have an individualized element as is the case with labour market pensions,[21] then this form of financing will be less distortionary than general taxation for the basic reason that higher contributions benefit the individual directly. This can also be rephrased by saying that contributions are based on the benefit principle (see e.g. Summers (1989) and Kaplow (2004)). If the

[19] A more radical solution is the establishment of so-called welfare accounts. See e.g. Bovenberg et al. (2012).
[20] Mandatory arrangements have the advantage that possible adverse selection problems are eliminated by ensuring that all participate. However, moral hazard effects of insurance remain.
[21] It is interesting to note that pension reforms in Denmark and Sweden have taken somewhat different routes, but in both cases there is now a strong link for the individual between contributions and entitlements.

relation between entitlements and contributions is actuarially fair and agents do not suffer from myopia, there will be no distortion[22]. If these ideal conditions are not met, there may be distortions, but to a lesser extent than with general taxation. While this approach may relieve the public sector of substantial financial burdens it is not without problems. Such schemes will target those in employment, and hence there is an issue of unequal coverage and there are also distributional implications of such a change. One solution applied for pensions is to have a basic tax-financed public pension defining the minimum living standard that the welfare state finds acceptable for old citizens. However, this introduces new distortions due to the transition between the two systems. Hence, this does not escape the trade-off between efficiency and equity, but it may achieve a different and more preferable balance.

User payments are often mentioned as a possible way to counteract the expenditure drift within the welfare state. User payments are used by the Nordic countries (see e.g. Hansen and Houlberg (2012)), but not to a large extent. Moreover there are no clear principles for their application, which seems more to depend on historical circumstances. User payments have three immediate effects. First, it may reduce use or demand for the particular service, which, in turn, leads to a cost saving. Second, it provides some revenue. Finally, financing via user payments does not release the same distortions as general taxation since the payment, in case of user payment, is related to the demand and use, while with general taxation it depends on income and thus distorts incentives.

The more the user payment reduces demand, the larger the cost saving and the smaller the revenue accruing from the payment. How sensitive the use is to the user payment is thus of crucial importance. There is an international empirical literature on the effects of user payments within health and long-term care, see Kiil and Houlberg (2012). For health services (like medicine, consultation with a general practitioner, ambulant treatments, etc.) these studies do in general find that user payments reduce demand. The order of magnitude is such that a one percent increase in the user payment reduces demand between 0 and 0.4 % depending on the specific service and country. There are fewer studies of the effects of user payment in old-age care, but there is also evidence that demand is reduced by user payments on such services. There is thus evidence that user payments can be used to affect the level of demand for services which, in turn, has implications for both costs and revenue.

An important issue in relation to user payment is the distributional consequences. User payments are relatively more important for low income families, and especially low income families with a strong need for particular health services. The studies considered in the survey by Kiil and Houlberg (2012) thus find that user payments tend to have a problematic distributional profile. This problem can be addressed in different ways. One is to limit the sum of user payment to be paid over some period (as known for e.g. medicine). This ensures that individuals with a strong need for a particular type of medicine are not disproportionally affected. Another approach is to make user payments depend on income. This has, however, the disadvantage that it may increase effective marginal tax rates, in particular for low income groups.

User payments are not the solution to the problem of financing welfare services, but it can contribute to reduce some of the problems. Without jeopardizing the general principles of the welfare state, user payments cannot be a main source of financing. They may, however, serve the purpose of reducing

[22] Under these conditions it is difficult to justify a mandatory pension scheme.

demand, lowering costs, and providing some revenue. For distributional reasons the level of user payments is bounded, but they are used today and there is a need for more general principles for the use of user payments and for aligning them more consistently across various welfare services. Even though user payments have some drawbacks, they should be seen against the alternative. There is a financial challenge to be solved, and the alternative may be that some services will not be included at all in the public package.

6. Concluding remarks

It is a widespread concern that globalization makes it more difficult to maintain generous tax-financed welfare arrangements. In this paper we have focused on the role of product market integration and thus the easier scope to relocate production and thus jobs across economies. We have based our approach explicitly on modern theories of trade capturing essential elements of the globalization process. These models also predict that countries with higher taxes tend to have relatively higher wages. However, one cannot conclude from this that further integration increases the social costs of tax financing. Integration is associated with gains from trade, the political motivation for such integration, which increases production and consumption and thus tax bases and in this way eases tax financing of the welfare state. Simultaneously it changes the marginal costs and benefits of publicly provided activities. An important conclusion from these analyses is that further product market integration is not a particular threat to small countries with a strong preference for public sector activities.

This does not imply that the design of the tax system is immaterial. On the contrary, labour supply incentives along both the intensive (hours worked) and extensive (labour force participation) margin are of crucial importance. The Nordic countries have in recent years undertaken a number of reforms to lower marginal tax rates and to make work pay.

Along the same line it is important to consider alternative modes of financing which are less distortionary. This includes mandatory social insurance arrangements and user payments.

References

Adema, W. and M. Ladaique, 2009, How Expensive is the Welfare State?: Gross and Net Indicators in the OECD Social Expenditure Database (SOCX), *OECD Social, Employment and Migration Working Papers*, No. 92, OECD Publishing. http://dx.doi.org/10.1787/220615515052.

Alesina, A. and R. Perotti, 1997, The Welfare State and Competitiveness, American Economic Review, 87(5), 921-39.

Andersen, T.M., 2013, Why do Scandinavians work?, Working Paper, Department of Economics and Business, Aarhus University.

Andersen, T.M., B.S. Rasmussen, and J.R. Sørensen, 1996, Optimal Fiscal Policies in Open Economies with Labour Market Distortions, Journal of Public Economics, 63, 103-117.

Andersen, T.M. and A. Sørensen, 2011, Globalisation squeezes the public sector - is it so obvious? International Tax and Public Finance, 18, 369-382.

Andersen, T.M. and A. Sørensen, 2012, Globalization, Tax Distortions, and Public-Sector Retrenchment, Scandinavian Journal of Economics, 409-439.

Andersen, T.M. and A. Sørensen, 2013, Product market integration, tax distortions and public sector size, Aarhus University, Economics Working Papers 2013-28 (to appear in B.J. Christensen and C. Kowalczyk).

Baxter, M. and R. King, 1993, Fiscal Policy in General Equilibrium, American Economic Review, 83, 159-192.

Bargain, O. and A. Peichl, 2013, Steady-State Labour Supply Elasticities: A Survey, IZA Discussion Paper 7698.

Bennmarker, H., L. Calmfors, and A. L. Seim, 2013, Earned Income Tax Credits, Unemployment Benefits and Wages: Empirical Evidence from Sweden, IFAU Working Paper 2013:12.

Bernard, A.B. and J. Bradford Jensen, 1999, Exceptional Exporter Performance: Cause, Effect or Both? Journal of International Economics 47, 1-25.

Bernard, A.B. and J. Bradford Jensen, 2001, Exporting and Productivity: The Importance of Reallocation, Working Paper.

Botman D., D. Laxton, D. Muir, and A. Romanov, 2006, A New-Open-Economy-Macro Model for Fiscal Policy Evaluation, IMF Working paper 06/45.

Bovenberg, L., M. I. Hansen and P.B. Sørensen, 2012, Efficient redistribution of lifetime income through welfare accounts, Fiscal Studies, 33 (1), 1–37

Bruce, N. and D.D. Purvis, 1985, The Specification of Goods and Factor Markets in Open Economy Macroeconomic Models, Ch. 16 in R.W. Jones and P.B. Kenen, Handbook of International Economics, Vol. II; North-Holland.

Burda, M., 1999, European Labour Markets and the Euro: How Much Flexibility Do We Really Need? CEPR Discussion paper 2217.

Chari, V.V. and P.J. Kehoe, 1990, International coordination of fiscal policy in limiting economies, Journal of Political Economy, 98, 617-636.

Dam N.A., T. S. Hvolbøl, E. H. Pedersen, P. B. Sørensen and S. H. Thamsborg, 2011, Boligboblen der bristede: Kan boligpriserne forklares? Og kan deres udsving dæmpes? Nationalbankens Kvartalsoversigt, 1. kvartal, Del I.

Danish Economic Council, 2001, The Danish Economy – Fall 2011, Copenhagen.

Daveri, F. and G. Tabellini, 2000, Unemployment growth and taxation in industrial countries, Economic Policy, 30, 47-104.

Devereux, M.B., 1991, The terms of trade and the international coordination of fiscal policy, Economic Inquiry, 29, 720-736.

Dornbusch, R., Fischer, S., and P.A. Samuelson, 1977, Comparative Advantage, Trade and Payments in a Ricardian Model with a Continuum of Goods, American Economic Review, 67, 823-839.

Eaton, J. and S. Kortum, 2002, Technology, geography and trade, Econometrica, 70, 1741-1779.

Epifani, P. and G. Gancia, 2009, Openness, Government Size and the Terms of Trade, Review of Economic Studies, vol. 76, p. 629-668.

Eurostat, 2013, Taxation trends in the European Union – Data for EU Members States, Iceland and Norway.

Evers, M., R. A. de Moij, and D. J. van Vuuren, 2005, What explains the variation in estimates of labour supply elasticities? CESifo working paper 1633.

Hansen, S.W. and K. Houlberg, 2012, Brugerbetaling på sundheds- og ældreområdet i komparativt perspektiv, AKF Rapport, Anvendt Kommunal Forskning, København.

Jaumotte, F.,2004, Labour force participation of women: empirical evidence on the role of policy and other determinants in OECD countries, OECD Economic Studies, 37, 51-108.

Kaplow, L., 2004, On the (Ir-)relevance of Distribution and Labour Supply Distortion to Government Policy, Journal of Economic Perspectives, 18(4), 159-75.

Kiil, A. and K. Houlberg, 2012, Adfærdsmæssige effekter af brugerbetaling, AKF Rapport, Anvendt Kommunal Forskning, København.

Lane, P. R. and R. Perotti, 2003, On the Importance of the Composition of Fiscal Policy: Evidence from Different Exchange Rate Regimes, Journal of Public Economics, 87, 2253--2279.

Lassen, D.D. and P. B. Sørensen, 2003, Financing the Nordic Welfare States: The Challenge of Globalization to Taxation in the Nordic Countries, In Nordiska Ministerådet, Det fremtida nordiska välfärdssamhället – Utmaningar och möjligheter, Nord 2003:12.

Layard, R., S. Nickell, and R. Jackman, 2005, Unemployment: Macroeconomic Performance and the Labour Market, 2nd edition, Oxford University Press.

Marston, R. C., 1985, Stabilization Policies in Open Economies, Ch. 17 in R.W. Jones and P.B. Kenen, Handbook of International Economics, Vol. II; North-Holland.

Meghir, C. and D. Phillips, 2008, Labour Supply and Taxes, IZA Discussion paper 3405.

OECD, 2012a, Economic Survey of Finland 2012, Paris.

OECD, 2012b, Economic Survey of Norway 2012, Paris.

Razin, A., E. Sadka, and B. Suwanskiri, 2011, Migration and the welfare state. Political-economy formation, MIT Press (Cambridge).

Rodrik, D., 1998, Why do more open economies have bigger governments?, Journal of Political Economy, 106, 997-1032.

Skaksen, M. Y. and J. R. Sørensen, 2001, Should Trade Unions Appreciate Foreign Direct Investment?, Journal of International Economics, vol. 55, 379-390.

SNS, 2014, Hur får vi råd med välfärden? Konjunkturrådets Rapport 2014, Stockholm.

Summers, L., 1989, Some simple economics of mandated benefits, American Economic Review, Papers and Proceedings, 79(2), 177-183.

Swedish Fiscal Policy Council, 2008, Swedish Fiscal Policy, Stockholm.

Sørensen, P.B., 2010, Dual Income Taxes: A Nordic System, In I. Claus, N. Gemmell, M. Harding and D. White (eds.) Tax reform in Open Economies, Edwar Elgar.

Tanzi, V., 2000, Globalization and the future of social protection, IMF working paper WP/00/12.

Turnovsky, S.J., 1988, Coordination of optimal taxation in a two-country equilibrium model, Journal of International Economics.

van der Ploeg, R., 1987, Coordination of Optimal Taxation in a Two-Country Equilibrium Model, Economics Letters, 24, 279-285.

van der Ploeg, R., 1988, International policy coordination in interdependent monetary economies, Journal of International Economics, 25, 1-23.