

Economic Studies 172



Jacob Lundberg
Essays on Income Taxation and Wealth Inequality

Jacob Lundberg

Essays on Income Taxation
and Wealth Inequality



UPPSALA
UNIVERSITET

Department of Economics, Uppsala University

Visiting address: Kyrkogårdsgatan 10, Uppsala, Sweden

Postal address: Box 513, SE-751 20 Uppsala, Sweden

Telephone: +46 18 471 00 00

Telefax: +46 18 471 14 78

Internet: <http://www.nek.uu.se/>

ECONOMICS AT UPPSALA UNIVERSITY

The Department of Economics at Uppsala University has a long history. The first chair in Economics in the Nordic countries was instituted at Uppsala University in 1741.

The main focus of research at the department has varied over the years but has typically been oriented towards policy-relevant applied economics, including both theoretical and empirical studies. The currently most active areas of research can be grouped into six categories:

- * Labour economics
 - * Public economics
 - * Macroeconomics
 - * Microeconometrics
 - * Environmental economics
 - * Housing and urban economics
-

Additional information about research in progress and published reports is given in our project catalogue. The catalogue can be ordered directly from the Department of Economics.

Dissertation presented at Uppsala University to be publicly examined in Hörsal 2, Ekonomikum, Kyrkogårdsgatan 10, Uppsala, Friday, 6 October 2017 at 13:15 for the degree of Doctor of Philosophy. The examination will be conducted in English. Faculty examiner: Professor Tomas Sjögren (Handelshögskolan vid Umeå universitet).

Abstract

Lundberg, J. 2017. Essays on Income Taxation and Wealth Inequality. *Economic studies* 172. 173 pp. Uppsala: Department of Economics, Uppsala University. ISBN 978-91-85519-79-8.

This thesis is concerned with inequality, redistribution and taxation, in particular the taxation of labour income and the distribution of wealth. Most of the analysis is focused on Sweden. The thesis consists of four self-contained essays.

Essay 1: "Analyzing tax reforms using the Swedish Labour Income Microsimulation Model". Labour income taxation is a central policy topic because labour income makes up the majority of national income and most taxes are in the end taxes on labour. In order to quantify how behavioural responses of labour income earners affect tax revenue, the Swedish Labour Income Microsimulation Model (SLIMM) is constructed and used to evaluate tax reforms. Elasticities are calibrated to match midpoints of estimates found in the quasiexperimental literature. The simulations indicate that the earned income tax credit has increased employment by 128,000 and has a degree of self-financing of 21 percent. Almost half of the revenue increase from higher municipal tax rates would disappear due to behavioural responses. Tax cuts for the richest fifth of working Swedes are completely self-financing.

Essay 2: "The Laffer curve for high incomes". An expression for the Laffer curve for high incomes is derived, assuming a constant Pareto parameter and elasticity of taxable income. Microsimulations using Swedish population data show that the simulated curve matches the theoretically derived Laffer curve well, suggesting that the analytical expression is not too much of a simplification. A country-level dataset of top effective marginal tax rates and Pareto parameters is assembled. This is used to draw Laffer curves for 27 OECD countries. Revenue-maximizing tax rates and degrees of self-financing for a small tax cut are also computed. The results indicate that degrees of self-financing range between 28 and 195 percent. Five countries have higher tax rates than the peak of the Laffer curve.

Essay 3: "Political preferences for redistribution in Sweden" (with Spencer Bastani). We examine preferences for redistribution inherent in Swedish tax policy 1971–2012 using the inverse optimal tax approach. The income distribution is carefully characterized with the help of administrative register data and we employ behavioral elasticities reflecting the perceived distortionary effects of taxation. The revealed social welfare weights are high for non-workers, small for low-income earners, and hump-shaped around the median. At the top, they are always negative, especially so during the high-tax years of the 1970s and '80s. The weights on non-workers increased sharply in the 1970s, fell drastically in the late '80s and early '90s, and have since then increased.

Essay 4: "Wealth inequality in Sweden: What can we learn from capitalized income data?" (with Daniel Waldenström). This paper presents new estimates of wealth inequality in Sweden during 2000–2012, linking wealth register data up to 2007 and individually capitalized wealth based on income and property tax registers for the period thereafter when a repeal of the wealth tax stopped the collection of individual wealth statistics. We find that wealth inequality increased after 2007 and that more unequal bank holdings and housing appear to be important drivers. We also evaluate the performance of the capitalization method by contrasting its estimates and their dispersion with observed stocks in register data up to 2007. The goodness-of-fit varies tremendously across assets and we conclude that although capitalized wealth estimates may well approximate overall inequality levels and trends, they are highly sensitive to assumptions and the quality of the underlying data sources.

Keywords: public economics, income taxation, wealth inequality, Laffer curve, redistribution, microsimulation

*Jacob Lundberg, Department of Economics, Box 513, Uppsala University, SE-75120
Uppsala, Sweden.*

© Jacob Lundberg 2017

ISSN 0283-7668

ISBN 978-91-85519-79-8

urn:nbn:se:uu:diva-328153 (<http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-328153>)

To my parents

Contents

Preface (in Swedish)	1
Summary (in Swedish)	3
Introduction	7
1 Analyzing tax reforms using the Swedish Labour Income Microsimulation Model	15
1.1 Introduction	16
1.2 Literature review	18
1.3 Labour income taxation in Sweden	22
1.4 Behavioural elasticities	30
1.5 The simulation model	35
1.6 Reform evaluation	49
1.7 Conclusion	58
2 The Laffer curve for high incomes	73
2.1 Introduction	74
2.2 Related literature	76
2.3 Theoretical preliminaries	78
2.4 An expression for the high-income Laffer curve	81
2.5 Laffer curves in OECD countries	85
2.6 Simulations	90
2.7 Conclusion	94
3 Political preferences for redistribution in Sweden	107
3.1 Introduction	108
3.2 Theoretical framework	111
3.3 Income distribution	118
3.4 Taxes	120
3.5 Elasticities	124
3.6 Results	127
3.7 Concluding remarks	133
4 Wealth inequality in Sweden: What can we learn from capitalized income tax data?	145
4.1 Introduction	146
4.2 Data and estimation strategy	149
4.3 Evaluating the capitalization method	154
4.4 Wealth inequality in Sweden 2000–2012	162
4.5 Concluding remarks	169

Förord

I augusti 2012 flyttade jag till Uppsala för att doktorera i nationalekonomi. Nya och gamla vänner och kollegor har gjort de här fem åren roligare och arbetet med avhandlingen lättare. Här ska några av dessa personer nämnas.

Först vill jag tacka mina handledare. Min huvudhandledare Håkan Selin tog sig alltid tid och lade ner många timmar på att ge återkoppling på mitt arbete. Min tidigare huvudhandledare Daniel Waldenström kom med många goda råd och vårt samarbete mynnade ut i den fjärde uppsatsen i denna avhandling, som dessutom är publicerad i tidskrift. Biträdande handledaren Spencer Bastani har generöst delat med sig av sina omfattande kunskaper inom offentlig ekonomi och vi hade ett gott samarbete i arbetet med uppsats tre i avhandlingen. Biträdande handledaren Helena Svaleryds kommentarer har förbättrat uppsatserna ett och två avsevärt. Denna avhandling hade inte varit möjlig utan er hjälpsamhet och ert tålamod.

I also want to thank Emmanuel Saez for inviting me to University of California, Berkeley, during the spring of 2015. It was a rewarding experience in many ways.

Doktorandkollegorna som varit med hela vägen sedan 2012 – Sebastian Escobar, Kristina Gunnarsson, Evelina Björkegren, Gunnar Brandén, Josefine Andersson och Olof Rosenquist – har med tiden blivit goda vänner. Allt ifrån att plugga till tentor till att arrangera fester blev roligare tillsammans med er.

Nationalekonomiska institutionen i Uppsala är en fantastisk arbetsplats tack vare de människor som verkar där. Daniel Jahnson, Linuz Aggeborn, Mattias Öhman, Johannes Hagen, Oscar Erixson, Johan Grip, Henrik Andersson, Jonas Klarin, Ylva Moberg, Arnaldur Stefánsson, Mathias von Buxhoeveden, Eva Mörk, Mikael Elinder och Tomas Guvå är några av de personer som har förgyllt luncher och aldrig tvekat att hjälpa till. Katarina Grönvall, Stina Kjetselberg och övriga inom administrationen har vänligt och professionellt funnits till hands vid alla frågor och problem.

Jag vill rikta ett tack till kollegorna på Timbro, i synnerhet Karin Svansson-Sjövall, Lydia Wälsten och Jesper Ahlgren, för gott samarbete och en lärorik upplevelse under mitt halvårslånga studieuppehåll under 2016. Mina två somrar på forskningsinstitutet Ratio – där jag

lärde känna Nils Karlson, Christian Sandström och Patrik Gustavsson Tingvall, med flera – gav mig värdefulla kunskaper och kontakter. Jag är också glad över att i olika sammanhang haft förmånen att arbeta med Stefan Fölster, Johan Norberg, Fredrik Segerfeldt och Rola Brentlin.

Vännerna Alexander Fritz Englund, Martin Bucht, Edvin Alam, Lucas Kramer, Gustav Åqvist och många fler gjorde min tid i Uppsala så mycket trevligare. Jag vill också tacka Axel Gottfries, Gabriel Heller Sahlgren, Jonas Grafström, Niklas Wykman, Caspian Rehbinder, Isak Kupersmidt och Gustav Karreskog för många stimulerande samtal.

Min bror Adam, min farmor Thyra och mina föräldrar Helena och Karl-Enar har i alla lägen hjälpt till med uppmuntran och stöd. Detta gäller i synnerhet mina föräldrar, till vilka denna avhandling är dedikerad.

Uppsala den 21 augusti 2017
Jacob Lundberg

Sammanfattning

Denna doktorsavhandling inom offentlig ekonomi behandlar ojämlikhet, omfördelning och beskattning, med särskilt fokus på Sverige. I synnerhet analyseras förmögenhetsojämlikhet samt beskattning av arbetsinkomster. I nästa avsnitt, inledningen, ges en kort introduktion till teorin om optimal inkomstskatt, det svenska skattesystemet och ojämlikhet i Sverige.

Avvägningen mellan jämlikhet och effektivitet är ett genomgående tema i offentlig ekonomi. Omfördelning, typiskt sett genom skattesystemet, minskar ojämlikheten men kommer i regel att skapa snedvridningar i ekonomin och därmed samhällsekonomiska kostnader.

I en modern ekonomi är de flesta skatter i praktiken skatter på arbete. Detta gäller inte bara inkomstskatten. Arbetsgivaravgifterna tas från löneutrymmet och betalas därmed i slutändan av löntagarna. Även skatter på konsumtion, som moms och punktskatter, är egentligen skatter på arbete eftersom de minskar lönens köpkraft. Skatter på arbete svarar därför för en stor majoritet av skatteintäkterna och en betydande andel av BNP; se figur 2a på sidan 10.

Optimal inkomstbeskattning handlar om att väga vinsterna av omfördelning – en krona i fickorna på en fattig anses typiskt sätt vara mer värd än en krona i händerna på en rik person – mot kostnaderna i form av minskat arbetsutbud och andra negativa effekter av höga skatter på arbete. Denna avvägning kan göras matematiskt om man känner till (1) inkomstfördelningen, (2) storleken på beteendeförändringarna och (3) sociala välfärdsvikter för olika inkomstnivåer. Beteendeförändringarnas storlek mäts med en elasticitet. Den visar hur mycket löntagarna förändrar sitt beteende om skatten sänks eller höjs; ju högre elasticitet desto större beteendeförändringar och desto värre samhällsekonomiska förluster av beskattning. De sociala välfärdsvikterna behövs för att siffersätta strävan efter en jämn inkomstfördelning – hur mycket mer värd är en krona hos en låginkomsttagare än hos en höginkomsttagare?

Okun (1975) liknade omfördelning genom beskattning vid en läckande hink. De fattiga kommer inte att få allt som tagits från de rika eftersom en del läcker ut under transporten. Läckan motsvarar den samhällsekonomiska kostnaden av beskattning. Om 75 procent av hinken läcker ut innebär det att beteendeförändringar hos skattebetalarna raderar ut 75 procent av skatteintäkten. Självfinansieringsgraden (som beräknas i kapitel 1 och 2) vid en liten skattesänkning är

alltså 75 procent. Självfinansieringsgraden visar i hur hög grad en skattesänkning betalar för sig själv genom positiva beteendeförändringar (även kallade dynamiska effekter), som ökad arbetstid, hos löntagarna – eller omvänt, hur stor del av en skattehöjning som försvinner till följd av beteendeförändringar.

Det finns dessutom en koppling till den sociala välfärdsvikten på de rikas inkomster. Eftersom staten tolererar effektivitetsförluster motsvarande tre fjärdedelar av hinkens innehåll värderar staten konsumtion hos de rika till en fjärdedel av värdet av konsumtionen i befolkningen som helhet. Den sociala välfärdsvikten (som beräknas i kapitel 3) är alltså 25 procent i detta exempel. Liknelsen med den läckande hinken illustrerar att självfinansieringsgraden vid en skattesänkning är en viktig parameter i den skattepolitiska debatten.

* * *

Avhandlingen består av fyra fristående uppsatser.

Uppsats 1: "Analyzing tax reforms using the Swedish Labour Income Microsimulation Model"

I uppsatsen utvecklas mikrosimuleringsmodellen Swedish Labour Income Microsimulation Model (Slimm) som kan användas för att förutsäga beteendeförändringar vid olika skattereformer. Elasticiteterna är valda med utgångspunkt i svensk forskning om hur arbetstid, arbetskraftsdeltagande och arbetsinkomst påverkats av tidigare skattereformer. Slimm används för att analysera hur sysselsättning och skatteintäkter skulle påverkas av olika tänkbara skattereformer. Jobbskatteavdraget uppskattas ha ökat sysselsättningen med 128 000 personer och ha en självfinansieringsgrad på 21 procent. Vid sänkt kommunalskatt finansierar beteendeförändringarna nästan hälften av skattesänkningen. En sänkning eller ett avskaffande av den statliga inkomstskatten skulle vara helt självfinansierande.

Uppsats 2: "The Laffer curve for high incomes"

En formel för Lafferkurvan – alltså sambandet mellan skattesats och skatteintäkter – för skatt på höga inkomster härleds. De variabler som ingår i formeln är skattebaselasticiteten, som visar hur taxerad inkomst förändras vid en skattehöjning eller -sänkning, och Paretoparametern, ett mått på hur tunn den högra svansen av inkomstfördelningen är. En simuleringsövning i Slimm visar att de antaganden som krävs för att härleda Lafferkurvan inte verkar vara allt för starka. Paretoparametrar och effektiva skattesatser på höga inkomster sammanställs för 27 länder. Resultaten indikerar att självfinansieringsgraden vid en liten skattesänkning på höga inkomster varierar mellan 28 och 195 procent i

de olika länderna. Fem länder har skattenivåer bortom Lafferkurvans topp.

Uppsats 3: "Political preferences for redistribution in Sweden" (med Spencer Bastani)

Uppsatsen bidrar till en växande forskningslitteratur om inverterad optimal beskattning, som innebär att man räknar fram de sociala välfärdsvikter som skulle innebära att dagens skattesystem är optimalt. Givet inkomstfördelningen, skattesystemets utformning och elasticiteter kan vi räkna fram de sociala vikterna vid olika inkomstnivåer i Sverige under perioden 1971–2012. Vi finner att den sociala vikten är relativt hög på de icke-arbetande, förvånansvärt låg för arbetare med låga löner och negativ för höga inkomster – vilket implicerar en självfinansieringsgrad över 100 procent.

Uppsats 4: "Wealth inequality in Sweden: What can we learn from capitalized income data?" (med Daniel Waldenström)

Denna uppsats uppskattar förmögenhetsojämlikhetens utveckling i Sverige under perioden 2007–2012. Eftersom förmögenhetsskatten avskaffades 2007 kan inte uppgifter kontrolluppgifter över tillgångar användas. I stället beräknar vi banklån och bankkontotillgodohavanden genom att observera ränteavdrag och ränkeinkomster i deklARATIONEN och anta att alla individer har samma ränta. Innehav av aktier som lämnar utdelning kan beräknas på bolagsnivå genom kontrolluppgifter. Icke-utdelande aktier och bostadsrätter värderas genom en enkel framskrivning av det observerade innehavet 2007. Taxeringsvärden på fastigheter observeras direkt, liksom studielån. Våra beräkningar tyder på att förmögenheterna blev mer ojämnt fördelade under perioden, särskilt i samband med finanskrisen 2008. Utvecklingen på bostadsmarknaden kan också ha bidragit. Det verkar som att de redan dyra husen har ökat mest i värde.

Introduction

This is a thesis in public economics. Public economists study the role of government in the economy – especially how the government weighs efficiency against equity in its policymaking. The most widely used tool for affecting inequality is taxation. In the first section of this introduction, I provide an introduction to the theory of income taxation, especially focusing on how behavioural responses imply that taxation is socially costly – i.e., the size of the pie depends on how it is sliced. Next, I outline the Swedish tax system. In the last section, I describe the evolution of inequality in Sweden. In each section, I discuss labour and capital separately, highlighting my own research. The papers in this thesis contribute to the literature on the taxation of labour income and the distribution of capital.

The theory of labour income taxation

The conflict between efficiency and equity is a fundamental theme in public economics. Redistribution policies carried out by the government will typically decrease inequality, but at the same time induce some type of distortion, causing deadweight losses.¹ In general, the most efficient way to redistribute is through income and consumption taxes. These are also the main instruments used by all high-income countries.

The foundation of the optimal income taxation literature was laid by Mirrlees (1971), who formalized the efficiency–equity tradeoff and showed how optimal tax schedules could be calculated. Saez (2001) contributed by deriving formulas for optimal tax rates expressed in terms of in principle empirically observable parameters relating to the income distribution and behavioural responses, in addition to social welfare weights for each income level. These social weights, which are completely normative, show how the government values consumption by different income groups. Given inequality aversion, social welfare weights will be lower for higher incomes. If the researcher knows the

¹There are exceptions where this tradeoff does not apply. If environmental taxes are too low, for example, setting them at the correct Pigouvian level will improve efficiency and create resources for possible redistribution. Likewise, if a tax cut is fully self-financing there is no conflict between equity and efficiency.

shape of the income distribution and behavioural elasticities, the social weights that would rationalize the existing tax schedule can be computed through an exercise called inverse optimal taxation. In essay 3, Spencer Bastani and I do this for Sweden.

As discussed in section 1.7, the impact of behavioural responses on tax revenues, measured by the degree of self-financing (DSF), for example, is often sufficient to ascertain the efficiency costs of taxation. This is an old insight, most eloquently expressed by Okun (1975, p. 91–92) in his metaphor of redistributive taxation as a leaky bucket:

[T]he money must be carried from the rich to the poor in a leaky bucket. Some of it will simply disappear in transit, so the poor will not receive all the money that is taken from the rich. ... Suppose 10 percent leaks out ... Should society still make the switch? If 50 percent leaks out? 75 percent? ... Where would you draw the line? Your answer cannot be right or wrong – any more than your favorite flavor of ice cream is right or wrong.

Of course, the leak represents an inefficiency. The inefficiencies of real-world redistribution include the adverse effects on the economic incentives of the rich and the poor, and the administrative costs of tax collection and transfer programs.

As Okun's example illustrates, there is a direct link between the DSF (as calculated in essays 1 and 2) and the social weight (as calculated in essay 3). If 75 percent leaks out of the bucket, behavioural responses erase 75 percent of the last tax dollar collected from the rich and thus a small tax cut will have a DSF of 75 percent. Further, because the government tolerates efficiency losses corresponding to three quarters of marginal tax revenue collected, the value it places on the consumption of the rich is a quarter of the value placed on the consumption of the population at large. Hence the marginal social welfare weight is 25 percent. Degrees of self-financing for various tax reforms are therefore a valuable input to discussions of tax policy.

The fact that the distortion increases with the tax rate is central to the economics of taxation. One reason is that raising an already high tax rate will affect the return to work by a lot. For example, if the tax rate is raised from 80 to 90 percent, tax revenues will not increase by very much (even keeping the tax base constant), but the after-tax wage will be halved, reducing incentives to earn income significantly. Thus tax revenues will increase by less for each successive tax hike and eventually start declining when the tax rate is high enough. When the tax rate is 100 percent, the tax base and therefore tax revenue will have shrunk to zero. This is the logic behind the inverted U-shape of the Laffer curve – the relationship between tax revenues and the tax rate.²

²See Piketty & Saez (2013), p. 411, for a more formal discussion.

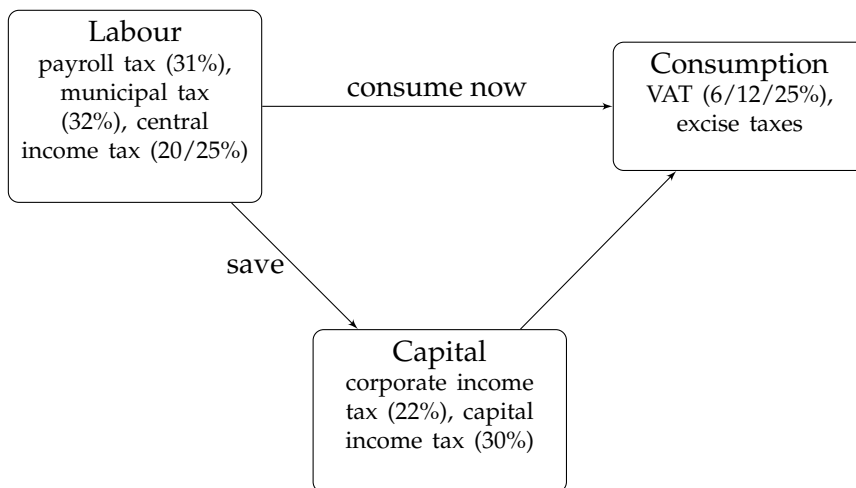


Figure 1. Simplified presentation of the Swedish tax system

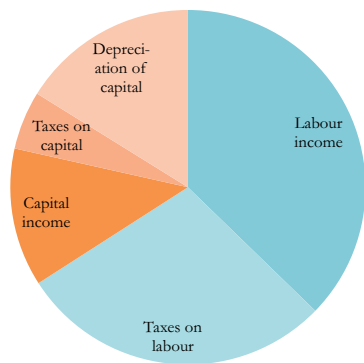
In chapter 2, I obtain a mathematical expression for the Laffer curve for high incomes and draw Laffer curves for 27 high-income countries.

Taxation in Sweden

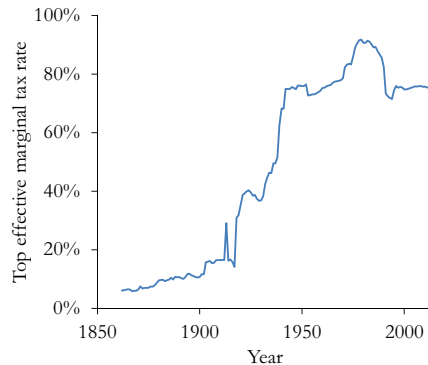
Figure 1 shows a schematic presentation of the main tax bases and tax rates in Sweden. All income must at some point have been earned by someone through labour and the purpose of earning income is consumption. For the wage-earner, the main decision is whether to consume now or whether to save in order to accumulate capital and consume later.

The figure illustrates the fact that in a modern economy, almost all taxes are directly or indirectly paid by labour income earners. This is true not only for the income tax. The long-run incidence of the payroll tax is also on wage-earners. Consumption taxes, such as value added, environmental, alcohol and tobacco taxes, erode the purchasing power of wages and are therefore in principle equivalent to a tax on labour income. An income tax that halves all incomes or a consumption tax that doubles all prices will, simplifying slightly, have the same effects on incentives to work and tax revenue.

Taking all these taxes into account, the average effective tax rate on labour income is therefore almost 50 percent. The top effective marginal tax rate is 75 percent; see figure 1.4a on page 29. Of the 31 countries surveyed in essay 2, this is the highest. Historically, marginal tax rates have been even higher. Du Rietz et al. (2015a) provide data on marginal tax rates over 150 years in Sweden. Their estimate for the



(a) The composition of Sweden's GDP in 2015. Source: Own calculations based on data from Statistics Sweden.



(b) The top effective marginal tax rate, including consumption taxes, 1862–2013. Source: Du Rietz et al. (2015a).

Figure 2. Taxation in Sweden

top effective marginal tax rate, including consumption taxes, is shown in figure 2b. These numbers are replicated by Spencer Bastani and myself in essay 3 for the period 1971–2016; see figure 3.5b on page 132. Even though top marginal tax rates decreased dramatically over the years 1982–1991 and have only increased slightly since, in essay 3, we conclude that Sweden was on the wrong side of the Laffer curve – the marginal degree of self-financing was more than 100 percent – for the entire period studied, given a taxable income elasticity of 0.2. More specifically, in essay 2 I calculate that the degree of self-financing for a small tax cut in this income segment is 195 percent. In line with the discussion in the previous section, this is equivalent to saying that social marginal welfare weights on high incomes were negative.

Turning to taxes on capital, the main taxes in Sweden are the corporate income tax and the capital income tax. The inheritance tax was repealed in 2004 and the wealth tax in 2007. There is also a property tax, but this was capped in 2008. As indicated in figure 1, the corporate income tax rate is 22 percent and the tax rate on dividend income is 30 percent. Thus the total tax rate on profits distributed to shareholders of listed firms is 45 percent. This is low by historical comparison. Du Rietz et al. (2015b) calculate the effective taxation of capital income in Sweden over more than a century using the King–Fullerton model. This takes into account accelerated depreciation, taxation of capital gains on a realization basis and other features of the tax system that imply a lower effective tax on capital. For 2013, they find an effective tax rate of 35 percent for investment financed through new share issues, 23 percent if financed with retained earnings and 17 percent if

financed using debt. These numbers have been declining slowly since the tax reform of 1990–1991 due to falling inflation (because capital incomes are taxed on a nominal basis) and lower corporate income tax. During the 1980s, effective tax rates on capital paid by a person facing the top marginal tax rate briefly surpassed 100 percent for all three modes of financing, owing to high inflation.

Because about two thirds of Sweden's GDP is attributable to labour and because effective tax rates on labour are higher than on capital, taxes on labour make up the vast majority of tax revenues and a sizeable proportion of GDP; see figure 2a.

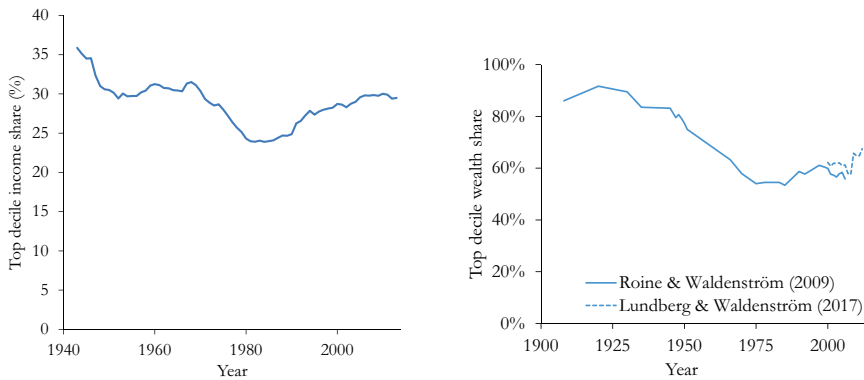
Inequality in Sweden

Interest in questions of inequality and redistribution has increased markedly in recent years. Thanks to relatively good data availability, long time series of inequality in Sweden are now available. Roine & Waldenström (2010) have estimated the share of income accruing to the richest tenth in Sweden over the 20th century; see figure 3a. This data series generally follows the U-shape pattern identified by Thomas Piketty in *Capital in the Twenty-First Century* for many countries: inequality fell up until about 1980 and has increased since. In his book, Piketty noted that Swedish inequality around 1980 is the lowest ever recorded for a country. Income inequality in Sweden remains low by international comparison.

The extent to which fluctuations in income inequality can be explained by tax policy is an interesting issue. When estimating behavioural responses to taxation, it is important to account for structural changes in the income distribution unrelated to taxation. Feldstein (1995) estimated very large responses to Ronald Reagan's tax cuts, but it seems likely that this, to a great extent, is driven by increased inequality during the 1980s. Later research that attempted to control for this, e.g., Gruber & Saez (2002), have consequently estimated lower elasticities. It seems likely that some of the increase in inequality is caused by a less progressive tax system but that the majority is caused by structural factors such as globalization and technological development.

Wealth is much more unevenly distributed than income. Wealth inequality is also much harder to measure. Even when data on taxable wealth exists, as in Sweden, this is not a perfect measure of true wealth inequality as some asset classes, such as pension plans, are missed entirely and others are not taxed at full market value.

As shown by Roine & Waldenström (2009), wealth inequality in Sweden fell sharply between the interwar period and the 1970s, based on



(a) The richest decile's share of market income (excluding capital gains), 1943–2013. Source: Roine & Waldenström (2010). (b) The richest decile's share of wealth at market value calculated from tax data, 1908–2012.

Figure 3. Income and wealth inequality in Sweden over time

wealth tax data. As the wealth tax was abolished in 2007, no taxable wealth data exists after this period. In essay 4, Daniel Waldenström and I extend this data series to 2012 by using the data sources that are available, e.g., interest income and expenses and tax values of real estate. We find an increase over the period. Both data series are shown in figure 3b.

References

- Du Rietz, Gunnar, Johansson, Dan & Stenkula, Mikael (2015a), "Swedish labor income taxation (1862–2013)", in Henrekson, Magnus & Stenkula, Mikael (eds.), *Swedish Taxation: Developments since 1862*. New York: Palgrave Macmillan.
- Du Rietz, Gunnar, Johansson, Dan & Stenkula, Mikael (2015b), "Swedish capital income taxation (1862–2013)", in Henrekson, Magnus & Stenkula, Mikael (eds.), *Swedish Taxation: Developments since 1862*. New York: Palgrave Macmillan.
- Feldstein, Martin (1995), "The effect of marginal tax rates on taxable income: A panel study of the 1986 Tax Reform Act", *Journal of Political Economy*, 103 (3).
- Gruber, Jon & Saez, Emmanuel (2002), "The elasticity of taxable income: Evidence and implications", *Journal of Public Economics*, 84.
- Lundberg, Jacob & Waldenström, Daniel (2017), "Wealth inequality in Sweden: What can we learn from capitalized income tax data?", *Review of Income and Wealth*, forthcoming.

- Mirrlees, James A. (1971), "An exploration in the theory of optimum income taxation", *Review of Economic Studies*, 38 (2).
- Okun, Arthur M. (1975), *Equality and Efficiency: The Big Tradeoff*. Washington, D.C.: The Brookings Institution.
- Piketty, Thomas & Saez, Emmanuel (2013), "Optimal labor income taxation", *Handbook of Public Economics, Volume 5*. Amsterdam: Elsevier.
- Roine, Jesper & Waldenström, Daniel (2009), "Wealth concentration over the path of development: Sweden, 1873–2006", *Scandinavian Journal of Economics*, 111 (1).
- Roine, Jesper & Waldenström, Daniel (2010), "Top incomes in Sweden over the twentieth century", in Atkinson, Anthony B. & Piketty, Thomas (eds.), *Top Incomes: A Global Perspective*. Oxford: Oxford University Press.
- Saez, Emmanuel (2001), "Using elasticities to derive optimal income tax rates", *Review of Economic Studies*, 68 (1).

